



# **K&H Treasury Handbook of Market Risk Management**



## ➔ Dear Partner,

Has it ever happened to your company that the volatility of exchange rates caused your business to suffer significant losses in selling your products or making purchases? Have you ever seen your financing costs increase rapidly because of changes in interest rates? Or is it that your business has been affected by fluctuating commodity prices? Since it is impossible to foresee how exchange rates, interest rates or commodity prices will evolve in the future, this lack of information leads to a state of constant uncertainty and a high level of risk for enterprises.

320 or 230? The only difference is two swapped digits and although we are looking at the low and peak of the forint's exchange rate against the euro they occurred within less than four years. We saw a base rate of 5.5% and 11.5% within just an 18-month period. After the credit crunch in 2007-2008 money markets experienced volatility so high that had been neither seen for decades nor expected to return. We looked at the 300 basis points interest rate hike of 2003 with nostalgia only to experience it again in 2008. The world has seen Greece, an EU member country to default while almost the rest of Southern Europe has sunk into recession, a sequence of events that has rewritten the pages of economic textbooks.

In this environment every responsible manager must protect their company against unfavourable financial impacts. The extreme fluctuation of the foreign exchange rates and the dramatic increase of credit costs can crack the future of a company even if it is a stable and predictable business. The handbook introduces techniques and products that with the advice of our dealers based on experiences gathered during the crisis can be used to reduce these risks.

K&H is one of Hungary's largest corporate banks. In addition to conventional banking products, our Treasury department has at its disposal the most up-to-date techniques which enable your company to successfully face the challenges of the swiftly changing financial and commodity markets. We are convinced that what we have is the perfect set-up for you.

The aim of this handbook is to provide you with a comprehensive, if not exhaustive, introduction to the arrangements our partners can make use of in order to reduce the existing risks of their business. This handbook is a recommended reading to our corporate clients engaged in the export or the import business, as well as those who have revenues or expenditure in HUF tied to specific foreign exchange rates, who have to consider interest rate or commodity price risks, and those with financial investments. When you make a decision, it is indispensable to be familiar with the conventional as well as new techniques available to handle risks amid the uncertainties of the market environment. This single booklet does not give an answer to every possible question. Nevertheless, we are ceaselessly working on new solutions, developing our risk management products, and endeavoring to adjust them to the ever changing circumstances.

Should you have any questions or ideas, please do not hesitate to contact our dealers at the contact addresses listed at the back of this handbook. They will assess the risks inherent in your business, along with your market expectations, and assist you in creating a hedging strategy tailored to your specific needs, even going beyond the scope of products explained in this book.

As always, we remain at your kind disposal:

**Hendrik Scheerlinck**  
CEO

**Mihály Országh**  
Head of Markets Directorate

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## → K&H Markets Directorate

K&H's mission is to be a customer oriented bank, and this is well reflected in the organizational structure of our Markets Directorate, centered on the dealers of our sales area. They are the ones helping you to be informed of even the slightest movements of the market. The sales team is always at the disposal of our clients, with a commitment to assist them in any business matter whatsoever.

You can contact our Treasury sales team whenever you need any of the following services:

- market information, forecasts on foreign exchange rates, interest rates and commodity prices
- daily and monthly newsletters: Good Morning Treasury!, Macroeconomic outlook, Commodity Monitor
- non-standard pricing, execution of orders, and market watch as needed
- creating a hedging strategy tailored to specific needs
- foreign exchange risk hedging: spot currency conversions, forward deals and other foreign exchange derivatives
- interest rate risk hedging
- commodity risk hedging
- investment solutions



The sales dealers are responsible for delivering services primarily from the Trading department to you. The Trading department is one of the most significant players on the FX market in Hungary. Our FX traders conduct FX transactions. Due to the high volume of our trading as well as the experience of our traders, both the speed and the price of our services are highly advantageous.

Another main role of the Trading department is to execute deposit, loan and swap transactions at the most competitive price possible, and in any currency. The considerable experience accumulated by our traders, as well as our economies of scale, constitute an important competitive edge for K&H, helping us in our efforts to procure for our clients the best price available in the market.

The Trading department has an important role in trading fixed income instruments in Hungary. Its activities cover participation in government bond auctions as well as distribution of government bonds.

Furthermore within the KBC Group FX options, interest rate options and commodity transactions are also traded at the best possible price. The traders of the K&H Trading department assist you in concluding deals available to traders of KBC Group, while both the price and speed of the services are still advantageous, thank to the strong cooperation between the sales dealers and the traders within the KBC Group.

# Wa the basics of market risk management

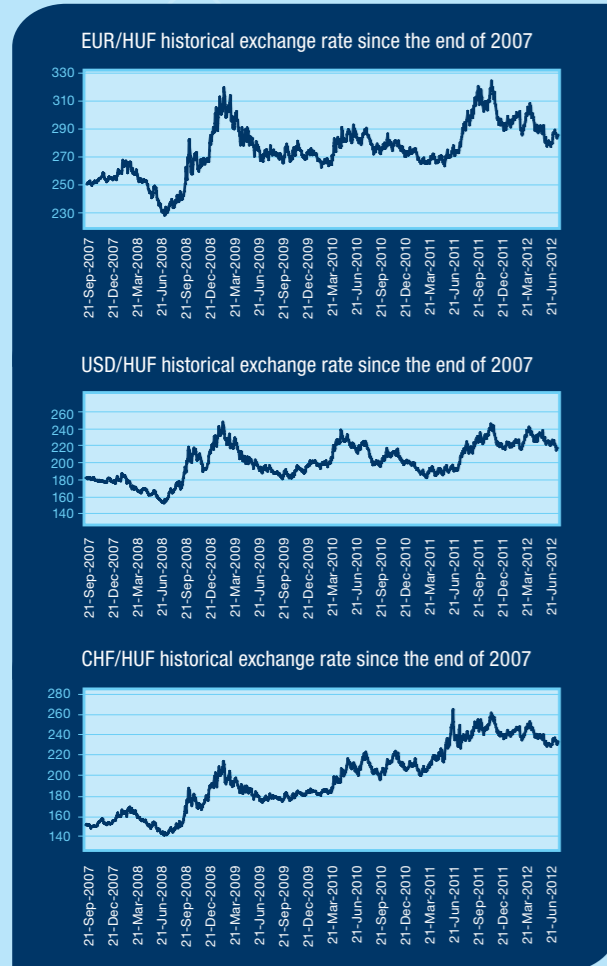


In order for a company to choose the risk management tools appropriate for its specific needs, the first step is to identify the risks inherent in the company's business, and to assess the nature of such risks. The profitability of a business can be influenced to a great extent by changes in the prices of the materials it uses for production. Also, it can be important whether material costs and sales revenues are denominated in a currency different from the one in which the books are kept, or, in the case of a trading company, whether revenues are collected and expenses incurred in the same or in different currencies. For companies with a loan based business it is not negligible how interest rates evolve, especially in cases where a company maintains high average loan debt over a long period. Long-term interest rate prospects may become crucial to the success of a project company. All such risk factors must be identified by means of a thorough analysis of the company's core business as well as its financial and accounting statements. In this part of the handbook, you will find basic information concerning the main types of market risks, and the markets related to each type.

## → types of market risk and the functioning of individual markets

# ➔ 1. foreign exchange risk

The risk associated with foreign exchange rates is relevant primarily in those businesses where income is received, or expenditure is incurred in foreign currencies (other than HUF), or where the extent of HUF-based income/expenditure is determined as a function of another currency, where there are loans in foreign currencies, or dividend payments (given or received) in another currency. If your company is in competition with foreign products either in the domestic market or in external markets, your business is also exposed to foreign exchange risk, since changes in exchange rates may bar you from price competition, or else give you unexpected edge. What is more, if your company is affiliated to a large international corporation, the value of your business, as well as your profitability, is also assessed in a foreign currency. In an open economy such as Hungary's, sooner or later every single enterprise will find itself faced with exchange rate risk. Because changes in exchange rates can have a significant impact on the value and profitability of your business, the top management must pay increased attention to the way exchange rate risk is handled.



The forint exchange rate has shown a much higher volatility over the past five years, than near the millennium, not to mention the exchange rate regime of the second part of the 90's with the predictable crawling peg. The crisis in 2008-2009 is a good example for that, when the exchange rate changed from 235 to 317, then went back to 265. Since the Hungarian economic situation is still very uncertain due to the remarkably high internal and external debt, in the next few years we expect volatility in the exchange rate, though not as high as in the time of the crisis.

## ➔ the foreign exchange (FX) market

### what defines exchange rates?

The current exchange rate of the HUF to a given other currency is always determined by the demand for, and the supply of the currency in question.

Demand is generated by importers in the first place, as they are the ones who buy foreign currencies from their forints on a regular basis. In addition, companies paying dividends to their foreign shareholders who run these companies as a working capital investment, or foreign financial investors with other HUF based assets purchased earlier for investment purposes (e.g. Hungarian treasury bonds) who would like to convert the yields realised in HUF upon the sale of their instruments back into foreign currencies, also buy foreign currencies from time to time. Private individuals embarking on a journey abroad also participate in generating demand for foreign currencies, and private individuals who keep their savings for safety reasons in foreign currencies play a more and more major role.

As for the supply side of the market, it comprises primarily exporters selling foreign currency they raised from their sales abroad, as well as foreign investors intending to make business or financial investments in Hungary from their foreign currency assets. Other important players of the supply side of the foreign exchange market are households and businesses with loans denominated in foreign currencies but disbursed in forint, as well as foreign tourists visiting Hungary.

It is worth noting that sooner or later the time comes when foreign currency loans are repaid, and if this is done from forints, the households and businesses with foreign currency loans will immediately return to the demand side of the FX market. (The loan in general is disbursed in a single sum. However, it is repaid in separate smaller installments over years, so they affect the exchange rate differently.)

The liquidity of the foreign exchange market, that is, the continuous existence of both supply and demand, is to a great extent furnished by

players other than the ones with foreign exchange exposures arising from the natural course of their economic flows, but also by those who, contrary to the ones mentioned above, do this business not in order to avoid or at least reduce foreign exchange risk, but who positively seek an acceptable level of risk in the expectation of an appropriate benefit. This latter group primarily comprises financial investors, as mentioned above, as well as **speculators** who consciously undertake some limited risk with a view to increasing the value of their investments in the long term. The more liquid a market becomes (that is, the more players are present as sellers or buyers on a continuous basis, the less will the exchange rate be driven by the transactions executed by individual players either as buyers or as sellers), the most benefits there will be for all players, since selling and buying rates will come much closer to each other.

Looking at the market of a single country from a macroeconomic perspective, the trade balance and the current account – the latter containing not only the balance of export and import but also the capital transfers - play a decisive role in the evolution of exchange rates. Where there is an import surplus, or where there is more income leaving the country than what is coming in, the current account becomes negative, and this must be counterbalanced by some sort of capital flow. A permanently negative current account may be financed by investments of the working capital or of the debt type. The exchange rate has an impact on the evolution of a country's current account, as the depreciation of the real exchange rate, for instance, can improve exports and reduce imports. On the other hand, strengthening or slowing in capital flows may cause the exchange rate to change. When the influx of capital abruptly increases due to improving investor confidence or in response to high interest rates, this leads to the appreciation of the country's currency which can even be followed by an unexpected outflow of capital and sudden weakening of the currency. In this process, the currency market is a very sensitive variable, and the experience of recent years has shown that the low interest rates maintained in developed countries indeed induce influx of capital and the strengthening of emerging market currencies (e.g. HUF). Such a phenomenon, however, can easily be followed by a sudden turnaround as the credit market environment of developed countries switches into reverse mode, and emerging market currencies may lose their appeal, causing the outflow of capital and the weakening of these currencies.

Another approach which has proved its effect mainly in a longer term, over periods of several years, is based on the assumption that the exchange rate is, more than anything else, a function of the price level prevalent in the country in question, and the currencies of countries with higher rates of inflation tend to depreciate against the currencies of countries with lower inflation rates.

In the case of the countries of Eastern Europe, there is yet another important element with an impact on exchange rates. This phenomenon is known as the **Balassa-Samuelson** effect, and in essence it means that productivity runs a different course in different sectors of the economy, which justifies a slow but continued convergence especially in the price levels of young market economies such as the Visegrad

states, to the so-called 'anchor' economy (e.g. Western Europe). This is the outcome of the fact that in the market of goods produced for foreign trade there is faster productivity growth than in the sectors not participating in international trade (mainly services). The result of all this is that in the case of a sector where the basic output consists of industrial goods, wages start to converge to those of the more developed regions, and this leads to a fast rise in wages. Higher wages, however, cause wages to rise in other sectors of the economy, as well. And since in the sectors where products and services are not competing in the international market, this wage increase is not coupled with higher productivity, these sectors are compelled to raise prices to set off the higher cost of labour, causing an inflationary pressure in the whole of the economy. Certain countries try to compensate this by revaluing their currencies slowly, by 1 to 3 per cent per year, while others accept the permanent high level of inflation as a fact. This is partly the reason why Hungary's inflation rate was permanently above those of its main trading partner countries (e.g. the euro zone) in the years before 2008, causing the real exchange rate (the nominal exchange rate adjusted by the price level index) to appreciate consistently, with the outcome that the forint kept on strengthening - taken into consideration the inflation differential as well. In the region, in case of Czech Republic and Slovakia, we have seen that when inflation is permanently low (2-3%) and economic growth is fast, the currency can even strengthen in the long run, without jeopardising exports.

There is a third approach, as well, placing the emphasis on the fact that exchange rates are determined in an international context. Indeed, it can be noted in certain periods that exchange rates tend to move in parallel within the same region. In case of the HUF, there have also been periods when the forint followed the course of the Polish zloty. This correlation may be explained by the actions of international investors buying or selling Czech, Polish and Hungarian currencies, shares and treasury bonds in unison, and generating similar capital flows in each currency. Because of the current downturn of Hungary's economy, it is still not clear what direction the exchange rate policy can be expected to turn into during the years following 2008. According to experience in the region, however, we believe that in the coming years the Hungarian economy will assume again a course of growth and convergence to the developed economies, which, along with low inflation and low interest rates, would make it possible to maintain a stable exchange rate in the long run. Whether it will be capital flows, differences in inflation or development, or regional trends, that have the most weight in determining the value of a given currency, is impossible to decide up front. Therefore, our aim is to provide our clients with regular comprehensive analyses to help them keep track of market developments, and identify the risks most relevant to their business.

### the structure of the foreign exchange (FX) market

Players in the FX market do not engage in transactions directly with one another, but via intermediaries, mainly banks. This is necessary because otherwise an exporter would have to search long for an importer who at the same time wants to buy the same amount of

currency. Since this would lead to cumbersome and time consuming processes, banks have taken it upon themselves to continuously buy and sell currencies, and to exchange the funds collected among themselves, on the interbank market.

It is important to know that banks usually strive to maintain a zero foreign exchange position, meaning that they try to collect foreign exchange from their clients in the shortest possible time, and sell it in one large sum in the interbank market. If there is demand by clients in the opposite direction, the same process is performed in reverse. It is also possible that different clients of the same bank happen to buy and sell roughly the same amount of foreign currencies at a given time, in which case the zero position is achieved without recourse to the interbank market.

#### **value dates: T, T+1, T+2**

The Hungarian market uses the same convention as international markets, that is, deals concluded on a given day (T date) are executed two working days later (on day T+2). The exchange rate applicable to deals to be executed two working days from today is the so-called spot rate. T date stands for trade date, while the term value date means the day when the deal in question is financially settled. A value date may fall on T date, T+1, T+2 or any subsequent day.

In a basic scenario, the default value date is T+2, and this means that a deal concluded on T date will be settled on day T+2, at the exchange rate established on T date.

**example:** let us assume that on the T date an agreement is made that a company converts EUR 100 000 into HUF at the exchange rate 290 EUR/HUF, with effect on the value date T+2. Then, whatever the current market rate is on day T+2 (be it 250 or 360), the company will receive  $100\,000 \cdot 290 = 29\,000\,000$  HUF for the euros sold.

In case of a T date conversion, the deal is made on the same day when financial settlement takes place. The exchange rate of a T date conversion is different from that of a transaction with day T+2 as the value date.

If the value date is day T+1, then financial settlement takes place on the first business day following the trade date.

## ➔ exchange rate types

### **official exchange rates quoted by the National Bank of Hungary**

It is not possible to execute conversions at the official exchange rates quoted by the National Bank of Hungary. These serve as reference to reflect the daily evolution of exchange rates, besides having an important role in the accounting of Hungarian companies.

The National Bank of Hungary determines official exchange rates in the following manner:

The National Bank of Hungary quotes official rates on Mondays, Tuesdays, Wednesdays, Thursdays and Fridays, except when a day

is a public holiday. The reference exchange rates must be considered as effective up to the time when the next series of exchange rates is published. The exchange rates are calculated at 11 a.m. on these days and published between 11:30 a.m. and 12:00 p.m. The ten most active Hungarian credit institutions in the currency market communicate their EUR/HUF rates to the NBH, from which the lowest and the highest two are disregarded, and the arithmetic average of the rest is calculated, to arrive at the official EUR/HUF exchange rate of the day concerned.

The NBH has the right to close deals at the rates quoted by the credit institutions, as well as to exclude from this procedure those banks which deviate from the current trends of the market to a significant extent. The official USD/HUF exchange rate is calculated on the basis of the EUR/HUF and EUR/USD rates. The exchange rates applicable to the rest of the currencies are quoted by the NBH on the basis of the USD/HUF rate thus calculated, and the cross rates prevailing in the international foreign exchange markets (applicable at 11 a.m. on the international markets).

Taking into account the abovementioned process, these official rates cannot serve as a basis of any foreign exchange transaction. However, these rates are an important source of information regarding the spot market rates prevailing at 11 a.m. on a given business day.

### **official exchange rates of the European Central Bank**

It is not possible to perform conversions at the official exchange rates quoted by the European Central Bank (ECB), but they serve as key sources of reference with respect to the day-to-day evolution of exchange rates.

The ECB's official reference rates are established at 14:15 (CET) every day. Afterwards, the exchange rates are published on the ECB's website and on other electronic systems used for the circulation of market information. Only one reference exchange rate is published for each currency, reflecting it as 1 EUR = x units of currency. When calculating the official exchange rates of the ECB, the current market levels prevailing at the given point in time are taken into account. Since the exchange rate thus quoted is the mean of the buying and selling rates of the market, they do not necessarily reflect the exchange rate level at which actual deals can be made on the market at the time when the official reference rates are established.

The consequence of the foregoing is that these rates are not considered as the basis of actual trades.

### **K&H Bank's "Currency I" exchange rate**

Until 8 a.m. every morning, K&H Bank quotes the so-called "Currency I" exchange rates, calculated on the basis of the market rates effective at the time of quoting. In a basic scenario, this exchange rate is applicable to conversions executed at value date "T" and also for incoming transfers in EEA currencies (including currencies of EEA member states and Swiss franc). Our bank might quote 'Currency I' exchange rate more than once a day in line with the market conditions. Always the latest exchange rate, which can be queried on the bank's website, is used for converting the orders.

The foregoing rules and procedures are in effect when this handbook is published. The latest announcements of our bank contain the current procedures and conditions and the relationship managers can also provide information on them.

### **K&H Bank's "Currency II" exchange rate**

Every day after 2 p.m. K&H Bank quotes its official "foreign trade" or "Currency II" exchange rate, as part of a process called fixing. This rate applies to value date "T+2". This exchange rate is derived from current interbank market exchange rates and the bank's overall position. The rate thus defined is applicable to transactions processed in the course of the morning, which consequently are part of the bank's above-mentioned position. In a basic scenario, foreign currency transfers accepted by the bank before 2 p.m. are credited at the Currency II exchange rates on value date "T+2". Also, Currency II exchange rates are used for debiting the outbound transfers for which paper-based orders were submitted by 10.30 a.m., or electronic orders by 2 p.m. on the given day. Therefore, clients executing a conversion at the official Currency II exchange rate quoted by the bank will not be aware of the actual exchange rate at the moment of submitting their orders.

The foregoing rules and procedures are in effect when this handbook is published. The latest announcements of our bank contain the current procedures and conditions and the relationship managers can also provide information on them.

Various banks can have different protocols for fixing. It may happen that banks have different cut-off times during a day, beyond which they do not accept items to be added to the given day's FX position. In addition, there is variety in that each bank can develop a different FX position during the day. Therefore, a comparison of different banks' official exchange rates is not really meaningful, as the small possible differences even out over a longer term.

### **„special" exchange rate**

Above the amount of EUR 50 000 or an equivalent amount in another currency, K&H Treasury grants special exchange rates which can be executed with effect on value dates T, T+1 or T+2 without Treasury limit.

- Our clients, who do not have Treasury limit and Treasury master agreement, according to the act on the Pursuit of the Business of Payment Service by NBH in effect since 2009, conversions between the Client's own accounts are to be executed on value date 'T' until 4 p.m. on working days, and after 4 p.m. the conversions are to be executed on value date 'T+1'. The trade shall take place exclusively by involving the relationship managers and if enough funds are available on the Client's account for the conversion.

- For the clients who do not have Treasury limit but have a Treasury master agreement on spot transactions, we can offer the foregoing procedures as well. In this case, it is possible for the client to engage in transactions directly with a dealer, thus there is no need to involve the relationship manager. The client must provide sufficient funds for the conversion on the trade date.

- For Clients with Treasury master agreement and Treasury limit, conversions between the Client's accounts can be executed for any value date over the tenor of the limit. In that case, the Client and the dealer engage in the transaction directly, there is no need for contribution from the relationship manager.

In case of loan related deals (interest payment, repayment, conversion of the loan between various currencies), the value date of the transaction can be maximum T+2 without Treasury limit.

Such special exchange rates are quoted as derived from interbank market rates which are subject to fluctuation even during a single day. Nevertheless, the exchange rate will be known in this case at the moment when the deal is concluded – in contrast to the cases involving the bank's official rates.

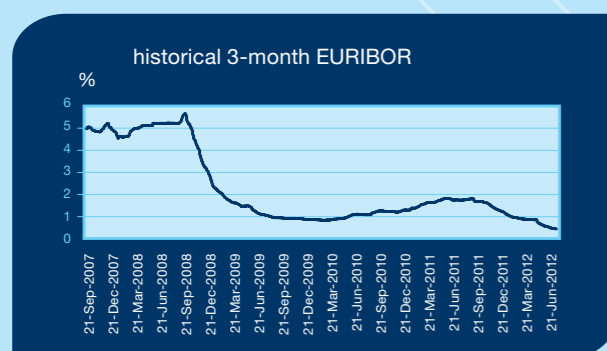
The special exchange rate applicable to day T+2 is the basis of the pricing of the forward transactions explained in the next sections.

## ➔ 2. interest rate risk

The fluctuation of interest rates has a considerable influence on the financing costs of a given enterprise, as well as on the yield of its investments. Interest rate risk is relevant for companies with loans or investments either in forint or in foreign currencies. It is worth noting that project companies are a specific group of borrowers, since the profit generated by a project company is greatly dependent on interest expenses. Another group like that comprises companies applying for tenders where the maximum level of interest expenses must be guaranteed in order to win the tender. The relevance of the handling of interest rate risk is reflected in a theory of classical economics according to which the present value of an enterprise equals the present value of future cash flows, and this in turn is a function of interest rate levels at any given time. Consequently, if you decide to fend off unfavourable interest rate movements to protect your business, you will achieve substantial improvement in both your market value and your profitability.

Euro interest rate risk increased after the crisis compared to the period before. Before the crisis generally the high levels of interest rates were the main sources of risk whilst currently the very low interest rates and the deepening of the euro crisis cause problems. Government bond yields were significantly divergent in certain EU members and this affects lending thus risks in both direction might occur in the future. If liquidity prevails on the euro market then downward risks will dominate, however if credit risks start to appear in financing of the member states then upward risks may appear.

Several factors influence the forint interest rates, not only yield fluctuation on developed markets, which depend on economic performance, but investor expectation of risks as well. During the crisis concerns over Hungary's indebtedness significantly increased the forint interest rate, whilst euro interest rate decreased. The more stable international situation caused moderate interest rate reduction because investors headed towards higher yielding currencies. However, with the



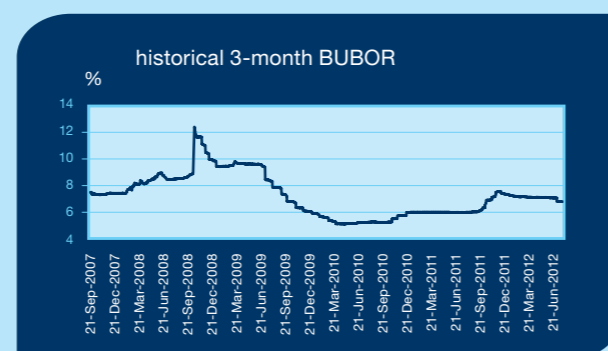
acceleration of economic growth of developed countries interest rates started to increase, blocking the way for more possible decrease of forint interest rates. In short, forint interest rates show higher volatility than yields of developed countries especially the euro.

### ➔ factors determining interest rates

#### which factors determine interest rates?

First of all, we must differentiate between real and nominal interest rates. The level of real interest rates is determined by four factors, namely, the supply and demand of savings, government measures and the rate of inflation. The supply of savings is typically generated by the population, while demand for savings is mainly posed by businesses needing these savings to finance capital expenditure. Besides, the net demand and/or supply generated by the government in the market of savings (fiscal policy) has a decisive role, in conjunction with the modifying effect of the central bank's actions (monetary policy). As a consequence, the nominal interest rate, combined with inflation forecasts, can be used to estimate the expected real interest rate.

There are several theories concerning the equilibrium level of interest rates. In general, short-term interest rates are primarily the function of the central bank's reference interest rates, while long-term ones are defined by the inflation and growth prospects of the economy. In the case of Hungary the situation is even more complicated, since the Hungarian economy has accumulated considerable debt, owing to foreign creditors. For instance, in 2008, foreign investors held a total government bond portfolio of more than HUF 3000 billion. Under such circumstances, the yield levels expected by foreign investors exert significant influence on Hungarian interest rates, and such expectations are always subject to change as a function of the situation on the international capital markets. As a result, there are two factors contributing to the interest rate spread of Hungarian government bonds over German ones denominated in euros, namely, the risk of the Hungarian state's default, and the foreign exchange risk associated with the forint. Experience in



the past few years has shown that if the yield expectation of foreign investors becomes higher, and the HUF interest rate does not contain the appropriate spread, foreign investors begin to sell government bonds, and convert the proceeds to euros, causing the forint to depreciate against the euro, after that the exchange rate consolidates as soon as yields begin to increase. If the perception of investors improves, it causes the Hungarian currency to appreciate, and yields to decrease.

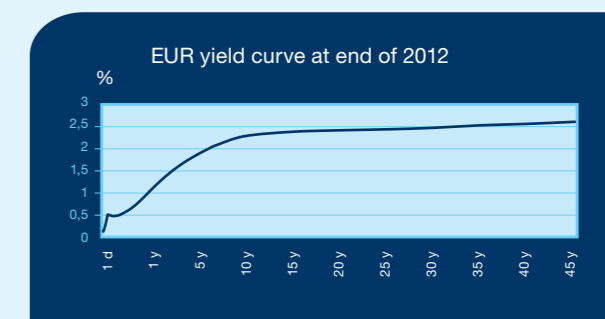
#### the yield curve

The yield curve depicts the average annual interest rate of investments with the same risk but with different tenors (that is, annualised yields up to the maturity date) as a function of the maturity date, the basis of which can be either government bonds, credit facilities or swaps. The National Bank of Hungary uses for its analyses a yield curve derived from risk-free government bond market yields. The annual interest rates applicable to government bonds with different maturities are depicted as a function of expiry dates to arrive at the yield curve.

As for its shape, the yield curve can be upward sloping, downward sloping (inverted), flat or humped. In many economies, the yield curve is upward sloping, which means that the longer the term, the higher the interest borrowers have to pay for loans and investors get for their investments. An upward sloping (normal) yield curve can be the result of expectations of rising future interest rates, but the reverse is not true: an upward sloping yield curve does not necessarily indicate that interest rates will surely increase in the future. Accordingly, an inverted yield curve can be understood as a forecast (but not a sure sign) of interest rates likely to decrease. Expectations about yield curves best prove correct in the long run.

**It is important to note a phenomenon characteristic of late 2008 and early 2009, namely that the interest rates of the yield curve, the reference interest rates of the interbank market (see below) and the actual interbank deposit and credit interest rates were significantly divergent for the same maturity dates. The reason for this phenomenon, coinciding with the peak of the liquidity crisis, was that the financial instruments backed by actual underlying capital movements (interbank credits and deposits) became substantially more expensive compared to instruments where the parties were supposed to settle interest rate differences only (such as in an interest rate swap), and where consequently there was no actual movement of capital.**

**As another phenomenon of the crisis, short term interest rates in some developed countries like Switzerland, Denmark, or a few Euro Zone countries, stayed around the levels of 0% permanently, due to loose monetary policy. In August 2011, as result of the strengthening role of the Swiss frank's as a "shelter currency" the 2 day interest rates became negative. In Denmark, the 2 weeks interest rates went negative. In an environment where interest rates are negative, the proprietor of a floating rate deposit pays interest rate to the extent of negative interest rate, while borrowers receive interest rate after their loans.**



In the following section our aim is to give a brief summary of the reference interest rates reflecting market expectations concerning the interest rate levels of short-term bank loans, short-term investments (such as bank deposits or discounted treasury bills), as well as long-term bank loans and investments (such as treasury bonds).

#### short-term interest rates

Commercial banks extend loans to one another on the interbank money market, subject to their own liquidity and FX positions at any given time. On European markets, the LIBOR (London interbank offered rate) and the EURIBOR (the interbank reference interest rate of the euro zone) are the reference interest rates at which large banks are willing to lend to other banks for a period of less than a year.

The EONIA is the overnight interbank interest rate of the euro zone (one-day rate effective from today till tomorrow). The BUBOR (Budapest interbank offered rate) is the Hungarian equivalent of the LIBOR/EURIBOR. Every day before 11 a.m. the National Bank of Hungary publishes the mean of the BUBOR values calculated by the largest Hungarian banks that morning. The BUBOR is the primary reference borrowing rate for the forint, the EURIBOR for the euro, and the LIBOR for specific currencies (EUR, USD, GBP, CHF, etc.), and as such they are used as reference rates in a large number of transactions. For instance, a Hungarian company can take out a HUF loan with floating interest rate at BUBOR plus X%.

#### long-term interest rates

The long-term interest levels of the above mentioned yield curve can be calculated from the yields of government bonds with fixed interest rates and with maturities of more than one year. Similarly to the BUBOR interest rate fixing, there is a long-term interest rate fixing, known as the Budapest Interest Rate Swap Fixing (BIRS). The National Bank of Hungary collects mid-swaps (the mean of their bid and ask rates) from Hungarian banks quoting interest rate swaps, and calculates their arithmetic average as the daily BIRS fixing rate. The tenors quoted range from 2 to 15 years, based on the 6-month BUBOR. The IRS fixing rates of the most important currencies (EUR, CHF, USD, etc.) are calculated in a similar way but typically more during the day, and are available on the ISDAFIX2 page of Reuters. These interest rates are used, among other purposes, to serve as the basis of the interest rate swap transactions that will be discussed later on.

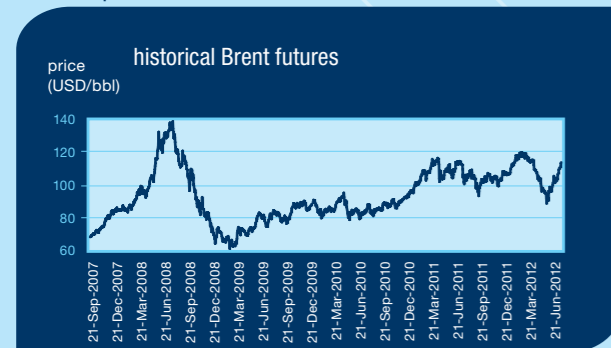


## → 3. commodity markets

The experience of the past few years has shown that Hungarian economic players have paid less attention to the risks associated with changes in commodity prices than to FX risk. Today's unpredictable and constantly changing global economy with its large number of participants has made commodity prices rather volatile – similarly to exchange rates, and sometimes one can see higher volatility in commodity prices than in exchange rates. It makes the profitability of companies exposed to commodity price fluctuations hardly predictable and highly vulnerable. If your company also has some commodity exposure, it is worth thinking it over what are those commodity price levels at which you can ensure sustainable financial growth for your company, in order to mitigate uncertainties caused by the volatility of market prices.

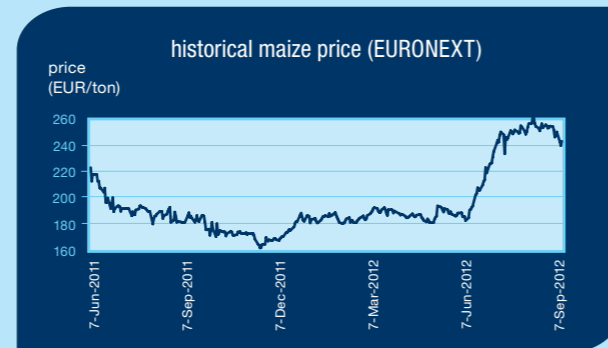
Oil prices have been very volatile and unpredictable in recent years. We may remember the period when year by year, drastic increases led to successive peaks in oil prices. During the crisis, crude oil and commodity markets in general suffered the biggest losses. Although these markets seem to have stabilized in the recent period, we cannot rule out high volatility in the future. Growth outlook and geopolitical risks cause the most significant moves. Moreover, actual refinery capacities, weather forecasts and among others offshore platform outages also affect the market.

During the summer of 2012, prices on the grain market began to increase significantly thanks to – among others – the extra dry weather conditions and market speculation. Prices soared to unexpected levels and after exceeding peaks of several years, both corn and wheat prices jumped to historical highs on every exchange and remained stuck at high levels. This period drew attention to the fact that although the supply-demand balance fundamentally drives prices on agricultural markets, speculation can also significantly influence prices.



The following main factors have an influence on commodity prices:

- **the balance of demand and supply:** economic growth, technological development, limitations of exploitation, freight and warehousing capacities, the number of places of extraction
- **political stability:** elections, strikes, terrorist attacks, wars
- **natural forces:** natural disasters with an impact on the place of extraction (earthquakes or hurricanes, etc.)
- **strategic reserves:** the quantity of the given commodity with which the market can be supplied in the event of economic uncertainties
- **speculation and investment:** an increasing number of economic players are present on the commodity market with an intention of purely investing in commodities



## → the risk of commodity price changes

The risk resulting from the hectic fluctuation of commodity prices causes concern for many businesses present on this market either as a buyer or as a seller in a way that it is impossible for them to pass on the effects of changing prices directly to their buyers.

Players most affected by this risk include the following:

- mineral oil and natural gas providers
- freight carriers and forwarding businesses
- air carriers
- mining companies
- companies trading or processing metals
- transportation companies
- electricity providers and consumers
- railway companies
- district heating providers
- travel agencies
- paper mills
- metal smelters and foundries
- jewellers
- hedge funds
- commercial banks
- central banks



1/b risk factors



The following chapter is a summary of the most important risk factors which may have an impact on the outcome of a transaction between a Client and the Bank. The Bank is not in a position to foresee whether these factors will become relevant or not, nor the likelihood of these events in the future. The opinion of the Bank is that the factors listed here are a comprehensive summary of the key factors of risk, but of course further factors may also influence the outcome of a deal. You will have to make your decisions concerning treasury/investment transactions after you have understood and thoroughly studied this chapter, as well as the information provided in this handbook and in the description of the product in question (with special regard to risks, market value changes and payout of each product written at the end of each product description), and after considering all these factors, in addition to the exposure and risk bearing ability of your company.

## ➔ what does MIFID stand for and how is it related to risks?

The so-called MIFID Directive (2004/39/EC) was implemented into the Hungarian law by Act CXXXVIII of 2007 on investment enterprises and commodity exchange service providers, and on the rules of the activities of such businesses. The aim of this legislation was to co-ordinate the way investment services are performed, and to formulate a number of conditions on the sale of financial instruments with a view to protecting clients' interests. The Act stipulates strict rules on the execution of specific transactions, taking into consideration, among other conditions, the purpose of the investment, including clients' risk taking ability and willingness, as well as their ability to bear financial burdens. A test regarding customers' level of product knowledge and experience is also required.

There is in certain cases clear prohibition in the Act concerning transactions with content not conforming to the findings of such a test, while in other cases the transaction can be concluded but only if the client expressly requests so.

The treasury products provided by our bank are classified in a number of categories according to their complexity. Each client has been classified into one of the categories established by law (retail, professional counterparty, and eligible counterparty). The investment objectives of each client, their product knowledge and experience, their risk bearing ability, their capability to bear financial burdens, and the complexity of the products, are all taken into account to determine the products tradable with the client on the offer of the treasury sales dealer. Where the client initiates a transaction in which the chosen product is not in line with this classification, the dealer can execute the deal only if the client explicitly requests it, after having warned the client about the possible losses and the fact that the product is not in conformity with the client's risk taking classification.

It is possible for the dealer to introduce a product to a client which is beyond the client's classification. In such cases, the treasury dealer, after the product is presented, gives the client a series of questions to verify whether the client has understood how the product works, what risks it involves, and whether it suits, in the client's opinion, the client's hedging or investment goals. If the client has understood and accepted the treasury sales dealer's recommendation with respect to the new product and the risks involved, the transaction can be concluded. The treasury sales dealer must draw the client's attention to a clause in the confirmation of the product, by signing that the client confirms that they have understood the product which is not part of their profile, and that this was demonstrated through the answers given to the questions made by the treasury sales dealer.

The so-called treasury product tree – see below – shows the complexity of each treasury product (a more detailed description about the main products is provided in the forthcoming chapters). Furthermore, the risk factors and risk levels of the products discussed in this handbook are summarized in the table below.

The risk factors must be understood from the Client's point of view! Transactions with speculative purposes have a different risk profile and these are not supported by the Bank, we neither recommend nor offer such deals.

In order to guarantee secure trading, the Treasury Directorate records every phone conversation, and the tape recordings are consulted should any disputes arise.

Certain risk factors underlying the products discussed in this handbook are summarized in the chapter below. The MIFID complexity and risk assessment of the products are based on the assessment prevailing at the time when this handbook was issued. The assessment of the products may change, the term sheets sent by the sales dealers always show the actual assessment.

group	type	product	product variant	complexity
FX products	linear	FX spot	-	1
		FX swap	-	
		FX futures	-	
		FX forward	-	
	optional	FX plain vanilla (call / put) option	European / American	2
		FX barriers option	European / American / window (partial)	3
			knock in / knock out	
			double knock in / double knock out	
		FX digitals option	European / American / window	3
			knock in / knock out	
			one touch / no touch	
			double one touch / double no touch	
			accrual	
TPF	-			
commodity products	linear	commodity swaps	-	2
		commodity forwards	-	
	optional	commodity option (plain vanilla)	-	

general risks of money markets						external risks and the bank's internal risk	
FX risk	IR risk	commodity risk	liquidity risk	volatility risk	underlying product risk	external risk	credit risk / partner risk
low	-	-	low	-	-	low	low
low / high (high, if only one leg is open)	medium (depends on tenor)	-	low	medium (depends on the volatility of the underlying currency pair)	low / medium (medium, if only one leg is open)	low	low
high	medium (depends on tenor)	-	low	medium (depends on the volatility of the underlying currency pair)	medium	low	low
high	medium (depends on tenor)	-	low	medium (depends on the volatility of the underlying currency pair)	medium	low	low
high	medium (depends on tenor)	-	low	high (depends on the volatility of the underlying currency pair)	medium	low	low
high	medium (depends on tenor)	-	medium	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	medium	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	medium (can be high close to expiry)	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	medium (can be high close to expiry)	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	medium (can be high close to expiry)	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	medium (can be high close to expiry)	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	medium	high (depends on the volatility of the underlying currency pair)	high	low	low
low	low	high	medium (depends on the underlying commodity and external risks)	high	medium	high	low
low	low	high	medium (depends on the underlying commodity and external risks)	high	medium	high	low
low	low	high	medium (depends on the underlying commodity and external risks)	high	medium	high	low

group	type	product	product variant	complexity	
IR products	linear	MM loans and deposits	prompt / forward started loan / deposit	1	
			fixed / floating		
			all combination of the variants		
		FRA		2	
		IRS (interest rate swap)	prompt / forward start		
			zero coupon / compounding / year on year		
			fixing up front / in arrear		
			amortizing		
		differential swap	-	3	
		CCIRS (cross currency IRS)	with / without initial exchange	2	
			floater-floater / fix-floater / fix-fix		
			forward start		
			zero coupon / year on year		
			fixing up front / in arrear		
			amortising		
			FX reset		
		optional	IR options	cap / floor (plain vanilla)	2
			IR barrier options	cap / floor (plain vanilla)	3
				European / American / window	
	knock in / knock out				
swaptions	European / American / Bermudian		2		
cash settled / delivery					

general risks of money markets						external risks and the bank's internal risk	
FX risk	IR risk	commodity risk	liquidity risk	volatility risk	underlying product risk	external risk	credit risk / partner risk
-	medium (depends on tenor)	-	low	low	low	-	low / medium (depends on the rating of the issuer / guarantor)
-	medium (depends on tenor)	-	low	low	low	-	low / medium (depends on the rating of the issuer / guarantor)
-	medium (depends on tenor)	-	low	low	low	-	low / medium (depends on the rating of the issuer / guarantor)
-	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	low
-	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	low
-	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	low
-	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	low
-	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	low
-	high (depends on tenor)	-	medium	low	medium (depends on tenor)	low	low
medium / high (depends on the parameters of the deal)	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	medium
medium / high (depends on the parameters of the deal)	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	medium
medium / high (depends on the parameters of the deal)	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	medium
medium / high (depends on the parameters of the deal)	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	medium
medium / high (depends on the parameters of the deal)	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	medium
medium / high (depends on the parameters of the deal)	high (depends on tenor)	-	low	low	medium (depends on tenor)	low	medium
-	high (depends on tenor)	-	low	medium	medium	low	low
-	high (depends on tenor)	-	low	medium	high	low	low
-	high (depends on tenor)	-	low	medium	high	low	low
-	high (depends on tenor)	-	low	medium	high	low	low
-	high	-	low	medium	medium	low	low
-	high	-	low	medium	medium	low	low

group	type	product	product variant	complexity
money market	linear	bills	treasury bills, treasury certificates	defensive
		bonds	public issues / private issues	
			government bond	defensive (<3 years) careful (>3 years)
			fixed / zero / floating rate	
			capital guaranteed / capital protected	
			perpetual	
			senior / subordinated	
	optional	callable bond		
		convertible / reverse convertible		
		K&H "Strong Forint" note	bond linked to FX changes	
			K&H index jumper	daring
			tower bonds	careful
		range floater / reverse floater		
		floating rate		
		municipality bonds	-	careful
structured investments	optional	dual currency investment (DCI)	-	dynamic
		callable investment	-	dynamic
		range accrual deposit (RAC)	pays inside / pays outside / pays above / pays below	careful
		tower deposit	double no touch / no touch / one touch / double one touch deposit / one touch up no touch down / one touch down no touch up	careful
		range accrual dual currency investment (RAC+DCI)	pays inside / pays outside	dynamic
		tower+ DCI	double no touch / no touch / one touch / double one touch deposit / one touch up no touch down / one touch down no touch up	dynamic

general risks of money markets						external risks and the bank's internal risk	
FX risk	IR risk	commodity risk	liquidity risk	volatility risk	underlying product risk	external risk	credit risk / partner risk
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
high	medium (depends on tenor)	-	medium (can be high close to expiry)	high (depends on the volatility of the underlying currency pair)	high	low	low
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
high	medium (depends on tenor)	-	high	high	high	low	low
high	high	-	high	high	high	low	low
high	medium (depends on tenor)	-	high	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	high	high (depends on the volatility of the underlying currency pair)	high	low	low
high	medium (depends on tenor)	-	high	high (depends on the volatility of the underlying currency pair)	high	low	low

\* In case a product has no complexity shown we do not provide that certain product at the time the handbook was published.

\*\* Complexity of the products may change due to changes of the product structure or market conditions which may lead to revaluation from the Bank. Current complexity shows the actual structure of the product and / or market conditions prevailing in the previous period. The latest announcements of our bank contain the current complexity for each product.

### ➔ 1. generic risks of the money market

#### ➔ foreign exchange risk

Every derivative financial product, the market value or payout of which is not measured or not entirely dependent on the currency of the client's/investor's country (including foreign exchange, interest rate or commodity derivatives or investment products described in this handbook), involves considerable loss potential as a consequence of fluctuation in exchange rates. Foreign exchange risk results from changes in the relative values (cross exchange rate) of the currencies which determine the value or payout of a treasury transaction, as a consequence of which a treasury transaction can have different values not only upon its expiry date but at any time during the tenor. The exchange rate risk includes, without any limitation, significant changes in the exchange value between the currency of the investor/client's country and the foreign currency involved, including the complete devaluation of one of the currencies and the consequent complete value depletion of the investment, or the possibility of unlimited loss in the case of a treasury transaction. Where a treasury deal was concluded in order to reduce the risk of an actual underlying exposure, the danger of loss is more moderate, but the possibility of a large loss cannot be excluded even in the case of pure hedging (because a significant change in fundamentals can have a direct or indirect impact on the company's business, in addition to the individual risks every enterprise has to face). In general terms, all this is also a function of economic, market, official and political developments which are out of the overall control of the bank as well as the investor/client. Therefore, it is important, prior to concluding an investment or treasury transaction, to take into account the impact the aforementioned developments can have on the financial, economic and competitive position of the investor/client's business. The bank is not in a position to foresee whether any of these factors will occur or not, or to estimate the likelihood of their emergence in the future.

#### ➔ interest rate risk

All derivative financial products where financial settlement is due, partially or entirely, in the future (including all the products described in this handbook, except for spot FX transactions), carries the possibility of significant loss in respect of changes in HUF or foreign interest rates during the investment period. Interest rate risk means the risk associated with variation in the interest rates of the currencies which determine the value or payout of a treasury instrument, resulting in the continuous fluctuation of the value of the treasury instrument not only upon the expiry date but over the entire investment period, as a consequence of the nature of these deals. Interest rate risk may include, without any limitation, the complete devaluation of the treasury instrument, its significant change of value during the tenor, including, in certain cases, potentially unlimited loss in the event of closing an open position before the expiry date. Where a treasury deal was concluded in order to reduce the risk of an actual exposure, the danger of loss is more moderate, but the possibility of a large loss cannot be excluded even in the case of pure hedging (because a significant change in fundamentals can have a direct or indirect impact on the company's business, in addition to the individual risks every enterprise has to face). In general terms, all this is also a function of economic, market, official and political developments which are out of the overall control of the bank as well as the investor/client. Therefore, it is important, prior to concluding an investment or treasury transaction, to take into account the impact the aforementioned developments can have on the financial, economic and competitive position of the investor/trader's business. The bank is not in a position to foresee whether any of these factors will occur or not, or to estimate the likelihood of their emergence in the future.

#### ➔ underlying product risk

Every derivative financial product whose value evolves as a function of the value of another underlying product traded on the market (commodities, shares, bonds, etc., and their derivatives including all commodity derivatives and structured investment products featured in this handbook), may involve significant potential risk of loss as a consequence of fluctuation in the price of the underlying product. The underlying product risk means the risk associated with the fluctuation of the value of the product determining the value or payout of a treasury instrument in a given currency, which, as a consequence of the nature of specific deals, results in continuous change in the value of the treasury instrument not only upon the expiry date but also over the course of the entire investment period. The underlying product risk may include, without any limitation, the complete devaluation of the treasury instrument, or significant change of value during the investment period, including in certain cases the possibility of unlimited loss where an open position is closed before expiry. Where a treasury deal was concluded in order to reduce the risk of an actual underlying exposure, the danger of loss is more moderate, but the possibility of a large loss cannot be excluded even in the case of pure hedging (because a significant change in fundamentals can have a direct or indirect impact on the company's business, in addition to the individual risks every enterprise has to face). In general terms, all this is also a function of economic, market, official and political developments which are out of the overall control of the bank as well as the investor/client. Therefore, it is important, prior to concluding an investment or treasury transaction, to take into account the impact the aforementioned developments can have on the financial, economic and competitive position of the investor/client's business. The bank is not in a position to foresee whether any of these factors will occur or not, or to estimate the likelihood of their emergence in the future.

#### ➔ liquidity risk

All derivative financial products whose value evolves as a function of, or whose payout depends on, partially or wholly, the continuity of trading on the market of an underlying product, its availability at a given point in time, or the possibility of selling/buying (including all products discussed in this handbook), may involve substantial potential risk as a consequence of fluctuation in the liquidity of the underlying product(s). Liquidity means the possibility of selling or buying relatively large quantities of a product traded on the market, at any time during the period of trading, in a cost-efficient manner, and in such a way that this transaction has only marginal effect on the market price before the transaction. If liquidity is lost entirely, it may happen that a product traded on the market cannot be sold or bought at a given moment at all. Liquidity risk includes, without any sort of limitation, the complete devaluation of the treasury instrument, or fast fluctuation of its value during the investment period, including the possibility of potentially unlimited loss in certain cases if an open deal is closed

before the expiry date. Where a treasury deal was concluded in order to reduce the risk of an actual underlying exposure, the danger of loss is more moderate, but the possibility of a large loss cannot be excluded even in the case of pure hedging (because a significant change in fundamentals can have a direct or indirect impact on the company's business, in addition to the individual risks every enterprise has to face). Liquidity risk causes that it is not always possible to close a specific deal, to exactly calculate or even to estimate its value, or to enter into settlement or delivery. In general terms, all this is also a function of economic, market, official and political developments which are out of the overall control of the bank as well as the investor/client. Therefore, it is important, prior to concluding an investment or treasury transaction, to take into account the impact the aforementioned developments can have on the financial, economic and competitive position of the investor/client's business. The bank is not in a position to foresee whether any of these factors will occur or not, or to estimate the likelihood of their emergence in the future.

#### ➔ volatility risk

All derivative financial products whose value evolves as a function of, or payout depends wholly or partly on, the actual or expected volatility of the value of an underlying product traded on the market (including all treasury instruments built up of options discussed in this handbook), involve a risk of large potential loss as a consequence of changes in the volatility of the underlying product(s) involved. Volatility is a financial mathematical term reflecting the expected or actual fluctuation of a certain variable over a given period of time. A higher level of volatility always means higher exchange rate or price risk. Volatility, as well as changes in volatility, has substantial impact on the price/value of specific options, causing the values of options to show wide variation at different points in time (at different volatility values) even ceteris paribus. Volatility risk may include, without any limitation, the complete devaluation of a treasury instrument, as well as significant change in its value during the investment period, including in certain cases the possibility of potentially unlimited loss if a transaction is closed before its expiry date. Where a treasury deal was concluded in order to reduce the risk of an actual underlying exposure, the danger of loss is more moderate, but the possibility of a large loss cannot be excluded even in the case of pure hedging (because a significant change in fundamentals can have a direct or indirect impact on the company's business, in addition to the individual risks every enterprise has to face). In general terms, all this is also a function of economic, market, official and political developments which are out of the overall control of the bank as well as the investor/client. Therefore, it is important, prior to concluding an investment or treasury transaction, to take into account the impact the aforementioned developments can have on the financial, economic and competitive position of the investor/client's business. The bank is not in a position to foresee whether any of these factors will occur or not, or to estimate the likelihood of their emergence in the future.

## ➔ 2. risks specific to the transaction concerned

Every client must consider to whether the instrument in question is appropriate for their purposes as a treasury or investment instrument. Clients should take into account their own specific circumstances, and answer the following questions:

- Do I have sufficient knowledge and experience to conclude this deal, to weigh up its potential benefits and risks and to assess the information provided about the product?
- Do I have appropriate expertise and knowledge to use and to understand the tools of analysis, in order to judge what impact the new transaction will have on my existing portfolio, if any?
- Do I have sufficient financial resources and liquidity to cover the potential loss of a treasury deal or investment, if such loss occurs?
- Is the treasury deal or investment in line with my financial position, my capacities and my objectives?
- Does the investment in question conform to my investment policy?
- Am I familiar with the risks the treasury deal or investment has in relation to the behaviour of various financial markets and indices?
- Does the treasury deal or investment comply with the relevant legal and official provisions and requirements, and with the mandate / competence of the client's authorized trader?

In addition, treasury or investment products may involve further risks for clients, even beyond the ones mentioned above.

## ➔ 3. external risks and the bank's internal risks

### ➔ the economic environment of Hungary

The bank's business is dependent on the banking, financial and investment services provided to its clients. The demand for credits is largely determined by the consumer confidence index, the level of employment, economic circumstances, and interest rate developments. As the bank performs its business in Hungary, we are exposed to the economic development and economic cycles of the country, and, indirectly to the consequences of the events on the domestic as well as international economic and political scenes. Nothing is there to guarantee protection for the bank against the worsening of its business positions if the economic situation of Hungary were to deteriorate.

### ➔ credit risk

The risks resulting from the quality of its credit portfolio, as well as default on the repayments of the loans, the related interest and other charges, have significant influence on the bank's business positions (this is called counterparty risk). Any worsening in the business positions of the bank's credit clients and other business partners, change for the worse in the Hungarian or international economic situation, or the risks involved in the functioning of the international financial system can have an adverse effect on the quality/rating of the bank's assets, the repayment of the loans extended, and the payment of other related obligations, sometimes compelling the bank to raise additional provisions for potential losses. Credit risk is the specific risk of the inability or unwillingness of the bank's client to perform the obligations undertaken towards the bank. In the case of credit related products and credit-linked derivative products the risks explained here must be taken into account in conjunction with further risks inherent in the products in question.

### ➔ risk of inflation

The inflation risk means the possibility that inflation has a greater effect on the treasury or investment product in question than on monetary assets.

### ➔ market risk

Foreign exchange risk, interest rate and commodity risk, as well as the risk of fluctuation in the value of bonds and shares, are the most important market risks that the bank faces in the course of conducting its business. Changes in the interest rate level and in the yield curve

may have an impact on the margin between credit and deposit interest rates, and, as a consequence, on the profitability of the lending business as a whole. Changes in exchange rates have an effect on the fair values of assets and liabilities denominated in foreign currencies, and may thus have a bearing on the revenues the bank derives from the trading of currencies. In addition, possible changes in the performance of financial markets may induce changes in the bank's investment and trading portfolios.

### ➔ operational risk

The bank's success in business is largely dependent on whether it can perform a sufficiently high number of transactions with appropriate efficiency and accuracy. Operational risks typically tend to arise from intentional abuse, errors committed by the bank's staff, the incomplete documentation of transactions, non-compliance with supervisory requirements and administrative rules, the deficiencies of the technical/ office equipment used, natural disasters, or the errors committed by the bank's other business partners, service providers and subcontractors.

### ➔ liquidity risk

Liquidity risk is the possibility that the bank is unable to foresee or handle the maturities of portfolios on the asset and the liabilities side, and, as a consequence, it becomes unable to settle payment obligations as they fall due. The bank handles the structure of assets, liabilities and commitments in a manner that makes it possible to maximise revenues at the same time as complying with obligations as they fall due.

### ➔ changes in the regulatory environment

The bank conducts its business in accordance with the effective financial legislation, supervisory requirements, expectations and recommendations. If the regulatory environment is unpredictable and rules tend to change frequently, this can mean significant risk for the bank, since such changes may have considerable impact on the day-to-day business of the bank and its profit on one hand, and of investors, on the other hand, in the context of the amendments of legal regulations concerning capital and interest related income.

The risk factors and levels relevant to the products are summarized in the table under the preamble of Chapter I/b. entitled "risk factors" of "K&H Treasury handbook of Market Risk Management."



I/C

5 basic products



In this section of the handbook, you will find introductory information about our so-called basic products, in the context of the foreign exchange markets, including descriptions of their types and functioning. These products have a two-fold function. On the one hand, they in themselves may offer a solution as to the way foreign exchange risk can be handled or at least mitigated. On the other hand, they serve as the “building blocks” or components of other, more complex products (and this is the reason they are featured in this chapter).

## → deals to manage foreign exchange rate risk

### → 1. forward deal

MIFID complexity

FX 1

The basic tool for the purpose of hedging exchange rate risk is the forward deal. When choosing among various exchange rate hedging strategies, this is the starting point in evaluating the desired hedging level. By concluding a forward transaction, the parties make an agreement at the present point in time about the conditions of a conversion some time in the future, including the currencies involved, the value date (that is, when settlement takes place), the direction of the deal (buying or selling), the amount and the applicable exchange rate.

**forward = spot + swap**

i.e. the combination of a spot and a swap deal form a forward deal, or in other words: the combination of a spot and a forward deal make a swap deal. In a parallel way, two forward deals with different expiration dates form a swap deal.

The connection between the spot, forward and swap deals shows that the three terms are tightly linked. The spot deal - as it is a simple currency conversion with value date T+2 - is not a standalone product, and it depends on what we choose as a basic product - either the swap or the forward deal - the third one can be made from the combination of the former two. As our clients generally do not use the swap deal as a standalone product (as a combination of two forwards) but to roll over their already existing forward deals, our handbook considers the forward as the underlying product and the swap deal is introduced based on the forward. More information about these deals are available in Chapter II. exposure to foreign exchange rates in the K&H Treasury Handbook of Market Risk Management.

The forward exchange rate is composed as follows:

**forward rate = spot rate + swap points**

The spot rate is the one quoted by the market for value date T+2. Swap

points express the interest rate differential between two currencies with respect to the tenor of the forward transaction.

Swap points can be calculated using the following approximation formula:

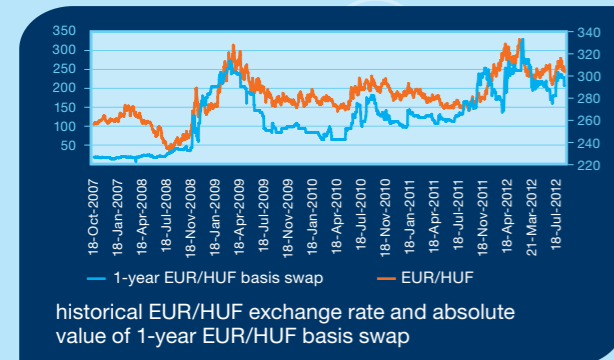
**swap points = spot rate \* (time-proportionate HUF-FCY interest rate differential)**

This calculation shows that the forward rate is not an expression of the Bank's expectations with respect to the future evolution of the spot rate, but rather the result of a financial computation.

As the forint interest rate is higher than the interest rate of most major currencies (EUR, USD, CHF, GBP, and JPY) when this handbook is written, the EUR/HUF, USD/HUF, CHF/HUF, GBP/HUF and JPY/HUF forward rates are higher than the actual spot price. When interest rates change, swap point change also. If the National Bank of Hungary raises its base rate the general interest level (yield curve) increases, while at a base rate cut the Hungarian interest level (yield curve) decreases, which has an effect on forward rates as well (assuming the foreign currency's interest rate remains unchanged).

At the same time it is important to see that while it is possible to calculate swap points mathematically, they are traded at the market like spot exchange rates, thus the actual swap points may differ from their theoretical value due to market fluctuations. The reason is the basis-swap difference, or basis-swap spread in other words. The basis-swap spread shows how demand and supply on the market divert the actual interest rate difference (counted from swap points) from the theoretical value (counted from interest rates) for a given currency pair and tenor. The negative value of the EUR/HUF basis-swap is largely due to the fact that the Hungarian banking sector needs significantly more foreign currency at the time of writing than it is able to collect from deposits. So the forint is swapped into foreign currency and this over-demand raises the forint-euro basis-swap difference. The basis-swap spread depends

on the EUR/HUF exchange rate, the EUR/USD basis swap, the Hungary CDS prices (i. e. probability of default of the Hungarian state) and the imbalance in liquidity. As basis swaps are actively traded on the market, the precise financial computation is not describable, but based on past events we can say that, for example, when the forint weakens versus the euro, the EUR/HUF basis swap spread rises in absolute value.



the contrary direction which involves the same amount denominated in one of the currencies concerned, but a different value date (see Chapter VII “Glossary” in the “K&H Treasury Handbook of Market Risk Management”). This, of course, will have an impact on the forward rate, too, causing decrease in the event of rolling back, and increase in the event of rolling over (provided that the interest rate of the primary currency is higher than that of the secondary currency) because of the applicable swap points.

The bank has a flexible position about roll-over, but a couple of rules must still be observed:

- every position can be rolled over for any length of time starting out from the spot rate applicable upon expiry. In this case, naturally, the profit or loss generated will be settled on the value date of the original forward transaction.
- the movement of the EUR/HUF spot rate on any given day is usually around +/- 1% in comparison with the exchange rate quoted by the NBH (except for extreme circumstances). Forward rates falling into this same range is considered as a market rate, so the previous point will be applicable to it.
- in the event of roll over, the bank must apply the interest rate differential corresponding to the period in question
- every position can be rolled back to a point in time preceding the original expiry
- where the amount covered by the original contract will arrive or be incurred as expenditure within a foreseeable period of time (2 weeks), the position (whether a profit or a loss position) can be rolled over, starting out from the exchange rate of the original forward contract, on no more than one occasion, and for the maximum of two weeks
- there is no roll over beyond a quarter, that is, the dates March 31<sup>st</sup>, June 30<sup>th</sup>, September 30<sup>th</sup>, and December 31<sup>st</sup> must not fall in between the starting and end dates of the roll over period.

**The foregoing rules are in effect when this handbook is published.**

The treasury deals concluded for currencies, interest rates or commodities are also called derivative transactions. Derivative contracts are those which are based on a spot exchange rate or an interest rate. Therefore, an agreement concerning forward exchange rates/interest rates/commodity prices are also part of the derivative category, because the forward rate is derived from the spot rate using swap points (or interest rate differentials), while the forward interest rate is derived from the spot yield curve. Options and their different combinations are derivative products with more complexity than forward deals.

## ➔ forward deals can be settled in three different ways

**gross settlement:** the currency amount subject to the forward contract is converted at the pre-agreed forward rate.

**for example:** a company sells EUR 1 000 000 for a one-year tenor at 302 EUR/HUF. When a year has passed, the bank debits the company's EUR account by EUR 1 000 000 and credits HUF 302 000 000 to its HUF account.

**net settlement:** at some point during the tenor of the transaction, you conclude a counter deal to close the original trade, so the net result of the two transactions will be settled between you and the bank. This solution is useful when in the meantime it turns out that the actual conversion will not eventually be necessary.

**for example:** if you can sell euros for a one year tenor at 302 EUR/HUF during the term and can buy at any time up to the expiry date your euros at 300 EUR/HUF with the same maturity, then the bank will credit to your company's HUF account 2 forints for every euro namely HUF 2 000 000 in total for a EUR 1 000 000 amount.

**the modification of the original forward position (roll over):** where the conversion does not eventually takes place on the expiry day, but later or even earlier than planned, then the original position can be rolled over to another value date by means of a currency swap. A currency swap is a contract in which the parties enter into a foreign exchange deal and, at the same time, into another deal in

**It is not infrequent that a forward rate is not in line with a client's plans, needs or budget plan, and / or expectations. In such a case, it can be justifiable to use other products / structures derived from the forward rate. These structured products are built up of a number of various options.**

## ➔ 2. plain vanilla options

MIFID complexity

FX 2

The so-called “plain vanilla” options are like an insurance contract providing absolute protection against adverse market movements, but not excluding the possibility of drawing a benefit from movements / rate changes in the market that are advantageous for the buyer of the option. As any insurance policy, naturally, an option involves the paradox that the holder of the option is in a better situation if the option needs not to be called at the end of its tenor. Similarly to the case of a home insurance, it is also true of this strategy that we are better off if no damage is done and thus there is no need to exercise our rights under the insurance.

## ➔ plain vanilla options have two basic types

**call option (a right to buy if you buy the option, and an obligation to sell if you sell the option):**

- call option is a right for the company which buys the option to buy a currency, on a previously fixed value date (delivery date) or in a set period (any time up to the expiry date) at the so-called strike rate. If this is a European option, the company exercises the right to buy at the strike rate provided that the market rate is above the strike rate on the day of expiry. In case of the American call option type, the company can exercise the option at any time during the tenor of the option.
- conversely, the seller of an option agrees to sell a currency on a previously fixed value date (delivery date) or in a set period (any time up to the expiry date), at the strike rate. The seller of the option has no other choice than to perform the conversion if the holder of the option decides to exercise the option.

**put option (a right to sell if you buy the option, and an obligation to buy if you sell the option):**

- put option is a right for the company buying the option to sell currency on a previously fixed value date (delivery date) or in a set period (any time up to the expiry date) at the strike rate. If this is an European option, the company exercises its right to sell at the strike rate provided that on the date of expiry the market rate is below the strike rate. In case of the American type put option, the option's holder company can exercise the option to sell at any time during the tenor of the option.
- conversely, the seller of a put option has an obligation to buy a currency on a previously fixed value date (delivery date) or in a set period (any time up to the expiry date), at the strike rate. The seller of the option has no other choice than to perform the conversion if the holder of the option decides to exercise the option.

Options can be classified based on whether they give the right to buy or sell (or an obligation if you sell the option), or according to the type of exchange rate monitoring as well.

● **according to the type of exchange rate monitoring, the following option types are distinguished:**

**European type option:** the exchange rate is only monitored on the expiration date of the option. The holder of the option has the right to sell or buy depending on the exchange rate on the expiration date, if the strike rate is more favourable than the rate on the expiration date.

**American type option:** the exchange rate is monitored from the option's trade date until the expiration date over the whole tenor. The holder of the option can have the right to sell or to buy over the tenor anytime, if the strike rate is more favorable than the actual rate at the time.

The holder of the option, similarly to a home insurance policy, must pay a premium to the obligor, or the seller of the option upon entering into the option deal.

At-the-money-forward (or ATMF) option is one in which the strike rate is the same as the forward rate applicable to the same delivery date.

The premium charged for the option is a function of the relation between the strike rate and the forward rate, as well as the expected degree of exchange rate volatility, and the tenor of the option. For instance, the premium payable for a one-year EUR/HUF ATMF option is around 4.5% of the nominal value, assuming that the rate of **ATMF (at-the-money-forward, i.e. at the forward rate prevailing on the trade date) volatility is 10%**. In the case of an ATMF option, the value of the call option is the same as that of the put option. It follows clearly that concurrently buying an ATMF call / put option and selling an ATMF put/call option of the same tenor will result in a FX forward buying/selling deal which has therefore zero cost. The result of all this is that a forward transaction can be constructed out of two options (the first being a right and the second an obligation). In a reverse logic, a forward deal is in essence the aggregate of two options, a right and an obligation. It is important to bear in mind that an option conversion is settled on the second working day (**delivery date**) after the **expiry date**, unless the parties agree otherwise.

Options have the highest possible flexibility, because they allow much greater share from favourable exchange rate movements than cost-free structures- with the complete elimination of the negative outcome. The premium charged for an option with full protection can be less than the exchange rate movement of a given foreign currency pair on a single day.

As zero cost is key for most of our Clients, in this handbook we will focus on products composed as portfolios of various rights and obligations, created in order to make the products themselves free of charge.

**By selling an option on a standalone basis a company cannot hedge its underlying exposure!**

### ➔ 3. barrier options

MIFID complexity

FX 3

Barrier options are like plain vanilla options except that there is a new element in this product, namely the so-called barrier or trigger level. This barrier level is what decides if the option is knocked in or knocked out: if at a certain point in time or within a certain period the market rate reaches the barrier price level, a specific action regarding the validity of the option is triggered (e.g. it will be activated or terminated, depending on the type of the barrier).

This classification of barrier options could be expanded further (for instance, there are knock-in-knock-out options triggered if a certain rate is reached and then terminated at another rate, or so-called double knock-out options with two knock-out barrier levels, etc.), but since the bank uses the above mentioned two types of barrier options in most of its products, the list will not be continued here.

Accordingly, the following option types can be distinguished:

In the above two examples the options also differ according to their barrier type being European or American which is another aspect of dividing the barrier options into different groups. The type of the barrier refers to the period of monitoring the barrier (or trigger) level.

- **knock-in option:** the option becomes a plain vanilla option at the moment that the spot rate reaches the barrier

According to this classification, the following types are distinguished:

**example:** the EUR/HUF spot exchange rate is at 290. The client buys from the bank a six-month put option at a strike rate of 300, with an American knock-in barrier at 275, for the amount of EUR 1 000 000. If the spot rate reaches 275 at any time during the term, the client will have the right to sell EUR 1 000 000 at the end of the six-month period at 300. Of course, this right is exercised only if the exchange rate is below 300 on the expiry date. If during the tenor, the spot rate never reaches 275, the option will not be knocked in, so at the end of the tenor, the client will sell the currency at the current market rate, which can be above 300 if the client is lucky, but this is not guaranteed by any element of the option.

- **European type barrier:** the barrier is monitored only on the expiry date of the option, at a time set in advance. Unless otherwise agreed the options' expiry date is always 2 work days before the delivery date
- **American type barrier:** the barrier is monitored from the option's trade date until the expiry date
- **American type barrier with partial monitoring (partial barrier):** the American type barrier is effective only during a specific period or window, set in advance and the window of course does not extend beyond the duration period

- **knock-out option:** when the spot rate reaches the barrier, the option is terminated (knocked out)

These instruments are used frequently because they are cheaper than plain vanilla options with similar parameters, so they are very useful in constructing various option structures. The combination of a knock-in and a knock-out option with the same tenor, notional, strike rate and barrier has the same value as a plain vanilla option for the same tenor, with the same notional and strike rate.

**example:** the EUR/HUF spot rate is at 290. A client buys from the bank a six-month call option at the strike rate of 280, with a European type knock-out barrier at 320, for the amount of EUR 1 000 000. If at the end of the tenor (on the expiry date) the spot rate is below 320, the client will have the right to buy EUR 1 000 000 at the exchange rate of 280. Of course, this right will be exercised only if the exchange rate is above 280 on the expiry date. If at the end of the term of the option, the spot rate is above 320, then the client will no longer be entitled to buy the euro amount at the 280 rate, which means that the current market rate will be applied if the client intends to buy euros.

## ➔ 4. digital options

MIFID complexity

FX 3

Digital options have a common feature in that, in contrast to the foregoing options, the buyer of the option will receive a predetermined payout if the market exchange rate reaches (or, alternatively, not reaches) a pre-defined level. Similarly to barrier options, digital options have a large number of varieties, so we will limit ourselves to listing the ones used as building blocks for the purpose of constructing the products discussed in this handbook.

- ➔ **in the case of a European type digital option**, the buyer of the option receives a pre-agreed fix amount on the delivery date, provided that on the expiry date of the option the spot rate is above (call option) or below (put option) the barrier level.

**example:** the client buys from the bank a six-month European digital call option with EUR 100 000 payout at the spot rate of 290 EUR/HUF and with a 300 EUR/HUF barrier level. The client pays the bank a premium of EUR 30 000 for this option when the deal is concluded. If upon the expiry date the exchange rate is above 300, the client will receive EUR 100 000; and if it is below 300, the client will not receive this sum.

- ➔ **in the case of an American type digital option**, the barrier level is monitored between the trade date and the expiry date. The varieties of this option are the following:

- **one touch option:** this is a digital option whose holder will receive a certain amount on the delivery date if before and up to the expiry date the market rate reaches a certain level.

**example:** the holder of a six-month one touch option with EUR 100 000 payout and 290 trigger level receives EUR 100 000 upon the date of delivery provided that the market exchange rate reaches the level of 300 at any time during the six months following the trade date.

- **no touch option:** this is the inverse of the previous option. The amount is payable to the holder of the option if up to the expiry date the exchange rate does not even once reach the trigger level.

- **double no touch option:** this option works the same way as the no touch option except with two trigger levels, and the amount will be payable if the market rate reaches neither level up to the expiry date.

**example:** the EUR/HUF spot rate is at 290, and our client buys a six-month double no touch option with EUR 100 000 payout and trigger levels at 280 and at 300. If within the next six months the market rate will not even once touching either 280 or 300, then the client will receive the EUR 100 000 payout. If, however, the market rate touches either trigger levels even on one single occasion, the client will not receive the payout.

Digital options have a number of further varieties in addition to these, but in the products discussed in the handbook we will refer only to the ones described above.

## ➔ 5. target profit forward deal

MIFID complexity

FX 3

The target profit forward deal is a series of forward transactions dealt for several expiries where the strike (or target profit forward rate) is mostly identical for all expiries. The strike obtainable on the transaction date might be more favourable than the average forward rate. In exchange for this favourable exchange rate, the company accepts the possibility that the transaction can be early terminated if the predetermined target profit amount has been reached. This means that while in the case of standard forward transactions the amount of exchange rate gains and losses realised at maturity is unlimited, the target profit forward contract limits the size of potential gains. However, the amount of potential exchange rate losses is unlimited similar to standard forward transactions. The contract terminates if the cumulated sum of the gains or sum of the gains and losses (see its varieties later) realised by the customer at the individual expiries reaches the target profit. When the target profit is reached, the exchange rate for that maturity can be modified accordingly (see product varieties below).

The target profit forward transaction, just like the normal forward deal, means a settlement obligation for both parties.

**product varieties:** there are a large number of varieties of target profit forward deals:

- ➔ **according to types of settlement:** deliverable (gross settlement) target profit forward deal or non-deliverable (cash settlement) target profit forward (see below)
- ➔ **according to the frequency of settlement:** settlement can take place with any frequency but by default it is done on a monthly basis. The frequency of settlement may change during the term of the deal (e.g. done on a weekly basis during the first month and on a monthly basis for the rest of the tenor)
- ➔ **according to rules of accumulation (rules for determining whether the target profit is reached or not):** sum of gains on each expiry or sum of gains and losses on each expiry are accumulated
- ➔ **according to tenor:** the maximum tenor is 1 year

- ➔ **according to the logic of settlement:**

- **target profit forward deal with an exact target profit amount;**  
In the case of an exact target profit amount the client receives the target profit amount exactly, not more and not less.
- **normal target profit forward deal**  
In case of a normal target profit forward deal there is no settlement on the expiry when the target profit is reached, i.e. when the deal is early terminated.
- **“last expiry pays all” type target profit forward deal**  
On the expiry date when the target profit forward deal is early terminated it pays all gains of that expiry even if the cumulated profit exceeds the target profit taking into account this payout (cash settlement), or the customer can make a conversion on the target profit forward rate, i.e. final target profit forward rate is not modified (gross settlement).
- **target profit forward deal with guarantee**  
The target profit forward deal is not be early terminated until pre-determined sum of expiries are settled, even if target profit is reached earlier.

- ➔ **according to leverage:** if there is a leverage (the notional amount of the obligation i.e. the notional amount on which the customer can realise loss is higher than the notional amount of the right i.e. the amount on which the customer can make a profit), the strike rate can be better than without leverage. In this case, however, the client runs the additional risk that depending on whether the notional amount of the right or the obligation equals the company's foreign exchange exposure, the transaction may lead to under-hedge or over-hedge. The leverage can also work in the other way: if there is a leverage (the notional amount of the right i.e. the notional amount on which the customer can realise profit is higher than the notional amount of the obligation i.e. the amount on which the customer can make loss), the strike rate can be worse than without leverage. At the time of publishing this handbook the allowed maximum leverage is 1.5 which means that the notional of the obligation can be maximum 1.5 times greater than the notional of the right. In the future the Bank can change this regulation both in negative or positive way.

In addition to the five basic products described above, K&H Treasury offers a wide range of structured options (built up, mainly but not exclusively, of the building blocks listed here). Since there is constant evolution on the derivatives market, this handbook can contain only the descriptions of the basic treasury products. More details and further information regarding the risks of each product can be found in the term sheets and in the K&H Treasury Market risk management handbook Chapter II. exposure to foreign exchange rates (II/a. treasury deals for exporters and II/b. treasury deals for importers). The basic products are available not just for foreign exchange deals only, but also for interest rates and commodities deals. The short description of these products is available below. This handbook also gives detailed description of these products in the chapters III/a. interest rate risk and V. commodity deals

## → deals to manage interest rate risk

### → 1. products for fixing interest rates

MIFID complexity  
IR 2

#### → forward rate agreement, FRA

##### for deposit holders

A forward rate agreement allows you to fix the interest rate of a future term deposit in advance. The deposit does not have to be in place when the transaction is concluded. A forward rate agreement is worth considering if your company is planning to place a larger deposit in the future and you are concerned that interest rates will be less favourable at the time of placing the deposit than the rates you could achieve if you concluded a forward rate agreement or you simply prefer to earn a safe, predictable interest.

The advantage of the transaction is that you will know in advance how much interest you will realise on your term deposit. However, if the market interest rate is higher at the time when the deposit is placed than the rate specified in the forward rate agreement, your company will still only earn interest according to the latter, i.e. less than it would have done if it had opted for the market rate.

##### for borrowers

A forward rate agreement allows you to fix the interest rate of a future loan for a given period. The loan does not have to be in place when the transaction is concluded, although the product can also be used for existing loans. A forward rate agreement is worth considering if your company is expected to make a larger interest payment in the future and you are concerned that the interest rate will be less favourable at the start of the next interest period than the rate you could achieve through the forward rate agreement or you simply prefer to pay a safe, predictable interest.

The advantage of the transaction is that you will know in advance how much interest you will have to pay on your loan in the next interest period. However, if the market interest rate is lower at the start of the

interest period in question than the rate specified in the forward rate agreement, your company will still have to pay interest according to the latter, i.e. more than it would have done if it had opted for the market rate. An FRA can be a partial alternative to an IRS if your company does not want to fix the interest rate for a large number of interest periods in advance, only for a shorter time or for one or a few interest periods (by concluding several FRAs for various periods).

#### → interest rate swap, IRS

An interest rate swap makes it possible for your company to swap its floating rate loans to fixed interest rate, or vice versa, without having to amend the underlying loan agreement. You can use this deal to hedge the interest rate risk of a cash flow starting on the present date or at a specific date in future. The latter is known as the forward start interest rate swap.

By entering into an interest rate swap transaction, the parties agree that they swap floating rate for fixed interest rate or vice versa with respect to a specific loan notional and maturity. The settlement of interest payments is due at the end of each interest payment period. There are two possible types of interest rate swaps, differentiated on the basis of the direction of swapping the interest payments:

- swapping of floating interest rate tied to a specific interest rate fixing (BUBOR, EURIBOR, etc.) for fixed interest rate (this is the so-called payer IRS), or
- swapping of fixed interest rate for floating interest rate tied to a specific interest rate fixing (BUBOR, EURIBOR etc.) (this is the so-called receiver IRS).

An interest rate swap is equally suitable for hedging future interest revenues or interest payments, so it can be used for loans, deposits or even investments in government securities.

## → 2. plain vanilla interest rate options

MIFID complexity  
IR 2

Cap and floor options are built up of series of options. Cap options are built up of caplets and floor options are built up of floorlets. Caplets and floorlets are tied to an interest period. Cap and floor options are built up of as many caplets or floorlets as the number of remaining interest periods from the given deal.

- **cap option** (in the case of rising interest rates, buying of a cap option gives protection, and selling it gives an obligation)
  - buying of cap option: protection for borrowers against rising interest rates. If at the outset of the interest payment period, the market rate is above the cap interest rate, the bank will pay the client the difference at the end of the interest period. If the market rate is below the cap interest rate, there will be no payment between the parties. At different cap interest rate levels, you can achieve various levels of protection: if the cap interest rate is lower, your protection will be at a more favourable level, but the option will also be more expensive, and vice versa.
  - selling of cap option: the seller of cap option undertakes the obligation if at the outset of the interest payment period, the market rate is above the cap interest rate, the client will pay the bank the difference at the end of the interest period. If the market rate is below the cap interest rate, there will be no payment between the parties. At different cap interest rate levels, you can achieve various levels of obligation: if the cap interest rate is lower, your obligation will be at a less favourable level, but the option premium will also be more favourable, and vice versa.

- **floor option** (in the case falling interest rates, buying of cap option gives protection, and selling of it gives obligation)
  - buying of floor option: protection for depositors against decreasing interest rates. If at the outset of the interest period, the market rate is below the floor interest rate, the bank will pay the client the difference at the end of the interest period. If the market rate is above the floor interest rate, there will be no payment between the parties. At different floor interest rate levels, you can achieve various levels of protection: if the floor interest rate is higher, your protection will be at a more favourable level, but the option will also be more expensive, and vice versa.
  - selling of floor option: the seller of floor option undertakes the obligation if at the outset of the interest payment period, the market rate is below the floor interest rate, the Client will pay the bank the difference at the end of the interest period. If the market rate is above the floor interest rate, there will be no payment between the parties. At different floor interest rate levels, you can achieve various levels of obligation: if the floor interest rate is higher, your obligation will be at a less favourable level, but the option premium will also be more favourable, and vice versa.

**By selling an option on a standalone basis a company cannot hedge its underlying exposure!**

## ➔ 3. barrier interest rate options

MIFID complexity  
IR 3

Barrier options offer a more cost-efficient protection than the vanilla options against rising or falling interest rates. In return of lower option premium, the level of protection is only partial.

### there are several kinds of barrier interest rate options

Barrier cap and floor options are built up of series of options similarly to plain vanilla options.

Barrier cap options are built up of caplets and barrier floor options are built up of floorlets. Cap and floor options are tied to an interest period. Barrier cap and floor options are built up of as many caplets or floorlets as the number of remaining interest periods from the given deal.

The barrier is an interest rate level that is fixed in advance and reaching it comes with consequences that are fixed before concluding the transaction.

The barrier can be either European or American type.

- **European** barrier means that reaching the barrier interest rate level has consequences only for the given interest period, so it affects only the given caplet or floorlet
- **American** barrier means that reaching the barrier interest rate level has consequences for all the remaining interest periods, so it affects every remaining caplet or floorlet

On the interbank market the European type barrier is the most widely used, so our Bank provides this type of barrier to our Clients.

According to the consequences of reaching the barrier (trigger) level we can speak about knock in and knock out levels.

- if **the European knock in level** is reached, the given caplet or floorlet comes into effect, but only for the given interest period. In the next period the caplet or floorlet comes into effect only if the trigger level is reached again.
- if **the European knock out level** is reached, the caplet or floorlet terminates, but only for the given interest period. In the next interest payment period, the caplet or floorlet terminates only if the trigger level is reached again.

### A) European knock out cap

The European knock out cap is a cap option, in which a European knock out level is built in above the cap strike.

The knock out cap provides protection for its buyer in every interest rate period, where on the fixing date the floating interest rate is above the cap strike and below the knock out level. That is the barrier level is watched separately for each caplet. If on the fixing date of a caplet:

- the floating interest rate exceeds the knock out level, only the caplet will be terminated (i.e. knocked out)
- the floating interest rate is below the knock out level and above the cap strike, the caplet is paid on the previously fixed settlement date (in general at the end of the interest period)
- the floating interest rate is below the cap strike, there is no payment between the parties

The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded.

### B) European knock out floor

The European type knock out floor is a floor option, in which a European knock out level is built in under the floor strike.

