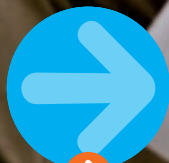
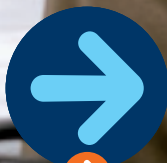


# K&H Treasury Handbook of Market Risk Management





## ➔ 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.

There was an especially spectacular example for unexpected developments in 2003, for instance, when in the middle of the year the HUF intervention band was shifted (essentially constituting a 2.26% devaluation of the national currency), followed at the end of the year by a dramatic interest rate hike announced by the National Bank of Hungary, which came as an unexpected blow to markets. The great extent of volatility that evolved in the election year 2006 also gave a headache to many executives. Furthermore, commodity price speculation in 2008, when raw material prices broke historic records, endangered the financial stability of several manufacturers. Year 2008 came with a number of other surprises, since the HUF was traded in the widest range against the euro, from levels around 228 in July, it eased by more than 25% to October and for a short while it even hit the level of 286 EUR/HUF.

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 technology solutions to enable your company to successfully face the challenges of the swiftly changing financial and commodity markets. This is the type of choreography we believe in.

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 endeavouring to adjust them to the ever changing circumstances.

Should you have any questions or ideas, please do not hesitate to contact our staff 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:

**Guy Libot**  
Deputy CEO  
Corporate Division

**Mihály Országh**  
Head of Treasury  
Treasury Directorate

December, 2009

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## → K&H Treasury

K&H's mission is to be a customer oriented bank, and this is well reflected in the organisational structure of our Treasury Directorate, centred 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 staff of our Treasury Directorate 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
- spot currency conversions, forward deals and other foreign exchange derivatives
- interest rate risk hedging
- commodity risk hedging
- creating a hedging strategy tailored to specific needs
- non-standard pricing, execution of orders, and market watch as needed
- investment solutions

The dealers working in our sales department are responsible primarily for assisting you in procuring services from the following three departments:

The **FX Market department** is one of the most significant players in the FX market of Hungary. Its primary function is to conduct FX transactions. Due to the wide scope of our activities, as well as the experience of our traders, both the speed and the prices of our services are highly advantageous.

The **Money Market department** is another key player in Hungary's money market. Its main role is to execute deposit, loan and swap transactions at the possible most competitive prices, 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 **Fixed Income department** has an important function in the trading of fixed yield instruments in Hungary. Its activities cover participation in government bond auctions as well as the distribution of government bonds.

# 1.1 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

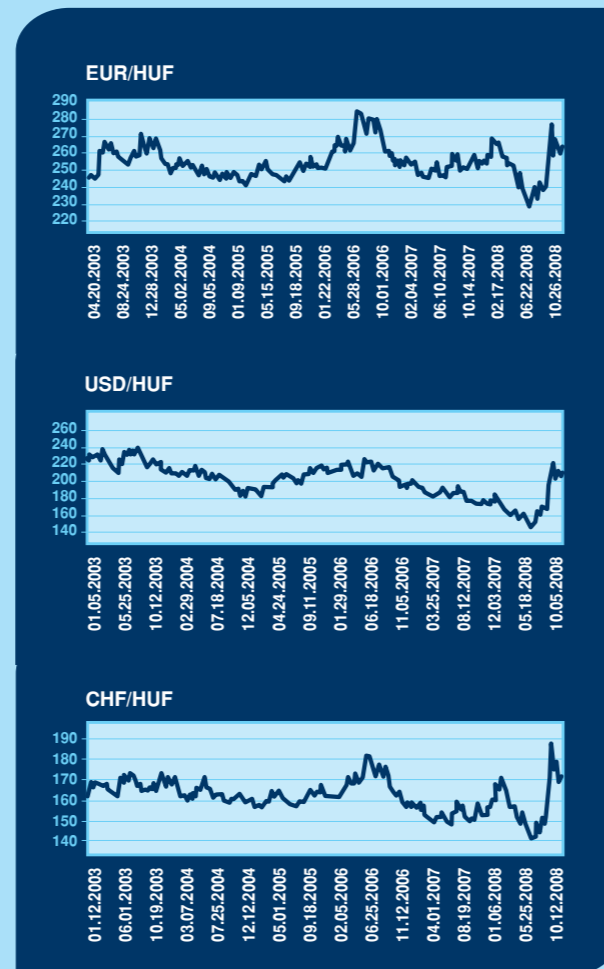
The risk associated with foreign exchange rates is relevant primarily in those businesses where income is received, or expenditure is incurred in foreign currencies (other than HUF), or where the extent of HUF-based income/expenditure is determined as a function of another currency, where there are loans 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.

EUR/HUF rates since 2003

USD/HUF rates since 2003

CHF/HUF rates since 2003



## ➔ 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.

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 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 240 EUR/HUF, with effect on the value date T+2. Then, whatever the current market rate is on day T+2 (be it 235 or 245), the company will receive  $100,000 * 240 = 24,000,000$  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 Deviza I exchange rate

At 6 a.m. every morning, K&H Bank quotes the so-called Deviza 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.

### K&H Bank's Deviza II exchange rate

At 2 p.m. every afternoon, K&H Bank quotes its official "foreign trade" or Deviza 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 Deviza II exchange rates on value date T+2. Also, Deviza 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 Deviza II exchange rate quoted by the bank will not be aware of the actual exchange rate at the moment of submitting their orders.

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 a framework 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. It is important to know that clients without a framework agreement on forward transactions must provide the bank with coverage for the special conversion as early as on the date of the trade.

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



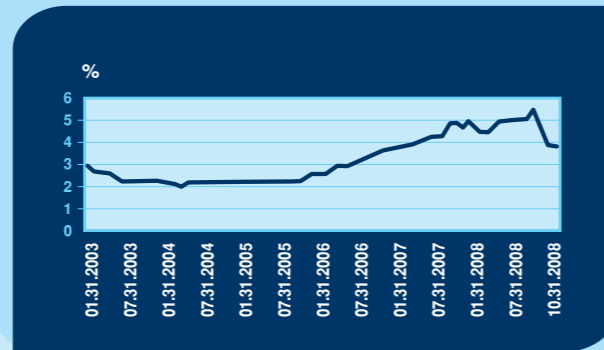


## ➔ 2. interest rate risk

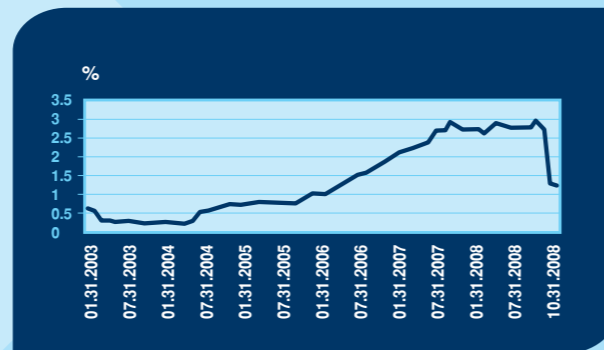
The fluctuation of interest rates has considerable influence on the financing costs of a given enterprise, as well as on the yield of its investments. Interest rate risk is relevant for companies with loans or investments either in forint or in foreign currencies.

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.



3-month EURIBOR rates since 2003



3-month CHF LIBOR rates since 2003

## ➔ 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.

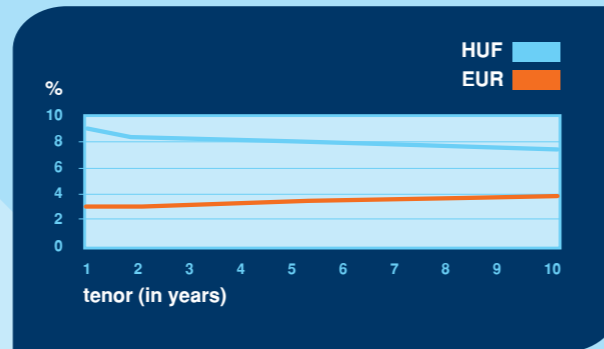
There are several theories concerning the equilibrium level of interest rates. In general, short-term interest rates are primarily the function of the central bank's reference interest rates, while long-term ones are defined by the inflation and growth prospects of the economy. In the case of Hungary 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.



HUF and EUR yield curve at the end of 2008

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.

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 3%.



3-month BUBOR rates since 2003

#### 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 times during a 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.

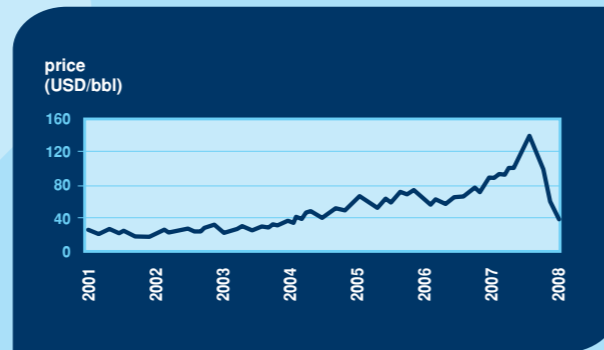
## ➔ 3. commodity markets

The experience of the past few years has shown that Hungarian economic players have paid much 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 price 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.

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



brent prices between 2001-2009



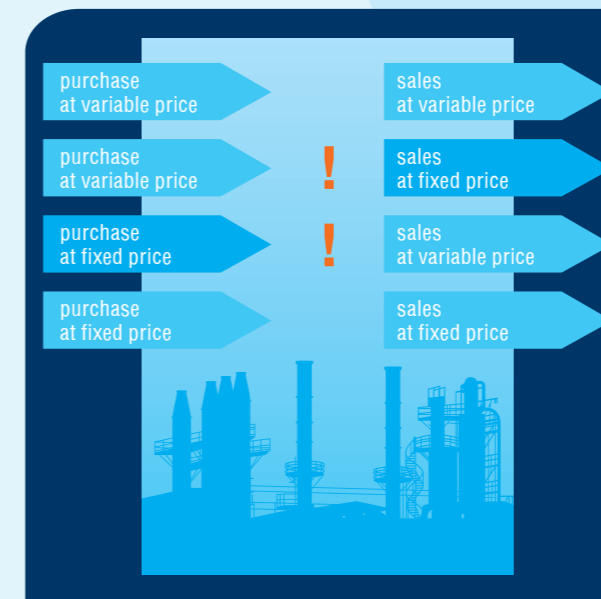
aluminium prices between 2001-2008

## ➔ 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



positions to be hedged and natural hedge in the commodity market

# 1.2 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 list – see below – shows the complexity of each treasury product (this handbook gives detailed description about the main products only in the forthcoming chapters).

| group                | type                               | subtype                     | product                    | variant                                       | complexity |
|----------------------|------------------------------------|-----------------------------|----------------------------|---|------------|
| exchange rate risk   | linear                             | building blocks             | FX Spot                    |   | 1          |
|                      |                                    |                             | FX Swap                    |   |            |
|                      |                                    |                             | FX Forward                 | OTC / exchange (FX Futures) / non deliverable |            |
|                      | optional                           | building blocks             | plain vanilla (call / put) | OTC / exchange                                | 2          |
|                      |                                    |                             |                            | deliverable / non deliverable                 |            |
|                      |                                    |                             |                            | ARO (Average Rate Option)                     |            |
|                      |                                    |                             |                            | knock out ARO                                 |            |
|                      |                                    |                             | basket options             | deliverable / non deliverable                 |            |
|                      |                                    |                             | compound                   |   |            |
|                      |                                    |                             | barriers                   | OTC / exchange                                | 3          |
|                      |                                    |                             |                            | knock in / knock out                          |            |
|                      |                                    |                             |                            | double knock in / double knock out            |            |
|                      |                                    |                             |                            | windows (partial)                             |            |
|                      |                                    |                             | digitals                   | OTC / exchange                                | 3          |
| knock out digitals   |                                    |                             |                            |   |            |
| one touch / no touch |                                    |                             |                            |   |            |
|                      | double one touch / double no touch |                             |                            |   |            |
| structures           | NPC-products (open list)           | transatlantic trigger reset |                            |   |            |

| group              | type                                | subtype                     | product                  | variant  | complexity |   |   |
|--------------------|-------------------------------------|-----------------------------|--------------------------|--|------------|---|---|
| interest rate risk | linear                              | building blocks             | MM Loans                 | annuities  | 1          |   |   |
|                    |                                     |                             |                          | forward forward loan / fixed rate / variable rate / amortizing |            |   |   |
|                    |                                     |                             | MM Deposits              | fixed / floating   |            |   |   |
|                    |                                     |                             |                          | forward forward deposit / amortizing                           |            |   |   |
|                    |                                     |                             | repo                     | standard / tri party   |            | 2 |   |
|                    |                                     |                             |                          | reverse standard / reverse tri party                           |            |   |   |
|                    |                                     |                             | FRA                      |  |            |   |   |
|                    |                                     |                             | IR future                | STIR future / bond future                                      |            |   |   |
|                    |                                     |                             | IRS (Interest Rate Swap) | forward start  |            |   | 3 |
|                    |                                     |                             |                          | zero coupon / compounding / year on year                       |            |   |   |
|                    | fixing up front / in arrear         |                             |                          |  |            |   |   |
|                    | amortizing                          |                             |                          |  |            |   |   |
|                    | CMS                                 |                             |                          |  |            |   |   |
|                    | callable (bermudian) / not callable |                             |                          |  |            |   |   |
|                    | inflation linked                    |                             |                          |  |            |   |   |
|                    | quanto's leveraged                  |                             |                          |  |            |   |   |
|                    | CCIRS (Cross Currency IRS)          | without initial exchange    | 2                        |  |            |   |   |
|                    |                                     | forward start               |                          |  |            |   |   |
|                    |                                     | zero coupon / year on year  |                          |  |            |   |   |
|                    |                                     | fixing up front / in arrear |                          |  |            |   |   |
| amortizing         |                                     |                             |                          |  |            |   |   |
| FX Reset           |                                     |                             |                          |  |            |   |   |
| optional           | building blocks                     | plain vanilla (cap/floor)   | 2                        |  |            |   |   |
|                    |                                     | swaptions                   |                          | cash settled / delivery  |            |   |   |
|                    |                                     |                             |                          | OTC / exchange   |            |   |   |
|                    |                                     |                             |                          | knock in / knock out   |            |   |   |
|                    |                                     |                             |                          | double knock in / double knock out                             |            |   |   |
|                    | barrier options                     | knock in / knock out        | 3                        |  |            |   |   |
|                    | digitals                            | OTC / exchange              |                          |  |            |   |   |
|                    |                                     | OTC / exchange              |                          |  |            |   |   |
|                    |                                     | multiple condition          |                          |  |            |   |   |
|                    |                                     | CMS Spread Cap              |                          |  |            |   |   |
| structures         | NPC-products (open list)            | Reset Cap                   |                          |  |            |   |   |

| group                    | type     | subtype         | product                           | variant  | complexity |  |
|--------------------------|----------|-----------------|-----------------------------------|--|------------|--|
| capital market products  | linear   | short term      | CP (Commercial Paper)             |  | 1          |  |
|                          |          |                 | CD (Certificate of Deposit)       |  |            |  |
|                          |          |                 | bills                             | treasury bills, treasury certificates, ...   |            |  |
|                          |          | long term       | bonds                             | public issues / private issues / government bond   |            |  |
|                          |          |                 |                                   | fixed / zero / floating rate (see optional structures) / linked (see optional structures) / step up / step down / different coupon frequency |            |  |
|                          |          |                 |                                   | capital guaranteed   |            |  |
|                          | futures  |                 |                                   |  |            |  |
|                          | optional | building blocks | options                           | call / put   | 2          |  |
|                          |          | structures      | callable / puttable bond          |  |            |  |
|                          |          |                 | convertible / reverse convertible |  |            |  |
|                          |          |                 | linked                            | inflation / index / equity / ... (other)   |            |  |
|                          |          |                 | floating rate                     | range floater / reverse floater floating rate CP / floating rate CD / floating rate bills  |            |  |
| NPC-products (open list) |          | TARN            |                                   |  |            |  |
|                          | Snowball |                 | 3                                 |  |            |  |

| group              | type | subtype    | product | variant   | complexity |
|--------------------|------|------------|---------|---|------------|
| credit derivatives |      | structures | CDS     | CDS Basket / nothing to default / CDS on ABS / CDS on CDO | 3          |
|                    |      |            | CDO     |   |            |



| group                  | type                 | subtype         | product                   | variant              | complexity |  |
|------------------------|----------------------|-----------------|---------------------------|----------------------|------------|--|
| equity-linked products | linear               |                 | share                     |                      | 1          |  |
|                        |                      |                 | index                     |                      |            |  |
|                        |                      |                 | basket                    |                      |            |  |
|                        |                      |                 | funds                     |                      |            |  |
|                        | optional             | building blocks | warrants                  | call / put           | 2          |  |
|                        |                      |                 |                           | european / american  |            |  |
|                        |                      |                 | cliquet                   |                      | 3          |  |
|                        |                      |                 | ARO (Average Rate Option) | knock in / knock out |            |  |
|                        |                      |                 | barrier                   | european / american  |            |  |
|                        |                      |                 |                           | knock in / knock out |            |  |
| digitals               | european / american  |                 |                           |                      |            |  |
|                        | one touch / no touch |                 |                           |                      |            |  |
|                        | knock in / knock out |                 |                           |                      |            |  |

| group          | type       | subtype                | product                    | variant              | complexity |
|----------------|------------|------------------------|----------------------------|----------------------|------------|
| commodity risk | linear     | building blocks        | commodity swaps            |                      | 2          |
|                |            |                        | commodity forwards         |                      |            |
|                | optional   | building blocks        | plain vanilla (call / put) |                      | 3          |
|                |            |                        | barrier options            | knock in / knock out |            |
|                | structures | (commodity structures) |                            |                      |            |

## ➔ risk factors

## ➔ 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 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 forint 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 discussed in this handbook are summarised 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.

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

|                           | foreign exchange risk | interest rate risk        | commodity price risk | liquidity risk                        | volatility risk   | sensitivity to changes in value of underlying instrument | external risk | counter-party risk |
|---------------------------|-----------------------|---------------------------|----------------------|---------------------------------------|---|--|---------------|--------------------|
| five basic products       |                       |                           |                      |                                       |   |  |               |                    |
| FX forward                | high                  | medium (depends on tenor) | -                    | low                                   | medium (depends on volatility of under-lying currency pair) | medium   | low           | low                |
| FX option (plain vanilla) | high                  | medium (depends on tenor) | -                    | low                                   | high (depends on volatility of under-lying currency pair)   | low  | low           | low                |
| barrier option            | high                  | medium (depends on tenor) | -                    | medium                                | high (depends on volatility of under-lying currency pair)   | high   | low           | low                |
| digital option            | high                  | medium (depends on tenor) | -                    | medium (can be high close to expiry!) | high (depends on volatility of under-lying currency pair)   | high   | low           | low                |
| target profit forward     | high                  | medium (depends on tenor) | -                    | medium                                | high (depends on volatility of under-lying currency pair)   | high   | low           | low                |

|                               | foreign exchange risk | interest rate risk        | commodity price risk | liquidity risk | volatility risk  | sensitivity to changes in value of underlying instrument | external risk | counterparty risk |
|-------------------------------|-----------------------|---------------------------|----------------------|----------------|--|--|---------------|-------------------|
| products for managing FX risk |                       |                           |                      |                |  |  |               |                   |
| FX forward                    | high                  | medium (depends on tenor) | -                    | low            | medium (depends on volatility of underlying currency pair) | medium   | low           | low               |
| FX option (plain vanilla)     | high                  | medium (depends on tenor) | -                    | low            | high (depends on volatility of underlying currency pair)   | low  | low           | low               |
| range forward                 | high                  | medium (depends on tenor) | -                    | low            | high (depends on volatility of underlying currency pair)   | low  | low           | low               |
| seagull option                | high                  | medium (depends on tenor) | -                    | low            | high (depends on volatility of underlying currency pair)   | low  | low           | low               |
| participating forward         | high                  | medium (depends on tenor) | -                    | low            | high (depends on volatility of underlying currency pair)   | low  | low           | low               |
| forward extra                 | high                  | medium (depends on tenor) | -                    | medium         | high (depends on volatility of underlying currency pair)   | high   | low           | low               |
| boosted forward               | high                  | medium (depends on tenor) | -                    | medium         | high (depends on volatility of underlying currency pair)   | high   | low           | low               |
| target profit forward         | high                  | medium (depends on tenor) | -                    | medium         | high (depends on volatility of underlying currency pair)   | high   | low           | low               |

|  | foreign exchange risk | interest rate risk      | commodity price risk | liquidity risk | volatility risk | sensitivity to changes in value of underlying instrument | external risk | counterparty risk |
|--|-----------------------|-------------------------|----------------------|----------------|-----------------|--|---------------|-------------------|
| products for managing interest rate risk   |                       |                         |                      |                |                 |  |               |                   |
| interest rate swap (IRS)                   | -                     | high (depends on tenor) | -                    | low            | low             | low (depends on tenor)                                   | low           | low               |
| interest rate options (cap, floor, collar) | -                     | high (depends on tenor) | -                    | low            | low             | low  | low           | low               |
| swaption                                   | -                     | high                    | -                    | low            | low             | low  | low           | low               |
| Bermuda IRS                                | -                     | high                    | -                    | medium         | low             | low (depends on tenor)                                   | low           | low               |

|  | foreign exchange risk | interest rate risk | commodity price risk | liquidity risk   | volatility risk | sensitivity to changes in value of underlying instrument | external risk | counterparty risk |
|--|-----------------------|--------------------|----------------------|--|-----------------|--|---------------|-------------------|
| products for managing commodity price risk |                       |                    |                      |  |                 |  |               |                   |
| commodity swap                             | low                   | low                | high                 | medium (depends on underlying commodity and on external risks) | high            | low  | high          | low               |
| commodity option                           | low                   | low                | high                 | medium (depends on underlying commodity and on external risks) | high            | low  | high          | low               |
| commodity collar                           | low                   | low                | high                 | medium (depends on underlying commodity and on external risks) | high            | low  | high          | low               |

|  | foreign exchange risk                            | interest rate risk            | commodity price risk | liquidity risk | volatility risk  | sensitivity to changes in value of underlying instrument | external risk | counterparty risk |
|--|--|-------------------------------|----------------------|----------------|--|--|---------------|-------------------|
| products for lowering credit interest expenses |  |                               |                      |                |  |  |               |                   |
| s/t interest refund                            | high   | medium (depends on tenor)     | -                    | low            | high (depends on volatility of underlying currency pair) | low  | low           | low               |
| cross-currency swap                            | low / high (depends on specific deal parameters) | low / high (depends on tenor) | -                    | low            | low  | low  | low           | medium            |
| l/t interest refund                            | high   | medium (depends on tenor)     | -                    | medium         | high (depends on volatility of underlying currency pair) | high   | low           | low               |

|                       | foreign exchange risk   | interest rate risk        | commodity price risk | liquidity risk                        | volatility risk  | sensitivity to changes in value of underlying instrument | external risk | counterparty risk |
|-----------------------|---|---------------------------|----------------------|---------------------------------------|--|--|---------------|-------------------|
| investments           |   |                           |                      |                                       |  |  |               |                   |
| dual currency deposit | high  | medium (depends on tenor) | -                    | low                                   | -  |  | low           | low               |
| tower deposit         | high  | medium (depends on tenor) | -                    | medium (can be high close to expiry!) | high (depends on volatility of underlying currency pair) | high   | low           | low               |
| accrual deposit       | high  | medium (depends on tenor) | -                    | medium (can be high close to expiry!) | high (depends on volatility of underlying currency pair) | high   | low           | low               |
| K&H bond programme    | the underlying risk varies according to bond type in question |                           |                      |                                       |  |  |               |                   |



# 1.3. 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).

The five basic products are the following:

## ➔ 1. forward deal

MIFID complexity

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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.