The knock out floor provides protection for its buyer in every interest period, where on the fixing date the floating interest rate is below the floor strike and above the knock out level. That is the barrier level is watched separately for each caplet. If on the fixing date of a caplet:

- the floating interest rate reaches the knock out level, only the floorlet will be terminated (i.e. knocked out)
- the floating interest rate is above the knock out level and below the floor strike, the floorlet is paid on the previously fixed settlement date (in general at the end of the interest period)
- the floating interest rate is above the floor strike, there is no payment between the parties

The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded.

### C) European knock-in cap

The European knock in cap is a cap option, in which a European knock in level is built in above the cap strike.

The knock in cap provides protection for its buyer in every interest period, where on the fixing date the floating interest rate is above the barrier. That is the barrier level is watched separately for each caplet. If on the fixing date of a caplet:

- the floating interest rate exceeds the knock in level, the caplet will come into effect (i.e. knocked in). The caplet is paid on the previously fixed settlement date (in general at the end of the interest period).
  - the floating interest rate is below the knock in level, the caplet does not come into effect and there is no payment between the parties
- The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded.

### D) European knock-in floor

The European knock in floor is a floor option, in which a European knock in level is built in below the floor strike.

The knock in floor provides protection for its buyer in every interest period, where on the fixing date the floating interest rate is below the barrier. That is the barrier level is watched separately for each caplet. If on the fixing date of a caplet:

- the floating interest rate reaches the knock in level, the floorlet will come into effect (i.e. knocked in). The floorlet is paid on the previously fixed settlement date (in general at the end of the interest period).
  - the floating interest rate is above the knock in level, there is no payment between the parties
- The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded

## → 4. differential swap

MIFID complexity

IR 3

The differential swap enables your company to pay interest on a loan in a given currency based on the interest rate of another currency in the original currency without foreign exchange risk.

The differential swap is similar to the interest rate swap allowing the parties to swap interest payments **without amending the underlying loan or deposit agreement**. The difference is that one leg of the differential swap is always a floating interest rate, the so called “differential floating leg” and its reference index is based on a different currency than the denomination of the underlying loan.

The parties pay both legs of the differential swap in the same currency. The interest rate index tied to another currency is used merely to calculate interest payments.

There are the following differential swap types based on the swapped interest rate payments:

- one party pays fixed interest, the other pays float. This is called fix to float differential swap. Both the fix and the floating legs are paid in the same currency.
- both parties pay floating interest, but the floating rates are tied to different currency's interest rate indices, e. g. one leg is tied to BUBOR, the other to EURIBOR. This is called float to float differential swap. Both floating legs are paid in the same currency.

Digital options can be interpreted in the context of interest rate deals as well. However, our product range does not contain these products so we do not present them within this handbook.

## → deals to manage commodity risk

### → 1. products for fixing commodity prices

MIFID complexity

COMMODITY 2

#### → commodity forward

You can fix the price of a commodity purchase or sale due sometime in the future in advance. Whatever the spot price will be upon expiry, your company will realise the forward rate set as part of this deal in net. In other words, there will be a settlement between your company and its partner on the actual market price according to the original physical deal, while the difference between the forward and the actual market price will be net settled on the expiry date between your company and our bank.

#### → commodity swap

You can fix the price of a commodity purchase or sale due sometime in the future in advance. Whatever the spot price will be upon expiry, your company will realise the swap price in net. In other words, there will be a settlement between your company and its partner on the actual market price according to the original physical deal, while the difference between the swap and the average daily market price for the tenor will be net settled on the expiry date between your company and our bank.



## ➔ 2. commodity plain vanilla option

MIFID komplexitás  
COMMODITY 2

### ➔ commodity call option

(right to buy if you buy the option, and obligation to sell if you sell the option):

- by buying a commodity call option your company has the right to buy commodity at the settlement date set in advance and the price fixed in advance (net settlement) if the price on the expiry date or the average of the daily market prices for the tenor will be above the option strike price.
- by selling a commodity call option your company has the obligation to sell commodity at the settlement date set in advance and the price fixed in advance (net settlement) if the price on the expiry date or the average of the daily market prices for the tenor will be below the option strike price.

### ➔ commodity put option

(right to sell if you buy the option, and obligation to buy if you sell the option):

- by buying a commodity put option your company has the right to sell commodity at the settlement date set in advance and the price fixed in advance (net settlement) if the price on the expiry date or the average of the daily market prices for the tenor will be below the option strike price.

- by selling a commodity put option your company has the obligation to buy commodity at the settlement date set in advance and the price fixed in advance (net settlement) if the price on the expiry date or the average of the daily market prices for the tenor will be above the option strike price.

#### Commodity options can be European or Asian type:

- **European commodity option:** the deal is concluded for a given date, the net settlement takes place against current market price applicable on the given date
- **Asian commodity option:** the net settlement takes place against the average of market prices applicable over the given period

#### By selling an option on a standalone basis a company cannot hedge its underlying exposure!

Barrier and digital options can be interpreted in the context of commodity deals as well. However, our product range does not contain these products so we do not present them within this handbook.

W/d hedging strategy



## → hedging or speculation

As a general rule, market players can follow any of four main risk management / investment strategies:

- **hedging:** the treasury deal has the same notional and the same tenor as the underlying risk exposure of the client. A company can use treasury deals for the purpose of eliminating the potential adverse effects of market risk. Treasury products (such as options, for instance), can come at a high cost, but taking into account the underlying position of the company concluding a treasury deal the possibility of “unlimited loss” is eliminated (see the section on “risk factors”), because the potential and sometimes significant opportunity loss on the treasury deal is fully compensated by the profit realised on the underlying exposure (and vice versa).
- **active risk management:** the company manages the underlying exposure in a manner that part of it or the whole exposure is “left open”, which means that the company enters into treasury transactions that, in terms of their tenor or amount, do not entirely cover the underlying exposure. The level of risk taking resulting from active risk management is somewhere between the risk level of hedging and that of speculation.
- **speculation:** speculative transactions have little or no relation with an underlying exposure, because the only purpose of the deal is to make profit by taking risk on the market. The investor may suffer large losses, or even lose the entire premium paid for the transaction, depending on the outcome of the deal (e.g. in the case of buying an option, if the option is not exercised).
- **investment:** the placement of funds in financial assets with the aim of realising higher yields.

In summary, when you make the decision as to whether or not to enter into a certain treasury transaction, you must weigh up primarily the following aspects:

	there is risk arising from the core business of the company	there is no risk arising from the core business of the company
with treasury product	hedging	speculation
without treasury product	speculation	natural hedge

If the business of your company is significantly influenced by changes in a particular foreign exchange rate, interest rate or commodity price, and you do not enter into treasury transactions, you can be considered to act as a speculator who, on the contrary, executes treasury deals without underlying exposure. A transaction originally concluded for hedging purposes can become speculative if the risk arising from the underlying business is eliminated during the tenor of the deal. Natural hedge means a situation where, for instance, during a period you have the same amount of income in a particular currency as you have in expenses, because in this case it is unnecessary to hedge your risk with treasury deals, while of course liquidity management still remains important as the timing of foreign currency revenues is not necessarily aligned with the timing of expenses.

It is important to note that treasury deals on a standalone basis cannot be considered as hedging or speculation but only based on the purpose and the underlying exposure of the company (the financial risks associated with the core business of the company). The complexity of the treasury products listed in chapter I/b. is also independent from the deal's hedging or speculative nature. For example, a simple forward deal can be considered speculative in case its parameters (currency pair, direction of selling/buying, value date) are not in line with the underlying exposure while a complex forward extra option structure can be for hedging in case it is in line with the exposure's direction, tenor and currency pair. Regarding the notional amount a treasury deal is definitely hedging in case the notional is not greater than the exposure itself while in case of an underhedged position the notional that is not hedged with a treasury deal can be considered as a speculative position. In case a treasury deal has a greater notional than the exposure that is associated with the core business than it is recommended to close the additional amount and restructure the position in order to get the treasury position in line with the underlying exposure according to the notional as well. A treasury deal greater than the underlying exposure is considered overhedged or speculative in the amount of the additional notional.

Our aim is to help you identify the risk exposures affecting your business, and appropriately analyse your situation as a result of which you can handle the market risks arising from your core business by entering into treasury transactions.

## ➔ how your company's market position and strategy can accommodate a particular treasury transaction?

Before entering into a treasury transaction you must be able to define the optimum hedging strategy of your company in the course of annual (or multi-annual) planning, taking into consideration your business' relative competitive standing, profitability and level of indebtedness. It is worth comparing the target exchange rates, interest rates and commodity rates, giving you the profitability desired with the exchange rates, interest rates and commodity prices that can be realistically expected. In addition, possible scenarios should also be studied, to find out about the degree to which your company is exposed to changes in foreign exchange rates, interest rates or commodity prices, whether positive or negative.

After the market risks affecting your core business have been identified and the risk appetite of your company established, the time has come to choose a risk management tool that best fits your business profile.

The financial analysis suggested above will be of great assistance to you in defining the hedging strategy you should follow to achieve the best results:

- **defensive:** identification of a guaranteed worst outcome and exclusion of any possibility that is worse than that
- **offensive:** the treasury deals must make a profit on a standalone basis, and if the defensive hedging strategy is not enough to reach the target exchange rate, the primary aim of an offensive strategy is taking a risk in order to boost the available exchange rate levels.

**Worst case scenario in this case is unknown.**

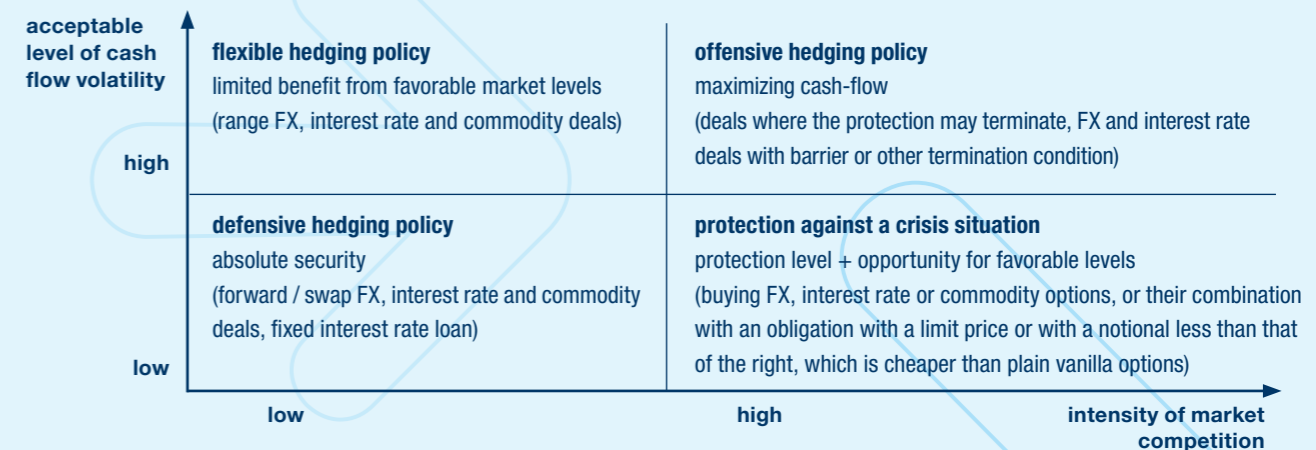
When defining your hedging policy, specific hedging objectives must also be determined. Such objectives can be the following:

- driving at absolute security: complete elimination of cash-flow fluctuation
- definition of a defence level
- a certain degree of benefit from potentially advantageous market movements
- increasing relative competitive advantage: maximising the value of cash flow

Where only very low cash flow fluctuation is allowed, while market competition is highly intensive, a company must by all means define a level of defence which is defined as the worst-case scenario the business in question can afford. A crisis situation can be best fended off by buying options. If this is beyond your means, it is worth considering structures where the worst-case scenario is clearly known but there is still some room for limited profit from potential advantageous market movements (partial forward or forward extra). If both the tolerable fluctuation of cash flow and the intensity of competition in the market are low, it is best considering conservative solutions, focusing on defensive hedging strategies involving various forward deals and interest rate swaps.

In the case of less intensive competition and less stretched cash flow, a hedging policy that is more flexible than the purely defensive strategy should be seriously considered, by executing range forward transactions, for instance. Where there is both intensive competition and high acceptable cash flow volatility, it may easily happen that the level of defence established by a company may, if pursued through defensive instruments or even by relatively flexible means, be harmful for the business, so the company in question will be forced to choose products that are expressly offensive and that give an investor more opportunity to have a share of advantageous market processes, while at the same time involving more risk, as well. In the decision making process it is important to consider what hedging policy your competitors are following.

In the graph that follows, typical exchange rate and interest hedging policies and the products available for the successful implementation of such strategies are depicted along two dimensions namely the intensity of market competition and the acceptable level of cash flow volatility.



Classification of our deals for foreign exchange exposure, interest rate and currency of a loan and commodity indices into the above categories:

- **flexible hedging policy:** range forward, interest rate collar, commodity collar
- **defensive hedging policy:** FX and interest rate forwards / average forwards, FX and interest rate swap, loan with fixed interest rate, commodity forward and swap, step up interest rate swap
- **offensive hedging policy:** seagull, boosted forward, boosted forward with compensation, extendible forward, reset forward,

target profit forward, barrier interest rate options (purchase of barrier cap and floor), interest rate collar with barrier (KO cap or KI floor)

- **protection against a crisis situation:** FX option (purchase of call and put), interest rate option (purchase of cap and floor), swaption, commodity option (purchase of call and put)

**With an offensive hedging policy the worst case outcome is not known with full certainty, deals falling in this category are not recommended on a standalone basis.**

## → how can I achieve better hedging levels than the forward exchange rate by taking risk?

During the development of the the hedging strategy the combination of the above may be useful to create a mixed hedging strategy. There are some examples shown about possible hedging strategies for both exporters and importers in Chapter II. entitled "exposure to foreign exchange rates" of "K&H Treasury Handbook of Market Risk Management".

As clearly demonstrated above, an extremely wide range of services is available to our clients over and beyond forward deals. It is a familiar situation to many that the forward exchange rate, used as a reference rate for all complex transactions given a particular set of market conditions, is not in line with the level the company wishes to secure for its purposes. At times like this, it is worth studying the products which make it possible to achieve hedging levels better than the forward rate, but when doing so, you must never lose sight of the risks involved in a hedging level that is more advantageous than the forward rate.

The typical ways to supersede the forward rate include the following:

- the level of obligation is more advantageous but in return the level of protection is less advantageous than in a forward deal (e.g. range forward)
- the option structure does not provide protection beyond a certain level (e.g. seagull)
- leverage is built into the treasury transaction: one can achieve better-than- forward rates if the obligation relates to a higher nominal value than the right involved. In such a solution, it is very important to take into account that the protection provided to the company covers only part of the amount to be hedged, which means that the company's risk will not be fully hedged (e.g. participating forward). This, of course, can also happen the other way around: if the right (i.e. the protection) is in line with the actual risk exposure, then the resulting obligation to convert may be higher than the actual exposure generated by the company's business; In case of leverage we definitely do not suggest that the amount of the obligation should exceed the company's total exposure. In this case an overhedged situation cannot occur for the company but the protection is only for a lower amount than the actual exposure which also contains risk for the company.

- in case of greater movement in the exchange rate it may occur that at the maturity the company reaches a better price level than the level of the forward if the notional of the right is greater than notional of the obligation (e.g. participating forward). In this case the company can enjoy full protection against unfavourable exchange rate movements and can benefit from favourable movements of the exchange rate in some extent at the same time.
- knock-in level built into the treasury transaction: the hedging level can become better than the forward rate also in a structure where the company's obligation is triggered at a level worse than the forward rate only if certain conditions are fulfilled (e.g. forward extra).
- knock-out level built into the treasury transaction: if the protection, or even the structure as a whole, can be terminated during the tenor, a better hedging level can be achieved. In such situations, however, the company runs the risk that the protection ceases exactly at the time when it would be most needed, and afterwards risk can only be hedged on the market at a rate that is worse than the original forward rate. Such knock-out may be defined as a function of a particular rate level (e.g. boosted forward) or a profit maximum to be achieved (e.g. target profit forward).

In conclusion, when choosing the option strategy most appropriate for your purposes, it is important to see the potential extra risk you take in order to reach a more flexible and/or more advantageous hedging level than the applicable forward rate.

## → microhedge vs macrohedge

There are various ways of managing a company's risk by means of treasury transactions.

**Microhedge** is a deal in which you, for instance, enter into a treasury transaction with respect to an amount expected to be received on a particular day in the month in question, for the date and amount in question, and hedge all your receivables in this way. When on the appointed day the foreign currency amount you expect is received, you can convert it into forints at the exchange rate applicable to the treasury transaction. If there is a delay, you can roll your position over about which see the chapter on the "five basic products". In the case of a microhedge, the treasury deal is typically gross settled which means that you actually perform the conversion at the exchange rate applicable to the treasury deal.

A company should use **microhedge** in case it covers typically a small number of large notional amounts and these amounts occur in a time schedule that can be easily estimated.

**Macrohedge** is an approach which you can use, for instance, when you have only a rough idea about the size of the monthly foreign currency revenues you will have in the next year which you will intend to convert into forints, and these revenues will be received in several smaller amounts. In such a case, you enter into treasury deals for one

specific date each month for the full amount of your monthly revenues irrespective of the dates when parts of your monthly revenue are received. You can also decide to hedge the entire year's income at an average exchange rate, and then the average hedging level will be the average of the exchange rates calculated for the expiry dates of various months, weighted by the amounts expected in each month. Following this, in an optimistic scenario, the amounts expected will be received in every month of the next year and you can convert them at the spot rates prevailing at those points in time. The treasury deal concluded for one specific day of the month will be net settled, that is, you and the bank will settle in cash the exchange rate gains or losses realised on the whole monthly amount on the given month's expiry date. The profit or loss thus generated, plus the smaller monthly amounts which are converted into forints at the prevailing spot rates, give approximately the same financial result as if you had converted each item at that month's hedging rate. A macrohedge means a simplified settlement technique and a more comprehensive approach to the annual foreign exchange risk than the above mentioned microhedge if the timing of your cash flows is difficult to foresee but the amounts are more or less predictable.

A company should use **macrohedge** in case it covers typically a large number of small notional amounts or if these amounts occur in a time schedule that can not be easily estimated.

III/a

exposure to foreign  
exchange rates -  
treasury deals  
for exporters



## → types of products

### → 1. forward and average forward

MIFID complexity

FX 1

#### → 1.a. hedging of foreign currency revenues for a single expiry

##### product description

You can fix the exchange rate of the conversion of foreign currency revenue due some time in the future at the present point in time already with respect to the future date in question. Whatever the spot exchange rate upon expiry is, your company will sell the foreign currency at the forward rate set as part of this deal. In other words, your company will acquire a right as well as an obligation to sell foreign currency upon the trade date, and both the potential foreign exchange gains and losses can be unlimited in theory.

Costs and revenues of the underlying exposure can compensate both

the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to receive EUR 100 000 in a year's time. Let us assume that the current spot exchange rate is 290 EUR/HUF. This company wants to eliminate the foreign exchange risk by entering into a forward transaction for selling EUR 100 000. Upon the trade date the EUR/HUF forward rate is 12 forint above the spot rate for one-year forward transactions. The difference is the result of the fact that the one-year HUF interest rate is higher at the time of the deal than the one-year EUR interest rate.

##### parameters of the forward

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date	end of first year
spot rate prevailing at pricing	290 EUR/HUF
forward rate	302 EUR/HUF
transaction cost on the trade date	zero

##### possible scenarios on expiry

exchange rate below 302 EUR/HUF	your company sells EUR 100 000 at a rate of 302 EUR/HUF
exchange rate at or above 302 EUR/HUF	
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate on the expiry date is below 302. In this case your company sells EUR 100 000 at a rate of 302 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate on the expiry date is above 302. In this case your company sells EUR 100 000 at a rate of 302 EUR/HUF. The resulting foreign exchange loss can be unlimited.

##### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

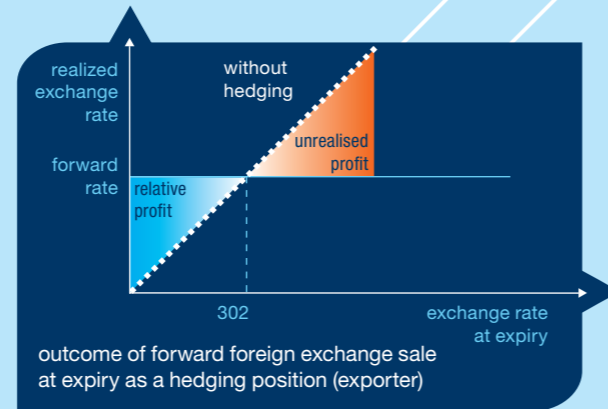
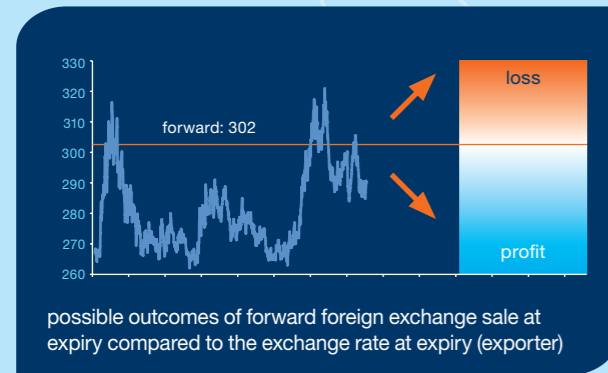
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	2 050 000
300	-950 000
330	-3 950 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(302 - 270) * 100\,000 = 3\,200\,000$	$302 * 100\,000 = 30\,200\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(302 - 300) * 100\,000 = 200\,000$	
330	$330 * 100\,000 = 33\,000\,000$	$(302 - 330) * 100\,000 = -2\,800\,000$	



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### 1.b. hedging foreign currency revenues for various expiries – average forward

#### product description

If foreign currency revenues are due on different future dates you can fix the same forward exchange rate for each of those future dates at the present time. Whatever the spot rate may be on the expiry date, your company will convert the foreign currency revenues at the average forward exchange rate set as part of this deal. In other

words, your company upon the trade date acquires a right as well as an obligation to sell foreign currency, and both the potential foreign exchange gains and losses can be unlimited in theory.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to incur EUR 100 000 per month in the next year in revenues. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company would like to exclude all foreign exchange risk, and sell euros on all expiry dates at the same exchange rate, so it enters into an average forward deal at the EUR/HUF exchange rate of 296.50.

parameters of the average forward	
notional amount	1 200 000 EUR = 12 * 100 000 EUR
notional amount on each expiry	100 000 EUR
currency pair	EUR/HUF
tenor	1-12 months
number of expiry dates	12
expiry dates	trade date + 1 month, + ..., + 12 months
spot rate prevailing at pricing	290 EUR/HUF
forward rates prevailing at pricing, for each expiry date	
month 1	291 EUR/HUF
month 2	292 EUR/HUF
month 3	293 EUR/HUF
month 4	294 EUR/HUF
month 5	295 EUR/HUF
month 6	296 EUR/HUF
month 7	297 EUR/HUF
month 8	298 EUR/HUF
month 9	299 EUR/HUF
month 10	300 EUR/HUF
month 11	301 EUR/HUF
month 12	302 EUR/HUF
average forward rate	296.50 EUR/HUF (arithmetic average of the forward rates for each expiry)
transaction cost on the trade date	zero
possible scenarios on each expiry date	
exchange rate is below 296.50 EUR/HUF	your company sells EUR 100 000 at a rate of 296.50 EUR/HUF
exchange rate is at or above 296.50 EUR/HUF	
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 296.50 on the expiry date. In this case, your company sells EUR 100 000 at a rate of 296.50 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 296.50 on the expiry date. In this case, your company sells EUR 100 000 at a rate of 296.50 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

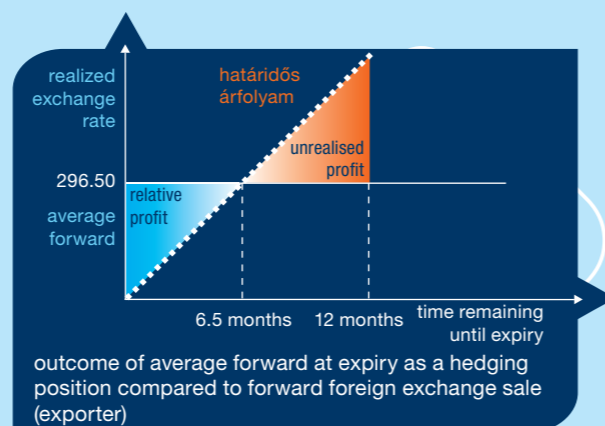
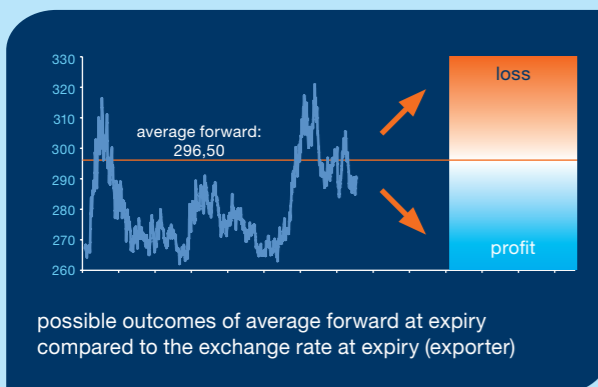
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	24 600 000
300	-11 400 000
330	-47 400 000

#### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$ in total: $12 * 27\,000\,000 = 324\,000\,000$	$(296.50 - 270) * 100\,000 = 2\,650\,000$ in total: $12 * 2\,650\,000 = 31\,800\,000$	$296.50 * 100\,000 = 29\,650\,000$ in total: $12 * 29\,650\,000 = 355\,800\,000$
300	$300 * 100\,000 = 30\,000\,000$ in total: $12 * 30\,000\,000 = 360\,000\,000$	$(296.50 - 300) * 100\,000 = -350\,000$ in total: $12 * -350\,000 = -4\,200\,000$	
330	$330 * 100\,000 = 33\,000\,000$ in total: $12 * 33\,000\,000 = 396\,000\,000$	$(296.50 - 330) * 100\,000 = -3\,350\,000$ in total: $12 * -3\,350\,000 = -40\,200\,000$	



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- the exchange rate applicable to foreign currency selling transactions in the future is fixed in advance
- full protection against any appreciation of the forint
- potential foreign exchange gains are unlimited (on the treasury deal itself)
- with an average forward deal you can achieve better rates for expiries in the first half of the tenor than with a regular forward deal for those expiries (in case the forint – foreign exchange swap points are positive)
- no cost or separate fee charged.
- if the hedge is no longer needed, the position can be closed with a counter deal (forward buying of euros for an expiry coinciding with the expiry date of the original deal) with net settlement on expiry. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- even if the exchange rate on expiry is higher than the forward rate, the client will be obliged to convert the foreign currency revenues at the forward rate, which means that foreign exchange loss will incur. The potential foreign exchange loss can be unlimited in theory.
- if you decide to close your position before expiry by means of a counter deal (forward buying of euros for an expiry date coinciding with the expiry of the original deal) you may incur a loss.
- if an average forward deal is concluded, the exchange rates that are achievable on the last few expiries may be worse than the forward rates applicable to the expiry dates in question (provided that the forint – foreign exchange interest rate differential is positive).

- the actual market value of the forward deal is influenced by the spot rate, the interest rate levels of the two currencies for the given tenor and their differential, basis swaps and time until maturity. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

This product is built up of forward deals. The product can be built up of two options as a synthetic forward deal, about which you can find detailed explanation in the 3. point of the actual Chapter. The section on forward deals and options of Chapter. I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 2. currency swap

MIFID complexity

FX 1

#### product description

Should your company require foreign currency in a given time, while it receives the required foreign currency amount in another time, then a currency swap deal can be concluded to hedge exchange rate risk. With a currency swap deal your company can swap its foreign currency into forint or vice versa for a given period at a given exchange rate (the deal can be concluded in any currency pair quoted by the bank). Thus you can increase your liquidity in a given currency for a given time period by reducing your liquidity in another currency for that period. With the deal you can also roll over the expiry of an existing forward deal to an earlier or a later date. As the latter is the most common use of this deal by our clients, we introduce this first.

#### roll over of an existing forward deal

By concluding a currency swap deal the parties enter into a foreign exchange deal and at the same time enter into a foreign exchange deal in the opposite direction with the same notional but with a different expiry date (see Chapter I./c entitled "5 Basic products" of "K&H Treasury Handbook of Market Risk Management"). Of course the forward rate will change with the deal: decreases when rolling backwards and increases when rolling forward (in case the base currency's interest rate is lower than the quote currency's interest rate) because of the swap points. The bank has a flexible position about roll-over, but a couple of rules must still be observed:

- every position can be rolled over for any length of time starting out from the spot rate applicable upon expiry. In this case, naturally,

#### spot deal or forward deal + forward deal in opposite direction = currency swap

#### Gross settlement is applied for the deal.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gains.

**example for rolling over a forward deal:** a Hungarian exporter concluded a forward deal to sell EUR 100 000 in 11 months at 301 EUR/HUF to hedge the exchange rate risk of its future foreign exchange income. Two days before expiry the company receives notice that the amount arrives approximately one month later. Thus the company rolls over its forward deal of selling EUR 100 000 to a month later with a currency swap. Let us assume that the spot rate on expiry is 290 EUR/HUF. By concluding a currency swap deal the company buys EUR 100 000 at 290 EUR/HUF with spot value date and sells EUR 100 000 at 291 – the exchange rate increased with the swap points (1 HUF) – for a value date in one month, when the income is expected to arrive. The original forward deal will be closed at spot value date by the currency purchase and the bank will credit the financial result of  $(301-290) \text{ EUR/HUF} * \text{EUR } 100\,000 = \text{HUF } 1\,100\,000$  on the company's account. (In case the exchange rate on expiry was above 301 EUR/HUF, the position would have a loss). The other leg of the swap, expiring in 1 month means that the company will have a forward deal to sell EUR 100 000 but this time at 291 EUR/HUF.

the profit or loss generated will be settled on the value date of the original forward transaction.

- the movement of the EUR/HUF spot rate on any given day is usually around +/- 1% in comparison with the exchange rate quoted by the NBH (except for extreme circumstances). Forward rates falling into this same range is considered as a market rate, so the previous point will be applicable to it.
- in the event of roll over, the bank must apply the interest rate differential corresponding to the period in question.
- every position can be rolled back to a point in time preceding the original expiry.
- where the amount covered by the original contract will arrive or be incurred as expenditure within a foreseeable period of time (2 weeks), the position (whether a profit or a loss position) can be rolled over, starting out from the exchange rate of the original forward contract, on no more than one occasion, and for the maximum of two weeks
- there is no roll over beyond a quarter, that is, the dates March 31st, June 30th, September 30th, and December 31st must not fall in between the starting and end dates of the roll over period

In summary the deal means a spot purchase or sale of a currency and at the same time a deal concluded in the opposite direction as well for the same currency, notional and expiry for a later date.



**example for a normal swap deal:** a Hungarian exporter requires EUR 100 000, while has surplus liquidity in forint and expects EUR 100 000 income in 1 month. To hedge the exchange rate risk of the present shortage and the future surplus in EUR it concludes a currency swap and secures its liquidity without taking exchange rate risk. By concluding a currency swap deal the company buys EUR 100 000 at 290 EUR/HUF for spot value date, while sells EUR 100 000 at 291 EUR/HUF (exchange rate increased by swap points, 1 HUF) for one month later, when the income is expected. The bank credits EUR 100 000 on the company's euro account at spot value date, while debits EUR 100 000 \* 290 EUR/HUF = HUF 29 000 000 from the company's HUF account. The far leg of the swap, expiring in 1 month means that the company will have a forward deal to sell EUR 100 000 but this time at 291 EUR/HUF.

The currency swap not only enables the rollover of existing treasury deals but it can also be used on a standalone basis to increase the liquidity in one currency for a given time period in exchange for a liquidity decrease in another currency. The parameters of the swaps are identical in both methods; the only difference is in the settlement: rolling over an existing deal means that one leg of the swap will be net settled with the expiring deal that already existed.

parameters of a currency swap	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 month
tenor start	spot
direction of swap deal on spot value date (near leg)	EUR buy
direction of swap deal in 1 month (far leg)	EUR sell
exchange rate of near leg	290 EUR/HUF
exchange rate of far leg	291 EUR/HUF
spot rate prevailing at pricing	290 EUR/HUF
exchange rate of original forward deal	301 EUR/HUF
transaction cost on the trade date	zero
possible scenarios on expiry	
exchange rate is below 291 EUR/HUF	your company sells EUR 100 000 at a rate of 291 EUR/HUF
exchange rate is at or above 291 EUR/HUF	
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 291 on the expiry date. Your company sells EUR 100 000 at a rate of 291 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 291 on the expiry date. Your company sells EUR 100 000 at a rate of 291 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	2 050 000
300	-950 000
330	-3 950 000

#### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000	(291 - 270) * 100 000 = 2 100 000	291 * 100 000 = 29 100 000
300	300 * 100 000 = 30 000 000	(291 - 300) * 100 000 = -900 000	
330	330 * 100 000 = 33 000 000	(291 - 330) * 100 000 = -3 900 000	

#### advantages of transaction

- the exchange rate applicable to foreign currency selling transactions in the future is fixed in advance (in case the near leg of the swap is also a forward deal (forward starting swap), the exchange rate of the currency purchase is also fixed in advance)
- full protection against any appreciation of the forint on the far leg of the currency swap
- potential foreign exchange gains are unlimited (on the treasury deal itself)
- no cost or separate fee charged
- if the hedge is no longer needed, the position can be closed with a counter deal (forward buying of euros for an expiry coinciding with the expiry date of the original deal) with net settlement on expiry. If the near leg of the currency swap is not closed, the deal can be closed with a currency swap in the opposite direction. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- in case only the far leg of the currency swap is in effect, the company practically has a forward deal. In this case the client will be obliged to convert the foreign currency revenues at the forward rate even if the exchange rate on expiry is higher than that, which means that foreign exchange loss will incur. The potential foreign exchange loss can be unlimited in theory.
- if you decide to close your position before expiry by means of a counter deal (forward buying of euros for an expiry date coinciding with the expiry of the original deal) you may incur a loss.
- if both legs of the currency swap are open, the client runs risk on both the near and the far leg as swap points may change due to changes in the exchange rate, the interest rate differential or

time until maturity, so there is indirect exchange rate risk. In this case the deal can be closed with a currency swap in the opposite direction, which may result in a loss.

- the actual market value of the currency swap is influenced by the spot rate, the interest rate levels of the two currencies for the given tenor and their differential, the basis swap and the time until maturity. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

This product is built up of a spot and a forward deal or two forward deals. The section on forward deals of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

# ➔ 3. option for selling foreign currency: buying an option (right) + selling an option (obligation) = forward

MIFID complexity

FX 2

## ➔ 3.a. right to sell foreign currency (buying of EUR put option)

### product description

When you buy a EUR put option, your company will acquire the right to sell foreign currency on a specific delivery date and at a specific strike rate, both set in advance, provided that on the expiry date the spot rate is below the strike rate. Similarly to a forward deal, this option will give you complete protection at the level of the strike rate against the appreciation of the forint.

If on the expiry date the spot rate is above the strike rate, your company will have a right to sell euros at the spot rate prevailing on expiry but the company will not exercise this right. This means that, as opposed to a forward agreement, buying a EUR put option gives your company the possibility to derive 100% benefit from a potential appreciation of the forint (above the strike rate). In return for this benefit the option comes at a price paid by the buyer of the option in the form of a premium upon concluding the deal. In contrast to a forward deal, then, if you buy an option, your potential foreign exchange loss is limited to the amount of the option premium.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. Because the company expects that on the expiry date the spot rate will be much more advantageous than the forward rate, and because in order to achieve an appropriate profit margin it wants to avoid by all means having to sell euros on the expiry date at an exchange rate worse than the forward rate, it buys a European type EUR call option at a strike rate of 302 EUR/HUF (equalling the forward rate). The premium charged for buying the EUR put option is 3.50% of the notional, or else  $302 * 3.50\% = 10.57$  HUF per EUR, payable when the deal is concluded. Taking into account the option premium paid, this company will realise on expiry an exchange rate that is the same as the regular forward rate at the exchange rate level of  $(302 + 10.57) = 312.57$ . (In this example we ignored that the premium should carry interest as well).

The option's strike rate may be different from the forward rate available for the given tenor. In that case the option premium will be different as well.

### parameters of the option – buying of EUR put option

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
strike rate	302 EUR/HUF
option premium (payable by the client on the trade date)	$3.50\% * \text{notional amount} = 10.57$ HUF for each EUR (HUF 1 057 000)

### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

exchange rate is above 302 EUR/HUF	Your company has a right, but not an obligation to sell euros at the strike rate, but it does not exercise the option. Your company can sell euros at the spot rate prevailing on expiry.
exchange rate is at or below 302 EUR/HUF	Your company has a right to sell euros, and it exercises the option. It can sell EUR 100 000 at a rate of 302 EUR/HUF.
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 302 on expiry. Your company has a right to sell euros. In this case, your company can sell EUR 100 000 at a rate of 302 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 302 on the expiry date. Your company will have a right, which will not be exercised. In this case, your company can sell euros at the current spot rate (above 302 EUR/HUF). The resulting loss equals the amount of the option premium.

### the market value of the position two weeks after the trade date from the customer's point of view

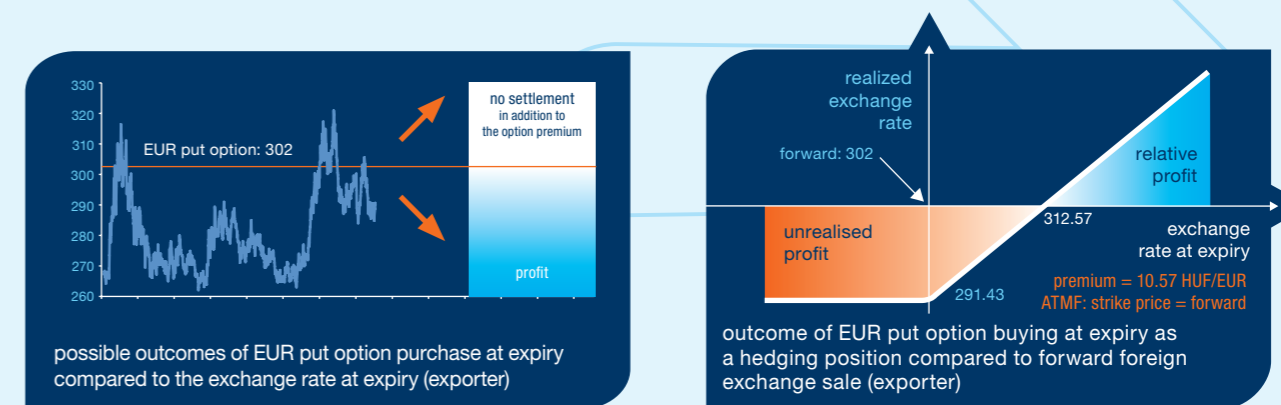
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)  
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	24.94 HUF per EUR * notional amount = 2,494,000 HUF
300	6.63 HUF per EUR * notional amount = 663,000 HUF
330	0.98 HUF per EUR * notional amount = 98,000 HUF

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(302 - 270) * 100\,000 - 1\,057\,000 = 2\,143\,000$	$302 * 100\,000 - 1\,057\,000 = 29\,143\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(302 - 300) * 100\,000 - 1\,057\,000 = -857\,000$	$302 * 100\,000 - 1\,057\,000 = 29\,143\,000$
330	$330 * 100\,000 = 33\,000\,000$	$0 - 1\,057\,000 = -1\,057\,000$	$330 * 100\,000 - 1\,057\,000 = 31\,943\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- full protection against the potential appreciation of the forint
- you can benefit from favourable exchange rate movements completely
- limited potential loss with the option premium as maximum
- the minimum value of the HUF cash flow can be planned with certainty
- given a specific tenor and nominal value, the option premium and the strike rate can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- the position can be closed with a counter deal (selling of a EUR put option), at any time before the expiry date, resulting in an income for your company, because an option never has a negative value

### risks of transaction

- the option premium must be paid on the trade date
- if the strike rate is the same as the forward rate, the profit threshold of the option is worse (increased by the premium) than the forward rate. Due to the option premium the company realises the exchange rate of a regular forward deal at a higher exchange rate upon expiry (forward + premium).

- closing the position before the expiry date may cause a loss if the option premium received upon the time of closing is less than what was charged as a premium when the option was bought
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor and their difference, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of one single plain vanilla option. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

### 3.b. obligation to sell foreign currency (selling of EUR call option)

#### product description

By selling a EUR call option your company acquires an obligation to sell foreign currency on a specific delivery date and at a specific strike rate, both set in advance, provided that on the expiry date the spot market rate is above the strike rate. An option obligation is like a forward deal in the event of the possible depreciation of the forint in that the client must sell foreign currency at the rate fixed in advance.

If on the expiry date the spot rate is below the strike rate, the client will acquire neither a right nor an obligation. In contrast to a forward deal, then, the selling of a EUR call option will not constitute protection against the appreciation of the forint. The seller of the option receives an option premium on the trade date.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**By selling an option on a standalone basis a company cannot hedge its underlying exposure! According to our rules and policy at the time when this Handbook is edited, concluding this deal on a standalone basis is not allowed, only with a combination of buying an option.**

**példa:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. Because selling this amount at an extremely low exchange rate will not have a significant impact on the company's profits, and neither will it cause a problem if the forint is depreciated by a large extent and the conversion takes place at the forward rate the company sells a EUR put option with a strike rate equalling the forward exchange rate, that is, at 302 EUR/HUF.

In return for this obligation the company receives an option premium on the trade date. The premium due for the obligation to sell is 3.50% of the notional, or  $302 * 3.50\% = 10.57$  HUF per EUR paid to the client when the deal is concluded.

Taking into account the option premium received, the company will realise an exchange rate equalling the standard forward if on the expiry date the EUR/HUF spot rate is  $(302 - 10.57) = 291.43$ . (In this example we ignored that the premium should carry interest as well.).

parameters of the option – selling of EUR call option	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 (CET) p.m. on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
strike rate	302 EUR/HUF
option premium (received by the client on the trade date)	$3.50\% * \text{notional amount} = 10.57$ HUF for each EUR (1,057,000 HUF)
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
exchange rate is at or above 302 EUR/HUF	your company has an obligation to sell euros, since the option is exercised. Your company sells EUR 100 000 at a rate of 302 EUR/HUF.
exchange rate is below 302 EUR/HUF	Your company has neither a right nor an obligation, since the option is not exercised. Your company can sell euros at the spot rate prevailing on expiry.
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 302 on the expiry date. Your company has neither a right nor an obligation. In this case, your company can sell euros at the spot rate prevailing on expiry (below 302 EUR/HUF).
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 302 on the expiry date. In this case your company has an obligation to sell euros. Your company sells EUR 100 000 at a rate of 302 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

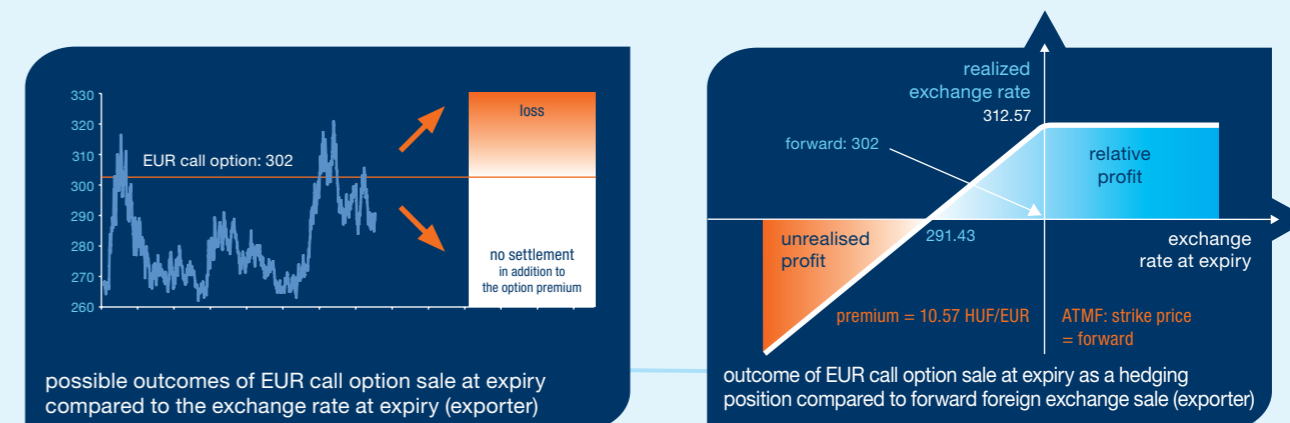
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	$2.88$ HUF per EUR * notional amount = -288 000 HUF
300	$6.30$ HUF per EUR * notional amount = -630 000 HUF
330	$13.06$ HUF per EUR * notional amount = -1 306 000

#### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction (HUF)
270	$270 * 100\ 000 = 27\ 000\ 000$	$0 + 1\ 057\ 000 = 1\ 057\ 000$	$270 * 100\ 000 + 1\ 057\ 000 = 28\ 057\ 000$
300	$300 * 100\ 000 = 30\ 000\ 000$	$0 + 1\ 057\ 000 = 1\ 057\ 000$	$300 * 100\ 000 + 1\ 057\ 000 = 31\ 057\ 000$
330	$330 * 100\ 000 = 33\ 000\ 000$	$(302 - 330) * 100\ 000 + 1\ 057\ 000 = -1\ 743\ 000$	$302 * 100\ 000 + 1\ 057\ 000 = 31\ 257\ 000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- if the strike rate is the same as the forward rate, the profit threshold of the option is higher (including the option premium) than that of a forward deal. Due to the option premium the company realises the exchange rate of a regular forward deal at a lower exchange rate upon expiry (forward - premium).
- the company receives an option premium on the trade date
- the option premium and the strike rate, with a given tenor and notional amount, can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- the position can be closed with a counter deal (buying of a EUR call option) at any time before the expiry date, but this will always come at a cost for your company, because an option never has a negative value

#### risks of transaction

- no protection against a possible appreciation of the HUF
- the transaction does not allow you to benefit from a potential depreciation of the HUF
- unlimited foreign exchange loss potential
- closing the position before the expiry date may cause a loss if the option premium paid upon the time of closing is more than what was received when the option was sold
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for

the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

This product is built up of one plain vanilla option. The section on plain vanilla options of Chapter 1/c..entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## → connection between options and forward deals

Assuming identical terms and notional amount, a forward deal can be constructed out of two options. To achieve this, the strike rates of the options must be the same as the forward rate (in this case 302) and the company must buy one option and sell the other. (see chapter II. of the “K&H Treasury Handbook of Market Risk Management Handbook” on forward deals and options). In such a case, on the trade date the cost of buying one option is the same as the income derived from selling the other, which means that the overall cost of the two deals is zero just as in the case of a forward transaction.

### selling foreign currency:

**forward deal for selling foreign currency = buying of EUR put option + selling of EUR call option**

(where: strike rates = forward rate)

deal type	options		forward
	buying of EUR put option	selling of EUR call option	forward FX selling
right or obligation acquired on concluding the deal	conditional right to sell EUR	conditional obligation to sell EUR	right and obligation to sell EUR
exchange rate	302.00 EUR/HUF (= forward rate = strike rate)		
condition	exchange rate on expiry < 302.00	exchange rate on expiry > 302.00	none
premium payable on trade date	- 1 057 000 (payable by client)	+ 1 057 000 (received by client)	0
total cost on trade date	0		0
spot rate on the expiry date is below forward rate	<b>right becomes effective</b>	obligation does not become effective	<b>right becomes effective</b>
spot rate on the expiry date is above forward rate	right does not become effective	<b>obligation becomes effective</b>	<b>obligation becomes effective</b>

## → 4. range forward

MIFID complexity

FX 2

### product description

A range forward deal provides more flexibility than a standard forward. Using this product you can fix the future selling rate of a specific currency in a range around the forward rate. In contrast to a forward deal, the rates of the right and the obligation for selling foreign currency are different. You have a limited potential gain in case of HUF strengthening; in return, your company is protected against unfavourable market movements at a rate lower than the forward.

Consequently, your company

- has a right to sell foreign currency at an exchange rate somewhat less advantageous than the forward rate, provided that the spot rate on expiry is below the bottom of the range or between the range, but in this case, the right will not be exercised
- has an obligation to sell your foreign currency at an exchange rate better than the forward rate if on expiry the exchange rate is above the top of the range.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company hopes to achieve an exchange rate better than the forward rate on the expiry date, but to secure an appropriate profit margin the EUR/HUF rate should at least be 298. Therefore, the company enters into a one-year range forward deal where the bottom and the top of the range are set at 298 and 306, respectively.

By entering into a range forward deal, the company may have the opportunity to convert its foreign currency revenues at an exchange rate that is better than the forward rate of 302, while at the same time losing the opportunity to benefit from a potential forint weakening beyond the top of the range (306 EUR/HUF). However, the company enjoys protection from any strengthening of the forint at a lower rate than the forward (298 EUR/HUF).

### parameters of the range forward

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
1-year forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
bottom of the range (right to sell)	298 EUR/HUF
top of the range (obligation to sell)	306 EUR/HUF
transaction cost on the trade date	zero

### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

exchange rate below 298 EUR/HUF	your company has a right to sell EUR 100 000 at a rate of 298 EUR/HUF (better than the market rate).
exchange rate between 298 and 306 EUR/HUF	Neither the right nor the obligation is exercised. Your company can sell euros at the spot rate prevailing on expiry.
exchange rate above 306 EUR/HUF	your company has an obligation to sell EUR 100 000 at a rate of 306 EUR/HUF (better than the forward rate prevailing on the trade date).
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 298 on the expiry date. In this case your company has to sell EUR 100 000 at a rate of 298 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 306 on the expiry date. In this case your company has to sell EUR 100 000 at a rate of 306 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's perspective

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

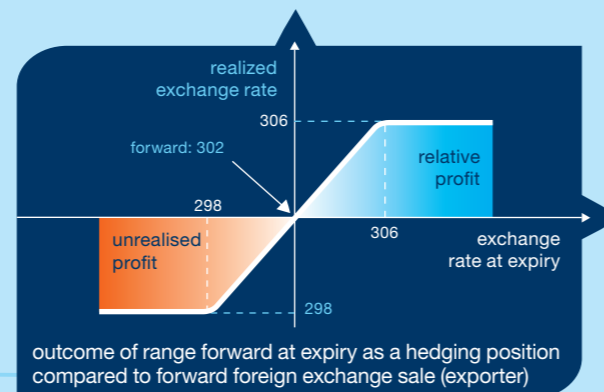
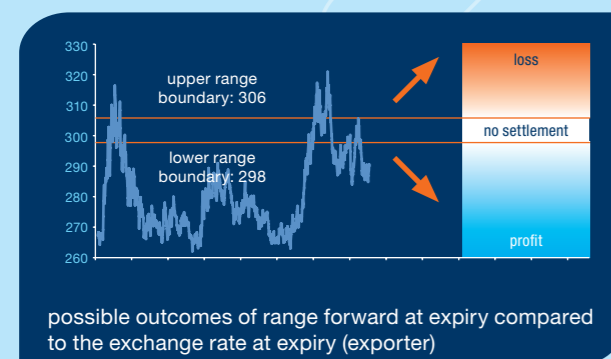
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	1 740 000
300	- 934 000
330	- 3 573 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(298 - 270) * 100\,000 = 2\,800\,000$	$298 * 100\,000 = 29\,800\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$300 * 100\,000 = 30\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(306 - 330) * 100\,000 = -2\,400\,000$	$306 * 100\,000 = 30\,600\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- limited profit from rates better than the forward rate
- fixed minimum exchange rate for foreign currency selling transactions in the future (the worst-case scenario is known), therefore the minimum HUF equivalent of your foreign currency revenues can be set in advance
- full protection against a potential forint strengthening
- no cost or separate fee charged
- the bottom, top, and width of the range can be tailored to your expectations, plans, and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- if upon expiry the spot rate is above the top of the range, your company has to sell foreign currency at the top of the range with unlimited foreign exchange loss potential
- the bottom of the range provides less protection than a standard forward
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- The market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The range forward is built up of two plain vanilla options. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## → 5. seagull option

MIFID complexity

FX 2

### product description

A seagull option provides more flexibility than a standard forward deal; moreover it offers a selling obligation rate better than the forward. With a seagull structure your company can gain limited profit from rates higher than the forward in case of a potential forint weakening. However, you have a limited protection from a potential forint strengthening at a rate lower than the forward.

In return for this limited protection your company can get a fixed amount of compensation.

The seagull structure offers a higher selling obligation rate than the range forward. But, unlike the range forward, the protection against potential forint strengthening is limited. The seagull structure is built up of three options, with the result that your company may acquire a right or an obligation in respect of three different exchange rate levels. Consequently, your company

- has to sell your foreign currency at a level above the forward rate (at the upper level of the seagull option), provided that the spot rate on expiry is higher than the upper level of the seagull option
- has a right to sell your foreign currency at a rate somewhat lower than the forward rate (or at the forward rate, in case of a narrower range), provided that the spot rate on expiry is between the lower and middle levels of the seagull option
- has to buy foreign currency at the lower level of the seagull option, which, combined with the right to sell at the middle level of the seagull option, results in limited protection against forint strengthening, but in return you receive a fixed amount of compensation from the bank.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot rate is 290 EUR/HUF, the one-year forward rate is 302 EUR/HUF, and the range forward rates are 298-310. The company wants to gain from a possible weakening of the forint to a greater extent than the forward would allow, and it is willing to take the risk that it is not protected from a forint strengthening below a certain exchange rate level. In the latter case, it receives a fixed amount of compensation from the bank in return. The company would like to receive at least 295 forints for 1 euro, and since it does not expect the forint to appreciate beyond 265 EUR/HUF it enters into a seagull option with exchange rate levels of 265-295-320. The obligation to sell at 320 allows the company to benefit to a greater extent from a potential depreciation of the forint than in a forward deal of 302, and than in a range forward deal with a top level of 306. In the seagull option, there is protection against the appreciation of the forint beyond 295, but it is limited at 265 (below this the fixed compensation is paid), while in a range forward deal the protection below 298 is unlimited.

### parameters of the seagull

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m.(CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
lower level of seagull option (obligation to buy)	265 EUR/HUF
middle level of seagull option (right to sell)	295 EUR/HUF
upper level of seagull option (obligation to sell)	320 EUR/HUF
transaction cost on the trade date	zero

### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

exchange rate is above 320 EUR/HUF	Your company has an obligation to sell EUR 100 000 at a rate of 320 EUR/HUF (better than the forward rate effective on the trade date).
exchange rate is between 295 and 320 EUR/HUF	Neither the right, nor the obligation is exercised. Your company can sell euros at the spot rate prevailing on expiry.
exchange rate is between 265 and 295 EUR/HUF	your company can sell EUR 100 000 at a rate of 295 EUR/HUF
exchange rate is below 265 EUR/HUF	Your company has an obligation to buy at a rate of 265 EUR/HUF and a simultaneous right to sell at a rate of 295 EUR/HUF. Your company's protection does not extend any further, but in return it receives a fixed amount of compensation.
amount of compensation	$(295 \text{ EUR/HUF} - 265 \text{ EUR/HUF}) = 30 \text{ HUF per EUR (HUF 3,000,000)}$
settlement of compensation	on the delivery date
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 265 on the expiry date. In this case your company can sell euros at the spot rate prevailing on expiry (below 265), but it receives compensation in return.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 320 on the expiry date. In this case your company has to sell EUR 100 000 at a rate of 320 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

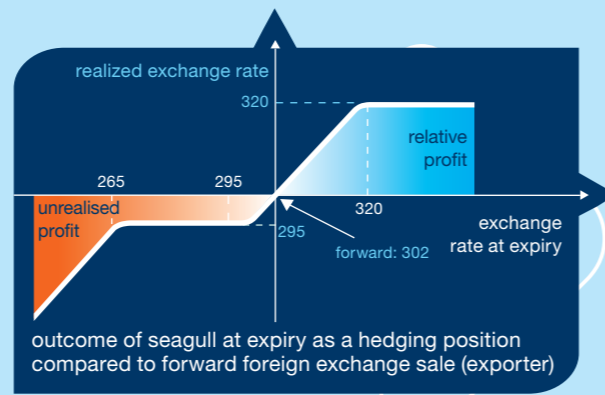
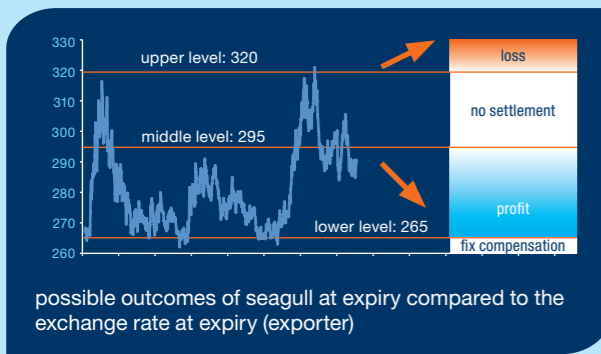
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	1 080 000
300	- 861 000
330	- 2 820 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
260	$260 * 100\,000 = 26\,000\,000$	$(295 - 265) * 100\,000 = 3\,000\,000$	$260 * 100\,000 + (295 - 265) * 100\,000 = 29\,000\,000$
290	$290 * 100\,000 = 29\,000\,000$	$(295 - 290) * 100\,000 = 500\,000$	$295 * 100\,000 = 29\,500\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$300 * 100\,000 = 30\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(320 - 330) * 100\,000 = - 1\,000\,000$	$320 * 100\,000 = 32\,000\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- limited benefit from exchange rate levels better than the forward rate
- limited protection against the appreciation of the forint
- you will receive compensation in case of significant forint strengthening, but there is no protection beyond a certain level
- no cost or separate fee charged
- the exchange rate levels specified in the seagull option can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- your company enjoys protection only up to the lower level you consider as an unlikely outcome. If on expiry the exchange rate is below that level, this strategy will give you compensation for the difference between the middle and the lower levels only.
- if upon expiry the spot rate is above the upper level of the seagull option, your company will be obliged to sell foreign currency at the upper level of the seagull option with unlimited foreign exchange loss potential,
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- The market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies

for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The seagull option is built up of three plain vanilla options. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## 6. participating forward

MIFID complexity

FX 2

#### product description

In a participating forward deal your company, similarly to a forward deal, enjoys full protection against a potential appreciation of the forint, while you can fully benefit from a possible depreciation with respect to a specific percentage of the notional amount fixed in advance. In return for this, the exchange rate applicable to a participating forward deal is less advantageous than the standard forward rate.

Participating forward deals come with a right and an obligation, but contrary to the standard forward contract, the right and the obligation in this case pertain to different nominal values.

Consequently, your company

- has a right to sell foreign currency at the participating forward rate (which is lower and so less advantageous than the standard forward rate) for 100% of the notional, provided that the spot rate on expiry is below the participating forward rate, in which case the option will not be exercised.
  - has an obligation to sell foreign currency at the participating forward rate, but only for a specific percentage of the notional, provided that the spot rate on expiry is above the participating forward rate
- Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company

assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company would like 100% protection against any appreciation of the forint, but also wants to profit to the extent of 50% from a possible weakening of the forint. In return for this, it is willing to accept that its protection against a possible appreciation of the forint will be at a level lower than the forward rate. Therefore, the company enters into a participating forward transaction at a participating forward rate of 293 EUR/HUF with a 50% obligation.

Let us assume that on the expiry date the spot rate is 315 EUR/HUF. In this case the realised exchange rate for the total notional amount is  $(293 + 315) / 2 = 304$  EUR/HUF, which represents a more favourable conversion level than the forward rate quoted on the trade date for this maturity. The realized exchange rate is the same as with a forward deal if on the expiry date the spot rate is 311 EUR/HUF, as  $(293 + 311) / 2 = 302$  EUR/HUF.

parameters of the participating forward	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
participating forward rate	293 EUR/HUF
percentage of obligation	50% * notional amount
transaction cost on the trade date	zero
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
exchange rate below 293 EUR/HUF	your company can sell EUR 100 000 at a rate of 293 EUR/HUF
exchange rate above 293 EUR/HUF	Your company has to sell 50% * 100 000 = 50 000 EUR at a rate of 293 EUR/HUF and can convert 100 000 - 50% * 100 000 = 50 000 EUR at the spot rate prevailing on expiry. The realized exchange rate is the same as with a forward deal if on the expiry date the spot rate is 311 EUR/HUF, as $(50\% * 293 + 50\% * 311) = 302$ EUR/HUF.
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 293 on the expiry date. In this case your company has a right to sell EUR 100 000 at a rate of 293 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 293 on the expiry date. In this case your company has to sell EUR 50 000 at a rate of 293 EUR/HUF. The resulting foreign exchange loss can be unlimited. But due to this deal, your company can sell the remaining EUR 50 000 at the spot rate prevailing on expiry, thus benefiting from the favourable exchange rate movement for some extent.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

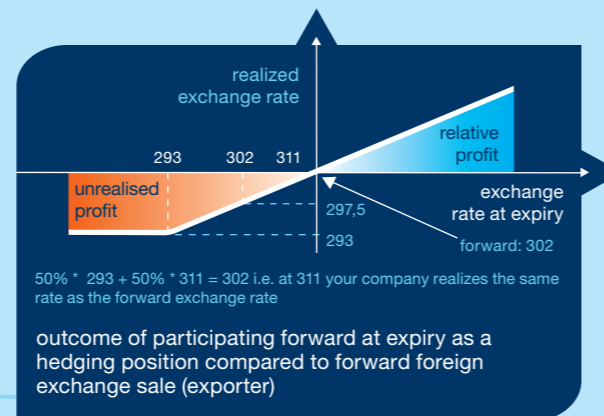
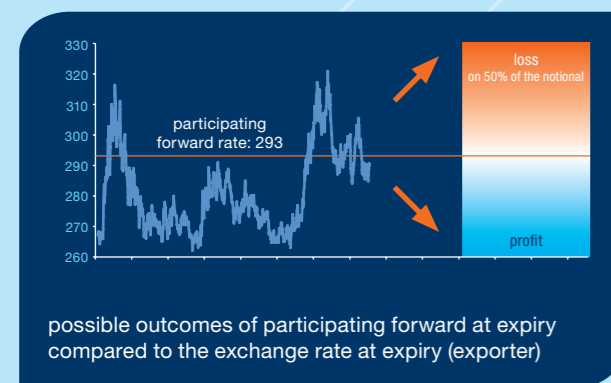
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	1 438 000
300	- 714 000
330	- 2 390 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(293 - 270) * 100\,000 = 2\,300\,000$	$293 * 100\,000 = 29\,300\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(293 - 300) * 50\,000 = - 350\,000$	$(293 * 50\,000) + (300 * 50\,000) = 29\,650\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(293 - 330) * 50\,000 = - 1\,850\,000$	$(293 * 50\,000) + (330 * 50\,000) = 31\,150\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- partial profit from exchange rate levels better than the standard forward rate, since your company must sell only a predefined percentage of the notional amount at the predefined rate
- the minimum exchange rate of future currency selling transactions is fixed in advance (i.e. the worst-case scenario is known), so the minimum HUF equivalent of your foreign currency revenues is fixed up front
- full protection against the appreciation of the forint below a certain level
- no cost or separate fee charged
- the participating forward rate, as well as the percentage of participation can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- protection at a level less advantageous than the standard forward rate
- you can only take advantage of rates better than the standard forward rate with a pre-agreed percentage of the notional amount
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- The market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The participating forward is built up of two plain vanilla options. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.



## → 7. forward extra

MIFID complexity

FX 3

### product description

A forward extra deal combines the security of a forward deal with the flexibility of an option. If you have a concrete idea of the maximum forint weakening that would be advantageous to your company, you can enjoy the benefits of a pure right to sell in exchange for a level of protection that is somewhat lower (i.e. less advantageous) than the normal forward rate.

The forward extra is composed of a right to sell and a barrier obligation to sell. The obligation will be triggered when the exchange rate reaches a specific knock-in level:

- consequently, your company acquires a right to sell your foreign currency at the forward extra rate (which is lower than the forward rate) provided that the spot rate on expiry is below the forward extra rate, and if its above the forward rate as well, but in this case the option will not be exercised
- if the EUR/HUF rate reaches the trigger level, your obligation to sell will become effective at the forward extra rate

### there are two types of this “knock-in” trigger level:

- European type trigger: the question of whether the obligation becomes effective at the forward extra rate depends only on the spot rate at 12 p.m. on the expiry date.
- American type trigger: the obligation may become effective at any time during the term. The trigger is available also as a partial/window barrier, when the trigger exists only over a certain part time period (window), which is fixed in advance.

For a given forward extra rate a European type trigger has a less favourable knock in level than an American trigger, so the obligation to sell foreign currency may come into effect at a smaller weakening of the forint. However in case of a European type trigger, the exchange rate is not monitored during the whole tenor, it will be decided whether the obligation to sell will come into effect or not based on the spot exchange rate at only 12 p.m. on the expiry date. In summary: before the trigger level is reached, the arrangement works like a standard put option, but if the trigger level is reached, it turns into a normal FX forward at the same strike price.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example for an American type trigger:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company expects that on the expiry date the spot rate will be more advantageous than the forward rate, but it would like to have 100% protection against a potential appreciation of the forint. It cannot afford a EUR/HUF exchange rate below 300, but it expects that the EUR/HUF rate will not reach 328 during the tenor of the deal. The company is willing to take the risk that if the spot rate reaches 328 EUR/HUF at any time during the term (including the expiry date), it will only have a forward contract at a strike price of 300 EUR/HUF (including a right and an obligation), thus it enters into a forward extra transaction at a forward extra rate of 300 EUR/HUF with an American trigger at 328 EUR/HUF.

Altogether the company enjoys protection against the appreciation of the forint up to the 300 EUR/HUF rate, and can benefit from a potential depreciation of the forint until the 328 EUR/HUF rate. When the 328 level is reached, the company's obligation to sell foreign currency will be triggered, so then the conversion must take place at 300 (forward extra) EUR/HUF exchange rate on the expiry date.

### parameters of the forward extra with American trigger

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date(date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
forward extra rate	300 EUR/HUF
trigger level (American)	328 EUR/HUF
transaction cost on the trade date	zero

### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

A) during the tenor or on the expiry date the exchange rate never reaches the 328 EUR/HUF rate	
A/1) exchange rate below 300 EUR/HUF	your company can sell EUR 100 000 at a rate of 300 EUR/HUF
A/2) exchange rate above 300 EUR/HUF	Neither the right nor the obligation will be exercised. Your company can sell euros at the spot rate prevailing on expiry.
B) during the tenor or on the expiry date, the exchange rate reaches 328 EUR/HUF	your company has a forward deal for EUR 100 000 at a rate of 300 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 300 on the expiry date. In this case your company can sell EUR 100 000 at a rate of 300 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	At any time during the tenor, the EUR/HUF rate reaches the 328 trigger level, and on the expiry date the EUR/HUF spot rate is above 300. In this case your company has to sell EUR 100 000 at a rate of 300 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	1 667 000
300	- 1 147 000
330	- 3 970 000

### financial outcome of some possible scenarios on the expiry date, if the exchange rate does not reach the knock in level during the tenor

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(300 - 270) * 100\,000 = 3\,000\,000$	$300 * 100\,000 = 30\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$300 * 100\,000 = 30\,000\,000$
320	$320 * 100\,000 = 32\,000\,000$	0	$320 * 100\,000 = 32\,000\,000$

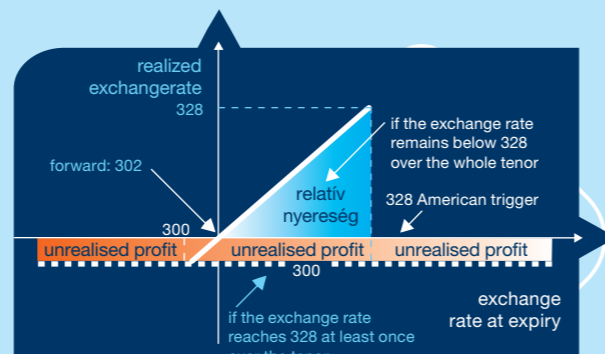
### financial outcome of some possible scenarios on the expiry date, if the exchange rate reaches the knock in level during the tenor

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(300 - 270) * 100\,000 = 3\,000\,000$	$300 * 100\,000 = 30\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	
330	$330 * 100\,000 = 33\,000\,000$	$(300 - 330) * 100\,000 = - 3\,000\,000$	



possible outcomes of forward extra (with American trigger) at expiry compared to the exchange rate at expiry (exporter)



outcome of forward extra (with American trigger) at expiry as a hedging position compared to forward foreign exchange sale (exporter)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

**example for the European type trigger:** A Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company expects the spot rate on expiry to be better than the forward rate, but it would like to enjoy 100% protection against a potential appreciation of the forint. It cannot afford a EUR/HUF rate below 300, but expects that on the expiry date, the EUR/HUF rate will not reach 323. The company is willing to take the risk that in case the EUR/HUF exchange rate reaches or goes above the level of 323 on the expiry date, it will only have a forward contract at a strike price of 300 EUR/HUF, therefore it enters into a forward extra transaction at a forward extra rate of 300 EUR/HUF with an European type trigger at 323 EUR/HUF. All in all, the company enjoys protection against the appreciation of the forint up to the 300 EUR/HUF (forward extra) rate, and can benefit from a potential depreciation of the forint until the 323 EUR/HUF rate. When the 323 level is reached on the expiry day, the company's obligation to sell foreign currency will be triggered, so then the conversion must take place at 300 EUR/HUF (forward extra) rate on the expiry date.

**parameters of the forward extra with European trigger**

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m.(CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
forward extra rate	300 EUR/HUF
trigger level (European)	323 EUR/HUF
trigger level monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
transaction cost on the trade date	zero

**possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date**

A) exchange rate below 323 EUR/HUF at p.m. on the expiry date	
A/1) exchange rate below 300 EUR/HUF	your company can sell EUR 100 000 at a rate of 300 EUR/HUF
A/2) exchange rate between 300 and 323 EUR/HUF	Your company will not exercise its right. Your company can sell euros at the spot rate prevailing on expiry.
B) exchange rate above 323 EUR/HUF at p.m. on the expiry date	your company has a forward deal for EUR 100 000 at a rate of 300 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate on the expiry date is below 300. In this case your company can sell EUR 100 000 at a rate of 300 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF rate is above 323 on the expiry date. In this case your company has to sell EUR 100 000 at a rate of 300 EUR/HUF. The resulting foreign exchange loss can be unlimited.

**the market value of the position two weeks after the trade date from the customer's perspective**

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

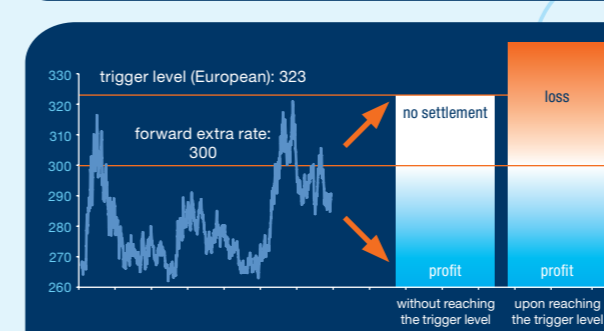
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot árfolyam két hét múlva (EUR/HUF)	pozíció piaci értéke (HUF)
270	1 581 000
300	- 1 072 000
330	- 4 044 000

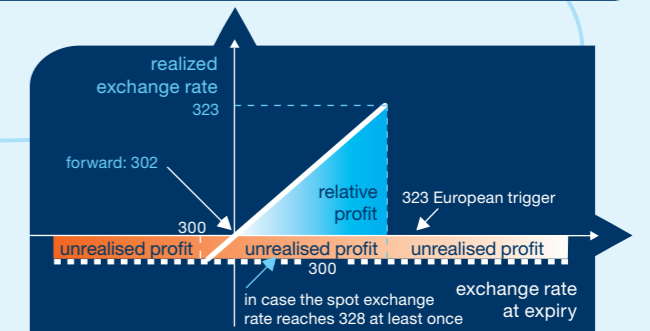
**financial outcome of some possible scenarios on the expiry date**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000	(300 - 270) * 100 000 = 3 000 000	300 * 100 000 = 30 000 000
300	300 * 100 000 = 30 000 000	0	300 * 100 000 = 30 000 000
310	310 * 100 000 = 31 000 000	0	310 * 100 000 = 31 000 000
330	330 * 100 000 = 33 000 000	(300 - 330) * 100 000 = - 3 000 000	300 * 100 000 = 30 000 000



possible outcomes of forward extra (with European trigger) at expiry compared to the exchange rate at expiry (exporter)



outcome of forward extra (with European trigger) at expiry as a hedging position compared to forward foreign exchange sale (exporter)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

**advantages of transaction**

- full protection against a possible appreciation of the forint, the minimum exchange rate of the future currency selling transactions is fixed in advance (the worst-case scenario is known)
- as long as the spot rate does not reach the trigger level, the company can take full advantage of exchange rate levels better than the forward rate
- no cost or separate fee charged
- the forward extra rate and the trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

**risks of transaction**

- the protection level is less favourable than with a normal forward deal
- after the trigger level has been reached, the put option will be replaced by a forward contract, whereby the company will be obliged to sell its currency below the normal forward rate.
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The forward extra is built up of a right to sell and a barrier obligation to sell. The sections on plain vanilla options and barrier options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.



## → 8. boosted forward

#### product description

By entering into a boosted forward deal, your company acquires a right and an obligation to sell foreign currency at an exchange rate higher (i.e. more advantageous) than the standard forward rate. In return for the better exchange rate, your company is willing to run the risk that both your right and your obligation (i.e. the boosted forward deal itself) is terminated if at any time during the tenor the exchange rate reaches a so-called trigger (in this case "knock-out") level.

The boosted forward is built up of a barrier right and a barrier obligation to sell foreign currency. If the exchange rate reaches the knock out trigger level fixed in advance, both the right and the obligation are terminated in the same time.

Consequently, your company:

- has a right to sell foreign currency at the boosted forward rate (which is above the forward rate), provided that the spot rate on expiry is below the boosted forward rate, but above the knock out trigger level, and it does not reach the knock out level over the tenor
- has an obligation to sell foreign currency at the boosted forward rate (which is above the forward rate), provided that the spot rate on expiry is above the boosted forward rate, and it does not reach the knock out level over the tenor
- has neither right nor obligation, provided that the EUR/HUF rate reaches the trigger level, because in this case, both the right and the obligation is terminated at the boosted forward rate

There are two types of knock-out trigger levels:

- European type trigger: the termination of the deal depends only on the spot rate at 12 p.m. on the expiry date.
- American type trigger: the deal may terminate at any time during the tenor. The trigger is available also as a partial/window barrier, when the trigger exists only over a certain part time period (window), which is fixed in advance.

For a given boosted forward rate a European type trigger has a less favourable knock out level than an American trigger so the right to sell foreign currency terminates after a smaller appreciation of the forint. However, in the case of a European type trigger, the exchange rate monitoring is not over the whole tenor, only at 12 p.m. on the expiry date will be decided whether the right to sell will terminate or not based on the spot exchange rate at 12 p.m. on the expiry date.

In summary: before the trigger level is reached, the deal is like a standard forward, but if the trigger level is reached, it terminates.

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains unhedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example for an American type trigger:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate, and it does not expect the EUR/HUF rate to drop below or reach 274 in the next year. Because it is willing to run the risk that the hedge can be terminated, it enters into a boosted forward deal with 320 as a boosted forward rate and 274 as a knock-out trigger level.

parameters of the boosted forward	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
boosted forward rate	320 EUR/HUF
trigger level (knock-out)	274 EUR/HUF
knock-out level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
transaction cost on the trade date	zero
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
A) the exchange rate never reaches the 274 EUR/HUF level during the tenor	
A/1) exchange rate is below 320 EUR/HUF	your company has a right to sell EUR 100 000 at a rate of 320 EUR/HUF
A/2) exchange rate is above 320 EUR/HUF	your company has an obligation to sell EUR 100 000 at a rate of 320 EUR/HUF
B) the exchange rate reaches the 274 EUR/HUF level during the tenor	the hedge ceases to exist, in other words, it is as if no transaction were made at all
best-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate never reaches 274 EUR/HUF, and on the expiry date the EUR/HUF spot rate is below 320 but above 274. In this case your company sells EUR 100 000 at a rate of 320 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate never reaches the 274 EUR/HUF level, and on expiry the EUR/HUF rate is above 320. In this case, your company sells EUR 100 000 at a rate of 320 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	0
300	- 458 000
330	- 1 589 000

#### financial outcome of some possible scenarios on the expiry date, if the exchange rate does not reach the knock out level during the tenor

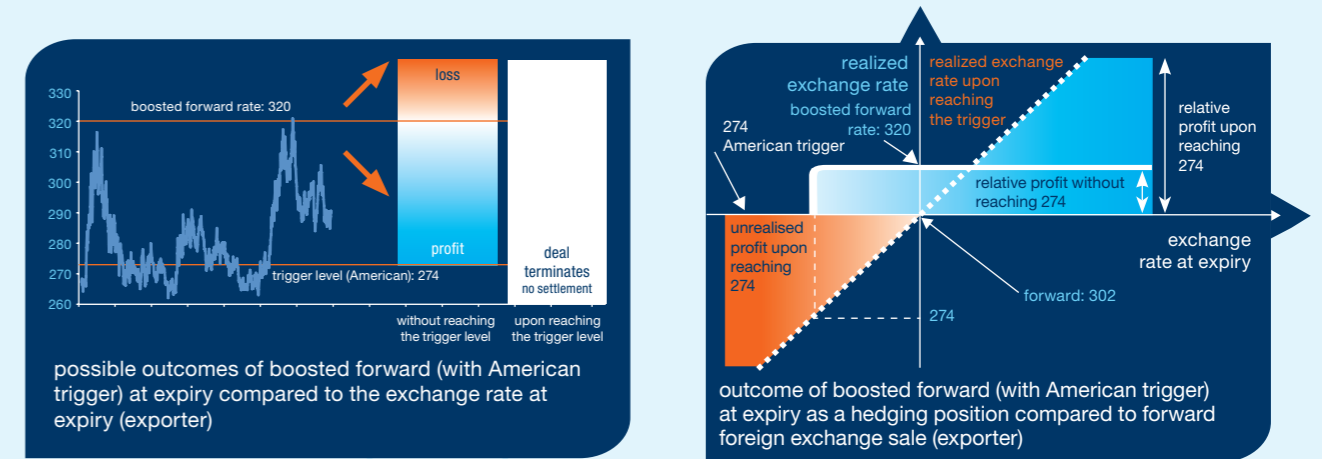
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
280	$280 * 100\,000 = 28\,000\,000$	$(320 - 280) * 100\,000 = 4\,000\,000$	$320 * 100\,000 = 32\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(320 - 300) * 100\,000 = 2\,000\,000$	
330	$330 * 100\,000 = 33\,000\,000$	$(320 - 330) * 100\,000 = - 1\,000\,000$	

#### financial outcome of some possible scenarios on the expiry date, if the exchange rate reaches the knock out level during the tenor

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
280	$280 * 100\,000 = 28\,000\,000$	deal terminated	$280 * 100\,000 = 28\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	deal terminated	$300 * 100\,000 = 30\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	deal terminated	$330 * 100\,000 = 33\,000\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

**example for a European type trigger:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate, and it does not expect the EUR/HUF rate to appreciate below 276 on the expiry date. Because it is willing to run the risk that the hedge can be terminated, it enters into a boosted forward deal with 310 as a boosted forward rate and 276 as a European knock-out trigger level.

parameters of the boosted forward	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
boosted forward rate	310 EUR/HUF
trigger level (knock-out)	276 EUR/HUF
knock-out level monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
transaction cost on the trade date	zero
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
the exchange rate is below 276 EUR/HUF	the hedge ceases to exist, in other words, it is as if no transaction was made at all
exchange rate is between 276 and 310 EUR/HUF	your company has a right to sell EUR 100 000 at a rate of 310 EUR/HUF
exchange rate is above 310 EUR/HUF	your company has an obligation to sell EUR 100 000 at a rate of 310 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	On the expiry date the EUR/HUF spot rate is below 310 but above 276. In this case your company sells EUR 100 000 at a rate of 310 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	On expiry the EUR/HUF rate is above 310. In this case, your company has an obligation to sell EUR 100 000 at a rate of 310 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

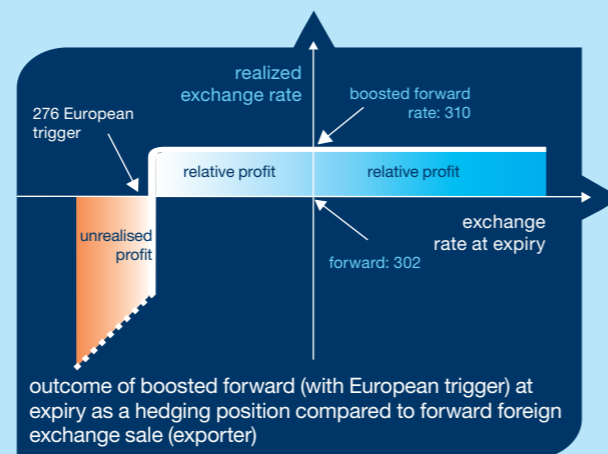
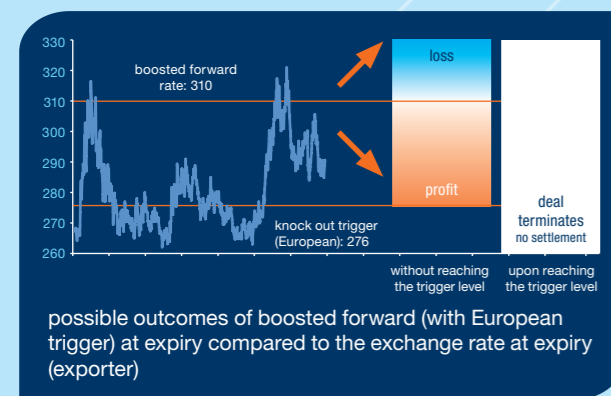
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)  
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	243 000
300	- 748 000
330	- 3 467 700

### Financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	deal terminated	$270 * 100\,000 = 27\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(310 - 300) * 100\,000 = 1\,000\,000$	$310 * 100\,000 = 31\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(310 - 330) * 100\,000 = -2\,000\,000$	$310 * 100\,000 = 31\,000\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- opportunity to obtain an exchange rate much better than the forward rate
- no cost or separate fee charged
- the boosted forward rate as well as the knock-out / trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- after reaching the knock-out trigger level, the deal, including protection against the appreciation of the forint, is terminated
- if during the exchange rate monitoring (in case of an American trigger during the whole tenor until expiry date at 12:00 p.m., in case of an European trigger only on expiry date at 12:00 p.m.) the spot rate does not reach the knock-out level and on expiry it is above the boosted forward rate, your company will be obliged to sell foreign currency at the boosted forward rate with an unlimited foreign exchange loss potential
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint

could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.

- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here but rather from other factors.