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.

Because at the time when this Handbook is edited, the HUF interest rates are above those of most major currencies (such as EUR, USD, CHF, GBP or JPY), the forward rates for EUR/HUF, USD/HUF, CHF/HUF, GBP/HUF and JPY/HUF are also higher than the spot market rates. When interest rates change, swap points change, too, as a consequence. When the National Bank of Hungary raises interest rates, this may lead to increase in the general interest rate level (yield curve),

and when it cuts interest rates, this may result in the decrease of the domestic interest rate level (yield curve), which in turn has its effect on forward rates (assuming that there was no change in the interest rate of the foreign currency).

### ➔ 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 instance: a company sells EUR 1,000,000 for a one-year tenor at 262 EUR/HUF. When a year has passed, the bank debits the company's EUR account by EUR 1,000,000 and credits HUF 262,000,000 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.

**example:** if you can, at any time up to the expiry date, sell at 260 EUR/HUF your euros bought for 3 months at 253 EUR/HUF, then the bank will credit to your company's HUF account 7 forints for every euro or HUF 700,000 in total for a EUR 100,000 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 the contrary direction

which involves the same amount denominated in one of the currencies concerned, but a different value date (see chapter "glossary" in the "K&H Market Risk Management Handbook"). 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 were in effect when this Handbook was published. The bank has the right to modify these rules at any time without prior notice or justification, or to formulate, at its own discretion, non-standard conditions that are less favourable than these.**

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.

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

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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):**

- A 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. If, however, the option is of the american 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):**

- A 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 a 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. If the put option is of the american type, 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 agrees 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.

In this Handbook, we will discuss European type options. 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. An 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.

Buying a call or a put option comes at a high price, so 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.

## → 3. barrier options

MIFID complexity

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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).

Accordingly, the following option types can be distinguished:

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

**example:** The EUR/HUF spot exchange rate is at 250. The client buys from the bank a six-month European put option at a strike rate of 260, with an american knock-in barrier at 246, for the amount of EUR 1,000,000. If the spot rate reaches 246 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 260. Of course, this right is exercised only if the exchange rate is below 260 on the expiry date. If during the tenor, the spot rate never reaches 246, 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 260 if the client is lucky, but this is not guaranteed by any element of the option.

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

**example:** The EUR/HUF spot rate is at 250. A client buys from the bank a six-month European call option at the strike rate of 252, with a European type knock-out barrier at 260, for the amount of EUR 1,000,000. If at the end of the tenor (on the expiry date) the spot rate is below 260, the client will have the right to buy EUR 1,000,000 at the exchange rate of 252. Of course, this right will be exercised only if the exchange rate is above 252 on the expiry date. If at the end of the term of the option, the spot rate is above 260, then the client will no longer be entitled to buy the euro amount at the 252 rate, which means that the current market rate will be applied if the client intends to buy euros.

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.

Another possible aspect of the classification is what the monitoring period of the barrier/trigger level is.

According to this classification, the following types are distinguished:

- **american type barrier:** the barrier is monitored from the option's trade date until the expiry date
- **european type barrier:** the barrier is monitored exclusively on the expiry date of the option, at a time set in advance
- there is also a type of a barrier which remains effective during a specific period, or **window**, defined in advance

Unless the parties agree otherwise, the **expiry date** of the option will always be two business days before the **delivery date** of the option.

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.



## ➔ 4. digital options

MIFID complexity

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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 6-month European digital call option with EUR 100,000 payout at the spot rate of 250 EUR/HUF and with a 256 EUR/HUF barrier level. The client pays the bank a premium of EUR 20,000 for this option when the deal is concluded. If upon the expiry date the exchange rate is above 256, the client will receive EUR 100,000; and if it is below 256, 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 256 trigger level receives EUR 100,000 upon the date of delivery provided that the market exchange rate reaches the level of 256 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 250, and our client buys a six-month double no touch option with EUR 100,000 payout and trigger levels at 245 and at 255. If within the next six months the market rate remains inside the range 245-255 not even once touching either 245 or 255, 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

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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 realized 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 notional amount:** target profit forward deal with a constant notional amount, or target profit forward deal with a variable notional amount
- ➔ **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 target profit forward rates:** a target profit forward deal with a constant strike rate, or a target profit deal with variable strike rates
- ➔ **according to tenor:** the maximum tenor is 3 years

### ➔ 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 the 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.
- digital target profit forward deal  
After pre-defined number of expiries with profit is settled the digital target profit forward is early terminated. Here there is no target profit amount defined, and the only thing that matters is how many expiries result in profit for the client.

- ### ➔ according to leverage:
- if there is a leverage (the notional amount of the obligation i.e. the notional amount on which the customer can realize loss is higher than the notional amount of the right i.e. the amount on which the customer can make 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.

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. Term sheets contain more details and further information regarding the risks of each product.

# 1.4. 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. 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

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

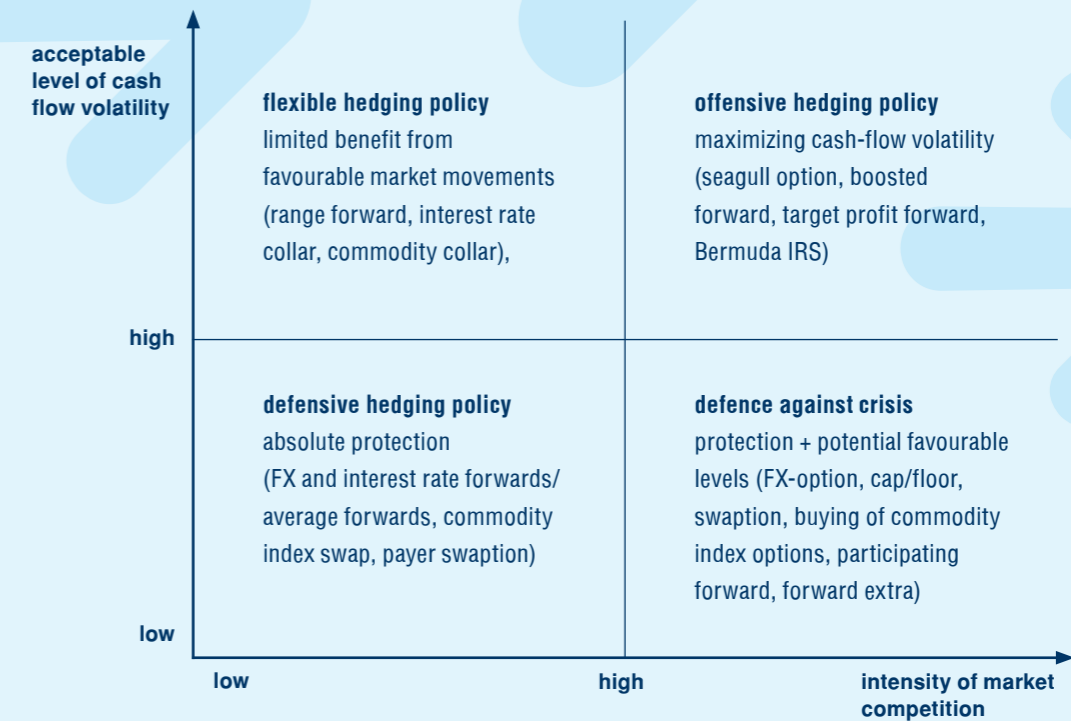
- driving at absolute security: complete elimination of cash-flow fluctuation
- definition of a defence level
- a certain degree of benefit from potentially advantageous market movements
- increasing relative competitive advantage: maximising the value of cash flow

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.





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

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

- 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.

- **Micro hedge** 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 "5 basic products". In the case of a micro hedge, the treasury deal is typically gross settled which means that you actually perform the conversion at the exchange rate applicable to the treasury deal.
- **Macro hedge** 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 macro hedge means a simplified settlement technique and a more comprehensive approach to the annual foreign exchange risk than the above mentioned micro hedge if the timing of your cash flows is difficult to foresee but the amounts are more or less predictable.

# 2.1 foreign exchange hedging for exporters



# ➔ 1. forward and average forward

MIFID complexity

1

## ➔ 1.1. 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.

**example:** a Hungarian exporter expects to receive EUR 100,000 in a year's time. Let us assume that the current spot rate is 250 EUR/HUF. This company wants to eliminate the foreign exchange risk by entering into a forward transaction for the selling of EUR 100,000. Upon the trade date, the EUR/HUF forward rate is 12 forints 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                                  | 250 EUR/HUF  |
| forward rate   | 262 EUR/HUF  |
| transaction cost on the trade date                               | zero   |
| possible scenarios on expiry                                     |  |
| exchange rate below 262 EUR/HUF                                  | Your company sells EUR 100,000 at a rate of 262 EUR/HUF.   |
| exchange rate at or above 262 EUR/HUF                            |  |
| best-case scenario (treasury transaction on a standalone basis)  | The EUR/HUF spot rate on the expiry date is below 262. In this case your company sells EUR 100,000 at a rate of 262 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate on the expiry date is above 262. In this case your company sells EUR 100,000 at a rate of 262 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

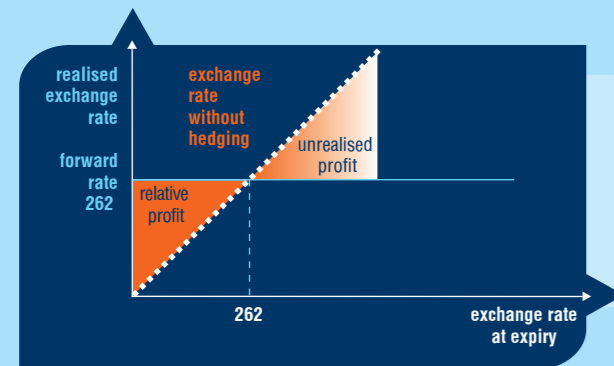
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | 2,050,000                          |
| 260                              | -950,000                           |
| 290                              | -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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(262-230) * 100,000 = 3,200,000$                      | $262 * 100,000 = 26,200,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | $(262-260) * 100,000 = 200,000$                        |  |
| 290  | $290 * 100,000 = 29,000,000$   | $(262-290) * 100,000 = -2,800,000$                     |  |



result of the standard forward on expiry in the case of a hedged position (exporter)

## ➔ 1.2. hedging foreign currency revenues for various expiries – average forward

MIFID complexity

1

### 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.

**example:** A Hungarian exporter expects to receive EUR 100,000 per month in the next year. Let us assume that the current spot rate is 250 EUR/HUF, and the one-year forward rate is 262 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 256,50.

| 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                                 | 250 EUR/HUF   |
| forward rates prevailing at pricing, for each expiry date       |   |
| month 1   | 251 EUR/HUF   |
| month 2   | 252 EUR/HUF   |
| month 3   | 253 EUR/HUF   |
| month 4   | 254 EUR/HUF   |
| month 5   | 255 EUR/HUF   |
| month 6   | 256 EUR/HUF   |
| month 7   | 257 EUR/HUF   |
| month 8   | 258 EUR/HUF   |
| month 9   | 259 EUR/HUF   |
| month 10  | 260 EUR/HUF   |
| month 11  | 261 EUR/HUF   |
| month 12  | 262 EUR/HUF   |
| average forward rate  | 256.50 EUR/HUF  |
| transaction cost on the trade date                              | zero  |
| possible scenarios on each expiry date                          |   |
| exchange rate is below 256.50 EUR/HUF                           | Your company sells EUR 100,000 at a rate of 256.50 EUR/HUF.   |
| exchange rate is at or above 256.50 EUR/HUF                     |   |
| best-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is below 256.50 on the expiry date. In this case, your company sells EUR 100,000 at a rate of 256.50 EUR/HUF.   |
| best-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is above 256.50 on the expiry date. In this case, your company sells EUR 100,000 at a rate of 256.50 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

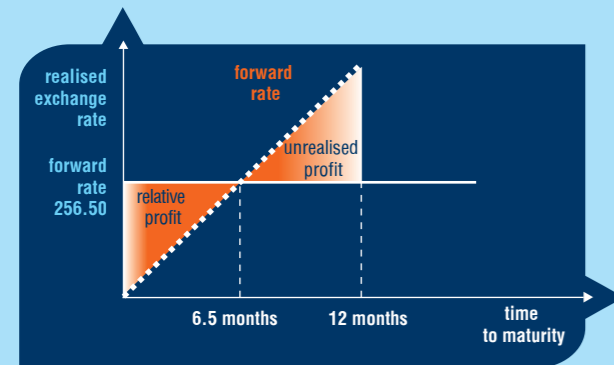
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | 24,600,000                         |
| 260                              | -11,400,000                        |
| 290                              | -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) |
|--|--|---|--|
| 230  | 230 * 100,000 = 23,000,000<br>in total: 12 * 23,000,000 = 276,000,000      | (256.50-230) * 100,000 = 2,650,000<br>in total: 12 * 2,650,000 = 31,800,000     | 256.50 * 100,000 = 25,650,000<br>in total: 12 * 25,650,000 = 307,800,000                     |
| 260  | 260 * 100,000 = 26,000,000<br>in total: 12 * 26,000,000 = 312,000,000      | (256.50-260) * 100,000 = -350,000<br>in total: 12 * 350,000 = -4,200,000        |  |
| 290  | 290 * 100,000 = 29,000,000<br>in total: 12 * 29,000,000 = 348,000,000      | (256.50-290) * 100,000 = -3,350,000<br>in total: 12 * (-3,000,000) = 40,200,000 |  |



result of the average forward compared to the standard forward on expiry in the case of a hedged position (exporter)

### 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)
- 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 HUF-FCY interest rate differential is positive)
- chapter 1.2. 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 section on forward deals of chapter 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.



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

MIFID complexity

2

### ➔ 2.1. 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 neither a right nor an obligation and you can sell euros at the spot rate prevailing on expiry. 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 (beyond 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.

**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 250 EUR/HUF, and the one-year forward rate is 262 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 262 EUR/HUF (equalling the forward rate). The premium charged for buying the EUR put option is 3.68% of the notional, or else  $262 * 3.68\% = 9.64$  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 ( $262 + 9.64 = 271.64$ ). (In this example we ignored that the premium should carry interest 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                | 250 EUR/HUF   |
| forward rate prevailing at pricing             | 262 EUR/HUF   |
| ATMF volatility                                | 10%   |
| strike rate                                    | 262 EUR/HUF   |

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

|  |  |
|--|--|
| exchange rate is above 262 EUR/HUF                               | Your company has neither a right nor an obligation, since it does not exercise the option. Your company can sell euros at the spot rate prevailing on expiry.  |
| exchange rate is at or below 262 EUR/HUF                         | Your company has a right to sell euros, since it exercises the option. It can sell EUR 100,000 at a rate of 262 EUR/HUF.   |
| option premium (payable by the client on the trade date)         | $3.68\% * \text{notional amount} = 9.64$ HUF for each EUR (HUF 964,000)  |
| best-case scenario (treasury transaction on a standalone basis)  | The spot market EUR/HUF rate is below 262 on expiry. Your company has a right to sell euros. In this case, your company can sell EUR 100,000 at a rate of 262 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is above 262 on the expiry date. Your company has neither a right nor an obligation. In this case, your company can sell euros at the current spot rate (above 262 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

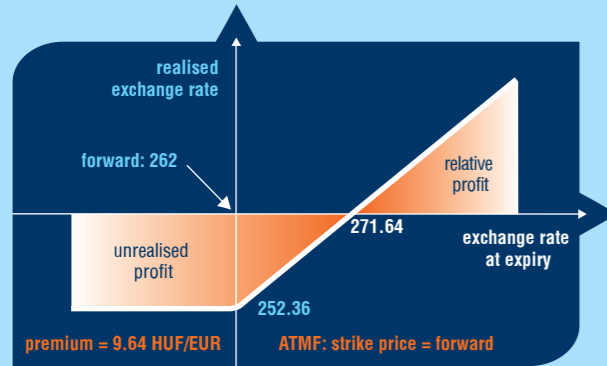
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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)                  |
|----------------------------------|---|
| 230                              | 21.54 HUF per EUR * notional amount = 2,154,000 HUF |
| 260                              | 6.68 HUF per EUR * notional amount = 668,000 HUF    |
| 290                              | 0.86 HUF per EUR * notional amount = 86,000 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(262 - 230) * 100,000 - 964,000 = 2,236,000$          | $262 * 100,000 - 964,000 = 25,236,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | $(262 - 260) * 100,000 - 964,000 = -764,000$           | $262 * 100,000 - 964,000 = 25,236,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $0 - 964,000 = -964,000$                               | $290 * 100,000 - 964,000 = 28,036,000$   |



result of buying a EUR put option compared to the standard forward on expiry in the case of a hedged position (exporter)

#### advantages of transaction

- full protection against the potential appreciation of the forint
- you can benefit from favourable exchange rate movements
- 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 (taking into account the option premium) is at a rate worse than the forward rate
- 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
- chapter 1.2. 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 1.3. entitled “5 basic products” of “K&H Treasury Handbook of Market Risk Management” also applies to this product.

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

MIFID complexity  
2

#### 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 applicable 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 convert foreign currency revenues into HUF 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.

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

**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 250 EUR/HUF, and the one-year forward rate is 262 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 262 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 3.68% of the notional, or  $262 * 3.68\% = 9.64$  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  $(262 - 9.64 =) 252.36$ . (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                       | 250 EUR/HUF   |
| forward rate prevailing at pricing                    | 262 EUR/HUF   |
| ATMF volatility                                       | 10%   |
| strike rate   | 262 EUR/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 262 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 262 EUR/HUF.  |
| exchange rate is below 262 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.  |
| option premium (payable to the client on the trade date)  | 3.68% * notional amount = 9.64 HUF for each EUR (964,000 HUF)  |
| best-case scenario (treasury transaction on a standalone basis)                                 | The EUR/HUF spot rate is below 262 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 (above 262 EUR/HUF).                |
| worst-case scenario (treasury transaction on a standalone basis)                                | The EUR/HUF spot rate is above 262 on the expiry date. Your company has an obligation to sell euros. In this case, your company sells EUR 100,000 at a rate of 262 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

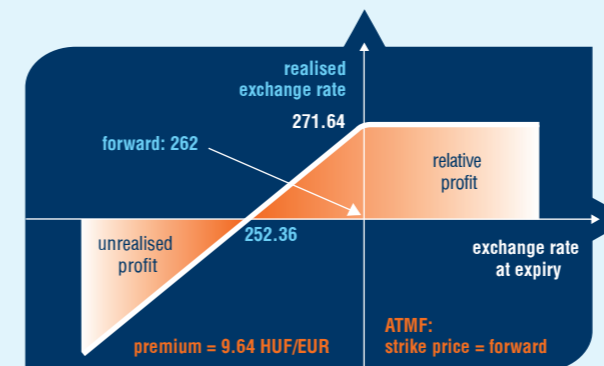
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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)                   |
|----------------------------------|--|
| 230                              | 2.57 HUF per EUR * notional amount = -257,000 HUF    |
| 260                              | 14.75 HUF per EUR * notional amount = -1,475,000 HUF |
| 290                              | 37.80 HUF per EUR * notional amount = -3,780,000     |

#### 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) |
|--|--|--|---|
| 230  | 230 * 100,000 = 23,000,000   | 0 + 964,000 = 964,000                                  | 230 * 100,000 + 964,000 = 23,964,000  |
| 260  | 260 * 100,000 = 26,000,000   | 0 + 964,000 = 964,000                                  | 260 * 100,000 + 964,000 = 26,964,000  |
| 290  | 290 * 100,000 = 29,000,000   | (262-290) * 100,000 + 964,000 = -1,836,000             | 262 * 100,000 + 964,000 = 27,164,000  |



result of selling a EUR call option compared to the standard forward on expiry (exporter)

#### advantages of transaction

- if the strike rate is the same as the forward rate, the profit threshold of the option is more advantageous (including the option premium) than that of a forward deal
- 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 exchange rate 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
- chapter 1.2. 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 1.3. 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 262) and the company must buy one option and sell the other. (see chapter 2.1. of the “K&H Treasury Handbook of Market Risk Management” 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)

|   | options                               |                                    | forward                          |
|---|---------------------------------------|------------------------------------|----------------------------------|
| deal type   | 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                                       | 262.00 (= forward rate = strike rate) |                                    |                                  |
| condition   | exchange rate on expiry < 262.00      | exchange rate on expiry > 262.00   | none                             |
| premium payable on trade date                       | -964,000                              | +964,000                           | 0                                |
| total cost on trade date                            | 0                                     |                                    | 0                                |

## ➔ 3. range forward

MIFID complexity

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 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
- has 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

**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 250 EUR/HUF, and the one-year forward rate is 262 EUR/HUF. The company hopes to achieve on the expiry date an exchange rate better than the forward rate, but to secure an appropriate profit margin the EUR/HUF rate should at least be 259. Therefore, the company enters into a one-year range forward deal where the bottom and the top of the range are set at 259 and 265, 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 262, while at the same time losing the opportunity to benefit from a potential forint weakening beyond the top of the range (265 EUR/HUF). However, the company enjoys protection from any strengthening of the forint at a lower rate than the forward (259 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                | 250 EUR/HUF   |
| 1-year forward rate prevailing at pricing      | 262 EUR/HUF   |
| ATMF volatility                                | 10%   |
| bottom of the range (right to sell)            | 259 EUR/HUF   |
| top of the range (obligation to sell)          | 265 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 259 EUR/HUF                                  | Your company has a right to sell EUR 100,000 at a rate of 259 EUR/HUF (better than the market rate).  |
| exchange rate between 259 and 265 EUR/HUF                        | Your company has neither a right nor an obligation. Your company can sell euros at the spot rate prevailing on expiry.  |
| exchange rate above 265 EUR/HUF                                  | Your company has an obligation to sell EUR 100,000 at a rate of 265 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 259 on the expiry date. In this case your company has to sell EUR 100,000 at a rate of 259 EUR/HUF.  |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is above 259 on the expiry date. In this case your company has to sell EUR 100,000 at a rate of 265 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