### product structure

The boosted forward is built up of a barrier right and a barrier obligation to sell foreign currency. The section on barrier options of Chapter 1/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 9. boosted forward with rebate

MIFID complexity

FX 3

### product description

By entering into a boosted forward with rebate, your company acquires a right and an obligation to sell foreign currency at an exchange rate higher (i.e. more advantageous) than the standard forward rate. In return for the better exchange rate, your company is willing to run the risk that both your right and your obligation (i.e. the boosted forward deal itself) is terminated if at any time during the tenor the exchange rate reaches a so-called trigger (in this case “knock-out”) level. However in the case of termination our Client will receive a predetermined, fixed amount of compensation from the bank.

The boosted forward with rebate is built up of a barrier right and a barrier obligation to sell foreign currency, and a one touch digital option. If the exchange rate reaches a knock out trigger level fixed in advance, both the right and the obligation are terminated in the same time, but the Client will receive a predetermined, fixed amount of compensation from the bank.

Consequently, your company:

- has a right to sell foreign currency at the boosted forward rate (which is above the forward rate), provided that the spot rate on expiry is below the boosted forward rate, but above the knock out trigger level, and it does not reach the knock out and one touch levels during the tenor
- has an obligation to sell foreign currency at the boosted forward rate (which is above the forward rate), provided that the spot rate on expiry is above the boosted forward rate, and it does not reach the knock out and one touch levels during the tenor
- has neither right nor obligation, provided that the EUR/HUF rate reaches the trigger and one touch level, because in this case, both the right and the obligation are terminated at the boosted forward rate. In this case, our Client will receive a predetermined, fixed amount of compensation from the one touch option.

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains unhedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to receive in a year from now EUR 100 000 in revenues. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate, and it does not expect the EUR/HUF rate to appreciate below 274 in the next six months. Because it is willing to run the risk that the hedge can be terminated, and in the case of termination it receives only a fixed amount of compensation, it enters into a boosted forward deal with a boosted forward rate at 310 and an American knock-out trigger level at 274, combined with a one touch option with a trigger at 274. The amount of compensation (payoff of the one touch option if it reaches the trigger level) is 10 HUF per each euro, in other words, HUF 1 000 000 for a notional of EUR 100 000.

In comparison with a boosted forward, that does not pay a compensation for the client upon termination, it would have a trigger level of 274 and a boosted forward rate of 320 EUR/HUF.

### parameters of the boosted forward with compensation

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate until 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
boosted forward rate	310 EUR/HUF
trigger level (knock-out)	274 EUR/HUF
knock-out level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
one touch trigger level	274 EUR/HUF
one touch trigger level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
amount of compensation	10 HUF per each euro (1 000 000 HUF for the whole notional)
settlement of compensation	on the delivery date
transaction cost on the trade date	zero

### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

A) the exchange rate never reaches the 274 EUR/HUF level during the tenor	
A/1) exchange rate is below 310 EUR/HUF	your company has a right to sell EUR 100 000 at a rate of 310 EUR/HUF
A/2) exchange rate is above 310 EUR/HUF	your company has an obligation to sell EUR 100 000 at a rate of 310 EUR/HUF
B) the exchange rate reaches the 274 EUR/HUF level during the tenor	The hedge ceases to exist, in other words, it is as if no transaction were made at all. In case of termination the Client will receive a fixed amount of compensation.
best-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate never reaches 274 EUR/HUF, and on the expiry date the EUR/HUF spot rate is below 310 but above 274. In this case your company sells EUR 100 000 at a rate of 310 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate never reaches the 274 EUR/HUF level, and on expiry the EUR/HUF rate is above 310. In this case, your company sells EUR 100 000 at a rate of 310 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	+ 1 000 000
280	+1 730 000
300	- 657 000
330	- 3 330 000

### financial outcome of some possible scenarios on the expiry date if the exchange rate does not reach the knock out – one touch trigger level during the tenor

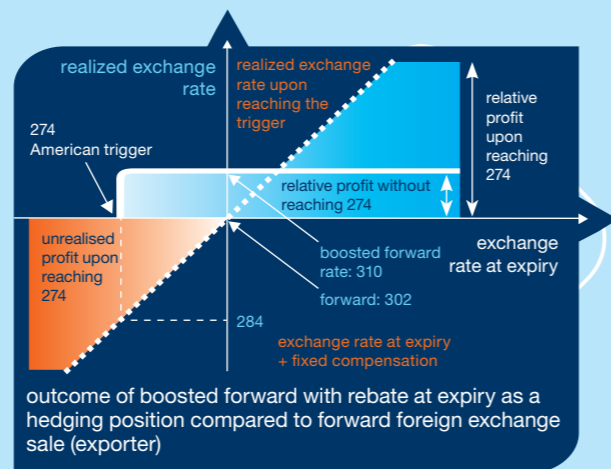
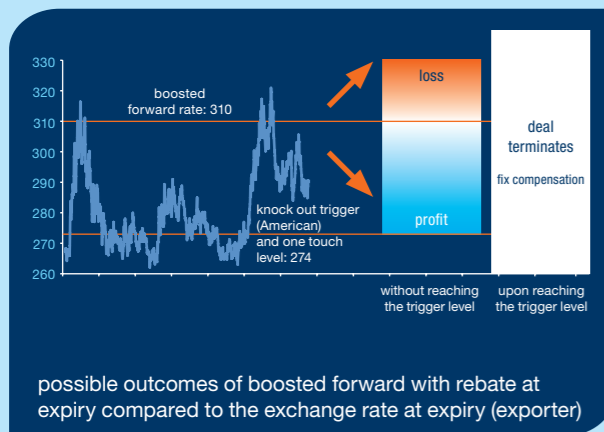
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
280	$280 * 100\,000 = 28\,000\,000$	$(310 - 280) * 100\,000 = 3\,000\,000$	$310 * 100\,000 = 31\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(310 - 300) * 100\,000 = 1\,000\,000$	
330	$330 * 100\,000 = 33\,000\,000$	$(310 - 330) * 100\,000 = -2\,000\,000$	

### financial outcome of some possible scenarios on the expiry date if the exchange rate reaches the knock out – one touch trigger level during the tenor

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	terminated, amount of compensation: 1 000 000 HUF	$270 * 100\,000 + 1\,000\,000 = 28\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	terminated, amount of compensation: 1 000 000 HUF	$300 * 100\,000 + 1\,000\,000 = 31\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	terminated, amount of compensation: 1 000 000 HUF	$330 * 100\,000 + 1\,000\,000 = 34\,000\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- opportunity to obtain an exchange rate much better than the forward rate
- no cost or separate fee charged
- the boosted forward rate as well as the one touch trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- in case of termination the Client will receive a predetermined, fixed amount of compensation, but will not be protected against further HUF strengthening
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- after reaching the knock-out trigger level, the deal, including the protection against the appreciation of the forint, is terminated. In case of termination the Client will receive a predetermined, fixed amount of compensation.
- if during the term of the deal, the spot rate does not reach the knock-out level and the one touch trigger level and on expiry it is above the boosted forward rate, your company will be obliged to sell foreign currency at the boosted forward rate with an unlimited foreign exchange loss potential
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here but rather from other factors.

#### product structure

The boosted forward is built up of a barrier right and a barrier obligation to sell foreign currency, combined with a one touch option. The section on barrier options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 10. extendible forward

MIFID complexity

FX 3

#### product description

By combining the average forward with "knock-in" barrier options the average forward rate can be improved for the same period. The extendible forward offers you the advantages of a normal forward transaction with a strike that is higher (more advantageous) than the average forward rate for the same period. If the exchange rate is above the knock-in trigger level on the day when the knock-in level is monitored, the forward will be extended until the maturity. If however the spot exchange rate is below the knock-in trigger level on the day when the knock-in level is monitored, the forward will cease to exist for the rest of the tenor.

The extendible forward is built up of a strip of forwards for the first part of the tenor and of a strip of barrier call and put options with European type knock-in triggers for the second part of the tenor. The barrier calls and puts are combined in a way to achieve a strip of forward deals with European type knock-in triggers. The forwards for the second part of the tenor may be triggered (knocked in) when the exchange rate upon the knock-in level monitoring is above the knock-in trigger level (which may be equal to the extendible forward rate, but different versions are possible as well).

#### There are two types of knock-in trigger level:

- European trigger: the extension of the deal depends only on the spot rate at 12 p.m. on the expiry date.
- American trigger: the deal may be extended at any time during the tenor. The trigger is available also as a partial/window barrier, when the trigger exists only over a certain time period (window), which is fixed in advance.

Consequently, your company

- has the right and the obligation to sell foreign currency at the extendible forward rate (which is more advantageous than the average forward rate) at every expiry date until the knock-in date
- if the EUR/HUF is above the knock-in trigger level during the monitoring, both your right and obligation to sell becomes effective for the rest of the tenor at the extendible forward rate (which may be equal to the improved average forward rate of the first period)
- if the EUR/HUF rate does not reach the knock-in trigger level during the monitoring, both your right and obligation to sell ceases to exist for the rest of the tenor.

If monitoring of the knock-in level (either for a European or a one-day American trigger) and the exchange rate are on the same day, and the deal does not terminate for future expiries, then in case of a European trigger it is certain, while with an American trigger it is highly probable that there will be at least one settlement with a loss. The reason is that the knock-in level is either the same or higher than the extended forward rate, therefore if the exchange rate is higher on a given date, the settlement is done at the extended forward rate, while the market is at a higher level at that time. Nevertheless the date of the knock-in monitoring and the date of the exchange rate monitoring are not necessarily the same.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example for a one-day American trigger:** a Hungarian exporter expects to receive EUR 100 000 in revenues per month for one year. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF, and the average forward rate for 1 year is 296.50 EUR/HUF. The company would like to enjoy 100% protection against a potential appreciation of the forint for the first 6 months.

To secure an appropriate profit margin the company needs to realise a EUR/HUF level of 300, which it wants to achieve for the first 6 months in any case. As it is willing to realise this rate for the second 6 months even if the market is above 302 on the knock-in level monitoring date in 6 months, the company concludes an extendible forward deal at 300 EUR/HUF level with a knock-in trigger at 302 EUR/HUF.

If after six months on the monitoring day the prevailing spot rate is above 302 EUR/HUF, the deal will extend for the next six months at 300 EUR/HUF rate. That time this is less favourable than the prevailing average forward rate for six months but the company's activity is secured by this exchange rate level as well. (in return for the first six months the exchange rate is more favourable). If however the EUR/HUF rate is below 302 on the knock-in date, the extendible forward ceases to exist for the rest of the tenor.

parameters of the extendible forward with American trigger	
notional amount, if the exchange rate does not reach the knock-in level	600 000 EUR = 6 * 100 000 EUR
notional amount, if the exchange rate reaches the knock in level	1 200 000 EUR = 12 * 100 000 EUR
currency pair	EUR/HUF
tenor	1 – 12 months
knock-in level monitoring	in six months for a whole day, 2 business days before the 6. settlement day
knock-in event (condition for the deal to extend)	The EUR/HUF fixing is above the knock-in level on the knock-in level monitoring day
number of expiries if there is no knock-in event	6
number of expiries if there is knock-in event	12
expiry dates (date of exchange rate monitoring)	2 business days before settlement days
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry dates
settlement dates	monthly
spot rate prevailing at pricing	290 EUR/HUF
1-year forward rate	302 EUR/HUF
1-year average forward rate	296,50 EUR/HUF
ATMF volatility	15%
extendible forward rate	300 EUR/HUF
knock-in level	302 EUR/HUF
transaction cost on the trade date	zero

possible scenarios on each expiry depending on the spot market rates at 12:00 p.m. on each expiry date until the knock-in date	
1) exchange rate below 300 EUR/HUF	Your company has a right to sell EUR 100 000 at 300 EUR/HUF.
2) exchange rate above 300 EUR/HUF	Your company has an obligation to sell EUR 100 000 at 300 EUR/HUF.

possible scenarios on each expiry depending on the spot market rates at 12:00 p.m. on each expiry date after the knock-in date until the end of tenor	
A) EUR/HUF spot rate reaches or above 302 EUR/HUF on the knock-in level monitoring date	
A/1) EUR/HUF spot rate below 300 EUR/HUF on expiry	your company has a right to sell EUR 100 000 at 300 EUR/HUF
A/2) EUR/HUF spot rate above 300 EUR/HUF on expiry	your company has an obligation to sell EUR 100 000 at 300 EUR/HUF
B) EUR/HUF spot rate does not reach 302 EUR/HUF on the knock-in level monitoring date	the forwards ceases to exist for the rest of the tenor
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF rate on each expiry date is below 300 until the knock-in date and the EUR/HUF spot reaches the knock-in level on the knock-in date. Afterwards, the EUR/HUF rate is below 300 for the rest of the tenor. In this case your company sells EUR 100 000 at 300 EUR/HUF on each expiry. There will be one expiry with a loss (see above) as if on the knock-in level monitoring date the exchange rate is above the trigger level (302) then the settlement for this expiry will be done at the extendible forward rate (300), which is below the prevailing market rate.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF rate is above 300 until the knock in date and the EUR/HUF spot rate reaches the knock-in level on the knock-in date. Afterwards, the EUR/HUF rate stays above 300 for the rest of the tenor. In this case your company sells EUR 100 000 at a rate of 300 EUR/HUF on each expiry. The resulting foreign exchange loss can be unlimited.

**the market value of the position two weeks after the trade date from the customer's point of view**

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	12 747 000
300	- 10 936 000
330	- 43 343 000

**financial outcome of some possible scenarios on the expiry date if there is no knock-in event**

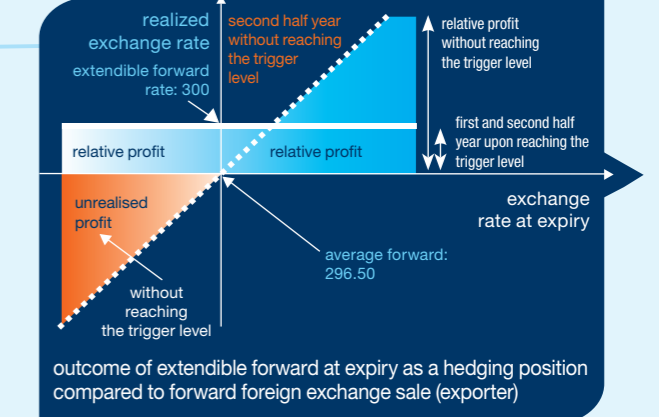
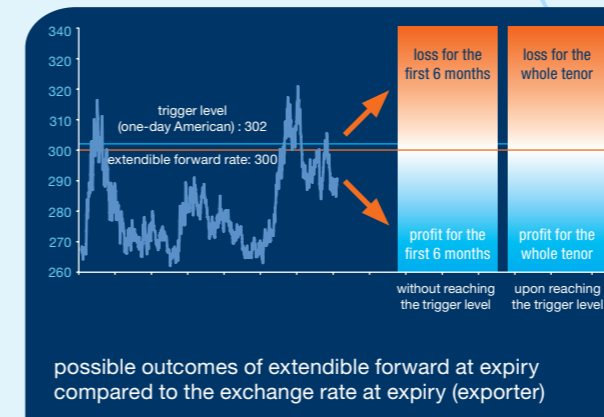
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000 in total: 6 * 27 000 000 = 162 000 000	(300 - 270) * 100 000 = 3 000 000 in total: 6 * 3 000 000 = 18 000 000	300 * 100 000 = 30 000 000 in total: 6 * 30 000 000 = 180 000 000
300	300 * 100 000 = 30 000 000 in total: 6 * 30 000 000 = 180 000 000	0	
330	330 * 100 000 = 33 000 000 in total: 6 * 33 000 000 = 198 000 000	(300 - 330) * 100 000 = - 3 000 000 in total: 6 * - 3 000 000 = - 18 000 000	

**financial outcome of some possible scenarios on the expiry date if there is knock-in event**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000 in total: 12 * 27 000 000 = 324 000 000	(300 - 270) * 100 000 = 3 000 000 in total: 12 * 3 000 000 = 36 000 000	300 * 100 000 = 30 000 000 in total: 12 * 30 000 000 = 360 000 000
300	300 * 100 000 = 30 000 000 in total: 12 * 30 000 000 = 360 000 000	0	
330	330 * 100 000 = 33 000 000 in total: 12 * 33 000 000 = 396 000 000	(300 - 330) * 100 000 = - 3 000 000 in total: 12 * - 3 000 000 = - 36 000 000	



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.



### advantages of transaction

- full protection against a possible appreciation of the forint until the knock-in date
- the exchange rate of the future currency selling transactions is fixed in advance (the worst-case scenario is known) until the knock-in date
- if the spot rate reaches the knock-in trigger level at the knock-in level monitoring day, the company can take full advantage of the exchange rate level that was better than the average forward rate for the whole tenor
- if the spot rate does not reach the knock-in trigger level at the knock-in level monitoring day, the company can take full advantage of the exchange rate level better than the average forward rate until the knock-in level monitoring day (i.e. for the first 6 months)
- no cost or separate fee charged
- the extendible forward rate, the trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- if the trigger level is not reached on the knock-in date, the forwards will not be extended, and the company loses further protection against the appreciation of the forint
- if the forwards do not get extended, the company may conclude a hedge on a less advantageous average forward level than the original average forward rate, as the prevailing market conditions determine whether the average forward rate for the remaining tenor is above or below the original average forward rate
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The extendible forward is built up of a strip of forwards and a strip of barrier rights to sell and barrier obligations to sell. The section on forward deals and barrier options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 11. reset forward

MIFID complexity

FX 3

### product description

By entering into a reset forward deal - similarly to a forward - your company acquires a right and an obligation to sell foreign currency, but at a primary exchange rate, which is higher (i.e. more advantageous) than the standard forward rate. In return for the better exchange rate, your company is willing to run the risk that the primary exchange rate will change to a predetermined, less advantageous secondary exchange rate if at any time during the tenor the exchange rate reaches a so-called trigger (in this case "no touch") level. The primary exchange rate is settled in a net basis, i.e. if the exchange rate does not reach the no touch trigger level, on the expiry date the secondary exchange rate will be gross settled, and our client will receive a fixed amount of compensation. The net result is equal as if the foreign currency revenues were sold at the primary exchange rate. If the exchange rate reaches the no touch trigger level, gross settlement will take place at the secondary exchange rate, in that case our client does not receive the fixed amount of compensation, in other words the client realises the secondary rate.

### In summary

- if the exchange rate reaches the no touch level: the conversion will take place at the secondary (lower) exchange rate
- if the exchange rate does not reach the no touch level: the conversion will take place at the secondary (lower) exchange level, but the client will receive a fixed amount of compensation, so on a net basis it realises the primary (higher) exchange rate

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian exporter expects to receive a year from now EUR 100 000 in revenues. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate, and it does not expect the EUR/HUF rate to appreciate below 278 in the next year. Because it is willing to run the risk that the exchange rate will change to 295 (secondary exchange rate), if the rate reaches the 278 level, therefore it enters into a reset forward deal with a primary exchange rate of 310 with 278 as no touch level.

**parameters of the reset forward**

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate until 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
1-year forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
reset forward primary exchange rate	310 EUR/HUF
reset forward secondary exchange rate	295 EUR/HUF
trigger level (no touch)	278 EUR/HUF
no touch level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
amount of compensation	15 HUF per EUR (HUF 1,500,000 HUF for the notional of EUR 100 000)
transaction cost on the trade date	zero

**possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date**

A) the exchange rate never reaches the 278 EUR/HUF level during the tenor	
A/1) exchange rate is below 295 EUR/HUF, but above 278 EUR/HUF	Your company has a right to sell EUR 100 000 at the (secondary) rate of 295 EUR/HUF and receives a fixed amount of compensation (15 HUF per EUR). The net result is the same as if the client sold its foreign currency revenues at the primary exchange rate (310 EUR/HUF).
A/2) exchange rate is above 295 EUR/HUF	Your company has an obligation to sell EUR 100 000 at the (secondary) rate of 295 EUR/HUF and receives a fixed amount of compensation (15 HUF per EUR). The net result is the same as if the client sold its foreign currency revenues at the primary exchange rate. (310 EUR/HUF).
B) the exchange rate reaches 278 EUR/HUF during the tenor	
B/1) the rate is below 295 EUR/HUF	your company has a right to sell EUR 100 000 at 295 EUR/HUF
B/2) the rate is above 295 EUR/HUF	your company has an obligation to sell EUR 100 000 at 295 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate never reaches 278 EUR/HUF, and upon expiry the EUR/HUF spot rate is below 310 but above 278. In this case your company sells EUR 100 000 at a (secondary) rate of 295 EUR/HUF and receives a fixed amount (15 HUF per EUR) of compensation. The net result is the same as if the client sold its foreign currency revenues at the primary exchange rate. (310 EUR/HUF).
worst-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate reaches 278 EUR/HUF and on expiry the EUR/HUF rate is above 295. In this case, your company sells EUR 100 000 at a rate of 295 EUR/HUF. The resulting foreign exchange loss can be unlimited.

**the market value of the position two weeks after the trade date from the customer's point of view**

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	1 236 000
300	- 950 000
330	- 3 400 000

**financial outcome of some possible scenarios on the expiry date, if the exchange rate does not reach the no touch level during the tenor**

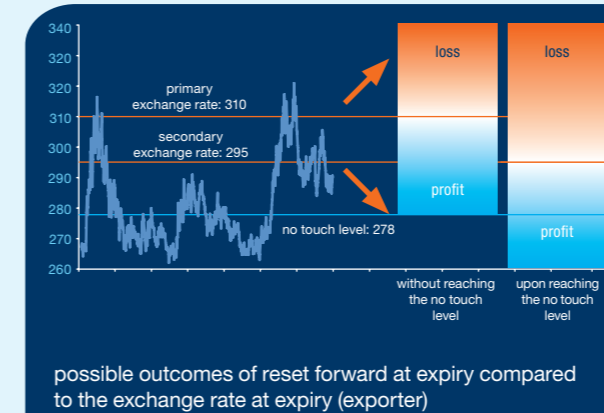
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
280	280 * 100 000 = 28 000 000	(295 - 280) * 100 000 + 1 500 000 = 3 000 000	295 * 100 000 + 1 500 000 = 31 000 000
300	300 * 100 000 = 30 000 000	(295 - 300) * 100 000 + 1 500 000 = 1 000 000	
330	330 * 100 000 = 33 000 000	(295 - 330) * 100 000 + 1 500 000 = -2 000 000	

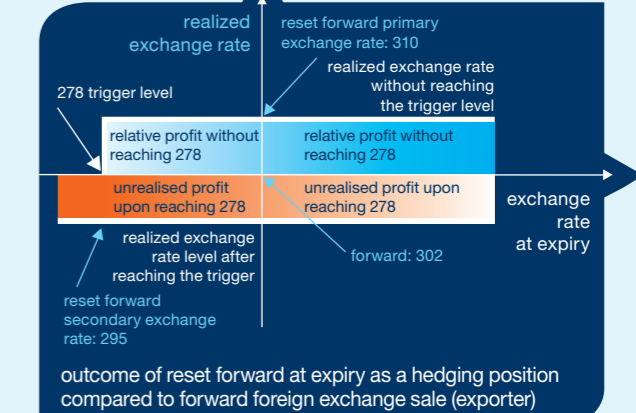
**financial outcome of some possible scenarios on the expiry date if the exchange rate reaches the no touch level during the tenor**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000	(295 - 270) * 100 000 = 2 500 000	295 * 100 000 = 29 500 000
300	300 * 100 000 = 30 000 000	(295 - 300) * 100 000 = - 500 000	
330	330 * 100 000 = 33 000 000	(295 - 330) * 100 000 = - 3 500 000	



possible outcomes of reset forward at expiry compared to the exchange rate at expiry (exporter)



outcome of reset forward at expiry as a hedging position compared to forward foreign exchange sale (exporter)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

**advantages of transaction**

- opportunity to obtain a primary exchange rate much better than the forward rate
- no cost or separate fee charged
- the primary and the secondary exchange rate as well as the no touch level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

**risks of transaction**

- in case of reaching the no touch level, the Client realises the secondary forward rate (the company does not receive compensation), which may be less advantageous than the forward rate prevailing on the trade date.
- if during the tenor, the exchange rate reaches the no touch level, and on the expiry the exchange rate is above the secondary forward rate, your company will have an obligation to sell foreign currency at the secondary forward rate, i.e. realises a loss. The amount of potential foreign exchange loss is unlimited
- if during the tenor, the exchange rate does not reach the no touch level, and on the expiry the exchange rate is above the primary forward rate, your company will have an obligation to sell foreign currency at the primary forward rate, i.e. realises a loss. The amount of potential foreign exchange loss is unlimited.
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market

liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here but rather from other factors.

**product structure**

The reset forward is built up of a combination of a barrier right and a barrier obligation to sell foreign currency and a digital (one touch) option. The section on barrier and digital options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 12. target profit forward – selling of foreign currency

MIFID complexity

FX 3

### product description

There is great variety of target profit forward deals. The product description below introduces a frequently applied version as an example. For a non-exhaustive presentation of further versions of the target profit forward deal see the section on target profit forward transactions in Chapter I/c. entitled “5 Basic Products” of K&H Treasury Handbook of Market Risk Management.

The target profit forward deal is a series of forward transactions originally dealt for 12 expiries where the strike (or target profit forward rate) is mostly identical for all expiries. The strike obtainable on the trade date might be favourable than the 1-year average forward rate. In exchange for this favourable exchange rate, the company accepts the possibility that the transaction can be early terminated if the predetermined target profit amount has been reached. This means that while in the case of standard forward transactions, the amount of exchange rate gains and losses realised at maturity is unlimited, the target profit forward contract limits the size of potential exchange

gains. However, the amount of potential foreign exchange loss is unlimited, similar to standard forward transactions.

The contract terminates if the cumulated sum of the gains and losses realised by the customer at the individual expiries reaches the target profit. When the target profit is reached, the exchange rate for that maturity is modified accordingly.

The target profit forward transaction, just like the normal forward deal, means a settlement obligation for both parties. Contrary to standard forwards, if the cumulated amount of the profits (determined as a positive number) and losses (determined as a negative number) realised by the customer at the individual maturities reaches a pre-set maximum level (determined as a positive number), no profit exceeding such level will be settled. In this case the target profit forward rate may change and all remaining forward deals – concluded within the framework of the target profit forward transaction – that have not matured yet will cease to exist on the date of expiry when the level of the profit maximum is reached.

### Profits and losses are determined in comparison to the European Central Bank's official EUR/HUF exchange rate (ECB fixing) effective on the date of expiry as follows:

ECB fixing < target profit forward rate ⇒ profit

ECB fixing > target profit forward rate ⇒ loss

### the target profit forward rate depending on the target profit amount:

sum of gains and losses realised by the customer < target profit amount ⇒ selling of EUR at the target profit forward rate.

sum of gains and losses realised by the customer > target profit amount ⇒ selling of EUR at the Final target profit forward rate.

Final target profit forward rate = ECB fixing + (target profit in HUF per EUR – sum of gains and losses realised by the customer at earlier maturities in HUF per EUR)

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains un-hedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** an exporter expects to receive EUR 100 000 revenue each month during the following 1 year (annually EUR 1.2 million). Suppose the current EUR/HUF spot rate is at 290 and the 1-year average forward rate is 296.50 EUR/HUF. As the company has budgeted its revenues at a 310 EUR/HUF exchange rate, therefore it enters into a target profit forward contract at 310 EUR/HUF strike for a monthly EUR 100 000 notional amount (a total amount of EUR 1.2 million).

parameters of the target profit forward	
notional amount	EUR 1 200 000 = EUR 100 000 * 12 expiries
notional amount per expiry	EUR 100 000 / expiry
currency pair	EUR/HUF
tenor	1-12 months
number of expiry dates	12
expiry dates (dates of exchange rate monitoring)	trade date + 1 month, + 2 months, ..., + 12 months
exchange rate monitoring	The European Central Bank's official EUR/HUF exchange rate (ECB fixing) quoted at 14:15 (CET) at each expiry date
settlement dates	2 business days after each expiry date
spot exchange rate prevailing at pricing	290 EUR/HUF
1-year average forward rate	296.50 EUR/HUF
ATMF volatility	15%
target profit forward rate	310 EUR/HUF
calculation of cumulated profit/loss	100% * notional amount * (target profit forward rate – ECB fixing)
target profit amount (the maximum profit that the customer can realise)	+ HUF 3 000 000 (+30 HUF per EUR per notional amount per expiry date)
termination event	The cumulated sum of the profits and losses realised by your company reaches the target profit amount on any expiry date
termination	If the termination criteria are met, the deal terminates and the remaining expiries are cancelled. The customer sells euros at the final target profit forward rate on the expiry date when the termination criteria are met.
final target profit forward rate	ECB fixing rate + (target profit in HUF per EUR – the sum of the profits and losses realised by the customer at earlier expiries in HUF per EUR)
possible scenarios on each expiry date depending on the European Central Bank's EUR/HUF fixing	
ECB fixing rate below 310 EUR/HUF	Your company has a forward selling deal for 100% of the notional amount at a rate of 310 EUR/HUF. If the termination event occurs, the company will have a forward selling deal for 100% of the notional amount, at the final target profit forward rate.
ECB fixing rate above 310 EUR/HUF	Your company has a forward selling deal for 100% of the notional amount at a rate of 310 EUR/HUF.
settlement	gross settlement
transaction cost payable on the trade date	zero
best-case scenario (treasury transaction on a standalone basis)	Until the target profit amount is reached, the ECB fixing is below the target profit forward rate on each expiry date. In this case the company realises only gains before the target profit amount is reached and sells EUR 100 000 at the target profit forward rate on each expiry. After the target profit amount is reached, the deal ceases to exist (on the expiry date when the termination criteria are met, the target profit forward rate may change, see above)
worst-case scenario (treasury transaction on a standalone basis)	The ECB fixing rate is above the target profit forward rate on each expiry date. In this case your company convert EUR 100 000 at the target profit rate at each expiry in a total amount of EUR 1 200 000. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	1 258 000
300	- 7 141 000
330	- 35 625 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

ECB fixing on each expiry dates (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$310 - 270 = 40$ Final target profit forward rate: $270 + (30 - 0) = 300$ $30 * 100\,000 = 3\,000\,000$ the deal terminates after the first expiry	$310 - 270 = 40$ Final target profit forward rate: $270 + (30 - 0) = 300$ $30 * 100\,000 = 3\,000\,000$ the deal terminates after the first expiry
300	$300 * 100\,000 = 30\,000\,000$	$310 - 300 = 10$ $10 * 100\,000 = 1\,000\,000$ $30/10 = 3 \Rightarrow$ the deal terminates after 3 expiries	$310 - 300 = 10$ $310 * 100\,000 = 31\,000\,000$ $30/10 = 3 \Rightarrow$ the deal terminates after 3 expiries. Final target profit forward rate: $300 + (30 - 20) = 310$ on the 3. expiry
330	$330 * 100\,000 = 33\,000\,000$	$310 - 330 = -20$ $-20 * 100\,000 = -2\,000\,000$ In total: $12 * -2\,000\,000 = -24\,000\,000$ The deal is live on each expiry date.	$310 - 330 = -20$ $-20 * 100\,000 = -2\,000\,000$ The deal is live on each expiry date.

day	TPF rate	daily fixing price	position's daily value	position's accrued value
1	310	305	5	5
2	310	302	8	13
3	310	306	4	17
4	310	310	0	17
5	310	312	-2	15
6	310	305	5	20
7	310	302	8	28
8	310	300	10	38
9	310			
10	310			
11	310			
12	310			
13	310			

deal terminates for remaining expiries when accrued value is larger than 30

target profit forward: evolution of the position's value upon reaching the target profit (exporter)

day	TPF rate	daily fixing price	position's daily value	position's accrued value
1	310	305	5	5
2	310	302	8	13
3	310	306	4	17
4	310	310	0	17
5	310	312	-2	15
6	310	315	-5	10
7	310	318	-8	2
8	310	322	-12	-10
9	310	328	-18	-28
10	310	325	-15	-43
11	310	326	-16	-59
12	310	330	-20	-79
13	310	332	-22	-101

if target profit is not reached the deal remains open for remaining expiries. The resulting accrued loss may be unlimited!

target profit forward: evolution of the position's value without reaching the target profit (exporter)

### advantages of transaction

- opportunity to obtain an exchange rate much better than the forward rate
- opportunity to obtain an exchange rate much better than the 1-year average forward rate even for short tenors, e.g. 1 month
- protection against a strengthening of the forint until the maximum profit amount is reached
- no cost or separate fee charged
- the notional amount, the number of expiries, the target profit forward rate and the maximum (or target) profit amount can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the final expiry. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- If the ECB fixing exceeds the target profit forward rate at all maturities, the transaction will incur foreign exchange loss at each maturity, i.e. every month for a year. The amount of the foreign exchange loss is, similar to a standard forward, unlimited, whether for one maturity or for all maturities.

- assuming that the ECB fixing rate is above the profit maximised forward rate on all expiries, the following formula can be used to estimate the possible foreign exchange loss:  
(target profit forward rate – ECB fixing) \* EUR notional amount  
**example:**  
Suppose that the target profit forward rate is at 310.00 EUR/HUF, Notional amount = EUR 1 200 000.  
The amount of potential foreign exchange loss with the assumption that the ECB fixing is at 330.00 EUR/HUF at all maturities:  
 $(310 - 330) * 1\,200\,000 = \text{HUF} - 24\,000\,000$   
(monthly: HUF -2 000 000)  
The loss actually realised may also be higher or lower than the above value.
- after the maximum profit amount has been reached, the transaction will terminate for the remaining expiries.
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of one single target profit forward deal. The section on target profit forwards of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ possibilities and main cornerstones of creating hedging strategy for exporters

The first step in creating a hedging strategy is having a financial plan for the year or for several years, which can be followed by tailoring the hedging strategy according to the company's unique characteristics, e.g. the timing of exports and imports. A hedging strategy is always based on market expectations and the company's risk tolerance. The main goal is to provide such an exchange rate that gives the company the required profit margin. By creating a hedging policy it is recommended to set specific hedging goals, which can be achieving absolute security, a protection level or cash-flow maximization. We suggest that risk diversification should be an essential concept when creating a hedging strategy.

### creating hedging strategy:

The time frame for exchange rate hedging is usually 1 year in line with the company's financial plans. When specifying the target exchange rate the company must take into account budget constraints, financial plans and frequency and characteristics of foreign currency payments. In other words if the allowed cash-flow fluctuation is low, while market competition is intense, the company has to specify a protection level, as a more unfavourable level would hurt the company's operations (target exchange rate).

It also has to be decided whether the company is able to spend money on protection or the strategy needs to be based on zero cost structures.

If yes, i.e. there are funds to buy protection then the target exchange rate can be secured with option purchase. However, if your budget does not enable this option then those structures can be suitable for your company where the worst-case scenario is known in advance for at least part of the exposure, while there is opportunity to benefit from favourable market movements. We wish to emphasize that the main goal is not to realise a standalone financial gain but to hedge exchange rate risk, secure the core operation and to leave room for the company to create its hedging strategy according to its market expectations.

In case of importer companies it is highly important to take into account pricing of competitors. If the company faces strong competition with the same profile, it is advised to take into account the possible hedging strategy of competitors. Failure to do this may result in a loss even the strategy would be considered as a hedge financially.

Guidelines we follow by creating a hedging strategy in our example:

- securing the target exchange rate
- risk diversification and cost effectiveness
- mainly focus on deals with lower risk
- part of the exposure remains as a puffer to be able to conclude more deals in case of a weakening in the forint

**example:** a Hungarian exporter expects to receive a monthly EUR 1 500 000 in revenues, while it has EUR 500 000 in expenses. Based on that its monthly net exposure equals to EUR 1 million, which it converts into HUF every month for its operations. The company calculated its financial plans with 290 EUR/HUF rate. Incomes occur in every month. Let us assume that the current spot exchange rate is 290 EUR/HUF, the one-year forward rate is 302 EUR/HUF and the average forward rate for one-year is 296.50 EUR/HUF.

Let us assume, that the company concludes the following deals for 1 year with expiries in every month. Detailed term sheets can be found in Chapter II/a. entitled "Foreign exchange exposure hedging for exporters" of "K&H Treasury Handbook of Market Risk Management".

deal type	hedging weight	notional (EUR) / month	exchange rate (EUR/HUF)
average forward	40%	400 000	296.50
range forward	30%	300 000	range: 293 – 297
boosted forward	20%	200 000	boosted forward rate: 298 knock-out level 269 (American trigger)
unhedged exposure	10%	100 000	actual market rate

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains un-hedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

### Possible financial outcomes of the strategy above:

- if the exchange rate does not reach the 269 knock-out level during the tenor, i.e. the boosted forward does not terminate
  - minimum 295.67 EUR/HUF =  $(400\,000 \cdot 296.50 + 300\,000 \cdot 293 + 200\,000 \cdot 298) / 900\,000$
  - maximum 297.00 EUR/HUF =  $(400\,000 \cdot 296.50 + 300\,000 \cdot 297 + 200\,000 \cdot 298) / 900\,000$
  - unhedged: 10%
- if the exchange rate reaches the 269 knock-out level during the tenor, i.e. the boosted forward terminates
  - minimum 295.00 EUR/HUF =  $(400\,000 \cdot 296.50 + 300\,000 \cdot 293) / 700\,000$
  - maximum 296.71 EUR/HUF =  $(400\,000 \cdot 296.50 + 300\,000 \cdot 297) / 700\,000$
  - unhedged: **30%**

The bank's contribution does not end when the hedging positions are opened even if our client has treasury deals and hedging strategy for the whole year. Tight relationship has to be maintained over the tenor as our client's may require our services and individual risks need to be managed. Potential termination or market value change of existing deals or change in the client's underlying foreign exchange exposure may lead to closure or modification of the treasury deal. By continuous monitoring and handling of existing deals we can provide our clients with more alternatives to achieve a more effective risk management.

Should you have any questions regarding the structure in the example or need assistance in creating a hedging strategy in-line with your company's risk exposure, please contact your relationship manager or treasury dealer.

## ➔ our products in terms of exchange rate expectations

You can find the following table useful when creating hedging strategy. The table summarizes the market value evolution of the specific deals as a function of future exchange rate evolution and exchange rates upon expiry. Thus it might prove useful in helping you to find the right deals which correspond with your expectations.

deal type	future exchange rate evolution, exchange rate upon expiry				
	extreme forint appreciation	small forint appreciation	no significant exchange rate change	small forint weakening	extreme forint weakening
forward deal	+++	++	+/-	-	---
purchase of put option	+++	++	-	-	-
range forward	++	+	+/-	-	---
seagull	+	++	+/-	-	---
participating forward	+++	++	+/-	-	--
forward extra	++	+	+/-	-	---
boosted forward	---	+++	++	+	---
boosted forward with rebate	--	+++	++	+	---
extendible forward	+++/-	++/-	+/-	-	---
reset forward	+	+++	++	+	---
target profit forward	---	+++	++	+	---

## → restructuring an existing treasury deal

Should the parameters of an already existing treasury deal turn unfavourable (market value of the treasury deal worsens) you have the opportunity to close the existing deal and open a new position for the same or less notional even with a more complex product. Opening of a new deal has to be always in-line with the underlying exposure. If the parameters of the new deal are worse than the prevailing market levels, the net present value of the new deal might compensate part of the costs of closing the original deal. The cost level of the new deal cannot be unlimitedly worse than the prevailing market levels.

**You have the opportunity for restructuring if your MIFID classification is at least FX2!** The new deal opened during restructuring can be built up of options only. When opening a new position it is fundamental to take into account the MIFID classification of our client, and only those products can be selected, whose complexity corresponds to the MIFID classification of our client.

**Examples for restructuring a treasury deal:** an exporter company has an expiring forward deal, i.e. has a right and an obligation to sell EUR 1 000 000 at 280 EUR/HUF. The spot price is 290 EUR/HUF, the 1-year forward rate is 302 EUR/HUF. As the company's foreign exchange revenue did not arrive until expiry, it has to close the treasury deal. The cost of closing (net present value) would be HUF 10 000 000 (loss). The closing takes place with a deal in the opposite direction than the original deal, while notional and expiry remains the same. The cost of closing is the difference between the exchange rate of the original deal and the counter deal on the notional:  $(280 - 290) * 1\,000\,000 = \text{HUF } -10\,000\,000$ .

The company has the option to realise the losses, but can also restructure part of the losses into a new treasury deal starting at the day of restructuring in the same direction as the company's exposure for a tenor not longer than the approved limit and with a notional not larger than the original deal's notional. The client pays part of the cost of closing the position the remaining part is covered by the net present value of the new deal. The client can receive payment (net present value) for the new deal, because the deal's parameters are less favourable than that of a deal with zero net present value based on current market levels.

Successful restructuring might give the idea that there is always a solution for every bad position, but it may occur that further restructuring is not possible and the only option is to realise losses!

**In the following examples it is assumed that the company pays 30% of the losses from the expiring deal and 70% is financed through a new position. Opening a new deal has to be always in-line with the underlying exposure.**

### ● restructuring into a synthetic forward

	notional (EUR)	expiry	exchange rate level of treasury deal (EUR/HUF)	net present value of treasury deal (HUF)
original deal: right to sell and obligation to sell EUR	1 000 000	t+2	280.00	-10 000 000
new deal: right to sell and obligation to sell EUR	1 000 000	1 év múlva	292.00	7 000 000

The synthetic forward deal is a combination of two foreign exchange options (buying a EUR put and selling a EUR call) Detailed term sheets can be found in Section 1 and 3 of Chapter II/a. entitled "treasury deals for exporters" of "K&H Treasury Handbook of Market Risk Management"

### ● restructuring into a range forward

	notional (EUR)	expiry	exchange rate level of treasury deal (EUR/HUF)	net present value of treasury deal (HUF)
original deal: right to sell and obligation to sell EUR	1 000 000	t+2	280.00	-10 000 000
new deal: right to sell and obligation to sell EUR	1 000 000	1 year	range: 289-296	7 000 000

As opposed to the synthetic forward in the second example an exchange rate range is created. If upon expiry the market is in the range, then the client has neither right nor obligation, it can sell foreign exchange at the actual market level on its own discretion.

Detailed term sheets can be found in Section 4 of Chapter II/a. entitled "treasury deals for exporters" of "K&H Treasury Handbook of Market Risk Management"

### ● restructuring into a boosted forward

If your MIFID classification is FX3, you can restructure your expiring deal into a boosted forward. In this case you may conclude a boosted forward at 295 EUR/HUF with an American knock-out at 265.

	notional (EUR)	expiry	exchange rate level of treasury deal (EUR/HUF)	net present value of treasury deal (HUF)
original deal: right to sell and obligation to sell EUR	1 000 000	t+2	280.00	-10 000 000
new deal: right to sell and obligation to sell EUR	1 000 000	1 year	boosted forward rate: 295.00 knock-out level: 265.00	7 000 000

Detailed term sheets can be found in Section 8 of Chapter II/a. entitled "treasury deals for exporters" of "K&H Treasury Handbook of Market Risk Management"

The examples above are only to illustrate the possibilities. During restructuring you can choose other product types in-line with your MiFID classification and underlying exposure.

### advantages of restructuring

- the new deal may give obligation at a more favourable level for the future expiry than the previous deal
- client receives net present value for the new deal, which covers part of the cost of closing the original deal
- the date of expiry and exchange rate level(s) of the new deal can be adapted to customer needs, in accordance with your expectations, future exposure, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- by restructuring and concluding a new deal the client will benefit from every advantage of the new deal
- if the new deal is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions

### risks of restructuring

- the client will have both a right and an obligation due to the new deal, thus upon expiry the client may incur losses if the market rate is higher than the exchange rate of the new deal. The potential loss is unlimited.
- if the underlying exposure ceases to exist, it is advisable to close the treasury deal too, since there is no longer any risk resulting from the exposure. Closing the deal before maturity might lead to a loss depending on the actual market situation.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- by restructuring and concluding a new deal the client will run every risk of the new deal
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

## ➔ prerequisites for dealing, required documents

### ➔ before concluding a deal

- Treasury master agreement
- MiFID questionnaire (for complexity)
- live treasury limit (for deals that require a treasury limit)

other fees: (account maintenance fee, transfer fee): Fees can be found in the prevailing announcement and general terms and conditions.

On exchange rates you can find information on the official Reuters page (<http://uk.reuters.com/business/currencies>).

taxation: The Bank does not deduct any taxes from clients who do not fall under the personal income tax, it is the client's responsibility to comply with tax regulations.

You can find detailed and exhaustive term sheets on the products in the table below in this chapter, moreover as an additional service we conduct exchange rate monitoring when requested and execute orders by which please bear in mind the following.

We reserve the right to change the values in the following table!

deal type	limit requirement	minimum amount	tenor
exchange rate monitoring	no	no	-
order	no	EUR 300 000	-
forward	yes	EUR 50 000	minimum t+3
average forward	yes	EUR 50 000	minimum t+3
currency swap	yes	EUR 50 000	minimum t+1 (on far leg)
buying of put option	no (premium is paid upfront)	EUR 50 000	minimum 2 weeks
range forward	yes	EUR 50 000	minimum 2 weeks
seagull	yes	EUR 50 000	minimum 2 weeks
participating forward	yes	EUR 50 000	minimum 2 weeks
forward extra	yes	EUR 50 000	minimum 2 weeks
boosted forward	yes	EUR 50 000	minimum 2 weeks
boosted forward with compensation	yes	EUR 50 000	minimum 2 weeks
extendible forward	yes	EUR 50 000 / expiry	minimum 2 weeks
reset forward	yes	EUR 50 000	minimum 2 weeks
target profit forward	yes	EUR 50 000 / expiry	minimum 2 weeks

The K&H Treasury Handbook of Market Risk Management and explanations for the products can be found on the K&H Bank webpage ([www.kh.hu](http://www.kh.hu)) on the corporate – K&H treasury services page.

**automatically executed orders:** automatically executed foreign exchange conversions with a minimum amount of EUR 300 000 (or equivalent in a different currency). Orders are good until cancelled and settled always with spot, i.e. t+2 value date. If the order is filled you can choose prompt or forward settlement, in this case the exchange rate will be modified with swap points. Order executions are on a best effort basis, i.e. it may occur that the market trades at the exchange rate level of your order without actual fulfillment of your order or that only partial fulfillment occurs. Orders can be given and cancelled only by phone during regular business hours and we cannot guarantee their execution.

Dear Client,

We kindly request you to read the following information carefully prior to concluding any transaction!

The product outlined in the product description may differ from your/your company's MiFID profile, meaning that the product may be of higher complexity than the complexity level stipulated by your/your company in the MiFID documentation. In this case the Bank shall conclude the transaction solely at your/your company's initiative and shall manage the transactions falling outside the MiFID profile in accordance with its prevailing internal regulation.

Prior to concluding the deal, please, make sure that you fully understand the product, the operation thereof and potential development of the transaction's future market value. As a result of the future change in the transaction's market value you may incur a temporary or permanent obligation to provide additional collateral, which may impact your Company's liquidity and solvency.

If you believe that the information provided herein is not comprehensive, or you have questions or doubts in connection with the product, please notify the Bank's competent employee prior to concluding the deal, so that you receive the information you deem necessary.

If you believe that the information you received is not comprehensive, please do not conclude any deal for that specific product, even if otherwise the product fits into your/your company's MiFID profile.

If you do conclude a deal for the product outlined in the product description, it shall be construed that you deemed the information received from the Bank comprehensive, irrespective of the fact whether the product is in line with your/your company's (the Client) MiFID profile available for us at the time of concluding the deal.

Please, note that the parameters and prices stated in the product description are of indicative nature and serve only referential purposes.

The parameters of the actually concluded deals will correspond to the terms agreed during the telephone conversation recorded upon deal conclusion and those may depart from the indicative parameters and prices stated in this product description.

### ➔ after concluding a deal

According to the Treasury master agreement deals can be concluded only on recorded phone.

After concluding the deal the client receives confirmation on the deal's parameters on fax and on its existing, open positions, live transactions a summarized report at the beginning of every month, which shows the market value of the existing positions based on market levels prevailing on the last workday of the previous month.

In the confirmation faxes and in the reports of existing positions the parameters are stated according to the bank's viewpoint, i.e. if the position's direction is "buy", it is a "selling" position for the client.



**exposure to foreign  
exchange rates -  
treasury deals  
for importers**





## → types of products

### → 1. forward and average forward

MIFID complexity

FX 1

#### → 1.a. hedging of foreign currency expenses for a single expiry

assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

##### product description

You can fix the exchange rate of the conversion of a foreign currency expense due some time in the future at the present point in time already, with respect to the future date in question. Whatever the spot exchange rate upon expiry is, your company will buy the foreign currency needed at the forward rate set as part of this deal. In other words, your company will acquire a right as well as an obligation to buy foreign currency upon the trade date, and both the foreign exchange gains and losses can be unlimited in theory. Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company

**example:** a Hungarian importer expects to incur a year from now EUR 100 000 in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF. This company wants to eliminate the foreign exchange risk by entering into a forward transaction for buying EUR 100 000. Upon the trade date, the EUR/HUF forward rate is 12 forint above the spot rate for one-year forward transactions. The difference is the result of the fact that the one-year HUF interest rate is higher at the time of the deal than the one-year EUR interest rate.

##### parameters of the forward

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date	end of first year
spot rate prevailing at pricing	290 EUR/HUF
forward rate	302 EUR/HUF
transaction cost on the trade date	zero

##### possible scenarios on expiry

exchange rate below 302 EUR/HUF	your company buys EUR 100 000 at a rate of 302 EUR/HUF
exchange rate at or above 302 EUR/HUF	
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate on the expiry date is above 302. In this case your company buys EUR 100 000 at a rate of 302 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate on the expiry date is below 302. In this case, your company buys EUR 100 000 at a rate of 302 EUR/HUF. The resulting foreign exchange loss can be unlimited.

##### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)

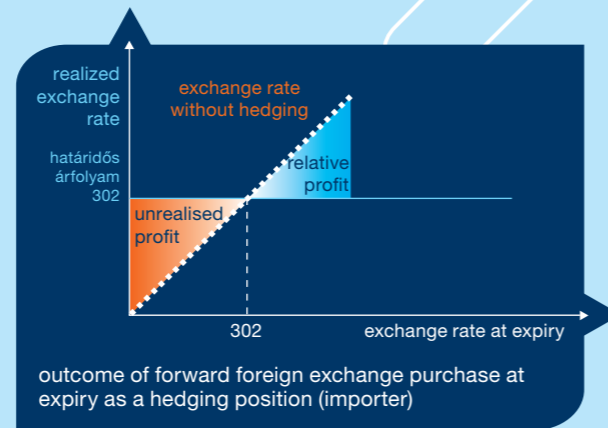
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 2 050 000
300	950 000
330	3 950 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(270 - 302) * 100\,000 = -3\,200\,000$	$302 * 100\,000 = 30\,200\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(300 - 302) * 100\,000 = -200\,000$	
330	$330 * 100\,000 = 33\,000\,000$	$(330 - 302) * 100\,000 = 2\,800\,000$	



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### 1.b. hedging of foreign currency expenses for various expiries – average forward

#### product description

If foreign currency expenditures are due on different future dates, you can fix the same forward exchange rate for each of those future dates at the present time. Whatever the spot rate may be on the expiry date, your company will buy foreign currency at the average

forward exchange rate set as part of this deal. In other words, your company will upon the trade date acquire a right as well as an obligation to buy foreign currency, and both the potential foreign exchange gains and losses can be unlimited in theory.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian importer expects to incur EUR 100 000 per month in the next year in expenses. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company would like to exclude all foreign exchange risk, and buy euros on all expiry dates at the same exchange rate, so it enters into an average forward deal at the EUR/HUF exchange rate of 296.50.

#### parameters of the average forward

notional amount	EUR 1 200 000 = 12 * EUR 100 000
notional amount on each expiry	EUR 100 000
currency pair	EUR/HUF
tenor	1-12 months
number of expiry dates	12
expiry dates	trade date + 1 month, +... , + 12 months
spot rate prevailing at pricing	290 EUR/HUF

#### forward rates prevailing at pricing, for each expiry

month 1	291 EUR/HUF
month 2	292 EUR/HUF
month 3	293 EUR/HUF
month 4	294 EUR/HUF
month 5	295 EUR/HUF
month 6	296 EUR/HUF
month 7	297 EUR/HUF
month 8	298 EUR/HUF
month 9	299 EUR/HUF
month 10	300 EUR/HUF
month 11	301 EUR/HUF
month 12	302 EUR/HUF
average forward rate	296.50 EUR/HUF (arithmetic average of the forward rates for each expiry)
transaction cost on the trade date	zero

#### possible scenarios on each expiry date

exchange rate is below 296.50 EUR/HUF	your company buys EUR 100 000 at a rate of 296.50 EUR/HUF
exchange rate is at or above 296.50 EUR/HUF	your company buys EUR 100 000 at a rate of 296.50 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 296.50 on the expiry date. In this case, your company buys EUR 100 000 at a rate of 296.50 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 296.50 on the expiry date. In this case, your company buys EUR 100 000 at a rate of 296.50 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)  
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	-24 600 000
300	11 400 000
330	47 400 000

#### financial outcome of some possible scenarios on the expiry date

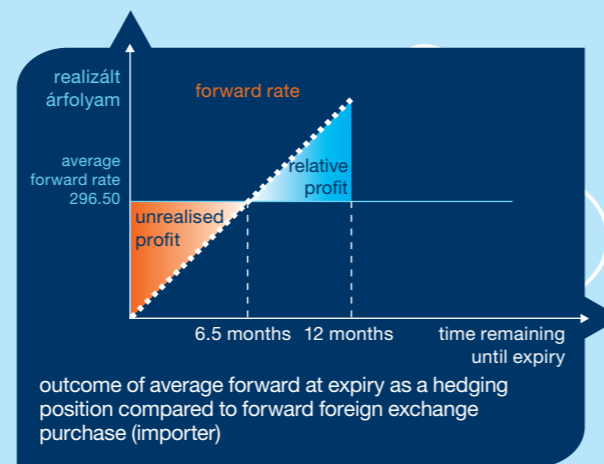
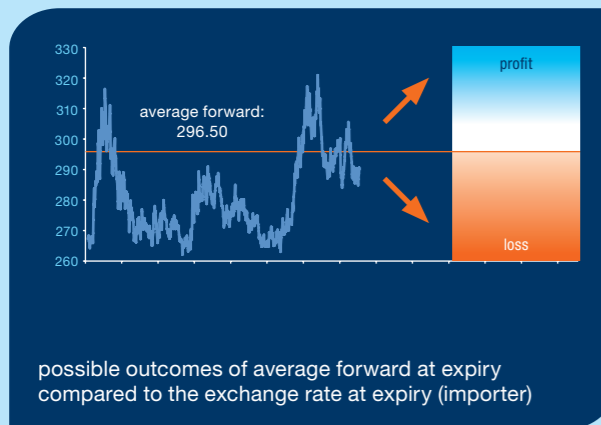
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$ in total: $12 * 27\,000\,000 = 324\,000\,000$	$(270 - 296.50) * 100\,000 = -2\,650\,000$ in total: $12 * 2\,650\,000 = -31\,800\,000$	$296.50 * 100\,000 = 29\,650\,000$ in total: $12 * 29\,650\,000 = 355\,800\,000$
300	$300 * 100\,000 = 30\,000\,000$ in total: $12 * 30\,000\,000 = 360\,000\,000$	$(300 - 296.50) * 100\,000 = 350\,000$ in total: $12 * 350\,000 = 4\,200\,000$	
330	$330 * 100\,000 = 33\,000\,000$ in total: $12 * 33\,000\,000 = 396\,000\,000$	$(330 - 296.50) * 100\,000 = 3\,350\,000$ in total: $12 * 3\,350\,000 = 40\,200\,000$	

## ➔ 2. currency swap

MIFID complexity

FX 1



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- the exchange rate applicable to foreign currency buying transactions in the future is fixed in advance
- full protection against any depreciation of the forint
- potential foreign exchange gains are unlimited (on the treasury deal itself)
- with an average forward deal you can achieve better rates for expiries in the second half of the tenor than with a regular forward deal for those expiries (in case the forint – foreign exchange swap points are positive)
- no cost or separate fee charged
- if the hedge is no longer needed, the position can be closed with a counter deal (forward selling of euros for an expiry coinciding with the expiry date of the original deal) with net settlement on expiry. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- even if the exchange rate on expiry is lower than the forward rate, the client will be obliged to buy euros at the forward rate, which means that a foreign exchange loss will incur. The potential foreign exchange loss can be unlimited in theory.
- if you decide to close your position before expiry by means of a counter deal (forward selling of euros for an expiry coinciding with the expiry date of the original deal), you may incur a loss.
- if an average forward deal is concluded, the exchange rates that are achievable on the first few expiries may be worse than the forward rates applicable to the expiry dates in question (provided that the forint – foreign exchange interest rate differential is positive)

- the actual market value of the forward deal is influenced by the spot rate, the interest rate levels of the two currencies for the given tenor and their differential, basis swaps and time until maturity. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of forward deals. The product can be built up of two options as a synthetic forward deal, about which you can find detailed explanation in the 3. part of the actual Chapter. The section on forward deals and options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

### product description

Should your company require foreign currency in a given time, while it receives the required foreign currency amount in another time, then a currency swap deal can be concluded to hedge exchange rate risk. With a currency swap deal your company can swap its foreign currency into forint or vice versa for a given period at a given exchange rate (the deal can be concluded in any currency pair quoted by the bank). Thus you can increase your liquidity in a given currency for a given time period by reducing your liquidity in another currency for that period. With the deal you can also roll over the expiry of an existing forward deal to an earlier or a later date. As the latter is the most common use of this deal by our clients, we introduce this first.

### roll over of an existing forward deal

By concluding a currency swap deal the parties enter into a foreign exchange deal and at the same time enter into a foreign exchange deal in the opposite direction with the same notional but with a different expiry date (see Chapter I/c. entitled "5 Basic products" of "K&H Treasury Handbook of Market Risk Management"). Of course the forward rate will change with the deal: decreases when rolling backwards and increases when rolling forward (in case the base currency's interest rate is lower than the quote currency's interest rate) because of the swap points. The bank has a flexible position about roll-over, but a couple of rules must still be observed:

- every position can be rolled over for any length of time starting out from the spot rate applicable upon expiry. In this case, naturally, the profit or loss generated will be settled on the value date of the original forward transaction.
- the movement of the EUR/HUF spot rate on any given day is usually around +/- 1% in comparison with the exchange rate quoted by the NBH (except for extreme circumstances). Forward rates falling into this same range are considered as a market rate so the previous point will be applicable in such cases.
- in the event of roll over, the bank must apply the interest rate differential corresponding to the period in question
- every position can be rolled back to a point in time preceding the original expiry
- where the amount covered by the original contract will arrive or be incurred as expenditure within a foreseeable period of time (2 weeks), the position (whether a profit or a loss position) can be rolled over, starting out from the exchange rate of the original forward contract, on no more than one occasion, and for the maximum of two weeks
- there is no roll over beyond a quarter, that is, the dates March 31<sup>st</sup>, June 30<sup>th</sup>, September 30<sup>th</sup>, and December 31<sup>st</sup> must not fall in between the starting and end dates of the roll over period

In summary the deal means a spot purchase or sale of a currency and at the same time a deal concluded in the opposite direction as well for the same currency, notional and expiry for a later date.

### spot deal or forward deal + forward deal in opposite direction = currency swap

### Gross settlement is applied for the deal.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example for rolling over a forward deal:** A Hungarian importer concluded a forward deal to buy EUR 100 000 in 11 months at 301 EUR/HUF to hedge the exchange rate risk of its future foreign exchange expenditure. Two days before expiry the company receives notice that the expenditure arises approximately one month later. Thus the company rolls over its forward deal of buying EUR 100 000 to a month later with a currency swap. Let us assume that the spot rate on expiry is 290 EUR/HUF. By concluding a currency swap deal the company sells EUR 100 000 at 290 EUR/HUF with spot value date and buys EUR 100 000 at 291 – the exchange rate increased with the swap points (1 HUF) – for a value date in one month, when the expenditure is expected to arise. The original forward deal will be closed at spot value date by the currency selling and the bank will debit the financial result of  $(290-301) \text{ EUR/HUF} * \text{EUR } 100\,000 = \text{HUF } -1\,100\,000$  loss from the company's account. (In case the exchange rate on expiry was above 301 EUR/HUF, the position would have a profit). The far leg of the swap, expiring in 1 month means that the company will have a forward deal to buy EUR 100 000 but this time at 291 EUR/HUF.

**example for a normal swap deal:** a Hungarian importer has surplus liquidity of EUR 100 000 but needs forints and expects EUR 100 000 expenditure in 1 month. To hedge the exchange rate risk of the present surplus and the future shortage in EUR it concludes a currency swap and secures its liquidity in forint without taking exchange rate risk. By concluding a currency swap deal the company sells EUR 100 000 at 290 EUR/HUF for spot value date, while buys EUR 100 000 at 291 EUR/HUF (exchange rate increased by swap points, 1 HUF) for one month later, when the expenditure is expected. The bank credits EUR 100 000 \* 290 EUR/HUF = HUF 29 000 000 on the company's forint account at spot value date, while debits EUR 100 000 from the company's EUR account. The far leg of the swap, expiring in 1 month means for the company a forward deal to buy EUR 100 000 but this time at 291 EUR/HUF.

The currency swap not only enables the rollover of existing treasury deals but it can also be used on a standalone basis to increase the liquidity in one currency for a given time period in exchange for a liquidity decrease in another currency. The parameters of the swaps are identical in both methods; the only difference is in the settlement: rolling over an existing deal means that one leg of the swap will be net settled with the expiring deal that already existed.

parameters of a currency swap	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 month
tenor start	spot
direction of swap deal on spot value date (near leg)	EUR sell
direction of swap deal in 1 month (far leg)	EUR buy
exchange rate of near leg	290 EUR/HUF
exchange rate of far leg	291 EUR/HUF
spot rate prevailing at pricing	290 EUR/HUF
exchange rate of original forward deal	301 EUR/HUF
transaction cost on the trade date	zero
possible scenarios on expiry	
exchange rate is below 291 EUR/HUF	your company buys EUR 100 000 at a rate of 291 EUR/HUF
exchange rate is at or above 291 EUR/HUF	
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 291 on the expiry date. Your company buys EUR 100 000 at a rate of 291 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 291 on the expiry date. Your company buys EUR 100 000 at a rate of 291 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	-2 050 000
300	950 000
330	3 950 000

#### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000	(270 - 291) * 100 000 = - 2 100 000	291 * 100 000 = 29 100 000
300	300 * 100 000 = 30 000 000	(300 - 291) * 100 000 = 900 000	
330	330 * 100 000 = 33 000 000	(330 - 291) * 100 000 = 3 900 000	

#### advantages of transaction

- the exchange rate applicable to foreign currency buying transactions in the future is fixed in advance (in case the near leg of the swap is also a forward deal (forward starting swap), the exchange rate of the currency selling is also fixed in advance)
- full protection against any weakening of the forint on the far leg of the currency swap
- potential foreign exchange gains are unlimited (on the treasury deal itself)
- no cost or separate fee charged
- if the hedge is no longer needed, the position can be closed with a counter deal (forward selling of euros for an expiry coinciding with the expiry date of the original deal) with net settlement on expiry. If the near leg of the currency swap is not closed, the deal can be closed with a currency swap in the opposite direction. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- In case only the far leg of the currency swap is in effect, the company practically has a forward deal. In this case the client will be obliged to convert the foreign currency expenditures at the forward rate even if the exchange rate on expiry is lower than that, which means that foreign exchange loss will incur. The potential foreign exchange loss can be unlimited in theory.
- if you decide to close your position before expiry by means of a counter deal (forward selling of euros for an expiry date coinciding with the expiry of the original deal) you may incur a loss
- if both legs of the currency swap are open, the client runs risk on both the near and the far leg as swap points may change due to

changes in the exchange rate, the interest rate differential or time until maturity, so there is indirect exchange rate risk. In this case the deal can be closed with a currency swap in the opposite direction, which may result in a loss.

- the actual market value of the currency swap is influenced by the spot rate, the interest rate levels of the two currencies for the given tenor and their differential, the basis swap and the time until maturity. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

This product is built up of a spot and a forward deal or two forward deals. The section on forward deals of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

# ➔ 3. option for buying foreign currency: buying an option (right) + selling an option (obligation) = forward

MIFID complexity

FX 2

## ➔ 3.a. right to buy foreign currency (buying of EUR call option)

### product description

When you buy a EUR call option, your company will acquire the right to buy foreign currency on a specific delivery date and at a specific strike rate, both set in advance, provided that on the expiry date the spot rate is above the strike rate. Similarly to a forward deal, this option will give you complete protection at the level of the strike rate against the depreciation of the forint.

If on the expiry date the spot rate is lower than the strike rate, your company will have a right to buy euros at the spot rate prevailing on expiry but you will not exercise this right. This means that, as opposed to a forward agreement, buying a EUR call option gives your company the possibility to derive 100% benefit from a potential appreciation of the forint (below the strike rate). In return for this benefit, the option comes at a price, paid by the buyer of the option in the form of a premium upon concluding the deal. In contrast to a forward deal, then, if you buy an option, your potential foreign exchange loss is limited to the amount of the option premium.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly.

The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian importer expects to incur, a year from now, EUR 100 000 in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. Because the company expects that on the expiry date the spot rate will be much more advantageous than the forward rate, and because in order to achieve an appropriate profit margin it wants to avoid by all means having to buy euros on the expiry date at an exchange rate worse than the forward rate, it buys a European type EUR call option at a strike rate of 302 EUR/HUF (equalling the forward rate). The premium charged for buying the EUR call option is 3.50% of the notional, or else  $302 * 3.50\% = 10.57$  HUF per EUR, payable when the deal is concluded.

Taking into account the option premium paid, this company will realise on expiry an exchange rate that is the same as the regular forward rate if on the expiry date the exchange rate level is  $(302 - 10.57 =) 291.43$ . (In this example we ignored that the premium should carry interest as well).

The option's strike rate may be different from the forward rate available for given tenor. In that case the option premium will be different as well.

parameters of the option – buying of EUR call option	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
strike rate	302 EUR/HUF
option premium (payable by the client on the trade date)	$3.50\% * \text{notional amount} = 10.57$ HUF for each EUR (HUF 1 057 000)
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
exchange rate is below 302 EUR/HUF	Your company has a right but not an obligation to buy euros, but it does not exercise the option. Your company can buy euros at the spot rate prevailing on expiry.
exchange rate is at or above 302 EUR/HUF	Your company has a right to buy euros, and it exercises the option. It can buy EUR 100 000 at a rate of 302 EUR/HUF.
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 302 on the expiry date. Your company has a right to buy euros. In this case, your company can buy EUR 100 000 at a rate of 302 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 302 on the expiry date. Your company will have a right, which will not be exercised. In this case, your company can buy euros at the spot rate prevailing on expiry (below 302 EUR/HUF). The resulting loss equals the amount of the option premium.

## the market value of the position two weeks after the trade date from the customer's point of view

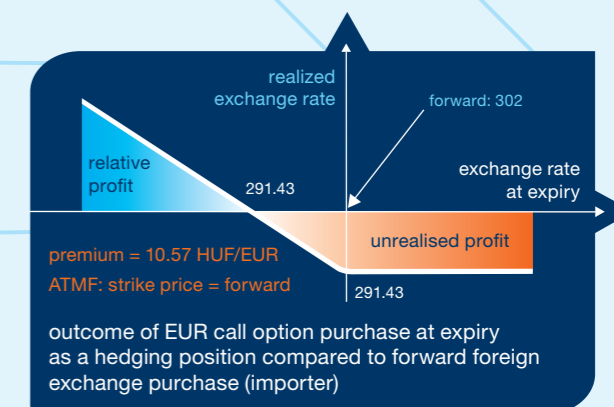
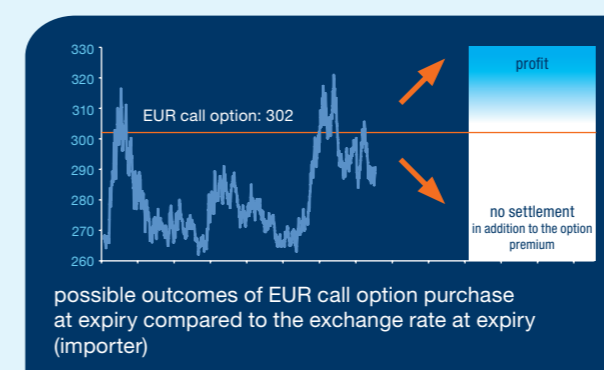
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)  
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	7.17 HUF per EUR * notional amount = 717 000 HUF
300	18.62 HUF per EUR * notional amount = 1 862 000 HUF
330	42.73 HUF per EUR * notional amount = 4 273 000

## financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\ 000 = 27\ 000\ 000$	$0 - 1\ 057\ 000 = -1\ 057\ 000$	$270 * 100\ 000 + 1\ 057\ 000 = 28\ 057\ 000$
300	$300 * 100\ 000 = 30\ 000\ 000$	$0 - 1\ 057\ 000 = -1\ 057\ 000$	$300 * 100\ 000 + 1\ 057\ 000 = 31\ 057\ 000$
330	$330 * 100\ 000 = 33\ 000\ 000$	$(330 - 302) * 100\ 000 - 1\ 057\ 000 = 1\ 743\ 000$	$302 * 100\ 000 + 1\ 057\ 000 = 31\ 257\ 000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

## advantages of transaction

- full protection against a potential depreciation of the forint
- you can benefit from favourable exchange rate movements completely
- limited potential loss, with the option premium as maximum
- the maximum value of the HUF cash flow can be planned with certainty
- given a specific tenor and nominal value, the option premium and the strike rate can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- the position can be closed with a counter deal (selling of EUR call option), at any time before the expiry date, resulting in an income for your company, because an option never has a negative value

## risks of transaction

- the option premium must be paid on the trade date
- if the strike rate is the same as the forward rate, the profit threshold of the option is worse (taking into account the option premium) than the forward rate. Due to the option premium the company realises the exchange rate of a regular forward deal at a lower exchange rate upon expiry (forward – premium).

- closing the position before the expiry date may cause a loss if the option premium received upon the time of closing is less than what was charged as a premium when the option was bought
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- chapter I/b entitled “Risk Factors” of “K&H Treasury Handbook of Market Risk Management” lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

## product structure

This product is built up of one single plain vanilla option. The section on plain vanilla options of Chapter I/c. entitled “5 Basic Products” of “K&H Treasury Handbook of Market Risk Management” also applies to this product.

### 3.b. obligation to buy foreign currency (selling of EUR put option)

#### product description

By selling a EUR put option, your company acquires an obligation to buy foreign currency on a specific delivery date and at a specific strike rate, both set in advance, provided that on the expiry date the spot market rate is below the strike rate. An option obligation is like a forward deal in the event of the possible depreciation of the forint, in that the client must buy foreign currency at the rate fixed in advance.

If on the expiry date the spot rate is above the strike rate, your company will have neither a right nor an obligation. In contrast to a forward deal then, the selling of a EUR put option will not give you protection against the depreciation of the forint. The seller of the option receives an option premium upon the trade date.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian importer expects to incur, a year from now EUR 100 000 in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. Because buying this amount at an extremely high exchange rate will not have a significant impact on the company's profits, and neither will it cause a problem if the forint is appreciated by a large extent and the conversion takes place at the forward rate, the company sells a EUR put option with a strike rate equalling the forward exchange rate, that is, at 302 EUR/HUF.

In return for this obligation, the company receives an option premium on the trade date. The premium due for the obligation to buy foreign currency is 3.50% of the notional, or else  $302 * 3.50\% = 10.57$  HUF per EUR, paid to the client when the deal is concluded.

Taking into account the option premium received, the company will realise an exchange rate equalling the standard forward if on the expiry date the EUR/HUF spot rate is  $(302 + 10.15) = 312.15$ . (In this example we ignored that the premium should carry interest as well.

**By selling an option a company cannot hedge its underlying exposure! According to our rules and policy at the time when this Handbook is edited, concluding this deal on a standalone basis is not allowed, only with a combination of buying an option.**

parameters of the option deal – selling of EUR put option	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
strike rate	302 EUR/HUF
option premium (received by the client on the trade date)	$3.50\% * \text{notional amount} = 10.57$ HUF for each EUR (1 057 000 HUF)
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
exchange rate is below 302 EUR/HUF	Your company has an obligation to buy euros, since the option is exercised. Your company buys EUR 100 000 at a rate of 302 EUR/HUF.
exchange rate is at or above 302 EUR/HUF	Your company has neither a right nor an obligation, since the option is not exercised. Your company can buy euros at the spot rate prevailing on expiry.
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 302 on the expiry date. Your company has neither a right nor an obligation. In this case, your company can buy euros at the spot rate prevailing on expiry (above 302 EUR/HUF).
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 302 on the expiry date. In this case, your company has an obligation to buy euros. Your company buys EUR 100 000 at a rate of 302 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

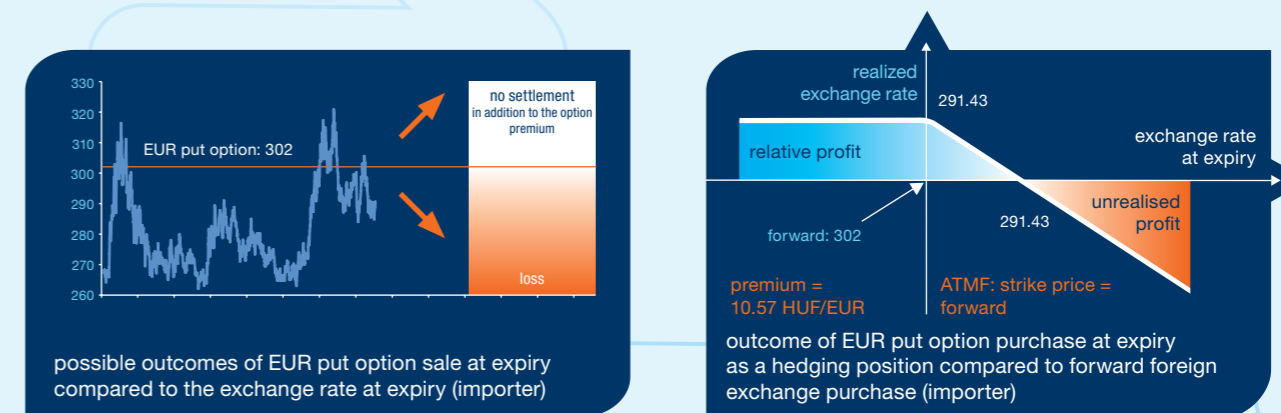
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	$8.38$ HUF per EUR * notional amount = - 838 000 HUF
300	$2.24$ HUF per EUR * notional amount = - 224 000 HUF
330	$0.38$ HUF per EUR * notional amount = - 38 000 HUF

#### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction (HUF)
270	$270 * 100\ 000 = 27\ 000\ 000$	$(270 - 302) * 100\ 000 + 1\ 057\ 000 = -2\ 143\ 000$	$302 * 100\ 000 - 1\ 057\ 000 = 29\ 143\ 000$
300	$300 * 100\ 000 = 30\ 000\ 000$	$(300 - 302) * 100\ 000 + 1\ 057\ 000 = 857\ 000$	$302 * 100\ 000 - 1\ 057\ 000 = 29\ 143\ 000$
330	$330 * 100\ 000 = 33\ 000\ 000$	$0 + 1\ 057\ 000 = 1\ 057\ 000$	$330 * 100\ 000 - 1\ 057\ 000 = 31\ 943\ 000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- if the strike rate is the same as the forward rate, the profit threshold of the option is more advantageous (after the reduction of the option premium) than a forward deal. Due to the option premium the company realises the exchange rate of a regular forward deal at a higher exchange rate upon expiry (forward + premium).
- the company receives an option premium on the trade date
- the option premium and the strike rate, with a given tenor and notional amount, can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- the position can be closed with a counter deal (buying of EUR put option), at any time before the expiry date, but this will always come at a cost for your company, because an option never has a negative value

#### risks of transaction

- no protection against a potential depreciation of the forint
- this transaction does not allow you to benefit from a potential appreciation of the forint
- unlimited foreign exchange loss potential
- closing the position before the expiry date may cause a loss if the option premium paid upon the time of closing is more than what was received when the option was sold
- The market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies

for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

This product is built up of one single plain vanilla option. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ connection between options and forward deals

Assuming identical terms and notional amounts, a forward deal can be constructed out of two options. To achieve this, the strike rates of the options must be the same as the forward rate (in this case 302), and the company must buy one option and sell the other. (See chapter II. of the “K&H Treasury Handbook of Market Risk Management Handbook” on forward deals and options). In such a case, on the trade date the cost of buying one option is the same as the income derived from selling the other, which means that the overall cost of the two deals is zero, just as in the case of a forward transaction.

### buying foreign currency:

**forward deal for buying foreign currency = buying of EUR call option + selling of EUR put option**

(where strike rate = forward rate)

	options		forward
deal type	buying of EUR call option	selling of EUR put option	forward FX buying
right or obligation acquired upon concluding the deal	conditional right to buy EUR	conditional obligation to buy EUR	right and obligation to buy EUR
exchange rate	302.00 EUR/HUF (= forward rate = strike rate)		
condition	exchange rate on expiry > 302.00	exchange rate on expiry < 302.00	none
premium payable on trade date	- 1 057 000 (payable by client)	+ 1 057 000 (received by client)	0
total cost on trade date	0		0
spot rate on the expiry date is below forward rate	right does not become effective	<b>obligation becomes effective</b>	obligation becomes effective
spot rate on the expiry date is above forward rate	<b>right becomes effective</b>	obligation does not become effective	right becomes effective

## ➔ 4. range forward

MIFID complexity

FX 2

### product description

A range forward deal provides more flexibility than a standard forward. Using this product, you can fix the future buying rate of a specific currency in a range around the forward rate. In contrast to a forward deal, the rates of the right and the obligation for buying foreign currency are different. You have a limited potential gain in case of HUF weakening; in return, your company is protected against unfavourable market movements at a rate higher than the forward.

Consequently, your company

- has a right to buy foreign currency at an exchange rate somewhat less advantageous than the forward rate, provided that the spot rate on expiry is above the top of the range or between the range, but in this case, the right will not be exercised
- has an obligation to buy foreign currency at an exchange rate better than the forward rate if on expiry the exchange rate is below the bottom of the range.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian importer expects to incur a year from now EUR 100 000 in expenses. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company hopes to achieve an exchange rate better than the forward rate on the expiry date, but to secure an appropriate profit margin it is important that the exchange rate remains below the maximum of 320 EUR/HUF. Therefore, the company enters into a one-year range forward deal, where the bottom and the top of the range are set at 295 and 320, respectively. By entering into a range forward deal, the company may have the opportunity to convert foreign currency at an exchange rate that is better than the forward rate of 302, while at the same time losing the opportunity to benefit from a potential forint strengthening beyond the bottom of the range (295 EUR/HUF). However, the company enjoys protection against the weakening of the forint at a higher level than the forward (320 EUR/HUF).

parameters of the range forward	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
1-year forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
bottom level of the range (obligation to buy)	295 EUR/HUF
top of the range (right to buy)	320 EUR/HUF
transaction cost on the trade date	zero
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
exchange rate above 320 EUR/HUF	Your company has a right to buy EUR 100 000 at a rate of 320 EUR/HUF (better than the market rate)
exchange rate between 295 and 320 EUR/HUF	Neither the right nor the obligation is exercised. Your company can buy euros at the spot rate prevailing on expiry.
exchange rate below 295 EUR/HUF	Your company has an obligation to buy EUR 100 000 at a rate of 295 EUR/HUF (better than the forward rate prevailing on the trade date).
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 320 on the expiry date. In this case your company has a right to buy EUR 100 000 at a rate of 320 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 295 on the expiry date. In this case your company has to buy EUR 100 000 at a rate of 295 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

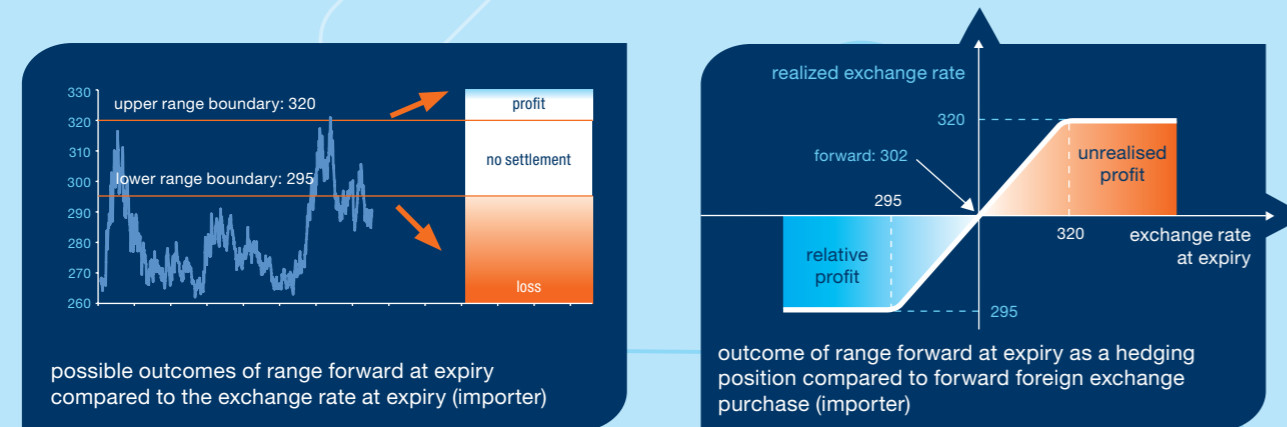
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 1 555 000
300	700 000
330	2 680 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(270 - 295) * 100\,000 = - 2\,500\,000$	$295 * 100\,000 = 29\,500\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$300 * 100\,000 = 30\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(330 - 320) * 100\,000 = 1\,000\,000$	$320 * 100\,000 = 32\,000\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- limited profit from rates better than the forward rate
- fixed maximum exchange rate for foreign currency buying transactions in the future (the worst-case scenario is known), therefore the maximum HUF equivalent of your foreign currency expenditure can be set in advance
- full protection against a potential forint weakening
- no cost or separate fee charged
- the bottom, top, and width of the range can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- if upon expiry the spot rate is below the bottom of the range, your company has to buy foreign currency at the bottom of the range with unlimited foreign exchange loss potential
- the top of the range provides less protection than a standard forward
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- The market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the

given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The range forward is built up of two plain vanilla options. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.



## → 5. seagull option

MIFID complexity

FX 2

### product description

A seagull option provides more flexibility than a standard forward deal and moreover it offers a buying obligation rate better than the forward. With a seagull structure your company can gain limited profit from rates lower than the forward in case of a potential forint strengthening. However, you have a limited protection from a potential forint weakening at a level higher than the forward. In return for this limited protection your company can get a fixed amount of compensation.