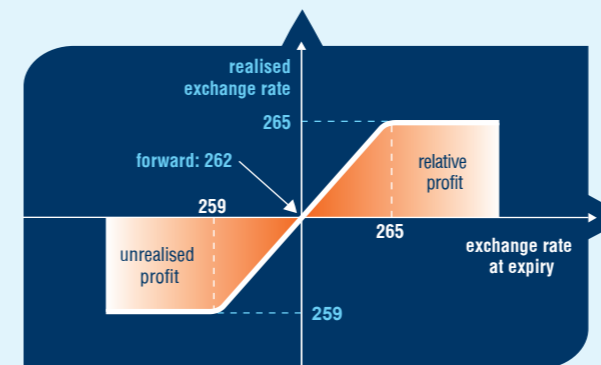
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | 1,590,000                          |
| 260                              | -985,000                           |
| 290                              | -3,495,000                         |

#### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(259 - 230) * 100,000 = 2,900,000$                    | $259 * 100,000 = 25,900,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(265 - 290) * 100,000 = -2,500,000$                   | $265 * 100,000 = 26,500,000$   |



result of the range forward compared to the standard forward on expiry in the case of a hedged position (exporter)

#### 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.



## ➔ 4. seagull option

MIFID complexity

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

**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 250 EUR/HUF, and the one-year forward rate is 262 EUR/HUF. 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 259 forints for 1 euro, and since it does not expect the forint to appreciate beyond 247 EUR/HUF it enters into a seagull option with exchange rate levels of 247-259-283. The obligation to sell at 283 allows the company to benefit to a greater extent from a potential depreciation of the forint than in a range forward deal with a top level of 259. In the seagull option, there is protection against the appreciation of the forint beyond 259, but it is limited at 247 (below this the fixed compensation is paid), while in a range forward deal the protection below 259 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   | 250 EUR/HUF  |
| forward rate prevailing at pricing  | 262 EUR/HUF  |
| ATMF volatility   | 10%  |
| lower level of seagull option (obligation to buy)   | 247 EUR/HUF  |
| middle level of seagull option (right to sell)  | 259 EUR/HUF  |
| upper level of seagull option (obligation to sell)  | 283 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 283 EUR/HUF  | Your company has an obligation to sell EUR 100,000 at a rate of 283 EUR/HUF (better than the forward rate effective on the trade date).  |
| exchange rate is between 259 and 283 EUR/HUF  | Neither a right, nor an obligation is acquired. Your company can sell euros at the spot rate prevailing on expiry.   |
| exchange rate is between 247 and 259 EUR/HUF  | Your company can sell EUR 100,000 at a rate of 259 EUR/HUF.  |
| exchange rate is below 247 EUR/HUF  | You have an obligation to buy at a rate of 247 EUR/HUF and a simultaneous right to sell at a rate of 259 EUR/HUF. Your company's protection does not extend any further, but in return it receives a fixed amount of compensation. |
| amount of compensation  | $(259 \text{ EUR/HUF} - 247 \text{ EUR/HUF}) = 12 \text{ HUF per EUR (HUF 1,200,000)}$   |
| settlement of compensation  | on the delivery date   |
| best-case scenario (treasury transaction on a standalone basis)                                 | The EUR/HUF spot rate is below 247 on the expiry date. In this case your company can sell euros at the spot rate prevailing on expiry (below 247), but it receives compensation in return.   |
| worst-case scenario (treasury transaction on a standalone basis)                                | The EUR/HUF spot rate is above 283 on the expiry date. In this case your company has to sell EUR 100,000 at a rate of 283 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

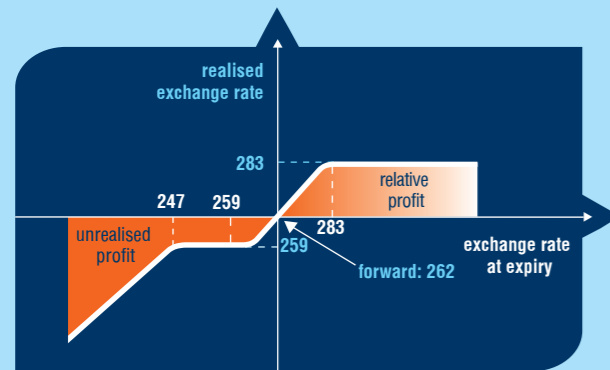
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | 375,000                            |
| 260                              | -815,000                           |
| 290                              | -2,070,000                         |

### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(259 - 247) * 100,000 = 1,200,000$                    | $230 * 100,000 + 100,000 * (259 - 247) = 24,200,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(283 - 290) * 100,000 = -700,000$                     | $283 * 100,000 = 28,300,000$   |



result of the seagull option compared to the standard forward on expiry in the case of a hedged position (exporter)

#### 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## → 5. participating forward

MIFID complexity

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
- 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

**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 250 EUR/HUF, and the one-year forward rate is 262 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 255 EUR/HUF with a 50% obligation.

Let us assume that on the expiry date the spot rate is 270 EUR/HUF. In this case the realized exchange rate for the total notional amount is  $(255 + 270) / 2 = 262.50$  EUR/HUF, which represents a more favourable conversion level than the forward rate quoted on the trade date for this maturity.

| 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                | 250 EUR/HUF   |
| forward rate prevailing at pricing             | 262 EUR/HUF   |
| ATMF volatility                                | 10%   |
| participating forward rate                     | 255 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 255 EUR/HUF   | Your company can sell EUR 100,000 at a rate of 255 EUR/HUF.  |
| exchange rate above 255 EUR/HUF   | Your company has to sell 50% * 100,000 = 50,000 EUR at a rate of 255 EUR/HUF and can convert 100,000 – 50% * 100,000 = 50,000 EUR at the spot rate prevailing on expiry.   |
| best-case scenario (treasury transaction on a standalone basis)                                 | The EUR/HUF spot rate is below 255 on the expiry date. In this case your company has a right to sell EUR 100,000 at a rate of 255 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis)                                | The EUR/HUF spot rate is above 255 on the expiry date. In this case your company has to sell EUR 50,000 at a rate of 255 EUR/HUF. But due to this deal, your company can sell the remaining EUR 50,000 at the spot rate prevailing on expiry. The resulting exchange rate loss can be unlimited. |

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

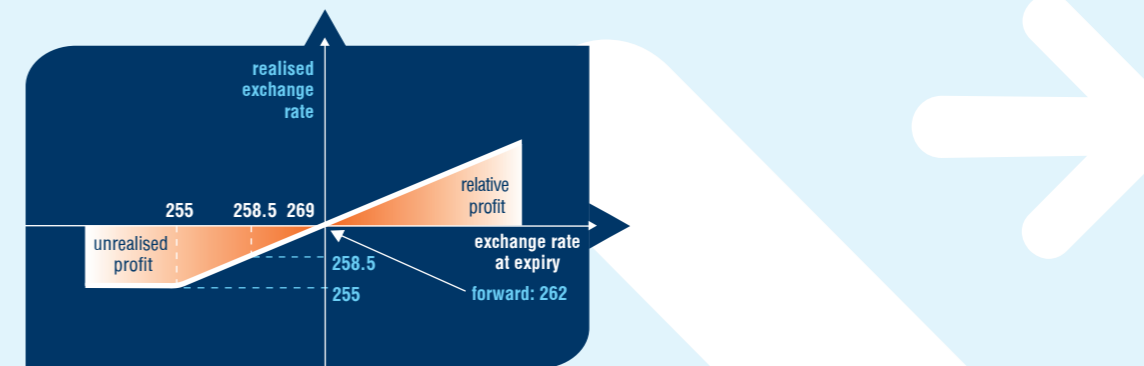
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | 1,550,000                          |
| 260                              | -715,000                           |
| 290                              | -2,165,000                         |

### 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) |
|--|--|--|--|
| 230  | 230 * 100,000 = 23,000,000   | (255 – 230) * 100,000 = 2,500,000                      | 100,000 * 255 = 25,500,000   |
| 260  | 260 * 100,000 = 26,000,000   | (255 – 260) * 50,000 = -250,000                        | 255 * 50,000 + 260 * 50,000 = 25,750,000   |
| 290  | 290 * 100,000 = 29,000,000   | (255 – 290) * 50,000 = -1,750,000                      | 255 * 50,000 + 290 * 50,000 = 27,250,000   |



result of the participating forward compared to the standard forward on expiry in the case of a hedged position (exporter)

### 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 6. forward extra

MIFID complexity

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
- 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:

- an american type trigger: the obligation may become effective at any time during the term;
- a 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.

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 (creating both a right and an obligation) at the same strike price.

**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 250 EUR/HUF, and the one-year forward rate is 262 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 260, but it expects that the EUR/HUF rate will not reach 280 during the tenor of the deal. The company is willing to take the risk that if the spot rate reaches 280 EUR/HUF at any time during the term (including the expiry date), it will only have a forward contract at a strike price of 260 EUR/HUF, thus it enters into a forward extra transaction at a forward extra rate of 260 EUR/HUF with an american trigger at 280 EUR/HUF.

All in all, the company enjoys protection against the appreciation of the forint up to the 260 EUR/HUF rate, and can benefit from a potential depreciation of the forint until the 280 EUR/HUF rate. When the 280 level is reached, the company’s obligation to sell foreign currency will be triggered, so then the conversion must take place at 260 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               | 250 EUR/HUF   |
| forward rate prevailing at pricing            | 262 EUR/HUF   |
| ATMF volatility                               | 10%   |
| forward extra rate                            | 260 EUR/HUF   |
| trigger level (american)                      | 280 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 280 EUR/HUF rate |   |
| A/1) exchange rate below 260 EUR/HUF   | Your company can sell EUR 100,000 at a rate of 260 EUR/HUF.   |
| A/2) exchange rate above 260 EUR/HUF   | 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 280 EUR/HUF               | Your company has a forward deal for EUR 100,000 at a rate of 260 EUR/HUF.   |
| best-case scenario (treasury transaction on a standalone basis)                                | The EUR/HUF spot rate is below 260 on the expiry date. In this case your company can sell EUR 100,000 at a rate of 260 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis)                               | At any time during the tenor, the EUR/HUF rate reaches the 280 trigger level, and on the expiry date the EUR/HUF spot rate is above 260. In this case your company has to sell EUR 100,000 at a rate of 260 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

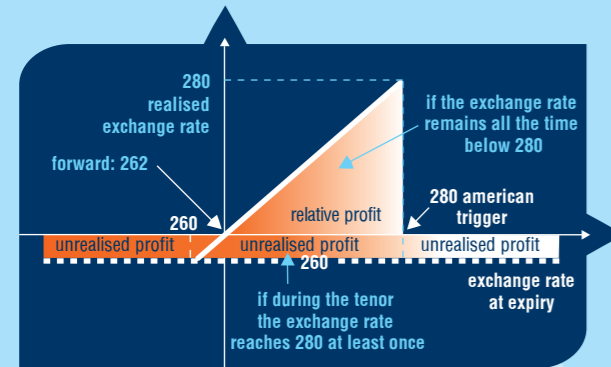
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint) The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | 1,794,000                          |
| 260                              | 884,000                            |
| 290                              | -3,000,000                         |

### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(260 - 230) * 100,000 = 3,000,000$                    | $260 * 100,000 = 26,000,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(260 - 290) * 100,000 = -3,000,000$                   | $260 * 100,000 = 26,000,000$   |



result of the forward extra (with american trigger) compared to the standard forward on expiry in the case of a hedged position (exporter)

**example for the european type trigger:** If you conclude a forward extra deal with a european type trigger, the “knock-in” level will be less advantageous than an american type trigger in that your obligation to buy foreign currency can be triggered already on a slighter depreciation of the forint. In the case of a european trigger, however, the exchange rate is not monitored during the entire term of the transaction – only the spot rate prevailing at 12 p.m. on the expiry date determines whether the obligation to sell becomes effective or not.

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 250 EUR/HUF, and the one-year forward rate is 262 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 260, but expects that on the expiry date, the EUR/HUF rate will not reach 265. If this assumption proves to be wrong, and the EUR/HUF rate is at or above 265 on the date of expiry, then the company will sell euros at 260.

### 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                | 250 EUR/HUF  |
| forward rate prevailing at pricing             | 262 EUR/HUF  |
| ATMF volatility                                | 10%  |
| forward extra rate                             | 260 EUR/HUF  |
| trigger level (european)                       | 265 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) exchange rate below 265 EUR/HUF at 12:00 p.m. on the expiry date |  |
| A/1) exchange rate below 260 EUR/HUF                                | Your company can sell EUR 100,000 at a rate of 260 EUR/HUF.  |
| A/2) exchange rate above 260 EUR/HUF                                | Your company can sell euros at the spot rate prevailing on expiry.   |
| B) exchange rate above 265 EUR/HUF at 12:00 p.m. on the expiry date | Your company has a forward deal for EUR 100,000 at a rate of 260 EUR/HUF.  |
| best-case scenario (treasury transaction on a standalone basis)     | The EUR/HUF spot rate on the expiry date is below 260. In this case your company can sell EUR 100,000 at a rate of 260 EUR/HUF.  |
| worst-case scenario (treasury transaction on a standalone basis)    | The EUR/HUF rate is above 265 on the expiry date. In this case your company has to sell EUR 100,000 at a rate of 260 EUR/HUF. The resulting exchange rate 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 (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) |
|----------------------------------|------------------------------------|
| 230                              | 1,702,000                          |
| 260                              | -1,040,000                         |
| 290                              | -3,886,000                         |

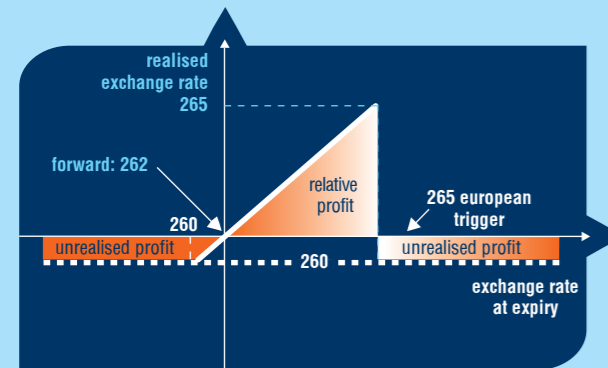




### financial outcome of some possible scenarios on the expiry date

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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(260 - 230) * 100,000 = 3,000,000$                    | $260 * 100,000 = 26,000,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(260 - 290) * 100,000 = -3,000,000$                   | $260 * 100,000 = 26,000,000$   |



result of the forward extra (with european trigger) compared to the standard forward on expiry in the case of a hedged position (exporter)

#### 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

- 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.

## → 7. boosted forward

MIFID complexity

3

#### 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.

**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 250 EUR/HUF, and the one-year forward rate is 262 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 242 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 285 as a boosted forward rate and 242 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                | 250 EUR/HUF  |
| forward rate prevailing at pricing             | 262 EUR/HUF  |
| ATMF volatility                                | 10%  |
| boosted forward rate                           | 285 EUR/HUF  |
| trigger level (knock-out)                      | 242 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   |

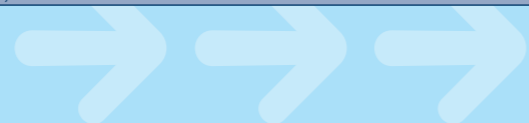
**possible scenarios on expiry depending on the spot market rates at 12:00 p.m on the expiry date**

|   |   |
|---|---|
| A) the exchange rate never reaches the 242 EUR/HUF level during the tenor |   |
| A/1) exchange rate is below 285 EUR/HUF                                   | Your company has a right to sell EUR 100,000 at a rate of 285 EUR/HUF.  |
| A/2) exchange rate is above 285 EUR/HUF                                   | Your company has an obligation to sell EUR 100,000 at a rate of 285 EUR/HUF.  |
| B) the exchange rate reaches the 242 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 242 EUR/HUF, and on the expiry date the EUR/HUF spot rate is below 285 but above 242. In this case your company sells EUR 100,000 at a rate of 285 EUR/HUF.                                   |
| worst-case scenario (treasury transaction on a standalone basis)          | During the tenor, the exchange rate never reaches the 242 EUR/HUF level, and on expiry the EUR/HUF rate is above 285. In this case, your company sells EUR 100,000 at a rate of 285 EUR/HUF. The resulting exchange rate 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 (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.

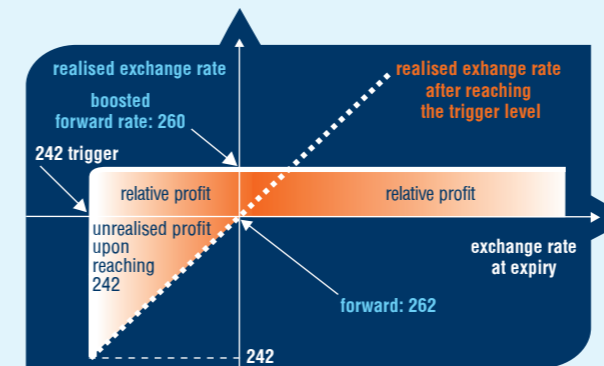
| spot rate in two weeks (EUR/HUF) | market value of the position (HUF) |
|----------------------------------|------------------------------------|
| 230                              | 0                                  |
| 260                              | 936,000                            |
| 290                              | -1,276,000                         |



**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) |
|--|--|--|--|
| 230  | 230 * 100,000 = 23,000,000   | deal terminated  | deal terminated  |
| 260  | 260 * 100,000 = 26,000,000   | (285 - 260) * 100,000 = 2,500,000                      | 285 * 100,000 = 28,500,000   |
| 290  | 290 * 100,000 = 29,000,000   | (285 - 290) * 100,000 = -500,000                       | 285 * 100,000 = 28,500,000   |



result of the boosted forward compared to the standard forward on expiry in the case of a hedged position (exporter)

**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 term of the deal, 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 exchange rate loss potential
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

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

MIFID complexity

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 1.3. 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 realized at maturity is unlimited, the target profit forward contract limits the size of potential exchange 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 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)

**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 250 and the 1-year average forward rate is 256.50 EUR/HUF. As the company has budgeted its revenues at a 265 EUR/HUF exchange rate, therefore it enters into a target profit forward contract at 265 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   | 250 EUR/HUF  |
| average forward rate prevailing at pricing   | 256.50 EUR/HUF   |
| ATMF volatility  | 10%  |
| target profit forward rate   | 265 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 (Reuters 'ECB37 page') – the logic is the same for all expiries |  |
| ECB fixing rate below 265 EUR/HUF  | Your company has a forward selling deal for 100% of the notional amount at a rate of 265 EUR/HUF.  |
| ECB fixing rate above 265 EUR/HUF  | Your company has a forward selling deal for 100% of the notional amount at a rate of 265 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.<br>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 possible foreign exchange loss is 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 (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) |
|----------------------------------|------------------------------------|
| 230                              | -2,198,000                         |
| 260                              | -6,678,000                         |
| 290                              | -38,396,000                        |

### 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)                    |
|---|--|--|---|
| 230                                       | 230 * 100,000 = 23,000,000   | (265 – 230) = 35<br>final target profit forward rate:<br>230 + (30 – 0) = 260<br>(260 – 230) * 100,000 = 3,000,000 | 265 – 230 = 35<br>ultimate profit maximised forward rate:<br>230 + (30 – 0) = 260<br>260 * 100,000 = 26,000,000 |
| 260                                       | 260 * 100,000 = 26,000,000   | (265 – 260) = 5<br>(265 – 260) * 100,000 = 500,000<br>30 / 5 = 6<br>→ the deal terminates after 6 expiries         | (265 – 260) = 5<br>265 * 100,000 = 26,500,000<br>30 / 5 = 6<br>→ the deal terminates after 6 expiries           |
| 290                                       | 290 * 100,000 = 29,000,000   | 265 – 290 = -25<br>(265 – 290) * 100,000 = -2,500,000<br>in total: 12 * (-2,500,000) = -30,000,000                 | 265 – 290 = -25<br>265 * 100,000 = 26,500,000<br>→ the deal is live on each expiry date                         |



#### advantages of transaction

- a euro selling rate higher (more favourable) than the standard forward rate
- an exchange rate more favourable than the 1-year average forward rate can be reached even for a very short, e.g. 1-month period
- 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 exchange rate losses at each maturity, i.e. every month for a year. The amount of the exchange rate losses 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 265.00 EUR/HUF,  
Notional amount = EUR 1,200,000.

The amount of potential exchange rate loss with the assumption that the ECB fixing is at 290.00 EUR/HUF at all maturities:

$$(265 - 290) * 1,200,000 = \text{HUF} - 30,000,000 \text{ (monthly: HUF -2,500,000)}$$

The loss actually realised may also be higher or lower than the above value.

- after the maximum profit amount has been reached, the hedge will no longer exist during the subsequent months
- chapter 1.2. 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 1.3. entitled “5 basic products” of “K&H Treasury Handbook of Market Risk Management” also applies to this product.

# 2.2 foreign exchange hedging for importers





# ➔ 1. forward and average forward

MIFID complexity

1

## ➔ 1.1. hedging of foreign currency expenses for a single expiry

### 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.

**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 250 EUR/HUF. This company wants to eliminate the foreign exchange risk by entering into a forward transaction for the buying of EUR 100,000. Upon the trade date, the EUR/HUF forward rate is 12 forints 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                                  | 250 EUR/HUF   |
| forward rate   | 262 EUR/HUF   |
| transaction cost on the trade date                               | zero  |
| possible scenarios on expiry                                     |   |
| exchange rate below 262 EUR/HUF                                  | Your company buys EUR 100,000 at a rate of 262 EUR/HUF  |
| exchange rate at or above 262 EUR/HUF                            |   |
| best-case scenario (treasury transaction on a standalone basis)  | The EUR/HUF spot rate on the expiry date is above 262. In this case, your company buys EUR 100,000 at a rate of 262 EUR/HUF.  |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate on the expiry date is below 262. In this case, your company buys EUR 100,000 at a rate of 262 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

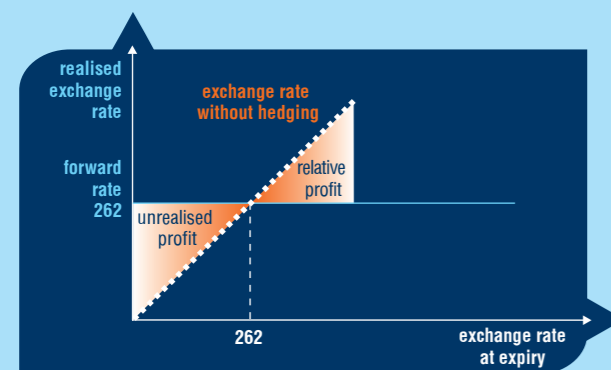
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -2,050,000                         |
| 260                              | 950,000                            |
| 290                              | 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(230 - 262) * 100,000 = -3,200,000$                   | $262 * 100,000 = 26,200,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | $(260 - 262) * 100,000 = -200,000$                     |  |
| 290  | $290 * 100,000 = 29,000,000$   | $(290 - 262) * 100,000 = 2,800,000$                    |  |



result of the standard forward on expiry in the case of a hedged position (importer)

## ➔ 1.2. hedging of foreign currency expenses for various expiries – average forward

MIFID complexity

1

### 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.

**example:** A Hungarian importer expects to incur a year from now monthly EUR 100,000 in expenses. Let us assume that the current spot rate is 250 EUR/HUF, and the one-year forward rate is 262 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 256.50.

### 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 | 250 EUR/HUF                            |

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

|                                    |                |
|------------------------------------|----------------|
| month 1                            | 251 EUR/HUF    |
| month 2                            | 252 EUR/HUF    |
| month 3                            | 253 EUR/HUF    |
| month 4                            | 254 EUR/HUF    |
| month 5                            | 255 EUR/HUF    |
| month 6                            | 256 EUR/HUF    |
| month 7                            | 257 EUR/HUF    |
| month 8                            | 258 EUR/HUF    |
| month 9                            | 259 EUR/HUF    |
| month 10                           | 260 EUR/HUF    |
| month 11                           | 261 EUR/HUF    |
| month 12                           | 262 EUR/HUF    |
| average forward rate               | 256.50 EUR/HUF |
| transaction cost on the trade date | zero           |

### possible scenarios on each expiry date

|   |   |
|---|---|
| exchange rate is below 256.50 EUR/HUF                           | Your company sells EUR 100,000 at a rate of 256.50 EUR/HUF.   |
| exchange rate is at or above 256.50 EUR/HUF                     |   |
| best-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is above 256.50 on the expiry date. In this case, your company sells EUR 100,000 at a rate of 256.50 EUR/HUF.   |
| best-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is below 256.50 on the expiry date. In this case, your company buys EUR 100,000 at a rate of 256.50 EUR/HUF. The resulting exchange rate 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 (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) |
|----------------------------------|------------------------------------|
| 230                              | -24,480,000                        |
| 260                              | 11,520,000                         |
| 290                              | 47,520,000                         |

### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$<br>in total: $12 * 23,000,000 = 276,000,000$  | $(230 - 256.50) * 100,000 = -2,650,000$<br>in total: $12 * (-2,650,000) = -31,800,000$ | $256.50 * 100,000 = 25,650,000$<br>in total: $12 * 25,650,000 = 307,800,000$                 |
| 260  | $260 * 100,000 = 26,000,000$<br>in total: $12 * 26,000,000 = 312,000,000$  | $(260 - 256.50) * 100,000 = 350,000$<br>in total: $12 * 350,000 = 4,200,000$           |  |
| 290  | $290 * 100,000 = 29,000,000$<br>in total: $12 * 29,000,000 = 348,000,000$  | $(290 - 256.50) * 100,000 = 3,350,000$<br>in total: $12 * 3,350,000 = 40,200,000$      |  |



result of the average forward compared to the standard forward on expiry in the case of a hedged position (importer)

### advantages of transaction

- the exchange rate applicable to the future foreign currency buying transactions in the future is fixed in advance
- full protection against any depreciation of the forint
- 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 HUF/FCY interest rate differential is positive)
- chapter 1.2. 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 section on forward deals of chapter 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

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

MIFID complexity

2

### ➔ 2.1. 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. 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 neither a right nor an obligation and you can buy euros at the spot rate prevailing on expiry. 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.

**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 250 EUR/HUF, and the one-year forward rate is 262 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 262 EUR/HUF (equalling the forward rate). The premium charged for buying the EUR call option is 3.68% of the notional, or else  $262 * 3.68\% = 9.64$  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 ( $262 - 9.64 = 252.36$ ). (In this example we ignored that the premium should carry interest 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                | 250 EUR/HUF   |
| forward rate prevailing at pricing             | 262 EUR/HUF   |
| ATMF volatility                                | 10%   |
| strike rate                                    | 262 EUR/HUF   |

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

|  |  |
|--|--|
| exchange rate is below 262 EUR/HUF                               | Your company has neither a right nor an obligation, since it does not exercise the option. Your company can buy euros at the spot rate prevailing on expiry.   |
| exchange rate is at or above 262 EUR/HUF                         | Your company has a right to buy euros, since it exercises the option. It can buy EUR 100,000 at a rate of 262 EUR/HUF.   |
| option premium (payable by the client on the trade date)         | $3.68\% * \text{notional amount} = 9.64$ HUF for each EUR (964,000 HUF)  |
| best-case scenario (treasury transaction on a standalone basis)  | The EUR/HUF spot rate is above 262 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 262 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is below 262 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 (below 262 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

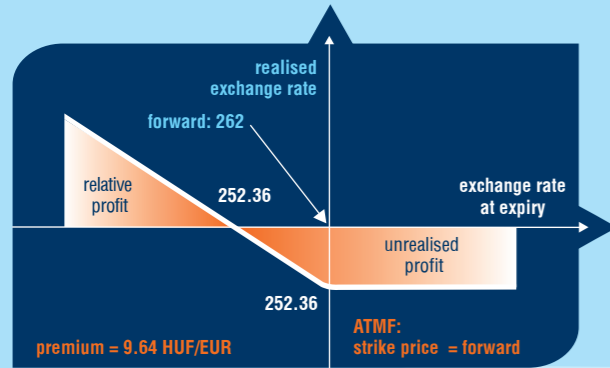
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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)                  |
|----------------------------------|---|
| 230                              | 2.57 HUF per EUR * notional amount = 257,000 HUF    |
| 260                              | 14.75 HUF per EUR * notional amount = 1,475,000 HUF |
| 290                              | 37.80 HUF per EUR * notional amount = 3,780,000     |

#### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $0 - 964,000 = 964,000$                                | $230 * 100,000 + 964,000 = 23,964,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | $0 - 964,000 = 964,000$                                | $260 * 100,000 + 964,000 = 26,964,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(290 - 262) * 100,000 - 964,000 = 1,836,000$          | $262 * 100,000 + 964,000 = 27,164,000$   |



result of buying a EUR call option compared to the standard forward on expiry in the case of a hedged position (importer)

#### advantages of transaction

- full protection against a potential depreciation of the forint
- you can benefit from favourable exchange rate movements
- 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 (taking into account the option premium) is at a rate worse than the forward rate
- 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
- chapter 1.2. 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 1.3. entitled “5 basic products” of “K&H Treasury Handbook of Market Risk Management” also applies to this product.

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

MIFID complexity

2

#### product description

By selling a EUR put option, your company will acquire 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 date of expiry the spot 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.

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

**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 250 EUR/HUF, and the one-year forward rate is 262 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 262 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 3.68% of the notional, or else  $262 * 3.68\% = 9.64$  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  $(262 + 9.64 =) 271.64$ . (In this example we ignored that the premium should carry interest as well.).



#### parameters of the option deal – selling of EUR put option

|  |   |
|--|---|
| notional amount                                | EUR 100,000   |
| currency pair involved                         | 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                | 250 EUR/HUF   |
| forward rate prevailing at pricing             | 262 EUR/HUF   |
| ATMF volatility                                | 10%   |
| strike rate                                    | 262 EUR/HUF   |

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

|  |  |
|--|--|
| exchange rate is below 262 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 262 EUR/HUF.  |
| exchange rate is at or above 262 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.   |
| option premium (payable to the client on the trade date)         | 3.68% * notional amount = 9.64 HUF for each EUR (964,000 HUF)  |
| best-case scenario (treasury transaction on a standalone basis)  | The EUR/HUF spot rate is above 262 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 (below 262 EUR/HUF).         |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is below 262 on the expiry date. In this case, your company has an obligation to buy. Your company buys EUR 100,000 at a rate of 262 EUR/HUF. The resulting exchange rate 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 (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)

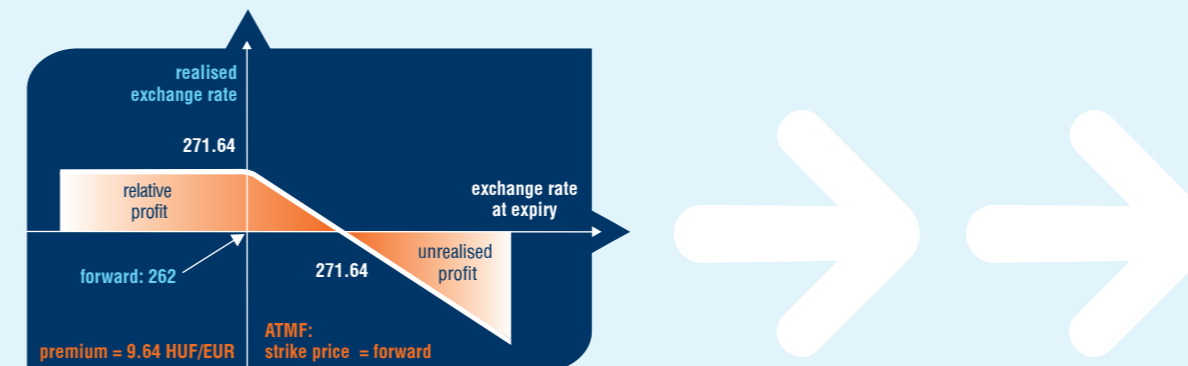
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

| spot rate in two weeks (EUR/HUF) | market value of the position (HUF)                   |
|----------------------------------|--|
| 230                              | 21.54 HUF per EUR * notional amount = -2,154,400 HUF |
| 260                              | 6.68 HUF per EUR * notional amount = -668,000 HUF    |
| 290                              | 0.86 HUF per EUR * notional amount = -86,000 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) |
|--|--|--|---|
| 230  | 230 * 100,000 = 23,000,000   | (230 - 262) * 100,000 + 964,000 = -2,236,000           | 262 * 100,000 - 964,000 = 25,236,000  |
| 260  | 260 * 100,000 = 26,000,000   | (260 - 262) * 100,000 + 964,000 = 764,000              | 262 * 100,000 - 964,000 = 25,236,000  |
| 290  | 290 * 100,000 = 29,000,000   | 0 + 964,000 = 964,000                                  | 290 * 100,000 - 964,000 = 28,036,000  |



result of selling a EUR put option compared to the standard forward on expiry (importer)

#### 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 that of a forward deal
- 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 exchange rate 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
- chapter 1.2. 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 1.3. 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 262), and the company must buy one option and sell the other. 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)

| deal type   | options                               |                                   | forward                         |
|---|---------------------------------------|-----------------------------------|---------------------------------|
|   | 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   | 262.00 (= forward rate = strike rate) |                                   |                                 |
| condition   | exchange rate on expiry > 262.00      | exchange rate on expiry < 262.00  | none                            |
| premium payable on trade date                         | -964,000                              | +964,000                          | 0                               |
| total cost on trade date                              | 0                                     |                                   | 0                               |

## ➔ 3. range forward

MIFID complexity

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
- has 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

**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 250 EUR/HUF, and the one-year forward rate is 262 EUR/HUF. The company hopes to achieve on the expiry date an exchange rate better than the forward rate, but to have an appropriate profit margin it is important that the exchange rate remains below the maximum of 265 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 259 and 265, 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 262, while at the same time losing the opportunity to benefit from a potential forint strengthening beyond the bottom of the range (259 EUR/HUF). However, the company enjoys protection against the weakening of the forint at a higher level than the forward (265 EUR/HUF).

#### parameters of the range forward

|  |  |
|--|--|
| notional amount                                | EUR 100,000  |
| currency pair involved                         | 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                | 250 EUR/HUF  |
| 1-year forward rate prevailing at pricing      | 262 EUR/HUF  |
| ATMF volatility                                | 10%  |
| bottom level of the range (obligation to buy)  | 259 EUR/HUF  |
| top of the range (right to buy)                | 265 EUR/HUF  |
| deal premium                                   | zero   |

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

|  |  |
|--|--|
| exchange rate above 265 EUR/HUF                                  | Your company has a right to buy EUR 100,000 at a rate of 265 EUR/HUF (better than the market rate)   |
| exchange rate between 259 and 265 EUR/HUF                        | Your company has neither a right nor an obligation. Your company can buy euros at the spot rate prevailing on expiry.  |
| exchange rate below 259 EUR/HUF                                  | Your company has an obligation to buy EUR 100,000 at a rate of 259 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 265 on the expiry date. In this case your company has a right to buy EUR 100,000 at a rate of 265 EUR/HUF.  |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is below 259 on the expiry date. In this case your company has to buy EUR 100,000 at a rate of 259 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

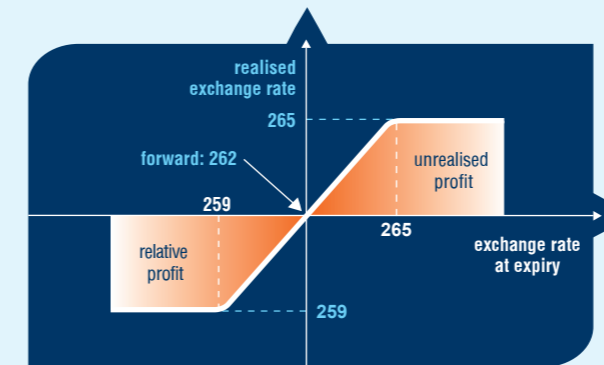
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -1,720,000                         |
| 260                              | 835,000                            |
| 290                              | 3,340,000                          |

#### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(230 - 259) * 100,000 = -2,900,000$                   | $259 * 100,000 = 25,900,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(290 - 265) * 100,000 = 2,500,000$                    | $265 * 100,000 = 26,500,000$   |



result of the range forward compared to the standard forward on expiry in the case of a hedged position (importer)

#### 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

#### 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

## ➔ 4. seagull option

MIFID complexity

2

### product description

A seagull option provides more flexibility than a standard forward deal 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

**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 250 EUR/HUF, and the one-year forward rate is 262 EUR/HUF. 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 267 EUR/HUF, and because it does not expect the forint to depreciate beyond 275, it enters into a seagull option with exchange rate levels of 250-267-275. The obligation to buy at 250 allows the company to benefit to a greater extent from a potential appreciation of the forint than in a range forward deal with a top level of 259. In the seagull option, there is protection against the depreciation of the forint above 267, but it is limited at 275 (above this the fixed compensation is paid), while in a range forward deal the protection above 265 is unlimited.

### parameters of the seagull option

|  |   |
|--|---|
| notional amount                                    | EUR 100,000   |
| currency pair involved                             | 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                    | 250 EUR/HUF   |
| forward rate prevailing at pricing                 | 262 EUR/HUF   |
| ATMF volatility                                    | 10%   |
| lower level of seagull option (obligation to buy)  | 250 EUR/HUF   |
| middle level of seagull option (right to buy)      | 267 EUR/HUF   |
| upper level of seagull option (obligation to sell) | 275 EUR/HUF   |
| deal premium                                       | zero  |

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

|  |   |
|--|---|
| exchange rate is below 250 EUR/HUF                               | Your company has an obligation to buy EUR 100,000 at a rate of 250 EUR/HUF (better than the forward rate effective on the trade date).  |
| exchange rate is between 250 and 267 EUR/HUF                     | Neither a right, nor an obligation is acquired. Your company can buy euros at the spot rate prevailing on expiry.   |
| exchange rate is between 267 and 275 EUR/HUF                     | Your company can buy EUR 100,000 at a rate of 267 EUR/HUF.  |
| exchange rate is above 275 EUR/HUF                               | Your company has a right to buy at a rate of 267 EUR/HUF and a simultaneous obligation to sell at a rate of 275 EUR/HUF. Your company's protection does not extend any further, but in return it receives a fixed amount of compensation. |
| amount of compensation   | $(275 \text{ EUR/HUF} - 267 \text{ EUR/HUF}) = 8 \text{ HUF per EUR (800,000 HUF)}$   |
| settlement of compensation                                       | on the delivery date  |
| best-case scenario (treasury transaction on a standalone basis)  | The EUR/HUF spot rate is above 275 on the expiry date. In this case your company can buy euros at the spot rate prevailing on expiry (above 275), but it receives compensation in return.   |
| worst-case scenario (treasury transaction on a standalone basis) | The EUR/HUF spot rate is below 250 on the expiry date. In this case your company has to buy EUR 100,000 at a rate of 250 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

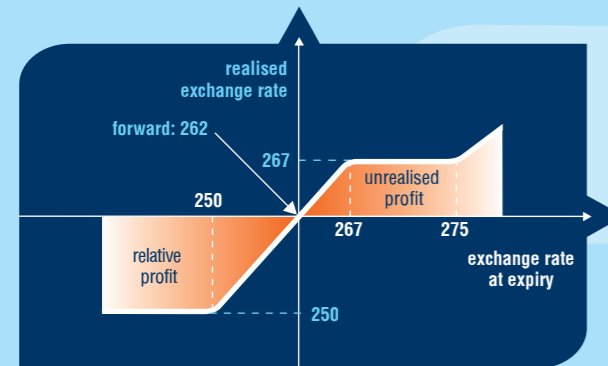
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint) The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -1,595,000                         |
| 260                              | -110,000                           |
| 290                              | 495,000                            |

### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(230 - 250) * 100,000 = -2,000,000$                   | $250 * 100,000 = 25,000,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(275 - 267) * 100,000 = 800,000$                      | $290 * 100,000 - 100,000 * (275 - 267) = 28,200,000$   |



result of the seagull option compared to the standard forward on expiry in the case of a hedged position (importer)

#### 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## → 5. participating forward

MIFID complexity

2

#### product description

In a participating forward deal your company, similarly to a forward deal, enjoys full protection against a potential depreciation of the forint, 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 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 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
- 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

**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 250 EUR/HUF, and the one-year forward rate is 262 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 272 EUR/HUF, with a 50% obligation.

Let us assume that on the expiry date the spot rate is 250 EUR/HUF. In this case the realized exchange rate for the total notional amount is  $(272 + 250) / 2 = 260$  EUR/HUF, which represents a more favourable conversion level than the forward rate quoted on the trade date for this maturity.



| 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                | 250 EUR/HUF   |
| forward rate prevailing on expiry              | 262 EUR/HUF   |
| ATMF volatility                                | 10%   |
| participating forward rate                     | 272 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 272 EUR/HUF   | Your company can buy EUR 100,000 at a rate of 272 EUR/HUF.   |
| exchange rate below 272 EUR/HUF   | Your company has to buy 50% * 100,000 = 50,000 EUR at a rate of 272 EUR/HUF, and can convert 100,000 – 50% * 100,000 = 50,000 EUR at the spot rate prevailing on expiry.   |
| best-case scenario (treasury transaction on a standalone basis)                                 | The EUR/HUF spot rate is above 272 on the expiry date. In this case your company has a right to buy EUR 100,000 at a rate of 272 EUR/HUF   |
| worst-case scenario (treasury transaction on a standalone basis)                                | The EUR/HUF spot rate is below 272 on the expiry date. In this case your company has to buy EUR 50,000 at a rate of 272 EUR/HUF. But due to this deal, your company can buy the remaining EUR 50,000 at the spot rate prevailing on expiry (below 272). The resulting exchange rate loss can be unlimited. |

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

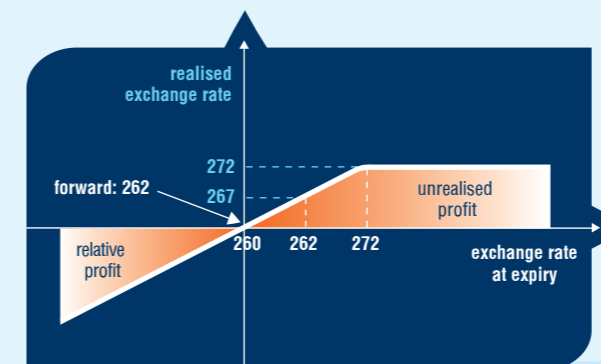
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -1,165,000                         |
| 260                              | -450,000                           |
| 290                              | 2,780,000                          |

### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(230 - 272) * 50,000 = -2,100,000$                    | $272 * 50,000 + 230 * 50,000 = 25,100,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | $(260 - 272) * 50,000 = -600,000$                      | $272 * 50,000 + 260 * 50,000 = 26,600,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(290 - 272) * 100,000 = 1,800,000$                    | $272 * 100,000 = 27,200,000$   |



result of the participating forward compared to the standard forward on expiry in the case of a hedged position (importer)

### 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## ➔ 6. forward extra

MIFID complexity

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 composed 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
- 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:

- an american type trigger: the obligation may become effective at any time during the term
- a 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

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.

**example for an american type trigger:** 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 250 EUR/HUF, and the one-year forward rate is 262 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 264, but it expects that the EUR/HUF rate will not reach 242 during the tenor of the deal. The company is willing to take the risk that if the spot rate reaches 242 EUR/HUF at any time during the term (including the expiry date), it will only have a forward contract at a strike price of 264 EUR/HUF, thus it enters into a forward extra transaction at a forward extra rate of 264 EUR/HUF with an american trigger at 242 EUR/HUF.