The seagull structure offers a higher buying obligation rate than the range forward. But, unlike the range forward, the protection against potential forint strengthening is limited. The seagull structure is built up of three options; therefore your importing company may acquire a right or an obligation in respect of three different exchange rate levels. Consequently, your company

- has to buy foreign currency at a level lower than the forward rate (the lower level of the seagull option), provided that the spot rate on expiry is below the lower level of the seagull option
- has a right to buy foreign currency at a level somewhat higher than the forward rate (or at the forward rate in case of a narrower range), provided that the spot rate on expiry is between the middle and the upper levels of the seagull option
- has to sell foreign currency at the upper level of the seagull option, which, combined with the right to buy at the middle level of the seagull option, results in limited protection against forint weakening, but in return you receive a fixed amount of compensation from the bank.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian importer expects to incur, EUR 100 000 in expenses a year from now. Let us assume that the current spot exchange rate is 290 EUR/HUF, the one-year forward rate is 302 EUR/HUF, and the range forward rates are 295-320. The company wants to gain from a possible strengthening of the forint to a greater extent than the forward would allow, and it is willing to take the risk that it is not protected from a forint weakening above a certain exchange rate level. In the latter case, it receives a fixed amount of compensation from the Bank in return. The company wants to buy euros at the maximum rate of 310 EUR/HUF, and because it does not expect the forint to depreciate beyond 330, it enters into a seagull option with exchange rate levels of 290-310-330. The obligation to buy at 290 allows the company to benefit to a greater extent from a potential appreciation of the forint than in a forward deal at 302 and with a range forward deal with 295. In the seagull option, there is protection against the depreciation of the forint above 310, but it is limited at 330 (above this the fixed compensation is paid), while in a range forward deal the protection above 320 is unlimited.

### parameters of the seagull option

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
lower level of seagull option (obligation to buy)	290 EUR/HUF
middle level of seagull option (right to buy)	310 EUR/HUF
upper level of seagull option (obligation to sell)	330 EUR/HUF
transaction cost on the trade date	zero

### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

exchange rate is below 290 EUR/HUF	your company has an obligation to buy EUR 100 000 at a rate of 290 EUR/HUF (better than the forward rate effective on the trade date)
exchange rate is between 290 and 310 EUR/HUF	Neither a right, nor an obligation is exercised. Your company can buy euros at the spot rate prevailing on expiry.
exchange rate is between 310 and 330 EUR/HUF	your company can buy EUR 100 000 at a rate of 310 EUR/HUF
exchange rate is above 330 EUR/HUF	Your company has a right to buy at a rate of 310 EUR/HUF and a simultaneous obligation to sell at a rate of 330 EUR/HUF. Your company's protection does not extend any further, but in return it receives a fixed amount of compensation.
amount of compensation	$(330 \text{ EUR/HUF} - 310 \text{ EUR/HUF}) = 20 \text{ HUF per EUR (2 000 000 HUF)}$
settlement of compensation	on the delivery date
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 330 on the expiry date. In this case your company can buy euros at the spot rate prevailing on expiry (above 330), but it receives compensation in return.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 290 on the expiry date. In this case your company has to buy EUR 100 000 at a rate of 290 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

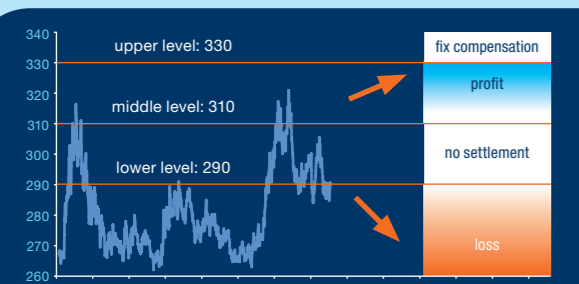
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 1 510 000
300	205 700
330	1 288 000

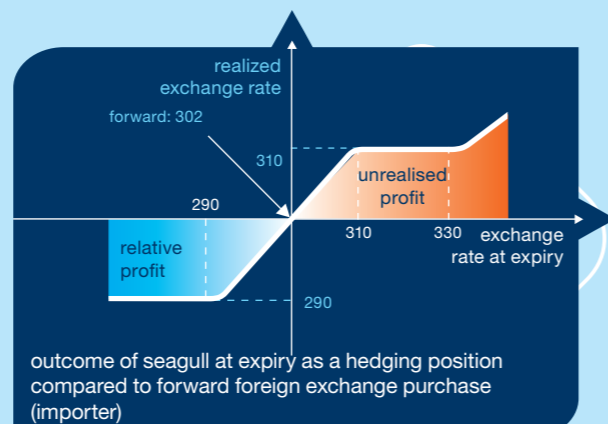
### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(270 - 290) * 100\,000 = -2\,000\,000$	$290 * 100\,000 = 29\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$300 * 100\,000 = 30\,000\,000$
320	$320 * 100\,000 = 32\,000\,000$	$(320 - 310) * 100\,000 = 1\,000\,000$	$310 * 100\,000 = 31\,000\,000$
340	$340 * 100\,000 = 34\,000\,000$	$(330 - 310) * 100\,000 = 2\,000\,000$	$340 * 100\,000 - 2\,000\,000 = 32\,000\,000$



possible outcomes of seagull at expiry compared to the exchange rate at expiry (importer)



outcome of seagull at expiry as a hedging position compared to forward foreign exchange purchase (importer)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- limited benefit from exchange rate levels better than the forward rate
- limited protection against the depreciation of the forint
- you will receive compensation in case of significant forint weakening, but there is no protection beyond a certain level
- no cost or separate fee charged
- the exchange rate levels specified in the seagull option can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- your company enjoys protection only up to the upper level you consider as an unlikely outcome. If on expiry the exchange rate is above that level, this strategy will give you compensation for the difference between the upper and the middle levels only.
- if upon expiry the spot rate is below the lower level of the seagull option, your company will be obliged to buy foreign currency at the lower level of the seagull option with unlimited foreign exchange loss potential
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies

for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The seagull option is built up of three plain vanilla options. The section on plain vanilla options of Chapter I/c entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 6. participating forward

MIFID complexity

FX 2

#### product description

In a participating forward deal your company enjoys full protection against a potential depreciation of the forint similarly to a forward deal, while you can fully benefit from a possible appreciation with respect to a specific percentage of the notional amount, fixed in advance. In return for this, the exchange rate applicable to a participating forward deal is less advantageous than the standard forward rate.

Participating forward deals are built up of a right and an obligation, but contrary to the standard forward contract, the right and the obligation in this case pertain to different nominal values.

Consequently, your company

- has a right to buy foreign currency at the participating forward rate (which is higher and so less advantageous than the standard

forward rate) for 100% of the notional, provided that the spot rate on expiry is above the participating forward rate, in which case the option will not be exercised.

- has an obligation to buy foreign currency at the participating forward rate, but only for a specific percentage of the notional, provided that the spot rate on expiry is lower than the participating forward rate

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian importer expects to incur EUR 100 000 a year from now in expenses. Let us assume that the current spot rate is 290 EUR/HUF and the one-year forward rate is 302 EUR/HUF. The company would like 100% protection against any depreciation of the forint but also wants to profit to the extent of 50% from a possible strengthening of the forint. In return for this, it is willing to accept that its protection against a possible depreciation of the forint will be at a level higher than the forward rate. Therefore, the company enters into a participating forward transaction at a participating forward rate of 317 EUR/HUF, where the obligation stands for 50% of the notional.

Let us assume that on the expiry date the spot rate is 285 EUR/HUF. In this case the realised exchange rate for the total notional amount is  $(285 + 317) / 2 = 301$  EUR/HUF which represents a more favourable conversion level than the forward rate quoted on the trade date for this maturity. The realised exchange rate is the same as with a forward deal if on the expiry date the spot rate is 287 EUR/HUF, as  $(287 + 317) / 2 = 302$  EUR/HUF.

parameters of the participating forward	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing on expiry	302 EUR/HUF
ATMF volatility	15%
participating forward rate	317 EUR/HUF
percentage of obligation	50% * notional amount
transaction cost on the trade date	zero
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
exchange rate above 317 EUR/HUF	your company can buy EUR 100 000 at a rate of 317 EUR/HUF
exchange rate below 317 EUR/HUF	Your company has to buy 50%*100 000 = 50 000 EUR at a rate of 317 EUR/HUF and can convert 100 000-50%*100 000 = 50 000 EUR at the spot rate prevailing on expiry. The realised exchange rate is the same as with a forward deal if on the expiry date the spot rate is 287 EUR/HUF as $(287 + 317) / 2 = 302$ EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 317 on the expiry date. In this case your company has a right to buy EUR 100 000 at a rate of 317 EUR/HUF
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below 317 on the expiry date. In this case your company has to buy EUR 50 000 at a rate of 317 EUR/HUF. The resulting foreign exchange loss can be unlimited. But due to this deal, your company can buy the remaining EUR 50 000 at the spot rate prevailing on expiry, thus benefiting from the favourable exchange rate movement for some extent.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

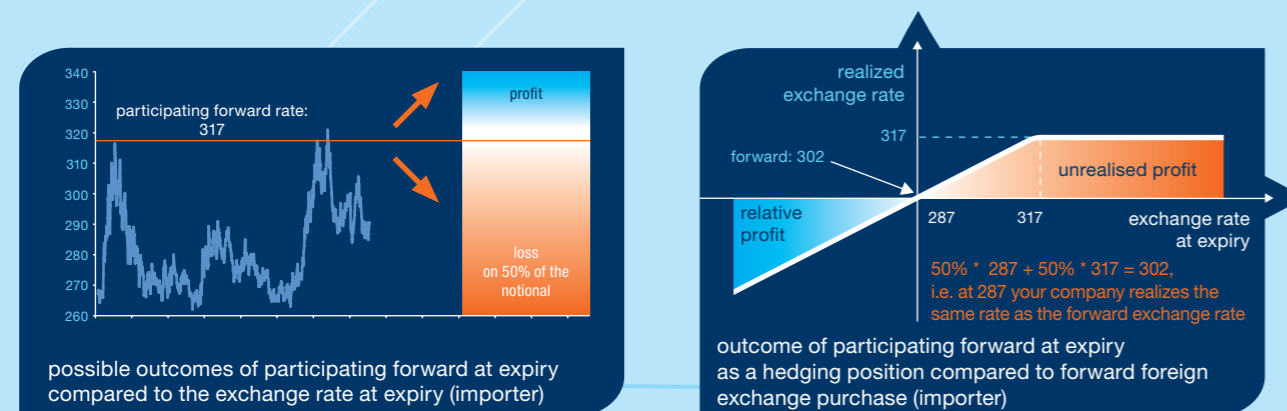
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 1 363 000
300	489 000
330	2 857 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit/loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(270 - 317) * 50\,000 = -2\,350\,000$	$(270 * 50\,000) + (317 * 50\,000) = 29\,350\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(300 - 317) * 50\,000 = -850\,000$	$(300 * 50\,000) + (317 * 50\,000) = 30\,850\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(330 - 317) * 100\,000 = 1\,300\,000$	$317 * 100\,000 = 31\,700\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- partial profit from exchange rate levels better than the standard forward rate since your company must buy only a predefined percentage of the notional amount at the predefined rate
- the maximum exchange rate of future currency buying transactions is fixed in advance (the worst-case scenario is known) so the maximum HUF equivalent of your foreign currency expenditure is fixed in advance
- full protection against the depreciation of the forint above a certain level
- no cost or separate fee charged
- the participating forward rate, as well as the percentage of participation can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- protection at a level less advantageous than the standard forward rate
- you can only take advantage of rates better than the standard forward rate with a pre-agreed percentage of the notional amount
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies

for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The participating forward is built up of two plain vanilla options. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 7. forward extra

MIFID complexity

FX 3

### product description

A forward extra deal combines the security of a forward deal with the flexibility of an option. If you have a concrete idea about the maximum forint strengthening that would be advantageous to your company you can enjoy the benefits of a pure right to buy in exchange for a level of protection that is somewhat higher (i.e. less advantageous) than the normal forward rate.

The forward extra is built up of a right to buy and a barrier obligation to buy. The obligation will be triggered when the exchange rate reaches a specific knock-in level:

- consequently, your company acquires a right to buy foreign currency at the forward extra rate (which is higher than the forward rate) provided that the spot rate on expiry is above the forward extra rate, and even if it is below the forward rate but in this case the option will not be exercised
- if the EUR/HUF rate reaches the trigger level, your obligation to buy becomes effective at the forward extra rate

There are two types of this “knock-in” trigger level:

- European type trigger: the question of whether the obligation becomes effective at the forward extra rate depends only on the spot rate at 12 p.m. on the expiry date.
- American type trigger: the obligation may become effective at any time during the tenor. The trigger is available also as a partial/window barrier, when the trigger exists only over a certain part time period (window), which is fixed in advance.

For a given forward extra rate a European type trigger has a less favourable knock in level than an American trigger. In other words, the obligation to buy foreign currency may come into effect at a smaller appreciation of the forint. However, in case of a European type trigger the exchange rate is not monitored during the whole tenor, it will be decided whether the obligation to buy will come into effect on the spot exchange rate at only 12 p.m. on the expiry date.

In summary: before the trigger level is reached the arrangement works like a standard call option but if the trigger level is reached it turns into a normal FX forward (creating both a right and an obligation) at the same strike price.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly.

The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example for an American type trigger:** a Hungarian importer expects to incur EUR 100 000 a year from now in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company expects that on the expiry date the spot rate will be more advantageous than the forward rate but it would like to have 100% protection against a potential depreciation of the forint. It cannot afford a EUR/HUF exchange rate above 315 but it expects that the EUR/HUF rate will not reach 270 during the tenor of the deal. The company is willing to take the risk that if the spot rate reaches 270 EUR/HUF at any time during the term (including the expiry date), it will only have a forward contract at a strike price of 315 EUR/HUF, thus it enters into a forward extra transaction at a forward extra rate of 315 EUR/HUF with an American trigger at 270 EUR/HUF. Altogether, the company enjoys protection against the depreciation of the forint up to the 315 EUR/HUF rate and can benefit from a potential appreciation of the forint until the 270 EUR/HUF rate. If, however, the 270 level is reached, the company's obligation to buy foreign currency will be triggered so then the conversion must take place at 315 on the expiry date.

### parameters of the forward extra with an American trigger

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m.(CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate	302 EUR/HUF
ATMF volatility	15%
forward extra rate	315 EUR/HUF
trigger level (American)	270 EUR/HUF
transaction cost on the trade date	zero

### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

A) the exchange rate never reaches the 270 EUR/HUF rate during the tenor or on the expiry date	
A/1) exchange rate above 315 EUR/HUF	your company can buy EUR 100 000 at a rate of 315 EUR/HUF
A/2) exchange rate below 315 EUR/HUF	your company can buy euros at the spot rate prevailing on expiry
B) the exchange rate reaches 270 EUR/HUF during the tenor or on the expiry date	your company has a forward deal for EUR 100 000 at a rate of 315 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is above 315 on the expiry date. In this case your company can buy EUR 100 000 at a rate of 315 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	At any time during the tenor, the EUR/HUF spot rate reaches the 270 trigger level and on the expiry date the EUR/HUF spot rate is below 315. In this case your company has to buy EUR 100 000 at a rate of 315 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	-3 043 000 HUF
300	572 000 HUF
330	2 865 000 HUF

### financial outcome of some possible scenarios on the expiry date, if the exchange rate does not reach the knock in level during the tenor.

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
280	$280 * 100\,000 = 28\,000\,000$	0	$280 * 100\,000 = 28\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$300 * 100\,000 = 30\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(330 - 315) * 100\,000 = 1\,500\,000$	$315 * 100\,000 = 31\,500\,000$

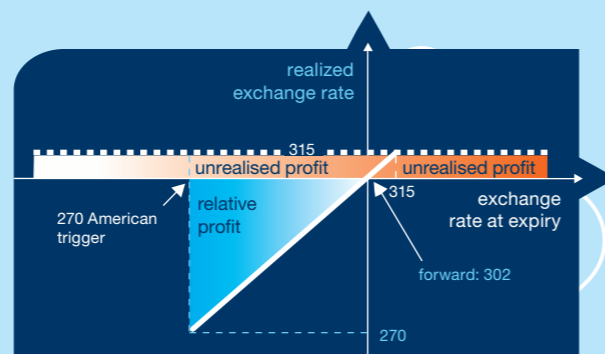
### financial outcome of some possible scenarios on the expiry date, if the exchange rate reaches the knock in level during the tenor.

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(270 - 315) * 100\,000 = -4\,500\,000$	$315 * 100\,000 = 31\,500\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$315 * 100\,000 = 31\,500\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(330 - 315) * 100\,000 = 1\,500\,000$	$315 * 100\,000 = 31\,500\,000$



possible outcomes of forward extra (with American trigger) at expiry compared to the exchange rate at expiry (importer)



outcome of forward extra (with American trigger) at expiry as a hedging position compared to forward foreign exchange purchase (importer)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

**example for an European type trigger:** a Hungarian importer expects to incur EUR 100 000 a year from now in expenses. Let us assume that the current spot rate is 290 EUR/HUF, and the one-year forward rate is 302 EUR/HUF. The company expects the spot rate on expiry to be better than the forward rate but it would like to enjoy 100% protection against a potential depreciation of the forint. It cannot afford a EUR/HUF exchange rate above 315, but it expects that on the expiry date the EUR/HUF rate will not reach 284. The company is willing to take the risk that if on the expiry date the EUR/HUF exchange rate reaches the level 284, or goes below that, it will only have a forward contract at a strike price of 315 EUR/HUF, therefore it enters into a forward extra transaction at a forward extra rate of 315 EUR/HUF, with an European type trigger at 284 EUR/HUF.

All in all, the company enjoys protection against the depreciation of the forint up to the 315 EUR/HUF (forward extra) rate, and can benefit from a potential appreciation of the forint until the 284 EUR/HUF rate. If, however, the 284 level is reached, the company's obligation to buy foreign currency will be triggered so then the conversion must take place at 315 (forward extra) rate on the expiry date.

#### parameters of the forward extra with a European trigger

notional amount	EUR 100 000
currency pair	EUR/HUF
Tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
forward extra rate	315 EUR/HUF
trigger level (European)	284 EUR/HUF
transaction cost on the trade date	zero

#### possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date

A) the exchange rate is above 284 EUR/HUF at 12 p.m. on the expiry date	
A/1) exchange rate is above 315 EUR/HUF	your company can buy EUR 100 000 at a rate of 315 EUR/HUF
A/2) exchange rate is between 284 and 315 EUR/HUF	your company can buy euros at the spot rate prevailing on expiry
B) the exchange rate is below 284 EUR/HUF at 12 p.m. on the expiry date	your company has a forward deal for EUR 100 000 at a rate of 315 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate on the expiry date is above 315. In this case your company can buy EUR 100 000 at a rate of 315 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF spot rate is below the 284 on the expiry date. In this case your company has to buy EUR 100 000 at a rate of 315 EUR/HUF. The resulting foreign exchange loss can be unlimited.

#### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

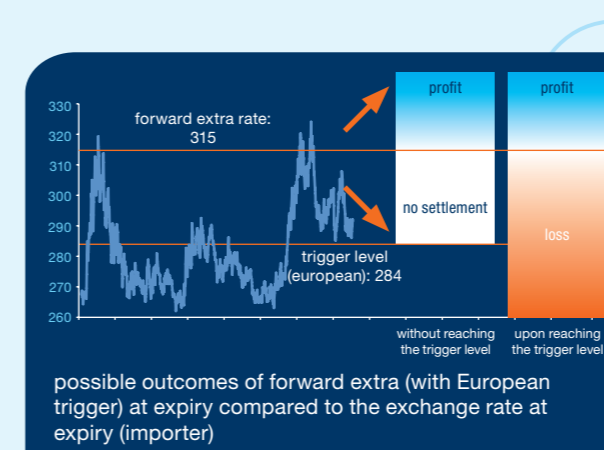
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	-2 601 000
300	471 000
330	3 049 000

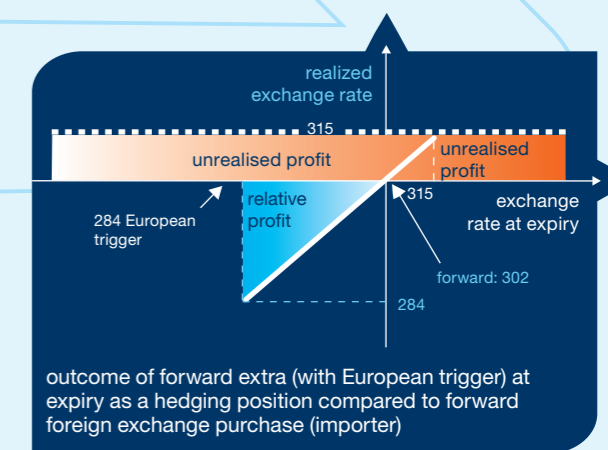
#### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit/loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(270 - 315) * 100\,000 = -4\,500\,000$	$315 * 100\,000 = 31\,500\,000$
300	$300 * 100\,000 = 30\,000\,000$	0	$300 * 100\,000 = 30\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	$(330 - 315) * 100\,000 = 1\,500\,000$	$315 * 100\,000 = 31\,500\,000$



possible outcomes of forward extra (with European trigger) at expiry compared to the exchange rate at expiry (importer)



outcome of forward extra (with European trigger) at expiry as a hedging position compared to forward foreign exchange purchase (importer)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- full protection against a possible depreciation of the forint, the maximum exchange rate of the future currency buying transactions is fixed in advance (the worst-case scenario is known)
- as long as the spot rate does not reach the trigger level, the company can take full advantage of exchange rate levels better than the forward rate
- no cost or separate fee charged
- the forward extra rate and the trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- protection at a level less advantageous than the standard forward rate

- after the trigger level has been reached the call option will be replaced by a forward contract whereby the company will be obliged to buy its currency above the normal forward rate
- if you decide to close your position before expiry by means of a counter deal you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's

viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.

- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The forward extra is built up of a right to buy and a barrier obligation to buy. The section on plain vanilla options and barrier options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 8. boosted forward

MIFID complexity

FX 3

#### product description

By entering into a boosted forward deal, you acquire a right and an obligation to buy foreign currency at an exchange rate that is below (i.e. more advantageous) than the standard forward rate. In return for the better exchange rate your company is willing to run the risk that both your right and your obligation (i.e. the boosted forward deal itself) is terminated if at any time during the tenor the exchange rate reaches a so-called trigger (in this case "knock-out") level.

The boosted forward is built up of a barrier right and a barrier obligation to buy foreign currency. If the exchange rate reaches the knock out trigger level fixed in advance, both the right and the obligation are terminated in the same time.

Consequently, your company:

- has a right to buy foreign currency at the boosted forward rate (which is below the forward rate), provided that the spot rate on expiry is above the boosted forward rate but below the knock out trigger level and it does not reach the knock out level over the tenor
- has an obligation to buy foreign currency at the boosted forward rate (which is below the forward rate), provided that the spot rate on expiry is below the boosted forward rate and it does not reach the knock out level over the tenor
- has neither right nor obligation, provided that the EUR/HUF rate reaches the trigger level because in this case both the right and the obligation is terminated at the boosted forward rate.

There are two types of knock-out trigger levels:

- European type trigger: the termination of the deal depends only on the spot rate at 12 p.m. on the expiry date
- American type trigger: the deal may terminate at any time during the tenor. The trigger is available also as a partial/window barrier, when the trigger exists only over a certain part time period (window), which is fixed in advance.

For a given boosted forward rate a European type trigger has a less favourable knock out level than an American trigger so the right to buy foreign currency terminates after a smaller depreciation of the forint. However, in case of a European type trigger the exchange rate monitoring is not over the whole tenor, it will be decided only at 12 p.m. on the expiry date whether the right to buy will terminate or.

In summary: before the trigger level is reached the deal works like a standard forward but if the trigger level is reached, it terminates.

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains un-hedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example for an American type trigger:** a Hungarian importer expects to incur EUR 100 000 a year from now in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate and it does not expect the EUR/HUF rate to rise above or reach 320 in the next year. Because it is willing to accept the risk that the hedge can be terminated it enters into a boosted forward deal with 290 as a boosted forward rate and 320 as a knock-out trigger.

**parameters of the boosted forward with an American trigger**

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
boosted forward rate	290 EUR/HUF
trigger level (knock-out)	320 EUR/HUF
knock-out level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
transaction cost on the trade date	zero

**possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date**

A) the exchange rate never reaches the 320 EUR/HUF level during the tenor	
A/1) exchange rate above 290 EUR/HUF	your company has a right to buy EUR 100 000 at a rate of 290 EUR/HUF
A/2) exchange rate below 290 EUR/HUF	your company has an obligation to buy EUR 100 000 at a rate of 290 EUR/HUF
B) the exchange rate reaches the 320 EUR/HUF level during the tenor	the hedge ceases to exist, in other words, it is as if no transaction was made at all
best-case scenario (treasury transaction on a standalone basis)	During the tenor the spot exchange rate never reaches 320 EUR/HUF and on expiry the EUR/HUF spot rate is above 290 but below 320. In this case your company buys EUR 100 000 at a rate of 290 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	During the tenor the spot exchange rate never reaches the 320 EUR/HUF level and on the expiry date the EUR/HUF rate is below 290. In this case, your company buys EUR 100 000 at a rate of 290 EUR/HUF. The resulting foreign exchange loss can be unlimited.

**the market value of the position two weeks after the trade date from the customer's point of view**

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 1 524 000
300	17 000
330	0

**financial outcome of some possible scenarios on the expiry date, if the exchange rate does not reach the knock out level during the tenor.**

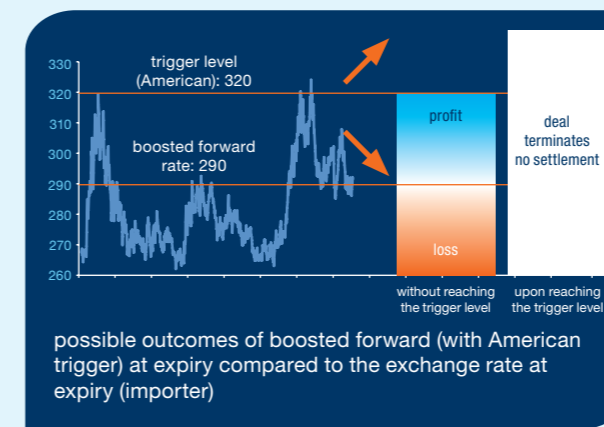
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000	(270 - 290) * 100 000 = - 2 000 000	290 * 100 000 = 29 000 000
300	300 * 100 000 = 30 000 000	(300 - 290) * 100 000 = 1 000 000	290 * 100 000 = 29 000 000
310	310 * 100 000 = 31 000 000	(310 - 290) * 100 000 = 2 000 000	290 * 100 000 = 29 000 000

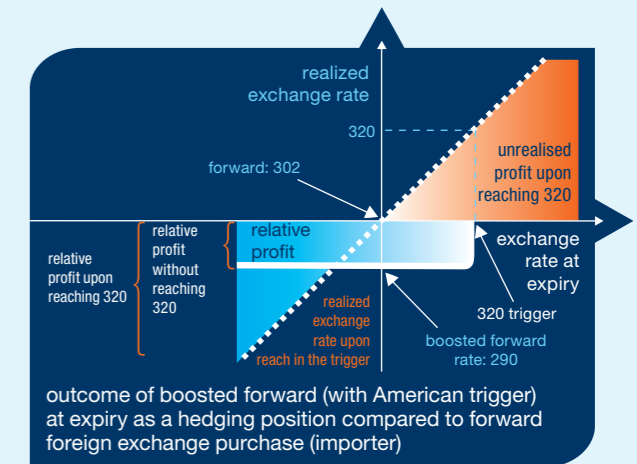
**financial outcome of some possible scenarios on the expiry date, if the exchange rate reaches the knock out level during the tenor.**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000	megszűnik	270 * 100 000 = 27 000 000
300	300 * 100 000 = 30 000 000	megszűnik	300 * 100 000 = 30 000 000
330	330 * 100 000 = 33 000 000	megszűnik	330 * 100 000 = 33 000 000



possible outcomes of boosted forward (with American trigger) at expiry compared to the exchange rate at expiry (importer)



outcome of boosted forward (with American trigger) at expiry as a hedging position compared to forward foreign exchange purchase (importer)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

**example for a European type trigger:** a Hungarian importer expects to incur EUR 100 000 a year from now in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate and it does not expect the EUR/HUF rate to depreciate above 310 on the exchange rate monitoring day. Because it is willing to accept the risk that the hedge can be terminated it enters into a boosted forward deal with 297 as a boosted forward rate and 310 as a knock-out trigger.

**parameters of the boosted forward with a European trigger**

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
boosted forward rate	297 EUR/HUF
trigger level (knock-out)	310 EUR/HUF
knock-out level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
transaction cost on the trade date	zero

**possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date**

A) the exchange rate at 12:00 p.m. (CET) on the expiry date is below 310	
A/1) exchange rate is between 297 and 310 EUR/HUF	your company has a right to buy EUR 100 000 at a rate of 297 EUR/HUF
A/2) exchange rate is below 297 EUR/HUF	your company has an obligation to buy EUR 100 000 at a rate of 297 EUR/HUF
B) the exchange rate at 12:00 p.m. (CET) on the expiry date is above 310	the hedge ceases to exist, in other words, it is as if no transaction was made at all
best-case scenario (treasury transaction on a standalone basis)	On expiry the EUR/HUF spot rate is above 297 but below 310. In this case your company buys EUR 100 000 at a rate of 297 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	On expiry the spot rate is under 297. In this case, your company has an obligation to buy EUR 100 000 at a rate of 297 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)

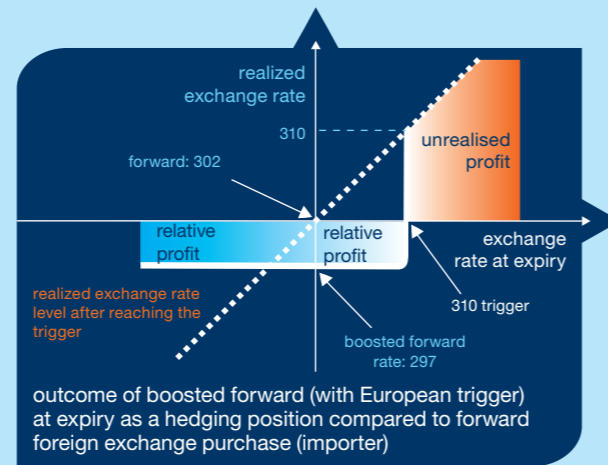
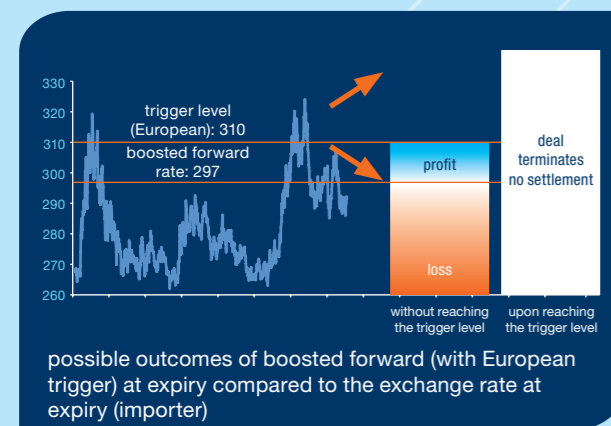
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 1 944 700
300	123 779
330	206 021

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(270 - 297) * 100\,000 = - 2\,700\,000$	$297 * 100\,000 = 29\,700\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(300 - 297) * 100\,000 = 300\,000$	$297 * 100\,000 = 29\,700\,000$
330	$330 * 100\,000 = 33\,000\,000$	terminated	$330 * 100\,000 = 33\,000\,000$



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- opportunity to obtain an exchange rate much better than the forward rate
- no cost or separate fee charged
- the boosted forward rate and the knock-out trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- after reaching the knock-out trigger level the deal, including protection against the depreciation of the forint, is terminated
- if during the exchange rate monitoring (over the whole tenor in case of an American trigger, on expiry in case of an European trigger) the spot rate does not reach the knock-out level, and on expiry it is below the boosted forward rate, your company will be obliged to

buy foreign currency at the boosted forward rate with an unlimited foreign exchange loss potential

- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide

additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.

- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The boosted forward is built up of a barrier right and a barrier obligation to buy foreign currency. The section on barrier options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.



## ➔ 9. boosted forward with compensation

MIFID complexity

FX 3

### product description

By entering into a boosted forward with rebate your company acquires a right and an obligation to buy foreign currency at an exchange rate lower (i.e. more advantageous) than the standard forward rate. In return for the better exchange rate your company is willing to run the risk that both your right and your obligation (i.e. the boosted forward deal itself) is terminated if the exchange rate reaches a so-called trigger (in this case “knock-out”) level. However, in case of termination our Client will receive a predetermined, fixed amount of compensation from the bank.

The boosted forward with rebate is built up of a barrier right and a barrier obligation to buy foreign currency, and a one touch digital option. If the exchange rate reaches a knock out trigger level fixed in advance, both the right and the obligation are terminated at the same time but the Client will receive a predetermined fixed amount of compensation from the bank.

Consequently, your company:

- has a right to buy foreign currency at the boosted forward rate (which is below the forward rate), provided that the spot rate on expiry is above the boosted forward rate but below the knock out trigger level and it does not reach the knock out and one touch levels during the tenor,
- has an obligation to buy foreign currency at the boosted forward rate (which is below the forward rate), provided that the spot rate on expiry is below the boosted forward rate and it does not reach the knock out and one touch levels during the tenor,
- has neither right nor obligation, provided that the EUR/HUF rate reaches the trigger and one touch level because in this case both the right and the obligation are terminated at the boosted forward rate. In this case, our Client will receive a predetermined, fixed amount of compensation from the one touch option.

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains un-hedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** Hungarian importer expects to incur EUR 100 000 a year from now in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate and it does not expect the EUR/HUF rate to depreciate above 315 in the next one year. Because it is willing to run the risk that the hedge can be terminated and in case of termination it receives only a fixed amount of compensation it enters into a boosted forward deal with a boosted forward rate at 290 and an American knock-out trigger level at 315 combined with a one touch option with a trigger at 315. The amount of compensation (pay off of the one touch option if it reaches the trigger level) is 10 HUF per each euro, in other words, HUF 1 000 000 for a notional of EUR 100 000. In comparison with a boosted forward that does not pay a compensation for the client upon termination, the client would have a trigger level of 320 and a boosted forward rate of 290 EUR/HUF.

parameters of the boosted forward with compensation	
notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate until 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
boosted forward rate	290 EUR/HUF
trigger level (knock-out)	315 EUR/HUF
knock-out level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
one touch trigger level	315 EUR/HUF
one touch trigger level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
amount of compensation	10 HUF per each euro (1 000 000 HUF for the whole notional)
settlement of compensation	on the delivery date
transaction cost on the trade date	zero
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
A) the exchange rate never reaches the 315 EUR/HUF level during the tenor	
A/1) exchange rate is above 290 EUR/HUF	your company has a right to buy EUR 100 000 at a rate of 290 EUR/HUF
A/2) exchange rate is below 290 EUR/HUF	your company has an obligation to buy EUR 100 000 at a rate of 290 EUR/HUF
B) the exchange rate reaches the 315 EUR/HUF level during the tenor	The hedge ceases to exist, in other words, it is as if no transaction were made at all. In case of termination the Client will receive a fixed amount of compensation.
best-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate never reaches 315 EUR/HUF, and on the expiry date the EUR/HUF spot rate is above 290 but below 315. In this case your company buys EUR 100 000 at a rate of 290 EUR/HUF.
worst-case scenario (treasury transaction on a standalone basis)	During the tenor, the exchange rate never reaches the 315 EUR/HUF level, and on expiry the EUR/HUF rate is below 290. In this case, your company buys EUR 100 000 at a rate of 290 EUR/HUF. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint) The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 1 245 800 HUF
300	633 573 HUF
330	1 000 000 HUF

### financial outcome of some possible scenarios on the expiry date if the exchange rate does not reach the knock out – one touch trigger level during the tenor.

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$(290 - 270) * 100\,000 = 2\,000\,000$	$290 * 100\,000 = 29\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	$(290 - 300) * 100\,000 = -1\,000\,000$	
310	$310 * 100\,000 = 31\,000\,000$	$(290 - 310) * 100\,000 = -2\,000\,000$	

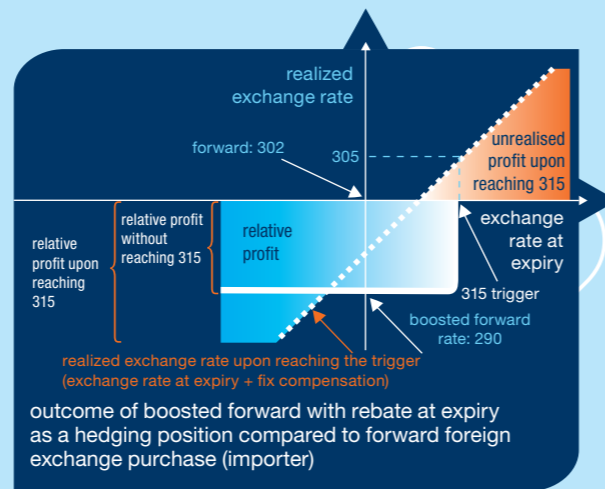
### financial outcome of some possible scenarios on the expiry date if the exchange rate does not reach the knock out – one touch trigger level during the tenor.

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	terminated, amount of compensation: 1 000 000 HUF	$270 * 100\,000 - 1\,000\,000 = 26\,000\,000$
300	$300 * 100\,000 = 30\,000\,000$	terminated, amount of compensation: 1 000 000 HUF	$300 * 100\,000 - 1\,000\,000 = 29\,000\,000$
330	$330 * 100\,000 = 33\,000\,000$	terminated, amount of compensation: 1 000 000 HUF	$330 * 100\,000 - 1\,000\,000 = 32\,000\,000$



possible outcomes of boosted forward with rebate at expiry compared to the exchange rate at expiry (importer)



outcome of boosted forward with rebate at expiry as a hedging position compared to forward foreign exchange purchase (importer)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

#### advantages of transaction

- opportunity to obtain an exchange rate much better than the forward rate
- no cost or separate fee charged
- the boosted forward rate as well as the one touch trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- in case of termination the Client will receive a predetermined, fixed amount of compensation, but will not be protected against further HUF weakening
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- after reaching the knock-out trigger level the deal, including the protection against the appreciation of the forint, is terminated. In case of termination the Client will receive a predetermined, fixed amount of compensation.
- if during the term of the deal the spot rate does not reach the knock-out level and the one touch trigger level and on expiry it is below the boosted forward rate your company will be obliged to buy foreign currency at the boosted forward rate with an unlimited foreign exchange loss potential
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here but rather from other factors.

#### product structure

The boosted forward is built up of a barrier right and a barrier obligation to buy foreign currency combined with a one touch option. The section on barrier options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 10. extendible forward

MIFID complexity

FX 3

#### product description

By combining the average forward with "knock-in" barrier options the average forward rate can be improved for the same period. The extendible forward offers you the advantages of a normal forward transaction with a strike that is lower (more advantageous) than the average forward rate for the same period. If the exchange rate is below the knock-in trigger level on the day when the knock-in level is monitored the forward will be extended until the maturity date. If however the spot exchange rate is above the knock-in trigger level on the day when the knock-in level is monitored, the forward will cease to exist for the rest of the tenor.

The extendible forward is built up of a strip of forwards for the first part of the tenor and of a strip of barrier call and put options with European type knock-in triggers for the second part of the tenor. The barrier calls and puts are combined in a way to achieve a strip of forward deals with European type knock-in triggers. The forwards for the second part of the tenor may be triggered (knocked in) when the exchange rate upon the knock-in level monitoring is below the knock-in trigger level (which may be equal to the extendible forward rate, but different versions are possible as well).

There are two types of knock-in trigger level:

- European trigger: the extension of the deal depends only on the spot rate at 12 p.m. on the expiry date.
- American trigger: the deal may be extended at any time during the tenor. The trigger is available also as a partial/window barrier, when the trigger exists only over a certain time period (window) which is fixed in advance.

Consequently, your company

- has the right and the obligation to buy foreign currency at the improved average forward rate (which is more advantageous than the average forward rate) until the knock-in date,
- if the EUR/HUF is below the knock-in trigger level during the monitoring, both your right and obligation to buy becomes effective for the rest of the tenor at the extendible forward rate (which may be equal to the improved average forward rate of the first period),
- if the EUR/HUF rate does not reach the knock-in trigger level during the monitoring, both your right and obligation to buy ceases to exist for the rest of the tenor.

If monitoring for the knock-in level (either for a European or a one-day American trigger) and for the exchange rate are on the same day and the deal does not terminate for future expiries then in case of a European trigger it is certain, while with an American trigger it is highly probable that there will be at least one settlement with a loss. The reason is that the knock-in level is either the same or lower than the extended forward rate, therefore if the exchange rate is higher on a given date, the settlement is done at the extended forward rate while the market is at a lower level at that time. Nevertheless, the date of the knock-in monitoring and the date of the exchange rate monitoring are not necessarily the same.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example for a one-day American trigger:** a Hungarian importer expects to incur EUR 100 000 in expenses per months for a year. Let us assume that the current spot rate is 290 EUR/HUF, the one-year forward rate is 302 EUR/HUF and the average forward rate for 1 year is 296.50 EUR/HUF. The company would like to enjoy 100% protection against a potential depreciation of the forint for the first 6 months.

To secure an appropriate profit margin the company needs to realise a EUR/HUF level of 294, which it wants to achieve for the first 6 months in any case. As it is willing to realise this rate for the second 6 months even if the market is below 286 on the knock-in level monitoring date in 6 months, the company concludes an extendible forward deal at 294 EUR/HUF level with a knock-in trigger at 286 EUR/HUF.

If after six months the prevailing spot rate is below 286 EUR/HUF on the knock-in monitoring day, the deal will extend for the next six months at 294 EUR/HUF rate. This is less favourable than the average forward rate for six months prevailing at that time but the company's activity is secured by this exchange rate level as well (in return for the first six months the exchange rate is more favourable). If however the EUR/HUF rate is above 286 on the knock-in date, the extendible forward ceases to exist for the rest of the tenor.

parameters of the extendible forward with 1 day American type trigger	
notional amount, if the exchange rate does not reach the knock-in	600 000 EUR = 6 * 100 000 EUR
notional amount, if the exchange rate reaches the knock in	1 200 000 EUR = 12 * 100 000 EUR
currency pair	EUR/HUF
tenor	1 – 12 months
knock-in monitoring	in six months for a whole day, 2 business days before the 6. settlement day
knock-in event (condition for the deal to extend)	the EUR/HUF fixing rate is below the trigger level on the trigger level monitoring day
number of expiries if there is no knock-in event	6
number of expiries if there is knock-in event	12
expiry dates (date of exchange rate monitoring)	2 business days before settlement days
exchange rate monitoring	EUR/HUF spot rate at 12:00 p.m. (CET) on the expiry date
settlement dates	monthly
spot rate prevailing at pricing	290 EUR/HUF
1-year forward rate	302 EUR/HUF
1-year average forward rate	296.50 EUR/HUF
ATMF volatility	15%
extendible forward rate	294 EUR/HUF
knock-in level	286 EUR/HUF
transaction cost on the trade date	zero
possible scenarios on each expiry depending on the spot market rates at 12:00 p.m. on each expiry date until the knock-in date	
1) exchange rate below 294 EUR/HUF	your company has an obligation to buy EUR 100 000 at a rate of 294 EUR/HUF
2) exchange rate above 294 EUR/HUF	your company has a right to buy EUR 100 000 at a rate of 294 EUR/HUF
possible scenarios on each expiry depending on the spot market rates at 12:00 p.m. on each expiry date after the knock-in date	
A) the exchange rate reaches or is below 286 EUR/HUF on the knock-in date	
A/1) EUR/HUF spot rate below 294 EUR/HUF	your company has an obligation to buy EUR 100 000 at a rate of 294 EUR/HUF
A/2) EUR/HUF spot rate above 294 EUR/HUF	your company has a right to buy EUR 100 000 at a rate of 294 EUR/HUF
B) the exchanges rate does not reach 286 EUR/HUF on the knock in date	the forwards ceases to exist for the rest of the tenor
best-case scenario (treasury transaction on a standalone basis)	The EUR/HUF rate on each expiry date is above 294 until the knock-in date and the EUR/HUF spot reaches the knock-in level on the knock-in date. Afterwards, the EUR/HUF rate is above 294 for the rest of the tenor. In this case your company can buy EUR 100 000 at a rate of 294 EUR/HUF on each expiry.
worst-case scenario (treasury transaction on a standalone basis)	The EUR/HUF rate is below 294 until the knock in date and the EUR/HUF spot rate reaches the knock-in level on the knock-in date. Afterwards, the EUR/HUF rate stays below 294 for the rest of the tenor on each expiry date. In this case your company has to buy EUR 100 000 at a rate of 294 EUR/HUF on each settlement day. The resulting foreign exchange loss can be unlimited.

**the market value of the position two weeks after the trade date from the customer's point of view**

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	12 747 000
300	- 10 936 000
330	- 43 343 000

**financial outcome of some possible scenarios on the expiry date if there is no knock-in event**

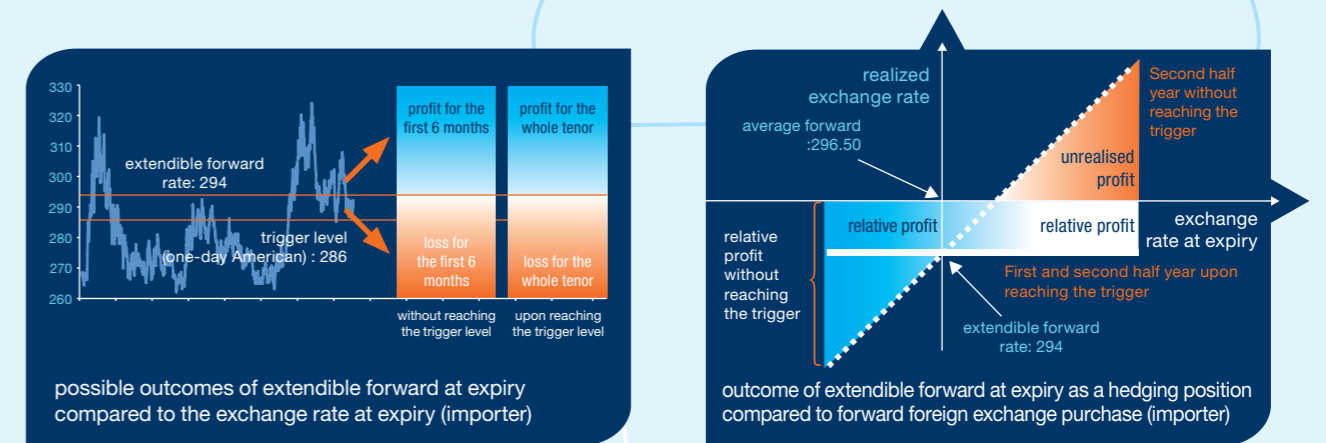
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000 in total: 6 * 27 000 000 = 162 000 000	(270 - 294) * 100 000 = - 2 400 000 in total: 6 * (- 3 000 000) = - 14 400 000	294 * 100 000 = 29 400 000 in total: 6 * 29 400 000 = 176 400 000
300	300 * 100 000 = 30 000 000 összesen: 6 * 30 000 000 = 180 000 000	(300 - 294) * 100 000 = 600 000 in total: 6 * 600 000 = 3 600 000	
330	330 * 100 000 = 33 000 000 in total: 6 * 33 000 000 = 198 000 000	(330 - 294) * 100 000 = 3 600 000 in total: 6 * 3 000 000 = 21 600 000	

**financial outcome of some possible scenarios on the expiry date if there is knock-in event**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000 in total: 12 * 27 000 000 = 324 000 000	(270 - 294) * 100 000 = - 2 400 000 in total: 12 * (-2 400 000) = - 28 800 000	294 * 100 000 = 29 400 000 in total: 12 * 30 000 000 = 352 800 000
300	300 * 100 000 = 30 000 000 összesen: 12 * 30 000 000 = 360 000 000	(300 - 294) * 100 000 = 600 000 in total: 12 * 600 000 = 7 200 000	
330	330 * 100 000 = 33 000 000 in total: 12 * 33 000 000 = 396 000 000	(330 - 294) * 100 000 = 3 600 000 in total: 12 * 3 600 000 = 43 200 000	



The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

### advantages of transaction

- full protection against a possible appreciation of the forint until the knock-in date
- the exchange rate of the future currency buying transactions is fixed in advance (the worst-case scenario is known) until the knock-in date
- if the spot rate reaches the knock-in trigger level at the knock-in level monitoring day, the company can take full advantage of the exchange rate level that was better than the average forward rate for the whole tenor
- if the spot rate does not reach the knock-in trigger level at the knock-in level monitoring day, the company can take full advantage of the exchange rate level better than the average forward rate until the knock-in level monitoring day (i.e. for the first 6 months)
- no cost or separate fee charged
- the improved forward rate, the extendible forward rate or the trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- if the trigger level is not reached on the knock-in date, the forwards will not be extended, and the company loses further protection against the depreciation of the forint
- if the forwards do not get extended, the company may conclude a hedge on a less advantageous average forward level than the original average forward rate, as the prevailing market conditions determine whether the average forward rate for the remaining tenor is above or below the original average forward rate
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The extendible forward is built up of strip of forwards, barrier rights and barrier obligations to buy. The section on plain vanilla options and barrier options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 11. reset forward

MIFID complexity

FX 3

### product description

By entering into a reset forward deal your company acquires a right and an obligation to buy foreign currency- similarly to a forward -, but at a primary exchange rate which is lower (i.e. more advantageous) than the standard forward rate. In return for the better exchange rate your company is willing to run the risk that the primary exchange rate will change to a predetermined, less advantageous secondary exchange rate if at any time during the tenor the exchange rate reaches a so-called trigger (in this case "no touch") level. The primary exchange rate is settled in a net basis, i.e. if the exchange rate does not reach the no touch trigger level, there will be gross settlement on the secondary exchange rate on the expiry date and our client will receive a fixed amount of compensation. The net result is equal as if the foreign currency revenues were sold at the primary exchange rate. If the exchange rate reaches the no touch trigger level, gross settlement will take place at the secondary exchange rate, in that case

our client does not receive the fixed amount of compensation, in other words the client realises the secondary rate.

### In summary

- if the exchange rate reaches the no touch level the conversion will take place at the secondary (higher) exchange rate
- if the exchange rate does not reach the no touch level the conversion will take place at the secondary (higher) exchange level but the client will receive a fixed amount of compensation so on a net basis it realises the primary (lower) exchange rate

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** a Hungarian importer expects to incur EUR 100 000 a year from now in expenses. Let us assume that the current spot exchange rate is 290 EUR/HUF and the one-year forward rate is 302 EUR/HUF. The company would like to achieve a level of protection that is more advantageous than the forward rate and it does not expect the EUR/HUF rate to depreciate above 315 in the next year. Because it is willing to run the risk that the exchange rate will change to 310 (secondary exchange rate) if the rate reaches the 315 level, it enters into a reset forward deal with a primary exchange rate of 300 with 315 as no touch level.

**parameters of the reset forward**

notional amount	EUR 100 000
currency pair	EUR/HUF
tenor	1 year
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
exchange rate monitoring	EUR/HUF spot rate until 12:00 p.m. (CET) on the expiry date
settlement date	end of tenor
spot rate prevailing at pricing	290 EUR/HUF
forward rate prevailing at pricing	302 EUR/HUF
ATMF volatility	15%
reset forward primary exchange rate	300 EUR/HUF
reset forward secondary exchange rate	310 EUR/HUF
trigger level (no touch)	315 EUR/HUF
no touch level monitoring	continuously, the EUR/HUF spot rate from the trade date until 12:00 p.m. (CET) on the expiry date
amount of compensation	10 HUF per EUR (HUF 1,500,000 HUF for the notional of EUR 100 000)
transaction cost on the trade date	zero

**possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date**

A) the exchange rate never reaches the 315 EUR/HUF level during the tenor	
A/1) exchange rate is below 310 EUR/HUF	Your company has an obligation to buy EUR 100 000 at the (secondary) rate of 310 EUR/HUF and receives a fixed amount of compensation (10 HUF per EUR). The net result is the same as if the client bought its foreign currency revenues at the primary exchange rate. (300 EUR/HUF).
A/2) exchange rate is above 310 EUR/HUF but below 315	Your company has a right to buy EUR 100 000 at the (secondary) rate of 310 EUR/HUF and receives a fixed amount of compensation (10 HUF per EUR). The net result is the same as if the client bought its foreign currency revenues at the primary exchange rate (300 EUR/HUF).
B) the exchange rate reaches the 315 EUR/HUF level during the tenor	
B/1) the rate is below 310 EUR/HUF	your company has an obligation to buy EUR 100 000 at a rate of 310 EUR/HUF
B/2) the rate is above 310 EUR/HUF	your company has a right to buy EUR 100 000 at a rate of 310 EUR/HUF
best-case scenario (treasury transaction on a standalone basis)	During the tenor the exchange rate never reaches 315 EUR/HUF and upon expiry the EUR/HUF spot rate is above 300 but below 315. In this case your company buys EUR 100 000 at a (secondary) rate of 310 EUR/HUF and receives a fixed amount (15 HUF per EUR) of compensation. The net result is the same as if the client bought its foreign currency revenues at the primary exchange rate. (300 EUR/HUF).
worst-case scenario (treasury transaction on a standalone basis)	During the tenor the exchange rate reaches 315 EUR/HUF and on expiry the EUR/HUF rate is below 310. In this case, your company buys EUR 100 000 at a rate of 310 EUR/HUF. The resulting foreign exchange loss can be unlimited.

**the market value of the position two weeks after the trade date from the customer's point of view**

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive) (assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 1 924 000
300	527 000
330	678 957

**financial outcome of some possible scenarios on the expiry date, if the exchange rate does not reach the no touch level.**

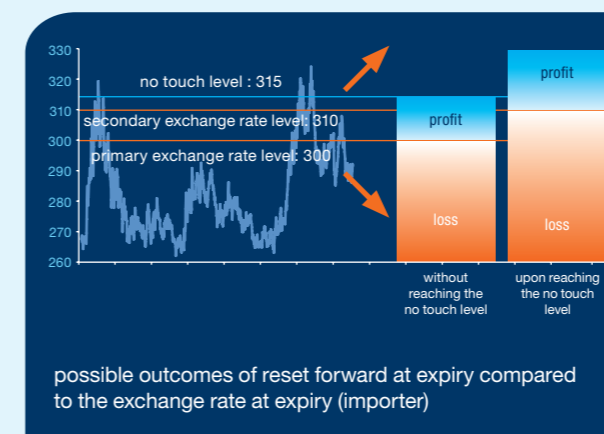
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	270 * 100 000 = 27 000 000	(310 - 270) * 100 000 + 1 000 000 = - 3 000 000	310 * 100 000 - 1 000 000 = 30 000 000
300	300 * 100 000 = 30 000 000	(310 - 300) * 100 000 + 1 000 000 = 0	
310	310 * 100 000 = 31 000 000	0 + 1 000 000 = +1 000 000	

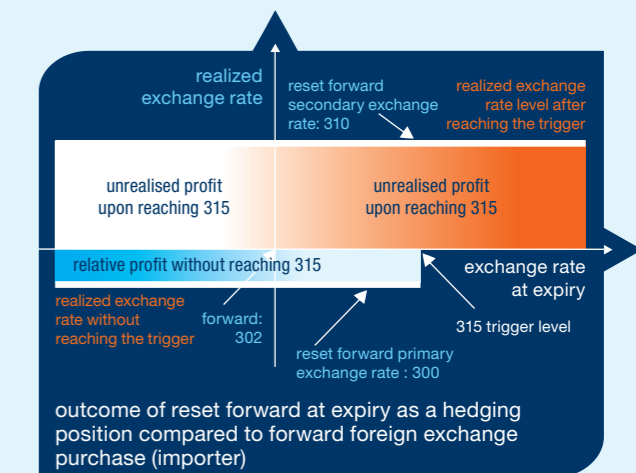
**financial outcome of some possible scenarios on the expiry date if the exchange rate reaches the knock in – out level during the tenor.**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on the expiry date (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction (HUF)
270	270 * 100 000 = 27 000 000	(270 - 310) * 100 000 = - 4 000 000	310 * 100 000 = 31 000 000
300	300 * 100 000 = 30 000 000	(300 - 310) * 100 000 = - 1 000 000	
330	330 * 100 000 = 33 000 000	(330 - 310) * 100 000 = 2 000 000	



possible outcomes of reset forward at expiry compared to the exchange rate at expiry (importer)



outcome of reset forward at expiry as a hedging position compared to forward foreign exchange purchase (importer)

The chart illustrates the possible financial outcomes; profit or loss of the transaction may be balanced out by the financial outcome of the underlying exposure. The evolution of the historical exchange rate on the chart only intends to show a comparison between the level(s) of the transaction and the exchange rates prevailing in the past. Future evolution of the exchange rate and exchange rate fluctuations until maturity are unknown in advance, extent of profit or loss depends on the exchange rate level upon expiry. Number of possible outcomes is infinite and there may be even more extreme values than the ones presented below. The chart is not suitable to forecast the market value of the position during the tenor.

**advantages of transaction**

- opportunity to obtain an exchange rate much better than the forward rate
- no cost or separate fee charged
- the primary and the secondary forward rate as well as the one touch / trigger level can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

**risks of transaction**

- in case of reaching the no touch level the Client realises the secondary forward rate (the company does not receive compensation) which may be less advantageous than the forward rate prevailing on the trade date
- if during the tenor the exchange rate reaches the no touch level and on the expiry the exchange rate is below the secondary forward rate your company will have an obligation to buy foreign currency at the secondary forward rate, i.e. realises a loss. The amount of potential foreign exchange loss is unlimited
- if during the tenor the exchange rate does not reach the no touch level and on the expiry the exchange rate is below the primary forward rate your company will have an obligation to buy foreign currency at the primary forward rate, i.e. realises a loss. The amount of potential foreign exchange loss is unlimited.
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss

- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here but rather from other factors.

**product structure**

The reset forward is built up of a combination of a barrier right and a barrier obligation to buy foreign currency and a digital (one touch) option. The section on barrier and digital options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 12. target profit forward – buying of foreign currency

MIFID complexity  
FX 3

### product description

There is great variety of target profit forward deals. The product description below introduces a frequently applied version as an example. For a non-exhaustive presentation of further versions of the target profit forward deal see the section on target profit forward transactions in Chapter I/c. entitled “5 Basic Products” of K&H Treasury Handbook of Market Risk Management.

The target profit forward deal is a series of forward transactions originally dealt for 12 expiries where the strike (or target profit forward rate) is mostly identical for all expiries. The strike obtainable on the transaction date might be more favourable than the 1-year average forward rate. In exchange for this favourable exchange rate, the company accepts the possibility that the transaction can be early terminated if the predetermined target profit amount has been reached. This means that while in the case of standard forward transactions, the amount of exchange rate gains and losses realised at maturity is unlimited; the target profit forward contract limits the size of potential

exchange gains. However, the amount of potential foreign exchange loss is unlimited, similar to standard forward transactions.

The contract terminates if the cumulated sum of the gains and losses realised by the customer at the individual expiries reaches the target profit. When the target profit is reached, the exchange rate for that maturity is modified accordingly.

The target profit forward transaction, just like the normal forward deal, means a settlement obligation for both parties. Contrary to standard forwards, if the cumulated amount of the profits (determined as a positive number) and losses (determined as a negative number) realised by the customer at the individual maturities reaches a pre-set maximum level (determined as a positive number), no profit exceeding such level will be settled. In this case the target profit forward rate may change and all remaining forward deals – concluded within the framework of the target profit forward transaction – that have not matured yet will cease to exist on the date of expiry when the level of the profit maximum is reached.

### Profits and losses are determined in comparison to the European Central Bank's official EUR/HUF exchange rate (ECB fixing) effective on the date of expiry as follows:

ECB fixing > target profit forward rate ⇒ profit

ECB fixing < target profit forward rate ⇒ loss

### the target profit forward rate depending on the target profit amount:

total of gains and losses realised by the client < target profit amount ⇒ buying of EUR at the target profit forward rate

total of gains and losses realised by the client > target profit amount ⇒ buying of EUR at the Final target profit forward rate

final target profit forward rate = ECB fixing + (target profit in HUF per EUR – sum of gains and losses realised by the client at earlier maturities in HUF per EUR)

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains un-hedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

**example:** an importer expects to incur EUR 100 000 expenses each month during the following 1 year (annually EUR 1.2 million). Suppose the current EUR/HUF spot rate is at 290 and the 1-year average forward rate is 296.50 EUR/HUF. As the company has budgeted its revenues at a 289 EUR/HUF exchange rate, therefore it enters into a target profit forward contract at 289 EUR/HUF strike for a monthly EUR 100 000 notional amount (a total amount of EUR 1.2 million).

parameters of the target profit forward	
notional amount	EUR 1 200 000 = EUR 100 000 * 12 expiries
notional amount per expiry	EUR 100 000 / expiry
currency pair	EUR/HUF
tenor	1-12 months
number of expiry dates	12
expiry dates (dates of exchange rate monitoring)	trade date + 1 month, + 2 months, ..., + 12 months
exchange rate monitoring	the European Central Bank's official EUR/HUF exchange rate (ECB fixing) quoted at 14:15 (CET) on each expiry date
settlement dates	2 business days after each expiry date
spot exchange rate prevailing at pricing	290 EUR/HUF
average forward rate prevailing at pricing	296.50 EUR/HUF
ATMF volatility	15%
target profit forward rate	289 EUR/HUF
calculation of cumulated profit/loss	100% * notional amount * (target profit forward rate – ECB fixing)
target profit amount (the maximum profit that the customer can realise)	+ HUF 3 000 000 (+30 HUF per EUR per notional amount per expiry)
termination event	the cumulated sum of the profits and losses realised by the customer reaches the target profit amount on any expiry date
termination	If the termination criteria are met the deal terminates and the remaining expiries are cancelled. The customer buys euros at the final target profit forward rate on the expiry date when the termination criteria are met.
final target profit forward rate	ECB fixing rate – (target profit in HUF per EUR – the sum of the profits and losses realised by the client at earlier expiries in HUF per EUR)

possible scenarios on each expiry date depending on the European Central Bank's EUR/HUF fixing	
ECB fixing rate above 289 EUR/HUF	Your company has a forward buying deal for 100% of the notional amount at a rate of 289 EUR/HUF. If the termination event occurs, the company will have a forward buying deal for 100% of the notional amount, at the final target profit forward rate.
ECB fixing rate below 289 EUR/HUF	Your company has a forward buying deal for 100% of the notional amount at a rate of 289 EUR/HUF.
settlement	gross settlement
transaction cost payable on the trade date	zero
best-case scenario	zero
(treasury transaction on a standalone basis)	Until the target profit amount is reached, the ECB fixing rate is above the target profit forward rate on each expiry date. In this case the company realises only gains before the target profit amount is reached and buys EUR 100 000 at the target profit forward rate at each expiry. After the target profit amount is reached, the deal ceases to exist (on the expiry date when the termination criteria are met, the target profit forward rate may change, see above)
worst-case scenario (treasury transaction on a standalone basis)	The ECB fixing rate is below the target profit forward rate on each expiry date. In this case your company buys EUR 100 000 at the target profit rate at each expiry in a total amount of EUR 1 200 000. The resulting foreign exchange loss can be unlimited.
worst-case scenario (treasury transaction on a standalone basis)	The ECB fixing rate is below the target profit forward rate on each expiry date. In this case your company buys EUR 100 000 at the target profit rate at each expiry in a total amount of EUR 1 200 000. The resulting foreign exchange loss can be unlimited.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (the deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot rate in two weeks (EUR/HUF)	market value of the position (HUF)
270	- 19 559 000
300	144 000
330	1 833 000

## financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

ECB fixing on each expiry dates (EUR/HUF)	underlying exposure's financial outcome with no treasury transaction (HUF)	profit / loss of the product on a standalone basis (HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (HUF)
270	$270 * 100\,000 = 27\,000\,000$	$270 - 289 = -19$ $-19 * 100\,000 = -1\,900\,000$ in total: $12 * -1\,900\,000 = -22\,800\,000$ The deal is live on each expiry date.	$270 - 289 = -19$ $289 * 100\,000 = 28\,900\,000$ The deal is live on each expiry date.
300	$300 * 100\,000 = 30\,000\,000$	$300 - 289 = 11$ $11 * 100\,000 = 1\,100\,000$ $30/11 = 2,72 \Rightarrow$ the deal terminates after 3 expiries	$300 - 289 = 11$ $289 * 100\,000 = 28\,900\,000$ $30/11 = 2,72 \Rightarrow$ the deal terminates after 3 expiries final target profit forward rate: $300 - (30 - 22) = 292$ on the 3. expiry
330	$330 * 100\,000 = 33\,000\,000$	$330 - 289 = 41$ final target profit forward rate: $330 - (30 - 0) = 300$ $30 * 100\,000 = 3\,000\,000$ the deal terminates after the first expiry	$330 - 289 = 41$ final target profit forward rate: $330 - (30 - 0) = 300$ $300 * 100\,000 = 30\,000\,000$ the deal terminates after the first expiry

day	TPF rate	daily fixing price	position's daily value	position's accrued value
1	289	294	5	5
2	289	297	8	13
3	289	293	4	17
4	289	289	0	17
5	289	287	-2	15
6	289	294	5	20
7	289	297	8	28
8	289	299	10	38
9	289			
10	289			
11	289			
12	289			
13	289			

deal terminates for remaining expiries when accrued value is larger than 30

target profit forward:  
evolution of the position's value upon reaching the target profit (importer)

day	TPF rate	daily fixing price	position's daily value	position's accrued value
1	289	294	5	5
2	289	297	8	13
3	289	293	4	17
4	289	289	0	17
5	289	287	-2	15
6	289	284	-5	10
7	289	281	-8	2
8	289	277	-12	-10
9	289	271	-18	-28
10	289	274	-15	-43
11	289	273	-16	-59
12	289	269	-20	-79
13	289	267	-22	-101

if target profit is not reached the deal remains open for remaining expiries. The resulting accrued loss may be unlimited!

target profit forward:  
evolution of the position's value without reaching the target profit (exporter)

### advantages of transaction

- opportunity to obtain an exchange rate lower (more favourable) than the forward rate
- protection against a weakening of the forint until the maximum profit amount is reached
- no cost or separate fee charged
- the notional amount, the number of expiries, the target profit forward rate and the maximum (or target) profit amount can be tailored to your expectations, plans and budget. Changing a parameter entails change in the rest.
- if the hedge is no longer needed, the position can be closed with a counter deal at any time before the final expiry. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- if the ECB fixing is lower than the target profit forward rate at all maturities, the transaction will incur foreign exchange loss at each maturity, i.e. every month for a year. The amount of the foreign exchange loss is, similar to a standard forward, unlimited, whether for one maturity or for all maturities.
- assuming that the ECB fixing rate is below the profit maximised forward rate on all expiries, the following formula can be used to estimate the potential foreign exchange loss:  
(target profit forward rate – ECB fixing) \* EUR notional amount

example: suppose that the target profit forward rate is at 289.00 EUR/HUF,  
notional amount = EUR 1 200 000.

The amount of potential foreign exchange loss with the assumption that the ECB fixing is at 270.00 EUR/HUF at all maturities:  
 $(270 - 289) * 1\,200\,000 = \text{HUF } -22\,800\,000$  (monthly: HUF -1 900 000)

The loss actually realised may also be higher or lower than the above value.

- after the maximum profit amount has been reached the transaction will terminate for the remaining expiries
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of one single target profit forward deal. The section on target profit forwards of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ possibilities and main cornerstones of creating hedging strategy for importers

The first step in creating a hedging strategy is having a financial plan for the year or for several years, which can be followed by tailoring the hedging strategy according to the company's unique characteristics, e.g. the timing of exports and imports.

A hedging strategy is always based on market expectations and the company's risk tolerance. The main goal is to provide such an exchange rate that gives the company the required profit margin. By creating a hedging policy it is recommended to set specific hedging goals, which can be achieving absolute security, a protection level or cash-flow maximization.

We suggest that risk diversification should be an essential concept when creating a hedging strategy.

### creating hedging strategy

The time frame for exchange rate hedging is usually 1 year in line with the company's financial plans. When specifying the target exchange rate the company must take into account budget constraints, financial plans and frequency and characteristics of foreign currency payments. In other words if the allowed cash-flow fluctuation is low, while market competition is intense, the company has to specify a protection level, as a more unfavourable level would hurt the company's operations (target exchange rate).

It also has to be decided whether the company is able to spend money on protection or the strategy needs to be based on zero cost

structures. If yes, i.e. there are funds to buy protection then the target exchange rate can be secured with option purchase. However, if your budget does not enable this option then those structures can be suitable for your company, where the worst-case scenario is known in advance for at least part of the exposure, while there is opportunity to benefit from favourable market movements. We wish to emphasize that the main goal is not to realise a standalone financial gain but to hedge exchange rate risk, secure the core operation and to leave room for the company to create its hedging strategy according to its market expectations.

In case of importer companies it is highly important to take into account pricing of competitors. If the company faces strong competition with the same profile, it is advised to take into account the possible hedging strategy of competitors. Failure to do this may result in a loss even the strategy would be considered as a hedge financially.

Guidelines we follow by creating a hedging strategy in our example:

- securing the target exchange rate
- risk diversification and cost effectiveness
- mainly focus on deals with lower risk
- part of the exposure remains as a puffer to be able to conclude more deals in case of a strengthening in the forint

**example:** a Hungarian importer expects to incur EUR 1 500,000 expenses each month, while it has an income of EUR 500 000. Based on that its monthly net exposure equals to EUR 1 million, which it buys from HUF every month for its operations. The company calculated its financial plans with 298 EUR/HUF rate. Let us assume that the current spot exchange rate is 290 EUR/HUF, the one-year forward rate is 302 EUR/HUF and the average forward rate for one-year is 296.50 EUR/HUF.

Let us assume, that the company concludes the following deals for 1 year with expiries in every month. Detailed term sheets can be found in Chapter II/b. entitled "Foreign exchange exposure hedging for importers" of "K&H Treasury Handbook of Market Risk Management".

deal type	hedging weight	notional (EUR) / month	exchange rate (EUR/HUF)
average forward	40%	400 000	296.50
range forward	30%	300 000	range: 295-320
boosted forward	20%	200 000	boosted forward rate: 290, knock-out level 320 (American trigger)
unhedged exposure	10%	100 000	actual market rate

It is important to see that the deal might cease to exist when it would be the most necessary and valuable for the client. As after the termination the client's underlying exposure of the terminated deal remains un-hedged, our Bank does not recommend hedging more than 50% of the treasury limit with products that can terminate before maturity.

### Possible financial outcomes of the strategy above:

- if the exchange rate does not reach the 320 knock-out level during the tenor, i.e. the boosted forward does not terminate  
 minimum 294,56 EUR/HUF =  $(400\ 000 * 296,50 + 300\ 000 * 295 + 200\ 000 * 290) / 900\ 000$   
 maximum 302,89 EUR/HUF =  $(400\ 000 * 296,50 + 300\ 000 * 320 + 200\ 000 * 290) / 900\ 000$   
 unhedged: 10%
- if the exchange rate reaches the 320 knock-out level during the tenor, i.e. the boosted forward terminates  
 minimum 295,86 EUR/HUF =  $(400\ 000 * 296,50 + 300\ 000 * 295) / 700\ 000$   
 maximum 306,57 EUR/HUF =  $(400\ 000 * 296,50 + 300\ 000 * 295) / 700\ 000$   
 unhedged: **30%**

The bank's contribution does not end when the hedging positions are opened even if our client has treasury deals and hedging strategy for the whole year. Tight relationship has to be maintained over the tenor as our client's may require our services and individual risks need to be managed. Potential termination or market value change of existing deals or change in the client's underlying foreign exchange exposure may lead to closure or modification of the treasury deal. By continuous monitoring and handling of existing deals we can provide our clients with more alternatives to achieve a more effective risk management.

Should you have any questions regarding the structure in the example or need assistance in creating a hedging strategy in-line with your company's risk exposure, please contact your relationship manager or treasury dealer.

## ➔ our products in terms of exchange rate expectations:

You can find the following table useful when creating hedging strategy. The table summarizes the market value evolution of the specific deals as a function of future exchange rate evolution and exchange rates upon expiry. Thus it might prove useful in helping you to find the right deals which correspond with your expectations.

deal type	future exchange rate evolution, exchange rate upon expiry				
	extreme forint appreciation	small forint appreciation	no significant exchange rate change	small forint weakening	extreme forint weakening
forward deal	---	-	+/-	++	+++
purchase of call option	-	-	-	++	+++
range forward	---	-	+/-	+	++
seagull	---	-	+/-	++	+
participating forward	--	-	+/-	++	+++
forward extra	---	-	+/-	+	++
boosted forward	---	+	++	+++	---
boosted forward with rebate	---	+	++	+++	--
extendible forward	---	-	+/-	++ / --	+++ / ---
reset forward	---	+	++	+++	+
target profit forward	---	+	++	+++	---



## ➔ restructuring an existing treasury deal

Should the parameters of an already existing treasury deal turn unfavourable (market value of the treasury deal worsens) you have the opportunity to close the existing deal and open a new position for the same or less notional even with a more complex product. Opening of a new deal has to be always in-line with the underlying exposure. If the parameters of the new deal are worse than the prevailing market levels, the net present value of the new deal might compensate part of the costs of closing the original deal. The cost level of the new deal cannot be unlimitedly worse than the prevailing market levels.

**You have the opportunity for restructuring if your MIFID classification is at least FX2!** The new deal opened during restructuring can be built up of options only. When opening a new position it is fundamental to take into account the MIFID classification of our client, and only those products can be selected, whose complexity corresponds to the MIFID classification of our client.

**examples for restructuring a treasury deal:** an importer company has an expiring forward deal, i.e. has a right and an obligation to buy EUR 1 000 000 at 280 EUR/HUF. The spot price is 275 EUR/HUF, the 1-year forward rate is 302 EUR/HUF. As the HUF equivalent of the company's foreign exchange expenditure did not arrive until expiry, it has to close the treasury deal. The cost of closing (net present value) would be HUF 5 000 000 (loss). The closing takes place with a deal in the opposite direction than the original deal, while notional and expiry remains the same. The cost of closing is the difference between the exchange rate of the original deal and the counter deal on the notional:  $(275 - 280) * 1\,000\,000 = \text{HUF} - 5\,000\,000$ .

The company has the option to realise the losses, but can also restructure part of the losses into a new treasury deal starting at the day of restructuring in the same direction as the company's exposure for a tenor not longer than the approved limit and with a notional not larger than the original deal's notional. The client pays part of the cost of closing the position, the remaining part is covered by the net present value of the new deal. The client can receive payment (net present value) for the new deal, because the deal's parameters are less favourable than that of a deal with zero net present value based on current market levels.

**Successful restructuring might give the idea that there is always a solution for every bad position, but it may occur that further restructuring is not possible and the only option is to realise losses.**

In the following examples it is assumed that the company pays 30% of the losses from the expiring deal and 70% is financed through a new position. Opening a new deal has to be always in-line with the underlying exposure.

### ● restructuring into a synthetic forward:

	notional (EUR)	expiry	exchange rate level of treasury deal (EUR/HUF)	net present value of treasury deal (HUF)
original deal: right to buy and obligation to buy EUR	1 000 000	t+2	280.00	-5 000 000
new deal: right to buy and obligation to buy EUR	1 000 000	4 months	284.00	3 500 000

The synthetic forward deal is a combination of two foreign exchange options (buying a EUR call and selling a EUR put) Detailed term sheets can be found in Section 1 and 3 of Chapter II/b. entitled "treasury deals for importers" of "K&H Treasury Handbook of Market Risk Management".

### ● restructuring into a range forward

	notional (EUR)	expiry	exchange rate level of treasury deal (EUR/HUF)	net present value of treasury deal (HUF)
original deal: right to buy and obligation to buy EUR	1 000 000	t+2	280.00	-5 000 000
new deal: right to buy and obligation to buy EUR	1 000 000	4 months	range: 283-288	3 500 000

As opposed to the synthetic forward in the second example an exchange rate range is created. If upon expiry the market is in the range, then the client has neither right nor obligation, it can buy foreign exchange at the actual market level on its own discretion.

Detailed term sheets can be found in Section 4 of Chapter II/b. entitled "treasury deals for importers" of "K&H Treasury Handbook of Market Risk Management".

### ● restructuring into a boosted forward

If your MIFID classification is FX3, you can restructure your expiring deal into a boosted forward. In this case you may conclude a boosted forward at 280 EUR/HUF with an American knock-out at 295. Detailed term sheets can be found in Section 8 of Chapter II/b. entitled "treasury deals for exporters" of "K&H Treasury Handbook of Market Risk Management"

	notional (EUR)	expiry	exchange rate level of treasury deal (EUR/HUF)	net present value of treasury deal (HUF)
original deal: right to buy and obligation to buy EUR	1 000 000	t+2	280.00	-5 000 000
new deal: right to buy and obligation to buy EUR	1 000 000	4 months	boosted forward rate: 280.00 knock-out level: 295.00 (American trigger)	3 500 000

The examples above are only to illustrate the possibilities. During restructuring you can choose other product types in-line with your MiFID classification and underlying exposure.

### advantages of restructuring

- the new deal may give obligation at a more favourable level for the future expiry than the previous deal
- client receives net present value for the new deal, which covers part of the cost of closing the original deal
- the date of expiry and exchange rate level(s) of the new deal can be adapted to customer needs, in accordance with your expectations, future exposure, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- by restructuring and concluding a new deal the client will benefit from every advantage of the new deal
- if the new deal is no longer needed, the position can be closed with a counter deal at any time before the expiry date. This may result in profit or loss, depending on the prevailing market conditions.

### risks of restructuring

- the client will have both a right and an obligation due to the new deal, thus upon expiry the client may incur losses if the market rate is lower than the exchange rate of the new deal. The potential loss is unlimited.
- if the underlying exposure ceases to exist, it is advisable to close the treasury deal too, since there is no longer any risk resulting from the exposure. Closing the deal before maturity might lead to a loss depending on the actual market situation.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- by restructuring and concluding a new deal the client will run every risk of the new deal
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

## ➔ prerequisites for dealing, required documents

### ➔ before concluding a deal

Prerequisites for dealing, required documents:

- Treasury master agreement
- MiFID questionnaire (for complexity)
- live treasury limit (for deals that require a treasury limit)

other fees: (account maintenance fee, transfer fee): Fees can be found in the prevailing announcement and general terms and conditions.

On exchange rates you can find information on the official Reuters page (<http://uk.reuters.com/business/currencies>).

taxation: The Bank does not deduct any taxes from clients who do not fall under the personal income tax, it is the client's responsibility to comply with tax regulations.

You can find detailed and exhaustive term sheets on the products in the table below in this chapter, moreover as an additional service we conduct exchange rate monitoring when requested and execute orders by which please bear in mind the following.

We reserve the right to change the values in the following table!

deal type	limit requirement	minimum amount	tenor
exchange rate monitoring	no	no	-
order	no	EUR 300 000	-
forward	yes	EUR 50 000	minimum t+3
average forward	yes	EUR 50 000	minimum t+3
currency swap	yes	EUR 50 000	minimum t+1 (on far leg)
buying of put option	no (premium is paid upfront)	EUR 50 000	minimum 2 weeks
range forward	yes	EUR 50 000	minimum 2 weeks
seagull	yes	EUR 50 000	minimum 2 weeks
participating forward	yes	EUR 50 000	minimum 2 weeks
forward extra	yes	EUR 50 000	minimum 2 weeks
boosted forward	yes	EUR 50 000	minimum 2 weeks
boosted forward with compensation	yes	EUR 50 000	minimum 2 weeks
extendible forward	yes	EUR 50 000 / expiry	minimum 2 weeks
reset forward	yes	EUR 50 000	minimum 2 weeks
target profit forward	yes	EUR 50 000 / expiry	minimum 2 weeks

The K&H Treasury Handbook of Market Risk Management and explanations for the products can be found on the K&H Bank webpage ([www.kh.hu](http://www.kh.hu)) on the corporate – K&H treasury services page.

**examples for automatically executed orders:** automatically executed foreign exchange conversions with a minimum amount of EUR 300 000 (or equivalent in a different currency). Orders are good until canceled and settled always with spot, i.e. T+2 value date. If the order is filled you can choose prompt or forward settlement, in this case the exchange rate will be modified with swap points. Order executions are on a best effort basis, i.e. it may occur that the market trades at the exchange rate level of your order without actual fulfillment of your order or that only partial fulfillment occurs. Orders can be given and cancelled only by phone during regular business hours and we cannot guarantee their execution.

Dear Client,

We kindly request you to read the following information carefully prior to concluding any transaction!

The product outlined in the product description may differ from your / your company's MiFID profile, meaning that the product may be of higher complexity than the complexity level stipulated by your / your company in the MiFID documentation. In this case the Bank shall conclude the transaction solely at your / your company's initiative and shall manage the transactions falling outside the MiFID profile in accordance with its prevailing internal regulation.

Prior to concluding the deal, please, make sure that you fully understand the product, the operation thereof and potential development of the transaction's future market value. As a result of the future change in the transaction's market value you may incur a temporary or permanent obligation to provide additional collateral, which may impact your Company's liquidity and solvency.

If you believe that the information provided herein is not comprehensive, or you have questions or doubts in connection with the product, please notify the Bank's competent employee prior to concluding the deal, so that you receive the information you deem necessary.

If you believe that the information you received is not comprehensive, please do not conclude any deal for that specific product, even if otherwise the product fits into your / your company's MiFID profile.

If you do conclude a deal for the product outlined in the product description, it shall be construed that you deemed the information received from the Bank comprehensive, irrespective of the fact whether the product is in line with your/your company's (the Client) MiFID profile available for us at the time of concluding the deal.

Please, note that the parameters and prices stated in the product description are of indicative nature and serve only referential purposes. The parameters of the actually concluded deals will correspond to the terms agreed during the telephone conversation recorded upon deal conclusion and those may depart from the indicative parameters and prices stated in this product description.

### ➔ after concluding a deal

According to the Treasury master agreement deals can be concluded only on recorded phone.

After concluding the deal the client receives confirmation on the deal's parameters on fax and on its existing, open positions, live transactions a summarized report at the beginning of every month, which shows the market value of the existing positions based on market levels prevailing on the last workday of the previous month.

In the confirmation faxes and in the reports of existing positions the parameters are stated according to the bank's viewpoint, i.e. if the position's direction is "buy", it is a "selling" position for the client.



**interest rate  
risk of loans**



**There are two main risk factors of existing and future loans: interest rate and the denomination of the loan. Deals to manage interest rate risk of floating interest loans and to change the denomination are explained in this chapter. Deals that are explained in the first subchapter regarding interest rate risk management can be used within the scope of deposits as well.**

The risks your company can face are not necessarily limited to future adverse exchange rate movements – they may also include changes in the rates of interest payable on your loans and/or receivable on your deposits.