All in all, the company enjoys protection against the depreciation of the forint up to the 264 EUR/HUF rate, and can benefit from a potential appreciation of the forint until the 242 EUR/HUF rate. When, however, the 242 level is reached, the company's obligation to buy foreign currency will be triggered, so then the conversion must take place at 264 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                | 250 EUR/HUF  |
| forward rate                                   | 262 EUR/HUF  |
| ATMF volatility                                | 10%  |
| forward extra rate                             | 264 EUR/HUF  |
| trigger level (american)                       | 242 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 242 EUR/HUF rate during the tenor or on the expiry date |  |
| A/1) exchange rate above 264 EUR/HUF   | Your company can buy EUR 100,000 at a rate of 264 EUR/HUF.   |
| A/2) exchange rate below 264 EUR/HUF   | Your company can buy euros at the spot rate prevailing on expiry.  |
| B) during the tenor or on the expiry date, the exchange rate reaches 242 EUR/HUF               | Your company has a forward deal for EUR 100,000 at a rate of 264 EUR/HUF.  |
| best-case scenario (treasury transaction on a standalone basis)                                | The EUR/HUF spot rate is above 264 on the expiry date. In this case your company can buy EUR 100,000 at a rate of 264 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis)                               | At any time during the tenor, the EUR/HUF rate reaches the 242 trigger level, and on the expiry date the EUR/HUF spot rate is below 264. In this case your company has to buy EUR 100,000 at a rate of 264 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

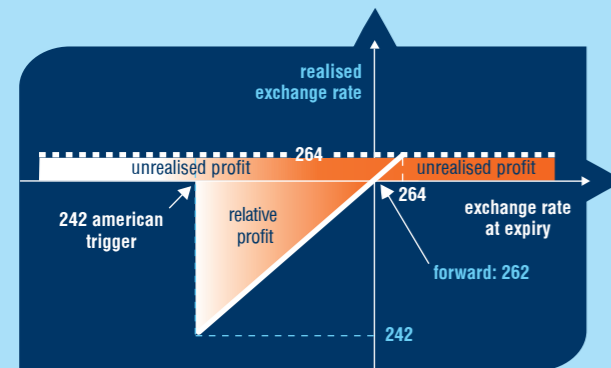
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint) The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -3,400,000                         |
| 260                              | 936,000                            |
| 290                              | 2,600,000                          |

### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(230 - 264) * 100,000 = -3,400,000$                   | $264 * 100,000 = 26,400,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(290 - 264) * 100,000 = 3,400,000$                    | $264 * 100,000 = 26,400,000$   |



result of the forward extra (with american trigger) compared to the standard forward on expiry in the case of a hedged position (importer)

**example for a european type trigger:** If you conclude a forward extra deal with a european type trigger, the “knock-in” level will be less advantageous than an american type trigger, in that your obligation to buy foreign currency can be triggered already on a slighter appreciation of the forint. In the case of a european trigger, however, the exchange rate is not monitored during the entire term of the transaction – only the spot rate prevailing at 12 p.m. on the expiry date determines whether the obligation to buy will become effective or not.

A Hungarian importer expects to incur, in one year's time, EUR 100,000 in expenses. Let us assume that the current spot rate is 250 EUR/HUF, and the one-year forward rate is 262 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 rate above 264, but it expects that on the expiry date the EUR/HUF rate will not reach 252. If this assumption proves to be wrong, and the EUR/HUF rate is at or below 252 on the date of expiry, then the company will buy euros at 264.

### 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                | 250 EUR/HUF  |
| forward rate prevailing at pricing             | 262 EUR/HUF  |
| ATMF volatility                                | 10%  |
| forward extra rate                             | 264 EUR/HUF  |
| trigger level (european)                       | 252 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) exchange rate above 252 EUR/HUF at 12:00 p.m. on the expiry date |   |
| A/1) exchange rate above 264 EUR/HUF                                | Your company can buy EUR 100,000 at a rate of 264 EUR/HUF.  |
| A/2) exchange rate below 264 EUR/HUF                                | Your company can buy euros at the spot rate prevailing on expiry.   |
| B) exchange rate below 252 EUR/HUF at 12:00 p.m. on the expiry date | Your company has a forward deal for EUR 100,000 at a rate of 264 EUR/HUF.   |
| best-case scenario (treasury transaction on a standalone basis)     | The EUR/HUF rate on the expiry date is above 264. In this case your company can buy EUR 100,000 at a rate of 264 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis)    | The EUR/HUF rate is below the 252 on the expiry date. In this case your company has to buy EUR 100,000 at a rate of 264 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

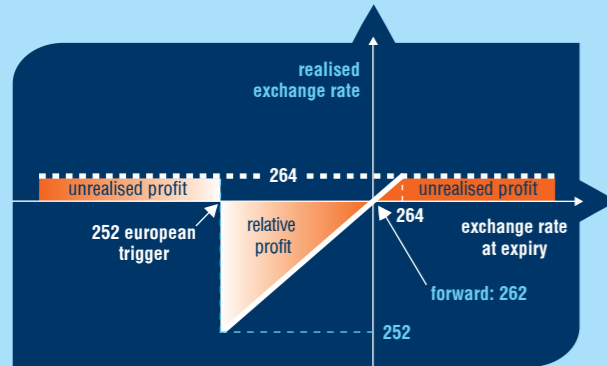
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -2,024,000                         |
| 260                              | 728,000                            |
| 290                              | 3,400,000                          |

### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(230 - 264) * 100,000 = -3,400,000$                   | $264 * 100,000 = 26,400,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | 0  | $260 * 100,000 = 26,000,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | $(290 - 264) * 100,000 = 3,400,000$                    | $264 * 100,000 = 26,400,000$   |



result of the forward extra (with european trigger) compared to the standard forward on expiry in the case of a hedged position (importer)

#### 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

- 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
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.

## → 7. boosted forward

MIFID complexity

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.

**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 250 EUR/HUF, and the one-year forward rate is 262 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 275 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 259 as a boosted forward rate, and 242 as a knock-out trigger.

#### 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                | 250 EUR/HUF   |
| forward rate prevailing at pricing             | 262 EUR/HUF   |
| ATMF volatility                                | 10%   |
| boosted forward rate                           | 259 EUR/HUF   |
| trigger level (knock-out)                      | 275 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 275 EUR/HUF level during the tenor |   |
| A/1) exchange rate above 259 EUR/HUF                                      | Your company has a right to buy EUR 100,000 at a rate of 259 EUR/HUF.   |
| A/2) exchange rate below 259 EUR/HUF                                      | Your company has an obligation to buy EUR 100,000 at a rate of 259 EUR/HUF.   |
| B) the exchange rate reaches the 275 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 275 EUR/HUF, and on expiry the EUR/HUF spot rate is above 259 but below 275. In this case your company buys EUR 100,000 at a rate of 259 EUR/HUF.   |
| worst-case scenario (treasury transaction on a standalone basis)          | During the tenor, the exchange rate never reaches the 275 EUR/HUF level, and on the expiry date the EUR/HUF rate is below 259. In this case, your company buys EUR 100,000 at a rate of 259 EUR/HUF. The resulting exchange rate loss can be unlimited. |

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

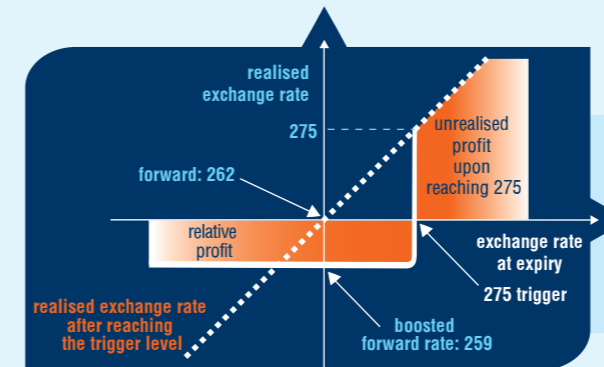
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint)  
The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -2,070,000                         |
| 260                              | -112,320                           |
| 290                              | 0                                  |

#### 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) |
|--|--|--|--|
| 230  | $230 * 100,000 = 23,000,000$   | $(230 - 259) * 100,000 = -2,900,000$                   | $259 * 100,000 = 25,900,000$   |
| 260  | $260 * 100,000 = 26,000,000$   | $(260 - 259) * 100,000 = 100,000$                      | $259 * 100,000 = 25,900,000$   |
| 290  | $290 * 100,000 = 29,000,000$   | deal terminated  | deal terminated  |



result of the boosted forward compared to the standard forward on expiry in the case of a hedged position (importer)

#### 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 term of the deal, 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 exchange rate loss potential
- if you decide to close your position before expiry by means of a counter deal, you may incur a loss
- chapter 1.2. 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 1.3. entitled "5 basic products" of "K&H Treasury Handbook of Market Risk Management" also applies to this product.



## ➔ 8. target profit forward – buying of foreign currency

MIFID complexity

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 1.3. on “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 realized at maturity is unlimited; the target profit forward contract limits the size of potential exchange 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 and losses realized 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)

**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 250 and the 1-year average forward rate is 256.50 EUR/HUF. As the company has budgeted its revenues at a 250 EUR/HUF exchange rate, therefore it enters into a target profit forward contract at 250 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                                | 250 EUR/HUF  |
| average forward rate prevailing at pricing                              | 256.50 EUR/HUF   |
| ATMF volatility   | 10%  |
| target profit forward rate  | 245 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 customer at earlier expiries in HUF per EUR)   |

#### possible scenarios on each expiry date depending on the European Central Bank's EUR/HUF fixing (Reuters 'ECB37 page') – the logic is the same for all expiries

|  |   |
|--|---|
| ECB fixing rate above 245 EUR/HUF                                | Your company has a forward buying deal for 100% of the notional amount at a rate of 245 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 245 EUR/HUF                                | Your company has a forward buying deal for 100% of the notional amount at a rate of 245 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 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 possible foreign exchange loss is unlimited.   |

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

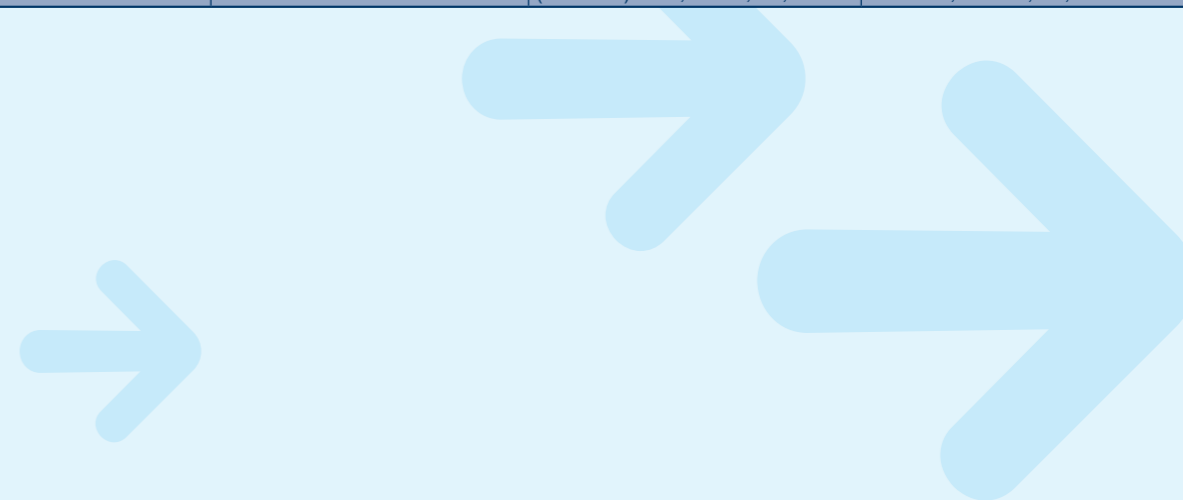
market value: the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions (assumption: except for the spot market rate, all other factors are unchanged, monthly HUF-EUR interest differential remains 1 forint) The number of possible outcomes 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) |
|----------------------------------|------------------------------------|
| 230                              | -14,342,000                        |
| 260                              | -3,527,000                         |
| 290                              | -3,634,000                         |

#### 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)                      |
|---|--|--|---|
| 230                                       | $230 * 100,000 = 23,000,000$   | $(230 - 245) = -15$<br>$(230 - 245) * 100,000 = -1,500,000$<br>in total:<br>$12 * (-1,500,000) = -18,000,000$            | $(230 - 245) = -15$<br>$245 * 100,000 = 24,500,000$<br>→ the deal is live on each expiry date                     |
| 260                                       | $260 * 100,000 = 26,000,000$   | $(260 - 245) = 15$<br>$(260 - 245) * 100,000 = 1,500,000$<br>$30 / 15 = 2$<br>→ the deal terminates after 2 expiries     | $(260 - 245) = 15$<br>$245 * 100,000 = 24,500,000$<br>$30 / 15 = 2$<br>→ the deal terminates after 2 expiries     |
| 290                                       | $290 * 100,000 = 29,000,000$   | $(290 - 245) = 45$<br>final target profit forward rate:<br>$290 - (30 - 0) = 260$<br>$(290 - 260) * 100,000 = 3,000,000$ | $(290 - 245) = 45$<br>final target profit forward rate:<br>$230 + (30 - 0) = 260$<br>$260 + 100,000 = 26,000,000$ |



#### advantages of transaction

- a euro buying rate lower (more favourable) than the standard 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 exchange rate losses at each maturity, i.e. every month for a year. The amount of the exchange rate losses 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 245.00 EUR/HUF, notional amount = EUR 1,200,000.

The amount of potential exchange rate loss with the assumption that the ECB fixing is at 230.00 EUR/HUF at all maturities:

$$(230 - 245) * 1,200,000 = \text{HUF} - 18,000,000 \text{ (monthly: HUF -1 500,000)}$$

The loss actually realised may also be higher or lower than the above value.

- after the maximum profit amount has been reached, the hedge will no longer exist during the subsequent months
- chapter 1.2. 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 1.3. entitled “5 basic products” of “K&H Treasury Handbook of Market Risk Management” also applies to this product.

# 3 products for managing interest rate risk



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 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, Bermuda interest rate swap) 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 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.

# ➔ 1. interest rate swap (IRS)

MIFID complexity

2

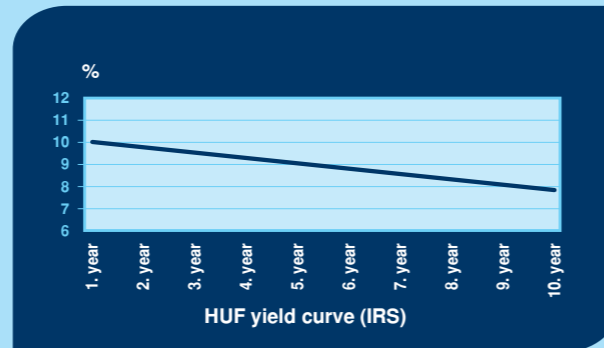
## product description

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. 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, LIBOR, 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, LIBOR, 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.



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 may occur in the future, but is not sure that it will actually materialise

**example: swapping of floating rate liability for fixed rate liability:** A company has a floating rate loan of HUF 100 million notional with a remaining tenor of three years. The effective 6-month BUBOR is 10%, while the 3-year fixed HUF interest rate (BIRS) is 9.40%. Over the medium term, the company in question expects that in the future interest rates will decrease by a lesser extent than what is reflected in the term structure of fixed interest rates (i.e. the yield curve) according to the prevailing market expectations, so it decides to swap its floating rate liability for a fixed rate one. Because the yield curve is declining, the company can benefit already on the trade date from the 0.60% lower interest rate that results from the interest reduction expected by the market as a whole, and which is the advantage of the 9.40% fixed interest rate as compared to the effective 6-month BUBOR. At the same time, this company will not be able to realise any more interest saving if interest rates happen to decrease by more than what is currently expected.

## parameters of the interest rate swap (IRS)

|  |   |
|--|---|
| notional   | HUF 100,000,000                                   |
| tenor  | 3 years   |
| variable notional                                    | no  |
| interest due to client                               | 6-month BUBOR                                     |
| interest payable by client                           | 9.40% fixed rate                                  |
| frequency of interest payment                        | 6 months  |
| interest rate calculation convention (fixed rate)    | actual number of days / 365                       |
| 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 BIRS                                  | 9.40%   |
| current 6-month BUBOR                                | 10.00%  |
| deal premium   | zero  |



### 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 (assumption: apart from the 6-month BUBOR, the rest of the factors remain unchanged, including the shape of the yield curve)  
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

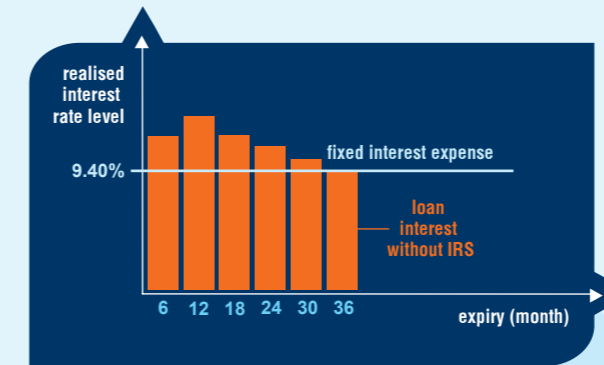
| 6-month BUBOR in two weeks' time (%) | market value of the position (HUF) |
|--------------------------------------|------------------------------------|
| 6.00                                 | -10,000,000                        |
| 10.00                                | -30,000                            |
| 14.00                                | 7,740,000                          |

### 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.

| end of period | 6-month BUBOR (%) | underlying exposure's financial outcome with no treasury transaction (interest expense without IRS, in HUF) | profit/loss of the product on a standalone basis (net settlement, client receives payment if value is "+", in HUF) | underlying exposure's financial outcome with the treasury transaction, hedged position (sum of the 2 previous columns, interest expense with IRS, in HUF) |
|---------------|-------------------|---|--|---|
| 6 months      | 10.00             | 5,000,000   | +300,000   | 4,700,000   |
| 12 months     | 10.25             | 5,125,000   | +425,000   | 4,700,000   |
| 18 months     | 10.00             | 5,000,000   | +300,000   | 4,700,000   |
| 24 months     | 9.75              | 4,875,000   | +175,000   | 4,700,000   |
| 30 months     | 9.50              | 4,750,000   | +50,000  | 4,700,000   |
| 36 months     | 9.40              | 4,700,000   | 0  | 4,700,000   |

According to the above scenario, the interest rate swap did provide the company with protection, because its expectations proved to be correct, and the market rates declined by less than what was indicated by the term structure of interest rates prevailing on the trade date (i.e. the yield curve).



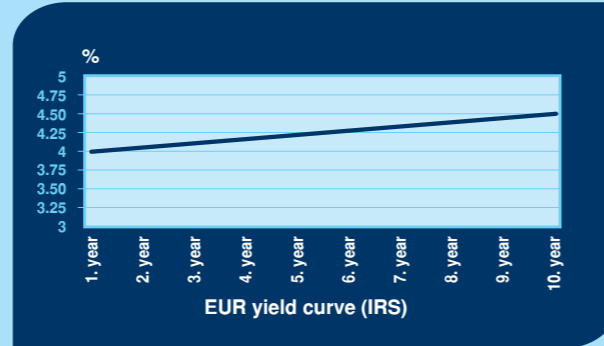
interest rate swap (IRS): swapping floating rate for fixed rate

### 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
- 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
- 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 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 loan with fixed interest 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 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
- 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



EUR yield curve: rising, protection may be provided by IRS against the increase of interest rates by a larger extent than expected by the market

## ➔ 2. interest rate options: caps and floors

MIFID complexity

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.

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.

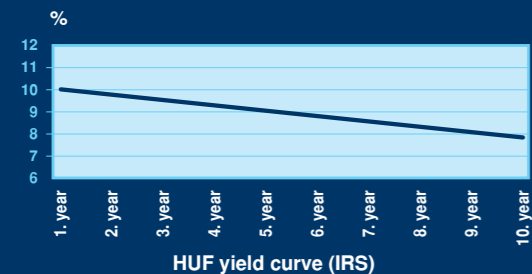
There are two types of the interest rate option:

- **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.

### example: cap option – protection against rising interest rates

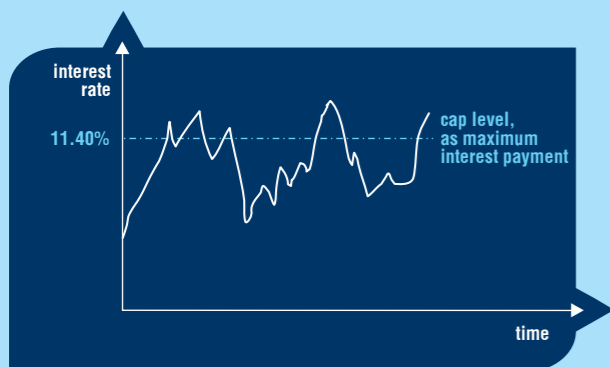
A company has taken out a HUF loan with floating interest rate with a remaining tenor of three years. The 6-month BUBOR is 10%, and the 3-year fixed interest rate (BIRS) is 9.40%. In the medium term, this company expects interest rates to decrease by more than what is expected by the market, but it would also like to exclude any scenario in which its financing expenses would exceed 11.40% p.a. Therefore, it buys a 3-year cap option with a cap strike at 11.40%, for which it pays a premium at 3% of the notional (about 0.5% semi-annually). By buying the cap option, this company can make sure that its interest expenditure in relation to the loan in question will not exceed 11.40% p.a. (plus the annualized premium charged for the cap option).



HUF yield curve: declining. If you expect that interest rates in the future will drop or hardly change, the cap option may provide favourable protection against sudden interest rate increases

#### parameters of the cap option

|   |  |
|---|--|
| notional  | HUF 100,000,000  |
| tenor   | 3 years  |
| variable notional                                     | no   |
| cap strike  | 11.40%   |
| frequency of interest payment                         | 6 months   |
| interest rate calculation convention                  | actual number of days / 360                                    |
| settlement of interest payment                        | net settlement at the end of each interest payment period      |
| precondition for settlement of cap interest payment   | 6-month BUBOR above 11.40% at the start of the interest period |
| current 6-month BUBOR                                 | 10.00%   |
| current 3-year BIRS                                   | 9.40%  |
| option premium (paid by the client on the trade date) | 3.00% * notional (approx. 0.5% semi-annually)                  |



buying a cap option: securing the maximum interest rate level

#### 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 (assumption: apart from the 6-month BUBOR, the rest of the factors remain unchanged, including the shape of the yield curve)

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

| 6-month BUBOR in two weeks' time (%) | market value of the position (HUF) |
|--------------------------------------|------------------------------------|
| 6.00                                 | 370,000                            |
| 10.00                                | 2,700,000                          |
| 14.00                                | 6,800,000                          |

#### 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.

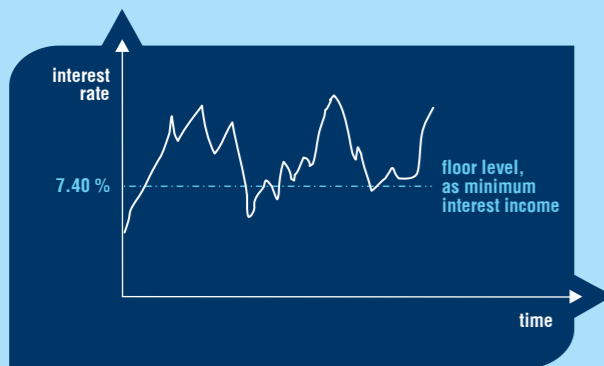
| end of period | 6-month BUBOR (%) | underlying exposure's financial outcome with no treasury transaction (interest expense without cap, in HUF) | profit/loss of the product on a standalone basis (net settlement, client receives payment if value is "+", in HUF) | underlying exposure's financial outcome with the treasury transaction (sum of the 2 previous columns, interest expense with cap and premium, in HUF) | underlying exposure's financial outcome with the treasury transaction, hedged position (interest expense with IRS, in HUF) |
|---------------|-------------------|---|--|--|--|
| 6 months      | 10.00             | 5,000,000   | none   | 5,500,000  | 4,700,000  |
| 12 months     | 8.00              | 4,000,000   | none   | 4,500,000  | 4,700,000  |
| 18 months     | 9.00              | 4,500,000   | none   | 5,000,000  | 4,700,000  |
| 24 months     | 7.00              | 3,500,000   | none   | 4,000,000  | 4,700,000  |
| 30 months     | 11.50             | 5,750,000   | +50,000 (due to client)  | 5,700,000 + 500,000 = 6,200,000  | 4,700,000  |
| 36 months     | 12.00             | 6,000,000   | +300,000 (due to client)   | 5,700,000 + 500,000 = 6,200,000  | 4,700,000  |

**example: floor option – protection against decreasing interest rates**

A company would like to hedge the revenues deriving from floating interest rate investments for three years. The 6-month BUBOR is at 10% and the effective 3-year fixed interest rate (BIRS) is at 9.40%. In the medium term, the company expects interest rates to decrease by less than what is reflected in currently prevailing market expectations, while it would also like to enjoy complete protection against a potentially dramatic interest rate drop. Therefore it buys a 3-year floor option with a floor strike at 7.40%, for which it pays a premium at 3% of the notional amount (about 0.5% semi-annually). In this manner the company can avoid a scenario in which the yield on its HUF term deposit would be lower than 7.40% p.a. (less the annualized premium paid for the floor option).

**parameters of the floor option**

|   |   |
|---|---|
| notional  | HUF 100,000,000   |
| tenor   | 3 years   |
| variable notional                                     | no  |
| floor strike  | 7.40%   |
| frequency of interest payment                         | 6 months  |
| interest rate calculation convention                  | actual number of days / 360                                   |
| settlement of interest payment                        | net settlement at the end of each interest period             |
| precondition for settlement of floor interest payment | 6-month BUBOR below 7.40% at the start of the interest period |
| current 6-month BUBOR                                 | 10.00%  |
| current 3-year BIRS                                   | 9.40%   |
| option premium (paid by the client on the trade date) | 3.00% * notional (approx. 0.5% semi-annually)                 |



buying a floor option: securing the minimum interest rate level

**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 (assumption: apart from the 6-month BUBOR, the rest of the factors remain unchanged, including the shape of the yield curve)  
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

| 6-month BUBOR in two weeks' time (%) | market value of the position (HUF) |
|--------------------------------------|------------------------------------|
| 6.00                                 | 6,700,000                          |
| 10.00                                | 2,600,000                          |
| 14.00                                | 1,200,000                          |

**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.

| end of period | 6-month BUBOR (%) | underlying exposure's financial outcome with no treasury transaction (interest expense without floor, in HUF) | profit/loss of the product on a standalone basis (net settlement, client receives payment if value is "+", in HUF) | underlying exposure's financial outcome with the treasury transaction, hedged position (sum of the 2 previous columns, interest expense with floor and premium, in HUF) | underlying exposure's financial outcome with the treasury transaction, hedged position (interest expense with IRS, in HUF) |
|---------------|-------------------|---|--|---|--|
| 6 months      | 10.00             | 5,000,000   | none   | 4,500,000   | 4,700,000  |
| 12 months     | 8.00              | 4,000,000   | none   | 3,500,000   | 4,700,000  |
| 18 months     | 9.00              | 4,500,000   | none   | 4,000,000   | 4,700,000  |
| 24 months     | 8.00              | 4,000,000   | none   | 3,500,000   | 4,700,000  |
| 30 months     | 7.00              | 3,500,000   | +200,000 (due to client)   | 3,700,000 – 500,000 = 3,200,000   | 4,700,000  |
| 36 months     | 6.00              | 3,000,000   | +700,000 (due to client)   | 3,700,000 – 500,000 = 3,200,000   | 4,700,000  |

#### 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 trade (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 on 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
- 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

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 offset 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 next page). In specific cases, a swaption (see below) 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.

## ➔ 3. combination of interest rate options: interest rate collar

MIFID complexity

2

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.

#### interest rate collar with an underlying loan transaction: buying of a cap option and selling of a 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 a floor option and selling of a cap option

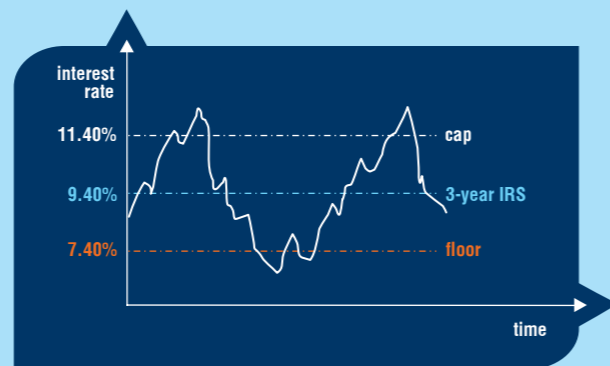
possible scenarios on specific predetermined expiry dates:

- 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 receive 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 takes place between the parties

Settlement takes place invariably at the end of each interest payment period.



**example:** A company has a 3-year floating-rate bullet loan in HUF. The current 6-month BUBOR is 10% and the 3-year fixed interest rate (BIRS) is 9.40%. 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 an 11.40% strike and sells a floor option with a 7.40% strike for the same notional. By doing so, the maximum of the company's interest expenditure will be set at 11.40%, in return for which the company accepts that it will not benefit from a potential decrease of interest rates below 7.40%.



collar deal: creating a protection band

**parameters of the interest rate collar**

|   |  |
|---|--|
| notional  | HUF 100,000,000  |
| tenor   | 3 years  |
| variable notional                               | no   |
| cap (maximum) strike                            | 11.40%   |
| floor (minimum) strike                          | 7.40%  |
| frequency of interest payments                  | 6 months   |
| 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 at the cap strike   | 6-month BUBOR above 11.40% at the start of the interest payment period |
| precondition for settlement at the floor strike | 6-month BUBOR below 7.40% at the start of the interest payment period  |
| current 6-month BUBOR                           | 10.00%   |
| current 3-year BIRS                             | 9.40%  |
| option premium                                  | none   |

**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 (assumption: apart from the 6-month BUBOR, the rest of the factors remain unchanged, including the shape of the yield curve)

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

| 6-month BUBOR in two weeks' time (%) | market value of the position (HUF) |
|--------------------------------------|------------------------------------|
| 6.00                                 | -6,500,000                         |
| 10.00                                | 500,000                            |
| 14.00                                | 5,300,000                          |

**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.

| end of period | 6-month BUBOR (%) | underlying exposure's financial outcome with no treasury transaction (interest expense without collar, in HUF) | profit/loss of the treasury deal on a standalone basis (net settlement, client receives payment if value is "+", in HUF) | underlying exposure's financial outcome with the treasury transaction, hedged position (interest expense with collar, in HUF) | underlying exposure's financial outcome with the treasury transaction, hedged position (interest expense with IRS, in HUF) |
|---------------|-------------------|--|--|---|--|
| 6 months      | 10.00             | 5,000,000  | none   | 5,000,000   | 4,700,000  |
| 12 months     | 8.00              | 4,000,000  | none   | 4,000,000   | 4,700,000  |
| 18 months     | 7.00              | 3,500,000  | -200,000 (paid by client)  | 3,700,000   | 4,700,000  |
| 24 months     | 6.50              | 3,250,000  | -450,000 (paid by client)  | 3,700,000   | 4,700,000  |
| 30 months     | 9.00              | 4,500,000  | none   | 4,500,000   | 4,700,000  |
| 36 months     | 11.50             | 5,750,000  | +50,000 (due to client)  | 5,700,000   | 4,700,000  |

### 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 deal

### 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
- the extent of the potential interest loss is unlimited in theory, if during the tenor interest rates have developed significantly more favourably 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
- 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

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 offset 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.

## ➔ 4. swaption

MIFID complexity

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.

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 (in six month's time in our example), 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.
- 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.

On the expiry date, the swaption can be settled in two alternative ways, as follows:

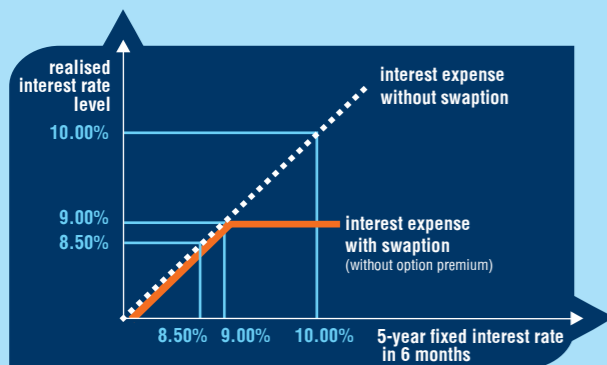
- swap settled: the swap is entered into by the two parties
- cash settled: the seller pays the buyer the current market value of the underlying swap

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.

**example: 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 six months' time. The company has a plan to take out a 5-year bullet loan to realise the project in six months' time. The 6-month BUBOR is 10%, and the five-year fixed interest rate (BIRS) is 9%. 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 9% interest rate. The swaption premium is 1.50% of the notional, that is, about 0.30% per year. This has given the company a right to pay 9% of the notional value of the option (that is, of the loan) to the bank for a duration of five years, while the bank will pay floating interest rate to the client for five years, provided that in six months' time the 5-year fixed interest rate is above 9% in the market.

| parameters of buying the payer swaption                                     |   |
|---|---|
| notional  | notional of loan (HUF 100,000,000)                      |
| tenor of swaption   | 6 months  |
| strike price of swaption  | 9.00% fixed rate  |
| parameters of interest rate swap taking effect upon exercising the swaption |   |
| notional of interest rate swap  | notional of loan (see above)                            |
| tenor of embedded interest rate swap  | 5 years (starting in 6 months)                          |
| variable notional   | no  |
| interest payable by client (strike price)                                   | 9.00% fixed rate  |
| interest due to client  | 6-month BUBOR   |
| interest rate calculation convention (fixed interest)                       | actual number of days / 365                             |
| interest rate 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) 5-year fixed interest rate below 9.00%                                   | the swaption is not exercised                           |
| B) 5-year fixed interest rate above 9.00%                                   | the swaption is exercised                               |
| B/1) payable by client  | fixed 9.00% interest on the entire notional for 5 years |
| B/2) due to client  | floating interest on the entire notional for 5 years    |
| current 6-month BUBOR   | 10.00%  |
| current 5-year BIRS   | 9.00%   |
| premium of swaption (payable by client on the trade date)                   | 1.50% * notional (approx. 0.30% p.a.)                   |



swaption (buying the payer swaption)

#### 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 (assumption: apart from the 6-month BUBOR, the rest of the factors remain unchanged, including the shape of the yield curve) The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

| 6-month BUBOR in two weeks' time (%) | market value of the position (HUF) |
|--------------------------------------|------------------------------------|
| 6.00                                 | 2,600                              |
| 10.00                                | 1,130,000                          |
| 14.00                                | 12,990,000                         |

#### 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.

| 5-year fixed interest rate in 6 months' time | is the swaption exercised? | underlying exposure's financial outcome with no treasury transaction (annual interest expense without swaption, in HUF) | profit/loss of the treasury deal on a standalone basis (net settlement, client receives payment if value is "+", in HUF) | underlying exposure's financial outcome with the treasury transaction, hedged position (annual interest expense with swaption and premium, in HUF) |
|--|----------------------------|---|--|--|
| 12.00%                                       | yes                        | 12,000,000  | +3,000,000   | 9,300,000  |
| 10.00%                                       | yes                        | 10,000,000  | +1,000,000   | 9,300,000  |
| 8.00%  | no                         | 8,000,000   | none   | 8,300,000  |
| 6.00%  | no                         | 6,000,000   | none   | 6,300,000  |

#### advantages of transaction

- complete protection against future adverse changes in long-term interest rates: the worst-case scenario 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 on 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 deal (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 on 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
- 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

## ➔ 5. “Bermudan” interest rate swap

MIFID complexity

3

A Bermudan interest rate swap is an interest rate swap which, similarly to a regular interest rate swap, makes it possible to swap your floating rate loan for a fixed rate loan, or vice versa, without having to amend the loan agreement. However, this interest rate swap can be called by the bank, in return for which it provides a better fixed interest rate than the regular interest rate swap. As long as the bank has not called the transaction, it can be considered as a regular interest rate swap, but it should not be regarded as a 100% hedging instrument because of the callability feature.

The decision whether or not to call the interest rate swap is entirely and exclusively up to the bank’s discretion.

### product description

By entering into this deal, the parties agree to swap floating rate for fixed interest rate with respect to a specific loan amount and maturity date. The swapping of interest payments is due at the end of each interest payment period.

The interest payments can be swapped in one of the following two ways:

- swapping of floating interest rate tied to an interest rate fixing (BUBOR, LIBOR, etc.) for a fixed interest rate (payer swap), or
- swapping of fixed interest rate for floating interest rate tied to an interest rate fixing (BUBOR, LIBOR, etc.) (receiver swap)

A Bermudan interest rate swap is a swap in which one of the parties has a right to call (or else terminate), free of charge, the deal at a point in time fixed in advance. The other party which sold the right of call has in return better interest rate conditions than in a regular interest rate swap with similar parameters. For instance, if you pay fixed interest rate and you have a right to call the interest rate swap, then you have to pay higher interest than in a regular interest rate swap. When, however, you pay fixed interest rate and you sell the right to call the swap, then you can achieve a better fixed interest rate than in a regular interest rate swap.

### example: Bermudan interest rate swap

A company has a floating rate loan of HUF 100,000,000 notional, with a remaining tenor of seven years. The current 6-month BUBOR interest rate is 10%, and the 1-year fixed HUF interest rate is 9.80%, while the seven-year fixed HUF interest rate is 8.60%. This company wants to avoid running a risk, but it also considers the seven-year fixed rate too high, and would prefer to pay 7.80% p.a. interest. In return, it is willing to accept the risk that its protection may be terminated after the end of the first year, because the bank has the right, after the end of the first year, to call the structure on a unilateral basis at the end of each year.

On the day of callability each year, the bank will not terminate the agreement if the following conditions prevail:

- the fixed interest rate of the underlying interest rate swap is below 7.80%
- the 6-month BUBOR is below 7.80%
- the Bank will terminate the interest rate swap if on a call date the interest rate advantage of the given interest period is higher than the value of the right to call
- the likelihood of calling the interest rate swap increases if the current interest rates are higher in the market

As a consequence of the foregoing conditions, it may happen that the company obtains interest rate advantage as compared to the market rates as part of this deal on a specific annual expiry date, but the bank refrains from exercising its right to call nevertheless.

If the yield curve is declining, the likelihood of calling the deal is less than in the case of a normal (upward sloping) yield curve.

### parameters of the Bermudan interest rate swap

|  |   |
|--|---|
| notional   | HUF 100,000,000   |
| tenor  | 7 years   |
| variable notional  | no  |
| interest due to client   | 6-month BUBOR   |
| interest paid by client  | 7.80% fixed rate  |
| frequency of interest payment  | 6 months  |
| interest rate calculation convention (fixed interest)  | actual number of days / 365   |
| interest rate calculation convention (variable interest)   | actual number of days / 360   |
| settlement of interest payment   | net settlement at the end of each interest period   |
| calling / termination of the deal  | may be initiated by the bank on the expiry dates  |
| expiry dates   | end of each year elapsed after trade date   |
| callability condition (the right to decide whether or not to call the interest rate swap is entirely up to the bank) | the bank will not terminate the deal only if on the call days each year: <ul style="list-style-type: none"> <li>· the fixed interest rate of the underlying interest rate swap is less than 7.80%, or</li> <li>· the 6-month BUBOR is below 7.80%</li> </ul> the bank will terminate the interest rate swap if on a call day in a given year: <ul style="list-style-type: none"> <li>· the interest advantage in the given interest period is higher than the value of the right to call</li> <li>· the likelihood of calling the interest rate swap increases when market interest rates are higher</li> </ul> |
| 1 <sup>st</sup> possible outcome: the deal is called after the first year  | The client used a HUF loan at an interest that is 2% more advantageous than the 1-year fixed interest rate effective on the trade date.   |
| 2 <sup>nd</sup> possible outcome: the deal is not called during its tenor  | The client pays 7.8% fixed interest for 7 years, and this is still lower by 0.8% than the 7-year fixed interest rate effective on the trade date.   |
| current 7-year BIRS  | 8.60%   |
| current 1-year BIRS  | 9.80%   |
| current 6-month BUBOR  | 10.00%  |
| deal premium   | zero  |



### 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 (assumption: apart from the 6-month BUBOR, the rest of the factors remain unchanged, including the shape of the yield curve)  
The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

| 6-month BUBOR in two weeks' time (%) | market value of the position (HUF) |
|--------------------------------------|------------------------------------|
| 6.00                                 | 2,600                              |
| 10.00                                | 1,130,000                          |
| 14.00                                | 12,990,000                         |

### 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

| end of period | 6-month BUBOR (%) | underlying exposure's financial outcome with no treasury transaction (interest expense without Bermudan IRS, in HUF) | profit/loss of the product on a standalone basis (net settlement, client receives payment if value is "+", in HUF) | underlying exposure's financial outcome with treasury transaction (sum of the 2 previous columns, interest expense with Bermudan IRS, in HUF) | underlying exposure's financial outcome with treasury transaction, hedged position (interest expense with IRS, in HUF) |
|---------------|-------------------|--|--|---|--|
| 1 year        | 7.00              | 7,000,000  | -800,000 (paid by client)  | 7,800,000   | 8,600,000  |
| 2 years       | 10.00             | 10,000,000   | deal terminated  | 10,000,000  | 8,600,000  |
| 3 years       | 10.25             | 10,250,000   | none   | 10,250,000  | 8,600,000  |
| 4 years       | 10.00             | 10,000,000   | none   | 10,000,000  | 8,600,000  |
| 5 years       | 9.75              | 9,750,000  | none   | 9,750,000   | 8,600,000  |
| 6 years       | 9.50              | 9,500,000  | none   | 9,500,000   | 8,600,000  |
| 7 years       | 9.40              | 9,400,000  | none   | 9,400,000   | 8,600,000  |

According to the foregoing scenario then, the company would have had better protection if it had chosen a regular interest rate swap, because the interest rates decreased by less than what was expected by the market, and the interest rate swap was terminated at the end of the second year. In return, the company paid 0.80% less interest than in a regular interest rate swap.

### advantages of transaction

- if floating interest rate payment is swapped for fixed interest rate payment, you will enjoy protection against unexpected interest rate changes up to the time of a possible call
- predictability: the payment of fixed interest rate helps you fix your interest expenses or income up to the time of a possible call event
- flexibility: using a Bermudan interest rate swap, you can hedge your interest expenses/income at interest rate levels that are more favourable than the market rates applicable on the trade date, with respect to the entire tenor of the loan, provided that the transaction is not called by the bank eventually
- if the deal is called, it can be considered as a short-term hedging instrument with an interest rate that is better than the current market rates
- net settlement: only the difference between fixed and floating interest rates will be settled between the parties
- you can enter into an interest rate swap in connection with a loan extended by, or deposit placed with, another financial institutions, because this deal is (in legal terms) separate from the underlying loan or deposit
- available in most liquid currencies
- the expiry date, as well as the length of fixed and floating interest rate payment periods, 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
- your position can be closed at any time before expiry, resulting, of course in a profit or a loss, depending on the current market situation

### risks of transaction

- because of the fluctuation of market rates, closing an interest rate swap position before expiry results in settlement obligations
- if the underlying loan is repaid before maturity, it is advisable to close the interest rate swap, as well, as there is no longer any risk resulting from the core business
- when a loan with fixed interest rate is repaid, you will lose on the interest rate swap, provided that the fixed interest rates have decreased in the meantime, but in this case the possibility to call the deal before expiry may have either a positive or a negative effect on the actual cost of closing your position
- if floating interest rate payment is swapped for fixed interest rate payment, it may happen that you will not benefit from a favourable turn in interest rates that is of a larger size than it was expected
- if fixed interest rate payment is swapped for floating interest rate payment, you will become vulnerable, without protection, to adverse interest rate changes in the case of a loan
- in the case of a Bermudan interest rate swap, if the bank calls the agreement, it will be terminated irrevocably, and you will become exposed to adverse interest rate changes without protection (the worst-case scenario is not known)
- 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.

In summary, the choice of an appropriate interest rate transaction is fundamentally a function of how you expect interest rates to evolve in the future. The yield curve is a reflection of market expectations: your product choice regarding interest rate risk hedging should be determined according to whether you expect developments different from what the yield curve suggests, because you foresee a different degree of rise or fall in interest rates, or whether, on the contrary, your forecast coincides with that of the market as far as future interest rates are concerned.

| client's forecast about future interest rate evolution                                      | borrower   | investor  |
|---|--|---|
| interest rates will in the future decrease as compared to market expectations (yield curve) | buying of cap option<br>buying of payer swaption | receives fixed interest (receiver IRS)                |
| interest rates will in the future evolve as expected by the market (yield curve)            | pays fixed interest (payer IRS)<br>collar deal   | receives fixed interest (receiver IRS)<br>collar deal |
| interest rates will in the future increase as compared to market expectations (yield curve) | pays fixed interest (payer IRS)                  | buying of floor option<br>buying of receiver swaption |

# 4 commodity risk hedging



## ➔ the hedging of the risk involved in commodity prices

Beside the management of foreign exchange and interest rate risk, an increasing number of clients have felt it necessary to contain their exposure somehow also in the volatile market of commodities. Hedging is crucial for businesses processing commodities as raw materials, as they have a need to fend off the effect of rising prices, and it is also indispensable for producers of raw materials in order to secure the necessary level of profitability. The risk resulting from the hectic changes in the price of raw materials and commodities is most often hedged using the following three product types:

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.

- **collar**

This is a combination of two options, and comes typically free of charge. The collar contract sets a price range around the 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.

### ➔ types of commodity market transactions

- **swap**

For a specific period (or 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.