The products offered for managing the interest rate risk of loans and deposits follow a logic similar to the products available for exchange rate hedging. When considering products discussed in this section, you should consider the following tips:

1. when you expect an increase in interest rates:

- hedge the interest rate risk of your loans
- swap the interest rate on your variable (floating) rate loans for a fixed rate
- swap the interest rate base of your loans for a lower rate (without changing denomination)
- swap the interest rate on your fixed rate deposits for a floating rate
- make floating rate deposits

2. when you expect a decrease in interest rates:

- swap the interest rate on your fixed-rate loans for a floating rate
- take out floating-rate loans
- hedge the interest rate risk of your deposits
- swap the interest rate on your floating rate deposits for a fixed rate

3. when you expect fluctuations in interest rates:

- use hedging transactions to protect yourself against unfavourable changes; and, at the same time
- leave room for benefiting from the favourable market processes

What is worth bearing in mind when hedging interest rate risk:

- it is extremely important that our partners perform the sensitivity analysis of profit after tax in terms of the evolution of interest rates and thereby define the interest rate level that still allows them to perform their activity profitably, since this is the interest rate level they have to guarantee no matter what. Setting out from this can the company decide which transaction type is the most suitable for the company concerned.
- it should be noted that market expectations do not always materialise, therefore it is justified to seek protection against an unfavourable shift. The achievable levels of defence depend on the actual market expectations (please see the yield curve below).
- based on our experience, our corporate clients are primarily interested in the direction of the interest rate changes; however an efficient interest rate risk management should also keep an eye on the evolution of the yield curve. E.g. in the case of a declining yield curve, by switching to fixed interest rate one may achieve even at the trade date a more favourable interest rate level than the actual short-term variable interest rate level. However, this entails the risk that one cannot profit from an eventual bigger-than-expected interest rate drop, since he has already fixed its interest rate costs at a given level.
- various option strategies (e.g. interest rate collar) help our clients protecting themselves free of charge – subject to assuming a risk – against the adverse development of interest rates at a more favourable level or in a more flexible structure than a normal interest rate swap.
- in order to achieve perfect hedging it is recommended to conclude a deal with the same parameters (tenor, length of interest periods, frequency of interest payments, reference index, cash flow, day count convention) as the underlying loan. Otherwise over or under hedging may occur potentially causing huge losses for your company.

**example for a loan's interest rate sensitivity:** A company has EUR 300 000 loan with 3 year tenor and pays a floating rate of 3 month EURIBOR every quarter. The following table shows the change of the yearly interest payments as the function of 3 month EURIBOR. Credit margin ignored.

notional (eur)	3 month EURIBOR	yearly interest payment (EUR, paid by the company when „+“)	yearly interest payment in HUF, calculated with 290 EUR/HUF (paid by the company when „+“)
300 000	-0,50%	-1 500	-435 000
300 000	0,00%	0	0
300 000	0,50%	1 500	435 000
300 000	1,00%	3 000	870 000
300 000	3,00%	9 000	2 610 000

In the example used in the product description below – for the sake of simplicity, and also because trading takes place similarly in the market as well, since each company has different credit margin – the usual loan/deposit margins that banks charge to their clients are ignored and calculations are based on market reference rates.

## → types of products

### → 1. interest rate swap, IRS

MIFID complexity

IR 2

#### product description

An interest rate swap makes it possible for your company to swap its floating rate loans to fixed interest rate, or vice versa, without having to amend the underlying loan agreement. You can use this deal to hedge the interest rate risk of a cash flow starting on the present date or at a specific date in future. The latter is known as the forward start interest rate swap. By entering into an interest rate swap transaction, the parties agree that they swap floating rate for fixed interest rate or vice versa with respect to a specific loan notional and maturity. The settlement of interest payments is due at the end of each interest payment period. Fixing of the floating rate is two banking days before the starting date of each period. There are two possible types of interest rate swaps, differentiated on

the basis of the direction of swapping the interest payments:

- swapping of floating interest rate tied to a specific interest rate fixing (BUBOR, EURIBOR, etc.) for fixed interest rate (this is the so-called payer IRS), or
- swapping of fixed interest rate for floating interest rate tied to a specific interest rate fixing (BUBOR, EURIBOR, etc.) (this is the so-called receiver IRS).

An interest rate swap is equally suitable for hedging future interest revenues or interest payments, so it can be used for loans, deposits or even investments in government securities.

**example: swapping of floating interest rate for fixed interest rate:** a company has a floating rate loan of EUR 300 000 notional with a remaining tenor of 3 years. The current 3-month EURIBOR is 0.50% and the 3-year fixed EUR interest rate is 0.85%. In the middle term, this company expects interest rates to decrease by less than what is expected in the term structure of fixed rates (yield curve) based on the current market expectations, and so decides to swap its floating-rate loan for a fixed rate one. The company believes that in the medium term, interest rates will rise more than what is reflected in the term structure of fixed rates (i.e. the yield curve, see below) based on the current market expectations, and so decides to swap its floating-rate loan for a fixed rate one. It also might expect a stable yield curve, but it would like to fix its interest rate exposure for 3 years. The company swaps its 3-month EURIBOR floating rate to a 0.60% fixed rate based on the outstanding notional. After concluding the deal it is not possible to benefit from an interest rate decline which is not indicated by the yield curve (see on chart) or from a smaller rise in interest rates than it is indicated by the yield curve. The difference between the fixed reference market rate and your company's interest payments is caused by the unique parameters of your loan.

#### parameters of the interest rate swap

notional	EUR 300 000
tenor	3 years
variable notional	no
interest due to client	3-month EURIBOR
fixing date of market reference rate	two banking days before the start date of the future interest period
interest payable by client	0.60% fixed rate
frequency of interest payment	quarterly
interest rate calculation convention (fixed rate)	actual number of days / 360
interest rate calculation convention (variable rate)	actual number of days / 360
settlement of interest payments	net settlement at the end of each interest period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (day count: ANN 30/360 vs 6M EURIBOR)	0.85%
current 3-month EURIBOR	0.50%
transaction cost	zero

#### possible scenarios on the settlement day, depending on the 3-month EURIBOR rates on the fixing date of market reference rate

3-month EURIBOR is below 0.60% rate	your company pays 0.60% fixed rate for the total notional amount in every interest period
3-month EURIBOR is above 0.60% rate	On the fixing date the 3 month EURIBOR is above 0.60%. Your company receives the time proportional difference between 0.60% and the 3-month EURIBOR for the actual notional amount in each interest rate period.
best base scenario (treasury transaction on a standalone basis)	On the fixing the 3 month EURIBOR is below 0.60%. Your company pays the time proportional difference between 0.60% and 3 month EURIBOR for the actual notional amount with an unlimited interest rate loss potential in each interest rate period.
worst case scenario (treasury transaction on a standalone basis)	

### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

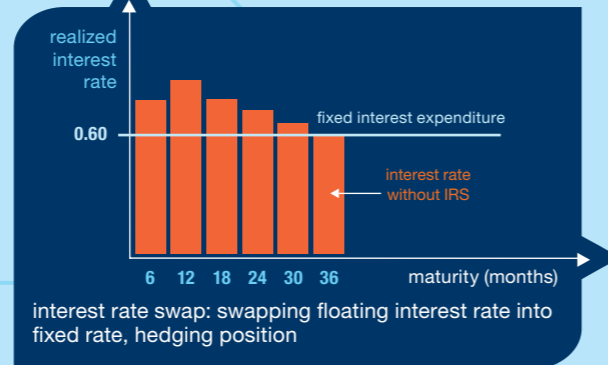
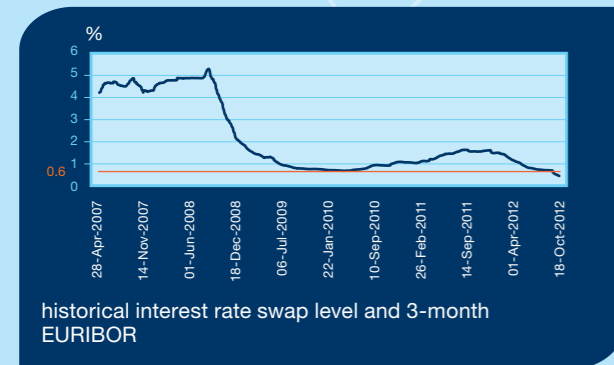
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	-13 051
0.50	-670
2.00	11 700

### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal: EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without IRS, EUR)	profit/loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with IRS, EUR)
1 year	-1.00	-750	1 200	450
1 year	0.00	0	450	450
1 year	0.50	375	75	450
1 year	1.50	1 125	-675	450
1 year	2.50	1 875	-1 425	450



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

### advantages of transaction

- paying fixed interest rate, obtained in the place of floating interest rate, gives you protection against actual interest rates in the future which are higher than those "predicted" by the market at the inception of the deal
- reliable planning: you can quantify your future interest expenditure or income due to the fixed interest rate
- the interest rate swap can be set to start now or some time in the future (with a forward start IRS)
- if the yield curve is downward sloping, you can immediately at inception benefit from the interest rates cuts expected by the market by fixing the interest rate (only when swapping to obtain a fixed interest rate)
- if the yield curve is upward sloping, you can shield yourself from a rise in interest rates that is of a greater extent than what is expected by the market (only when swapping to obtain a fixed interest rate)
- net settlement: only the difference between fixed and floating interest rate will be settled in cash between the parties
- you can conclude interest rate swaps for loans extended by, or deposits placed with, other financial institutions, as well, because this deal is separate (in legal terms) from the underlying loan or deposit transaction
- an interest rate swap can be concluded in most liquid currencies
- the date of expiry, as well as the periods of fixed or floating interest rate payment, can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- an IRS can be concluded to fit any repayment schedule
- your position can be closed at any time before the expiry date, resulting, of course, in a profit or a loss, depending on the current market situation at the time concerned.

### risks of transaction

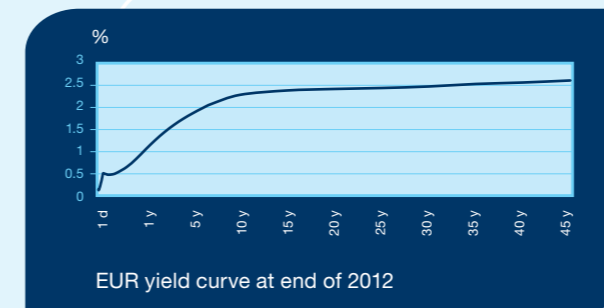
- because of the fluctuation of market rates, the closing of an interest rate swap before expiry involves settlement obligations, which may result in a profit or a loss, depending on the current situation in the interest rate market at the time concerned
- if the underlying loan is repaid, it is advisable to close the interest rate swap, too, since there is no longer any risk resulting from your core business
- if a fixed interest rate loan rate is repaid before maturity, you will realise a loss on closing the interest rate swap in the case that the fixed interest rates have decreased in the meantime
- if a floating rate loan is repaid before maturity, you will realise a loss on closing the interest rate swap in the case that the fixed interest of an interest rate swap for the remaining tenor (with same parameters as the original interest rate swap except the tenor) is lower than the fixed rate of the original interest rate swap.
- if floating interest rate payment is swapped for fixed interest rate payment, it may happen that you will not benefit from an interest rate change of unexpectedly large extent, otherwise favourable for your business
- if fixed interest rate payment is swapped for floating interest rate payment, you will become vulnerable to adverse changes in the interest rate
- in principle, any extent of interest rate loss is possible in the event that the evolution of interest rates takes an unexpected sharp turn to a more favourable level during the tenor of the deal
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods,

the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.

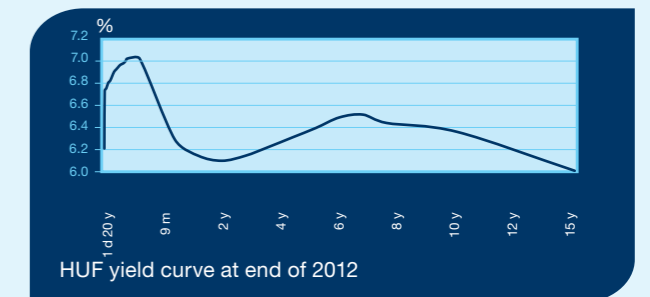
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The product is built up of an interest rate swap. The sections on interest rate swaps of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.



EUR yield curve: increasing, protection might be provided by IRS against the increase of interest rates by a larger extent than expected by the market



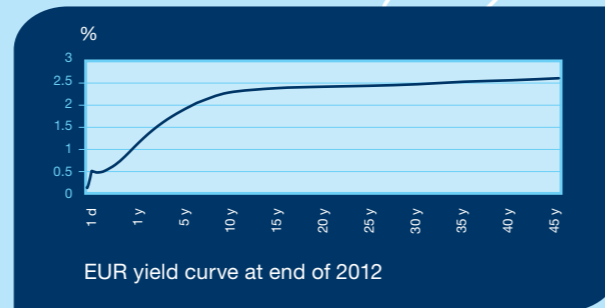
HUF yield curve: declining, i.e. the market expects HUF interest rates to drop in the future. The 3-year fixed interest rate is lower than the current 6-month BUBOR, thus the client can benefit already now from an interest rate cut, which is expected in the future but not sure that it will actually materialize

## ➔ 2. fixed interest rate loan

MIFID complexity  
IR 2

### product description

As an alternative to a normal floating interest rate loan, your company can borrow with interest payments fixed in the loan contract. This is available for working capital, investment or agricultural loans. In this case your company is not exposed to the constant fluctuation of interest rates and the interest payments can be calculated and predicted in advance for the whole tenor. The parties agree that the borrower pays fixed interest for the given notional and tenor. If you choose this product to lower interest rate risk, a separate interest rate swap with treasury limit requirement is not necessary, moreover there will be no need for revaluation in the company's books. If you plan to take out a loan, we suggest asking for a fixed rate alternative along with a pricing for floating interest.



EUR yield curve: increasing, protection might be provided by IRS against the increase of interest rates by a larger extent than expected by the market

**example, fixed interest rate loan:** a company plans to take out a loan of EUR 300 000 for 3 years with floating interest and asks for a fixed rate pricing as well. The current 3-month EURIBOR is 0.50%, the 3-year fixed EUR market reference rate is 0.85%. The company expects the interest rates to rise more on the medium term than it is indicated in the yield curve (see on chart), thus the company takes out a fixed interest rate loan rate instead of floating rate. The company can expect also that the shape of the yield curve remains unchanged, but wishes to fix interest payments for 3 years. The company takes out the loan **with a fixed 0.60%** interest rate for 3 years instead of the floating 3-month EURIBOR. After concluding the deal it is not possible to benefit from an interest rate decline which is not indicated by the yield curve (see on chart) or from a smaller rise in interest rates than it is indicated by the yield curve. The difference between the fixed reference market rate and your company's interest payments is caused by the unique parameters of your loan.

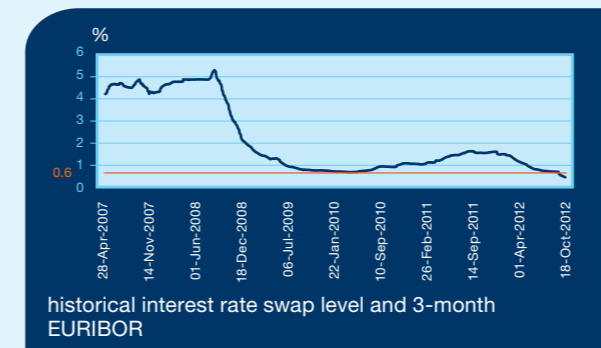
### parameters of the fixed interest rate loan

notional	EUR 300 000
tenor	3 years
variable notional	no
interest payable by client	fixed 0.60% per month
frequency of interest payment	quarterly
interest rate calculation convention (fixed rate)	actual number of days / 360
current 3-year ICAP EURO offer rate against 6-month EURIBOR (market reference rate)	0.85%
current 3-month EURIBOR	0.50%
transaction cost	zero

### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal: EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	interest expense with floating inte- rest rate (3 months, EUR)	interest expense with fixed interest rate (3 months, EUR)
1 year	-1.00	-750	450
1 year	0.00	0	450
1 year	0.50	375	450
1 year	1.50	1 125	450
1 year	2.50	1 875	450



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

### advantages of transaction

- paying fixed interest rate gives you protection against actual interest rates in the future which are higher than those "predicted" by the market at the inception of the deal
- reliable planning: you can quantify your future interest expenditure or income due to the fixed interest rate
- there is no need to reevaluate the interest rate swap deal concluded for a floating rate loan at the end of the year as you borrowed inherently on a fixed interest basis.
- if the yield curve is downward sloping, you can immediately at inception benefit from the interest rates cuts expected by the market
- if the yield curve is upward sloping, you can shield yourself from a rise in interest rates that is of a greater extent than what is expected by the market
- can be concluded in euro, forint or swiss franc
- the date of expiry, as well as the periods of fixed or floating interest rate payment, can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- can be concluded to fit any repayment schedule
- there is no need for a treasury limit
- contracting and disbursement may occur at separate dates

### risks of transaction

- partial or full early repayment may involve higher costs than repayment of a floating rate loan if interest rates changes are adverse
- because of the fluctuation of market rates, early repayment or termination involves settlement obligations, which may result in a profit or a loss, depending on the current situation in the interest rate market at the time concerned
- the fixed interest loan provides that you (client) should not pay more than the fixed interest plus usual loan fees after the loan capital if neither voluntary prepayment, nor termination because of breach of contract, nor any other event (e.g. liquidation procedure) which makes the debt due before the expiration date, not occur. Should any of the before

mentioned events arise the bank will charge to you (to client) all the costs and losses of termination (together: break cost) of that interest rate swap deal which made possible for the Bank to provide the loan on fixed interest rate. Among certain circumstances, depending on the remaining tenor and the extent of unfavourable interest rate movements, the break cost might exceed 100% of the outstanding amount of the debt payable (see table below), hence we (the Bank) suggest the you should always contact your relationship manager before voluntary prepayment in order to know the actual scale of the break cost.

- the break cost payable shall be counted by the formula below:

$$MTM(\text{fix loan}) = \sum_{i=1}^n K_i T_i^{dc} V_i$$

n = number of interest payment periods remaining until maturity set by the loan contract

Ki = fixed interest (in percentage) payable on the ith interest payment date minus the interest rate swap (IRS) rate calculated on the prepayment (final repayment) day according to market conditions, the repayment schedule and the remaining tenor of the loan

Ti = outstanding loan notional on the ith interest payment date

di = number of days from "i-1" to "i"

Vi = discount factor for the ith interest payment date, obtained by linear interpolation of zero coupon rates calculated from the relevant interest rate swap fixings with the closest tenors

dc = day-count convention (360 or 365 days per year)

The expected approximate break cost of a fixed interest loan in case of early repayment expressed in percentage of the outstanding loan notional:

		fixed loan interest rate minus market IRS rate at early termination (Ki, percent)			
		0.5%	2%	5%	15%
remaining maturity (years)	1	0.5%	2%	5%	15%
	2	1%	4%	10%	30%
	3	1.5%	6%	15%	45%
	5	2.5%	10%	25%	75%
	10	5%	20%	50%	150%

**examples:** the repayment of a 10-year EUR loan at 2% fixed interest rate at the end of the 5th year in case of -3% 5-year EUR IRS rate would entail a break cost of approximately 25% of the outstanding loan notional. The repayment of a 10-year HUF loan at 6% fixed interest rate at the end of the 5th year in case of -4% 5-year HUF IRS rate would entail a break cost of approximately 25% of the outstanding loan notional.

- if a fixed interest rate loan is repaid before maturity, you will realise a loss in case that the fixed interest rates have decreased in the meantime
- by paying fixed interest rate, it may happen that you will not benefit from an interest rate change of unexpectedly large extent, otherwise favourable for your business
- in principle, any extent of interest rate loss is possible in the event that the evolution of interest rates takes an unexpected sharp turn to a more favourable level during the tenor of the deal
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

## ➔ 3. step up interest rate swap, step up IRS

MIFID complexity

IR 2

### product description

A step up interest rate swap makes it possible for your company to swap its floating rate loans to step up fixed interest rate, or vice versa, without having to amend the underlying loan agreement. You can use this deal to hedge the interest rate risk of a cash flow starting on the present date or at a specific date in future. The latter is known as the forward start step up interest rate swap.

There are two possible types of step up interest rate swap, differentiated on the basis of the direction of swapping the interest payments:

- swapping of floating interest rate tied to a specific interest rate fixing (BUBOR, EURIBOR, etc.) for fixed step up interest rate (this is the so-called payer IRS).
- swapping of fixed step up interest rate for floating interest rate tied to a specific interest rate fixing (BUBOR, EURIBOR, etc.) (this is the so-called receiver IRS).

By entering into a step up interest rate swap transaction, the parties

agree that they swap floating rate for fixed step up interest rate or vice versa with respect to a specific loan notional and maturity. The settlement of interest payments is due at the end of each interest payment period. Fixing of the floating rate is two banking days before the starting date of each period.

A step up interest rate swap is equally suitable for hedging future interest revenues or interest payments, so it can be used for loans, deposits or even investments in government securities.

After concluding the deal you do not have the opportunity to realise savings on the interest rate if there should be an interest rate decrease on the market which is not priced in now (see EUR yield curve below) or if the interest rates would increase less than it is indicated in the current yield curve. The difference between the fixed market reference rate and the fixed interest rate to be paid by your company comes from the unique parameters of your loan, see the footnote.

**example for swapping of floating interest rate for fixed step up interest rate:** A company has a EUR 300 000 floating-rate loan with 3 years to maturity based on 3-month EURIBOR. The current 3-month EURIBOR is 0.50% and the 3-year fixed EUR interest rate is 0.85%. The company believes that in the medium term, interest rates will rise more than what is reflected in the term structure of fixed rates based on the current market expectations, and so decides to swap its floating-rate loan for a fixed step up rate one. It also might expect a stable yield curve, but it would like to fix its interest rate exposure for 3 years. The company swaps its 3-month EURIBOR floating rate to a fixed step up rate as follows:

- during the first one and a half year a fix interest rate of 0.4% is payable
- during the second one and a half year a fix interest rate of 0.8% is payable,

### parameters of the step up interest rate swap

notional	EUR 300 000
tenor	3 years
variable notional	no
interest due to client	3-month EURIBOR
fixing day of floating interest rate	2 working days before the start of the interest rate period
interest payable by client	the first one and a half year: 0.4% the second one and a half year: 0.8%
frequency of interest payment	quarterly
interest rate calculation convention (fixed rate)	actual number of days/360
interest rate calculation convention (variable rate)	actual number of days/360
settlement of interest payments	net settlement at the end of each interest period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (market reference rate)	0.85%
current 3-month EURIBOR	0.50%
transaction cost	zero

### possible scenarios on the settlement day, depending on the 3-month EURIBOR rates on the fixing date of market reference rate

3-month EURIBOR is below the fixed rate	your company pays 0.40% fixed rate during the first 1.5 years period, 0.8% fixed rate during the second 1.5 years period for the total notional amount
3-month EURIBOR is above the fixed rate	On fixing day the 3 month EURIBOR is above the fixed rate. Your company receives the time proportional difference between the fixed rate and 3 month EURIBOR for the actual notional amount in each interest rate period.
Best case scenario (treasury transaction on a standalone basis)	On fixing day the 3 month EURIBOR is below the fixed rate. Your company pays the time proportional difference between the fixed rate and 3 month EURIBOR for the actual notional amount with an unlimited interest rate loss potential in each interest rate period.
Worst case scenario (treasury transaction on a standalone basis)	

### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	-9 135
0.50	-1 200
2.00	6 735

### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

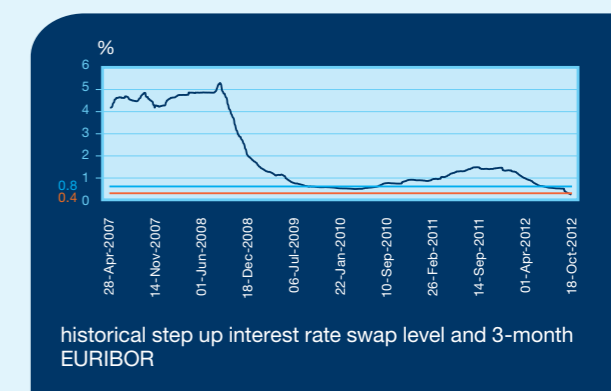
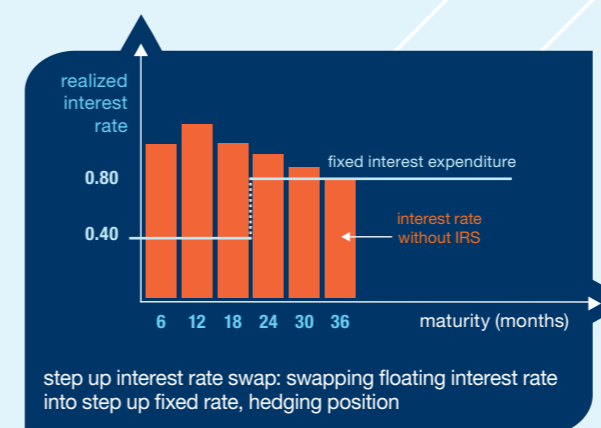
The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal: EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without step up IRS, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with step up IRS, EUR) fixed rate: 0.40%
1 year	-1.00	-750	1 050	300
1 year	0.00	0	300	300
1 year	0.50	375	-75	300
1 year	1.50	1 125	-825	300
1 year	2.50	1 875	-1 575	300

### financial outcome of some possible scenarios 2 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal: EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without step up IRS, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with step up IRS, EUR) fixed rate: 0.80%
2 év	-1.00	-750	1 350	600
2 év	0.00	0	600	600
2 év	0.50	375	225	600
2 év	1.50	1 125	-525	600
2 év	2.50	1 875	-1 275	600



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.



#### advantages of transaction

- paying step up interest rate, obtained in the place of floating interest rate, gives you protection against actual interest rates in the future which are higher than those “predicted” by the market at the inception of the deal
- at the start of the tenor you do not have to pay the higher interest rates of an IRS deal
- reliable planning: you can quantify your future interest expenditure or income due to the step up interest rate
- the step up interest rate swap can be set to start now or some time in the future (with a forward start IRS)
- if the yield curve is downward sloping, you can immediately at inception benefit from the interest rates cuts expected by the market by fixing the interest rate
- if the yield curve is upward sloping, you can shield yourself from a rise in interest rates that is of a greater extent than what is expected by the market
- net settlement: only the difference between fixed and floating interest rate will be settled in cash between the parties
- you can conclude step up interest rate swaps for loans extended by, or deposits placed with, other financial institutions, as well, because this deal is separate (in legal terms) from the underlying loan or deposit transaction
- a step up interest rate swap can be concluded in most liquid currencies
- the date of expiry, as well as the periods of fixed or floating interest rate payment, can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- an IRS can be concluded to fit any repayment schedule
- your position can be closed at any time before the expiry date, resulting, of course, in a profit or a loss, depending on the current market situation at the time concerned

#### risks of transaction

- because of the fluctuation of market rates, the closing of a step up interest rate swap before expiry involves settlement obligations, which may result in a profit or a loss, depending on the current situation in the interest rate market at the time concerned
- at the end of the tenor the payable interest rates are higher than it would be in case of an IRS which might be even higher than it is indicated by the current yield curve

- if the underlying loan is repaid, it is advisable to close the step up interest rate swap, too, since there is no longer any risk resulting from your core business. If a fixed interest rate loan rate is repaid before maturity, you will realise a loss on closing the step up interest rate swap in the case that the fixed interest rates have decreased in the meantime.
- if a loan with floating interest rate is repaid before maturity, you will realise a loss on closing the interest rate swap in the case that the floating rate have increased in the meantime
- if fixed interest rate payment is swapped for floating interest rate payment, you will become vulnerable to adverse changes in the interest rate
- in principle, any extent of interest rate loss is possible in the event that the evolution of interest rates takes an unexpected sharp turn to a more favourable level during the tenor of the deal
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled “Risk Factors” of “K&H Treasury Handbook of Market Risk Management” lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The product is built up of an interest rate swap. The sections on interest rate swaps of Chapter I/c. entitled “5 Basic Products” of “K&H Treasury Handbook of Market Risk Management”, also applies to this product.

## ➔ 4. forward rate agreement, FRA

MIFID besorolás

IR 2

#### Product description – deposit holders

A forward rate agreement allows you to fix the interest rate of a future term deposit in advance. The deposit does not have to be in place when the transaction is concluded. A forward rate agreement is worth considering if your company is planning to place a larger deposit in the future and you are concerned that interest rates will be less favourable at the time of placing the deposit than the rates you could achieve if you concluded a forward rate agreement or you simply prefer to earn a safe, predictable interest.

The advantage of the transaction is that you will know in advance how much interest you will realise on your term deposit. However, if the market interest rate is higher at the time when the deposit is placed than the rate specified in the forward rate agreement, your company will still only earn interest according to the latter, i.e. less than it would have done if it had opted for the market rate.

#### Product description – borrowers

A forward rate agreement allows you to fix the interest rate of a future loan for a given period. The loan does not have to be in place when the transaction is concluded, although the product can also be used for existing loans. A forward rate agreement is worth considering if your company is expected to make a larger interest payment in the future and you are concerned that the interest rate will be less favourable at the start of the next interest period than the rate you could achieve through the forward rate agreement or you simply prefer to pay a safe, predictable interest.

The advantage of the transaction is that you will know in advance how much interest you will have to pay on your loan in the next interest period. However, if the market interest rate is lower at the start of the interest period in question than the rate specified in the forward rate agreement, your company will still have to pay interest according to the latter, i.e. more than it would have done if it had opted for the market rate. An FRA can be a partial alternative to an IRS if your company does not want to fix the interest rate for a large number of interest periods in advance, only for a shorter time or for one or a few interest periods (by concluding several FRAs for various periods).

If your company is taking out a loan, it buys an FRA from the Bank; if it is placing a deposit, it sells an FRA. Settlement always occurs on a net basis in cash at the start of the interest period in question.

Notation used in forward rate agreements:

FRA t x n

where

t is the number of months left before the start of the next interest period and

n is the end date of the future interest period calculated from the transaction date.

For example, FRA 1x4 = a 3-month interest rate with the relevant interest period starting in one month.

**example for fixing a deposit interest in advance – selling an FRA:** a company is planning to deposit HUF 50 million in a month for a three-month term. It is concerned that the interest rate achievable for a three-month deposit on the start date of the deposit will be lower than the interest rate of the FRA, which is currently 7.00%. This 7.00% is acceptable to the company for a three-month term deposit so it decides to fix it now in a 1 month forward rate agreement.

One month later, on the second banking day before the start date of the deposit, we compare the 3-month BUBOR (the reference interest rate for the three-month period starting on day T+2) against the 7.00% set out in the forward rate agreement. The company and the Bank settle on the start date of the deposit as follows:

- if the 3-month BUBOR < 7.00% (forward interest rate) => the company is paid the discounted value of the time proportional difference between the two interest amounts.
- if the 3-month BUBOR > 7.00% (forward interest rate) => the company pays the discounted value of the time proportional difference between the two interest amounts.

The deposit and the forward rate agreement are legally separate transactions. The deposit of the company will be fixed for three months at the current interest rate (applicable in a month's time) and it will be paid/pay the discounted value of the time proportional difference between the BUBOR and the forward rate multiplied with the FRA notional under the forward rate agreement.

So, the interest realised by the company on its term deposit will be calculated from the rate set out in the forward rate agreement. (We assumed in the above description that the deposit would be normally fixed at the 3-month BUBOR applicable in one month's time.)

**Parameters of a forward rate agreement – selling an FRA**

notional	HUF 50 000 000
start of the future interest period	in one month
tenor of the future interest period	three months
settlement date	in one month (at the start of the interest period)
number of days in future interest period (N)	90
FRA 1x4 (interest rate applicable for a 3-month tenor starting in one month)	7.00%
market reference rate	3-month BUBOR
interest due to client	7.00% fixed interest (per annum)
interest payable by client	3-month BUBOR
interest calculation method	actual number of days / 360
fixing date of market reference rate	two banking days before the start date of the future interest period
settlement of interest payments	net, on the settlement date
current 3-month BUBOR	7.00%
transaction cost	zero

**possible scenarios on the settlement day, assuming that in one month the 3-month BUBOR is**

below 7.00%	received by the company at the start of the interest period: [notional value * (FRA – market reference rate) / 360 * N] / (1 + market reference rate * N / 360) here: [50 000 000 * (7.00% – 3-month BUBOR) / 360 * 90] / (1 + 3-month BUBOR * 90 / 360)
above 7.00%	paid by the company at the start of the interest period: [notional value * (market reference rate – FRA) / 360 * N] / (1 + market reference rate * N / 360) here: [50 000 000 * (3-month BUBOR – 7.00%) / 360 * 90] / (1 + 3-month BUBOR * 90 / 360)
best case scenario (treasury transaction on a standalone basis)	On the fixing the 3 month BUBOR is below 7.00%. Your company receives the discounted value of the time proportional difference between 7.00% and 3 month BUBOR.
worst case scenario (treasury transaction on a standalone basis)	On the fixing the 3 month BUBOR is above 7.00%. Your company pays the discounted value of the time proportional difference between 7.00% and 3 month BUBOR with an unlimited interest rate loss potential.

**the market value of the position two weeks after the trade date from the customer's point of view:**

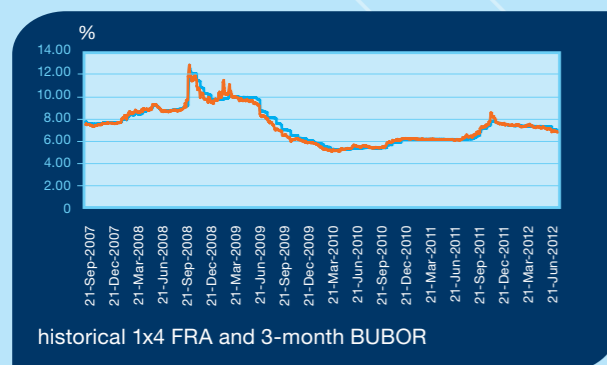
market value : the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions. The market value of the position is the value calculated as of the settlement date and discounted to the closing/market evaluation date. The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

FRA rate two weeks later (the FRA sold can be repurchased at this FRA rate) (%)	value of the position as of the settlement date (HUF)
6.00	+122 850
7.00	0
8.00	-122 850

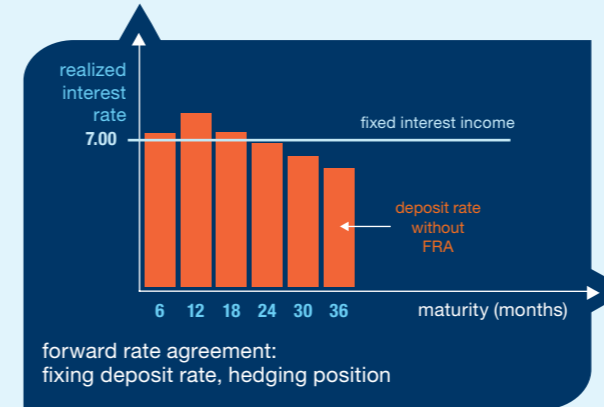
**financial outcome of some possible scenarios at maturity supposing that the 3-month BUBOR evolves as below:**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month BUBOR in 1 month (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest income without FRA, HUF)	profit/loss of the product on a standalone basis (net settlement at the start of the interest period, paid by the company if '-', HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (sum of the 2 previous columns, 3 months interest income with FRA, HUF)
5.00	625 000	245 700	875 000
6.00	750 000	122 850	875 000
7.00	875 000	0	875 000
8.00	1 000 000	-122 850	875 000
9.00	1 125 000	-245 700	875 000



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month BUBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.



The loan and the forward rate agreement are legally separate transactions. The company will pay interest on its loan according to the 6-month BUBOR applicable in six months' time (the usual loan margins that banks charge to their clients are ignored and calculations are based on market reference rates) and it will receive/pay the discounted value of the time proportional difference between the BUBOR and the forward rates multiplied by the FRA notional under the forward rate agreement.

So, the interest payable on the loan in the given interest period will be equal to the rate set out in the forward rate agreement (+ loan margin).

**example for fixing a loan interest rate in advance for one interest period – buying an FRA:** a company pays interest semi-annually and it would like to know at the start of the year how much it will have to pay in the second half of the year so it fixes the interest rate for the six-month interest period starting in six months' time from now, with the help of a forward rate agreement. When the transaction is concluded, the FRA 6x12 is 6.00%.

Six months later, on the second banking day before the start day of the interest period, we compare the 6-month BUBOR (the six-month reference rate starting on day T+2) against the 6.00% and the company and the Bank net settle in cash accordingly on the first day of the interest period as follows:

- if the 6-month BUBOR < 6.00% (forward rate) => the company pays the discounted value of the time proportional difference between the two interest amounts.
- if the 6-month BUBOR > 6.00% (forward rate) => the company will receive the discounted value of the time proportional difference between the two interest amounts.

**parameters of a forward rate agreement – purchase of an FRA**

notional	HUF 50 000 000
start of the future interest period	in six months
tenor of the future interest period	six months
settlement date	in six months (at the start date of the interest period)
number of days in future interest period (N)	180
FRA 6x12 (interest rate applicable to a six-month term starting in six months)	6.00%
market reference rate	6-month BUBOR
interest due to client	6-month BUBOR
interest payable by client	6.00% fixed interest rate (per annum)
interest rate calculation convention	number of actual days/360
fixing date of market reference rate	two banking days before the start date of the future interest period
settlement of interest payments	net, on the settlement date
current 6-month BUBOR	7.25%
transaction fee	zero

**possible scenarios on the settlement date assuming that on the fixing date the 6-month BUBOR is**

below 6.00%	paid by the company at the start of the interest period: [notional value * (FRA – market reference rate) / 360 * N] / (1 + market reference rate * N / 360) here: [50 000 000 * (6.00% – 6-month BUBOR) / 360 * 180] / (1 + 6-month BUBOR * 180 / 360)
above 6.00%	received by the company at the start of the interest period: [notional value * (market reference rate – FRA) / 360 * N] / (1 + market reference rate * N / 360) here: [50 000 000 * (6-month BUBOR – 6.00%) / 360 * 180] / (1 + 6-month BUBOR * 180 / 360)
best-case scenario (treasury transaction on a standalone basis)	On the fixing day 6 month BUBOR above 6.00%. Your company receives the discounted value of the time proportional difference between 6.00% and 6 month BUBOR
worst-case scenario (treasury transaction on a standalone basis)	On the fixing day 6 month BUBOR below 6.00%. Your company pays the discounted value of the time proportional difference between 6.00% and 6 month BUBOR with an unlimited interest rate loss potential.

**the market value of the position two weeks after the trade date from the customer's point of view**

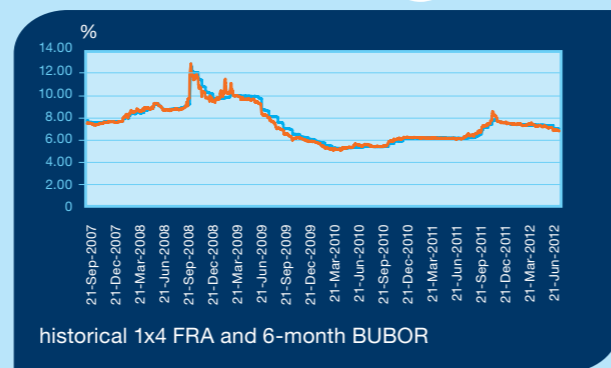
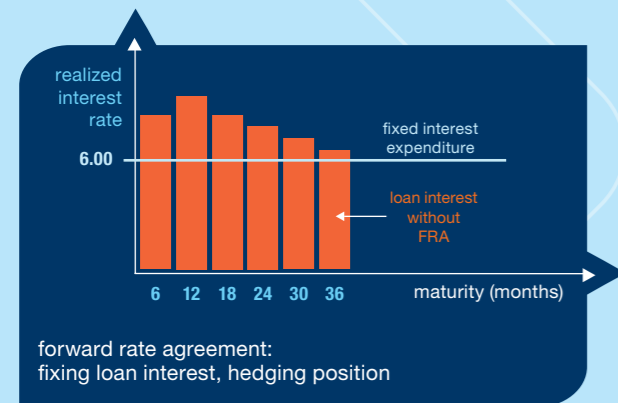
market value : the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions. The market value of the position is the value calculated as of the settlement date and discounted to the closing / market evaluation date. The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

FRA rate two weeks later (the FRA purchased can be sold at the following FRA rate) (%)	value of position as of the settlement date (HUF)
5.00	-233 714
6.00	0
7.00	+233 714

**financial outcome of some possible scenarios at maturity supposing that the 6-month BUBOR evolves as below:**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

6-month BUBOR in six months (%)	underlying exposure's financial outcome with no treasury transaction (6 months' interest income without FRA, HUF)	profit / loss of the product on a standalone basis (net settlement at the start of the interest period, paid by the company if '+', HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (6 months interest expense with FRA, HUF)
4,00	1 000 000	+467 428	1 500 000
5,00	1 250 000	+233 714	1 500 000
6,00	1 500 000	0	1 500 000
7,00	1 750 000	-233 714	1 500 000
8,00	2 000 000	-467 428	1 500 000



The chart shows the interest level(s) of the treasury deal and the historical evolution of 6 month BUBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

**advantages of transaction**

- protection against adverse changes in short-term interest rates for a predefined short period (the worst-case scenario is known).
- predictability: you can fix your interest expense or income in advance.
- if you conclude (buy) a forward rate agreement for a loan and the market rate is higher at the start of the interest period than the rate set in the forward rate agreement, then on the start of the interest period your account will be debited with the discounted value of the time proportional interest difference.
- if you conclude (sell) a forward rate agreement for a deposit and the market rate is lower at the start of the interest period than the rate set in the forward rate agreement, then at the start date of the interest period your account will be debited with the discounted value of the time proportional interest difference.
- you can conclude FRAs for loans extended by, or deposits placed with, other financial institutions, as well, because this deal is separate (in legal terms) from the underlying loan or deposit transaction.
- no cost or separate fees are charged.
- it can be concluded in most liquid currencies.
- the notional amount and the maturity date can be set according to your needs and expectations.
- the start and length of the future interest period can be set according to your expectations, plans and budget. Changing one parameter will also cause the other parameters to change.

- the position can be closed at any time before the maturity date, resulting in a profit or a loss depending on the current market situation at the time concerned.

**risks of transaction**

- if you conclude (buy) a forward rate agreement for a loan and the market rate is lower at the start of the interest period than the rate set in the forward rate agreement, then on the start of the interest period your account will be credited with the discounted value of the time proportional interest difference.
- if you conclude (sell) a forward rate agreement for a deposit and the market rate is higher at the start of the interest period than the rate set in the forward rate agreement, then at the start date of the interest period your account will be credited with the discounted value of the time proportional interest difference.
- because of the fluctuation of market rates, the closing of an FRA before expiry involves settlement obligations, which may result in a profit or a loss, depending on the current situation in the interest rate market at the time concerned.
- if the underlying loan is repaid or deposit is cancelled it is advisable to close the FRA too, since there is no longer any risk resulting from the clients core business.
- in principle any extent of interest rate loss is possible in the event that the evolution of interest rates takes an unexpected sharp turn to a more favourable level during the tenor of the deal.

- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead

to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.

- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

**product structure**

The product is built up of a forward rate agreement. The sections on forward rate agreements of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## ➔ 5. interest rate options: cap and floor

MIFID complexity  
IR 2

### product description

An interest rate option, similarly to a foreign exchange option used for the purpose of managing foreign exchange risk, is like an insurance contract that provides complete protection against adverse changes in the market, but does not exclude the possibility for you to derive maximum benefit from favourable changes in interest rates.

### Cap and floor options are built up of series of options.

**Cap options are built up of caplets and floor options are built up of floorlets. Caplets and floorlets are tied to an interest period. Cap and floor options are built up of as many caplets or floorlets as the number of remaining interest periods from the given deal.**

By buying an interest rate option, your company will have a right, in the case of an adverse change in the market, to pay or receive interest rate during the interest payment period at the option strike rate. The interest rate option is separate from the underlying transaction, and only the difference between the strike and the floating interest rate applied on the notional amount and for the time period settled between the parties.

There are two types of the interest rate option:

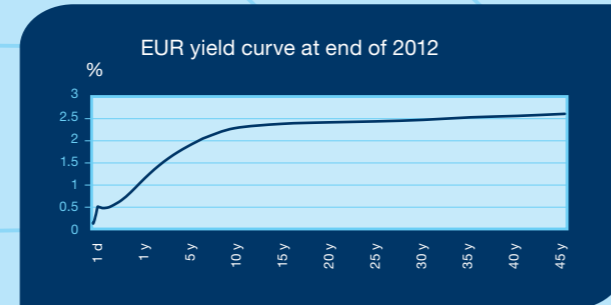
- **buying of cap option:** protection for borrowers against rising interest rates. If at the outset of the interest payment period, the market rate is above the cap interest rate, the bank will pay the client the difference at the end of the interest period. If the market rate is below the cap interest rate, there will be no payment between the parties. At different cap interest rate levels, you can achieve various levels of protection: if the cap interest rate is lower, your protection will be at a more favourable level, but the option will also be more expensive, and vice versa.
- **buying of floor option:** protection for depositors against decreasing interest rates. If at the outset of the interest period, the market rate is below the floor interest rate, the bank will pay the client the difference at the end of the interest period. If the market rate is above the floor interest rate, there will be no payment between the parties. At different floor interest rate levels, you can achieve various levels of protection: if the floor interest rate is higher, your protection will be at a more favourable level, but the option will also be more expensive, and vice versa.

In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period, however it is possible to agree otherwise.

### A) cap option: protection against rising interest rates

A company has a EUR 300 000 floating rate loan with a remaining tenor of 3 years. The 3-month EURIBOR is 0.50%. The current 3-year fixed interest rate is 0.85%. In the middle term, this company expects interest rates to decrease by more than what is expected by the market, but it would also like to exclude any scenario in which its financing expenses would suddenly exceed 1.00% annually. Therefore, it buys a forward starting 3-year cap option with a cap strike at 1.00%, for which it pays a premium at 0.40% of the notional (equivalent with paying approx. 0.1357% p. a. payable every 3 months). By buying the cap option, this company can make sure that its interest expenditure in relation to the loan in question will not exceed 1.00% p.a. (plus the annualized premium charged for the cap option).

Cap option can be bought without treasury limit, if the option premium is paid up front. However a treasury master agreement and a completed MiFID questionnaire is always required.



**EUR yield curve: increasing. If you expect that interest rates in the future will increase a larger extent than expected by the market, the cap option may provide favourable protection against sudden interest rate increases.**

parameters of the cap option	
notional	EUR 300 000
tenor	3 years
variable notional	no
cap (maximum) strike	1.00%
frequency of interest payment	quarterly
Interest rate fixing date	2 working days before onset of the interest period
interest rate calculation convention	actual number of days/360
settlement of interest payments	net settlement at the end of each interest period
precondition for settlement of cap interest payment	3-month EURIBOR above 1,00% at the start of the interest payment period
current 3-month EURIBOR	0.50%
current 3-year ICAPEURO offer rate against 6-month EURIBOR (Day count: ANN 30/360 vs 6M EURIBOR)	0.85%
option premium (paid by the client on the trade date)	0.40% * notional, that is EUR 1 200 upfront (approx. 0.1357% p.a. payable every 3 months, EUR 101.78 per quarter)

possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is	
above 1.00%	your company pays 1% interest on the loan in every interest period
below 1.00%	your company pays 3 month EURIBOR on the loan in every interest period
best-case scenario (treasury transaction on a standalone basis)	On the fixing days 3 month EURIBOR above 1.00%. Your company receives the time proportional difference between 1.00% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On the fixing days 3 month EURIBOR below 1.00%. No net settlement between the parties. The loss of your company is equal to the option premium.

### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in the event of positive sign the company can close the transaction at a profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

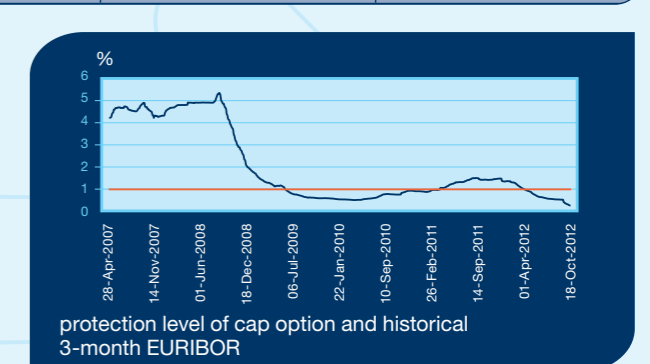
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	0
0.50	330
2.00	2 820

### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without cap, EUR)	profit/loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with cap and premium, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with 0,60% IRS, EUR)
1 year	-1.00	-750	0	$-(750 + 101.78) = -648.22$	450
1 year	0.00	0	0	101.78	450
1 year	0.50	375	0	$375 + 101.78 = 476.78$	450
1 year	1.50	1 125	-375	$750 + 101.78 = 851.78$	450
1 year	2.50	1 875	-1 125	$750 + 101.78 = 851.78$	450



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

## B) floor option: protection against decreasing interest rates

A company has a floating rate deposit and it would like to hedge the interest rate for a tenor of 3 years. The 3-month EURIBOR is 0.50%. The current 3-year fixed interest rate is 0.85%. In the middle term, this company expects interest rates to decrease by more than what is expected by the market, but it would also like to exclude any scenario in which interest rates would drop significantly. Therefore, it buys a 3-year floor option with a floor strike at 1.00%, for which it pays a premium at 1.56% of the notional (equivalent with paying approx. 0.1555% p. a. payable every 3 months). By buying the floor option, this company can make sure that its interest income in relation to the deposit in question will not be below 1.00% p.a. (minus the annualized premium charged for the floor option).

Floor option can be bought without treasury limit, if the option premium is paid up front. However a treasury master agreement and a completed MiFID questionnaire is always required.

parameters of the floor option	
notional	EUR 300 000
tenor	3 years
variable notional	no
floor (minimum) strike	1.00%
frequency of interest payment	quarterly
interest rate fixing date	2 working days before onset of the interest period
interest rate calculation convention	actual number of days/360
settlement of interest payments	net settlement at the end of each interest period
precondition for settlement of floor interest payment	3-month EURIBOR below 1,00% at the start of the interest payment period
current 3-month EURIBOR	0.50%
current 3-year ICAPEURO offer rate against 6-month EURIBOR (market reference rate)	0.85%
option premium (paid by the client on the trade date)	1.56% * notional, that is EUR 4 680 up front (approx. 0.1555% p.a., EUR 116.63 payable every 3 months)
possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is	
above 1.00%	your company receives 1% interest on the deposit in every interest period
below 1.00%	your company receives 3 month EURIBOR on the deposit in every interest period
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR below 1.00%. Your company receives the time proportional difference between 1.00% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR above 1.00%. No net settlement between the parties. The loss of your company is equal to the option premium.

### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions. (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

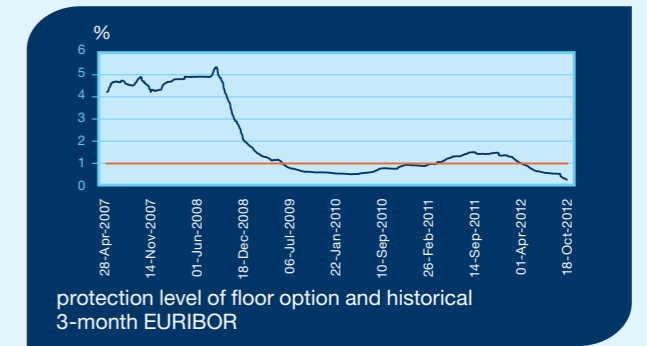
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	13 095
0.50	4 680
2.00	0

### financial outcome of some possible scenarios 1 year after the trade date, at the end of the interest rate period, supposing that the 3-month EURIBOR evolves as below in the last two days at the beginning of the given period

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without floor, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, client receives payment if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with floor and premium, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with 0,60% IRS, EUR)
1 year	-1.00	-750	1 500	750.00 - 116.63 = 633.37	450
1 year	0.00	0	750	750.00 - 116.63 = 633.37	450
1 year	0.50	375	375	750.00 - 116.63 = 633.37	450
1 year	1.50	1 125	0	1 125 - 116.63 = 1 008.37	450
1 year	2.50	1 875	0	1 875 - 116.63 = 1 758.37	450



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

### advantages of transaction

- complete protection against adverse changes in interest rates, the worst-case scenario is known
- you can fully benefit from advantageous changes in interest rates
- available for both loans and deposits
- an option can be attached to a loan taken out from, or deposit placed with, another financial institution, because the interest rate option is (in legal terms) separate from the underlying loan or deposit transaction
- the maximum / minimum of the future interest payment / income can be fixed in advance
- available in most liquid currencies
- the expiry date, the cap / floor strike, and the frequency of interest payments can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- available with any kind of repayment schedule
- your position can be closed at any time by means of a counter-deal (selling of the option) in the market

### risks of transaction

- similarly to an insurance premium, the option premium is paid either up-front, or at the end of each interest period, evenly spread over the tenor of the contract
- similarly to foreign exchange options, interest rate options also involve the paradox that the holder of the option is in a better situation if at expiry there is no need to exercise the option
- when the underlying loan is prepaid, or the underlying deposit is broken, it is advisable to close the interest rate option, as well, because the risk arising from the underlying business activity is no longer there. When closing the deal, that is, on selling the option, you may incur a loss; although an option never has a negative value, you may receive less on selling your option than what you

paid as a premium when the contract was made. The value of a cap option increases as interest rates rise, and can even come to zero if interest rates are cut sharply. The value of a floor option increases as interest rates decline, and can even come to zero if interest rates hike sharply.

- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the daycount method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- if the company sells a cap or a floor option, the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### Product structure

The product is built up of a forward rate agreement. The sections on forward rate agreements of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

If you expect interest rates to decrease by a greater degree than what is foreseen by the market (e.g. in the yield curve), the premium paid for the cap option can be off-set by a subsequent interest rate decrease that is greater than the market expectations.

If, however, you expect that interest rates will not change significantly over the tenor of the contract, and you want to avoid paying for protection, and in return you are prepared to accept that an interest payment obligation is created at a lower interest rate, then you can choose a zero cost interest rate collar (see paragraph 7 of this chapter – interest rate collar).

In specific cases, a swaption (see in a different document) will give you more effective and less expensive protection against an unfavourable turn in interest rates, but this is a hedging product that is less flexible than an interest rate option (see paragraph 6 of this chapter – swaption).

## ➔ 6. barrier interest rate options

MIFID complexity

IR 3

Barrier options are a more cost-efficient protection than the vanilla options against rising or falling interest rates. In return of lower option premium, the level of protection is only partial.

### There are several kinds of barrier interest rate options:

Barrier cap and floor options are built up of series of options similarly to plain vanilla options.

Barrier cap options are built up of caplets and barrier floor options are built up of floorlets. Cap and floor options are tied to an interest period. Barrier cap and floor options are built up of as many caplets or floorlets as the number of remaining interest periods from the given deal.

The barrier is an interest rate fixed in advance and reaching it comes with consequences that are fixed before concluding the transaction.

### the barrier can be either European or American type.

- European barrier means that reaching the barrier interest rate level has consequences only for the given interest period, so it affects only the given caplet or floorlet
- American barrier means that reaching the barrier interest rate level has consequences for all the remaining interest periods, so it affects every remaining caplet or floorlet.

On the interbank market the European type barrier is the most widely used, so our Bank provides this type of barrier to our Clients.

### according to the consequences of reaching the barrier (trigger) level we can speak about knock in and knock out levels.

- if the European knock in level is reached, the given caplet or floorlet comes into effect, but only for the given interest period. In the next period the caplet or floorlet comes into effect only if the trigger level is reached again
- if the European knock out level is reached, the caplet or floorlet terminates, but only for the given interest period. In the next interest payment period, the caplet or floorlet terminates only if the trigger level is reached again.

### A) European knock out cap

The European knock out cap is a cap option, in which a European knock out level is built above the cap strike.

The knock out cap provides protection for its buyer in every interest rate period, where on the fixing date the floating interest rate is above the cap strike and below the knock out level. That is the barrier level

is watched separately for each caplet. If on the fixing date of a caplet:

- the floating interest rate reaches or exceeds the knock out level, only the caplet will be terminated (i.e. knocked out).
- the floating interest rate is below the knock out level and above the cap strike, the caplet is paid on the previously fixed settlement date (in general at the end of the interest period).
- the floating interest rate is below the cap strike, there is no payment between the parties

The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded.

### B) European knock out floor

The European type knock out floor is a floor option, in which a European knock out level is built under the floor strike.

The knock out floor provides protection for its buyer in every interest period, where on the fixing date the floating interest rate is below the floor strike and above the knock out level. That is the barrier level is watched separately for each caplet. If on the fixing date of a caplet:

- the floating interest rate is below the knock out level, only the floorlet will be terminated (i.e. knocked out).
- the floating interest rate is above the knock out level and below the floor strike, the floorlet is paid on the previously fixed settlement date (in general at the end of the interest period).
- the floating interest rate is above the floor strike, there is no payment between the parties

The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded.

### C) European knock in cap

The European knock in cap is a cap option, in which a European knock in level is built above the cap strike.

The knock in cap provides protection for its buyer in every interest period, where on the fixing date the floating interest rate is above the barrier. That is the barrier level is watched separately for each caplet. If on the fixing date of a caplet:

- the floating interest rate exceeds the knock in level, the caplet will come into effect (i.e. knocked in). The caplet is paid on the previously fixed settlement date (in general at the end of the interest period).
  - the floating interest rate is below the knock in level, the caplet does not come into effect and there is no payment between the parties
- The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded.

#### D) European knock in floor

The European knock in floor is a floor option, in which a European knock in level is built below the floor strike.

The knock in floor provides protection for its buyer in every interest period, where on the fixing date the floating interest rate is below the barrier. That is the barrier level is watched separately for each caplet.

If on the fixing date of a caplet:

- the floating interest rate is below the knock in level, the floorlet will come into effect (i.e. knocked in). The floorlet is paid on the previously fixed settlement date (in general at the end of the interest period).
- the floating interest rate is above the knock in level, there is no payment between the parties

The premium, which is a percentage of the nominal value, is usually charged upfront when the contract is concluded

**example:** purchase of a knock-out cap: a company has a EUR 300 000 floating-rate loan with 3 years to maturity, on which it will be paying interest quarterly on the 3-month EURIBOR rate. There is no amortization during the maturity; repayment is at the end of the maturity in one sum. The current 3-month EURIBOR is 0.50%. The fixed EUR market reference rate is 0.85% In the middle term, this company expects interest rates to increase by less than what is expected by the market (ie. the yield curve), but it would also like to exclude any scenario in which its financing expenses would suddenly exceed 1.00% annually. Buying a normal (without knock-out) cap option costs 0.40% of the notional, which is too expensive for the company. The company does not expect the 3 month EURIBOR to increase above 2% in the coming 3 years. Therefore it buys a knock-out cap option with an option strike at 1% with a knock-out level of 2% for a tenor of 3 years for which it pays 0.12% of the notional. By buying the knock-out cap option it ensures that the expenditures of the loan will not exceed the level of 1% in each period (+the proportional part of the cap option premium that was paid) as long as the 3 month EURIBOR is between 1% and 2% two days before the starting date of the period.

The purchase of a knock-out cap offers a relative protection for the floating rate payer:

Two banking days before the start of the each interest period, the strike of the cap is compared to the 3-month EURIBOR level. If 3-month EURIBOR:

- is lower than the cap strike, no settlement is made for that period.
- exceeds the cap, but not the barrier, the difference between the cap strike and 3-month EURIBOR, applied on the notional amount and for the time period will be paid to the client. The settlement will occur at the end of the interest period.
- is higher or equal to the KO barrier, no settlement is made for that period.

In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period, however it is possible to agree otherwise.

So the cap buyer is protected against higher rates until the barrier level and will benefit from EURIBOR rates lower than the cap strike. The barrier has a quarterly reset: its activation on a specific quarter will only affect that specific period. Following quarters may produce a pay-out if conditions are met.

#### parameters of the knock-out cap option (with European barrier)

notional	EUR 300 000
tenor	3 years
variable notional	no
cap strike	1.00%
knock-out barrier	2.00% (applicable separately to each interest period)
frequency of interest payment	quarterly
fixing day of floating interest rate	2 working days before onset of given interest period
interest rate calculation convention	actual number of days/360
settlement of interest payments	net, at the end of each interest period
precondition for settlement of cap interest payment	if the 3-month EURIBOR fixing rate is between 1,00% and 2,00% two banking days before the start of the interest period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (Day count: ANN 30/360 vs 6M EURIBOR)	0.85%
current 3-month EURIBOR	0.50%
option premium (paid by the client on the trade date)	0.12% * notional, EUR 360 up front (approx. 0.042% p. a., EUR 32 payable every 3 months)

#### possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is

A) On the fixing days 3-month EURIBOR below 2.00%	
A/1) 3-month EURIBOR above 1.00%	your company pays 1% interest on the loan in every interest period
A/2) 3-month EURIBOR below 1.00%	your company pays 3-month EURIBOR on the loan in every interest period
B) on the fixing days 3-month EURIBOR reaches or exceeds 2.00%	your company pays 3-month EURIBOR on the loan in every interest period
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR below 2.00% and above 1.00%. Your company receives of the time proportional difference between 1.00% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR is at or above 2.00%. No net settlement between the parties. The loss of your company is equal to the option premium.

#### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit)

(assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

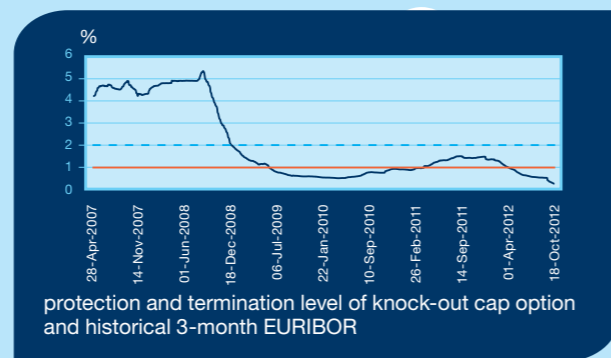
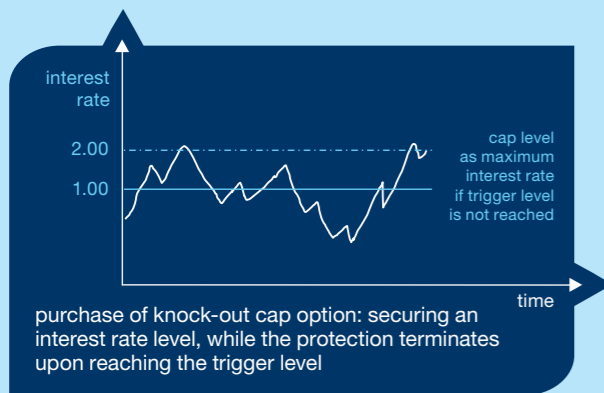
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
- 1.00	0
0.50	270
2.00	1 965

#### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without cap, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, payable by client if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with cap and premium, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with 0,60% IRS, EUR)
1 year	-1.00	-750	0	-(750 - 31.5) = 718.5	450
1 year	0.00	0	0	31.5	450
1 year	0.50	375	0	(375 + 31.5) = 406.5	450
1 year	1.50	1 125	-375	(750 + 31.5) = 781.5	450
1 year	2.50	1 875	0	(1875 + 31.5) = 1 906.5	450



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

**example for purchase of a knock-in floor with European barrier:** a company wishes to hedge its interest income from its floating rate deposit for 3 years. The current 3-month EURIBOR is 0.50%. The fixed EUR market reference rate is 0.85%. In the middle term, this company expects interest rates to increase by more than what is expected by the market (ie. the yield curve), but it would also have protection against a sharp decline in interest rates. The company would like to exclude any scenario in which interest rates drop below 1.00% annually and to optimize costs the company takes the risks that the protection comes into effect only below the 0.3% knock-in level. Therefore it buys a knock-in floor option with an option strike at 1% with a knock-in level of 0.3% for a tenor of 3 years for which it pays 1.10% of the notional up front. By buying the knock-in floor option it ensures that the interest income of the deposit will not drop below the level of 1% in each period (+the proportional part of the floor option premium that was paid) as long as the 3 month EURIBOR is under 0.30% two days before the starting date of the period. However, above the knock-in level there is no protection against falling interest rates.

The purchase of a knock-in floor offers a relative protection for the floating rate payer:

Two banking days before the start of the each interest period, the strike of the cap is compared to the 3-month EURIBOR level. If 3-month EURIBOR:

- is lower than the barrier, the difference between the floor strike and 3-month EURIBOR, applied on the notional amount and for the time period will be paid to the client. The settlement will occur at the end of the interest period.
- is higher than the barrier, no settlement is made for that period.
- is higher than the floor strike, no settlement is made for that period.

In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period, however it is possible to agree otherwise.

So the knock-in floor buyer is protected against interest rates lower than the floor strike in case interest rates are lower than the knock-in level. The company can benefit from interest rates higher than the floor strike without limit.

The barrier has a quarterly reset: its activation on a specific quarter will only affect that specific period. Following quarters may produce a pay-out if conditions are met.

parameters of the knock-in floor option (with European barrier)	
notional	EUR 300 000
tenor	3 years
variable notional	no
cap strike	1.00%
knock-in barrier	0.30% (applicable separately to each interest period)
frequency of interest payment	quarterly
fixing day of floating interest rate	2 working days before onset of given interest period
interest rate calculation convention	actual number of days/360
settlement of interest payments	net, at the end of each interest period
precondition for settlement of floor interest payment	if the 3-month EURIBOR fixing rate is below 0.30% two banking days before the start of the interest period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (day count: ANN 30/360 vs 6M EURIBOR)	0.85%
current 3-month EURIBOR	0.50%
option premium (paid by the client on the trade date)	1.10% * notional, EUR 3 300 up front (approx. 0.3657%, EUR 275.36 every 3 months if paid in quarterly installments)
possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is	
3-month EURIBOR above 0.30%	your company receives 3-month EURIBOR interest on the deposit in every interest period
3-month EURIBOR below 0.30%	your company receives 1.00% interest on the deposit in every interest period
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR below 0.30%. Your company receives the time proportional difference between 1.00% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR above 0.30%. No net settlement between the parties. The loss of your company is equal to the option premium.

**the market value of the position one year after the contract conclusion from the customer's point of view**

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

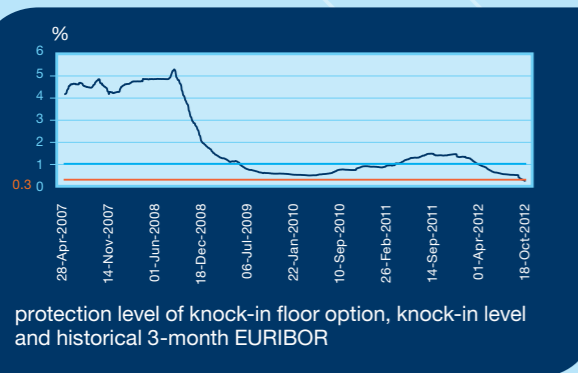
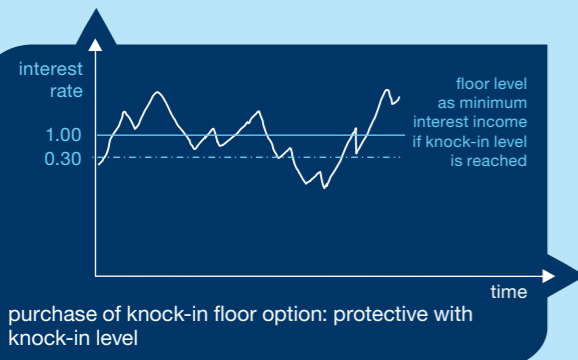
3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	1 620
0.50	1 076
2.00	0

**financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest income without knock-in floor, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, receivable by client if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' income with floor and premium, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest income with 0,60% IRS, EUR)
1 year	-1.00	-750	1 500	$-(750 - 275.63) = 474.37$	450
1 year	0.00	0	750	$(750 - 275.63) = 474.37$	450
1 year	0.50	375	0	$(375 - 275.63) = 99.37$	450
1 year	1.50	1 125	0	$(1 125 - 275.63) = 849.37$	450
1 year	2.50	1 875	0	$(1 875 - 275.63) = 1599.37$	450





The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

#### advantages of transaction

- purchase of a barrier option is more cost effective than a plain vanilla option with the same strike, but the protection may terminate upon reaching the barrier or the protection comes into effect only when reaching the barrier level.
- possibility to benefit from advantageous changes in interest rates
- a buyer of the barrier option receives a right, thus the position can never have a negative market value
- the only cost is the option premium
- available for both loans and deposits
- an option can be attached to a loan taken out from, another financial institution, because the interest rate option is (in legal terms) separate from the underlying loan or deposit transaction
- available in most liquid currencies
- start and expiry dates, strike and barrier, as well as the frequency of interest payments can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too.
- available for any kind of repayment schedule.
- your position can be closed at any time by means of a counter-deal (selling of the option) in the market.

#### risks of transaction

- barrier options cannot be considered a perfect hedge, as the protection will disappear when mostly needed. Barrier interest rate options may be combined with other interest rate options to produce effective hedges at an attractive cost.
- similarly to an insurance premium, the option premium is paid either up-front, or at the end of each interest period, evenly spread over the tenor of the contract
- similarly to foreign exchange options, interest rate options also involve the paradox that the holder of the option is in a better situation if at expiry there is no need to exercise the option (below the cap strike)
- when the underlying loan is prepaid or the deposit is broken, it is advisable to close the interest rate option, as well, because the risk arising from the underlying business activity is no longer there. When closing the deal, that is, on selling the option, you may incur a loss; although an option never has a negative value, you may receive less on selling your option than what you paid as a premium when the contract was made. Similarly if you wish to buy back the previously sold option it is possible that the price is much higher. The value of a cap option increases as interest rates rise (up to the barrier), and can even come to zero if interest rates are cut sharply. The value of a floor option decreases as interest rates fall (until to the barrier), and can even come to zero if interest rates are cut sharply.
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The product is built up of a barrier interest rate option. The sections on barrier interest rate options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## 7. combination of interest rate options: interest rate collar

MIFID complexity

IR 2

#### product description

If you want to avoid having to pay a high premium for a cap or a floor option, a collar option is a plausible solution. Interest rate options are like foreign exchange options in that they can be combined with one another. A cap and a floor option combined result in a collar transaction which comes at no cost. This product can be used to create a range of protection best suited to your requirements.

An interest rate collar involves the simultaneous sale/purchase of a cap and a floor. Your company buys the option that provides you with protection against adverse changes in interest rates, and sells the other option, thereby limiting the benefits of favourable interest rate movements, so that the transaction can be cost-free. The product can be particularly favourable in the case of a flat yield curve, or when you believe that despite the market expectations reflected in the yield curves, market interest rates will not change significantly in the foreseeable future.

**example:** a company has a EUR 300 000 3-year floating-rate bullet loan in EUR. The current 3-month EURIBOR is 0.50% and the 3-year fixed interest rate is 0.85%. The company expects that there will be no substantial change in interest rates in the future, but it would nevertheless like to be protected against a possible sudden surge in interest rates. Therefore, it enters into a 3-year zero-cost interest rate collar, or in other words it simultaneously buys a cap option with a 0.90% strike and sells a floor option with a 0.50% strike for the same notional. By doing so, the maximum of the company's interest expenditure will be set at 0.90%, in return for which the company accepts that it will not benefit from a potential decrease of interest rates below 0.50%.

#### Interest rate collar with an underlying loan transaction: buying of cap option and selling of floor option:

Possible scenarios on specific predetermined expiry dates:

- market interest rate > cap interest rate (cap strike)  
You have a right to pay the cap interest rate instead of the market rate, which means that the bank will pay to you the time proportional difference between the market interest rate and the cap interest rate.
- market interest rate < floor interest rate (floor strike)  
You have an obligation to pay interest at the floor rate, which means that you will pay to the bank the time proportional difference between the market interest rate and the floor interest rate.
- the market interest rate is between the cap and the floor rates:  
no settlement takes place between the parties

#### Interest rate collar with an underlying deposit transaction: buying of floor option and selling of cap option:

Possible scenarios on specific predetermined expiry dates:

- market interest rate < floor interest rate (floor strike)  
You have the right to receive interest at the floor rate, which means that the bank will pay to you the time proportional difference between the market rate and the floor rate.
- market interest rate > cap interest rate (cap strike)  
You have an obligation to pay interest at the cap interest rate, which means that you will pay to the bank the time proportional difference between the cap interest rate and the market interest rate.
- the market interest rate is between the floor and the cap rates:  
no settlement take place between the parties

In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period, however it is possible to agree otherwise.

**parameters of the interest rate collar**

notional	EUR 300 000
tenor	3 years
variable notional	no
floor (minimum) strike	0.50%
cap (maximum) strike	0.90%
frequency of interest payments	quarterly
interest calculation convention	actual number of days/360
fixing day of floating interest rate	2 working days before onset of given interest period
settlement of interest payments	net settlement at the end of each interest period
precondition to settlement at the floor strike	3-month EURIBOR below 0,50% at the start of the interest payment period
precondition to settlement at the cap strike	3-month EURIBOR below 0,90% at the start of the interest payment period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (Day count: ANN 30/360 vs 6M EURIBOR)	0.85%
current 3-month EURIBOR	0.50%
transaction fee	zero

**possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is**

3-month EURIBOR above 0.90%	your company pays 0.90% interest on the loan in every interest period
3-month EURIBOR between 0.50% and 0.90%	your company pays 3-month EURIBOR on the loan in every interest period
3-month EURIBOR below 0.50%	your company pays 0.50% interest on the loan in every interest period
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR above 0.90%. Your company receives the time proportional difference between 0.90% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR below 0.50%. Your company pays the time proportional difference between 0.50% and 3 month EURIBOR for the actual notional amount in each interest rate period with an unlimited interest rate loss potential.

**the market value of the position one year after the contract conclusion from the customer's point of view**

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

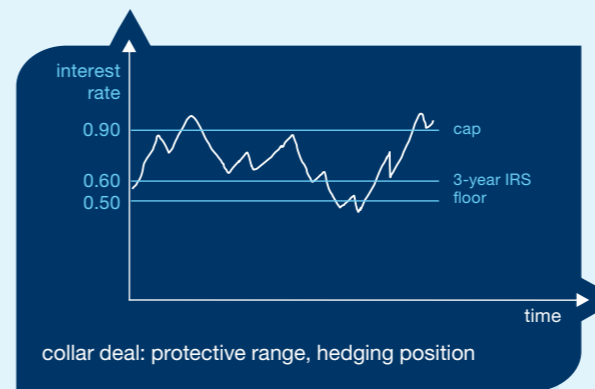
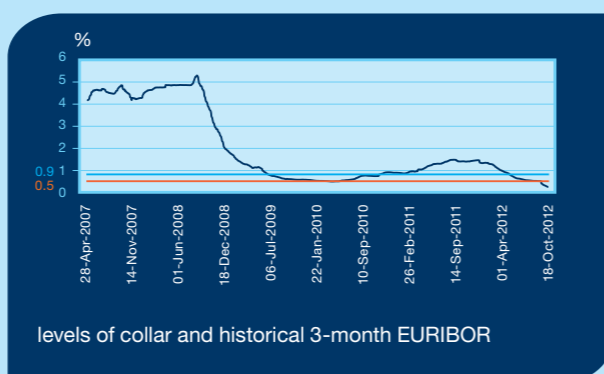
3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	-6 765
0.50	-510
2.00	5 745

**financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year**

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without collar, EUR)	profit/loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with collar, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with 0,60% IRS, EUR)
1 év	-1,00	-750	+1 125	375	450
1 év	0,00	0	+375	375	450
1 év	0,70	525	0	525	450
1 év	1,50	1 125	-450	675	450
1 év	2,50	1 875	-1 200	675	450

The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.



**advantages of transaction**

- protection against unexpected and substantial adverse changes in interest rates
- limited benefit from interest rates that are more advantageous than the fixed interest rate on the trade date
- the maximum / minimum of future interest rate payments/income is fixed in advance (the worst-case scenario is known)
- can be used to hedge both loans and deposits
- an interest rate collar can be combined with loans granted by or deposits placed with other financial institutions, since the collar deal is separate from the underlying loan or deposit transaction
- zero cost, this deal is available in most liquid currencies free of any special premium
- the expiry date, the cap and floor interest rates (strikes), and the frequency of interest payments can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- available for any repayment schedule
- if the treasury transaction is no longer needed, the collar deal can be closed at any time before expiry, by means of a counter trade

**risks of transaction**

- the protection relates to interest rates that are less advantageous than the fixed interest rate applicable to the same tenor
- you will not derive the full benefit of interest rate changes that are favourable for your underlying position

A collar deal could be an appropriate hedging strategy for you if you expect interest rates to remain stable at around the current market rates. If you expect that market rates will go below the floor level in the future, then the cap option may result in lower financing expenses, because the option premium you must pay could be set off by future decreases in the interest rate from which you can draw unlimited benefit. If, however, you expect higher interest rates than the market, then you will enjoy better conditions with an interest rate swap.

- the extent of the potential interest loss is unlimited in theory, if during the tenor interest rates have developed significantly more favorably than you expected.
- if the underlying loan is repaid before maturity, it is advisable to close the collar deal as well, because then there will no longer be any risk originating from the underlying business; on account of fluctuation in market rates, the closing of a collar deal before expiry will entail an obligation to settle, including the possibility of a loss
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

**product structure**

The product is built up of two plain vanilla interest rate option. The sections on plain vanilla interest rate options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## → 8. knock-out cap collar

MIFID complexity

IR 3

### product description

If you would like to improve the parameters of a zero cost collar, a knock-out cap collar is the obvious solution. Similarly to FX options, interest rate options can also be combined with each other, and combining a knock-out cap with a regular floor option results in a zero cost knock-out cap collar. This product creates a protection range we consider ideal, with the protection staying in place until the knock-out cap is terminated.

A knock-out cap collar involves the simultaneous conclusion of a knock-out cap and a floor option. Your company buys an option (knock-out cap) that provides protection in each interest period when the knock-out barrier is not reached and sells another (floor) option, which limits its benefits of favourable interest rate movements to ensure that the transaction is zero cost. This product can be particularly advantageous in case of a flat yield curve or if you believe that, despite the market expectations reflected by the yield curve, market interest rates will not change in the near future.

Knock-out cap collar concluded for a loan: the company buys a knock-out cap and sells a floor option:

Possible scenarios on the pre-agreed maturity dates (two banking days before each interest period)

- market interest rate  $\geq$  knock-out barrier: there is no settlement
- knock-out barrier  $>$  market interest rate  $>$  knock-out cap strike

You are entitled to pay according to the knock-out cap strike instead of the market interest rate, i.e. the Bank will pay the company the time proportional difference between the market and the cap interest rates.

- market interest rate between the knock-out cap and the floor strikes: there is no settlement

- market interest rate  $<$  floor strike

You have an obligation to pay interest at the floor rate, which means that you will pay to the bank the time proportional difference between the market interest rate and the floor interest rate

In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period, however it is possible to agree otherwise.

**an example for a zero cost knock-out cap collar transaction:** a company has a 3 year bullet loan with a notional of 300 000 EUR with a floating interest rate payment, on which it will be paying interest quarterly on the 3-month EURIBOR rate. The current 3-month EURIBOR is 0.50%. The fixed EUR interest rate on is 0.85%. The company believes that interest rates will not fall significantly in the future, but it would nevertheless like to be protected against a possible sudden surge in interest rates. It also believes that the 3-month EURIBOR rate is not going to rise above 2.00% in the coming 3 years. Thus it concludes a zero cost knock-out cap collar for term of 3 years, i.e. it buys a knock-out cap option with a 2.00% knock-out barrier and a 0.60% strike and simultaneously sells a floor option with a 0.30% strike for the same notional amount, in line with the notional schedule above. Thus it maximises its interest expenses at 0.60% and in exchange it is prepared to accept that its protection may cease in each interest period if the 3-month EURIBOR reaches or exceeds 2.00%. Furthermore the company accepts that should interest rates drop to a level below current market expectations (see the yield curve below), it will not be able to benefit from interest rates lower than 0.30%.

### parameters of a knock out cap collar transaction

initial notional	EUR 300 000
tenor	3 years
variable notional	no
floor (minimum) interest rate	0.30%
cap (maximum) interest rate	0.60%
knock-out barrier	2.00% (applicable separately to each interest period)
frequency of interest payment	quarterly
interest rate calculation convention	actual number of days / 360
fixing day of floating interest rate	2 working days before onset of given interest period
settlement of interest payments	net, at the end of each interest period
precondition for settlement of floor interest payment	if the 3-month EURIBOR is below 0,30% two banking days before the start of the interest period
precondition for settlement of cap interest payment	if the 3-month EURIBOR fixing rate is between 0.60% and 2,00% two banking days before the start of the interest period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (Day count: ANN 30/360 vs 6M EURIBOR)	0.85%
current 3-month EURIBOR	0.50%
option premium (paid by the client on the trade date)	none

### possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is

A) on the fixing days 3-month EURIBOR below 2.00%	
A/1) 3-month EURIBOR above 0.60%	your company pays 0.60% interest on the loan in every interest period
A/2) 3-month EURIBOR between 0.30% and 0.60%	your company pays 3-month EURIBOR on the loan in every interest period
A/3) 3-month EURIBOR below 0.30%	your company pays 0.50% interest on the loan in every interest period
B) on the fixing days 3-month EURIBOR above or equal 2.00%	your company pays 3-month EURIBOR on the loan in every interest period
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR never reaches 2.00% and 3-month EURIBOR is above 0.60% but below 2.00%. Your company receives the time proportional difference between 0.60% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR below 0.30%. Your company pays the time proportional difference between 0.30% and 3 month EURIBOR for the actual notional amount in each interest rate period with an unlimited interest rate loss potential.

### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

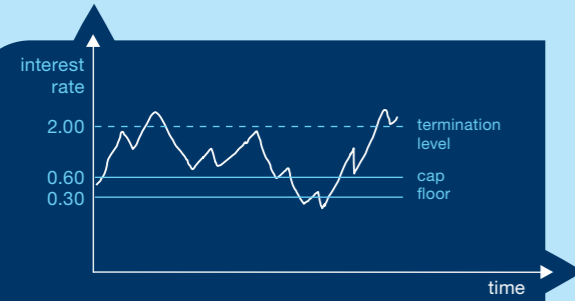
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	-1 539
0.50	-100
2.00	2 049

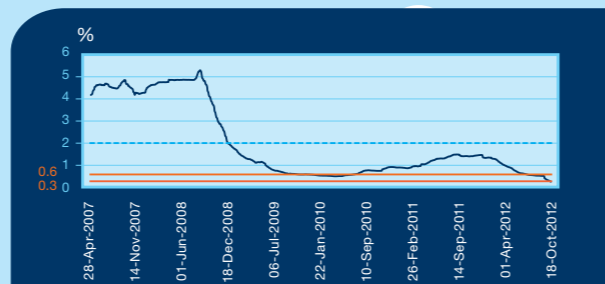
### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without knock-out cap collar, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with knock-out cap collar, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with 0,60% IRS, EUR)
1 year	-1.00	-750	+975	225	450
1 year	0.00	0	+225	225	450
1 year	0.50	375	0	375	450
1 year	1.50	1 125	-675	450	450
1 year	2.50	1 875	0	1 875	450



KO cap collar: protective range with termination level, hedging position



KO cap collar range, termination level and historical 3-month EURIBOR

The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

#### advantages of transaction

- purchasing a knock-out cap option will provide limited protection against unfavourable movements in interest rates until the option knocks out.
- as a knock-out cap costs less than a plain vanilla cap the floor option can be sold at a lower strike than the floor strike of a normal zero-cost collar with identical parameters.
- limited benefit from interest rates that are more advantageous than the fixed interest rate on the trade date.
- the maximum / minimum future interest expense / income is predetermined (the worst scenario is known) in the event that the knock-out barrier is not reached.
- can be used to hedge both loans and deposits.
- it can also be concluded for loans granted by or deposits placed with other financial institutions, since the collar deal is separate from the underlying loan or deposit transaction.
- zero cost, this deal is available in most liquid currencies free of any special premium.
- the expiry date, the cap and floor interest rates (strikes), the knock out barrier and the frequency of interest payments can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too.
- available for any repayment schedule.
- if no longer needed, the knock-out cap collar can be closed at any time before expiry, by means of a counter trade.