- **option**

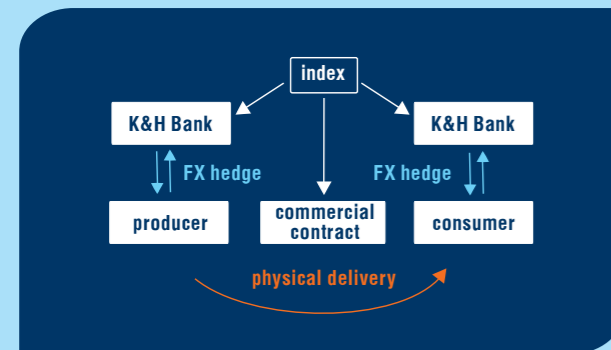
The buyer of an option acquires a right to buy or sell a given commodity in a period (or at a date) set in advance, at a price fixed in advance. In this sense, an option is a kind of insurance where premium is charged upfront when the contract is

### ➔ characteristics of commodity transactions

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. Therefore, we should also note that it is advisable to establish such terms and conditions in the commercial contract as to align such contract to a specific central reference price/index (in our example, the USLD 10 PPM Barges Rotterdam FOB index), because in this way, from your

point of view, the price exposure will be far more transparent and easier to hedge. 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 London Metal Exchange for metals, the PLATTS agency for mineral oil products, and the London Bullion Market Association for precious metals. 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, that is, your commodity exposure is no longer there, and you no longer need the treasury deal as a consequence. The conditions of closing are always defined as a function of the current market situation, so it can even cause you to incur a cost and thus a loss in some cases. Other exotic option structures are also available for commodities with higher liquidity.

The following chart illustrates the relationship between the treasury transaction and the underlying commercial contract:



link between the treasury transaction and the commercial contract

## ➔ commodities for which hedging is available

K&H Bank has on offer solutions for three main commodity groups, as follows:

- energy sources: crude oil, diesel oil, fuel oil, kerosene, light petrol, engine petrol, natural gas, coal, electricity
- metals: copper, zinc, nickel, lead, tin, aluminium, gold, silver, platinum, palladium, etc.
- others: cellulose, papers, CO<sub>2</sub> emissions, polyethylene, polypropylene, agricultural produce

## ➔ minimum trade quantities by commodity type and deal type

The following table contains the minimum trade quantities, broken down to various commodities and the different types of treasury deals:

| list of commodities | minimum tradeable quantity  |                             |
|---------------------|-----------------------------|-----------------------------|
|                     | forward transaction         | option, collar              |
| copper              | 25t                         | 75t                         |
| aluminium           | 25t                         | 75t                         |
| zinc                | 25t                         | 75t                         |
| nickel              | 6t                          | 24t                         |
| lead                | 25t                         | 75t                         |
| tin                 | 5t                          | 20t                         |
| heavy oil           | 0.5 mln USD/month (nominal) | 0.5 mln USD/month (nominal) |
| kerosene            | 150t/month, min. 6 months   | 300t/month, min. 3 months   |
| diesel oil          | 150t/month, min. 6 months   | 300t/month, min. 3 months   |
| 1% fuel oil         | 150t/month, min. 6 months   | 300t/month, min. 3 months   |
| 3.5% fuel oil       | 150t/month, min. 6 months   | 300t/month, min. 3 months   |
| gold                | 100 tr.oz.                  | 1000 tr.oz.                 |
| silver              | 1000 tr.oz.                 | 5000 tr.oz.                 |

## → examples for commodity hedging deals

### → swap

Our client needs to buy diesel oil for its business on a continuous basis, in a monthly quantity of about 1000 tonnes. The actual physical purchases are characterised by the fact that hedging is tied to the ULSD 10 ppm Barges Rotterdam FOB index. The current spot price is around USD 550 per tonne in the market, and the fixed price for the following 12 months is USD 599/t. This company must procure protection against rising diesel oil prices, so it buys this fixed price for the next 12 months (or else for 12 calculation periods), for a quantity of 1000 tonnes per month. If in the course of monthly settlements, the average of fluctuating daily prices is above the fixed price USD 599, then the bank pays the client the difference of the current and the fixed price for the given month's quantity of diesel oil. At the same time, if in a month the fluctuating daily prices, fixed daily, result in an average that is lower than USD 599/t, then the company will pay to the bank the difference of the fixed and the current price with respect to the given month's quantity of diesel oil bought.

| parameters of the commodity swap                       |  |
|--|--|
| notional   | 1000mt / expiry (mt = metric tonne)<br>in total: 12,000mt  |
| index  | ULSD 10 ppm Barges Rotterdam   |
| tenor  | 12 months, monthly expiries, see below   |
| calculation periods (expiry date = last day of period) | 01/01/2009 – 30/01/2009<br>01/02/2009 – 27/02/2009<br>01/03/2009 – 31/03/2009<br>01/04/2009 – 30/04/2009<br>01/05/2009 – 29/05/2009<br>01/06/2009 – 30/06/2009<br>01/07/2009 – 31/07/2009<br>01/08/2009 – 31/08/2009<br>01/09/2009 – 30/09/2009<br>01/10/2009 – 31/10/2009<br>01/11/2009 – 30/11/2009<br>01/12/2009 – 31/12/2009 |
| delivery dates   | every month, 5 business days after end of each calculation period  |
| spot price   | 550 USD/mt   |
| fixed price  | 599 USD/mt   |
| fixed price payable by                                 | client   |
| variable price   | average of prices fixed during a calculation period, on the basis of reference prices published by PLATTS  |
| variable price payable by                              | bank   |
| possible outcomes on a given expiry                    |  |
| the fixed price is above the variable price            | the party paying the fixed price will pay to the party paying the variable price<br>= notional * (fixed price – variable price)  |
| the variable price is above the fixed price            | the party paying the variable price will pay to the party paying the fixed price<br>= notional * (variable price – fixed price)  |
| settlement   | net settlement in USD  |
| precondition for signing contract                      | The K&H Treasury master agreement is to be supplemented by a section relating to the hedging of commodities.   |
| deal premium   | zero   |

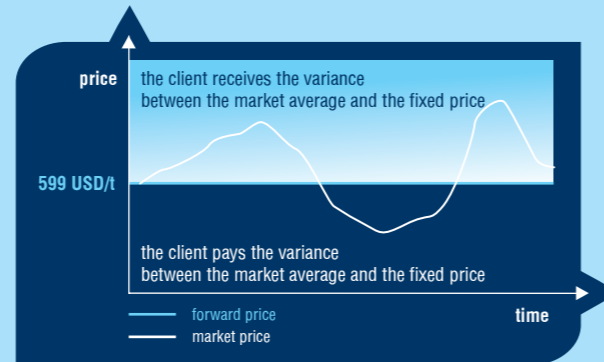


### advantages of transaction

- 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 the necessary/superfluous commodity quantities, your plans and your budget; the change of one parameter will cause the rest of the parameters to change, too
- free of charge, this transaction can be concluded without any special premium
- your position can be closed at any time before expiry, resulting, of course, in a profit or a loss, depending on the current market situation

### risks of transaction

- you may incur a loss on this deal if commodity prices evolve in an advantageous direction
- 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



settlement of swap on expiry, where the client purchases commodity at fixed price, hedged position

### ➔ buying a call option

Our client may decide to buy, rather than a swap, an option that gives its holder a right to buy the commodity concerned. The client has calculated the business's “break-even point”, that is, the price needed to generate a profit, at USD 700/t, this price resulting in the maximum cost the business can afford. This means that if in the following year the price of diesel oil rises above this level, then this will seriously imperil the company's profitability and its business as a whole. In order to fend this risk off, the company buys an option for the next 12 months, for USD 59 per tonne. This is the price the company is willing to pay to obtain 100% protection in return. If the monthly average price of diesel oil rises above USD 700/t, the bank will pay the client the difference of the current and the fixed price for the quantity purchased in the month in question. By contrast, if the monthly average of the daily prices is below USD 700/t in any given month, then there will be no settlement between the company and the bank. In this case the company can profit from the favourable turn in market price trends.

#### parameters of the commodity option

|  |  |
|--|--|
| notional   | 1000mt / expiry (mt = metric tonne)<br>in total: 12,000mt  |
| index  | ULSD 10 ppm FOB Barges Rotterdam   |
| tenor  | 12 months, monthly expiries, see below   |
| calculation periods (expiry date = last day of period) | 01/01/2009 – 30/01/2009<br>01/02/2009 – 27/02/2009<br>01/03/2009 – 31/03/2009<br>01/04/2009 – 30/04/2009<br>01/05/2009 – 29/05/2009<br>01/06/2009 – 30/06/2009<br>01/07/2009 – 31/07/2009<br>01/08/2009 – 31/08/2009<br>01/09/2009 – 30/09/2009<br>01/10/2009 – 31/10/2009<br>01/11/2009 – 30/11/2009<br>01/12/2009 – 31/12/2009 |
| delivery dates   | every month, 5 business days after end of each calculation period  |
| spot price   | 550 USD/mt   |
| type of option   | call option  |
| buyer of option  | client   |
| fixed price = strike price of option                   | 700 USD/mt   |
| fixed price payable by                                 | client   |
| variable price   | average of prices fixed during the calculation period, on the basis of the reference prices published by PLATTS  |
| variable price payable by                              | bank   |

#### possible outcomes on a given expiry

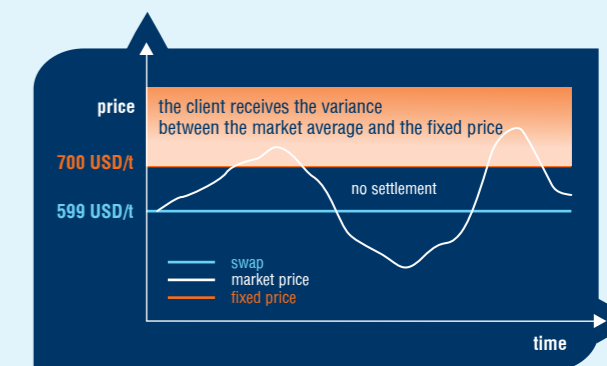
|   |  |
|---|--|
| the fixed price is above the variable price | no settlement takes place on the expiry date in question   |
| the variable price is above the fixed price | the party paying the variable price will pay to the party paying the fixed price = notional * (variable price – fixed price) |
| settlement                                  | net settlement in USD  |
| precondition for signing contract           | The K&H Treasury master agreement is to be supplemented by a section relating to the hedging of commodities.                 |
| deal premium                                | 59 USD/mt, in this case: 708,000 USD   |
| the deal premium is payable on              | the second business day following the trade date   |

#### advantages of transaction

- buying an option gives you complete protection against a potential adverse change in commodity prices
- you can fully benefit from advantageous changes in commodity prices
- the size of the potential loss is limited to the option premium as a maximum
- your cash flow can be calculated with certainty
- the option premium and the strike price can be set at your will for a specific term and notional, 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 by means of a counterdeal, resulting, of course, in a profit or a loss, depending on the current market situation

#### risks of transaction

- the option premium is payable when the deal is concluded
- if the strike price equals the swap commodity price, then the profit threshold of the option (after deduction of the premium) is less advantageous than that of a swap
- 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

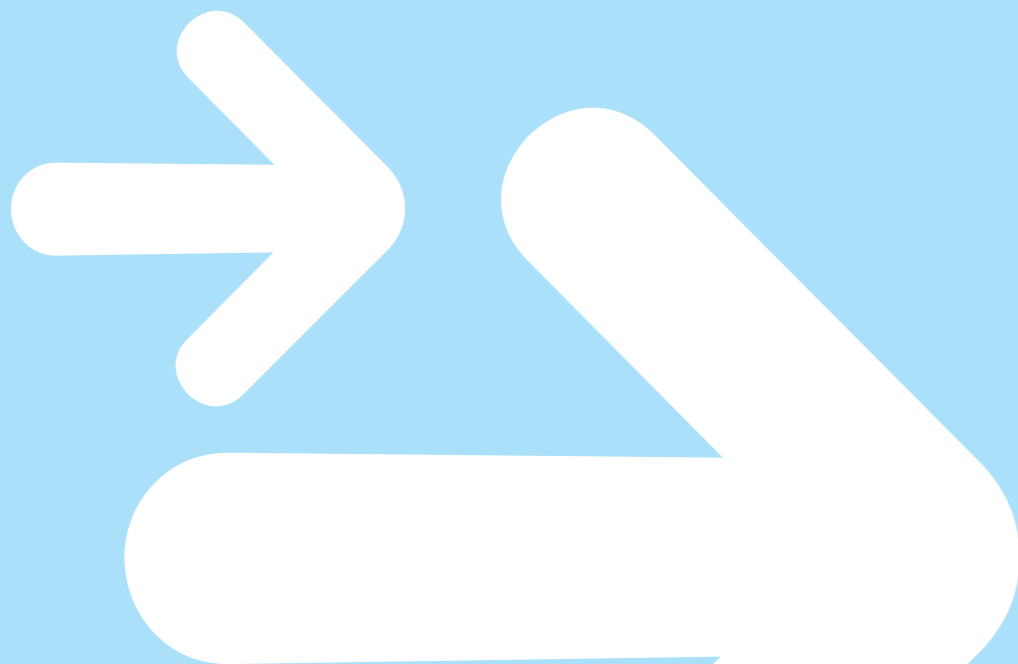


settlement of call option on expiry, if the option is purchased by the client, hedged position

## ➔ collar deal

The client cited in the previous example may also decide to conclude a zero cost collar transaction instead of an option which costs a premium, or a swap which also comes at no cost. A collar deal defines a range around the swap price, at the upper boundary of which the company in our example will have protection, or else a right to buy, while at its lower boundary the client will have an obligation to buy. Our client does not want to pay more than USD 700 for a tonne of diesel oil, so this will be the protection level set for the collar deal. In order to make the collar deal free of cost, the client must accept an obligation to buy at USD 540/tonne. This means that this transaction gives the company 100% protection against the adverse changes of market prices (to above USD 700/t), but the company will derive only limited profit (up to USD 540/t) from a potentially positive change.

When it comes to settlement each month, the monthly average of fluctuating prices is compared, in this case as well, to the two boundaries of the range. Accordingly, there are three possible scenarios: if the market price is above the top of the range, the bank will pay to the client the difference between the market price and the fixed price (upper edge of collar) with respect to the given month's quantity of diesel oil bought; if the market price is between the two boundaries of the range, there will be no settlement between the parties; if the market price is below bottom of the range, the client will pay to the bank the difference between the fixed price (bottom of the range) and the market price with respect to the given month's quantity of diesel oil bought.



### parameters of commodity collar deal

|   |  |
|---|--|
| notional  | 1000mt / expiry (mt = metric tonne)<br>in total: 12,000mt  |
| index   | ULSD 10 ppm FOB Barges Rotterdam   |
| tenor   | 12 months, monthly expiries, see below   |
| calculation periods (expiry date = last day of period)              | 01/01/2009 – 30/01/2009<br>01/02/2009 – 27/02/2009<br>01/03/2009 – 31/03/2009<br>01/04/2009 – 30/04/2009<br>01/05/2009 – 29/05/2009<br>01/06/2009 – 30/06/2009<br>01/07/2009 – 31/07/2009<br>01/08/2009 – 31/08/2009<br>01/09/2009 – 30/09/2009<br>01/10/2009 – 31/10/2009<br>01/11/2009 – 30/11/2009<br>01/12/2009 – 31/12/2009 |
| delivery dates  | every month, 5 business days after end of each calculation period  |
| spot price  | 550 USD/mt   |
| fixed price – protection level                                      | 700 USD/mt   |
| fixed price – obligation level                                      | 540 USD/mt   |
| fixed price payable by  | client   |
| variable price  | average of prices fixed during calculation period, on the basis of reference prices published by PLATTS  |
| variable price payable by   | bank   |
| <b>possible outcomes on a given expiry</b>                          |  |
| the variable price is above the protection level of the collar deal | the party paying the variable price will pay to the party paying the fixed price = notional * (variable price – protection level)  |
| the variable price is below the obligation level of the collar deal | the party paying the fixed price will pay to the party paying the variable price = notional * (obligation level – variable price)  |
| settlement  | net settlement in USD  |
| precondition for signing contract                                   | The K&H Treasury master agreement is to be supplemented by a section relating to the hedging of commodities.   |
| deal premium  | zero   |

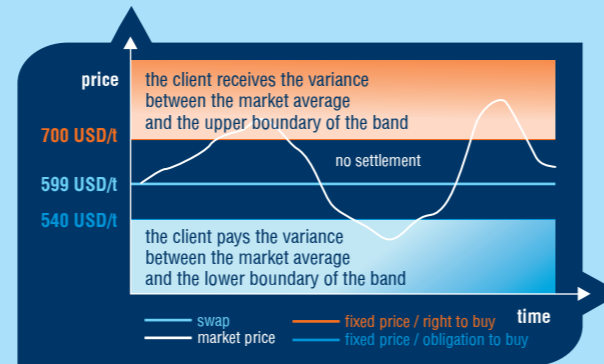


#### advantages of transaction

- limited benefit from advantageous commodity price changes
- the minimum and maximum prices of future commodity purchases and sales are fixed in advance (the worst-case scenario is known), so the minimum and maximum cost of commodities can be established in advance, as well
- partial protection against adverse changes in commodity prices
- free of charge, this transaction can be concluded without any extra premium
- the lower and upper boundaries of the range, as well as its width, 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
- if hedging is no longer needed, your position can be closed at any time by means of a counterdeal, resulting, of course, in a profit or a loss, depending on the current market situation

#### risks of transaction

- in case of advantageous price changes you may incur a loss because of the lower edge of the range
- if you decide to close your position by executing a counterdeal, you may incur a loss
- 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



settlement of collar transaction on expiry, where the client purchases the right to buy and undertakes the obligation to buy, hedging position

# 5

## reducing the interest burden of loans



## ➔ definition of foreign exchange risk in foreign currency loans

In recent years HUF loan interest rates have tended to be high, leading to ever increasing demand for foreign currency loans. This, however, involves higher foreign exchange risk if the client has no income in the same foreign currency, or if the timing of such revenues is not in alignment with the repayment schedule of your loan and the payment of interest.

In understanding the foreign exchange risk of foreign currency loans, it is indispensable to be aware of the correlation between the taking out or repaying a foreign currency loan and the evolution of exchange rates.

Let us assume that a company has a loan in euros. In order to repay its loan, the company must buy euros if it has no revenues in foreign currencies. This means that repaying the loan involves for this company buying the currency in which the loan is denominated, and on the interest rate basis of which it pays interest after the loan. When a EUR-based loan is drawn to a HUF account (on disbursement), the company sells the euros disbursed to it by the bank, so it acts essentially in the position of a seller of euros. It is important to note that when a company asks for a EUR-based loan to be disbursed to its EUR account, no currency conversion takes place on the disbursement of the loan. Similarly, the repayment of the loan will not involve currency conversions if the loan is repaid from the company's revenues in EUR, and from its EUR account, and the HUF account is not intersected in the process.

**in summary, for the EUR/HUF currency pair:**

- disbursement of EUR loan to HUF account = selling of EUR (exporter's position)  
→ EUR/HUF buying rate from the bank's point of view
- repayment of EUR loan from HUF account = buying of EUR (importer's position)  
→ EUR/HUF selling rate from the bank's point of view

According to the foregoing, the instruments of managing the foreign exchange risk of drawing a foreign currency loan are the same as the ones described in the chapter "foreign exchange hedging for exporters". Similarly, the instruments available for managing the foreign exchange risk involved in the repayment of a foreign currency loan are the same as the ones described in the chapter "foreign exchange hedging for importers".



## ➔ relationship between a company's line of business and its foreign currency loans

- If a company has no foreign currency income but decides to take out loan in a foreign currency because of the lower interest rate applicable, then after the loan is disbursed, the company will be in a foreign currency buyer's position which is different from its natural position (this being neutral), because it will have to buy foreign currency to repay the loan. In such cases, the foreign currency loan will be a transaction which increases the client's risk.
- If an exporting company takes out loan in a foreign currency, then after the loan is disbursed, the company will be in a position (foreign currency buyer) which is opposite to its natural foreign exchange position (foreign currency seller). In such cases (if the amounts involved are identical), natural hedging may evolve. If in such a case an exporter company concludes a hedging deal in its foreign currency revenues, it can in effect hedge the same foreign currency income twice, 're-opening' its foreign exchange exposure. It is important to note that time lapses between foreign currency revenues and the repayment of the foreign currency loan may lead to cash-flow difficulties if at the time when the loan is due to be repaid, the necessary foreign currency revenue is not yet available to the company. In this latter case, it can be advisable to enter into a hedging deal.
- When an importer takes out loan in foreign currency, then after the disbursement of the loan, the company will be in a position

(foreign currency buyer) which coincides with its natural foreign exchange position (foreign currency buyer). In such a case, the foreign currency loan is a transaction that increases the risk, because it will increase the company's natural exposure. At the same time, if an importer uses an amount drawn from its foreign currency loan to pay for the imports, this will not increase its risk, but it can manage the cash-flow problem resulting from time lapses between its income and expenditure, obtaining a sort of timing option, because the foreign currency amount in question needs not to be bought at the time when the foreign currency expenditure is incurred, but some time later, when the loan is due for repayment.

When taking out loan in a foreign currency, it is important to take into consideration what degree of depreciation is allowed by the interest rate spread so that the company be better off all in all than in the event of taking out a HUF loan. If, for instance, we assume that the annual HUF-EUR interest rate spread is 12 forints, then a EUR-based loan drawn (in HUF) at the 250 EUR/HUF exchange rate will mean a loss for the company in a year's time, if the EUR/HUF exchange rate is above 262. This means that if the exchange rate is below 262 in a year's time, then the company was in total better off than it would have been, had it taken out a loan in HUF. From this point of view, it is entirely irrelevant how the EUR/HUF exchange rate fluctuated during the course of the year.

## ➔ multi-currency loans – making use of fluctuations in exchange rates and managing foreign exchange risk

In the case of a loan available in various currencies, if a company is not aiming at natural hedging but at reducing interest expenditure by running some foreign exchange risk (i.e. financial speculation), then such a company can take advantage of the opportunities provided by changes in foreign exchange rates by converting its loan, in addition to choosing a more advantageous interest rate base.

Below you will find a description of how this is done, with respect to the EUR/HUF currency pair:

- the conversion of a EUR-based loan to a HUF basis is done technically by the repayment of the EUR-based loan and the disbursement of a HUF-based loan, or else:  
**conversion of EUR-based loan to a HUF basis = EUR buyer position (client) → EUR selling exchange rate (bank)**
  - the conversion of a HUF-based loan to a EUR basis is done technically by the repayment of the HUF-based loan and the disbursement of a EUR-based loan, or else:  
**conversion of HUF-based loan to a EUR basis = EUR seller position (client) → EUR buying exchange rate (bank)**
- When a loan is converted, foreign exchange profit can be generated if**
- the client converts its HUF loan to a EUR basis at a given EUR/HUF exchange rate (selling of EUR and buying of HUF), and then converts it to HUF at a EUR/HUF exchange rate that is lower

than the one at which the HUF amount was converted into EUR (this means that the client buys EUR at a lower, and sells HUF at a higher level). As a result of these conversions, the client's outstanding loan will be reduced.

- it is obvious that the conversion of a EUR-based loan to HUF at a given EUR/HUF exchange rate and the backward conversion of the same into EUR at a higher exchange rate also lead to foreign exchange gains.