#### risks of transaction

- the knock-out cap option part of the transaction does not provide full protection as the protection will disappear when mostly needed.
- the protection is in place until the knock-out barrier is reached, and it is for interest rates more adverse than the fixed interest rate applicable to the same tenor.
- you cannot take full advantage of favourable interest rate movements.

- in theory you may suffer an unlimited interest loss if interest rates exceed your expectations during the tenor of the transaction.
- if the underlying loan is repaid, it is advisable to close the knock-out cap collar too, since there is no longer any risk resulting from your core business. The closing of a collar deal before expiry will entail an obligation to settle, including the possibility of a loss.
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of interest rate options the market value is also influenced by the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The product is built up of a barrier and a plain vanilla interest rate option. The sections on barrier and plain vanilla interest rate options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## 9. knock-in floor collar

MIFID complexity

IR 3

#### product description

If you find the fixed rate of the current IRS too high, but wish to have protection near the current IRS level against rising interest rates, a knock-in floor collar is the obvious solution. Similarly to FX options, interest rate options can also be combined with each other, and combining a knock-in floor with a regular cap option results in a zero cost knock-in floor collar. The structure can be built up in way where the cap and the knock-in floor strike is the same (in this case the strike will be less favourable than the IRS level). With this product you can benefit from falling interest rates until the barrier level and may gain protection near the current IRS level against rising interest rates.

A knock-in floor collar involves the simultaneous conclusion of a knock-in floor and a cap option. Your company buys a cap option that provides protection against unfavourable interest rate moves and sells a knock-in floor option to ensure that the transaction is zero cost. The floor options comes into effect in a given interest period if the barrier level is reached, and limits the benefits of favourable interest rate movements. This product can be particularly advantageous in case you expect interest rates to increase less than market expectations reflected in the yield curve, or slightly decrease in the future.

Knock-in cap collar concluded for a loan: the company buys a cap and sells a knock-in floor option:

Possible scenarios on the pre-agreed maturity dates (two banking days before each interest period)

- market interest rate  $\leq$  knock-in barrier:  
the floor comes into effect, You have an obligation to pay interest at the floor rate, which means that you will pay to the bank the time proportional difference between the market interest rate and the floor interest rate
- knock-in level  $<$  market interest rate  $\leq$  floor strike: t  
here is no settlement
- floor strike  $<$  market interest rate  $\leq$  cap strike: there is no settlement
- cap strike  $\leq$  market interest rate:  
you are entitled to pay according to the cap strike instead of the market interest rate, i.e. the Bank will pay the company the time proportional difference between the market and the cap interest rates.

In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period, however it is possible to agree otherwise.

**an example for a zero cost knock-out cap collar transaction:** a company has a 3 year bullet loan with a notional of 300 000 EUR with a floating interest rate payment, on which it will be paying interest quarterly on the 3-month EURIBOR rate. The current 3-month EURIBOR is 0.50%. The fixed EUR interest rate on is 0.85%. The company believes that interest rates will not change significantly in the future, but it would nevertheless like to be protected against a possible sudden surge in interest rates. It also believes that the 3-month EURIBOR rate is not going to drop below 0.30% in the coming 3 years. Thus it concludes a zero cost knock-in floor collar for term of 3 years, i.e. it buys a cap option with a 0.70% strike and simultaneously sells a knock-in floor option with a 0.70% strike and a barrier level of 0.30% for the same notional amount, in line with the notional schedule above. Thus it maximises its interest expenses at 0.70% and in exchange it is prepared to accept that it is protected until 0.30% and if 3-month EURIBOR reaches 0.30% then an obligation to pay fixed interest at 0.70% comes into effect. Moreover, it accepts that the protection against rising interest rates is at a higher level than the current IRS rate.

parameters of a knock in floor collar transaction	
initial notional	EUR 300 000
tenor	3 years
variable notional	no
floor interest rate	0.70%
cap (maximum) interest rate	0.70%
knock-in barrier	0.30% (applicable separately to each interest period)
frequency of interest payment	quarterly
interest rate calculation convention	actual number of days/360
fixing day of floating interest rate	2 working days before onset of given interest period
settlement of interest payments	net, at the end of each interest period
precondition for settlement of floor interest payment	if the 3-month EURIBOR is below 0,30% two banking days before the start of the interest period
precondition for settlement of cap interest payment	if the 3-month EURIBOR fixing rate is above 0.70% two banking days before the start of the interest period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (Day count: ANN 30/360 vs 6M EURIBOR)	0.85%
current 3-month EURIBOR	0.50%
option premium (paid by the client on the trade date)	none
possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is	
A) on the fixing days 3-month EURIBOR above 0.30%	
A/1) 3-month EURIBOR at or above 0.70%	your company pays 0.70% interest on the loan in every interest period
A/2) 3-month EURIBOR below 0.70%	your company pays 3-month EURIBOR on the loan in every interest period
B) on the fixing days 3-month EURIBOR at or below 0.30%	
your company pays 0.70% interest on the loan in every interest period	
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR above 0.70%. Your company receives the time proportional difference between 0.70% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR below 0.30%. Your company pays the time proportional difference between 0.70% and 3 month EURIBOR for the actual notional amount in each interest rate period with an unlimited interest rate loss potential.

#### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

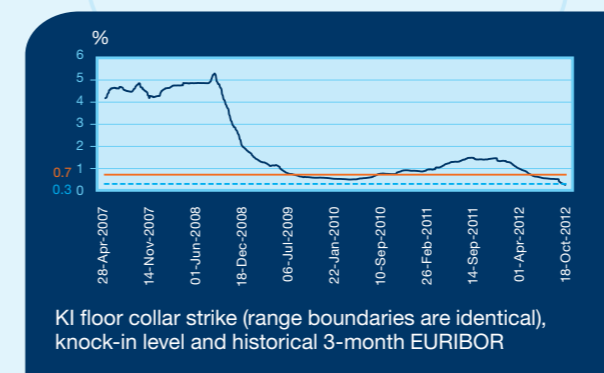
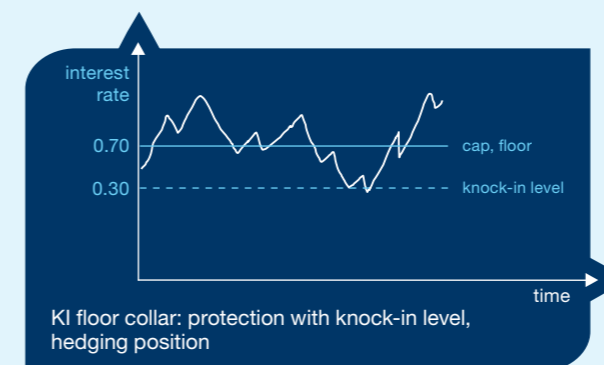
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	-2 637
0.50	-1 155
2.00	6 390

#### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without knock-in floor collar, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with knock-in floor collar, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with 0,60% IRS, EUR)
1 year	-1.00	-750	+1 275	525	450
1 year	0.00	0	+525	525	450
1 year	0.50	375	0	375	450
1 year	1.50	1 125	-600	525	450
1 year	2.50	1 875	-1 350	525	450



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

#### advantages of transaction

- limited benefit from favourable interest rate movements until the knock-in floor barrier level
- unlimited protection against unfavourable interest rate movements from the cap strike
- the maximum / minimum future interest expense/income is predetermined (the worst scenario is known)
- can be used to hedge both loans and deposits.
- it can also be concluded for loans granted by or deposits placed with other financial institutions, since the collar deal is separate from the underlying loan or deposit transaction.
- zero cost, this deal is available in most liquid currencies free of any special premium.
- the expiry date, the cap and floor interest rates (strikes), the knock in barrier and the frequency of interest payments can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too.
- available for any repayment schedule.
- if no longer needed, the knock-in floor collar can be closed at any time before expiry, by means of a counter trade.

#### risks of transaction

- obligation to pay interest at a higher than the market rate after reaching the knock-in level
- protection level is less favourable than the fixed interest rate applicable to the same tenor
- limited benefit from favourable interest rate movements
- If the underlying loan is repaid, it is advisable to close the knock-in cap collar too, since there is no longer any risk resulting from your core business. The closing of a collar deal before expiry will entail an obligation to settle, including the possibility of a loss.
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of interest rate options the market value is also influenced by the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The product is built up of a barrier and a plain vanilla interest rate option. The sections on barrier and plain vanilla interest rate options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## ➔ 10. swaption

MIFID complexity

IR 2

### product description

The swaption may be the appropriate solution to guarantee a certain interest rate level of possible future long-term loan or deposit transactions. A swaption gives you protection against future adverse changes in long-term interest rates, while not excluding the possibility for you to profit from the advantages of favourable changes in long-term interest rates.

A swaption gives you an opportunity to enter into an interest rate swap at a fixed future time, with a fixed interest rate, for a fixed notional and with a predetermined interest rate payment frequency. This in practice means that an option right to enter into an interest rate swap is granted to the buyer of the option. By paying the option premium, the buyer of the option acquires the right to swap fixed interest rate payments for floating interest rate payments, or floating interest rate payments for fixed interest rate payments. Accordingly, the seller of the option undertakes the obligation to pay fixed or floating interest rate, depending on the specific option type, after the option is called. In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period similar to an interest rate swap, however it is possible to agree otherwise.

There are two types of swaption, namely, the payer swaption which results in fixed interest rate payment, and the receiver swaption which results in floating interest rate payment:

By buying a payer swaption, you acquire a right to pay fixed interest rate and receive floating interest rate from a point in time set in advance. The seller of a payer swaption receives fixed interest rate and pays floating interest rate. A payer swaption may be advantageous for a company which has already drawn a specific loan at a favourable interest rate, but which would like to have protection against a possible future adverse turn in long-term interest rates. It can also be useful for companies running for tenders or signing project contracts, which would like, or have to, fix in some way or another the interest rate costs of a possible floating rate liability. It can provide protection for clients expecting lower interest rates on the expiry of the swaption, but who also are wary that interest rates may not evolve in accordance with their expectations, and who would like to have some guarantee for this occurring.

### example for protection against increasing interest rates – buying of payer swaption:

a company has been awarded a contract in a tender, and project implementation will begin in 1 years' time. The company has a plan to take out a 3-year bullet loan to realise the project in 1 years' time. The 3-month EURIBOR is 0.50%, and the 3-year fixed interest rate is 0.85%. The company expects long-term interest rates to decrease; but, because it wants to fend off the effect of a potential interest rate increase, it buys a payer swaption with a 1.00% interest rate. The swaption premium is 0.078% of the notional, (that is, about 0.026% per year payable every 3 months). This has given the company a right to pay 1.00% of the notional value of the option to the bank for duration of 2 years, while the bank will pay floating interest rate to the client for 2 years, provided that in 1 year time the 3-year fixed interest rate is above 1.00% in the market.

By buying a receiver swaption, you will acquire a right to pay floating interest rate and receive in the meantime fixed interest rate, from a certain point in time fixed in advance. The seller of the receiver swaption pays fixed interest rate and receives floating interest rate.

The strike price of a swaption is the predefined fixed interest rate at which the buyer of an option enters a future interest rate swap.

At expiry date, the swaption can be settled in two alternative ways, as follows:

- the swap is entered into by the two parties
- net settlement between the parties

Different swaption strike prices give you different levels of protection. A swaption with a more advantageous strike price can give you more protection, but it is also more costly than another swaption with a less advantageous strike price.

### parameters – buying of payer swaption

notional	EUR 300 000
tenor of swaption	1 year
day of swaption exercise	in 1 year (the underlying IRS deal may come into effect)
variable notional	no
strike price of swaption	1.00% fixed rate

### parameters of interest rate swap taking effect upon exercising the swaption

notional of interest rate swap	notional of the loan
tenor of embedded interest rate swap	2 years
interest payment	at maturity in one sum
interest payable by client (strike price)	1.00% fixed rate
interest due to client	3-month EURIBOR
condition to exercise the option	the fixed interest rate level of the interest rate swap beginning 2 days after the exercise day of the swaption with the same parameters as the swaption is higher than the swaption strike
fixing day of floating interest rate	2 working days before onset of given interest period
interest calculation convention (fixed interest)	actual number of days / 360
interest calculation convention (floating interest)	actual number of days / 360
settlement of interest payment	net settlement at the end of each interest period
closing of interest rate swap before expiry	can be initiated by either party, at any time

### possible outcomes on the expiry date of the swaption

A) 2-year fixed interest rate below 1.00%	the swaption is not exercised
B) 2-year fixed interest rate above 1.00%	the swaption is exercised
B/1) payable by client	fixed 1.00% interest on the entire notional for 2 years
B/2) due to client	floating interest on the entire notional for 2 years
current 3-month EURIBOR	0.50%
current 3-year ICAP EURO offer rate against 6-month EURIBOR (Day count: ANN 30/360 vs 6M EURIBOR)	0.85%
premium of swaption (payable by client on the trade date)	0.078% * notional, EUR 234 up front (approx. 0.026% p.a., EUR 19.50 payable every 3 months)

### possible scenarios at the end of the swaption's tenor based on the fixed rate of an interest rate swap with same parameters as the swaption

fixed rate of an interest rate swap with same parameters as the swaption is above 1.00%	your company pays 1.00% interest on the loan in every interest period during the tenor of the interest rate swap
fixed rate of an interest rate swap with same parameters as the swaption is below 1.00%	your company pays 3-month EURIBOR on the loan in every interest period, the swaption is not exercised
best-case scenario (treasury transaction on a standalone basis)	At the exercise day of the swaption the fixed market interest rate calculated on the interest rate swap is above 1.00% and after that 3-month EURIBOR above 1.00% in every interest period. Your company receives the time proportional difference between 1.00% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	At the exercise day of the swaption the fixed market interest rate calculated on the interest rate swap is above 1.00% and after that 3-month EURIBOR below 1.00% in every interest period. Your company pays the time proportional difference between 1.00% and 3 month EURIBOR for the actual notional amount in each interest rate period with an unlimited interest rate loss potential.

### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit)

(assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

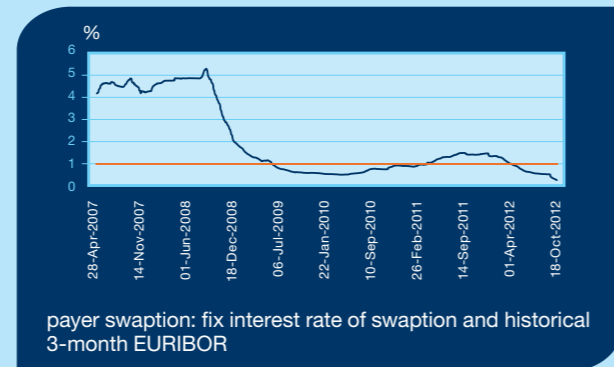
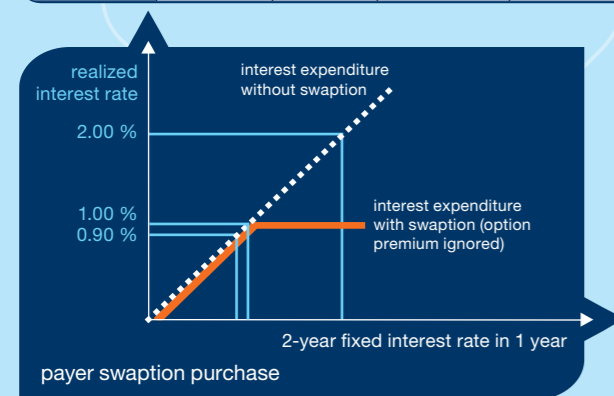
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (received by client if negative, %)	market value of the position (EUR)
-1.00	0
0.50	0
2.00	5 580

financial outcome of some possible scenarios 2 years after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year and the 2-year IRS evolves as below at the end of the first year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	2-year fixed interest rate 1 year later	is the swaption exercised?	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without IRS, EUR)	profit / loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with swaption and premium due in the quarter, EUR)
2 years	below 1.00	no	0.00	0	0	19.5
2 years	below 1.00	no	1.00	750	0	(750+19.5)=769.5
2 years	below 1.00	no	1.50	1 125	0	(1 125+19.5)=1 144.5
2 years	below 1.00	no	2.50	1 875	0	(1 875+19.5)=1 894.5
2 years	above 1.00	yes	0.00	0	750	(750+19.5)=769.5
2 years	above 1.00	yes	1.00	750	0	(750+19.5)=769.5
2 years	above 1.00	yes	1.50	1 125	-375	(750+19.5)=769.5
2 years	above 1.00	yes	2.50	1 875	-1 125	(750+19.5)=769.5



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

#### advantages of transaction

- complete protection against future adverse changes in long-term interest rates: the worst outcome is known already in advance of entering into a loan / deposit transaction
- full benefit of advantageous future interest rate changes
- swaptions tend to be cheaper than caps for a given period as the uncertainty stops at the expiry day. Volatilities tend to be lower for long term rates than for short term instruments
- can be used to hedge both loans and deposits
- a swaption can be attached to a loan extended by, or deposit placed with, another financial institution, because the swaption is (in legal terms) separate from the underlying loan or deposit transaction
- available in most liquid currencies
- the date of expiry, the tenor, the strike price and the frequency of interest payments of a swaption can be adapted to customer needs, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- available for any repayment schedule
- the option can be closed in the market at any time by means of a counter trade (i.e. selling of the option)

#### risks of transaction

- similarly to an insurance premium, the option premium is paid up front; the holder of the option is in a better position if at expiry the option needs not to be exercised, since then the lower level of interest rates will compensate for the prepaid option premium
- if the underlying loan is repaid before maturity, it is advisable to close (i.e. sell) the swaption as well, since there will no longer be any risk arising from the underlying business; closing the option can generate a loss, because, although an option never has a negative value, the current price of the option at the time of closing the position may be lower, depending on the market situation, than the original price at which the option was bought; similarly, if you want to repurchase an option sold at the outset, it is possible that the price of the repurchase will be much higher.
- when exercising a swaption, the holder of the option pays or receives fixed interest rate over the entire tenor of the transaction, so this hedging strategy is less flexible than buying an interest rate option (cap or floor), for instance, because in the latter the client can profit in each interest period from interest rate levels more favourable than the option interest rate, as results from the current market situation; at the same time, an interest rate option is, for the same reason, a more costly way of protection than a swaption.

- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the daycount method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position.
- if the company sells a swaption, the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the

adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.

- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

The product is built up of an interest rate swap option (swaption). The sections on interest rate swap options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

# ➔ 11. differential swap

MIFID complexity  
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A differential swap allows the company to pay interests at a rate linked to an interest rate index in a different currency than that of the loan and the interest payments, without running exchange rate risk. With the transaction a HUF loan with a floating interest of 3-month BUBOR can be converted to a HUF loan with a floating interest of 3-month EURIBOR.

### product description

The differential swap is similar to a plain vanilla interest rate swap which allows the parties to exchange the interest payments without amending the original loan- or deposit contract. The difference is that the differential leg has to be based on a floating rate which is called the "differential floating leg" and this floating rate is set by reference to an index which is originally NOT denominated in the same currency as the underlying loan is. For example the differential floating leg is based on EURIBOR but payable on a HUF notional by the party that pays the differential floating leg.

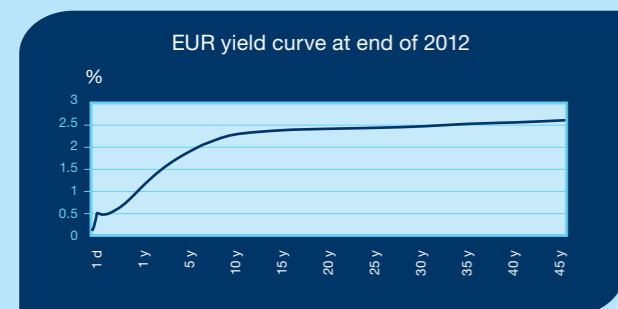
**It is important to note that both legs of the differential swap are paid in the same currency. The interest rate index in the different currency is only used to determine the coupon of the interest payment.**

Based on swapping interest rate payments the following differential swap transactions can be made:

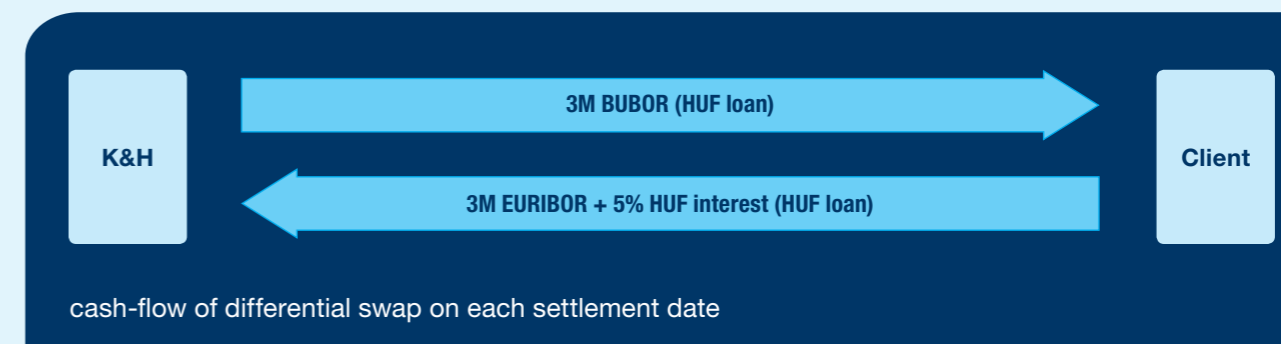
- one party pays a fixed rate and the other pays a floating rate. This is called a fixed to floating differential swap. Both the fixed and the floating rates are paid in the same currency.
- both parties pay a floating rate, but each floating rate is linked to a different interest rate index, e.g. one is linked to BUBOR and the other to EURIBOR. This is called a floating to floating differential swap. Both floating legs are payable in the same currency.

As the difference between the HUF interest rate and rates denominated in most foreign currencies is positive, in a differential swap **the foreign index is increased by the interest rate differential of the two currencies amended by the correlation of the two currencies.** Credit margins are ignored in the calculations below.

**example for floating to floating differential swap:** a company has a 5 year bullet loan with a notional of 100 000 000 HUF with a floating interest rate payment, on which it will be paying interest quarterly on the 3-month BUBOR rate. The current 3-month EURIBOR is 1%, the 3-month BUBOR is 7.00%. The company wishes to change the BUBOR interest rate base into EURIBOR for 5 years, as it expects EURIBOR rates to stay around current levels in the medium term and does not expect BUBOR rates to decrease in the foreseeable future. It also expects to benefit from a decrease in interest rates not reflected in the yield curve (see EUR yield curve below) compared to the BUBOR interest rate base. Thus it concludes a differential swap deal and changes 3-month BUBOR into 3-month EURIBOR + 5% for 5 years on the HUF loan's notional. Interests continue to be paid in HUF. The floating EUR rate on the trade date is more favourable than the 3-month BUBOR.



The yield curve depicts the average annual interest rate of investments with the same risk but with different tenors (that is, annualised yields up to the maturity date) as a function of the maturity date, the basis of which can be either government bonds, credit facilities or swaps. An upward sloping (normal) yield curve can be the result of expectations of rising future interest rates, but the reverse is not true: an upward sloping yield curve does not necessarily indicate that interest rates will surely increase in the future. Expectations about yield curves best prove correct in the long run. Among others interest rate swaps are based on levels of the actual yield curve.



### parameters of a differential swap

notional	HUF 100 million
tenor	5 years
amortization	no
interest rate fixing swap	3-month BUBOR & 3-month EURIBOR + 5.00% in HUF
interest due to client	3-month BUBOR in HUF
interest payable by client	3 month EURIBOR + 5.00% in HUF
frequency of interest payment	quarterly
interest rate calculation convention	actual number of days / 360
settlement of interest payments	Net, at the end of each interest period
current 3-month EURIBOR	1.00%
current 3-month BUBOR	7.00%
transaction cost	zero

### possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is

3-month BUBOR below 3-month EURIBOR+5% in HUF	your company pays 3-month EURIBOR+5% on the loan in HUF
3-month BUBOR above 3-month EURIBOR+5% in HUF	your company pays 3-month EURIBOR+5% on the loan in HUF
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3-month BUBOR above 3-month EURIBOR + 5% in HUF. Your company receives the time proportional difference of between 3-month BUBOR and 3 month EURIBOR + 5% for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3-month BUBOR below 3-month EURIBOR + 5% in HUF. Your company pays the time proportional difference of between 3-month BUBOR and 3 month EURIBOR + 5% for the actual notional amount in each interest rate period with an unlimited interest rate loss potential.

### the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit)

(assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

3-month EURIBOR in one year (%)	market value of the position (EUR)
0.00%	4 500 000
1.00%	-510 000
2.00%	-5 800 000

### financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year and 3-month BUBOR is 7.00%

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without differential swap, HUF)	profit / loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with differential swap, HUF)
1 year	0.00	1 750 000	-500 000	1 250 000
1 year	1.00	1 750 000	-250 000	1 500 000
1 year	2.00	1 750 000	-	1 750 000
1 year	3.00	1 750 000	250 000	2 000 000
1 year	4.00	1 750 000	500 000	2 250 000



### advantages of transaction

- a differential swap allows a company to take a position linked to an interest rate index denominated in a currency that differs from the currency of the loan/deposit without running exchange rate risk. For example, a company can pay interest in HUF linked to EURIBOR on a HUF loan without changing the original currency of the loan and therefore without running exchange rate risk.
- the swap can be combined with loans as well as deposits.
- you can conclude the deal for loans extended by, or deposits placed with, other financial institutions, as well, because this deal is separate (in legal terms) from the underlying loan or deposit transaction
- no extra costs or fees
- can be concluded in most liquid currencies
- the date of expiry, the currency and the reference of the „differential floating leg“ as well as the periods of interest rate payment, can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- can be concluded to fit any repayment schedule
- your position can be closed at any time before the expiry date, resulting, of course, in a profit or a loss, depending on the current market situation at the time concerned.

### risks of transaction

- in the end, your company might pay/receive interest at a much higher/lower rate than the market rate applicable to the underlying transaction. For example, a company that has a HUF loan based on BUBOR enters into a differential swap exchanging the BUBOR to EURIBOR and anytime during the tenor the EURIBOR + “differential” becomes higher than the BUBOR, the interest to be paid will become higher than just simply based on BUBOR applied on the original terms of the credit contract. The potential interest loss can be unlimited.
- if the underlying loan is repaid, it is advisable to close the differential swap, too, since there is no longer any risk resulting from your core

business. Because of the fluctuation of market rates, the closing of a differential swap before expiry involves settlement obligations, which may result in a profit or a loss, depending on the current situation in the interest rate market at the time concerned. The potential loss can be unlimited.

- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled “Risk Factors” of “K&H Treasury Handbook of Market Risk Management” lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

The product is built up of an interest rate swap option (swaption). The sections on interest rate swap options of Chapter I/c. entitled “5 Basic Products” of “K&H Treasury Handbook of Market Risk Management”, also applies to this product.

You can find the following table useful when creating hedging strategy. The table summarizes the market value evolution of the specific deals as a function of floating interest rates. Thus it might prove useful in helping you to find the right deals which correspond with your expectations.

**profit / loss of interest rate hedging deal in function of the evolution of the underlying loan's floating rate, the floating remains the same in every interest period after the initial change (in case of upward sloping yield curve on the trade date)**

deal type	extreme interest rate decline	small interest rate decline	no significant interest rate decline	small interest rate rise	extreme interest rate surge
interest rate swap	---	-	+/-	++	+++
fixed rate loan	---	-	+/-	++	+++
step up IRS	---	-	+/-	++	+++
forward rate agreement	---	--	+/-	+/-	+++
purchase of cap option	-	-	-	++	+++
purchase of cap option with knock-out level	-	-	-	+++	---
interest rate collar	---	-	+/-	+	++
interest rate collar with knock-out cap	---	-	+/-	+++	---
interest rate collar with knock-in floor	---	--	+/-	+	++
swaption	--	-	-	++	+++
differential swap, assuming no change in 3-month EURIBOR	---	-	+/-	++	+++

## ➔ restructuring an existing treasury deal into a deal with more favourable parameters

Should the parameters of an already existing interest rate treasury deal turn unfavourable (market value of the treasury deal worsens) you have the opportunity to close the existing deal and open a new position with a longer maturity in line with your existing loan. The new interest rate deal might be more complex than the existing one and might have a larger notional amount. The net present value of the new deal might compensate part of the costs of closing or even the whole loss amount and its parameters may grant more favourable (monthly, quarterly, semi-annual) interest rate expenses than the original deal, over a longer tenor.

**example for restructuring an interest rate deal:** a company has an IRS deal for paying a fix rate in 3.00% in EUR and receiving 3 month EURIBOR in EUR. The maturity of the IRS deal is 3 years with a notional of 300 000 EUR and there is no amortization. The underlying loan to the IRS deal has a notional of 900 000 EUR, its final maturity is 6 years.

### I. closure

If you decide to close the existing position, the cost of closing (net present value) would be EUR 21 000. The current fix interest rate for closing the existing deal of 3.00% would be 0.60%. The cost of closing will be debited from the client's account at the time of closing. (The deal that will be closed and the closing deal will have a difference in the net present value of the fix interest payments which gives the total cost of 21 000 EUR. After paying the cost there will be no further settlement between the company and the bank due to the closed and closing deal.)

### The existing treasury deal can be restructured into another deal type:

a) restructuring into a step up IRS deal with longer tenor and a larger notional:

notional EUR	period	new fix rate	net present value received for the new deal in EUR
600 000	first 3 years	1.20%	21 000
600 000	second 3 years	2.80%	

b) restructuring into an IRS deal with longer tenor and a larger notional:

notional EUR	period	new fix rate	net present value received for the new deal in EUR
600 000	6 years	2.00%	21 000
300 000	6 years	2.50%	17 000

c) restructuring into a collar with longer tenor and a larger notional:

notional eur	tenor of the new treasury deal	floor strike	cap strike	net present value received for the new deal in EUR
900 000	6 years	1.51%	3.00%	21 000

The company also has the opportunity to restructure the deal into a new one that will be in line with the parameters of the existing loan (tenor, interest rate period, interest rate, notional, amortization) but for a maturity that is longer than the previous deal. The new position would be a step up IRS with the following parameters:

### II. restructuring

The existing deal can be restructured for example into a step up IRS for 6 years with a notional of EUR 600 000 in which the company will pay a fixed interest rate of 1.50% in the next 3 years and a fixed interest rate of 2.50% in the second 3 years while receiving 3 month EURIBOR for the whole tenor. For opening the new position the client will receive 21 000 EUR as a net present value at the time of concluding the deal which covers 100% of the cost of closing. The new step up IRS parameters are in line with the existing loan parameters (tenor, interest rate period, interest rate, notional).

For concluding a new step up IRS deal the company receives a net present value because its parameters are worse than they would be if the position was calculated from the current market levels, it will be worse than a normal step up IRS with no payment.

For comparison: a step up IRS calculated from current market levels without payment would include a payable fixed interest rate level of 0.8% for the first 3 years and a payable fixed interest rate level of 1.40% for the second 3 years while the company would receive 3 month EURIBOR during the whole tenor.

d) restructuring into a collar with knock out cap with longer tenor and a larger notional:

notional eur	tenor of the new treasury deal	floor és knock out cap	knock out level (monitored in each period)	net present value received for the new deal in EUR
900 000	6 years	1.37-2.20%	4.00%	21 000

e) restructuring with selling a payer swaption deal:

By selling a payer swaption the company will not restructure its existing IRS deal but its payable interest expenditures will be mitigated. The original IRS deal will not be closed and the company would receive an option premium for selling a payer swaption which mitigates the fix interest rate expenditures. For receiving a premium by selling a payer swaption the company will have the obligation to pay 3 month EURIBOR and receive a fix interest rate (the strike level of the payer swaption, for example 1.00%) for 5.5 years if at the interest rate monitoring the 5.5 years IRS level will be above the strike of the payer swaption. The existing IRS deal will still remain unchanged, fix interest rate of 3.00% is payable and the client

receives 3-month EURIBOR.

That means that the payer swaption not only mitigates the company's interest expenditures by the option premium received at the date of selling the swaption but in case the option is exercised the received 1.00% will reduce the existing 3.00% fix interest rate expenditure of the IRS.

The disadvantage of the deal is that in case the option is exercised the company will pay all in all 2.00% fix interest rate (difference between 3.00% fixed interest rate in the original IRS and 1.00% strike rate in swaption), plus the 3 month EURIBOR on the notional amount of the underlying loan so the company will lose the protection provided by the original IRS deal.

notional eur	swaption interest rate monitoring date	tenor of the swaption deal that might start in 1 year	interest rate level of the obligation in case the 5.5 year IRS rate is above that (strike level)	option premium received for selling the payer swaption (every 3 month, based on the notional of 900 000 EUR)	difference between the fix interest payment of the IRS and the received fix interest payment of the swaption in case the payer swaption is exercised	total quarterly interest expense in case the swaption is exercised (3-month EURIBOR+2.00%-0.20%)	quarterly interest expense without swaption (fix 3.00%)
900 000	in 6 months	5.5 years	1.00%	0.20% p.a. (EUR 450 quarterly)	3.00%-1.00%=2.00%	3-month EURIBOR+EUR 4500-EUR 450 = 3-month EURIBOR + EUR 4050	EUR 6750

#### advantages of new transactions

- a more favourable interest level can be achieved than that of the existing deal (e.g. by increased tenor or notional, or with a more complex deal)
- the net present value of the new deal might compensate part of the costs of closing or even the whole loss amount
- partial of full predictability: you can partially or fully quantify your future interest expenditure (by restructuring an interest rate hedging deal with an underlying loan) or income (by restructuring an interest rate hedging deal with an underlying deposit)
- the new deal can have a start date on the trading date or a future date
- you can conclude the deal for loans extended by, or deposits placed with, other financial institutions, as well, because this deal is separate (in legal terms) from the underlying loan or deposit transaction
- the date of expiry, the currency and the reference of the „differential floating leg” as well as the periods of interest rate payment, can be set at your will, in accordance with your expectations, plans and

budget; the change of one parameter will cause the rest of the parameters to change, too

- your position can be closed at any time before the expiry date, resulting, of course, in a profit or a loss, depending on the current market situation at the time concerned.

#### risks of new transactions

- to achieve a more favourable interest level than that of the existing deal a longer tenor, increased notional or a more complex deal is needed
- by increasing the tenor you can benefit from favourable interest rate movements at a later date than with the original deal
- the market value of the new deal may be equal to the market value of the original deal, thus the new deal's market value will not improve compared to the original deal.
- because of the fluctuation of market rates, the closing of the new deal before expiry involves settlement obligations, which may result in a profit or a loss, depending on the current situation in the interest rate market at the time concerned

- if the underlying loan is repaid, it is advisable to close the interest rate swap, too, since there is no longer any risk resulting from your core business
- in case of an increased notional or tenor, the loss can be the multiple of the original deal's loss
- in principle, any extent of interest rate loss is possible in the event that the evolution of interest rates takes an unexpected sharp turn to a more favourable level during the tenor of the deal
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.



## → understanding the risks of foreign currency loans

Due to high forint interest rates there is still great demand for foreign currency loans. This means however taking on exchange rate risk if the company does not have income in that currency, or the timing of these incomes does not match the repayment schedule of the loan.

To understand the risks of foreign currency loans it is fundamental to be familiar with the relation between exchange rates and taking or repaying a foreign currency loans.

Let us assume that a company has a foreign currency loan. To repay the loan it has to buy EUR if it does not have income in EUR. For the company the repayment of the loan means buying of the currency, in which the loan is denominated and whose interest rate forms the base of the loan's interest payments. When the company takes out the loan in EUR and it is credited to the company's account in HUF, the company is in fact a euro seller.

It is important to note that if a company takes out a loan denominated in EUR, which is credited on its EUR account then no currency conversion takes place. Similarly there is no currency conversion in case of repayment if the company repays its EUR loan from its EUR income without using a HUF account.

### In summary for the EUR/HUF currency pair:

- taking out an EUR denominated loan and credited to a HUF account = EUR seller (exporter position)
  - EUR/HUF bid rate from the Bank's side
- repayment of an EUR denominated loan from a HUF account = EUR buying (importer position)
  - EUR/HUF offer rate from the Bank's side

Based on the above tools for hedging the foreign exchange risk of taking out an EUR loan are the same as the products presented in Chapter II/b. entitled "Managing exchange risk for exporters". Similarly the exchange rate risk of the repayment of an EUR loan can be hedged with the same products as presented in Chapter "Managing exchange risk for importers".

### Relation between the company's activities and its foreign currency loans

- if a company does not have foreign exchange income but it decides to take out a foreign currency loan due to the lower interest rate then after taking out the loan the company's natural foreign exchange position (neutral) changes into foreign exchange buying position as it has to buy foreign currency to repay the loan. In this case taking out the foreign exchange loan means that the company takes on more risk.
- if an exporter company takes out a foreign currency loan then after the loan is credited to its account the company takes on a position (foreign currency buyer), which is the opposite of its natural foreign exchange position (seller). In this case, if the notional amounts are the same, natural hedging may occur. In such cases if the exporter company hedges its foreign exchange income with a treasury deal, the company hedges the same income amount twice, thus incurring foreign exchange exposure. It is important to note that if the schedule of foreign exchange incomes and foreign currency loan repayments differ then cash-flow problems may occur if the company does not have the necessary foreign exchange for the loan repayments. In this case it is recommended to conclude a treasury deal.
- if an importer company takes out a foreign currency loan then after the loan is credited to its account the company takes on a position, which is in the same direction as the company's natural foreign exchange exposure (buyer). In this case the foreign exchange loan means additional risk as it increases the company's natural exposure. However, if the company pays for its imports from the foreign currency loan then it does not bear additional risk but it can manage the cash-flow problems arising from the different schedule of its income and expenses and may receive an option for timing as it can buy the needed foreign currency not when its expenses incur but at a later date when repaying the loan.

When taking out a foreign currency loan it is important to measure the extent of forint weakening allowed by the interest rate differential between the forint and the foreign exchange for the given tenor, when the company is still in a better position than by taking out a forint loan. If the annual forint-foreign exchange interest rate differential is 12 HUF then a company with a foreign exchange loan taken out at 290 EUR/HUF incurs a loss in one year if the EUR/HUF rate is above 302. (Assuming interest rates evolve as expected) This if the exchange rate in one year is below 302 (and there is no repayment in the meantime) then the company may be in a better position than with a forint loan. In this regard it is irrelevant how the EUR/HUF exchange rate evolved during the year.

### dual currency loans – benefiting from exchange rate movements, managing exchange rate risk

Dual currency loans are beneficial for companies, which want to change the loan's denomination into another currency, in which it also has income. In this case the conversion of the loan does not go against the company's underlying exposure but it leads also to natural hedging if the company has enough income in the given currency. However it might occur that the company wishes to lower its interest expenses by taking on foreign exchange risk (financial speculation). In this case the company may benefit not only from the lower interest rate base but also from favourable exchange rate movements by converting the loan.

Below there are some examples for the EUR/HUF pair:

- converting an EUR denominated loan into a HUF loan means technically the fully repayment of the EUR loan and taking out a HUF loan, i.e.:

**converting an EUR loan into a HUF loan = (client) EUR buying position (bank) EUR offer rate**

- converting an HUF denominated loan into a EUR loan means technically the fully repayment of the HUF loan and taking out a EUR loan, i.e.:

**converting an HUF loan into a EUR loan = (client) EUR selling position (bank) EUR bid rate**

#### exchange rate gain may occur by converting the loan if:

- the company converts its HUF loan into a EUR loan at a given EUR/HUF rate (i.e. sells EUR and buys HUF) then at a lower EUR/HUF rate it converts the loan back into HUF (i.e. buys EUR lower and sells HUF higher). As a result the outstanding notional of the loan decreases.
- naturally, if a EUR loan is converted into a HUF loan at a given EUR/HUF rate and it is converted back into EUR at a higher exchange rate then the company realises exchange rate profit.

**example:** let us assume that an exporter company takes out a EUR 1 000 000 loan for 3 years at 290 EUR/HUF (the notional in HUF is  $1\,000\,000 \times 290 = \text{HUF } 290\,000\,000$ ). Let us assume that after half a year the spot exchange rate is 280 EUR/HUF. The company decides to convert its EUR 1 000 000 loan into HUF. The resulting HUF loan will have a notional of  $1\,000\,000 \times 280 = \text{HUF } 280,000,000$ . After the conversion the loan's notional in HUF decreases from 290 million to 280 million resulting in a profit of HUF 10 000 000. Due to the decreased notional the company's interest payments also decrease. In this case if the company does not have sufficient income in HUF the natural hedging might cease, which is recommended to be hedged by the company.

#### exchange rate loss may occur by converting the loan if:

- the company converts its EUR loan into a HUF loan at a given EUR/HUF rate (i.e. buys EUR and sells HUF) then at a lower EUR/HUF rate it converts the loan back into EUR (i.e. sells EUR lower and buys HUF higher). As a result the outstanding notional of the loan increases.
- if a HUF loan is converted into a EUR loan at a given EUR/HUF rate and it is converted back into HUF at a higher exchange rate then the company realises exchange rate loss.

**example:** let us assume that an exporter company takes out a HUF 290 000 000 loan for 3 years at 290 EUR/HUF (the notional in EUR is  $290\,000\,000 / 290 = \text{EUR } 1\,000\,000$ ). Let us assume that after half a year the spot exchange rate is 280 EUR/HUF. The company is concerned over a potential strengthening of the forint and decides to convert its HUF 290 000 000 loan into EUR. The result will be that the loan's notional in EUR terms increases from EUR 1 million to EUR 1 036 million. The loss is EUR 35 714.29. Due to the increased notional the company's interest payments also increase. In this case if the company's EUR income is sufficient to repay the loan the company acquires natural hedging.

**Changing the loan's denomination only to benefit from favourable exchange rate movements and every deal which means taking over an existing loan does not qualify as hedging. However, converting a loan in accordance with the company's natural exposure might reduce the company's exchange rate risk!**

#### Loan conversion can take place:

- at the actual spot price
- with a forward deal (see Chapter II/a. entitled "Managing exchange risk for exporters" and II/b. entitled "Managing exchange risk for importers")
- with a structured deal (see Chapter II/a. entitled "Managing exchange risk for exporters" and II/b. entitled "Managing exchange risk for importers")
- with an interest refund deal (see next page)

## → deal types

### → 1. short term interest refund deal

MIFID complexity

FX 2

#### product description

The interest burden of a loan available in multiple currencies can be reduced by means of a short-term interest refund deal, if the client is willing to run foreign exchange risk. On expiry, the client receives guaranteed interest refund. In return, conditional conversion obligation must be undertaken with respect to its loan, for an exchange rate that is more advantageous than the forward rate applicable at the trade date to the end date of the tenor.

The obligation to execute the conversion will take effect if on the date of expiry the current market exchange rate is:

- above the conditional exchange rate for HUF loans, and
  - below the conditional exchange rate for foreign currency loans.
- The tenor of this product is always shorter than the tenor of the loan, since if necessary, the loan itself will be converted.

**example for a HUF loan:** a company has a HUF loan with a remaining tenor of one year, and a HUF 29 000 000 notional, which can be drawn in multiple currencies. The client would like to reduce the related interest expenditure, but at the 290 EUR/HUF exchange rate it is of the opinion that the immediate conversion of the loan into euros would mean exaggerated foreign exchange risk. At the EUR/HUF rate of 296, the client would already be willing to convert the loan into euros, but in the meantime it would like to reduce the interest burden of the HUF loan. Therefore, the company in our example enters into a 3-month interest refund deal, as part of which it is willing to run the risk that if in three months the EUR/HUF exchange rate exceeds 296, the loan will be converted into euros. The conversion of the loan can be effected thus, at a rate that is far better than the 3-month forward exchange rate applicable on the trade date (293 EUR/HUF) but less advantageous than the market rate applicable on the date of expiry. The interest refund will be credited by the bank in all cases at the end of the tenor of the deal, to the client's account and in HUF, irrespective of whether or not the loan is converted into euros.

#### parameters of interest refund deal for HUF loans

notional	HUF 29 000 000
tenor	3 months
currencies	EUR/HUF
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
delivery date (crediting of interest refund)	end of tenor
spot exchange rate at time of pricing	290 EUR/HUF
3-month forward rate	293 EUR/HUF
ATMF volatility	15%
conditional exchange rate	296 EUR/HUF
condition	the spot market rate at 12:00 p.m. on the expiry date is higher than the conditional exchange rate
notional in the event of conditional conversion	$29\,000\,000 / 296 = \text{EUR } 97\,972.97$
rate of interest refund (annual)	5.00%
currency of interest refund	HUF

#### possible outcomes on expiry as a function of spot market rates at 12:00 p.m. on the expiry date

exchange rate below 296 EUR/HUF	The bank credits the interest refund to the client's account on the delivery date. The loan will continue to be maintained in HUF, and the client can reduce the interest burden of the loan with similar deals in the future as before, and can freely consider the conversion of the loan, as well.
exchange rate above 296 EUR/HUF	The bank credits the interest refund to the client's account on the delivery date. The loan will be converted to EUR at the 296 EUR/HUF exchange rate, and the client will in the future pay interest at a rate tied to the EURIBOR.
best-case scenario (treasury transaction on a standalone basis)	On the expiry date the market exchange rate is lower than the conditional rate. The loan is not converted. The client receives guaranteed interest refund in HUF.
worst-case scenario (treasury transaction on a standalone basis)	On the expiry date, the market exchange rate is higher than the conditional rate. The client's loan is converted at the conditional rate. The client receives guaranteed interest refund.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot exchange rate in two weeks' time (EUR/HUF)	market value of the position (HUF)
260	- 60 000
290	- 483 000
320	- 2 755 000

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on expiry (EUR/HUF)	conversion of loan without interest refund transaction	conversion of loan as part of a forward transaction	loan + interest refund transaction
260	$29\,000\,000 / 260 = 111\,538.46$ EUR	$29\,000\,000 / 293 = 98\,976.11$ EUR	no obligation to convert loan interest refund: HUF 362 500
290	$29\,000\,000 / 290 = 100\,000$ EUR		conversion of loan: $290\,000\,000 / 296 = \text{EUR } 97\,972.97$ interest refund: HUF 362 500
320	$29\,000\,000 / 320 = 90\,625.00$ EUR		

**example for a EUR loan:** a company has a EUR loan with a remaining tenor of one year, and a EUR 1 000 000 notional, which can be drawn in multiple currencies. The client would like to reduce the related interest expenditure, but at the 290 EUR/HUF exchange rate it is of the opinion that the immediate conversion of the loan into forint would mean exaggerated foreign exchange risk. At the EUR/HUF rate of 285, the client would already be willing to convert the loan into forint, but in the meantime it would like to reduce the interest burden of the EUR loan. Therefore, the company in our example enters into a 3-month interest refund deal, as part of which it is willing to run the risk that if in three months the EUR/HUF exchange rate drops below 285, the loan will be converted into forint. The conversion of the loan can be effected thus, at a rate that is far better than the 3-month forward exchange rate applicable on the trade date (293 EUR/HUF) but less advantageous than the market rate applicable on the date of expiry. The interest refund will be credited by the bank in all cases at the end of the tenor of the deal, to the client's account and in EUR, irrespective of whether or not the loan is converted into euros.

parameters of interest refund deal for EUR loans	
notional	EUR 100 000
tenor	3 months
currencies	EUR/HUF
expiry date (date of exchange rate monitoring)	2 business days before end of tenor
delivery date (crediting of interest refund)	end of tenor
spot exchange rate at time of pricing	290 EUR/HUF
3-month forward rate	293 EUR/HUF
ATMF volatility	15%
conditional exchange rate	285 EUR/HUF
condition	the spot market rate at 12:00 p.m. on the expiry date is higher than the conditional exchange rate
notional in the event of conditional conversion	$100\,000 * 285 = 28\,500\,000$ HUF
rate of interest refund (annual)	1.35%
currency of interest refund	EUR
possible outcomes on expiry as a function of spot market rates at 12:00 p.m. on expiry date	
A) exchange rate above 285 EUR/HUF	The bank credits the interest refund to the client's account on the delivery date. The loan will continue to be maintained in EUR, and the client can reduce the interest burden of the loan with similar deals in the future as before, and can freely consider the conversion of the loan, as well.
B) exchange rate below 285 EUR/HUF	The bank credits the interest refund to the client's account on the delivery date. The loan will be converted to EUR at the 285 EUR/HUF exchange rate, and the client will in the future pay interest at a rate tied to the BUBOR.
best-case scenario (treasury transaction on a standalone basis)	On the expiry date the market exchange rate is higher than the conditional rate. The loan is not converted. The client receives guaranteed interest refund in EUR.
worst-case scenario (treasury transaction on a standalone basis)	On the expiry date, the market exchange rate is lower than the conditional rate. The client's loan is converted at the conditional rate. The client receives guaranteed interest refund.

### the market value of the position two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (deal can be closed with profit if the market value is positive)

(assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot exchange rate in two weeks' time (EUR/HUF)	market value of the position (HUF)
260	- 2 252 000
290	- 228 000
320	- 21 500

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

exchange rate on expiry (EUR/HUF)	conversion of the loan without interest refund transaction	conversion of the loan as part of a forward transaction	loan + interest refund transaction
260	$100\,000 * 260 = 26\,000\,000$ HUF	$100\,000 * 293 = 29\,300\,000$ HUF	conversion of loan: $100,000 * 285 = \text{HUF } 28,500,000$ interest refund: EUR 337.50
290	$100\,000 * 290 = 29\,000\,000$ HUF		no obligation to convert loan interest refund: EUR 337.50
320	$100\,000 * 320 = 32\,000\,000$ HUF		

### advantages of transaction

- on expiry, the client receives guaranteed interest refund, irrespective of the market exchange rate effective on the expiry date
- the client has an obligation to convert the loan at a future exchange rate that is more advantageous than the one effective at the time the deal is concluded
- the possible conversion of the loan will take place at an exchange rate the client knows in advance
- available in most liquid currencies
- free of charge, this transaction can be concluded without any special premium
- the conditional exchange rate, the extent of the interest refund, as well as the tenor of the instrument can be set at your will, in accordance with your company's plans, budget and/or expectations; the change of one parameter will cause the rest of the parameters to change, too
- your position can be closed at any time by means of a counterdeal at any time before expiry, resulting, of course, in a profit or a loss, depending on the current market situation.

### risks of transaction

- during the tenor of the instrument, your company can at any time convert your HUF-based loan to a foreign currency basis, but then the interest refund deal may result in a net settlement obligation to the bank, provided that when the transaction expires, the conversion obligation becomes effective
- on expiry, the loan will be converted at the pre-determined conditional exchange rate even if the exchange rate has changed by a larger extent, the resulting exchange rate loss may be unlimited
- closing your position before expiry will cause you to suffer a loss
- in the case of HUF-based loans, if the loan is converted into foreign currency as a result of the interest refund deal, and subsequently your company converts the loan back to HUF at an exchange rate above the conditional exchange rate, or if you decide not to convert it back but

to repay the loan from HUF at an exchange rate above the conditional exchange rate, then your company will incur foreign exchange loss

- in the case of foreign currency loans, if the loan was converted into HUF as a result of the interest refund deal, and subsequently your company converts it back into foreign currency at an exchange rate below the conditional exchange rate, then you will incur a foreign exchange loss
- the market value of options is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, the number of days remaining until the expiry of the transaction, and the evolution of market volatility. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover if you fail to provide additional collateral when requested it may lead to the closure of your open positions and prompt realization of losses and this also may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of a single plain vanilla option. The explanation concerning the plain vanilla options, provided in chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## ➔ 2. cross-currency interest rate swap

MIFID complexity  
IR 2

### product description

If, for administrative or other reasons, your company cannot freely convert an already existing foreign currency loan to another currency, for instance because it is a government subsidised or a syndicated loan, or because specific contract clauses exclude the possibility of conversion, but you would still like to achieve foreign exchange and/or interest exposure that is different from what you have now, you can conclude a cross-currency interest rate swap.

The point of this transaction is that your company swaps the currency and interest basis of your loan in a specific currency for another currency and the interest rate basis associated with that currency. By means of such a swap your company will receive from the bank the interest rate related to the currency of the original loan, while paying interest at the rate associated with the other currency. The various components of a cross-currency interest rate swap are, from a technical point of view, swapped as follows:

### currency swap (exchange of principals):

When the transaction is concluded, the outstanding loan is converted into the other currency at the current market rate. Normally, this exchange rate will remain fixed over the entire tenor of the cross currency swap, which means that the settlement of repayments of capital and interest, as well as the conversion of the outstanding loan into the original currency on the expiry date of the swap, will be executed at this exchange rate. You can specify that principals should be exchanged at the:

- start date (initial exchange)
- end date (final exchange, including intermediate payments on amortization dates, if any)
- both the start date and the end date (initial, intermediate and final exchange)
- neither date

**example:** let us assume that a company has a loan of HUF 290 000 000, with a remaining tenor of 5 years, repayment occurs at maturity in one sum. For this loan, the company's interest obligation is defined as a function of the 3-month EURIBOR (we disregard credit margin in this example). The client would like to reduce the related interest expenditure and it expects euro interest rates to remain below forint interest rates in the next 5 years. Therefore, it enters into a 5-year cross-currency interest rate swap as part of which its HUF loan is technically "converted into EUR" at the current EUR/HUF spot rate of 290, and the company will pay instead of 3-month BUBOR a floating 3-month EURIBOR + 2.60% interest rate for the remaining tenor at the end of each interest payment period. The original loan agreement is not amended!

### In case of principal exchange, gross settlement takes place.

(In case of an already existing loan there is no initial exchange of principal, but the loan notional in the other currency can be calculated using the original notional of the loan and the fixed exchange rate) Independently from whether the exchange of principals occur or not, the deal entails currency and interest rate risk, i.e. the market value of the deal changes continuously depending on exchange rate and interest rate movements. If however only the currency swap part of the whole deal is observed then the potential profit/loss (together with the underlying loan) is equal as if the loan's original currency denomination has been changed. On a net basis the cash flow of the original loan and the cross-currency swap will equal to a cash-flow of a converted loan at every moment. Taking into account only the currency swap part of the deal however (see below), the picture is more nuanced: it also affects market value, thus the market value of the entire cross-currency interest rate swap deal will not be the same as the book value of a converted loan with the same parameters at the same time.

### the swapping of interest may take various forms:

- fixed interest rate in both currencies
- floating interest rate in both currencies
- fixed interest rate in one currency and variable in the other

There is a net settlement of interest payments at the end of the interest periods. The potential interest rate gain or loss realised on this deal equals the difference between the interest received from, and payable to, the bank (interest rate risk).

Since the cross-currency interest rate swap will not change the conditions of the underlying loan transaction, the above transactions will in practice mean the synthetic construction of a foreign currency loan:  
**original loan transaction + cross-currency swap = synthetic foreign currency loan**

Therefore, the company obtains an exposure identical of having a EUR loan where it pays interests and repayment the capital at the end of the tenor in EUR. (By means of such a swap your company will receive from the bank the interest rate and capital payments related to the original loan in HUF)

If, however, the company's revenues are generated in EUR and are sufficient to pay the capital and interest repayments then a cross-currency interest rate swap deal reduces risks associated from your exposure fully or partly, i.e. in practice you will not run exchange rate risk (underlying exposure and treasury deal jointly). However, a cross-currency interest rate swap deal (on a standalone basis) may have negative market value (meaning a loss to your company) over the tenor.

The HUF loan is technically "converted into EUR" at the current EUR/HUF spot rate. This means in practice that if the exchange rate is 290 EUR/HUF on the trade date, then this rate remains fixed during the entire tenor of the cross-currency-swap to calculate the settlement of the capital and interest payments and any remaining capital conversion at the end of the tenor of the deal. Since the transaction's value is marked-to-market every day, if (everything else remaining unchanged) the EUR/HUF rate is above 290, the marked-to-market value of the deal is negative, and if the EUR/HUF rate is below 290, the marked-to-market value of the deal is positive. (see below the possible market values of the position)

### parameters of the cross-currency interest rate swap

notional of original loan	HUF 290 000 000
original loan interest rate	3M BUBOR
repayment	at maturity in one sum
tenor of cross-currency interest rate swap	5 years
currency pair of cross-currency interest rate swap	EUR/HUF
spot exchange rate at the time of pricing	290 EUR/HUF
notional of synthetic EUR loan	original loan amount / spot rate: HUF 290 000 000 / 290 EUR/HUF = EUR 1 000 000
interest rate swap	3M BUBOR & 3M EURIBOR + 2.60%
client pays to bank	notional of synthetic EUR loan * (3M EURIBOR + 2.60%) * actual number of days / 360
bank pays to client	notional of original HUF loan * (3M BUBOR) * actual number of days / 360
settlement of capital and interest payments	net settlement at the end of each interest payment period
duration of interest periods	3 months
current 3-month EURIBOR	1.00%
current 3-month BUBOR	7.00%
deal premium	zero

### the interest rate payment cash flows due at the end of the first interest period, assuming an unchanged EUR/HUF exchange rate:

- payable by the client to the bank:  $1\,000\,000 * (1.00\% + 2.60\%) * 90 / 360 = 9\,000\text{ EUR}$
- payable by the bank to the client:  $290\,000\,000 * 7.00\% * 90 / 360 = \text{HUF } 5\,075\,000$
- settlement:  $5\,075\,000\text{ HUF} - 9\,000\text{ EUR} * 290 = \text{HUF } 2\,465\,000$  which will be debited on the client's account, this is your interest rate profit

### The capital repayment cash flows due at the end of the tenor:

The swapping of interest payments takes place at the end of the tenor as described above.

As a result of this deal, the client will have to pay back EUR 1 000 000 in 5 years and receives HUF 290 million from the bank (this latter serves as the capital repayment of the HUF loan). The company incurs exchange

rate risk if it doesn't have the sufficient EUR amount at its disposal. In that case it has to buy EUR on the interbank FX market that could be done by a forward deal any time before that date or with a spot conversion at the expiry date. If it can buy EUR at a higher rate than 290 EUR/HUF, then the company has an exchange rate loss. If it can buy EUR at a lower rate than 290 EUR/HUF, then the company has an exchange rate gain.

### the market value of the position at two weeks after the trade date from the customer's point of view

market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (in case of positive number, the company can close the deal with profit)

(assumption: except for the spot market rate, all other factors remain unchanged, monthly HUF-EUR interest differential remains 1 forint)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

spot exchange rate end of 2012 (EUR/HUF)	market value of the position (HUF)
260	30 550 000
290	-3 020 000
320	-36 580 000

### foreign exchange and interest rate risk of a cross currency swap deal in a given interest rate period

foreign exchange risk (assuming unchanged interest rate levels) – over a period of 3 months, 3-month EURIBOR: 1.00%, 3-month BUBOR: 7.00%				
exchange rate	interest payable by client (EUR)	cash flows in interest rate swap (HUF)		net result of interest rate swap (HUF)
EUR/HUF	interest paid by client (EUR)	interest paid by client (HUF)	paid by bank (HUF)	paid by bank (HUF)
260	9 000	2 340 000	5 075 000	2 735 000
290		2 610 000		2 465 000
320		2 880 000		2 195 000

interest rate risk (assuming unchanged exchange rate levels) – over a period of 3 months at the end of the first interest payment period				
EURIBOR+2,6%	interest paid by client (EUR)	interest paid by client (HUF)	paid by bank (HUF)	paid to client (HUF)
3,10%	7 750	2 247 500	5 075 000	2 827 500
3,60%	9 000	2 610 000		2 465 000
4,10%	10 250	2 972 500		2 102 500
BUBOR	interest paid by client (EUR)	interest paid by client (HUF)	paid by bank (HUF)	paid to client (HUF)
6,00%	9 000	2 610 000	4 350 000	1 740 000
7,00%			5 075 000	2 465 000
8,00%			5 800 000	3 190 000

#### advantages of transaction

- exposure to the volatility of the HUF interest market is swapped for a more advantageous interest market exposure (in time of editing this Handbook e.g. EUR, CHF or USD)
- in case of subsidized or other foreign currency loans where the loan agreement cannot be changed, but the company has HUF surplus, the foreign currency loan can be swapped into a HUF loan. Therefore the company doesn't have to buy foreign currency to pay the debt service.
- swapping the cash-flow of a fixed or float interest rate loan in a given currency into the future cash-flow of a fixed or float interest rate loan in a different currency may fully or partially hedge risks arising from the company's underlying exposure (e.g. a company with EUR revenue swaps its floating rate HUF loan into fixed rate EUR loan)
- foreign exchange risk and interest rate risk deriving from the cross-currency swap can be managed by other treasury instruments. If the company does not possess the necessary forint or foreign exchange amount to settle its obligations derived from the product, it may manage this risk by concluding treasury transactions or if the company runs interest rate risk for a given expiry it may conclude the cross-currency swap with fixed interest payments, consequently the interest rate risk is managed.
- his deal can be concluded for loans extended by other banks, because the cross-currency interest rate swap is separate from the underlying loan transaction
- available for loans and deposits
- available in most liquid currencies
- available for any repayment schedule
- the expiry date, the currency and the frequency of interest payment can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- your position can be closed at any time before expiry, with the result of such closing settled by net settlement.

#### risks of transaction

- concluding this deal involves running foreign exchange risk with respect to the notional outstanding in the loan at any given time, i.e. the position's market value changes continuously even if the deal eliminates partly or fully the risks associated to the underlying exposure
- if the difference between the two interest rates decreases during the term of the deal, the possible interest savings will be reduced, too, i.e. in case of floating interest rates the future interest rate differentials are unknown in advance
- if the underlying loan is repaid, it is advisable to close the cross-currency interest rate swap, too, because there will no longer be any risk from the core business.
- if the currency of the original underlying loan transaction is depreciated to a significant degree during the term of the cross-currency swap, then closing your position may result in foreign exchange loss, which must be deducted from the interest savings you realise on the deal if you changed into an interest base, which resulted in lower interest payments.
- if the company changed into an interest base, which results in lower interest payments (e.g. swapping a HUF loan into a EUR loan) and the possible foreign exchange loss is in excess of the interest savings made possible by the deal, then, in retrospect, you would have been better off not concluding the swap, and leaving your loan in the original currency
- if the company changed into an interest base, which results in higher interest payments (e.g. swapping a EUR loan into a HUF loan) and the currency of the new loan transaction is depreciated to a significant degree during the term of the cross-currency swap then the deal protects you from realizing exchange rate loss (which would occur without the deal due to the denomination of the loan) By closing the deal you may realise exchange rate profit, which would decrease the interest rate reduction achieved by the deal. If the possible interest rate profit is in excess of the avoided exchange

rate loss possible by the deal, then, in retrospect, you would have been better off not concluding the swap, and leaving your loan in the original currency.

- the market value of a cross-currency swap is determined by the evolution of the spot exchange rate, the interest rate levels of the two currencies for the given tenor, the difference between the interest rates for the given tenor, evolution of basis swaps, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. More information can be found on basis swaps in chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management". The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect negatively the company's liquidity and solvency. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect negatively the company's liquidity and solvency.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

This product is the combination of a currency swap and an interest rate swap. The explanation concerning interest rate swaps in point 1. entitled "interest rate swap" in chapter III/a. "interest rate risk of loans" of "K&H Treasury Handbook of Market Risk Management", as well as concerning currency swaps in chapter VII "Glossary", and point 2. "cross currency swap" of III/b. "currency of loans" will apply to this product.



 **treasury deals  
related to  
subsidized loans**



This chapter introduces in short treasury deals, which can be concluded on a subsidized loan to reduce interest payments and/or manage exchange rate and interest rate risks.

## ➔ 1. cross-currency swap deals for EIB loans

EIB refinanced EUR loans with interest payments tied to 3-month EURIBOR have the advantage of EUR interest base which is lower than HUF rates, but the floating rate EUR loan causes exchange rate risk.

If you receive your revenue in HUF, i.e. a EUR loan would mean taking exchange rate risk for your company and because of this you would prefer a HUF loan then your EUR loan can be changed into a synthetic fixed or float rate HUF loan (without amending the original loan contract)

Applying current market parameters, the transaction would result in the following interest payment:

3-month EURIBOR  $\Rightarrow$  3-month BUBOR – 2.30%

OR: 3-month EURIBOR  $\Rightarrow$  5-year fixed HUF interest – 2.30%

The floating or fixed interest rate payment at the end of the 1st interest payment period:

1.00% floating EUR rate  $\Rightarrow$  7.00% – 2.30% = 7.00% – 2.30% = 4.70% floating HUF rate (**HUF rate varies in every period!**)

OR: 1.00% floating EUR rate  $\Rightarrow$  6.80% – 2.30% = 4.50% fixed HUF rate (**HUF rate is fixed for 5 years**)

In case of choosing the above transaction, you will have an exposure similar to a HUF loan, where you pay HUF interests and you have to pay back the remaining HUF amount (if any) at the maturity of the deal (we create a synthetic HUF loan without effectively converting the original EUR loan). (With the deal the Bank pays you the interest principal payments in EUR, which you can use to repay the original loan)

will have a positive market value (all else remaining equal) if the EUR/HUF rate is above 290. However, if your revenues are generated in HUF and are sufficient to cover the HUF loan repayments and interest payments, your company does not incur any real exchange rate risk.

Products to manage the interest rate risk on the EIB loan (in case you do not wish to convert it into a HUF loan) are explained in chapter III/a. of the “K&H Treasury Handbook of Market Risk Management” entitled “interest rate risk of loans”.

Within the cross-currency-swap, we technically convert the outstanding EUR loan amount into HUF at the prevailing spot EUR/HUF rate. If the exchange rate is at 290 EUR/HUF, this means that it remains fixed during the entire tenor of the cross-currency-swap. Therefore, both the loan repayments and the interest payments, and also the technical re-conversion of the eventually remaining loan amount at the maturity of the cross-currency-swap will be settled at this fixed exchange rate. Since the deal will be marked-to-market daily, it will have a negative market value (all else remaining equal) if the EUR/HUF rate is below 290 and it

### product structure

This product is the combination of a currency swap and an interest rate swap. The explanation concerning interest rate swaps in point 1. entitled “interest rate swap” in chapter III/a. “interest rate risk of loans” of “K&H Treasury Handbook of Market Risk Management”, as well as concerning currency swaps in chapter VII “Glossary”, and point 2. “cross currency swap” of III/b. “currency of loans” will apply to this product.

## ➔ 2. cross-currency swap deals for EXIM loans

EXIM loans are fixed rate loans tied to CIRR rates with payments at every 6 months for equal amounts. Reduction in the interest payments (in case of favourable floating rate movements), a more flexible product can be achieved with an interest rate swap.

Let us assume you have an EXIM loan denominated in EUR and expect EUR rates to increase less in the medium term than that is indicated in the EUR yield curve or the shape of the EUR yield will not change significantly then you can swap your fixed rate loan into a floating rate loan.

Applying current market parameters, the transaction would result in the following interest payment: CIRR rate  $\Rightarrow$  6-month EURIBOR + 1.10%

The floating or fixed interest rate payment at the end of the 1<sup>st</sup> interest payment period:

2.65% fixed EUR rate  $\Rightarrow$  1% + 1.10% = 2.10% floating EUR rate (**EUR rate varies in every period!**)

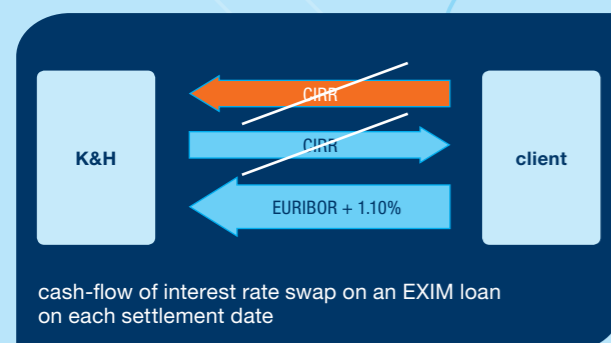
**The chart below shows the cash-flow of the interest rate swap tied to the EXIM loan:**

(red arrow indicates interest payments of the EXIM loan, while the blue arrow shows the cash-flow of the interest rate swap)

Swapping the fixed CIRR rate to a floating rate gives you flexibility and opportunity to benefit from lower interest rates than the current fixed rate (in case interest rates remain unchanged or increase less than expected). However, paying a floating rate incurs interest rate risk as future interest payments are unpredictable.

### product structure

This product is built up of an interest rate swap. The explanation concerning interest rate swaps in point 1. entitled "interest rate swap" in chapter III/a. "interest rate risk of loans" of "K&H Treasury Handbook of Market Risk Management" applies to this product as well.



## ➔ 3. differential swap and interest rate swap deals for MFB loans

MFB refinanced loans with interest payments tied to 3-month EURIBOR have the advantage of EUR interest base, which is lower than HUF interest rates without exchange rate risk, as the interest and principal payments are denominated in HUF. Its disadvantage is however that the floating rate generates EUR interest rate risk.

These loans are more favourable even with the MFB margin (1.00%-3.00%) than a BUBOR based HUF loan with similar parameters. (In the following we ignore credit margin, i.e. the interest rates below include only the MFB margin)

**example:** the current 3-month EURIBOR is 1.00%, the 3.-month BUBOR is 7.00%. Your company pays 2-4.00% EUR interest (depending on the MFB margin) including the MFB margin, i.e. less than the current 3-month BUBOR without taking EUR/HUF exchange rate risk.

If you expect that EURIBOR rates will not remain below the BUBOR rate increased by the MFB margin for a longer period and wish to manage your risk associated with the floating interest base, the construction gives you a favourable position to conclude a differential swap.

In case you wish to convert the above mentioned HUF loan into EUR loan for practical reasons (you generate revenues in EUR) then you can swap into a fixed rate EUR loan with an interest rate more favourable than the market rate without amending the original loan contract.

### 1. option: swap 3-month EURIBOR into 3-month BUBOR (differential swap)

If you decide to swap the current very favourable HUF loan with EURIBOR interest base back into BUBOR base, applying current market parameters, the transaction would result in the following interest payments:

3-month EURIBOR + MFB margin (in HUF)  $\Rightarrow$   
3-month BUBOR - 3.50% + MFB margin

The HUF interest rate payment at the end of the 1<sup>st</sup> interest payment period:

1.00% EUR rate + MFB margin (in HUF)  $\Rightarrow$   
**3.50% HUF rate + MFB margin (HUF rate varies in every period!)**

Based on the above you can swap your current HUF loan into 6.50% BUBOR based interest base, which is more favourable than current market levels even with 3% MFB margin without EUR interest rate risk.

### product structure

This product is built up of a differential swap. The explanation concerning differential swaps in point 11. entitled "differential swap" in chapter III/a. "interest rate risk of loans" of "K&H Treasury Handbook of Market Risk Management" applies to this product, as well.

### 2. option: 3-month EURIBOR swapped into 5-year fixed EUR rate – at the same time converting the HUF loan into EUR loan with taking exchange rate risk (differential swap + cross-currency interest rate swap)

If you generate revenues in EUR and prefer a EUR loan but it is not possible with an MFB refinanced loan then your HUF loan can be converted into a synthetic EUR loan with favourable fix interest payments.

Applying current market parameters, the transaction would result in the following interest payment:

3-month EURIBOR + MFB margin (in HUF)  $\Rightarrow$   
5-year fixed EUR rate - 3.50% + MFB margin (in EUR)

The interest rate payment at the end of the 1<sup>st</sup> interest payment period:

1.00% EUR rate + MFB margin (in HUF)  $\Rightarrow$   
-2.50% fixed EUR rate + MFB margin  
**(EUR rate fixed for 5 years and payable in EUR)**

Based on the above you can swap your existing floating EUR interest rate exposure into a 0.50% fixed rate EUR loan, which is more favourable than current market levels even with MFB margin included. At the same time with this product you incur exchange rate risk (on the deal on a standalone basis) as you obtain EUR loan exposure, and you pay interest and principal payments in EUR (a synthetic foreign currency loan is made)

### product structure

This product is built up of a combination of a differential swap and cross-currency interest rate swap. The explanation concerning differential swaps in point 11. entitled "differential swap" in chapter III/a. "interest rate risk of loans" of "K&H Treasury Handbook of Market Risk Management", and the explanation concerning cross-currency swaps in point 2. "cross currency swap" of III/b. "currency of loans" apply to this product, as well.

## ➔ prerequisites for dealing, required documents

### ➔ before concluding a deal

Prerequisites for dealing, required documents:

- Treasury master agreement
- MiFID questionnaire (for complexity)
- live treasury limit (for deal requiring a treasury limit)

other fees: (account maintenance fee, transfer fee): Fees can be found in the prevailing announcement and general terms and conditions.

On exchange rates you can consult the following pages:

<http://www.euribor-rates.eu/>

<http://www.bbalibor.com/>

<http://www.mnb.hu/>

taxation: The Bank does not deduct any taxes from clients who do not fall under the personal income tax, it is the client's responsibility to comply with tax regulations.

The K&H Treasury Handbook of Market Risk Management and explanations for the products can be found on the K&H Bank webpage ([www.kh.hu](http://www.kh.hu)) on the corporate – K&H treasury services page.

You can find detailed and exhaustive term sheets on the products in the table below in this chapter, moreover as an additional service we conduct interest rate monitoring when requested.

deal type	limit requirement	minimum notional of underlying loan	tenor
interest rate monitoring	no	-	-
interest rate swap	yes	300 000 EUR	minimum t+1 year
fixed rate loan	no	300 000 EUR	minimum t+1 year
step up IRS	yes	300 000 EUR	minimum t+1 year
forward rate agreement	yes	300 000 EUR	minimum t+4 months
purchase of cap option	no (premium is paid on trade date)	300 000 EUR	minimum t+1 year
purchase of cap option with knock-out level	no (premium is paid on trade date)	300 000 EUR	minimum t+1 year
interest rate collar	yes	300 000 EUR	minimum t+1 year
interest rate collar with knock-out cap	yes	300 000 EUR	minimum t+1 year
interest rate collar with knock-in floor	yes	300 000 EUR	minimum t+1 year
swaption	no (premium is paid on trade date)	300 000 EUR	minimum 2 weeks
interest refund deal	yes	50 000 EUR	minimum 2 weeks
cross-currency interest rate swap	yes	300 000 EUR	minimum t+1 year
differential swap	yes	300 000 EUR	minimum t+1 year

Dear Client,

We kindly request you to read the following information carefully prior to concluding any transaction!

The product outlined in the product description may differ from your / your company's MiFID profile, meaning that the product may be of higher complexity than the complexity level stipulated by your / your company in the MiFID documentation. In this case the Bank shall conclude the transaction solely at your / your company's initiative and shall manage the transactions falling outside the MiFID profile in accordance with its prevailing internal regulation.

Prior to concluding the deal, please, make sure that you fully understand the product, the operation thereof and potential development of the transaction's future market value. As a result of the future change in the transaction's market value you may incur a temporary or permanent obligation to provide additional collateral, which may impact your Company's liquidity and solvency.

If you believe that the information provided herein is not comprehensive, or you have questions or doubts in connection with the product, please notify the Bank's competent employee prior to concluding the deal, so that you receive the information you deem necessary.

If you believe that the information you received is not comprehensive, please do not conclude any deal for that specific product, even if otherwise the product fits into your / your company's MiFID profile.

If you do conclude a deal for the product outlined in the product description, it shall be construed that you deemed the information received from the Bank comprehensive, irrespective of the fact whether the product is in line with your / your company's (the Client) MiFID profile available for us at the time of concluding the deal.

Please, note that the parameters and prices stated in the product description are of indicative nature and serve only referential purposes. The parameters of the actually concluded deals will correspond to the terms agreed during the telephone conversation recorded upon deal conclusion and those may depart from the indicative parameters and prices stated in this product description.

### ➔ after concluding a deal

According to the Treasury master agreement deals can be concluded only on recorded phone.

After concluding the deal the client receives confirmation on the deal's parameters on fax and on its existing, open positions, live transactions a summarized report at the beginning of every month, which shows the actual market value of the existing positions based on market levels prevailing on the last workday of the previous month.

In the confirmation faxes and in the reports of existing positions the values are stated according to the bank's viewpoint, i.e. if the position's direction is "buy", it is a "selling" position for the client.



**bond origination –  
an alternative for  
financing**



## → bond origination – an alternative for financing

Bonds can offer corporations and municipalities with larger funding needs stable and reliable source of funding which can be an alternative or complementary to a bank loan. K&H Bank originates bond issues denominated both in forints and euros. Given the associated costs this form of funding should be considered for issue amounts above EUR 50 million or HUF 500 million.

In case of euro denominated bonds the target investor group will be the institutional and private banking clients of the Belgian KBC Bank, parent bank of K&H.

### product description:

Bond is a debt security representing the indebtedness of the bond issuer to the holder. The issuer is obliged to pay interest on the agreed dates during the tenor and repay the principal at maturity to the bondholder. Bonds have usually fixed interest with a tenor of mostly 3, 5, 7 or 10 year, but the structure can be created flexibly according to the market situation and demand.

### advantages:

- no down-payment is required
- structure can be created flexibly according to the market situation and demand
- ability to raise short or long term funding
- stable and transparent costs for the whole tenor
- diversification of sources of funding
- the whole funding amount is available to the issuer (no counterparty risk)
- creates a name recognition in the financial markets
- no public procurement is required

### disadvantages:

- good credit quality is required
- at maturity the repayment of the whole principal amount creates refinancing risk
- no guarantee for the necessary market demand (execution risk)
- marketing efforts may be required to introduce the issuer to the potential investors
- potential investors need detailed and full information on the issuer
- disclosure of audited financial numbers may be (required documentation)

## → investments

Using the innovative and flexible products offered by K&H Treasury, which can be aligned to your specific needs and expectations, you can realise above market interest rates on your free liquid assets placed either in HUF or in any other currency, provided that you are willing to run some risk.

One group of our investment products comprises of solutions which can give you above-the-market interest as a function of currency exchange rate trends. These products are continuously available, and the most important parameters of the instruments (such as the amount and the tenor of the investment) can be set in accordance with your needs. Conditions are continuously modified in line with changes in market circumstances, in a cyclical manner, meaning that sometimes one, and other times the other type of investment product can offer you potentially excellent yields, depending on your expectations.

Also a huge variety of bond instruments is available via K&H Treasury. For government bonds (treasury bills and treasury bonds)

we continuously provide a quote except when market conditions are extreme, while we also distribute government bonds issued in a foreign currency (EUR, USD, CHF, GBP) and corporate bonds (MOL, OTP, HDB, Hungarian National Asset Management) based on individual demand and depending on market liquidity.

In addition to our standard products that are available on a continuous basis, the K&H Bond Programme offers individual and occasional investment opportunities, using which you can benefit from your predictions over a longer term, with respect to a given currency pair, or even any share or commodity price index, a combination of these, or any other product traded on the market.

It is important to know that to use the investment instruments listed in the present chapter, you do not need to enter into a Treasury master agreement.

Apart from the products described in this Handbook, we will be pleased to assist you in creating any other individual investment instrument, in line with your specific needs and the development of the market.

# IV/a investments - continuously available investment products



# → structured investment products - with capital protection

## → 1. tower deposit

MIFID complexity  
careful

The tower deposit is a possible alternative to a regular term deposit. This form of investment is an opportunity for you to achieve far higher interest than the market rates, profiting from your exchange rate expectations, while the minimum interest rate (and fixed capital repayment at maturity) is guaranteed (as well as the repayment on expiry of the capital placed). Both the capital and interest will be repaid in HUF, and changes in the exchange rate will affect the amount of the interest only.

### product description

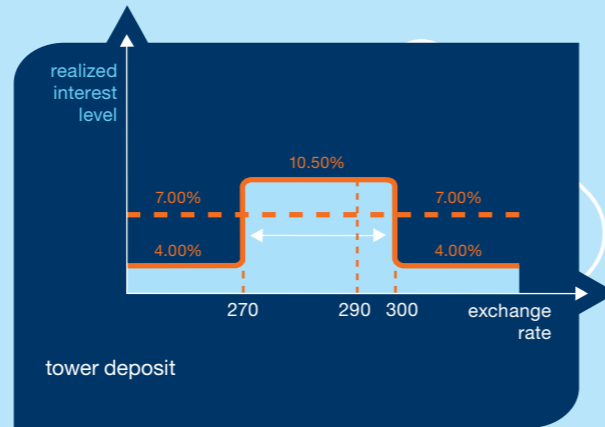
A client places a deposit at a bank. The interest paid for this deposit depends on the fluctuation of the currency pair (one of them being the currency in which the deposit is placed) during the maturity. The interest rates premiums are paid if the product's conditions are met. If the evolution of the exchange rate is in-line with the conditions set when the deal is concluded, then an interest rate above the regular term deposit rate is achievable, in other case the minimum interest rate will be guaranteed, and this is lower than the regular term deposit rate. The client will be returned 100% of the capital placed, in the same currency as in which the deposit was made.

interest rate premium's conditions	possible exchange rate monitoring
the interbank exchange rate of a given currency pair <b>reaches or exceeds at least once</b> the exchange rate level fixed in advance over the tenor	from the trade day until the second business day before the expiry day OR over the tenor in any partial period
the interbank exchange rate of a given currency pair <b>does not reach or exceed</b> the exchange rate level fixed in advance over the tenor	
the interbank exchange rate of a given currency pair <b>remains in the exchange rate range</b> fixed in advance over the tenor	
the interbank exchange rate of a given currency pair <b>exceeds or touches at least once either the top or the bottom</b> of the exchange rate range fixed in advance over the tenor	
the interbank exchange rate of a given currency pair <b>reaches or exceeds at least once</b> an exchange rate level fixed in advance over the tenor and in the same time it does not reach or exceed a further exchange level fixed in advance	
the interbank exchange rate of a given currency pair is <b>above / below an exchange rate level fixed in advance</b> on the monitoring day	
the interbank exchange rate of a given currency pair is within an exchange rate range fixed in advance on the monitoring day <b>without touching the top or bottom of the range</b>	at a given time on the second business day before the expiry day
the interbank exchange rate of a given currency pair is out of an exchange rate range fixed in advance on the monitoring day <b>without touching the top or bottom of the range</b>	

Based on the above, your investment can bring in high interest not only if the exchange rate is less volatile but also when it evolves in the direction you predicted. This product has a variant in which not only one exchange rate condition is defined. In that case you can have different interest rate premiums tied to different conditions. The deposit will not be broken before the end of the investment period (security deposit).



**example for a HUF investment (in case of a range):** an investor has HUF 100 million, which he wishes to deposit for the next 3 months. The regular market interest rate for 3-month term deposits is 7% per annum, and the EUR/HUF spot rate is 290. The investor expects no significant volatility in the exchange rate in the coming 3 months, and would like to turn this expectation into profit. He is ready to accept lower yield if his expectations turn out to be wrong eventually. Therefore, this investor places his savings in a tower deposit, with the following conditions (with range limits set according to the client's will, and the interest rates calculated accordingly):



**conditions of the tower deposit for a 3-month tenor (one option must be chosen from the following table when the deposit is placed)**

exchange rate range (EUR/HUF)	maximum interest rate	minimum interest rate
range: 275 – 305	13.00%	0.10%
range: 275 – 305	11.00%	2.00%
range: 270 – 305	10.50%	0.10%
range: 270 – 305	9.50%	2.00%
range: 270 – 300	10.50%	4.00%

**possible outcomes on expiry according to the example of the last line**

	interest income if exchange rate stays within fixed range	interest income if exchange rate leaves range or touches either boundary
tower deposit	10.50%	4.00%
regular deposit	7.00%	7.00%

**parameters of the tower deposit – example in case of the last option above**

notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	up to 2 business days before end of tenor
normal deposit rate (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility	10.00%
EUR/HUF exchange rate range	270-300 EUR/HUF
achievable maximum interest (annualised)	10.50%
condition to crediting achievable maximum interest	the EUR/HUF interbank market exchange rate does not leave the fixed EUR/HUF exchange rate range, and does not touch either boundary, during the tenor
guaranteed minimum interest (annualised)	4.00%
transaction charges	none

**example for a HUF investment (in the case of reaching exchange rate levels):** an investor has HUF 100 million, which he wishes to deposit for the next 3 months. The regular market interest rate for 3-month term deposits is 7% per annum, and the EUR/HUF spot rate is 290. The investor expects no significant volatility in the exchange rate in the coming 3 months, and would like to turn this expectation into profit. He is ready to accept lower yield if his expectations turn out to be wrong eventually. Therefore, this investor places his savings in a tower deposit, with the following conditions, which provides higher interest rate than the minimum, if the exchange rate level closer to the spot is reached, and it provides the maximum interest rate, if the farther exchange rate is reached (with range limits set according to the client's will, and the interest rates calculated accordingly):

**conditions of the tower deposit for a 3-month tenor (one option must be chosen from the following table when the deposit is placed)**

wider exchange rate level (EUR/HUF)	maximum interest rates	tighter exchange rate level (EUR/HUF)	intermediate interest rate	minimum interest rates
282	13.50%	285	4.00%	0.10%
284	11.50%	285	4.00%	0.10%
284	10.50%	288	4.00%	0.10%
284	9.50%	288	4.00%	2.00%
282	12.00%	285	4.00%	2.00%

**possible outcomes on expiry according to the example of the last line**

	if the exchange rate reaches the farther level fixed in advance	if the exchange rate reaches the closer level fixed in advance	if the exchange rate does not reach either levels fixed in advance
tower deposit	12.00%	4.00%	2.00%
regular deposit	7.00%	7.00%	7.00%

**parameters of the tower deposit – example in case of the last option above**

notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	up to 2 business days before end of tenor
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility	10.00%
farther EUR/HUF exchange rate	282 EUR/HUF
achievable maximum interest (annualised)	12.00%
condition to crediting achievable maximum interest	the EUR/HUF interbank market exchange rate reaches the farther EUR/HUF exchange level
closer EUR/HUF exchange rate	285 EUR/HUF
achievable intermediate interest (annualised)	4.00%
condition to crediting the intermediate interest	the EUR/HUF interbank market exchange rate reaches the closer EUR/HUF exchange level
guaranteed minimum interest (annualised)	2.00%
transaction charges	none

#### advantages

- it is possible to achieve yield above the regular term deposit interest, while there is a guarantee that the capital plus a minimum interest will be repaid on expiry. It is possible to profit from your predictions concerning the evolution of the exchange rate of a specific currency pair (and thus to achieve extra yield), if your predictions prove right
- the maximum interest rate, the minimum interest rate and the width of the range can be set at your will, and the rest of the parameters will be calculated accordingly; the change of one parameter will cause the rest of the parameters to change, too.

#### risks

- if during the investment period the exchange rate leaves the range(s) defined in advance, the guaranteed minimum interest is lower than the term deposit interest that was achievable on the market when the deposit was made
- the deposit cannot be broken before expiry (security deposit)
- further risks, arising not exclusively from the characteristics of the product described here but from other factors, are explained in chapter I/b. of the "K&H Treasury Handbook of Market Risk Management" on risk factors.

#### product structure

This product is the combination of a security deposit and a digital option. The explanation concerning digital options, provided in chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 2. accrual deposit

MIFID complexity  
careful

The accrual deposit is a possible alternative to regular term deposits. This investment gives you an opportunity to achieve higher interest than in a regular term deposit if your exchange rate expectations prove to be right, while enjoying guaranteed minimum interest (and the repayment of your capital on expiry). Both capital and interest will be paid in the same currency as in which the deposit was made, and changes in the exchange rates will have a bearing only on what interest is accrued.

### product description

A client places a deposit with a bank. The interest paid on this deposit is determined as a function of the evolution of the cross exchange rate between two specific currencies (one of them being the currency in which the deposit was made). If the exchange rate remains within the range defined on concluding the deal for a longer period of time, then interest above the regular term deposit interest is achievable. Every day, the bank will inspect whether on the given day the official daily fixing rate quoted by the National Bank of Hungary (or the European Central Bank, up to the client's choice) is within the range specified when the deposit was made. If the fixing rate is within the range, then the bank pays enhanced interest for that day, but for the rest of the days only the minimum interest rate is guaranteed.

interest rate premium's conditions can be the following:

- within the exchange rate range fixed on the trade day, without touching the range limits
- out of the exchange rate range fixed on the trade day, without touching the range limits
- below the exchange rate level fixed on the trade day
- above the exchange rate level fixed on the trade day

Based on the above, your investment can yield high interest not only if the exchange rate is less volatile but also by large exchange rate fluctuations or when it evolves in the direction you predicted.

The client will receive 100% of the capital back on expiry in every case, in the same currency as in which the deposit was made. The deposit will not be broken before the end of the investment period (security deposit), the interest is paid on the end of the tenor in one sum.

This product has a variant in which not only one exchange rate condition is defined. In that case you can have different interest rate premiums tied to different conditions.

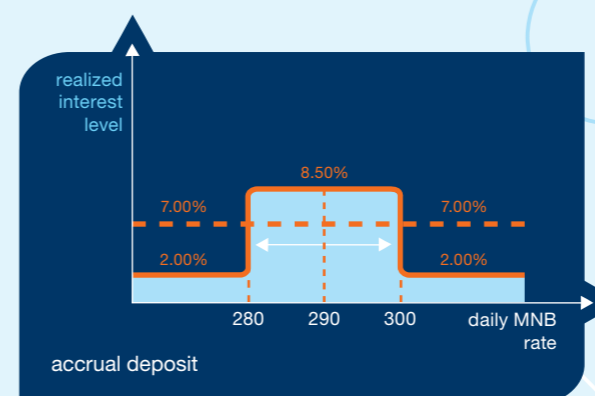
**example HUF investment – premium interest accrued on days when the exchange rate is inside the range:** an investor has HUF 100 million, which he intends to deposit for the next three months. The regular market interest rate for three-month term deposits is 7% per annual. The spot EUR/HUF rate is 290, and the investor in question does not expect the exchange rate to fluctuate widely in the coming three months. He is of the opinion that over the term of the deposit, the official EUR/HUF exchange rate quoted by the NBH will not leave (for long) the range between 280-300. He would like to turn this prediction into an extra yield, but by no means would he accept an interest less than 2%. Therefore, he places an accrual deposit which pays 8.50% interest for the days when the fixing rate is within the range and the 2% is guaranteed for each day during the tenor.

### possible outcomes on expiry

number of days, when NBH's fixing is within the pre-defined range	realised interest rate in case of a range accrual deposit (%)	realised interest rate in case of a standard deposit (%)
30	4.17	7.00
60	6.33	7.00
90	8.50	7.00

### parameters of the range accrual deposit

notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	one banking date before end of tenor
number of fixing days	90
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility	10.00%
EUR/HUF exchange rate range	280 – 300 EUR/HUF
maximum interest (annualised)	8,50%
minimum interest + premium	8.50%
condition to payment of maximum interest	the NBH's official EUR/HUF exchange rate does not leave the range on any business day during the tenor
premium	6.50%
minimum interest (annualised)	2.00%
interest income (annualised)	$6.50\% * (N/90) + 2.00\%$ where N = the number of days when the NBH fixing rate stays within the EUR/HUF range during the tenor. In the case of weekends and holidays, the fixing rate of the preceding business day will be taken into account. If the fixing rate is exactly the same as either boundary of the range, the minimum interest will be paid.
transaction charges	none



**example of the accrual deposit – in case of more exchange rate levels:** an investor has HUF 100 million, which he intends to deposit for the next three months. The regular market interest rate for three-month term deposits is 7% p.a. The spot EUR/HUF rate is 290, and the investor in question does not expect forint depreciation in the coming three months. He is of the opinion that over the term of the deposit, the official EUR/HUF exchange rate quoted by the NBH will not be (for long) above 290 and 295. He would like to turn this prediction into an extra yield, but by no means would he accept an interest less than 2%. Therefore, he places an accrual deposit which pays 4% interest for the days when the fixing rate is between 290-295, and 10% interest for the days when the fixing rate is below 290, while the 2% minimum interest is guaranteed for the rest of the days.

### possible outcomes on expiry

number of days, when NBH's fixing is below 290	number of days, when NBH's fixing is above 290, but below 295	realised interest rate in case of a range accrual deposit	realised interest rate in case of a standard deposit
90	0	10.00%	7.00%
30	30	5.33%	7.00%
0	90	4.00%	7.00%

**parameters of the range accrual deposit**

notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	one banking date before end of tenor
number of fixing days	90
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility	10.00%
exchange rate condition of maximum interest	290 EUR/HUF
maximum interest (annualised)	10.00%
minimum interest + premium	
condition to payment of maximum interest	the NBH's official EUR/HUF exchange rate is not above 290 on every day over the tenor
premium	8%
exchange rate condition of intermediate interest	295 EUR/HUF
intermediate interest	4.00%
intermediate premium	2.00%
condition to payment of intermediate interest	the NBH's official EUR/HUF exchange rate is not above 295, but it exceeds 290 on ever day over the tenor
minimum interest (annualised)	2.00%
interest income (annualised)	$8.00\% * (N/90) + 2.00\% * (n/90) + 2.00\%$ where N = the number of days when the NBH fixing rate stays below the EUR/HUF level tied to the maximum interest rate during the tenor. n = the number of days when the NBH fixing rate stays below the EUR/HUF level tied to the intermediate interest rate during the tenor. In the case of weekends and holidays, the fixing rate of the preceding business day will be taken into account. If the fixing rate is exactly the same as either boundary of the range, the lower interest will be paid.
transaction charges	none

**advantages**

- it is possible to achieve higher yield than in a regular term deposit, while it is guaranteed that your capital and a minimum interest will be repaid at the end of the investment term.
- it is possible to profit from your predictions about the evolution of the cross exchange rate between a given pair of currencies (that is, to achieve extra yield) if your predictions prove to be right
- the maximum interest rate, the minimum interest rate or the width of the range can be set at your will, and the rest of the parameters will be calculated accordingly; the change of one parameter will cause the rest of the parameters to change, too.

**risks**

- if during the tenor the exchange rate remains outside the range for a longer period, then the interest paid on your deposit may be lower than the market rate prevailing on the date when the deal is concluded
- the deposit will not be broken before expiry (security deposit)
- further risks, arising not exclusively from the characteristics of the product described here but from other factors, are explained in chapter I/b. of the "K&H Treasury Handbook of Market Risk Management" on risk factors.

**product structure**

This deal is the combination of a bank deposit and a number of digital options. The explanation concerning digital options, provided in chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product

**→ structured investments products - without capital protection**

**→ 1. dual currency investment**

**MIFID complexity**  
dynamic

The dual currency investment is an alternative to regular term deposits. It could be an ideal choice, when as a result of the company's financial operation you effect conversions more or less regularly in one or more currency pairs. The dual currency investment offers a higher yield on your short-term investments in a given currency, and in return you accept the possibility that the principal may be repaid to you in another currency.

**product description**

A dual currency investment involves an investment placed in a certain currency (base currency) with the proviso that the Bank may repay the principal in another currency (secondary currency), if at expiry the cross rate of the two currencies is above or below – depending on the direction of conversion – a pre-defined exchange rate level (conditional exchange rate). It is this conditional conversion obligation that secures for your fixed investment an interest rate that is higher than the market rate. If the conversion condition is met, the invested capital is returned to the client in the "secondary currency". Interest payments, however, will always be made in the base currency, regardless of whether the principal has been converted or not. The investment cannot be cancelled during the tenor (security investment).

**example of investment in euro (EUR):** an investor places EUR 100 000 at the Bank for 3 months and would like his investment to earn a higher interest rate than the market rate. In return for this, he is willing to take the risk that, if on the expiry date the strengthening of the euro against the forint exceeds a certain level (i.e., the EUR/HUF exchange rate goes above the conditional conversion rate), his invested capital will be repaid in forint at the maturity of the deposit. EUR/HUF spot exchange rate on the day when the investment is concluded is 290. The customer may choose from the following combinations of conditional conversion rates and enhanced interest rates for a 3-month tenor:

conditional conversion rate (EUR/HUF)	enhanced annual interest rate (%) of the dual currency investment in EUR	payout in 3 month in case of a conversion
293	10.00%	HUF 29 300 000 + EUR 2 500 (interest)
295	8.00%	HUF 29 500 000 + EUR 2 000 (interest)
298	7.00%	HUF 29 800 000 + EUR 1 750 (interest)
300	6.00%	HUF 30 000 000 + EUR 1 500 (interest)

parameters of the dual currency investment – EUR deposit (upon choosing the first row)	
notional	EUR 100 000
currency pair	EUR/HUF
tenor	3 month
exchange rate monitoring date	2 business days before end of tenor
date of delivery	at maturity
3-month EURIBOR at time of pricing (annualised)	1.00%
spot exchange rate	EUR/HUF 290
ATMF volatility for 1 month	10.0%
conditional exchange rate	EUR/HUF 293
guaranteed enhanced annual interest rate	10.00%
currency of the credited enhanced interest refund	EUR
condition of conversion of principal	spot market rate above the conditional conversion rate at 12 p.m. Budapest time on the exchange rate monitoring date
exchange rate of capital conversion	conditional conversion rate
value date for capital conversion and the crediting of the guaranteed enhanced interest	end of tenor (expiry date)
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
A) exchange rate below 293 EUR/HUF	the investment stays denominated in EUR, and the 10.00% interest is credited by the bank to the client's account (in EUR) on the expiry date of the investment
B) exchange rate above 293 EUR/HUF	the investment will be converted into HUF at 293 EUR/HUF. The Bank will credit the 10.00%-interest to the client's account in EUR on the investment maturity date.
transaction cost	none

**example of investment in forint (HUF):** an investor places HUF 25 000 000 at the Bank for 3 months and would like his investment to earn a higher interest rate than the market rate. In return for this, he is willing to take the risk that, if on the expiry date the strengthening of the forint against the euro exceeds a certain level (i.e., the EUR/HUF exchange rate goes below the conditional conversion rate), his invested capital will be repaid in euro at the maturity of the deposit. EUR/HUF spot exchange rate on the day when the investment is concluded is 290. The customer may choose from the following combinations of conditional conversion rates and enhanced interest rates for a 3-month tenor:

possible combinations of conditional conversion rates and enhanced interest rates for HUF deposit (one option should be chosen from the table upon placing the investment)		
conditional conversion rate (EUR/HUF)	enhanced annual interest rate (%) of the dual currency investment in HUF	payout in 3 month in case of a conversion
289	11.00%	EUR 86 505.19+ HUF 687 500 forint (interest)
288	10.50%	EUR 86 805.56+ HUF 656 250 (interest)
287	10.00%	EUR 87 108.01 + HUF 625 000 (interest)
286	9.50%	EUR 87 412.59 + HUF 593 750 (interest)

parameters of the dual currency investment – HUF deposit (upon choosing the first row)	
notional	HUF 25 000 000
currency pair	EUR/HUF
tenor	3 month
exchange rate monitoring date	2 business days before end of tenor
date of delivery	at maturity
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	EUR/HUF 290
ATMF volatility for 1 month	10.0%
conditional exchange rate	EUR/HUF 289
guaranteed enhanced annual interest rate	11.00%
currency of the credited enhanced interest refund	HUF
condition of conversion of principal	spot market rate below the conditional conversion rate at 12 p.m. Budapest time on the exchange rate monitoring date
exchange rate of capital conversion	conditional conversion rate
value date for capital conversion and the crediting of the guaranteed enhanced interest	end of tenor (expiry date)
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
A) exchange rate above 289 EUR/HUF	the investment stays denominated in HUF, and the 11.00% interest is credited by the bank to the client's account (in HUF) on the expiry date of the investment
B) exchange rate below 289 EUR/HUF	the investment will be converted into EUR at 289 EUR/HUF. The Bank will credit the 11.00%-interest to the client's account in HUF on the investment maturity date.
transaction cost	none

#### advantages

- it is possible to achieve yield above the regular term deposit interest, while the enhanced interest is guaranteed
- it is possible to profit from your predictions about the evolution of the cross exchange rate between a given pair of currencies (that is, to achieve extra yield) if your predictions prove to be right
- if the amount invested is eventually converted, this will always be done at a more advantageous exchange rate than the spot rate at the time of placement
- the enhanced interest rate or the conditional conversion rate can be set at your will, and the rest of the parameters will be calculated accordingly. The change of one parameter will cause the rest of the parameters to change, too.

#### risks

- if conversion takes place at maturity on the conditional exchange rate, this will always mean that the investment is converted to the term currency at a less advantageous rate than the current market rate applicable on expiry
- if the investment is not converted, the exchange rate of a spot conversion can be less advantageous than it would have been if done on the date of placement
- the investment cannot be broken before expiry (security deposit)
- the invested capital is not guaranteed (So if conversion takes place, a spot re-conversion could result a lower amount in the base currency than it was originally.)
- further risks, arising not exclusively from the characteristics of the product described here but from other factors, are explained in chapter I/b. of the "K&H Treasury Handbook of Market Risk Management" on risk factors.

#### product structure

This product is the combination of a security deposit and a plain vanilla option. The section on plain vanilla options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## ➔ 2. dual currency tower investment

MIFID complexity  
dynamic

The dual currency tower investment is an alternative to regular term deposits. The investment gives you the opportunity to gain higher interest rate than the regular term deposit rates, profiting from your exchange rate expectations while the minimum interest is guaranteed. The payment of the interest rate will happen in the deposit currency in which the deposit was made, the evolution of the exchange rate has an effect only on **the level of the interest** amount achieved on the investment and determines the currency in which the deposit will be repaid to the investor.

### product description

The client places deposit at a bank. The interest paid for this deposit is a function of the fluctuation of a currency pair (one of them being the currency in which the deposit is placed). The interest rates premiums are paid if the product's conditions are met. If the evolution of the exchange rate is in-line with the conditions set when the deal is concluded, then an interest rate above the regular term deposit rate is achievable, in other case the minimum interest rate will be guaranteed, and this is lower than the regular term deposit rate.

interest rate premium's conditions	possible exchange rate monitoring
the interbank exchange rate of a given currency pair <b>reaches or exceeds at least once</b> the exchange rate level fixed in advance over the tenor	from the trade day until the second business day before the expiry day OR over the tenor in any partial period
the interbank exchange rate of a given currency pair <b>does not reach or exceed</b> the exchange rate level fixed in advance over the tenor	
the interbank exchange rate of a given currency pair <b>remains in the exchange rate range</b> fixed in advance over the tenor	
the interbank exchange rate of a given currency pair <b>exceeds or touches at least once either the top or the bottom</b> of the exchange rate range fixed in advance over the tenor	
the interbank exchange rate of a given currency pair reaches or exceeds at least once an exchange rate level fixed in advance over the tenor and in the same time it does not reach or exceed a further exchange level fixed in advance	
the interbank exchange rate of a given currency pair is <b>above / below an exchange rate level</b> fixed in advance on the monitoring day	at a given time on the second business day before the expiry day
the interbank exchange rate of a given currency pair is within <b>an exchange rate range</b> fixed in advance on the monitoring day without touching the top or bottom of the range	
the interbank exchange rate of a given currency pair is <b>out of an exchange rate range</b> fixed in advance on the monitoring day without touching the top or bottom of the range	

Based on the above, your investment can bring in high interest not only if the exchange rate is less volatile but also when it evolves in the direction you predicted.

This product has a variant in which not only one exchange rate condition is defined. In that case you can have different interest rate premiums tied to different conditions.

The currency in which the investment is repaid depends on the spot market rate at 12 p.m. on the exchange rate monitoring date. A dual currency tower investment involves an investment placed in a certain currency (base currency) with the proviso that the Bank may repay the principal in another currency (secondary currency), if at expiry the cross rate of the two currencies is above or below – depending on the direction of conversion – a pre-defined exchange rate level (conditional exchange rate). If the conversion condition is met, the invested capital is returned to the client in the "secondary currency". Interest payments, however, will always be made in the base currency, regardless of whether the principal has been converted or not. The investment cannot be cancelled during the tenor (security investment). Interest is paid at the end of the tenor in one sum.

**example of HUF investment (with an exchange rate range):** an investor has HUF 100 million, which he intends to deposit in a dual currency tower investment for the next 3 months. The rate on conventional 3 month deposits is 7%. The EUR/HUF spot rate is 290 and the investor expects no significant volatility in the exchange rate in the coming 3 months, and would like to turn this expectation into profit. He is ready to accept lower yield if his expectations turn out to be wrong eventually, and accepts the risk that the capital is repaid in euro at the end of the tenor. Therefore, this investor places his savings in a dual currency tower investment with the following conditions (the conditional conversion rate or the width of the range can be set at the investor's will, we calculate the interest payments accordingly)

some possible combinations of exchange rate ranges - conditional conversion rates and enhanced interest rates for HUF deposit (one option should be chosen from the table upon placing the investment)			
exchange rate range (EUR/HUF)	conditional conversion rate (EUR/HUF)	maximum interest (annualised)	minimum interest (annualised)
275-305	270	13.50%	0.10%
270-305	270	11.00%	0.10%
270-300	270	15.00%	0.10%

parameters of the dual currency tower deposit (upon choosing the first row)	
notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	up to 2 business days before end of tenor
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility for 3 months	10%
EUR/HUF exchange rate range	275-305 EUR/HUF
maximum interest (annualised)	13.50%
condition to crediting achievable maximum interest	the EUR/HUF interbank market exchange rate does not leave the fixed EUR/HUF exchange rate range, and does not touch either boundary, during the tenor
guaranteed minimum interest (annualised)	0.10%
conditional exchange rate	270 EUR/HUF
conditional conversion exchange rate monitoring day	2 bank days before maturity
currency of the credited enhanced interest refund	HUF
condition of conversion of principal	the spot market rate at 12:00 p.m. on the date of exchange rate monitoring is below the conditional exchange rate
exchange rate of capital conversion	conditional exchange rate
value date of capital conversion and crediting of enhanced interest	end of tenor (expiry date)
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
A) exchange rate above 270 EUR/HUF	the investment stays denominated in HUF, and the 13.50% interest is credited by the bank to the client's account (in HUF) on the expiry date of the investment if the exchange rate has not left the range, has not even touched the boundaries. Otherwise minimum interest is guaranteed.
B) exchange rate below 270 EUR/HUF	the investment is converted into EUR at 270 EUR/HUF, and guaranteed minimum interest is credited by the bank to the client's account (in HUF)
transaction charges	none

**example for HUF investment (with an exchange rate level):** an investor has HUF 100 million, which he intends to deposit in a dual currency tower investment for the next 3 months. The rate on conventional 3 month deposits is 7%. The EUR/HUF spot rate is 290 and the investor expects significant volatility in the exchange rate in the coming 3 months, and would like to turn this expectation into profit. He is ready to accept lower yield if his expectations turn out to be wrong eventually, and accepts the risk that the capital is repaid in euro at the end of the tenor. Therefore, this investor places his savings in a dual currency tower investment with the following conditions, which pays an interest higher than the minimum interest upon reaching the closer exchange rate level, while pays the maximum interest premium if the farther exchange rate level is reached. (the conditional conversion rate or the exchange rate levels can be set at the investor's will, we calculate the interest payments accordingly):

some possible conditions for HUF deposit (one option should be chosen from the table upon placing the investment)					
farther exchange rate level (EUR/HUF)	maximum interest (annualised)	closer exchange rate level (EUR/HUF)	intermediate interest (annualised)	minimum interest (annualised)	conditional conversion rate
282	15.00%	285	4.00%	0.10%	275
284	12.50%	285	4.00%	0.10%	275
284	11.00%	288	4.00%	0.10%	275
284	10.50%	288	4.00%	2.00%	275
282	13.50%	285	4.00%	2.00%	275

**parameters of the dual currency tower deposit-upon choosing the first row**

notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	up to 2 business days before end of tenor
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility for 3 months	10%
farther exchange rate level (EUR/HUF)	282 EUR/HUF
maximum interest (annualised)	15%
condition to crediting achievable maximum interest	the EUR/HUF interbank market exchange rate touches the farther exchange rate level over the tenor
closer exchange rate level (EUR/HUF)	285 EUR/HUF
intermediate interest (annualised)	4.00%
condition to crediting achievable intermediate interest	the EUR/HUF interbank market exchange rate touches the closer exchange rate level over the tenor
guaranteed minimum interest (annualised)	0.10%
conditional exchange rate	275 EUR/HUF
conditional conversion exchange rate monitoring day	2 bank days before maturity
currency of the credited enhanced interest refund	HUF
condition of conversion of principal	the spot market rate at 12:00 p.m. on the date of exchange rate monitoring is below the conditional exchange rate
exchange rate of capital conversion	conditional exchange rate
value date of capital conversion and crediting of enhanced interest	end of tenor (expiry date)
<b>possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date</b>	
A) exchange rate above 275 EUR/HUF	the investment stays denominated in HUF, and the interest is credited by the bank to the client's account (in HUF).
B) exchange rate below 275 EUR/HUF	the investment is converted into EUR at 275 EUR/HUF, and the interest is credited by the bank to the client's account (in HUF)
transaction charges	none

**advantages**

- it is possible to achieve higher yield than in a regular term deposit, while it is guaranteed that a minimum interest will be repaid at the end of the investment term
- it is possible to profit from your predictions about the evolution of the cross exchange rate between a given pair of currencies (that is, to achieve extra yield) if your predictions prove to be right
- if the amount invested is eventually converted, this will always be done at a more advantageous exchange rate than the spot rate at the time of placement
- the maximum interest rate, the minimum interest rate, the conditional conversion rate or the width of the range can be set at the investor's will, and the rest of the parameters will be calculated accordingly; the change of one parameter will cause the rest of the parameters to change, too.

**risks**

- if conversion takes place at maturity on the conditional exchange rate, this will always mean that the investment is converted to the term currency at a less advantageous rate than the current market rate applicable on expiry

- if the investment is not converted, the exchange rate of a spot conversion can be less advantageous than it would have been if done on the date of placement
- if during the investment period the exchange rate's evolution is not in-line with the conditions of the interest premium, the guaranteed minimum interest is lower than regular term deposit interest that was achievable on the market when the investment was made
- the invested capital is not guaranteed (so if conversion takes place, a spot re-conversion could result a lower amount in the base currency than it was originally)
- the investment cannot be broken before expiry (security deposit)
- further risks, arising not exclusively from the characteristics of the product described here but from other factors, are explained in chapter 1.2. of the "K&H Treasury Handbook of Market Risk Management" on risk factors.

**product structure**

This product is the combination of a security deposit, a digital option and a plain vanilla option. The explanation concerning digital options and plain vanilla options provided in chapter 1.3 of the "K&H Treasury Handbook of Market Risk Management" on the five basic products, will also apply to this product.

### ➔ 3. currency-linked dual currency investment

MIFID complexity  
dynamic

Currency-linked dual currency investment is a possible alternative to a regular term deposit. This form of investment is an opportunity for you to achieve far higher interest than regular term deposit rates, profiting from your exchange rate expectations, while you have a minimum interest guaranteed. Interest will be paid in the same currency in which the deposit was made, the evolution of the exchange rate has an effect on the level of the interest achieved on the investment and determines the currency in which the deposit will be repaid to the investor.

**product description**

A client places an investment at the bank. The interest paid for this deposit is a function of the fluctuation of the cross-rate of a currency pair (one of them being the currency in which the deposit is placed). If the exchange rate remains for a long time within the range defined when the deal is concluded, then an interest rate above the regular term deposit rate is achievable. The Bank will examine if the official exchange rate (NBH fixing rate) of the National Bank of Hungary (or European Central Bank – set according to the client's will) stays in the predefined range every day or not. If this fixing rate stays in the range, then the Bank pays an interest rate premium for that given day otherwise the minimum interest rate will be guaranteed.

interest rate premium's conditions can be the following:

- within the exchange rate range fixed on the trade day, without touching the range limits
- out of the exchange rate range fixed on the trade day, without touching the range limits
- below the exchange rate level fixed on the trade day
- above the exchange rate level fixed on the trade day

Based on the above, your investment can yield high interest not only if the exchange rate is less volatile but also by large exchange rate fluctuations or when it evolves in the direction you predicted. This product has a variant in which not only one exchange rate condition is defined. In that case you can have different interest rate premiums tied to different conditions. The currency in which the investment is repaid depends on the spot market rate at 12 p.m. on the exchange rate monitoring date. A dual currency tower investment involves an investment placed in a certain currency (base currency) with the proviso that the Bank may repay the principal in another currency (secondary currency), if at expiry the cross rate of the two currencies is above or below – depending on the direction of conversion – a pre-defined exchange rate level (conditional exchange rate). If the conversion condition is met, the invested capital is returned to the client in the "secondary currency". Interest payments, however, will always be made in the base currency, regardless of whether the principal has been converted or not.

The deposit will not be broken before the end of the investment period (security deposit), the interest is paid on the end of the tenor in one sum.

**example for HUF investment – accruing premium interest is paid for days when the fixing is inside the range:** an investor has HUF 100 million, which he intends to deposit for the next 3 months. The rate on conventional 3 month deposits is 7%. The EUR/HUF spot rate is 290 and the investor does not expect significant volatility in the exchange rate in the coming 3 months. The investor expects that the official NBH fixing will not leave (for a long time) the 280-300 range and would like to turn this expectation into profit but would not like to get lower than 2% interest rate in any case. Moreover he accepts the risk that the capital is repaid in euro at the end of the tenor. Therefore, this investor places his savings in a currency-linked dual currency investment, which pays a 10.00% interest on every day in the range and the 2% minimum interest is guaranteed on every day over the tenor.

In case on the exchange rate monitoring day forint strengthens below 280 (below the conditional exchange rate) versus euro, then the invested capital will be paid back in euro converted at 280 EUR/HUF.

parameters of the currency-linked dual currency investment	
notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	up to 2 business days before end of tenor
number of fixing days	90
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility for 2 months	10%
EUR/HUF exchange rate range	280-300 EUR/HUF
achievable maximum interest (annualised) (minimum interest + premium)	10.00%
condition to crediting achievable maximum interest	the official MNB EUR/HUF fixing rate does not leave the fixed EUR/HUF exchange rate range on any fixing day over the tenor
guaranteed minimum interest (annualised)	2.00%
premium interest (annualised)	$8,00\% * (N/90) + 2\%$ , where N: number of the days when EURHUF MNB fixing rate remained in the range during the tenor. In case of holidays and weekends the fixing rate of the last working day before will be considered. In case of a fixing rate exactly on one of the boundaries the minimum interest rate is guaranteed.
conditional exchange rate	280 EUR/HUF
conditional conversion exchange rate monitoring day	2 bank days before maturity
currency of the credited enhanced interest refund	HUF
condition of conversion of principal	the spot market rate at 12:00 p.m. on the date of exchange rate monitoring is below the conditional exchange rate
exchange rate of capital conversion	conditional exchange rate
value date of capital conversion and crediting of enhanced interest	end of tenor (expiry date)
possible scenarios on expiry depending on the spot market rates at 12:00 p.m. on the expiry date	
A) exchange rate above 280 EUR/HUF	the investment stays denominated in HUF, and the interest is credited by the bank to the client's account (in HUF) on the expiry date of the investment
B) exchange rate below 280 EUR/HUF	the investment is converted into EUR at 280 EUR/HUF, and guaranteed minimum interest is credited by the bank to the client's account (in HUF)
transaction charges	none

**example for HUF investment – with more exchange rate levels:** an investor has HUF 100 million, which he intends to deposit for the next 3 months. The rate on conventional 3 month deposits is 7%. The EUR/HUF spot rate is 290 and the investor does not expect significant depreciation of the forint in the coming 3 months. The investor expects that the official NBH fixing will not rise above (for a long time) the 290 and 295 levels and would like to turn this expectation into profit but would not like to get lower than 2% interest rate in any case. Moreover he accepts the risk that the capital is repaid in euro at the end of the tenor. Therefore, this investor places his savings in a currency-linked dual currency investment, which pays a 5.00% interest on every day when the fixing is between 290 and 295, while pays 12.50% premium interest on days when the fixing is below 290. The 2% minimum interest is guaranteed on every day over the tenor.

In case on the exchange rate monitoring day forint strengthens below 280 (below the conditional exchange rate) versus euro, then the invested capital will be paid back in euro converted at 280 EUR/HUF.

parameters of the currency-linked dual currency investment	
notional	HUF 100 000 000
tenor	3 months
expiry date	end of tenor
exchange rate monitoring period	up to 2 business days before end of tenor
number of fixing days	90
3-month BUBOR at time of pricing (annualised)	7.00%
spot exchange rate	290 EUR/HUF
ATMF volatility for 2 months	10%
EUR/HUF rate tied to the maximum interest	290 EUR/HUF
achievable maximum interest (annualised) (minimum interest + premium)	12.50%
condition to crediting achievable maximum interest	the official MNB EUR/HUF fixing rate is not above the 290 EUR/HUF exchange rate level on any fixing day over the tenor
intermediate interest (annualised)	3.00%
intermediate interest premium (annualized)	295 EUR/HUF
EUR/HUF rate tied to the intermediate interest	5.00%
intermediate interest premium (annualized)	the official MNB EUR/HUF fixing rate is not above the 295 EUR/HUF exchange rate level but exceed the 290 level on every fixing day over the tenor
condition to crediting intermediate interest	2.00%
guaranteed minimum interest (annualised)	$10,50\% * (N/90) + 3,00\% * (n/90) + 2,00\%$ , where N: number of the days when the EUR/HUF MNB fixing rate is under the exchange rate level tied to the maximum interest rate n: number of the days when the EUR/HUF MNB fixing rate is under the exchange rate level tied to the intermediate interest rate. In case of holidays and weekends the fixing rate of the last working day before will be considered. In case of a fixing rate exactly on one of the boundaries the minimum interest rate is guaranteed.
premium interest (annualised)	280 EUR/HUF
conditional exchange rate	2 bank days before maturity
conditional conversion exchange rate monitoring day	HUF
currency of the credited enhanced interest refund	the spot market rate at 12:00 p.m. on the date of exchange rate monitoring is below the conditional exchange rate
condition of conversion of principal	conditional exchange rate
exchange rate of capital conversion	end of tenor (expiry date)
value date of capital conversion and crediting of enhanced interest	
A) exchange rate above 280 EUR/HUF	the investment stays denominated in HUF, and the interest is credited by the bank to the client's account (in HUF) on the expiry date of the investment
B) exchange rate below 280 EUR/HUF	the investment is converted into EUR at 280 EUR/HUF, and guaranteed minimum interest is credited by the bank to the client's account (in HUF)
transaction charges	none

### advantages

- it is possible to achieve yield above the regular term deposit interest, while there is a guarantee that the capital plus a minimum interest will be repaid on expiry
- it is possible to profit from your predictions about the evolution of the cross exchange rate between a given pair of currencies (that is, to achieve extra yield) if your predictions prove to be right
- if the amount invested is eventually converted, this will always be done at a more advantageous exchange rate than the spot rate at the time of placement
- the maximum interest rate, the minimum interest rate, the conditional conversion rate or the conditions of the interest rate premium can be set at your will, and the rest of the parameters will be calculated accordingly; the change of one parameter will cause the rest of the parameters to change, too.

### risks

- if conversion takes place at maturity on the conditional exchange rate, this will always mean that the investment is converted to the term currency at a less advantageous rate than the current market rate applicable on expiry
- if the investment is not converted, the exchange rate of a spot conversion can be less advantageous than it would have been if done on the date of placement
- if during the investment period the exchange rate leaves the range(s) or reaches or does not reach exchange rate levels defined in advance for a longer time period, the achieved interest would be lower than the term deposit interest that was achievable on the market when the deposit was made

- the invested capital is not guaranteed (so if conversion takes place, a spot re-conversion could result a lower amount in the base currency than it was originally)
- the deposit cannot be broken before expiry (security deposit)
- further risks, arising not exclusively from the characteristics of the product described here but from other factors, are explained in chapter I/b. of the "K&H Treasury Handbook of Market Risk Management" on risk factors.

### product structure

This product is the combination of a security deposit and more digital option. The explanation concerning digital options, provided in Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## → government papers

### → 1. treasury bill

MIFID classification  
defensive

Discount treasury bills are potential alternatives to regular term deposits. It has favourable liquidity properties meaning you can mobilize your investment anytime under normal market conditions. Discount treasury bills are government securities with maturity less than one year. No interest is paid on these securities; instead, they are issued at a discount, i.e. at a price lower than the face value of the security, and the face value is repaid on redemption date. The difference between the face value and the purchase price is the discount, i.e. the yield of the security.

#### product description

Discount treasury bills are issued by the Hungarian Debt Management Agency representing the debt of the Hungarian State for maturities less than one year. Treasury bill payments are guaranteed by the state. These securities are issued on weekly, bi-weekly auctions through the primary dealers (e.g. K&H Bank Zrt.).

**Discount treasury bills pay no interest, however the investor realises a yield as the securities can be bought before maturity at a price lower than the face value, at a so called discount value and upon maturity the face value (HUF 10 000) is repaid.** In case

of a discount treasury bill the payment upon maturity is fixed similarly to a regular term deposit, thus the yield until maturity is certain.

**The price of a treasury bill can be interpreted as the sum needed to be placed in a term deposit at current market levels to receive at maturity a sum equal to the face value of the treasury bill, i.e. HUF 10,000. As most investors are concerned with the yield level, the trading of the securities is based on the yield.** This yield level expresses the realised gain in case the security is held until maturity. An important difference from term deposits is that interest on term deposits are calculated with 365 days / year, while treasury bills are calculated with 360 days / year – their comparability will be explained below.

In summary: a treasury bill held until maturity pays fixed interest, which is comparable with the interest level of a term deposit with the same tenor. The liquid secondary market allows the sale of the security before maturity, thus if you need the invested amount you can sell your treasury bills, however the time proportional yield will be uncertain, i.e. it can be lower or higher than the yield level at the time of purchase (in extreme cases it can be negative even). Sale of a treasury bill does not involve additional costs as breaking the deposit in case of a term deposit.

#### yield and price calculation for treasury bills

calculating price from yield:

$$\text{price} = \frac{\text{notional (HUF 10 000)}}{1 + (\text{yield} / 100) \times (\text{number of days until maturity}) / 360}$$

for example: 6.00% yield and maturity in 90 days:  $10,000 / (1 + (6/100) * 90/360) = 9852.21$  forint, i.e. 98.5221% of the face value. The price is typically given as a percentage, which is rounded to the fourth digit according to market convention.

It is important to note that interest on term deposits are calculated with 365 days/year, while yield on treasury bills is calculated using 360 days/year. Due to the different day count for example a 6% yield on a treasury bill is equivalent to 6.083% interest on a term deposit, as  $6\% * (365/360) = 6.083\%$  If you wish to sell your investment before maturity the realised yield can be calculated using the formula below:

$$\text{realized annual rate} = \left( \frac{\text{selling price}}{\text{purchase price}} \right) \times \frac{360}{\text{days elapsed}} \times 100$$

for example: a security bought at HUF 9400 and sold 90 days later for HUF 9550:  $(9550 / 9400 - 1) * (360 / 90) * 100 = 6.38\%$



**example for buying discount treasury bill – held until maturity:** an investor wishes to invest his HUF 100 million for 12 months. Actual price of a 12-month treasury bill is 94.3396% (as a percentage of the face value), i.e. HUF 9433.96/piece. Thus 10 600 pieces of treasury bills can be bought with HUF 100 million, which pay upon maturity HUF 106 million. So the annual return is 6.00%

**example for buying discount treasury bill – sold before maturity:** an investor wishes to invest his HUF 200 million for 1 year. He places HUF 100 million in term deposit with 6.08% interest, while he buys treasury bills for HUF 100 million with 6.00% yield. (This equals to the 6.08% interest due to the base difference). He buys 10 600 pieces of treasury bills, which pay HUF 106 million at maturity. Six months (183 days) after the transactions he wishes to access HUF 100 million.

In this case he can choose from 2 solutions. The first possibility is to break his deposit. In this case however the bank pays only 1% sight interest, i.e. HUF 100 500 000 is repaid after the invested 100 million. The realised annual interest for a half-year is 1%. The other possibility is to sell his treasury bills worth of HUF 100 million before maturity. In this case there are three scenarios depending on the evolution of the market yield.

1. market yield **increases by 1%** - after six months of purchase the price of the treasury bill at 7% market yield is HUF 9662.73 / piece. So 10 660 pieces worth HUF 102 424 948, i.e. the realised annual yield for half a year is **4.77%**
2. market yield **unchanged** - after six months of purchase the price of the treasury bill at 6% market yield is HUF 9709.51 / piece. So 10 660 pieces worth HUF 102 920 834, i.e. the realised annual yield for half a year is **5.75%** (Although the market yield remained unchanged, your realised yield is not 6% but slightly less due to compound interest)
3. market yield **decreases by 1%** - after six months of purchase the price of the treasury bill at 5% market yield is HUF 9756.75 / piece. So 10 660 pieces worth HUF 103 421 545, i.e. the realised annual yield for half a year is **6.73%**

#### advantages

- held until maturity the discount treasury bill provides fixed yield
- possibility to earn interest similar to a term deposit, while in case you need to sell the investment before maturity there is no “break fee”, the price is based on the actual market yield.
- if treasury bills are bought with a longer tenor than intended you may realise better yield when selling before maturity (in case market yield decreased in the meantime)
- liquid instrument, the investment may be mobilized anytime

#### risks

- if you buy securities with longer tenor than you intend to invest the realised yield is uncertain
- if you have to sell the treasury bills before maturity, its value may be less than at time of purchase, i.e. the realised yield may be negative. This may occur if the sale is very shortly after the purchase relative to the tenor and/or the market yield increases significantly over the tenor
- discount treasury bills bear the risk of default of the Hungarian State. In case of default the resulting loss of capital may be unlimited
- under extreme market circumstances (e.g. in November 2008) the market for government papers may be frozen for a short time. In such a case these securities cannot be sold or only at a very high yield level, which may cause significant losses or liquidity problems.
- chapter I/ entitled “Risk Factors” of “K&H Treasury Handbook of Market Risk Management” lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

## ➔ 2. government bonds – with fixed interest payment

MIFID classification  
defensive

Government bonds are potential alternatives to regular term deposits. It has favourable liquidity properties meaning you can mobilize your investment anytime under normal market conditions.

Hungarian government bonds are interest-bearing government securities with maturity longer than one year. Currently it is issued for four maturities, namely 3 years, 5 years, 10 years and 15 years. Coupon payments can be fixed or floating.

#### product description

Government bonds are issued by the Hungarian Debt Management Agency representing the debt of the Hungarian State for maturities longer than one year. Only primary dealers may buy treasury bonds from the State. As K&H Bank is a primary dealer you can buy government papers at our bank at the best possible price.

#### Government bonds pay annually or semi-annually interest (coupon), which is fixed as a percentage of the face value.

Government bonds can be purchased at the current price in every case, while at maturity the face value (HUF 10 000 / piece) is repaid and you are entitled to all future interest payments of your bonds. Interest payments are fixed similarly to term deposits, thus the yield until maturity is predictable also for this instrument.

The **price of the government bond** gives today's value of the bond's future cash-flow (coupon+principal). (Present value of the bond's future cash-flow at the yield level at time of purchase). As the coupon payments and principal repayment occur at different dates the price can be interpreted as the sum of deposits with the same payments as the bond's cash-flow at the different expiries at the current market yield.

As most investors are concerned on the yield level the trading of the securities is based on the yield. The **yield of the bond** expresses the realised yield level for the whole tenor if the bond is held until maturity and the coupon payments are reinvested at the same yield level.

The liquid secondary market allows the sale of the security before maturity, thus if you need the invested amount you can **sell your government bonds**, however the time proportional yield will be uncertain, i.e. it can be lower or higher than the yield level at the time of purchase. Sale of a treasury bill does not involve additional costs as breaking the deposit in case of a term deposit, however the realised time proportional yield will be uncertain, i.e. it can be lower or higher than the yield level at the time of purchase.

#### yield and price calculation of government bonds (with fixed coupon payments)

$$\text{calculating price from yield: gross price} = \sum_{i=1}^n \frac{\text{coupon}}{\left(1 + \frac{\text{yield}}{100}\right)^i} + \frac{\text{notional (10 000)}}{\left(1 + \frac{\text{yield}}{100}\right)^t}$$

where:

- n = number of remaining coupon payments
- t = number of years until maturity, where the day count of the actual interest period must be taken into account (365 or 366)

for example: to calculate after coupon payment the gross price of a bond with annual 5% coupon payments (HUF 550 / piece) with a remaining tenor of 3 years and a face value of HUF 10 000 at 6.00% market yield, the following formula can be used:

$$\left(\frac{500}{(1+0.06)^1}\right) + \left(\frac{500}{(1+0.06)^2}\right) + \left(\frac{500}{(1+0.06)^3}\right) + \left(\frac{10.000}{(1+0.06)^3}\right) = 9732.70$$

Prices of government bonds are typically quoted as a percentage rounded to 4 digits according to market convention. Thus the price of the bond in the example is 97.3270% as a percentage of the face value.

In case the bond's coupon payment is higher than the actual market yield, the price is higher than the face value, which is compensated by the above market coupon payments. Thus the price of a bond with the same parameters as above at 4% market yield:

$$\left(\frac{500}{(1+0,04)^1}\right) + \left(\frac{500}{(1+0,04)^2}\right) + \left(\frac{500}{(1+0,04)^3}\right) + \left(\frac{10.000}{(1+0,04)^3}\right) = 10\,277,51$$

i.e. the gross price of the bond will be 102.7751%

Sale and purchase of government bonds are conducted at the gross price explained above. Gross price is the sum of the accrued interest and the net price. At coupon payment the owner of the bond receives the full payment for the interest period, therefore the buyer has to pay also the accrued interest (interest not yet paid for the time elapsed from the interest period)

Accrued interest is zero at the time of issuance or coupon payment, i.e. gross and net prices are equal. Otherwise:

$$\text{accrued interest} = \text{coupon \%} \times \frac{\text{days elapsed after the last interest payment}}{\text{number of days in the actual interest period (365 of 366)}} \times \text{nominal value}$$

If you wish to sell your investment **before maturity** the realised yield can be calculated as follows:

$$\text{realized yield} = \left( \frac{\text{gross selling price} + \text{reinvested value of received coupons}}{\text{gross buying price}} \right)^{\frac{365}{\text{days elapsed}}} - 1$$

**example for buying government bond – held until maturity:** an investor wishes to invest his HUF 100 million for 3 years. Current market yield of 3-year government bonds is 7.35%. The current price of the government bond with 8% coupon and 3-years until maturity is 101.6950% (as a percentage of the face value), i.e. HUF 10,169.50/piece.

**example for buying government bond – sold before maturity:** an investor wishes to invest his HUF 200 million for 3 years. He places HUF 100 million in term deposit with 7.35% interest, while he buys government bonds for HUF 100 million with 7.35% yield. The purchased security matures in 3 years and pays 8% coupon, the purchase is concluded right after coupon payment. One year (365 days) after the transactions he wishes to access HUF 100 million.

In this case he can choose from 2 solutions. The first possibility is to break his deposit. In this case however the bank pays only 1% sight interest, i.e. HUF 101,000,000 is repaid after the invested 100 million. The realised annual interest is 1%. The other possibility is to sell his government bonds worth of HUF 100 million before maturity. In this case there are three scenarios depending on the evolution of the market yield. As the bonds are sold exactly one year after the purchase it is important to note that the transaction is right after coupon payment so the received interest can be reinvested at the actual market yield.

1. market yield **increases by 1%** - after one year of purchase the price of the government bond at 8.35% market yield is HUF 9937.88/piece. The investor also receives the 8% coupon, i.e. HUF 800. In sum he realises HUF 10 737.88, which equals to 5.59% realised yield.
2. market yield **unchanged** - after one year of purchase the price of the government bond at 7.35% market yield is HUF 10,116.95/piece. The investor also receives the 8% coupon, i.e. HUF 800. In sum he realises HUF 10,916.95, which equals to 7.35% realised yield.
3. market yield **decreases by 1%** - after one year of purchase the price of the government bond at 6.35% market yield is HUF 10,301.03/piece. The investor also receives the 8% coupon, i.e. HUF 800. In sum he realises HUF 11,101.03, which equals to 9.16% realised yield.

Government bonds are identified with a unique code built up of letters and numbers. The A140212C03 (or 2014/C) is a bond maturing (and paying coupon) on 12.02.2014 issued in 2003. The letter "C" distinguishes it from securities maturing in the same year.

#### advantages

- held until maturity the government bond provides fixed yield
- possibility to earn interest similar to a term deposit, while in case you need to sell the investment before maturity there is no "break fee", the price is based on the actual market yield.
- if government bonds are bought with a longer tenor than intended you may realise better yield when selling before maturity (in case market yield decreased in the meantime)
- liquid instrument, the investment may be mobilized anytime

#### risks

- if you buy securities with longer tenor than you intend to invest the realised yield is uncertain
- if you have to sell the government bonds before maturity, its value may be less than at time of purchase, i.e. the realised yield may be negative. This may occur if the sale is very shortly after the purchase relative to the tenor and/or the market yield increases significantly over the tenor

### ➔ 3. government bond denominated in foreign currency – with fixed interest payment

MIFID classification  
defensive

Government bonds denominated in a foreign currency are potential alternatives to regular term deposits. Foreign exchange government bonds are interest-bearing government securities denominated in EUR, USD, CHF, GBP or JPY with a maturity of typically several years. They are issued occasionally.

#### product description

Government bonds are issued by the Hungarian Debt Management Agency representing the foreign exchange debt of the Hungarian State for maturities longer than one year. The bond payments are guaranteed by the State.

**Government bonds pay annually or semi-annually interest (coupon), which is fixed as a percentage of the face value.** Government bonds can be purchased at the current price in every case, while at maturity the face value (typically EUR or USD 1 000-2 000) is repaid and you are entitled to all future interest payments of your bonds. Interest payments are fixed similarly to term deposits, thus the yield until maturity is predictable also for this instrument.

The **price of the government bond** gives today's value of the bond's future cash-flow (coupon+principal). (Present value of the bond's future cash-flow at the yield level at time of purchase). As the coupon payments and principal repayment occur at different dates

the price can be interpreted as the sum of deposits with the same payments as the bond's cash-flow at the different expiries at the current market yield.

As most investors are concerned on the yield level the trading of the securities is based on the yield. The **yield of the bond** expresses the realised yield level for the whole tenor if the bond is held until maturity and the coupon payments are reinvested at the same yield level.

The usually liquid secondary market allows the sale of the security before maturity, thus if you need the invested amount you can **sell your government bonds**, however the time proportional yield will be uncertain, i.e. it can be lower or higher than the yield level at the time of purchase. Sale of a treasury bill does not involve additional costs as breaking the deposit in case of a term deposit, however the realised time proportional yield will be uncertain, i.e. it can be lower or higher than the yield level at the time of purchase. Generally speaking **it is not recommended to buy foreign exchange government bonds with longer tenor than the intended tenor of the investment**, as the liquidity of these securities is slightly weaker compared to forint government bonds, thus a sale before maturity may incur a loss even if market yields remain unchanged. **However, this risk does not exist if the bond is held until maturity.**

#### yield and price calculation of government bonds (with fixed coupon payments)

Calculating price from yield:

in case of remaining tenor is more than a year: **gross price** = 
$$\sum_{i=1}^n \frac{\text{coupon}}{\left(1 + \frac{\text{yield}}{100}\right)^i} + \frac{\text{notional}}{\left(1 + \frac{\text{yield}}{100}\right)^t}$$

in case of remaining tenor is less than a year: **gross price** = 
$$\sum_{i=1}^n \frac{\text{coupon}}{\left(1 + \frac{\text{yield}}{100} \times \frac{k}{365^a}\right)^i} + \frac{\text{notional}}{\left(1 + \frac{\text{yield}}{100} \times \frac{k}{365^a}\right)^t}$$

where:

- n = number of remaining coupon payments
- t = number of years until maturity, where the day count of the actual interest period must be taken into account (365 or 366)
- k = days remaining until maturity
- <sup>a</sup> = 366 in leap years

For example to calculate after coupon payment the gross price of a bond with annual 5% coupon payments (EUR 50 / piece) with a remaining tenor of 3 years and a face value of EUR 1 000 at 6.00% market yield, the following formula can be used:

$$\left(\frac{500}{(1+0.06)^1}\right) + \left(\frac{500}{(1+0.06)^2}\right) + \left(\frac{500}{(1+0.06)^3}\right) + \left(\frac{1000}{(1+0.06)^3}\right) = 973.27$$

Prices of government bonds are typically quoted as a percentage rounded to 4 digits according to market convention. Thus the price of the bond in the example is 97.3270% as a percentage of the face value.

In case the bond's coupon payment is higher than the actual market yield, the price is higher than the face value, which is compensated by the above market coupon payments. Thus the price of a bond with the same parameters as above at 4% market yield:

$$\left(\frac{500}{(1+0.04)^1}\right) + \left(\frac{500}{(1+0.04)^2}\right) + \left(\frac{500}{(1+0.04)^3}\right) + \left(\frac{1000}{(1+0.04)^3}\right) = 1027.751$$

i.e. the gross price of the bond will be 102.7751%.

**Sale and purchase** of government bonds are conducted at the gross price explained above. Gross price is the sum of **the accrued interest and the net price**. At coupon payment the owner of the bond receives the full payment for the interest period, therefore the buyer has to pay also the accrued interest (interest not yet paid for the time elapsed from the interest period)

Accrued interest is zero at the time of issuance or coupon payment, i.e. gross and net prices are equal. Otherwise:

$$\text{accrued interest} = \text{coupon\%} \times \frac{\text{days elapsed after the last interest payment}}{\text{number of days in the actual interest period (365 of 366)}} \times \text{nominal value}$$

If you wish to sell your investment **before maturity** the realised yield can be calculated as follows:

$$\text{realized yield} = \left( \frac{\text{gross selling price} + \text{reinvested value of received coupons}}{\text{gross buying price}} \right)^{\frac{365}{\text{days elapsed}}} - 1$$

**example for buying government bond – held until maturity:** an investor wishes to invest his EUR 100 000 for 3 years. Current market yield of 3-year euro government bonds is 7.35%. The current price of the government bond with 8% coupon and 3-years until maturity is 101.6950% (as a percentage of the face value), i.e. EUR 1016.95 / piece.

**example for buying government bond – sold before maturity:** an investor wishes to invest his EUR 200,000 for 3 years. He places EUR 100 000 in term deposit with 7.35% interest, while he buys euro government bonds for EUR 100,000 with 7.35% yield. The purchased security matures in 3 years and pays 8% coupon, the purchase is concluded right after coupon payment. One year (365 days) after the transactions he wishes to access EUR 100 000.

In this case he can choose from 2 solutions. The first possibility is to break his deposit. In this case however the bank pays only 1% sight interest, i.e. EUR 101 000 is repaid after the invested 100 000. The realised annual interest is 1%.

The other possibility is to sell his euro government bonds worth of HUF 100 million before maturity. In this case there are three scenarios depending on the evolution of the market yield. As the bonds are sold exactly one year after the purchase it is important to note that the transaction is right after coupon payment so the received interest can be reinvested at the actual market yield.

1. market yield **increases by 1%** - after one year of purchase the price of the government bond at 8.35% market yield is EUR 993,788. The investor also receives the 8% coupon, i.e. EUR 80. In sum he realises EUR 1073.788, which equals to **5.59%** realised yield.
2. market yield **unchanged** - after one year of purchase the price of the government bond at 7.35% market yield is EUR 1011.695 / piece. The investor also receives the 8% coupon, i.e. EUR 80. In sum he realises EUR 1091.695, which equals to **7.35%** realised yield.
3. market yield **decreases by 1%** - after one year of purchase the price of the government bond at 6.35% market yield is EUR 1030.103 / piece. The investor also receives the 8% coupon, i.e. EUR 80. In sum he realises EUR 1110.103, which equals to **9.16%** realised yield.

### advantages

- held until maturity the government bond provides fixed yield
- possibility to earn interest similar to a term deposit, while in case you need to sell the investment before maturity there is no “break fee”, the price is based on the actual market yield
- if government bonds are bought with a longer tenor than intended you may realise better yield when selling before maturity (in case market yield decreased in the meantime)
- liquid instrument, the investment may be mobilized anytime

### risks

- if you buy securities with longer tenor than you intend to invest the realised yield is uncertain. If you have to sell the government bonds before maturity, its value may be less than at time of purchase, i.e. the realised yield may be negative. This may occur if the sale is very shortly after the purchase relative to the tenor and/or the market yield increases significantly over the tenor.
- liquidity of foreign exchange bonds is slightly weaker compared to forint government bonds. Under extreme market circumstances (e.g. in November 2008) the market for government papers may be frozen for a short time. In such a case these securities cannot be sold or only at a very high yield level, which may cause significant losses or liquidity problems.
- government bonds bear the risk of default of the Hungarian State. In case of default the resulting loss of capital may be unlimited. Moreover a default on foreign exchange debt is more probable as on forint debt (The latter can be avoided by money printing and inflation, whereas this is not possible with foreign exchange debt)
- if you or your company has expenditures not in the currency of the investment then you may incur exchange rate losses if the forint-foreign currency exchange rate moves unfavorably.
- chapter I/b. entitled “Risk Factors” of “K&H Treasury Handbook of Market Risk Management” lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

## ➔ documentation requirement of the transaction, technical parameters

### ➔ before the transaction

Prerequisites for dealing, required documents:

- MiFID questionnaire (for complexity)
- Treasury master agreement (in case the transaction is not done through the relationship manager)
- living Treasury limit (in case the transaction is not done through the relationship manager)
- Treasury master agreement for the bond securities transaction in case of government securities

other fees: (account maintenance fee, transfer fee): fees can be found in the prevailing announcement and general terms and conditions.

On exchange rates you can consult the official Reuters page (<http://uk.reuters.com/business/currencies>).

taxation: the Banks does not deduct any taxes from clients who do not fall under the personal income tax, it is the client's responsibility to comply with tax regulations.

The security deposit is not protected by BEVA and OBA.

The K&H Treasury Handbook of Market Risk Management and explanations for the products can be found on the K&H Bank webpage ([www.kh.hu](http://www.kh.hu)) on the corporate – K&H treasury services page.

You can find detailed and exhaustive term sheets on the products in the table below in this chapter,

deal type	limit requirement	minimum amount	tenor
structured investments	no (can be concluded with the relationship manager)	depending on tenor but at least EUR 100 000	minimum 2 weeks, maximum 1 year
government papers	no (can be concluded with the relationship manager)	EUR 100 000	-

Dear Client,

**We kindly request you to read the following information carefully prior to concluding any transaction!**

The product outlined in the product description may differ from your / your company's MiFID profile, meaning that the product may be of higher complexity than the complexity level stipulated by your / your company in the MiFID documentation. In this case the Bank shall conclude the transaction solely at your / your company's initiative and shall manage the transactions falling outside the MiFID profile in accordance with its prevailing internal regulation.

Prior to concluding the deal, please, make sure that you fully understand the product, the operation thereof and potential development of the transaction's future market value. As a result of the future change in the transaction's market value you may incur a temporary or permanent obligation to provide additional collateral, which may impact your Company's liquidity and solvency.

If you believe that the information provided herein is not comprehensive, or you have questions or doubts in connection with the product, please notify the Bank's competent employee prior to concluding the deal, so that you receive the information you deem necessary.

If you believe that the information you received is not comprehensive, please do not conclude any deal for that specific product, even if otherwise the product fits into your / your company's MiFID profile.

If you do conclude a deal for the product outlined in the product description, it shall be construed that you deemed the information received from the Bank comprehensive, irrespective of the fact whether the product is in line with your / your company's (the Client) MiFID profile available for us at the time of concluding the deal.

Please, note that the parameters and prices stated in the product description are of indicative nature and serve only referential purposes. The parameters of the actually concluded deals will correspond to the terms agreed during the telephone conversation recorded upon deal conclusion and those may depart from the indicative parameters and prices stated in this product description.

## ➔ after concluding a deal

According to the Treasury master agreement deals can be concluded only on recorded phone.

After concluding the deal the client receives confirmation on the deal's parameters on fax and on its existing, open positions, live transactions a summarized report at the beginning of every month, which shows the actual market value of the existing positions based on market levels prevailing on the last workday of the previous month.

In the confirmation faxes and in the reports of existing positions the values are stated according to the bank's viewpoint, i.e. if the position's direction is "buy", it is a "selling" position for the client.

**IVMO** periodically  
available  
investment products



## → K&H bond program

Under the Bond program the Bank (as issuer) sells registered, dematerialized bonds through public issuance in denomination of HUF, EUR, CHF or USD.

The bonds have a tenor of minimum 60 days and maximum 20 years, and it is possible to list them on the Budapest Stock Exchange or other regulated markets.

The bonds are very diverse just like investment funds, primarily capital guaranteed structures are issued. The yield of the investment can be tied to foreign exchange rates, stock prices, yields, commodity prices, indexes, inflation, etc.

**Under the Bond program the Bank focuses on structures which may generate high yield (with capital guarantee) if certain conditions are met (analyst or individual expectations) based on actual market situation and expectations.**

**As the bonds are unique and occasional the set of issued bonds varies constantly, the issues do not follow any schedule. If you wish to be informed on actual offers, please contact the Treasury Sales dealers on the contact details found at the end of this Handbook.**

We offer to issue bonds with individual, tailor made structure according to our client's wishes in any denomination. The minimum invested capital depends on the prevailing market situation and individual decision by the bank. New bonds are issued continuously through public offerings based on aggregate client demand. Condition of subscription and acceptance of an auction bid is a securities account at K&H bank and a bank account in the denomination of the bond.

Below we give an example how the bank translated market and analyst expectations into a moderate risk bond in-line with client demand.

## ➔ K&H “strong forint” note date of issue: May 2012- (currently not available)

MIFID classification  
cautious

The K&H “strong forint” note (hereinafter: the Note) is a one year, capital protected forint investment, with an outstanding yield of 16% in case the forint will be at slightly stronger than current levels in one year.

The Note pays a minimum coupon of 0.1% in case this does not happen.

The Note pays at maturity a coupon of 3.3 times the percentage strengthening of the forint from the 297 EUR/HUF level (maximum 16%), with a minimum of 0.1%.

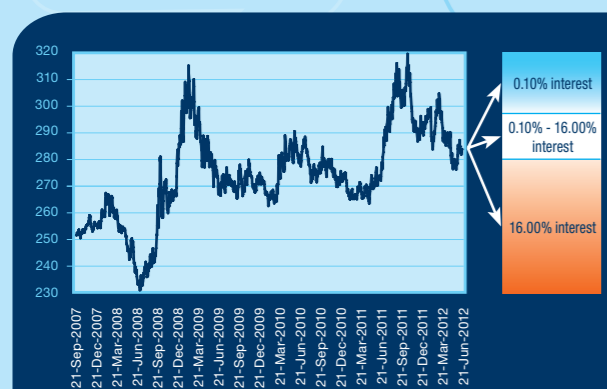
So the coupon paid is  
 $0.1\% + \text{MAX} [3.3 \times (297 - \text{“close price”}) / 297 : 0]$   
where “close price” = the official EUR/HUF exchange rate of the National Bank of Hungary (MNB) at 03 May 2013.

The subscription period for the Note is between 23 April – 4 May, with a minimum subscribed value of HUF 1 million, denominated in units of HUF 100 000.

The Note pays the maximum coupon of 16% in case the “closing price” is lower than 282.69.

In case the “closing price” is 297 or above, the Note pays the minimum coupon of 0.1%

MNB exchange rate	coupon	MNB exchange rate	coupon
>297	0.10%	289	8.99%
297	0.10%	288	10.10%
296	1.21%	287	11.21%
295	2.32%	286	12.32%
294	3.43%	285	13.43%
293	4.54%	284	14.54%
292	5.66%	283	15.66%
291	6.77%	282.69	16.00%
290	7.88%	<282.69	16.00%



strong forint note – interest payment as a function of the exchange rate level at expiry

### advantages

- 100% capital protection.
- potential of a significantly higher interest than standard deposit rates even with a slight strengthening of the forint
- the Note pays an outstanding coupon even in case of reaching the average EUR/HUF exchange rate of the last 1,2,3 or 5 years.

### risks

- if the expected strengthening of the forint does not occur, the Note pays only 0.1% coupon, which is significantly smaller than the deposit rates
- the Note's payment is a function of only one day's (03 May 2013) MNB exchange rate. The exact yield can not be known before this date.
- the Note does not get listed on a regulated market. It is assumed that the investors buying the Note want to keep it until maturity. It is not recommended for investors to buy the Note, who might want to redeem the note before maturity.



Besides managing foreign exchange and interest rate risks it is also very important to manage the commodity risk with deals that can be concluded on the commodity market. Hedging is important for companies using commodities as they have to hedge themselves against increasing prices but it is also necessary for suppliers who can ensure their profit margins by hedging. Trading companies also have to manage their price risk between buying and selling a certain commodity as this period is crucial for them. Furthermore, all three types of companies (producer, supplier and trader) face a certain level of bargaining power from their suppliers or customers during the price negotiations.

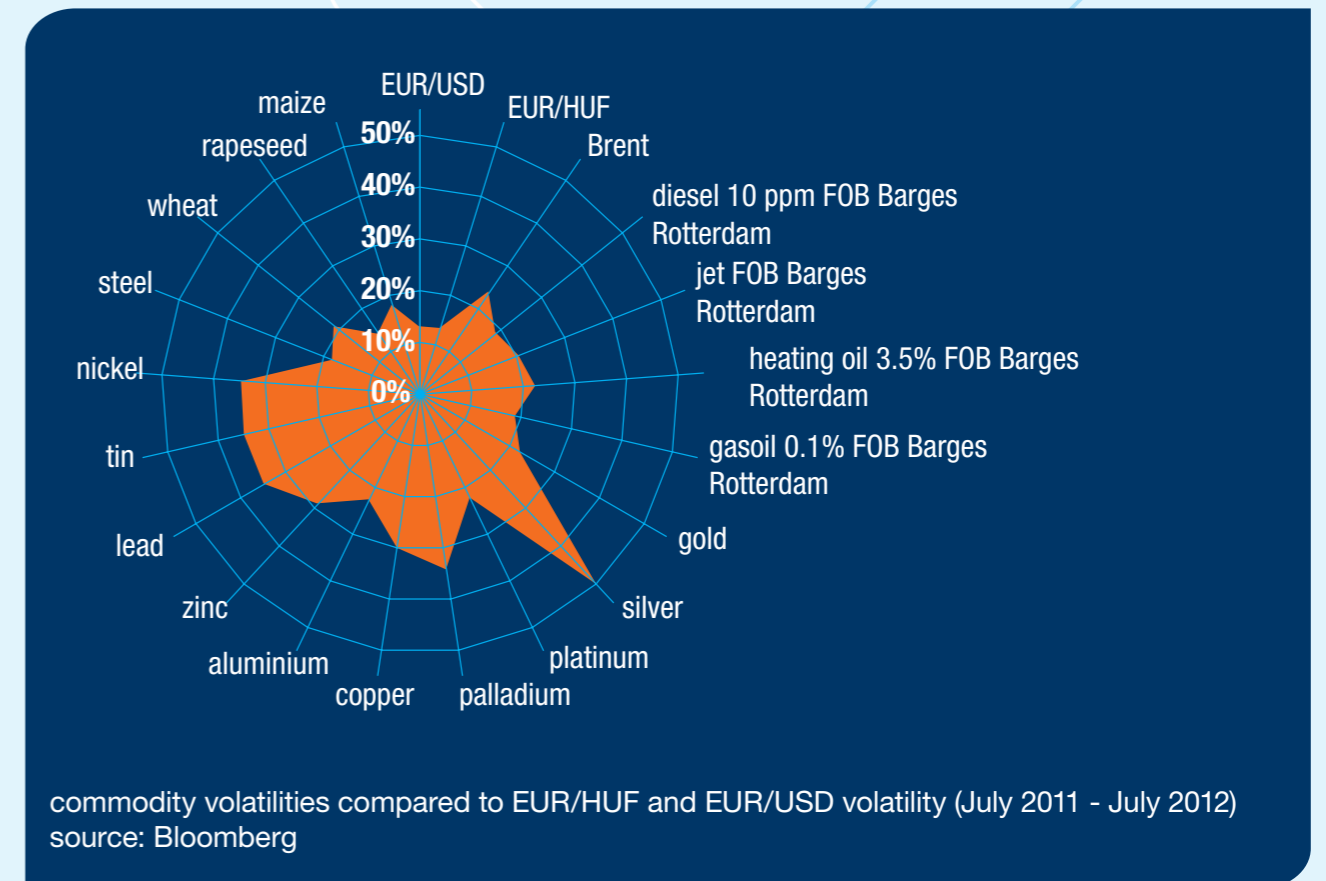
commodity hedging is highly important because of the following reasons:

- foreign exchange rate risk and interest rate risk on a standalone basis is not sufficient if the commodity risk is not managed as the volatility of commodities might be significantly higher than of foreign exchange rates and interest rates
- commodity prices can be influenced by several factors:
  - demand and supply
  - market equilibrium
  - forecasts for market demand and supply
  - production factors
  - weather and natural disasters
  - innovation and technological development
  - political factors, wars, etc

volatility of commodities compared to EUR/USD and EUR/HUF during July 2011 – July 2012, Source: Bloomberg

based on the above mentioned commodity hedging might have the following advantages:

- cash flow volatility can be lowered and incomes and costs can be stabilized
- dependency on market prices can be lowered
- planning becomes easier
- management can lay more focus on the core business





## → types of commodity products

The following products can be helpful during managing the risk of hectic prices movements of commodities.

**forward** – for a specific date fixed in advance, the client fixes the price at which a given commodity will be bought or sold. By means of this transaction, the client acquires complete protection against adverse price changes, without being able to profit from advantageous changes. This deal is free of charge. At maturity there is a net settlement.

**swap** – for a specific period fixed in advance, the client fixes the price at which a given commodity will be bought or sold. By means of this transaction, the client acquires complete protection against adverse price changes, without being able to profit from advantageous changes. This deal is free of charge. At maturity there is a net settlement.

option - The buyer of an option acquires a right to buy or sell a given commodity in a period (or at a date) set in advance, at a price fixed in advance. In this sense, an option is a kind of insurance where premium

is charged upfront when the contract is concluded. If you buy an option, you will enjoy full protection against adverse price changes, at the same time benefit from a potential favourable turn in the price trend, as well. At maturity there is a net settlement.

- **European option:** for a specific date, net settlement is against the market price available upon expiry
- **Asian option:** for a specific period in time, net settlement is against the arithmetic mean of market prices of the specific period

**collar** – the combination of two options which is in general free of charge. The collar results a price range around the forward or swap price resulting, at one boundary, in protection against adverse price change, and at the other boundary, in a possibility to profit from favourable price changes to some extent. At maturity there is a net settlement. The collar can be built up with European or Asian options as well.

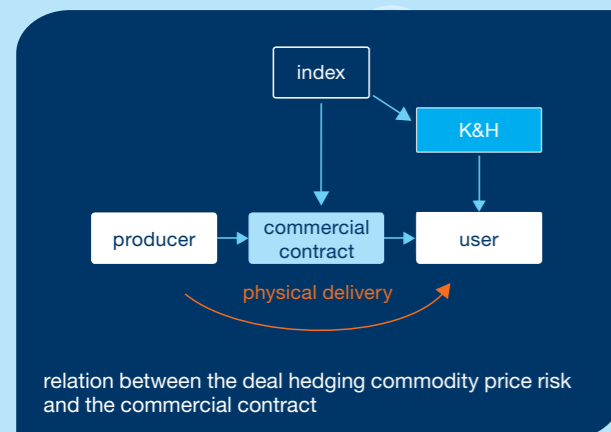
Other exotic option structures are also available for commodities with higher liquidity.

based on the above mentioned we can differentiate between the products as the following:

	fix price arrangement	option structure (insurance feature)
products for a period in time	swap	Asian option and structures based on Asian options (collar)
products for a specific date in time	forward	European option and structures based on European options (collar)

All the transactions make reference to the parameters of the actual underlying commercial contract, but they are managed independently of the corresponding commercial transactions. This means that the transactions are financially settled by net settlement between the parties, against the official settlement prices (typically the average of these), while physical delivery continues unchanged in accordance with the commercial contract concerned.

the following chart illustrates the relationship between the treasury transaction and the underlying commercial contract:



Therefore, we should also note that it is advisable to establish such terms and conditions in the commercial contract that specifies a central reference price/index (in our example, the Diesel 10 PPM FOB Barges Rotterdam index) because this way from your point of view the price exposure will be far more transparent and easier to hedge. If there is no possibility for such a specification the company should still investigate the correlation between the market price and the commodity prices realised by the company as if the correlation is sufficient enough it is possible to hedge against adverse movements.

Same strategy can be applied in case the price of a concerning product strongly correlates with a commodity price but due to its nature it could not be bound to a single index (a reason for that could be that it comprises from more components). In such a case the commercial

price of the product can not be connected to a single index but it is recommended to examine the correlation between the price of the product and the main component indices determining its trend and to make a decision based on the amount of the degree of the correlation.

Financial settlement is typically done in USD or in EUR while less frequently it is also possible to settle in HUF. In accordance with market standards, the official reference prices used in financial settlement are published by the PLATTS agency for mineral oil products, by the London Metal Exchange for metals and the London Bullion Market Association for precious metals and the London Platinum and Palladium Market (LPPM), for base metals the London Metal Exchange (LME) and by the Euronext Liffe for the agricultural products. In case of hedging the gas formula the financial settlement is based on the reference index that is included in the formula. Gas formula hedging is possible based on the type of the formula therefore please contact your Treasury sales dealer about the possibilities. In case of electricity hedging we can conclude deals based on the EEX index in Leipzig.

Transactions can be closed before expiry by means of a counter trade or restructured if the market conditions are appropriate. Closing your position is an alternative worth considering when the transaction has

lost its original meaning and your commodity exposure no longer exists and consequently you no longer need the treasury deal. The conditions of closing are always defined as a function of the current market situation therefore it can cause you to incur even a cost and thus a loss in some cases.

K&H Bank offers solutions for the following commodity groups. available commodities:

**energy sources:** oil and oil distillates: crude oil (Brent, ICE), diesel oil, fuel oil, jet fuel, premium gasoline, gasoil, natural gas, electricity (base load, peak load)

**precious metals:** gold, silver, platinum, palladium

**base metals:** copper, zinc, nickel, lead, tin, aluminium, steel billet

**agricultural products:** milling wheat, maize, rapeseed

Commodity product types, reference indices and minimum amounts for different products are summarized in the following table. It is important to notice that the liquidity of the commodity markets is sometimes not sufficient for concluding a deal. Therefore the following list is only a starting point. Please contact your Treasury sales dealer for information about the specific commodities, products and minimum amount in each case.

commodity list	reference index	forward	swap	European option and option strategies	Asian option and option strategies	minimum quantity for swap	minimum quantity for option		
oil ICE	PLATTS		+	+	+	1000 bbl/month			
oil Brent			+	+	+				
diesel 10 ppm FOB Barges Rotterdam			+		+	100 t/month minimum 6 months	300 t/month minimum 3 months		
diesel 10 ppm CIF Cargo NWE			+		+				
premium gasoline 10 ppm FOB Barges Rotterdam			+		+				
jet FOB Barges Rotterdam			+		+				
jet CIF Cargo NWE			+		+				
fuel oil 1% FOB Barges Rotterdam			+		+				
fuel oil 1% CIF Cargo NWE			+		+				
fuel oil 1% FOB Cargo MED			+		+				
fuel oil 3.5% FOB Barges Rotterdam			+		+				
gasoil 0.1% FOB Barges Rotterdam			+		+				
gasoil 0.1% FOB Cargo Med			+		+				
gas formula			+					50 t	-
electricity	EEX		+					normal time: 1 MW/hour; peaktime: 1 MW/hour, only from Monday until Friday, max. 11 hours/ day	-
gold	LBMA	+	+	+	+			100 tr oz	300 tr oz
silver		+	+	+	+	1000 tr oz	5000 tr oz		
platinum	LPPM	+	+	+	+	100 tr oz	300 tr oz		
palladium		+	+	+	+				
copper	LME	+	+	+	+	25 t	50 t		
aluminum		+	+	+	+	25 t	50 t		
zinc		+	+	+	+	25 t	50 t		
lead		+	+	+	+	25 t	50 t		
tin		+	+	+	+	5 t	15 t		
nickel		+	+	+	+	6 t	18 t		
steel billet				+		100 mt	-		
milling wheat		EURONEXT LIFFE	+	+		+	50 mt/month	100 mt/month	
rapeseed	+		+		+				
maize	+		+		+	-			

## → deal types

### → 1. forward deal for buying / selling commodity

MIFID complexity  
COMM 2

#### product description

You can fix the price of buying/selling a commodity for some time in the future at the present. Whatever the market price of the commodity is upon expiry, your company will buy or sell the commodity at the forward price set as part of the net settlement of this deal. Your company will have a physical delivery with your partner based on the trade agreement while there will be a net settlement with the bank between the market price and the forward price. In other words, your company will acquire a right as well as an obligation for a net settlement and both the potential foreign exchange gains and losses can be unlimited in theory. The balance of gains and losses of the underlying position can be offset by the gains and losses of the treasury transaction if the company had identified its underlying exposure and market status properly. The aim of the treasury transactions is to stabilize the company's earnings not to realise a financial profit on a standalone basis.

**example for buying milling wheat:** the company is buying milling wheat regularly, 50 mt monthly. Its actual physical buying is best hedged by concluding a deal related to EURONEXT LIFFE milling wheat futures. The forward price for 1 month is around 200 EUR/ton at the market. The company has to hedge itself against increasing wheat prices so it buys at this price for 1 month 50 mt wheat. If on the date of expiry the futures closing price is above the forward price of 200 EUR/ton the bank pays the difference between the forward price and the futures closing price based on the contracted amount to the company. If on the date of expiry the futures closing price is below 200 EUR/ton the company pays the difference between the futures closing price and the forward price based on the contracted amount to the bank.

parameters of the forward deal	
notional	50 mt (mt = metric ton, 1 metric ton = 1 000 kg)
direction	buying wheat
tenor	1 month
fixing date	specified date in 1 month
settlement date	2 business days after the fixing date
forward price	200 EUR/mt
basis for net settlement	futures closing price effective on the day of closing
futures	Euronext Liffe Milling Wheat
reference futures at expiry for the calculation of futures closing price	see the reference futures table below
possible outcomes on a given expiry:	
futures closing price is below 200 EUR / mt	the Client completes net payment = 50 mt * (200 EUR/mt – futures closing price)
futures closing price is above 200 EUR / mt	the Client receives net payment = 50 mt * (futures closing price – 200 EUR/mt)
settlement	net settlement in EUR, no physical settlement
precondition for signing contract	K&H Treasury master agreement including a section relating to the hedging of commodities depending on the current K&H Treasury master agreement
transaction cost	zero
best-case scenario (treasury transaction on a standalone basis)	the futures closing price is above 200 EUR/mt. In this case the Client receives net settlement.
worst-case scenario (treasury transaction on a standalone basis)	the futures closing price is below 200 EUR/mt. In this case the Client implements net payment. The loss can be unlimited.

#### evolution of market value of the position and the associated risk

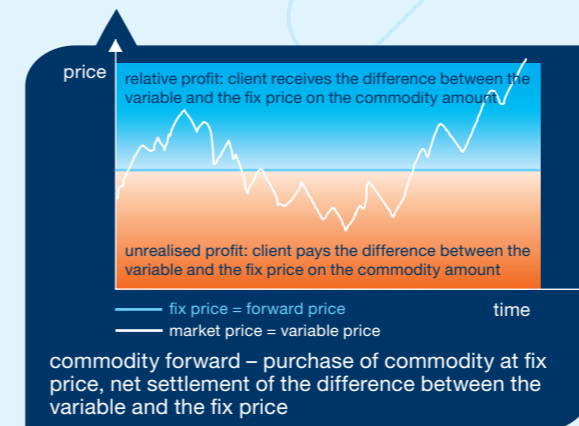
The cash flows of the deal depend on the evolution of wheat price. The market value of the deal changes during the tenor, the payment from a given settlement is only one component of the transaction's market value. The market value of the transaction is determined by the present value of future payments based on current market conditions. While client may benefit from a settlement payment for a given period, the market value of the transaction may be negative at the same time if the discounted value of client's aggregate future payment obligations exceeds the discounted value of the future receivables. As a result, client may have to pay a high compensation if he wants to terminate the transaction early during its lifetime. Moreover, there is

a risk that client may have to enter a significant negative market value into his balance sheet during the lifetime of the transaction. The liquidity or lack of liquidity of the underlying stock market indices may significantly affect the positions value negatively. Market liquidity may have a significant effect on the market value of commodity deals.

#### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

forward price (EUR)	futures closing price on the day of expiry (EUR)	hedged notional (mt)	futures closing price forward price – (EUR)	payment (EUR)	settlement
200	230	50	30	- 1 500	client receives
200	220	50	20	- 1 000	client receives
200	210	50	10	-500	client receives
200	200	50	0	-	no settlement
200	190	50	-10	500	client pays
200	180	50	-20	1 000	client pays
200	170	50	-30	1 500	client pays



the treasury deal itself into consideration, is that floating price will be 0. In this case the difference of the fixed and the variable price to be paid by the client is the highest. The resulting loss can be unlimited.

- if the underlying transaction ceases to exist, the character of this Swap transaction changes. Instead of a hedging transaction it becomes an open position with market risk, and the client may incur unlimited loss.
- market value risk: The evolution of the market value depends on the price change of the underlying product, volatility and the evolution of the settlements. The market value of the transaction is determined by all its discounted future payments under the current market conditions. While client may benefit from a settlement payment for a given period, the market value of the transaction may be negative at the same time if the discounted value of client's aggregate future payment obligations exceeds the discounted value of the future receivables. As a result, client may have to pay a high compensation if he wants to terminate the transaction early during its lifetime. Moreover, there is a risk that client may have to enter a significant negative market value into his balance sheet during the lifetime of the transaction.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### advantages of transaction

- if variable commodity prices are swapped for a fixed price, you enjoy 100% protection against adverse price changes
- predictability: you can plan your commodity expenses or income with a fixed price
- cash flow can be calculated with certainty
- net settlement: only the difference of the fixed and the variable price is settled between the parties
- available for all commodity types
- the expiry date can be set at your will, in accordance with your needed / superfluous commodity quantities, your plans and your budget; the change of one parameter will cause the rest of the parameters to change, too
- no cost or separate fee charged
- if the hedge is no longer needed, the position can be closed with a counter deal. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- you may incur a loss on this deal if commodity prices evolve in an advantageous direction, as in this case your financial outcome would have been more favourable without the treasury transaction. Namely if the average of the Floating prices for given calculation period is under the Fixed price, client will pay a cash settlement to the bank for relevant period, consequently is not able to benefit from the favourable market prices below the Fixed price. The worst case scenario, taking

#### product structure

This product is built up of forward deals. The section on forward deals of Chapter 1.c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 2. swap for buying / selling commodity

MIFID complexity  
COMM 2

### product description

You can fix the price of buying / selling a commodity for a future time period now. Whatever the average market price of the commodity is during the period, your company will buy or sell the commodity at the swap price set as part of the net settlement of this deal. Your company will have a physical delivery with your partner based on the trade agreement while there will be a net settlement with the bank between the average daily market price and the swap price. In other words, your company will acquire a right as well as an obligation for a net settlement and both the potential foreign exchange gains and losses can be unlimited in theory. The balance of gains and losses of the underlying position can be offset by the gains and losses of the treasury transaction if the company had identified its underlying exposure and market status properly. The aim of the treasury transactions is to stabilize the company's earnings not to realise a financial profit on a standalone basis.

**example for buying milling wheat:** our client needs to buy milling wheat for its business on a continuous basis, in a monthly quantity of about 50 metric tonnes. The actual physical purchases are characterised by the fact that hedging is tied to the Euronext LIFFE milling wheat index. The current swap price is around 200 EUR/ton at the market for the following 12. This company must procure protection against rising milling wheat prices so it buys this swap price for the next 12 months (or else for 12 calculation periods), for a quantity of 50 metric tonnes per month. If in the course of monthly settlements, the average of fluctuating daily prices is above the swap price of 200 EUR/ton then the bank pays the client the difference of the current and the fixed price for the given month's quantity of milling wheat. At the same time, if in a month the daily fixings of the fluctuating prices result in an average that is lower than 20 EUR/ton then the company will pay the bank the difference of the swap price and the floating price with respect to the given month's quantity of milling wheat bought.

### parameters of the swap

notional	50 mt/expiry (mt = metric ton, 1 metric ton = 1 000 kg) in total: 600 mt
futures	Euronext Liffe Milling Wheat
tenor	12 months, monthly expiries
calculation periods (expiry date = last day of period)	1-12 months
settlement dates	every month, 2 business days after end of each calculation period
fixed price	200 EUR/mt
fixed price payable by	client
variable price	average of prices fixed during a calculation period, on the basis of reference prices published by Euronext
variable price payable by	bank

### possible outcomes on a given expiry:

the variable price (average of daily prices) is below 200 EUR/mt	the Client completes net payment = 50 mt * (200 EUR/mt - variable price)
the variable price (average of daily prices) is above 200 EUR/mt	the Client receives net payment = 50 mt * (variable price - 200 EUR/mt)
settlement	net settlement in EUR, no physical settlement
precondition for signing contract	K&H Treasury master agreement including a section relating to the hedging of commodities depending on the current K&H Treasury master agreement
option premium	zero
best-case scenario (treasury transaction on a standalone basis)	the variable price (average of fluctuating daily prices) is above 200 EUR/mt. In this case the Client receives net settlement.
worst-case scenario (treasury transaction on a standalone basis)	the variable price (average of fluctuating daily prices) is below 200 EUR/mt. In this case the Client completes net settlement.

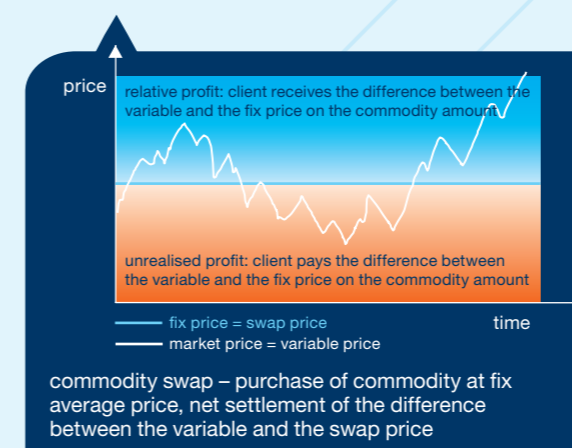
### evolution of market value of the position and the associated risk

The cash flows of the deal depend on the evolution of wheat price. The market value of the deal changes during the tenor, the payment from a given settlement is only one component of the transaction's market value. The market value of the transaction is determined by the present value of future payments based on current market conditions. While client may benefit from a settlement payment for a given period, the market value of the transaction may be negative at the same time if the discounted value of client's aggregate future payment obligations exceeds the discounted value of the future receivables. As a result, client may have to pay a high compensation if he wants to terminate the transaction early during its lifetime. Moreover, there is a risk that client may have to enter a significant negative market value into his balance sheet during the lifetime of the transaction. The liquidity or lack of liquidity of the underlying stock market indices may significantly affect the positions value negatively. Market liquidity may have a significant effect on the market value of commodity deals.

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

swap price (EUR)	average of floating price (EUR)	notional (mt)	floating price - fixed price (EUR)	payment (EUR)	settlement
200	230	50	30	- 1 500	client receives
200	220	50	20	- 1 000	client receives
200	210	50	10	-500	client receives
200	200	50	0	-	no settlement
200	190	50	-10	500	client pays
200	180	50	-20	1 000	client pays
200	170	50	-30	1 500	client pays



### advantages of transaction

- if variable commodity prices are swapped for a fixed price, you enjoy 100% protection against adverse price changes
- predictability: fixed price to plan exactly your commodity expenses or income
- cash flow can be calculated with certainty
- net settlement: only the difference of the fixed and the variable price is settled between the parties
- available for all commodity types
- the expiry date can be set at your will, in accordance with your needed / superfluous commodity quantities, your plans and your budget; the change of one parameter will cause the rest of the parameters to change, too
- no cost or separate fee charged
- if the hedge is no longer needed, the position can be closed with a counter deal. This may result in profit or loss, depending on the prevailing market conditions.

### risks of transaction

- you may incur a loss on this deal if commodity prices evolve in an advantageous direction, as in this case your financial outcome would have been more favourable without the treasury transaction. Namely if the average of the floating prices for given calculation period is under the fixed price, client will pay a cash settlement to the bank for relevant period, consequently is not able to benefit from the favourable market prices below the fixed price. The worst case scenario, taking the treasury deal itself into consideration, is that floating price will be 0. In this case the difference of the fixed

and the variable price to be paid by the client is the highest. The resulting loss can be unlimited.

- if the underlying transaction ceases to exist, the character of this swap transaction changes. Instead of a hedging transaction it becomes an open position with market risk, and the client may incur unlimited loss.
- market value risk: The evolution of the market value depends on the price change of the underlying product, volatility and the evolution of the settlements. The market value of the transaction is determined by all its discounted future payments under the current market conditions. While client may benefit from a settlement payment for a given period, the market value of the transaction may be negative at the same time if the discounted value of client's aggregate future payment obligations exceeds the discounted value of the future receivables. As a result, client may have to pay a high compensation if he wants to terminate the transaction early during its lifetime. Moreover, there is a risk that client may have to enter a significant negative market value into his balance sheet during the lifetime of the transaction.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of a commodity swap. The section of Chapter I/c entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 3. buying a call option

MIFID complexity  
COMM 2

### product description

When you buy a call option, your company will acquire the right to buy commodity on a specific delivery date and at a specific strike rate, both set in advance, provided that on the expiry date the commodity market price is above the strike (the company will receive a net settlement). Similarly to a forward or a swap, this option will give you complete protection at the level of the strike rate against the increasing commodity prices.

If on the expiry date the commodity market price is lower than the strike price, your company will have neither a right nor an obligation and there will not be a net settlement on expiry. This means that, as opposed to a forward or swap agreement, buying a commodity call option gives your company the possibility to derive 100% benefit from a potential price decrease (below the strike rate). In return for this benefit, the option comes at a price paid by the buyer of the option in the form of a premium upon concluding the deal. In contrast to a forward or a swap deal if you buy an option your potential loss is limited to the amount of the option premium.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

You can buy European and Asian options as well. In case of a European option the deal is due at a specific date in time and net settlement will be against the market price prevailing at expiry. In case of an Asian option the deal is for a time period and net settlement is against the arithmetic mean of the market prices during the period.

### example for buying milling wheat (in case of Asian option):

our Client may decide to buy a call option. The company's profit threshold, i.e. the maximum cost what the company is able to handle, is 220 EUR/mt. In other words, if the price of wheat rises above this level in the coming years, it will put serious risk on the company's profitability. In order to avoid this risk, the company buys a call option at a price of 220 EUR/mt, the premium charged for it is 10 EUR per tons for the next 12 months, what the company is willing to pay when the deal is concluded in return for the 100% protection. If the price of wheat is above 220 EUR/mt on the monthly expiries, the Bank pays to the company the difference of the variable and the fixed price for the given monthly quantity of wheat. However, if the average of daily variable prices in a month is below 220 EUR/mt, there is no settlement between the company and the Bank. So the company can benefit from favourable market price movements.

parameters of buying a call option	
notional	50 mt / expiry (mt = metric ton, 1 metric ton = 1 000 kg) in total: 600 mt
futures	Euronext Liffe Milling Wheat
tenor	12 months, monthly expiries
calculation periods (expiry date = last day of period)	1-12 months
settlement dates	every month, 2 business days after end of each calculation period
type of the option	asian type call option
buyer of the option	client
fixed price	220 EUR/mt
fixed price payable by	client
variable price	average of prices fixed during the calculation period, on basis of reference prices published by EURONEXT
variable price payable by	bank
possible outcomes on a given expiry:	
the variable price (average of daily prices) is below 220 EUR/mt	no settlement upon the given expiry
the variable price (average of daily prices) is at or above 220 EUR/mt	client receives net payment = 50 mt* (variable price-200 EUR/mt)
settlement	net settlement in EUR, no physical settlement
precondition for signing contract	K&H Treasury master agreement including a section relating to the hedging of commodities depending on the current K&H Treasury master agreement
option premium (payable by the client on the trade date)	10 EUR/mt, ie. 120 000 EUR
best-case scenario (treasury transaction on a standalone basis)	the variable price (average of daily prices) is above 220 EUR/mt. In this case the Client receives net payment.
worst-case scenario (treasury transaction on a standalone basis)	the variable price (average of daily prices) is below 220 EUR/mt. In this case the Client's loss equals the amount of the option premium.

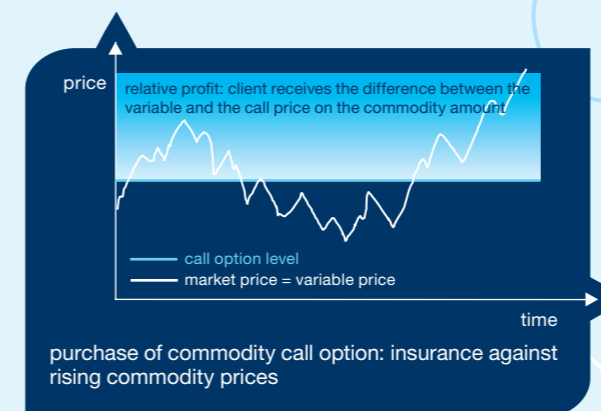
### evolution of market value of the position and the associated risk

The cash flows of the deal depend on the evolution of wheat price. The market value of the deal changes during the tenor, the payment from a given settlement is only one component of the transaction's market value. The market value of the transaction is determined by the present value of future payments based on current market conditions. As a result, client may have to pay cost if he wants to terminate the transaction early during its lifetime if the premium received at closing is lower than the premium paid for the option. The liquidity or lack of liquidity of the underlying stock market indices may significantly affect the positions value negatively. Market liquidity may have a significant effect on the market value of commodity deals.

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

	option price (EUR)	average of variable prices (EUR)	notional (mt)	variable price- fixed price (EUR)	payment (EUR)	settlement
protection level	220	250	50	30	1500	client receives
protection level	220	240	50	20	1000	client receives
protection level	220	230	50	10	500	client receives
protection level	220	220	50	0	0	no settlement
protection level	220	210	50	-10	0	no settlement
protection level	220	200	50	-20	0	no settlement
protection level	220	190	50	-30	0	no settlement



### risks of transaction

- the option premium must be paid on the trade date
- if the strike is the same as the swap price, the profit threshold of the option (taking into account the option premium) is less favourable than the swap price
- the market value of options is determined by the evolution of the underlying product (wheat) price, the volatility, the evolution of the actual settlements and the number of days remaining until the expiry of the transaction. The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position. As a result, if the client wants to terminate the transaction early during its lifetime, the Bank might pay lower premium to the Client than the option premium paid by the client on the trade date.
- chapter I/b entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of one commodity call option. The section of Chapter 1.c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

### advantages of transaction

- full protection against the potential unfavourable evolution of commodity price
- you can fully benefit from favourable commodity price movements
- limited potential loss with the option premium as maximum
- cash flow can be calculated with certainty
- the option premium and strike for a given tenor and notional can be set at your will, in accordance with your expectations, your plans and your budget; the change of one parameter will cause the rest of the parameters to change, too
- if the hedge is no longer needed, the position can be closed with a counter deal. This may result in profit or loss, depending on the prevailing market conditions.

## ➔ 4. buying a put option

MIFID complexity

COMM 2

### product description

When you buy a put option, your company will acquire the right to sell commodity on a specific delivery date and at a specific strike rate, both set in advance, provided that on the expiry date the commodity market price is below the strike (the company will receive a net settlement). Similarly to a forward or a swap, this option will give you complete protection at the level of the strike rate against the decreasing commodity prices.

If on the expiry date the commodity market price is higher than the strike price, your company will have the right to sell at a strike price, which right will not be exercised, since a more favourable deal can be made at the actual market price. There will not be a net settlement on expiry. This means that, as opposed to a forward or swap agreement, buying a commodity put option gives your company the possibility to derive 100% benefit from a potential price increase (above the strike rate). In return for this benefit, the option comes at a price paid by the buyer of the option in the form of a premium upon concluding the deal. In contrast to a forward or a swap deal if you buy an option your potential loss is limited to the amount of the option premium.

Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

You can buy European and Asian options as well. In case of a European option the deal is due at a specific date in time and net settlement will be against the market price prevailing at expiry. In case of an Asian option the deal is for a time period and net settlement is against the arithmetic mean of the market prices during the period.

### example for selling milling wheat (in the case of Asian option):

our Client may decide to buy a put option. The company's profit threshold, i.e. the minimum price what the company is able to handle, is 180 EUR/mt. In other words, if the price of wheat will be lower in the coming years, it will mean a serious risk for the company's profitability. In order to avoid this risk, the company buys a put option at a price of 180 EUR/mt, the premium charged for it is 10 EUR per tons for the next 12 months, what the company is willing to pay when the deal is concluded in return the 100% protection. If the price of wheat is below 180 EUR/mt on the monthly expiries, the Bank pays to the company the difference of the variable and the fixed price for the given monthly quantity of wheat. However, if the average of daily variable prices in a month is above 180 EUR/mt, there is no settlement between the company and the Bank. So the company can benefit from favourable market price movements.

### parameters of buying a put option

notional	50 mt/expiry (mt = metric ton, 1 metric ton = 1 000 kg) in total: 600 mt
futures	Euronext Liffe Milling Wheat
tenor	12 months, monthly expiries
calculation periods (expiry date = last day of period)	1-12 months
settlement dates	every month, 2 business days after end of each calculation period
type of the option	Asian type call option
buyer of the option	client
fixed price	180 EUR/mt
fixed price payable by	bank
variable price	average of prices fixed during a calculation period, on the basis of reference prices published by EURONEXT
variable price payable by	client

### possible outcomes on a given expiry:

the variable price (average of daily prices) is below 180 EUR/mt	client receives net payment = 50 mt* (180 EUR/mt - variable price)
the variable price (average of daily prices) is above 180 EUR/mt	no settlement upon the given expiry
settlement	net settlement in EUR
precondition for signing contract	K&H Treasury master agreement including a section relating to the hedging of commodities depending on the current K&H Treasury master agreement
option premium (payable by the client on the trade date)	10 EUR/mt, ie. 120,000 EUR
best-case scenario (treasury transaction on a standalone basis)	the variable price (average of daily prices) is below 180 EUR/mt. In this case the Client receives net payment.
worst-case scenario (treasury transaction on a standalone basis)	the variable price (average of daily prices) is above 180 EUR/mt. In this case the Client's loss equals the amount of the option premium.

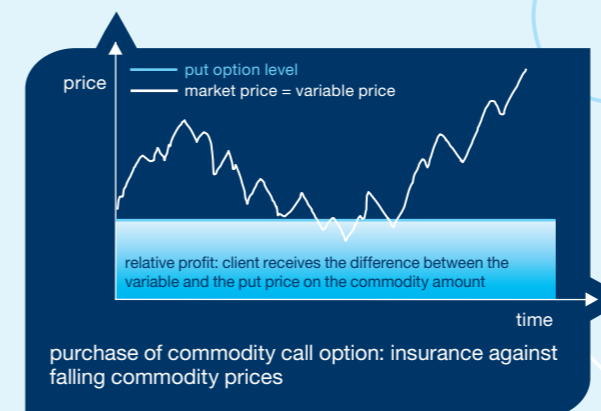
### evolution of market value of the position and the associated risk

The cash flows of the deal depend on the evolution of wheat price. The market value of the deal changes during the tenor, the payment from a given settlement is only one component of the transaction's market value. The market value of the transaction is determined by the present value of future payments based on current market conditions. As a result, client may have to pay cost if he wants to terminate the transaction early during its lifetime if the premium received at closing is lower than the premium paid for the option. The liquidity or lack of liquidity of the underlying stock market indices may significantly affect the positions value negatively. Market liquidity may have a significant effect on the market value of commodity deals.

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

	option price (EUR)	average of variable prices (EUR)	notional (mt)	variable price- fixed price (EUR)	payment (EUR)	settlement
protection level	180	210	50	30	0	no settlement
protection level	180	200	50	20	0	no settlement
protection level	180	190	50	10	0	no settlement
protection level	180	180	50	0	0	no settlement
protection level	180	170	50	-10	500	client receives
protection level	180	160	50	-20	1000	client receives
protection level	180	150	50	-30	1500	client receives



### risks of transaction

- the option premium must be paid on the trade date
- if the strike is the same as the swap, the profit threshold of the option (taking into account the option premium) is less favourable than the swap
- the market value of options is determined by the evolution of the underlying product (wheat) price, the volatility, the evolution of the actual settlements and the number of days remaining until the expiry of the transaction. The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position. As a result, if the client wants to terminate the transaction early during its lifetime, the Bank might pay lower premium to the Client than the option premium paid by the client on the trade date.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

### product structure

This product is built up of one commodity put option. The section of Chapter 1/c entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

### advantages of transaction

- full protection against the potential unfavourable evolution of commodity price
- you can benefit from favourable commodity price movements
- limited potential loss with the option premium as maximum
- cash flow can be calculated with certainty
- the option premium and strike for a given tenor and notional can be set at your will, in accordance with your expectations, your plans and your budget; the change of one parameter will cause the rest of the parameters to change, too
- if the hedge is no longer needed, the position can be closed with a counter deal. This may result in profit or loss, depending on the prevailing market conditions.

## → 5. commodity collar

MIFID complexity  
COMM 2

### product description

A collar deal provides more flexibility than a standard forward or a swap deal. Using this product, you can fix the future buying or selling price of a commodity in a range around the forward. In contrast to a forward deal, the prices of the right and the obligation are different. Your company has a limited potential gain from the favourable market movements; in return, your company is protected against unfavourable market movements at a price unfavourable than the forward. Costs and revenues of the underlying exposure can compensate both the potential gains and losses of the deal, as long as the company assesses its underlying exposure and market situation properly. The deals are made in order to stabilize the results, not to realise standalone financial gain.

Consequently, your company – in the case of a commodity collar for buying

- has a right to incur net settlement at a price less favourable, if the price upon the expiry is above the top of the range
- has an obligation to incur net settlement at a price more favourable than the forward price, provided that the price upon the expiry is below the bottom of the range

Consequently, your company – in the case of a commodity collar for selling

- has a right to incur net settlement at a price less favourable, if the price upon the expiry is below the bottom of the range
- has an obligation to incur net settlement at a price more favourable than the forward price, provided that the price upon the expiry is above the top of the range

The deal can be built up of both European and Asian type options. In the case of European type option, the deal is concluded for a given expiry, the net settlement occurs against the spot rate upon the expiry. However, in the case of Asian type option the deal is concluded for the given tenor, the net settlement occurs against the average of daily prices over the tenor.

### example for buying milling wheat (in the case of Asian collar):

our Client may decide to buy a collar with a 1 month tenor and zero deal premium. The collar defines a range around the swap price where at the top of the range the company has a protection level, i.e. has a right to buy, and at the bottom of the range has an obligation to buy. Our Client is not willing to pay more than 220 EUR/mt, so it enters into a collar deal with protection level 220 EUR/mt. In order to be this deal free of charge, our Client has to have an obligation to buy at 180 EUR/mt. In this case, the company has 100% protection against unfavourable price movements (i.e. increase over 220 EUR/mt), but in the same time it can partly benefit from the favourable market price movements (to 180 EUR/mt). On the monthly settlements, we compare the average of daily variable prices to the range. There are 3 possible scenarios:

- if the variable price is above the top of the range, then the Bank pays the difference between the variable and the fixed price (top of the range) for the given monthly wheat quantity
- if the variable price is in the range, then there is no settlement
- if the variable price is below the bottom of the range, then the Client pays the difference between the variable and the fixed price (top of the range) for the given monthly wheat quantity

parameters of collar	
notional	50 mt/expiry (mt = metric ton, 1 metric ton = 1 000 kg) in total: 600 mt
futures	Euronext Liffe Milling Wheat
tenor	1 month
calculation periods (expiry date = last day of period)	1 month
settlement dates	every month, 2 business days after end of each calculation period
fixed price - top of the range	220 EUR/mt
fixed price - bottom of the range	180 EUR/mt
fixed price payable by	client
variable price	average of prices fixed during a calculation period, on the basis of reference prices published by EURONEXT
variable price payable by	bank
possible outcomes on a given expiry:	
the variable price (average of daily prices) is above 220 EUR/mt	the Client receives net payment: 50mt * (variable price-220EUR/mt)
the variable price (average of daily prices) is between 180 and 220 EUR/mt	no settlement
the variable price (average of daily prices) is below 180 EUR/mt	the Client completes net payment: 50mt * (180 – variable price)
settlement	net settlement in EUR
precondition for signing contract	K&H Treasury master agreement including a section relating to the hedging of commodities depending on the current K&H Treasury master agreement
option premium	zero
best-case scenario (treasury transaction on a standalone basis)	the variable price (average of daily prices) is above 220 EUR/mt. In this case the Client receives net settlement.
worst-case scenario (treasury transaction on a standalone basis)	the variable price (average of daily prices) is below 180 EUR/mt. In this case the Client pays net settlement. The loss can be unlimited.

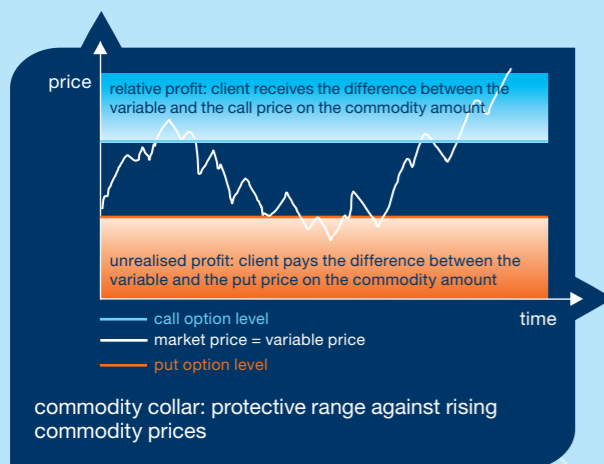
### evolution of market value of the position and the associated risk

The cash flows of the deal depend on the evolution of wheat price. The market value of the deal changes during the tenor, the payment from a given settlement is only one component of the transaction's market value. The market value of the transaction is determined by the present value of future payments based on current market conditions. While client may benefit from a settlement payment for a given period, the market value of the transaction may be negative at the same time if the discounted value of client's aggregate future payment obligations exceeds the discounted value of the future receivables. As a result, client may have to pay a high compensation if he wants to terminate the transaction early during its lifetime. Moreover, there is a risk that client may have to enter a significant negative market value into his balance sheet during the lifetime of the transaction. The liquidity or lack of liquidity of the underlying stock market indices may significantly affect the positions value negatively. Market liquidity may have a significant effect on the market value of commodity deals.

### financial outcome of some possible scenarios on the expiry date

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

	option price (EUR)	average of variable prices (EUR)	notional (mt)	variable price - fixed price (EUR)	payment (EUR)	settlement
obligation level	180	160	50	-20	-1 000	client pays
obligation level	180	170	50	-10	-500	client pays
obligation level	180	180	50	0	-	no settlement
		190	50	-	-	no settlement
		200	50	-	-	no settlement
		210	50	-	-	no settlement
protection level	220	220	50	0	-	no settlement
protection level	220	230	50	10	500	client receives
protection level	220	240	50	20	1 000	client receives



#### advantages of transaction

- you can benefit partly from favourable commodity movements
- the maximum and minimum prices applicable to the future transaction for selling and buying commodities are fixed in advance (the worst case scenario is known), therefore the minimum and the maximum equivalent of the commodity price can be set in advance
- partial protection against the potential unfavourable evolution of commodity price
- no cost or separate fee charged
- the top and the bottom of the range for a given tenor and notional can be set at your will, in accordance with your expectations, your plans and your budget; the change of one parameter will cause the rest of the parameters to change, too
- if the hedge is no longer needed, the position can be closed with a counter deal. This may result in profit or loss, depending on the prevailing market conditions.

#### risks of transaction

- as a result of the range, the company may incur a loss if the price of the commodity changes favourably, because in this case the company could have reached better position without the Treasury deal. Namely if the variable price is below/above (depending of the deal's direction) the obligation level on a given settlement day, the Client pays to the bank the difference, i.e. the company can not gain from the more favourable price levels.
- the market value of collar is determined by the evolution of the underlying product (wheat) price, the volatility, the evolution of the actual settlements. The market value of the option deal is determined by the option price on the market. As a result, if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- the collar deal changes with the termination of underlying exposure. The original hedge becomes an open position with unlimited potential of loss
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (e.g. money market and other crises) the negative market value of the position from the Client's viewpoint could reach such extreme levels that providing sufficient collateral may cause the company to become insolvent. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

#### product structure

This product is built up of one commodity call and one commodity put option. The section of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ prerequisites for dealing, required documents

### ➔ before concluding a deal

Prerequisites for dealing, required documents:

- Treasury master agreement
- MiFID questionnaire (for complexity)
- live treasury limit (for deal requiring a treasury limit)

The table in the Chapter's introduction provides you with information on the minimum amount and tenor to conclude the deals.

Other fees: (account maintenance fee, transfer fee): Fees can be found in the prevailing announcement and general terms and conditions.

On commodity prices you can consult the official Reuters page (<http://uk.reuters.com/business/commodities>).

Taxation: The Banks does not deduct any taxes from clients who do not fall under the personal income tax, it is the client's responsibility to comply with tax regulations.

The K&H Treasury Handbook of Market Risk Management and explanations for the products can be found on the K&H Bank webpage ([www.kh.hu](http://www.kh.hu)) on the corporate – K&H treasury services page.

Dear Client,

**We kindly request you to read the following information carefully prior to concluding any transaction!**

**The product outlined in the product description may differ from your / your company's MiFID profile, meaning that the product may be of higher complexity than the complexity level stipulated by your / your company in the MiFID documentation. In this case the Bank shall conclude the transaction solely at your / your company's initiative and shall manage the transactions falling outside the MiFID profile in accordance with its prevailing internal regulation.**

**Prior to concluding the deal, please, make sure that you fully understand the product, the operation thereof and potential development of the transaction's future market value. As a result of the future change in the transaction's market value you may incur a temporary or permanent obligation to provide additional collateral, which may impact your Company's liquidity and solvency.**

**If you believe that the information provided herein is not comprehensive, or you have questions or doubts in connection with the product, please notify the Bank's competent employee prior to concluding the deal, so that you receive the information you deem necessary.**

**If you believe that the information you received is not comprehensive, please do not conclude any deal for that specific product, even if otherwise the product fits into your / your company's MiFID profile.**

**If you do conclude a deal for the product outlined in the product description, it shall be construed that you deemed the information received from the Bank comprehensive, irrespective of the fact whether the product is in line with your / your company's (the Client) MiFID profile available for us at the time of concluding the deal.**

**Please, note that the parameters and prices stated in the product description are of indicative nature and serve only referential purposes. The parameters of the actually concluded deals will correspond to the terms agreed during the telephone conversation recorded upon deal conclusion and those may depart from the indicative parameters and prices stated in this product description.**

### ➔ after concluding a deal

According to the Treasury master agreement deals can be concluded only on recorded phone.

After concluding the deal the client receives confirmation on the deal's parameters on fax and on its existing, open positions, live transactions a summarized report at the beginning of every month, which shows the actual market value of the existing positions based on market levels prevailing on the last workday of the previous month.

In the confirmation faxes and in the reports of existing positions the values are stated according to the bank's viewpoint, i.e. if the position's direction is "buy", it is a "selling" position for the client.

VI

**derivative and hedge  
accounting –  
a brief guide  
to posting treasury deals**

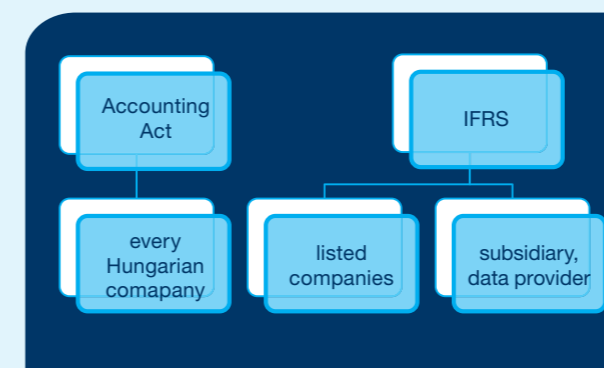




**Disclaimer: The solutions presented in this manual are designed to help understand regulations, but should not be deemed as advice or a professional opinion, and cannot substitute expert consulting. The responsibility for decisions will remain with the persons who make them, and cannot be passed on to the author or publisher of this manual.**

Our clients often contact us with questions as to how a particular treasury deal will appear on financial statements, and how such deals should be recognized and posted when they are made, settled and at yearend. The purpose of this chapter is to help the reader understand these issues and provide some guidelines with questions arising from an accounting perspective. It is important to note, however, that the examples, exercises and cases presented here are only designed to help understand regulations, but should by no means be deemed as advice or a professional opinion, and cannot substitute expert consulting. Consulting a professional is also useful because of the frequent changes in accounting regulations, as the regulations described in this chapter may have been amended in the meantime. The responsibility for decisions will remain with the persons who make them and cannot be passed on to K&H Bank, so please consult your accountant and/or auditor in any specific case!

On these pages we present how certain frequently used financial instruments should be stated and recognized in the accounting records of businesses. The first matter to decide is **what accounting regulation (system)** the business uses. Businesses registered in Hungary are covered by Act C of 2000, thus they compile their financial statements pursuant to the provisions of the **Accounting Act** (Szt.). Public companies limited by shares that are listed on the stock exchange are also obliged to prepare their (consolidated) financial statements pursuant to the **International Financial Reporting Standards** (IFRS), as adopted by the EU. Obviously not only the handful of listed public limited companies are affected by the IFRS but also the businesses whose parent company, for example, must use the IFRS, as these entities require data from their affiliated undertakings, as a result of which these subsidiaries will also have to employ these regulations. In this document we review both sets of regulations (Szt. and IFRS).

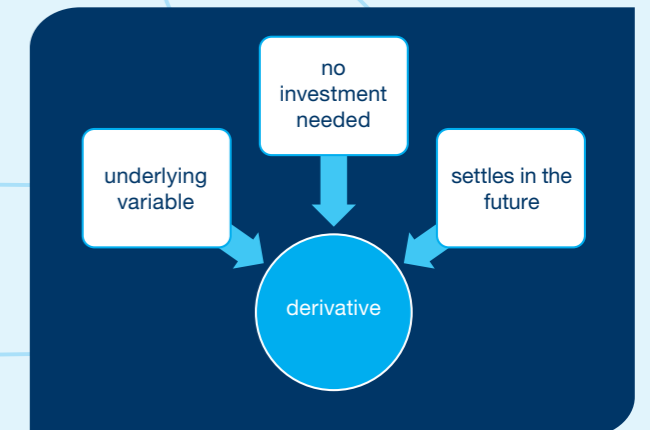


**What is considered a derivative?**

The first question is what should be considered a derivative. In this respect the Szt. and the IFRS follow the same logic. Derivatives are contracts with the following characteristics:

1. their value depends on another asset/liability (a variable) (e.g. exchange rate, interest rate, etc.).
2. they do not require a significant initial investment.
3. they are settled at a later date.

One of the simplest derivatives is the purchase / sale of foreign



currency agreed in advance for a future date (i.e., a currency forward or FX forward). When we enter into the contract, usually there is no transaction fee to consider. It is also clear that the settlement (closeout) of this contract will take place at a future date (i.e., at maturity). Plus, what is perhaps the most important: the value or outcome of the contract is a function of an underlying variable (the exchange rate). Thus an FX forward is a derivative.

**valuation at fair value**

The treatment of derivatives depends on whether the business has opted for applying the rules of valuation at fair value. **Under the IFRS<sup>1</sup>** there is no choice: valuation at fair value is mandatory. **Under Hungarian regulations<sup>2</sup>**, however, there is a **choice: businesses can decide whether to apply the rules of measuring certain assets/liabilities at fair value or not.** This decision will have a key impact on the accounting treatment of the matter.

**Note that a treasury deal made for hedging purposes – the primary purpose of which is to manage or mitigate the exchange rate, interest rate or commodity risk arising from the company's underlying exposure and not just to make a profit – can be deemed a hedging derivative as well as a non-hedging derivative from an accounting perspective! That is why it should be understood and kept in mind that the key terms (hedging deal, non-hedging deal, speculative deal) can have different meanings in actual dealmaking and in accounting!**

<sup>1</sup> see IAS 32. and IAS 39.

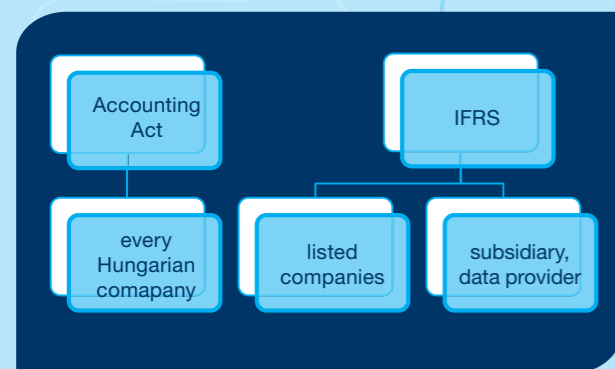
<sup>2</sup> see Szt. sections 59./A – 59./F

# ➔ 1. accounting treatment of non-hedging derivatives

A contract that is regarded as a non-hedging derivative in accounting terms may be a hedging deal from an economic perspective whose primary purpose is to manage or mitigate the exchange rate, interest rate or commodity risk arising from the company's underlying exposure and not just to make a profit!

If due to the documentation requirements a company decides not to apply hedge accounting, then in accounting terms its treasury deals will qualify as non-hedging (speculative) deals; nevertheless, the actual purpose of the deals may be hedging – that is, managing or reducing the risk arising from the company's core activity and not mere profit making. **Whether a treasury deal is deemed a hedge is determined by its economic rationale (whether it is in line with the nature, direction and extent of the exposure arising from the company's core activity, provided that the company has assessed its core activity accurately).**

The accounting treatment of derivatives depends on the applied regulation (Szt. vs. IFRS) whose provisions are applicable, and if Hungarian regulations must be used, on whether the business has opted for valuation at fair value. Therefore we must choose from three possible 'environments' or cases:



**First we discuss general, non-hedging deals (i.e., those deemed as such in accounting terms), as today most companies do not opt for fair valuation due to the significant documentation requirements of hedge accounting!**

**case 1<sup>3</sup>**  
If a business applies Hungarian accounting regulations and **does not opt for valuation at fair value**, it may only recognize the loss sustained on the derivative position (in fact, it must do so!); the profit on the position, if any, cannot be recognized. Also, the business

<sup>3</sup> this is the most common situation

must make provisions "to the required extent"<sup>4</sup> for the possible loss on a negative position, or, if it is the forward leg of a delivery forward or swap deal, it must state the amount in question under accrued expenses. Any increase in value may only be recognized if it offsets an earlier loss. In such a situation the previous provisions/accrued expenses must be reduced or derecognized ("up to" zero).

The vast majority of small businesses and larger companies without IFRS reporting obligation in Hungary follow Hungarian accounting regulations and do not use fair valuation, so the paragraph above applies to most of our clients!

**case 2**  
If the IFRSs are followed, the accounting treatment is fairly simple: it is identical to Case 2. **The value of derivatives must be adjusted to their fair value at the end of every year.** If a position turns into profit, the balance sheet will show an asset, while in the event of a loss it will show a liability. The resulting fair value difference must be recognized against earnings (probably under the financial heading)<sup>5</sup>.

**case 3**  
If the IFRSs are followed, the accounting treatment is fairly simple: it is identical to Case 2. The value of derivatives must be adjusted to their fair value at the end of every year. If a position turns into profit, the balance sheet will show an asset, while in the event of a loss it will show a liability. The resulting fair value difference must be recognized against earnings (probably under the financial heading).

### Exercises (derivatives deemed NON-hedging deals in accounting terms)

The following exercises present deals made for NON-hedging purposes (from an accounting perspective). (Nevertheless, for the reasons above, the economic rationale of the deal may be hedging.) The accounting treatment is fairly similar, almost irrespective of the underlying instrument.

In all accounting exercises the calculations are in Hungarian forints (HUF)! The exercises are for illustrative purposes only; they are designed to help the basics of accounting techniques and are not based on actual prices or market levels!

<sup>4</sup> szt. Section 41.§ (1)  
<sup>5</sup> apart from a few marginal exceptions.

## ➔ A) FX forward with a profit

A business entered into a forward deal on December 1st 20X1<sup>6</sup> to buy 1 000 EUR, to be settled on January 31st 20X2. The agreed forward rate is 300 EUR/HUF. The spot rate on the deal date is 298 EUR/HUF. The following spot and forward rates are known:

date	spot rate (EUR/HUF)	forward rate for January 31st 20X2 (EUR/HUF)
20X1. 12. 01.	298	300
20X1. 12. 31.	305	307
20X2. 01. 31.	310	-

The deal is regarded as a delivery forward (conversion will actually take place and be settled).

### case 1 (Hungarian standards, NO fair value measurement is used)

20X1.12.01. (when the deal is made)  
No entries required.

20X1.12.31. (at yearend):  
The deal is showing a profit, because if the same deal were to be entered on December 31st, the forward rate for January 31st 20X2 would be 307 EUR/HUF. The profit made, that is, the fair value of the deal is 1 000 \* (307-300) = 7 000 HUF. However, in this case the profit cannot be recognized. The fair value of the deal may be presented in the notes to the financial statements.

20X2.01.31. (when the deal is closed):  
The deal is settled, as follows:

Debit (DR) 3. Bank deposits (EUR)	310 000
Credit (CR) 3. Bank deposits (HUF)	300 000
Credit (CR) 9. Income from other financial services	10 000

### case 2 (Hungarian standards, WITH fair value adjustment)

20X1.12.01. (when the deal is made)  
No entries required.

20X1.12.31. (at yearend):  
The deal is showing profit, because if the same deal were to be entered on December 31st, the forward rate for January 31st 20X2 would be 307 EUR/HUF. The profit made, that is, the fair value of the deal is 1,000 \* (307-300) = 7,000 HUF. In this case the profit MUST be recognized, as the company has opted for valuation at fair value. The postings are as follows:

DR 3. Positive fair value difference of derivatives	7 000
CR 9. Income from other financial services	7 000

Thus at yearend there is a 7 000 HUF asset recognized in (?) the balance

<sup>6</sup> 20X1 refers to the current (reporting) year, while 20X2 refers to the following year

sheet, and a profit of the same amount in the income statement.

20X2.01.31. (when the deal is closed):  
The deal is settled, as follows:

DR 3. Bank deposits (EUR)	310 000
CR 3. Bank deposits (HUF)	300 000
CR 3. Positive fair value difference of derivatives	7 000
CR 9. Income from other financial services	3 000

Note that in this situation:  
● the fair value difference recognized earlier must be removed from the books;  
● the earnings are divided between two periods.

### case 3 (IFRS)

Fair valuation is mandatory under the IFRS. The solution to the exercise is identical to the one discussed for Case 2, with the proviso that there are (may be) differences in terminology due to the different names. The differences are not in content. A possible solution is presented below:<sup>7</sup>

20X1.12.01. (when the deal is made)  
No entries.

20X1.12.31. (at yearend):

DR Derivative assets	7 000
CR Financial income	7 000

20X2.01.31. (when the deal is closed):  
The deal is settled, as follows:

DR Bank deposits (EUR)	310 000
CR Bank deposits (HUF)	300 000
CR Derivative assets	7 000
CR Financial income	3 000

## ➔ B) FX forward with a loss

A business entered into a forward deal on December 1st 20X1<sup>8</sup> to buy 1 000 EUR, to be settled on January 31st 20X2. The agreed forward rate is 300 EUR/HUF. The spot rate on the deal date is 298 EUR/HUF. The following spot and forward rates are known:

date	spot rate (EUR/HUF)	forward rate for January 31st 20X2 (EUR/HUF)
20X1. 12. 01.	298	300
20X1. 12. 31.	295	297
20X2. 01. 31.	290	-

When the balance sheet is prepared (say, on January 15th 20X2), the forward rate for January 31st 20X2 is 294 EUR/HUF. The deal is regarded as a delivery forward (conversion will actually take place and be settled).

<sup>7</sup> in the following this case will only be mentioned, but not discussed in detail  
<sup>8</sup> 20X1 refers to the current (reporting) year, while 20X2 refers to the following year

### case 1 (Hungarian standards, NO fair value adjustment)

220X1.12.01. (when the deal is made)  
No entries required.

20X1.12.31. (at yearend):

The deal is showing a loss at yearend. Under Hungarian regulations, provisions must be made for this loss “to the required extent”. The current regulations do not specify the “required extent”, but in standard practice the best estimate of this amount can be derived from the data known at the time the balance sheet is prepared. The fair value of the position and thus the expected loss is  $(294-300) * 1\,000 = 6\,000$  HUF.

DR 8. Other expenses	6,000
CR 4. Provisions <sup>9</sup> for anticipated liabilities	6 000

20X2.01.31. (when the deal is closed):

The deal is settled, as follows:

DR 3. Bank deposits (EUR)	290 000
DR 8. Other financial expenses	10 000
CR 3. Bank deposits (HUF)	300 000

Related entry (by the end of the period at the latest):

DR 4. Provisions for anticipated liabilities	6 000
CR 9. Other income	6 000

### case 2 (Hungarian standards, USING fair value measurement)

20X1.12.01. (when the deal is made):  
No entries required.

20X1.12.31. (at yearend):

According to the rules of fair valuation, the loss on the deal must now be recognized on the value at the balance sheet date.

DR 8. Other financial expenses	6 000
CR 4. Negative fair value difference of derivatives	6 000

In this situation the fair value difference has the characteristics of a liability.

20X2.01.31. (when the deal is closed):

The deal is settled, as follows:

DR 3. Bank deposits (EUR)	290 000
CR 3. Bank deposits (HUF)	300 000
DR 4. Negative fair value difference of derivatives	6 000
DR 8. Other financial expenses	4 000

<sup>9</sup> In the case of a non-delivery forward, an accrued expense will be posted to the balance sheet (this is a delivery forward). This seems as a mere classification issue. [Szt. Section 44. § (5)].

### case 3 (IFRS)

20X1.12.01. (when the deal is made):  
No entries required.

20X1.12.31. (at yearend):

DR Financial expenses	6 000
CR Derivative liabilities	6 000

20X2.01.31. (when the deal is closed):

The deal is settled, as follows:

DR Bank deposits (EUR)	290 000
CR Bank deposits (HUF)	300 000
DR Derivative liabilities	6 000
DR Financial expenses	4 000

## ➔ C) forward sale of goods (commodities)

The business sells 1 000 tons of milling wheat for 71 000 HUF/ton, to be delivered on March 31st 20X2. From an accounting perspective the transaction is deemed a non-hedging deal (even though in reality – i.e., in economic terms – it may still serve hedging purposes). At maturity, net settlement is effected; in other words, the Bank does not make actual, gross delivery. At the end of the year the forward quote for milling wheat for March 31<sup>st</sup> 20X2 is 72 000 HUF/ton (this is also the price known at the time the balance sheet is prepared). The actual spot price at the time of closing is 71 500 HUF/ton.

(At present, the only actual deals available for grain commodities are those linked to the EURONEXT index, which are settled in EUR. There is a possibility, however, to enter into deals for grain commodities with HUF settlement: in this case we make a deal for a EUR-denominated grain index traded on the EURONEXT, combined with a EUR/HUF forward. The accounting treatment of the currency (FX) leg of the deal is not presented in this exercise; here we assume an unchanged EUR/HUF rate.

### case 1 (Hungarian standards, NO fair value measurement)

When the deal is made

No entries required.

20X1.12.31. (at yearend):

The deal seems to end in a loss. As a result, the expected loss must be recognized:

DR 8. Other financial expenses	1 000
CR 4. Accrued expenses	1 000

20X2.03.31. (when the deal is closed):

The deal did end in a loss eventually, but the loss is smaller than it had seemed at yearend. The required postings are as follows:

Closing the deal(s):	
DR 3/4. Settlement of forward deals (forward leg)	71 000
DR 4. Accrued expenses	1 000
CR 3/4. Settlement of forward deals (spot leg)	71 500
CR 9. Income from other financial services	500

Financial settlement:

DR 3/4. Settlement of forward deals	500
CR 3. Cash and equivalents	500

### case 2 (Hungarian standards, WITH fair value measurement)

20X1.12.01. (when the deal is made):

No entries required.

20X1.12.31. (at yearend):

According to the rules of fair valuation, the loss on the deal must now be recognized in the balance sheet.

DR 8. Other financial expenses	1 000
CR 4. Negative fair value difference of derivatives	1 000

20X2.01.31. (when the deal is closed):

The positions are closed out as follows:

DR 3/4. Settlement of forward deals (forward leg)	71 000
DR 4. Negative fair value difference of derivatives	1 000
CR 3/4. Settlement of forward deals (spot leg)	71 500
CR 9. Income from other financial services	500

Financial settlement:

DR 3/4. Settlement of forward deals	500
CR 3. Cash and equivalents	500

### Case 3 (IFRS)

Case 3 is treated identically to Case 2, with the terminology differences mentioned above.

## ➔ D) interest rate swap – a complex, multiyear deal, a non-hedging deal in accounting terms

A business enters into a 2-year deal (with no upfront fee) on July 1st 20X0 whereby the 12-month BUBOR interest payable annually on an amount of 100 000K HUF is swapped for 5% fixed interest, also payable annually. At maturity the deal is closed with net settlement. For the sake of simplicity we assume that for discounting the reference rate is 10%. Suppose that (from an accounting perspective) the deal was not made for interest rate hedging purposes. In accounting terms the deal is regarded as a non-hedging deal (which does not mean that it cannot be an actual hedge).

Our payment obligation under the deal is fixed:  $100\,000 * 5\% = 5,000$  K HUF annually, or 10 000K HUF in total (this is what we give in the swap). In contrast, the variable leg of the swap is uncertain, as it depends on the BUBOR rate (this is what we get in the swap).

The **initial market value of the swap** is zero, as we entered into the deal for no consideration, thus we can assume that both parties can calculate with the same payments at the starting date.

Suppose that on **December 31<sup>st</sup> 20X0** the BUBOR rates are as follows <sup>10</sup>:

The fair value of the swap is thus -43.29K HUF at the valuation date. The information available at the time the balance sheet is prepared shows a similar value.

payment date	estimated BUBOR rate	fixed rate	variable interest (received, HUF)	fixed interest (paid, HUF)	difference (HUF)	Discount factor	swap value (HUF) (if negative, it means a loss for the company)
20X1. 06. 30.	4.5 %	5 %	4 500	5 000	-500	1 / 1.05	-476.19
20X2. 06. 30.	5.5 %	5 %	5 500	5 000	+500	1 / (1.1 × 1.05)	432.90
							<b>total: -43,29</b>

Suppose that on **December 31<sup>st</sup> 20X1** the BUBOR rates are as follows:

The fair value of the swap is thus -309.52K HUF, the change in fair value is  $309.52 - 43.29 = 266.23$  K HUF. (The value at the time the balance sheet is prepared is the same.)

payment date	estimated BUBOR rate	fixed rate	variable interest (received, HUF)	fixed interest (paid, HUF)	difference (HUF)	Discount factor	swap value (HUF) (if negative, it means a loss for the company)
20X1. 06. 30.	4.5 %	5 %	4 500	5 000	-500	1	-500
20X2. 06. 30.	5.2 %	5 %	5 200	5 000	+200	1 / 1.05	+190.48
							<b>total: -309.52</b>

Suppose that the difference is actually paid on June 30th 20X2 (also suppose that the interest rate has remained unchanged). This means that we actually pay the (nominal) differences in interest determined earlier, and thus incur a payment obligation of  $(-500) + 200 = -300$  K HUF.

<sup>10</sup> The BUBOR rates do not reflect current data. For discounting we have used the straight-line method within a year.

### case 1 (Hungarian standards, NO fair value measurement)

The initial value of the swap is zero – assuming that it is entered into at fair value. As the interest rate swap seems to result in a loss at the end of both periods, if there is no fair measurement, these losses must be accrued (if there was a profit, it would not be stated in the books, only mentioned in the notes to the financial statements).

20X0.12.31. (yearend)	
Yearend loss (20X0)	
DR 8. Other financial expenses	43.29
CR 4. Accrued expenses	43.29

20X1.12.31. (yearend)	
Yearend loss (20X1)	
DR 8. Other financial expenses	266.23
CR 4. Accrued expenses	266.23

On December 31<sup>st</sup> 20X1 the balance of accrued expenses is 309.52K HUF.

On June 30<sup>th</sup> 20X2 settlement is effected, as follows:

Payment of the difference:	
DR 8. Interest paid (payable)	300
CR 3. Cash and equivalents	300

Reversing accruals	
DR 4. Accrued expenses	309.52
CR 8. Other financial expenses	309.52

### case 2 (Hungarian standards, WITH fair value measurement)

Yearend valuation (20X0)	
DR 8. Interest payable	43.29
CR 4. Negative fair value difference of derivatives	43.29

20X1.12.31. (yearend)	
Yearend loss (20X1)	
DR 8. Interest payable	266.23
CR 4. Negative fair value difference of derivatives	266.23

On June 30<sup>th</sup> 20X2 settlement is effected, as follows:

Payment of the difference:	
DR 4. Negative fair value difference of derivatives	309.52
CR 3. Cash and equivalents	300
CR 8. Interest payable	9.52

### case 3 (IFRS)

Case 3 is treated identically to Case 2, with the terminology differences mentioned above.

## ➔ E) currency (FX) call / put position

A client has taken an FX call position for non-hedging purposes (from an accounting perspective) on the EUR/HUF currency pair – i.e., purchased the right to buy EUR at a later date. The position is opened at fair value, the option premium paid is 5K HUF. At yearend the fair value of the position is a 15K HUF profit, while at the time of closing it is a 20K HUF profit, the latter of which is settled.

### case 1 (Hungarian standards, NO fair value measurement)

The option premium paid may be recognized (charged) immediately against earnings, but may also be accrued to the period (and expensed then) when the instrument will actually be settled. Standard practice is charging the premium against earnings. If there is no such explicit premium, this step makes no sense, so it is skipped.

When the position is opened: Option premium paid	
DR 5. Other services	5
CR 3. Bank deposits	5

At yearend:

As the option is showing a profit, there is no fair valuation (and no hedging purpose), the favourable position cannot be taken.

When the deal is closed:	
DR 3. Bank deposits	20
CR 9. Income from other financial services	20

### case 2 (Hungarian standards, WITH fair value measurement)

In the event of fair valuation it is reasonable to state the option premium under assets, and not charge it immediately against earnings (provided that there is such an explicit premium).

When the position is opened: Option premium paid	
DR 3. Positive fair value difference of derivatives	5
CR 3. Bank deposits	5

At yearend – because fair valuation is applied – the change in value must be recognized, but the premium stated under assets must also be taken into consideration.

At yearend:	
DR 3. Positive fair value difference of derivatives	10
CR 9. Income from other financial services	10

When the deal is closed:	
DR 3. Bank deposits	20
CR 3. Positive fair value difference of derivatives	15
CR 9. Income from other financial services	5

### case 3 (IFRS)

Case 3 is treated identically to Case 2, with the terminology differences mentioned above.

## ➔ 2. hedging deals, hedge accounting

If a company applies hedge accounting it is obvious from the accounting point of view that it uses derivatives for hedging, i.e. to **eliminate or mitigate** risk. In such cases the above accounting method needs to be changed since the objective is not a profit – on the contrary: it is the prevention of both profits and losses. The hedged risk may be a fair value risk or a cash-flow risk<sup>11</sup>. Hedge accounting is subject to some documentation requirements (see Szt. and IFRS), which are beyond the scope of this document.

If a company using IFRS decides not to apply hedge accounting because of the above mentioned documentation requirements its treasury deals will qualify as non-hedging (or speculative) deals (see the earlier sections) irrespective of the fact that the real purpose of them may still be hedging, i.e. the elimination or mitigation of some risk arising from the company's core activity instead of sheer profit making. Whether a treasury deal is a hedging one is determined by its economic rationale (whether it is in line with the nature, direction and extent of the exposure arising from the company's core activity, providing that the company determined its core activity accurately).

Under Hungarian law companies decide whether they apply fair value accounting at their discretion, and there is not any strictly separated hedge accounting like under IFRS. The hedging purpose of the deals must be proved, though.

Such accounting can be divided into **three cases**<sup>12</sup>:

**Case 1:** Hungarian financial reporting standards, NO fair value measurement, and the deal is for hedging;

**Case 2:** Hungarian financial reporting standards, THERE IS fair value measurement, and the deal is for hedging;

**Case 3:** IFRS, and the entity opts for hedge accounting.

### accounting (hedging deals)

In hedge accounting there are always **two deals: a hedged item** (FX loan, an instrument to be sold at a later time, a potential FX debt from purchasing, etc.) and a **hedging instrument** (a currency forward, a swap, etc.). Accounting here involves the **offsetting of the change in the value** of the hedged deal (loan, instrument, etc.) against the change in the value of the hedging deal (which is in the opposite direction), and the posting of the result as a single accounting unit. If the hedge is fully efficient the two items cancel each other out, and therefore the optimal result is zero.

For a derivative to be ready for posting the balance sheet needs to be adjusted for fair value, however, since otherwise the derivative takes effect only upon the closure of the position (Case 1); until then only loss-making positions may make their mark, namely among provisions or accrued expenses. There is an **important exemption** with respect to derivatives, **allowed by the Hungarian standards: the loss or gain of deals made specifically for hedging purposes may be posted among accrued expenses or accrued income** (although gains only up to the loss on the underlying deal)<sup>13</sup>. In other words a gain can be included in the income, providing that it cancels out some of the underlying-deal loss and that that loss is posted in the books too.

IFRS (Case 3.)<sup>14</sup> require fair value adjustment, i.e. the derivatives, hedging instruments are posted in the financial reports with actual values attached even before the positions are closed. Considering the extensive documentation requirements hedge accounting remains optional, though. Accounting hedging deals that are adjusted for fair value means that irrespective of other rules the income from both the hedged deals and the hedging instruments are taken into account and posted after netting in the same line in the income statement. For cash flow hedging deals the change in the value of the hedging instruments shall be offset against the equity (or some other comprehensive income position)<sup>15</sup>.

<sup>13</sup> Szt. 32. § (5) and 44. § (5)

<sup>14</sup> We do not discuss Case 2 (Hungarian financial reporting, fair value adjustment) here because it virtually never appears in practice. Note however that its treatment is in essence identical with that of Case 3 with some terminological differences.

<sup>15</sup> note that in the case of cash flow hedging the hedged deal typically appears in the balance sheet at a later point in time!

<sup>11</sup> From the accounting point of view there is a third kind of risk to be hedged: the so called net investment in a foreign operation. This is beyond the scope of this document.  
<sup>12</sup> in theory there are more cases although they never come up in practice

## ➔ F) interest-rate swap – attached to a particular credit facility<sup>16</sup>

Suppose that an entity has a HUFk 10 000 credit facility. The interest rate is BUBOR + 3%. The debtor wants to mitigate the interest rate risk and therefore makes an interest-rate swap, which locks in the rate at 10%. The swap is made on July 1<sup>st</sup> 20X1. The interest is payable at the end of each year and the swap is settled at the same time. The entity makes quarterly reports (and also posts the closing figures at the end of each quarter<sup>17</sup>).

date	BUBOR
20X1. 07. 01.	7%
20X1. 09. 30.	9%
20X1. 12. 31.	6%

For the sake of simplicity let us suppose that that the expected and actual values of the BUBOR are the same at each reporting date. A further simplification is that with respect to quarters we do not use banks' usual interest calculation (days actually elapsed / 360).

### case 1 (Hungarian standards, NO fair value measurement)

20X1. 09. 30. [facility rate:  $10,000 * (9+3)% * \frac{1}{4}$ ]:

Dr 8. Interest payable	300
Cr 4. Accrued expenses	300

The value of the swap is positive because the locked-in interest rate is smaller than the variable (facility) rate by HUFk50. Although there is no fair value adjustment the difference is posted because the instrument hedges another facility; the limit is the loss of the hedged facility. Since we have an interest-rate swap here the change is recognized as an adjustment of the interest.

Dr 3. Accrued income	50
Cr 8. Interest payable	50

20X1. 12. 31. [facility rate:  $10,000 * (6+3)% * \frac{1}{4}$ ]:

Dr 8. Interest payable	225
Cr 3. Cash	225

The value of the swap is negative now: the difference is HUFk25 loss. As there was accrued income in an earlier period the loss will be subtracted from it.

Dr 8. Interest payable	25
Cr 3. Accrued income	25

The swap gets financially settled on Dec. 31st ( $50 - 25 = 25$  cash inflow):

Dr 3. Cash and equivalents	25
(Cr 8. Interest paid	25)
Cr 3. Accrued income	25

<sup>16</sup> This kind of deal – an interest-rate swap settled together with the interest payment – is included here not because of its difficulty of valuation but rather on account of its frequency.

<sup>17</sup> For the purposes of the example. Closing figures can be posted at year-end only.

(Dr 8. Interest paid 25)<sup>18</sup>

Cases 2 and 3 yield this same result with the derivative appearing in the balance sheet as change in the fair value of derivatives in Case 2, while in Case 3 there may be some terminological (but not essential) differences.

## ➔ G) FX loan with conversion

An FX loan was taken out in EUR on January 1st 20X1. The principal is EUR 100 000 and the interest rate is 5% p.a. The interest is payable until the 10<sup>th</sup> day after the end of each year while there is a grace period of several years with respect to principal repayment. Fearful of the weakening of the HUF against the EUR the entity swaps its EUR cash flow for HUF cash flow (cross currency swap). The loan was taken out at HUF 290 a EUR. By the end of the year the rate is HUF 300 a EUR. The bank reports that the value of the Cross Currency Swap (CCS) is HUFk 1 075 gain.

### case 1 (Hungarian standards, NO fair value measurement, purpose is hedging):

20X1. 01. 01.	Lending		
	Dr 3. Cash and equivalents (EUR)	29 000	
	Cr 4. Bank debt (EUR)		29 000

20X1. 12. 31.	Interest accounting [ $100\,000 * 300 * 5\% = \text{HUFk } 1\,500$ ]		
	Dr 8. Interest payable	1 500	
	Cr 3. Cash and equivalents		1 500

	FX loan fair value adjustment [ $100,000 * (300 - 290)$ ]		
	Dr 8. Other financial expenses	1 000	
	Cr 4. Bank debt (EUR)		1 000

The value of the swap can be posted to the extent it offsets the loss of the underlying deal. Question is: what does the entity want to offset: the exchange rate loss of the loan or of the loan and the interest? Apparently the logical answer is it wants to hedge all exchange rate risk. The loss incurred by the entity is  $1\,000 + 1\,500 - \text{EURk } 100 * 290 * 5\% = \text{HUFk } 1\,050$ , of which HUFk50 is related to the interest. The correct posting is then as follows:

CCS posting		
Dr 3. Accrued income	1 050	
Cr 8. Other financial expenses		1 000
Cr 8. Interest paid		50

The residual HUFk 25 gain of the swap is not posted / recognized (because it is in excess of the exchange rate loss).

<sup>18</sup> according to the exact regulations accruals shall be offset against profit, but the profit is – of course – is not affected by this last posting

## ➔ H) FX forward to hedge future purchase

An entity wants to purchase new machinery for EURk 1 000 on April 30<sup>th</sup> 20X2. As it is fearful of the strengthening of the EUR against the HUF it makes a EUR buy forward in the amount of EURk 1 000 for April 30<sup>th</sup> 20X2 settlement on January 1<sup>st</sup> 20X1. The exchange rate evolves like this (suppose the entity makes semi-annual statements as well):

date	spot rate (EUR/HUF)	forward rate for 20X2. 04. 30. (EUR/HUF)
20X1. 01. 01.	270	300
20X1. 06. 30.	290	310
20X1. 12. 31.	285	305
20X2. 04. 30.	307	-

### case 1 (Hungarian standards, NO fair value measurement, purpose is hedging):

It is obvious that the forward is always in the gain since the forward rate applicable on January 1<sup>st</sup> 20X1 (HUF 300 a EUR) is lower than any of the later forward rates. The hedging purpose notwithstanding the gain cannot be posted because the hedged item (the price of the machinery to be purchased) is not yet in the books. The earliest anything of it can be posted is April 30<sup>th</sup> 20X2:

20X2. 04. 30:		
Machinery purchase		
Dr 1. Machinery		307 000
Cr 4. FX trade payables	307, 000	

Closure of the forward		
Dr 3. Bank deposit (EURk1,000)	307,000	
Cr 3. Bank deposit (HUF)		300 000
Cr 9. Income from other financial services		7 000

Trade payable settled		
Dr 4. FX trade payables	307 000	
Cr 3. Bank deposit (EUR)		307 000

### case 2 (Hungarian standards, THERE IS fair value measurement, purpose is hedging)

This forward qualifies as cash-flow hedging. A fair value adjustment is carried out at the end of each period with the change offset against the equity (the fair value valuation reserve) rather than the profit. The reason is that the hedged item (the future trade payable) does not yet influence the profit as the future machinery purchase is not included in the statements. The effects are therefore “deferred”, as it were:

20X1. 01. 01.  
No entries required.

20X1. 06. 30.		
Forward adjusted for fair value $(310-300) * 1,000$		
Dr 3. Positive fair value difference of derivatives	10 000	
Cr 4. Fair value valuation reserve (equity)		10 000

20X1. 12. 31.		
Forward adjusted for fair value $(305-310) * 1,000$		
Dr 4. Fair value valuation reserve (equity)	5 000	
Cr 3. Positive fair value difference of derivatives		5 000

20X2. 04. 30.		
Machinery purchase		
Dr 1. Machinery		307 000
Cr 4. FX trade payables	307 000	

Final adjustment of forward for fair value $(307-305) * 1,000$		
Dr 3. Positive fair value difference of derivatives	2 000	
Cr 4. Fair value valuation reserve (equity)		2 000

Closure of forward		
Dr 3. Bank deposit (EURk1,000)	307 000	
Cr 3. Bank deposit (HUF)		300 000
Cr 3. Positive fair value difference of derivatives		7 000

Payment of trade payables		
Dr 4. FX trade payables	307 000	
Cr 3. Bank deposit (EUR)		307 000

Fair value valuation reserve decreased		
Dr 4. Fair value valuation reserve (equity)	7 000	
Cr 1. Machinery		7 000

Note that the Fair value valuation reserve finally modifies the total cost of the asset. Therefore the total cost of the machinery (now HUFk 300 000) is exactly as much as the value of the forward at the beginning of the deal.

### case 3 (IFRS)

The IFRS make fair value adjustment compulsory. The method of posting is the same as in Case 2 albeit with some terminological differences.

## ➔ I) FX (call / put) option or interest rate option (cap/floor)

The posting goes analogously to E) FX call / put positions.

# VIII

**glossary and  
formulas**



## → glossary

**American type barrier:**

the barrier exchange rate level is monitored from the trade day until the expiry

**American type partial barrier:**

the trigger exists only over a certain time period (window), which is fixed in advance

**American type option:**

the exchange rate level is monitored over the whole tenor, i.e. from the trade day until the expiry. The right can be exercised at any time during the term, if the strike is more favourable than the spot rate.

**Asian type option:**

the exchange rate level is monitored over the whole tenor, i.e. from the trade day until the expiry, and the average exchange rate will be taken into account. The right can be exercised, if the strike is more favourable than the average exchange rate over the tenor.

**ATMF volatility:**

Mid-rate volatility calculated at the forward rate applicable when the deal is concluded, also called "at-the-money-forward volatility". In this Handbook, we assumed 15% ATMF volatility in the EUR/HUF exchange rate in every example given for the hedging of foreign exchange risk. See below the definition of volatility.

**barrier option:**

is an option with either a knock-in or a knock-out level, in which the option terminates or becomes effective depending on the type of the trigger, if the exchange rate reaches an advance fixed level

**basis foreign currency:**

one unit of the basis foreign currency is expressed in another foreign currency, in case of comparing two foreign currency

**basis swap:**

it shows how the market demand and supply changes the actual (calculated on the basis of the swap points) interest rate difference from the theoretical (calculated on the basis of the interest rate levels) value for a given foreign currency pair

**bid:**

The bank's buying rate where the bank is the buyer of the currency in question and the client sells it to the bank.

**binary option:**

in the case of advance fixed conditions are fulfilled, the option provides fix payment upon the expiry

**BIRS:**

Budapest Interbank Forint Interest Rate Swap, benchmark interest rate for tenors over a year, calculated on the basis of the average quote by retail banks at 11:00 a.m (CET) on business day

**BUBOR:**

Budapest Interbank Offered Rate, benchmark interest rate for tenors within a year, calculated on the basis of the average quote by retail banks at 11:00 a.m (CET) on business days

**call option:**

provides a right to buy for the buyer of the option

**cap option:**

is an interest rate option which provides protection against interest rate increases for the buyer of the option

**CET:**

Central European Time, the time zone where the time is 1 hour more than the coordinated universal time. The common expression Hungarian time has the same meaning.

**collar:**

is an option strategy which is built up of two interest rate options (a cap and a floor), which define a range for the possible interest rate levels

**currency swap:**

two foreign exchange deals in the opposite direction with the same notional, concluded in the same time, but with a different value date

**calculation period:**

A period of time during which the calculation agent observes the fixings of a given instrument, the instrument being typically, but not exclusively, a type of commodity.

**counterdeal:**

A deal having the same parameters as another, except that it has the opposite direction. Concluding a counterdeal involves the settlement of the exchange rate difference between the two deals in the case of forward transactions, and the sale/repurchase of a deal identical with the original deal in the case of options.

**double no-touch option (DNT):**

is a binary option which provides a payment upon the expiry for the owner of the option if the reference exchange rate stays within a range fixed in advance over the tenor, and it does not touch the range limits

**deliverability:**

The instrument becomes deliverable in a physical form as a result of the trade, that is, the parties enter into gross settlement (see below).

**delivery date:**

The banking day on which the option is due for settlement. If the trading parties do not agree otherwise, the delivery date falls on the second banking day following the expiry date (see below)

**currency I:**

Latest 8 a.m. every morning, K&H Bank quotes the so-called "Currency I" exchange rates, calculated on the basis of the market rates effective at the time of quoting. In a basic scenario, this exchange rate is applicable to conversions executed on value date "T" and to incoming transfers denominated in EGT currencies (including currencies of EGT member states and Swiss franc) on value date "T". The bank may quote the Currency I rate anytime depending on market conditions. In case of conversions the prevailing rate at the processing of the transaction will be used, which can be found on the bank's webpage.

**currency II:**

At 2 p.m. every afternoon, K&H Bank quotes its official exchange rate ("Currency II") for foreign trade purposes, as part of its fixing. This rate applies to value date "T+2". This exchange rate is based on the current interbank market rates and the bank's overall position, and is applicable to transactions processed in the course of the morning, and which consequently are part of the bank's position. In a basic scenario, the incoming foreign currency transfers denominated in non-EGT currencies (currencies of non-EGT member states and not Swiss franc) accepted by the bank before 4 p.m. are credited at the Currency II exchange rate and at value date "T+2". For outbound transfers the Currency II rate will be used with a value date "T+2" if the transfer is submitted before 10 a.m. in case of paper based transfer orders and orders through Telecenter and Cégvonal, or before 2 p.m. for electronic orders. Outbound EUR and domestic HUF transfers involving conversion settle on value date "T+1" but also using the Currency II rate. Therefore, clients executing a conversion at the official rate quoted by the bank will not be aware of the actual exchange rate when they submit their orders.

**EURIBOR:**

European Euro Interbank Offered Rate within a year whose is published by European Banking Federation and it is calculated on the basis of the average rate traded by retail banks at 11:00 a.m (CET) on business days

**European type barrier:**

the barrier exchange rate level is only monitored at a certain time fixed in advance on the expiry date

**European type option:**

the exchange rate is monitored on the expiry date. The right can become effective upon expiry, if the strike is more favourable than in that time prevailing spot rate.

**expiry date:**

The date when the conditions of exercising an option are assessed. The expiry date is the same as the settlement date in the case of a forward deal. Unless the parties agree otherwise, the expiry date is two banking days before the delivery date (see above).

**accrued interest:**

The difference of the gross and net price of the bond, which is the time proportion of the annual interest payment calculated from the last interest payment date on a 365 day basis.

**fixed interest rate:**

Interest rate level or levels defined in advance for the entire tenor of an interest rate swap transaction, establishing the interest rate(s) one of the trading parties will pay at the end of the pre-defined interest periods while receiving floating interest rate.

**fixing:**

Determining the value of a financial instrument (exchange rate, interest rate or commodity price) according to a set of specific market conventions, using a reference value (e.g. the official currency exchange rates determined by the National Bank of Hungary at 11 a.m. every day, on the basis of the rates quoted by the 10 banks most active in the currency market).

**floor option:**

interest rate option, which provides protection against interest rate decrease for the owner of the option

**forward exchange rate:**

Exchange rate defined in advance for a certain value date.

**FRA:** forward rate agreement**forward value date:**

A Value Date that is later in time than the Spot Value Date.

**FX Swap**

Means a transaction whereby the Parties enter into an FX transaction, and at the same time they also enter into a reverse agreement in one of the currencies, for the same amount but a different Value Date.

**gross settlement:**

In an FX (foreign exchange) spot or forward transaction concluded between a client and the bank, the amount denominated in the currency in question is actually converted to the other currency of the deal on the value date of the deal, at an exchange rate fixed when the deal was concluded. As a result, the amount sold by the client on the value date of the transaction will be debited by the bank to the client's account in the given currency, and the corresponding converted amount credited to the client's account in the other currency.

**hedge:**

Financial transactions which help companies make the future levels of foreign exchange rates, interest rates and commodity prices relevant to their cash flows, more foreseeable. Treasury deals can help eliminate the exchange rate, interest rate or commodity price risk that could jeopardize the profitability of a company.

**ICAP EURO IRS offer rate:**

In case of swapping cash flows with fixed and floating interest payments the basis of the comparison is the interbank market swap rate. Market convention is swapping the fixed annualized interest rate for the given tenor into the 6-month market reference rate in the same currency with a day count convention of ANN 30/360, meaning a year of 360 days and a month of 30 days for interest periods. Individual deals may differ as interest periods for fixed and floating rates, day count convention and payment schedule influence the fixed interest rate calculated using the parameters of your loan for a given tenor.

**interest rate swap (IRS):**

An interest rate transaction whereby the Parties agree that the client will exchange a liability or receivable with a floating or fixed interest rate for one with a fixed or floating interest rate with the bank. There is net cash settlement regularly at the end of the interest payment periods (individual agreements may differ).

**knock-in option:**

barrier option with a knock-in level, where the option becomes effective if the exchange rate reaches a level fixed in advance.

**knock-out option:**

barrier option with a knock-out level, where the option terminates, if the exchange rate reaches a level fixed in advance.

**LIBOR:**

London Interbank Offered Rate, benchmark interest rate in London for tenor less than a year which is published by the British Bankers' Association at 11:30 a.m on business days and it is calculated on the basis of the average quote by retail banks at 11:00 a.m on business days

**market exchange rate:**

See below: spot exchange rate.

**market interest rate:**

Any suitable, well-known and accepted interbank interest rate selected by the Parties – including, but not limited to, BUBOR, EURIBOR, LIBOR and EONIA – that is published via a suitable data source (by a suitable data provider) – including, but not limited to, Reuters and Bloomberg.

**market value:**

The cost of closing the position at any given time, based on prevailing market conditions.

**net settlement:**

The original deal is closed by a counterdeal which has the same parameters but the opposite direction, and thus the difference between the rates applicable to the two deals is settled between the client and the bank. Interest rate risk and commodity risk hedging transactions are typically settled by means of net settlement, while a currency swap is typically gross settled.

**net price:**

gross price of the bond minus the accrued interest from the last interest payment date

**notional amount:**

The notional value of a given deal, or else an amount expressed in the given currency in a transaction, on the basis of which settlement is performed when on expiry.

**no touch option:**

is a binary option, which provides payment upon expiry for the owner of the option if the reference exchange rate does not reach a level fixed in advance over the tenor.

**offer:**

The bank's selling rate at which the bank sells the currency in question, and the client purchases it from the bank.

**one touch option:**

is a binary option, which provides payment upon expiry for the owner of the option if the reference exchange rate reaches a level fixed in advance over the tenor.



**option premium:**

The fee charged for an option, constituting income for the seller of the option and an expense for the buyer.

**OTC („over the counter“):**

Financial instruments traded outside the stock exchange. The instruments discussed in this Handbook are typically, but not exclusively, of the OTC category.

**quote:**

The Bank's offer regarding the terms of a specific treasury transaction.

**partial barrier:** see American type partial barrier

**prompt foreign currency deal:**

is a deal with T+2 value deal

**roll over:**

the company closes an open position, while reopen it with a later or earlier value date

**special exchange rate:**

Above the amount of EUR 50 000 or an equivalent amount in another currency, K&H Treasury quotes special exchange rates which can be executed with effect on value dates T, T+1 or T+2 without a master agreement on forward transactions. Such special exchange rates are quoted as derived from interbank market rates which are subject to fluctuation even during a single day. Nevertheless, the exchange rate will be known in this case at the moment when the deal is concluded – in contrast to the cases involving the bank's official rates (Currency I or Currency II).

**speculation:**

Financial transaction(s) concluded for the sole purpose of achieving profit on exchange rates, characterised by significant risk.

**spot value date:**

The second banking day following the transaction date (T+2).

**spot exchange rate:**

The current exchange rate applicable to the T+2 value date (see below) prevailing on the interbank FX (foreign exchange) market at any given time.

**strike or exercise price:**

The strike (or exercise price) is defined on the trade date of an option deal. The strike price will be used to decide whether the option holder should exercise the option, i.e. the right to buy (sell) the underlying. An option is exercised when the option holder can achieve a better position through exercising the option than entering into the same transaction on the basis of the current terms of the market. The decision to exercise an option is made in the knowledge of the current

market rate applicable on the expiry date (at 12 p.m. in the case of EUR/HUF deals). In the case of exercising the option, settlement takes place on the second Business day following the expiry date, unless the parties agree otherwise. The exact time when the conditions are assessed is determined on the basis of standards varying from one currency pair to the other.

**swap:**

A currency or interest rate swap transaction (see above), or, in the case of commodity transactions, a treasury deal aimed at the buying or selling of a given commodity at a price and for a period (or date) fixed in advance.

**“T” date, value dates “T+1” and “T+2”:**

It refers to the settlement date of a transaction. T date stands for trade date, and the value date is the day when financial settlement takes place. Thus, in the case of a T date conversion delivery takes place on the date of the trade. In the case of a T+1 day conversion, settlement takes place 1 banking day after the trade date, while in the case of a T+2 days (spot) conversion, settlement takes place 2 banking days following the trade date.

**underlying exposure:**

The sum total and the direction (seller or buyer) of the cash flows related to the core business line of a company.

**value date:**

The banking day on which the parties are obliged to enter into mutual delivery (settlement) in relation to a certain treasury transaction.

**volatility:**

An indicator reflecting the variability of the price of underlying asset.

**yield curve:**

The yield curve is an expression of the average annual interest rate of investments with the same risk but with different tenors (that is, annualised yields up to the expiry date) as a function of the expiry date, the basis of which can be either treasury bonds, loan facilities or swaps. The National Bank of Hungary uses for its analyses a yield curve derived from bond market yields. The annual interest rates applicable to treasury bonds with different expiry dates are depicted as a function of expiry dates to arrive at this yield curve.

## → formulas

**forward deals – theoretical formula**

$$F = S \times \frac{1 + r_v \times \frac{d}{y}}{1 + r_b \times \frac{d}{y}}$$

$$\text{interest rate differential} = S \times \frac{r_v \times \frac{d}{y} - r_b \times \frac{d}{y}}{1 + r_b \times \frac{d}{y}}$$

F = forward exchange rate

S = spot exchange rate

$r_v$  = quote currency interest rate for the given tenor

$r_b$  = quote currency interest rate for the given tenor

d = number of days

y = day count convention

**options – theoretical formula**

Black – Scholes formula:  $c = S \times N(d_1) - PV(K) \times N(d_2)$

$$d_1 = \frac{\ln\left(\frac{S}{K}\right) + \left(r + \frac{\sigma^2}{2}\right) \times t}{\sigma \times \sqrt{t}}$$

$$d_2 = \frac{\ln\left(\frac{S}{K}\right) + \left(r - \frac{\sigma^2}{2}\right) \times t}{\sigma \times \sqrt{t}}$$

put – call parity:  $c + PV(K) = p + S$

c = option premium for European type call option

p = option premium for European type put option

$N_{(x)}$  = cumulative standard normal distribution of x

S = spot exchange rate

K = strike price of the option

r = interest rate difference between the two currencies

$\sigma$  = standard deviation

t = maturity

**FRA – theoretical formula**

$$\text{FRA settlement amount} = N \times \frac{(r_{\text{FRA}} - r_{\text{reference}}) \times \frac{d}{y}}{1 + r_{\text{FRA}} \times \frac{d}{y}}$$

$$r_{\text{FRA}} = \left( \frac{1 + r_l \times \frac{d_l}{y}}{1 + r_s \times \frac{d_s}{y}} - 1 \right) \times \frac{y}{d}$$

$r_{\text{FRA}}$  = FRA interest rate

$r_{\text{referencia}}$  = reference interest rate

$r_l$  = interest rate for the longer tenor

$r_s$  = interest rate for the shorter tenor

$d_l$  = remaining number of days for the longer tenor

$d_s$  = remaining number of days for the shorter tenor

$d = d_l - d_s$

y = day count convention

N = notional

**treasury bills**

$$r = \frac{100 - P}{P} \times \frac{360}{d} \times 100 \quad P = \frac{100}{1 + r \times \frac{d}{360}}$$

r = annual yield

P = market price

d = days remaining until maturity

**government bonds**

$$P = \frac{d_1}{(1+r)} + \frac{d_2}{(1+r)^2} + \dots + \frac{d_n}{(1+r)^n}$$

r = annual yield

P = market price

d = days remaining until maturity

gross price = net price + accrued interest

accrued interest =

$$= \frac{(\text{annual yield})}{365} \times \text{number of days since the last interest payment}$$



Should you have further questions on the treasury transactions and strategies explained in this handbook, please do not hesitate to contact our treasury dealers.

### Let us be partners in managing market risk!

treasury dealer	phone	fax	e-mail
Gabriella Varga Head of Sales Department	(+36 1) 328 9985	(+36 1) 328 9228	<a href="mailto:gabriella.varga@kh.hu">gabriella.varga@kh.hu</a>
Ottó Demjén	(+36 1) 328 9984	(+36 1) 328 9228	<a href="mailto:otto.demjen@kh.hu">otto.demjen@kh.hu</a>
Dr. Csaba Kun	(+36 1) 328 9962	(+36 1) 328 9228	<a href="mailto:csaba.kun@kh.hu">csaba.kun@kh.hu</a>
Zsuzsanna Kelemen	(+36 1) 328 9977	(+36 1) 328 9228	<a href="mailto:zsuzsanna.kelemen@kh.hu">zsuzsanna.kelemen@kh.hu</a>
Ildikó Megyeri	(+36 1) 486 8411	(+36 1) 328 9228	<a href="mailto:ildiko.megyeri@kh.hu">ildiko.megyeri@kh.hu</a>
Milán Nagy	(+36 1) 328 9961	(+36 1) 328 9228	<a href="mailto:milan.nagy@kh.hu">milan.nagy@kh.hu</a>
Andrea Németh	(+36 1) 328 9979	(+36 1) 328 9228	<a href="mailto:andrea.nemeth@kh.hu">andrea.nemeth@kh.hu</a>
Iván Németh	(+36 1) 328 9982	(+36 1) 328 9228	<a href="mailto:ivan.nemeth@kh.hu">ivan.nemeth@kh.hu</a>
Dóra Sarodi	(+36 1) 328 9972	(+36 1) 328 9228	<a href="mailto:dora.sarodi@kh.hu">dora.sarodi@kh.hu</a>
Ábel Szemán	(+36 1) 328 9964	(+36 1) 328 9228	<a href="mailto:abel.szeman@kh.hu">abel.szeman@kh.hu</a>
Edina Szendei	(+36 1) 328 9968	(+36 1) 328 9228	<a href="mailto:edina.szendei@kh.hu">edina.szendei@kh.hu</a>

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