**example:** Let us assume that an exporting company has taken out a loan for three years, with the notional of EUR 1,000,000, at the EUR/HUF exchange rate of 260 (the loan amount in HUF is  $1,000,000 * 260 = 260,000,000$ ). In six months, the market exchange rate is 250 EUR/HUF. Then the company in our example decides to convert the EUR 1,000,000 notional loan into HUF. As a result of the conversion, the loan amount in HUF is  $1,000,000 * 250 = 250,000,000$ . The notional of the loan has decreased from HUF 260 million to HUF 250 million as a consequence of the conversion, so the profit is HUF 10,000,000. The reduction of this conversion means that the company will pay interest on a lower notional. In this case, the company's natural export hedging is no longer there, so it is advisable for the company to hedge its exports.

**When a loan is converted, foreign exchange loss becomes possible if**

- the company converts a loan into HUF at a given EUR/HUF exchange rate (by buying EUR and selling HUF), and then converts it back into EUR at a EUR/HUF exchange rate lower than the one applied in the conversion into HUF (that is, the client sells EUR at a lower, and buys HUF at a higher level). As a result of the conversions, the company's outstanding loans will increase. A HUF-based loan is converted at a given EUR/HUF exchange rate into EUR, and then converted back into HUF at a higher exchange rate; this will also result in a foreign exchange loss.

**example:** Let us assume that an exporting company took out a 3-year loan of HUF 260,000,000 at notional, at the EUR/HUF exchange rate of 260 (the loan amount in EUR is  $260,000,000/260 = 1,000,000$ ). In six months' time, the market exchange rate is 250 EUR/HUF. At this point, the company, worried about that the HUF may appreciate further, decides to convert the HUF-based loan of HUF 260,000,000 at notional into EUR. As a result of this conversion, the loan amount in EUR will be  $260,000,000 / 250 = 1,040,000$ . As a result of the conversion, the notional of the loan increased from EUR 1 million to EUR 1.04 million. The loss is EUR 40,000. As a consequence of the increased loan amount, the company must pay interest on a larger notional. In this case, natural export hedging position is created.

**The conversion of a loan between various currencies in order to profit from exchange rate movements, or any other transaction in which a client obliges itself to take over an existing loan, are not considered as a hedging deal.**

a loan can be converted:

- at the current spot rate
- as part of a forward deal (see the chapters "foreign exchange hedging for exporters" and "foreign exchange hedging for importers")
- in structured transactions (see the chapters "foreign exchange hedging for exporters" and "foreign exchange hedging for importers")
- as part of an interest refund transaction (see next page)

## ➔ 1. short-term interest refund deal

MIFID complexity

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:** A company has a HUF loan with a remaining tenor of one year, and a HUF 25,000,000 notional, which can be drawn in multiple currencies. The client would like to reduce the related interest expenditure, but at the 250 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 256, 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 256, 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 (253 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 25,000,000   |
| 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           | 250 EUR/HUF  |
| 3-month forward rate                            | 253 EUR/HUF  |
| ATMF volatility                                 | 10%  |
| conditional exchange rate                       | 256 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 | 25,000,000 / 256 = 97,656.25 EUR   |
| rate of interest refund (annual)                | 5.80%  |
| 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 256 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 256 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 256 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 in HUF.  |

#### 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 (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) |
|---|------------------------------------|
| 230   | -225,700                           |
| 260   | -797,500                           |
| 290   | -3,575,000                         |

#### 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                            |
|-----------------------------------|--|---|---|
| 230                               | 25,000,000 / 230 = 108,695.65 EUR                      | 25,000,000 / 253 = 98,814.20 EUR                    | no obligation to convert loan<br>interest refund: 365,000 HUF |
| 260                               | 25,000,000 / 260 = 96,153.85 EUR                       |   | conversion of loan:<br>25,000,000 / 256 = 97,656.25 EUR       |
| 290                               | 25,000,000 / 290 = 86,206.90 EUR                       |   | interest refund: 365,000 HUF                                  |

#### 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           | 250 EUR/HUF  |
| 3-month forward rate                            | 253 EUR/HUF  |
| ATMF volatility                                 | 10%  |
| conditional exchange rate                       | 247 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 * 247 = 24,700,000 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 247 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 247 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 247 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 in EUR.   |

### 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 (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) |
|---|------------------------------------|
| 230   | -1,742,500                         |
| 260   | -127,500                           |
| 290   | -57,500                            |

### 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   |
|-----------------------------------|--|---|--|
| 230                               | $100,000 * 230 = 23,000,000$ HUF                           | $100,000 * 253 = 25,300,000$                            | conversion of loan:<br>$100,000 * 247 = 24,700,000$ HUF<br>interest refund: 329.59 EUR |
| 260                               | $100,000 * 260 = 26,000,000$ HUF                           |   | no obligation to convert loan<br>interest refund: 329.59 EUR                           |
| 290                               | $100,000 * 290 = 29,000,000$ 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
- 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
- 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 built up of a single plain vanilla option. The explanation concerning the plain vanilla options, provided in chapter 1.3. of the "K&H Treasury Handbook of Market Risk Management" on the 5 basic products will apply to this product, too.

## ➔ 2. cross-currency interest rate swap

MIFID complexity

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

When the transaction is concluded, the outstanding loan is converted into the other currency at the current market rate. 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.

- If capital there is initial capital exchange, then at the end of the tenor there will be a reverse swapping of principal, or else, gross settlement will take place.
- If capital there is no initial capital exchange, then it will not happen on expiry, either, and then net settlement will be effected with reference to the spot exchange rate effective on expiry.

**Irrespective of whether or not the swapping of capital takes place, this deal involves certain foreign exchange risk.**

### ➔ 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 gross settlement of interest payments at the end of the interest periods. The potential interest rate gains or loss realised on this deal equals the difference between the interest received from, and payable to, the bank (interest rate risk). Because 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 = foreign currency loan**

**example:** Let us assume that a company has a HUF loan of HUF 100 million at notional, with a tenor of two years, due to be repaid on expiry in a single amount. For this loan, the company's interest obligation is defined as a function of the three-month BUBOR (we disregard the bank's credit margin in this example). The company would like to realise savings on its interest expenditure, and is of the opinion that EUR interest rates will in the following two years remain below the HUF interest rates. Therefore, it enters into a one-year cross-currency interest rate swap as part of which its loan is converted into euros at the current EUR/HUF spot rate of 250, and the company will pay the three-month EURIBOR + 0.30%, instead of the three-month BUBOR, in the following year, at the end of every interest period. The original loan agreement was not amended. Because the cross-currency transaction does not cause the conditions of the underlying loan transaction to change, the foregoing transactions in practice mean that a foreign currency loan was created in a synthetic way::

**the 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:  
 $400\,000 * (3.97\% + 0.30\%) * 90 / 360 = 4270 \text{ EUR}$
- payable by the bank to the client:  
 $100\,000\,000 * 11.66\% * 90 / 360 = 2\,915\,000 \text{ HUF}$
- settlement:  
 $2\,915\,000 \text{ HUF} - 4\,270 \text{ EUR} * 250 = 1\,847\,500 \text{ HUF}$ , which will be credited to the client's account, comprising the client's interest gains

**the cash flows due on the expiry date of the cross-currency swap:**

- The swapping of interest payments takes place as described above.
- As a result of this deal, the client will have, in one year's time, a forward selling obligation of EUR 400,000 with respect to the whole notional of the loan. If, before expiry, the client can close this position by means of a counterdeal at an exchange rate lower than the market rate in effect on the trade date (in this specific case, by the forward buying of foreign currency), then foreign exchange gains can be realised. If the position is closed, by means of a counterdeal (spot or forward deal) at an exchange rate above the one effective on the trade date, the client will suffer foreign exchange loss.



#### parameters of the cross-currency interest rate swap

|  |  |
|--|--|
| notional of original loan                          | 100,000,000 HUF  |
| original loan interest rate                        | 3-month BUBOR  |
| repayment  | in a single sum at maturity  |
| tenor of cross-currency interest rate swap         | 1 year   |
| currency pair of cross-currency interest rate swap | EUR/HUF  |
| spot exchange rate at the time of pricing          | 250 EUR/HUF  |
| notional of synthetic EUR loan                     | original loan amount / spot rate: 100,000,000 HUF / 250 EUR/HUF = 400,000 EUR            |
| interest rate swap                                 | 3-month BUBOR for 3-month EURIBOR + deal premium   |
| client pays to bank                                | notional of synthetic EUR loan * (3-month EURIBOR + 0.30%) * actual number of days / 360 |
| bank pays to client                                | notional of original loan * 3-month BUBOR * actual number of days / 360                  |
| settlement of interest payments                    | net settlement at the end of each interest period  |
| duration of interest periods                       | 3 months   |
| current 3-month BUBOR                              | 11.66%   |
| current 3-month EURIBOR                            | 3.97%  |
| deal premium                                       | 0.70%  |

#### 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 (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) |
|---|------------------------------------|
| 230   | +8,200,000                         |
| 260   | -3,800,000                         |
| 290   | -15,000,000                        |

#### foreign exchange and interest rate risk of a cross-currency interest rate swap – over a period of three months

| foreign exchange risk (assuming unchanged interest rate levels) – over a period of three months |  |                |  |                |
|---|--|----------------|--|----------------|
| exchange rate   | cash flows in interest rate swap (HUF) |                | net result of interest rate swap (HUF) |                |
| EUR/HUF   | interest payable (EUR)                 | paid by client | paid by bank                           | paid to client |
| 230   | 4,270                                  | 982,100        | 2,915,000                              | 1,932,900      |
| 260   |  | 1,110,200      |  | 1,804,800      |
| 290   |  | 1,238,300      |  | 1,676,700      |
| interest rate risk (assuming unchanged interest rate levels) – over a period of three months    |  |                |  |                |
| EURIBOR   | interest payable (EUR)                 | paid by client | paid by bank                           | paid to client |
| 4.27%   | 4,270                                  | 1,067,500      | 2,915,000                              | 1,847,000      |
| 3.00%   | 3,000                                  | 750,000        |  | 2,165,000      |
| 2.00%   | 2,000                                  | 500,000        |  | 2,415,000      |
| BUBOR   | interest payable (EUR)                 | paid by client | paid by bank                           | paid to client |
| 11.66%  | 4,270                                  | 1,067,500      | 2,915,000                              | 1,847,500      |
| 11.00%  |  |                | 2,750,000                              | 1,682,500      |
| 8.50%   |  |                | 2,125,000                              | 1,057,500      |

#### advantages of transaction

- exposure to the volatility of the HUF interest market is swapped for a more advantageous interest market exposure (e.g. EUR, CHF or USD at the time when this Handbook is published)
- foreign exchange risk and interest rate risk can be managed by hedging instruments
- this 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 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
- if the difference between the two interest rates decreases during the term of the deal, the possible interest savings will be reduced, too, as a result
- 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 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
- this deal can cause you foreign exchange loss if on expiry the current spot exchange rate is above the spot rate effective on the trade date; if the size of such 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
- 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 currency swap and an interest rate swap. The explanation concerning interest rate swaps in chapter 3. of the “K&H Treasury Handbook of Market Risk Management” entitled “the management of interest rate risk”, as well as concerning interest rate swaps in chapter 8. “glossary”, will apply to this product, as well.

## ➔ 3. long-term interest refund deal

MIFID complexity

3

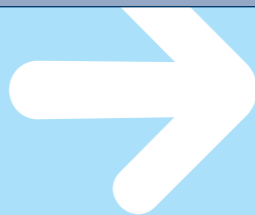
#### product description

If a company has a long-term loan either in HUF or in a foreign currency, and would like to realise interest savings, by assuming foreign exchange risk, over a period of 3-5 years, it can enter into a long-term interest refund deal.

In such a transaction, your company will receive a fixed annual amount in interest refund, and accept in return the obligation to pay the amount of the conditional payment to the bank in the event that the spot market rate is higher than a certain exchange rate level at specific points in time, defined in advance. In practice, your loan will become more expensive. However, your commitment may cease to exist completely, if at any time during the years of the tenor a given exchange rate level (the termination limit) is reached. After your conditional payment obligation ceases to exist, your company will continue to receive interest refund over the entire tenor of the transaction.

**example:** Let us assume that your company has a HUF loan of HUF 250,000,000 notional, with an outstanding tenor of five years, to be repaid on maturity in a single sum. The EUR/HUF spot market rate is 250 at this moment. For this loan you pay interest tied to the 3-month BUBOR rate (in this example we disregard the bank's loan interest margin). You would like to realise savings on your interest expenditure, even if your HUF loan is possibly later (after a year at the earliest) converted into EUR, because you are of the opinion that euro-based interest rates will remain well below HUF interest rates in the coming five years. If conversion takes place, in one year's time at the earliest, your loan would be converted at the five-year forward rate, which is an exchange rate far more advantageous than the currently available one-year forward rate of 262 EUR/HUF. Therefore, you enter into a five-year interest refund deal for the notional of HUF 250,000,000, with a 1% annual interest refund, at the strike rate of 290 EUR/HUF (this being equal to the 5-year forward rate), and with termination level at 245.

| parameters of the 5-year interest refund transaction |  |
|--|--|
| notional of loan                                     | 250,000,000 HUF  |
| variable notional                                    | no   |
| tenor  | 5 years  |
| spot exchange rate at time of pricing                | 250 EUR/HUF  |
| forward exchange rate for 5 years                    | 290 EUR/HUF  |
| ATMF volatility                                      | 10%  |
| paid to client                                       | <p><b>in each interest period:</b></p> <ul style="list-style-type: none"> <li>3-month BUBOR * notional of loan, quarterly, calculated on the basis of the actual number of days / 360</li> <li>subject to the modified following-business-day convention: if the end of an interest payment period falls on a bank holiday, interest payment will automatically take place on the following business day, which will thus be the value date of net settlement</li> <li>the 3-month BUBOR is reset 2 business days before the start date of each interest payment period (defined as the reset date, see below), and the payment of interest will be due at the end of the interest payment period</li> </ul> |
| paid by client                                       | <p><b>at the end of each interest payment period:</b></p> <ul style="list-style-type: none"> <li>(3-month BUBOR – 1%) * notional of loan, quarterly, calculated on the basis of the actual number of days / 360, subject to the modified following-business-day convention (see above)</li> <li>annually: conditional payment (on 5 occasions altogether)</li> </ul>   |
| interest payment period                              | 3 months   |
| reset date   | 2 business days before the start date of each interest payment period  |
| settlement of interest                               | net settlement: the company practically receives a 2.00% interest rate refund  |
| conditional payment                                  | The client will pay this amount to the Bank if on any of the 5 annual expiry dates the EUR/HUF exchange rate is at or above the strike.<br>The conditional payment obligation ceases to exist if the exchange rate reaches the knock-out barrier (see below).  |
| amount of conditional payment                        | <p><b>EUR notional of loan * (EUR/HUF spot rate on expiry – strike rate), where the EUR notional = HUF notional / strike rate</b></p> <p><b>three different ways of settlement are possible (of which the client can make a choice when the deal is concluded):</b></p> <ul style="list-style-type: none"> <li>actual selling of EUR, i.e. the HUF loan is converted into EUR at the strike rate</li> <li>net settlement in HUF (see formula above) – net settlement in EUR: EUR notional * (EUR/HUF spot rate on expiry – strike rate) / spot rate on expiry</li> </ul>   |
| strike rate  | 290 EUR/HUF  |
| knock-out provision                                  | The client will not be obliged to make the conditional payment at the end of any subsequent year after the EUR/HUF spot exchange rate trades at or below the knock-out barrier in the interbank market at any time during the tenor, or else from and including the moment when the deal is entered into on the trade date to and including 12:00 p.m. (Budapest time) on the last annual expiry date.<br><b>The knock-out barrier is continuously monitored.</b>  |
| knock-out barrier                                    | 245 EUR/HUF  |
| barrier trigger provision                            | The Bank will determine, in a commercially reasonable manner, whether the market exchange rate has reached the knock-out barrier.  |



|   |  |
|---|--|
| best-case scenario (treasury deal on a standalone basis)                | The barrier is reached during the first year.<br>In this case, the client will not be obliged to make the conditional payment during the tenor, while the 1% annual interest refund will be credited to the client every year during the 5-year tenor.   |
| one possible unfavourable outcome (treasury deal on a standalone basis) | <p>The barrier is never reached, and on every annual expiry the HUF is at a higher (weaker) rate against the EUR than the strike rate. In this case, the client has to make the conditional payment on every expiry, but in every year the interest refund will be paid to the client.</p> <p><b>example:</b><br/>The assumption is that the exchange rate is 320 EUR/HUF on each expiry, and during the five years of the tenor, the NBH will not set up a new exchange rate band.<br/>In this extreme case, the total annual interest payable by the client would be, including the conditional payment: <math>(320 - 290 =) 30</math> HUF per EUR * EUR notional, plus <math>(\text{BUBOR} - 1\%) * \text{HUF notional}</math>.<br/>In HUF, this will be calculated as follows: <math>((250,000,000 / 290) * 30) + (\text{BUBOR} - 1\%) * \text{HUF notional}</math>.</p>   |
| break-even point  | The 1% interest refund is equivalent with the situation where the HUF depreciates 2.5 HUF per EUR to above the strike rate. Thus in the example above, if the EUR/HUF exchange rate on the first expiry is $(290 + 2.5 =) 292.5$ EUR/HUF, and the transaction is not knocked-out before the first expiry, the conditional payment the client must make on the first expiry date will be approximately equal to the one-year interest refund realised by the client in the first year.  |
| reference rates according to which settlement can take place            | <p><b>in the strike rate, the following can serve as reference:</b></p> <ul style="list-style-type: none"> <li><b>spot market EUR/HUF exchange rate:</b><br/>in the context of a strike rate, the spot market EUR/HUF exchange rate on expiry is the exchange rate published by Reuters on the HUF page on each expiry date, at 12:00 p.m. (Budapest time), and which is established by the bank.</li> <li><b>ECB EUR/HUF fixing rate:</b><br/>The ECB (European Central Bank) EUR/HUF fixing rate is the rate published by Reuters on page ECB37 at 14:15 (Budapest time) on each expiry date.</li> <li><b>reference rate for the knock-out barrier:</b><br/>The EUR/HUF spot rate from the trade date until each expiry date, or from the start date of the delayed knock-out monitoring (window) period until each expiry date.</li> <li><b>reference value for the BUBOR:</b><br/>The 3-month BUBOR rate as published on the BUBOR-Telerate, two business days before the start date of each interest period.</li> </ul> |
| further options – delayed knock-out barrier                             | If during a specific delay period after the trade date the knock-out barrier is reached, the conditional payment obligation will not be cancelled. If, however, the delay period has already elapsed and at any time afterwards the knock-out barrier is reached, the obligation to make the conditional payment will be cancelled as stated above.  |
| 3-month delayed knock-out barrier                                       | If the knock-out provision is delayed by three months after the trade date, the knock-out barrier will be modified to 265 EUR/HUF, but all other parameters will remain unchanged.<br>Start date of monitoring of the 3-month delayed knock-out barrier: trade date + 3 months. If at this date the EUR/HUF exchange rate is below 265, or if at any time after this date the exchange rate reaches 265, the obligation to make the conditional payment will be cancelled.   |

### 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 (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 position (HUF)                                       |
|---|--|
| 230   | conditional payment obligation cancelled (knock-out barrier reached) |
| 260   | -88,600,000  |
| 290   | -197,790,000   |

### 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)                       | interest refund realised (paid to client, in HUF) | conditional payment (paid by client, in HUF)   |
|---|---|--|
| 230   | $250,000,000 * 1.00\% = 2,500,000$                | 0  |
| 270   | $250,000,000 * 1.00\% = 2,500,000$                | 0  |
| 310 (the knock-out barrier has not been reached so far) | $250,000,000 * 1.00\% = 2,500,000$                | $(310 - 290) * \text{EUR notional} = 20 * (250,000,000 / 290) = 20 * 862,068.97 = 17,241,379.31$ |

### advantages of transaction

- you can realise interest savings over the tenor of the deal
- your company runs foreign exchange risk at a rate far higher than the market rate effective on the trade date, as reaching the strike rate assumes as much as 10-15% depreciation of the forint
- after the knock-out barrier is reached, the interest refund will continue to be due to you as before
- this deal could be useful for exporters because if the forint is depreciated by a large extent, the client will incur extra expenditure up to the extent of the conditional payment, but in this case your export revenues can be converted into HUF, and/or hedged, at spot market rates that are much better than the forward rates applicable to the given tenors at the time of concluding the deal – this deal can be attached to loans extended by other financial institutions, because the interest refund transaction is separate from the underlying transaction
- available in most liquid currencies
- free of charge, this transaction can be concluded without any extra premium
- available for any repayment schedule
- the extent of interest refund, the currency of the loan, the currency pair of the conditional payment, the strike rate, the knock-out barrier, the final expiry date and the schedule of capital repayment can be set at your will, in accordance with your plans, your budget and/or your expectations; the change of one parameter will cause the rest of the parameters to change, too
- if hedging is no longer necessary, your position can be closed at any time by means of a counterdeal, resulting in a profit or a loss, depending on the current market situation

### risks of transaction

- if the conditional payment obligation does not cease to obtain, and the EUR/HUF exchange rate is above the strike rate on every expiry date, your company will be obliged to make the conditional payment once in every year for five years; the extent of such payment can be unlimited in theory; assuming, for instance, that the EUR/HUF rate is 300 on every annual expiry date, you would incur the following loss:

| expiry dates | strike rate (EUR/HUF) | exchange rate on expiry (EUR/HUF) | conditional payment (paid by client) (HUF) |
|--------------|-----------------------|-----------------------------------|--|
| year 1       | 290                   | 300                               | -8,620,690                                 |
| year 2       | 290                   | 300                               | -8,620,690                                 |
| year 3       | 290                   | 300                               | -8,620,690                                 |
| year 4       | 290                   | 300                               | -8,620,690                                 |
| year 5       | 290                   | 300                               | -8,620,690                                 |
|              |                       | total (HUF)                       | -43,103,450                                |

- in the case of an importing company, or a business with a neutral foreign exchange position, a long-term interest refund deal is not in line with the company's foreign exchange position resulting from the income and expenditure structure of the business concerned, and this can mean additional risk; if during the tenor of the deal, the forint is depreciated against the euro to a significant degree, the company in question will be obliged to make the conditional payment under the long-term interest refund deal on the one hand, and the cost of foreign currency expenditure related to the company's business, expressed in HUF, can also increase, on the other hand
- in case of a delayed knock-out provision, reaching the knock-out barrier during the delay period will not cause the conditional payment obligation to be cancelled; it may happen that after the delay period has elapsed, the EUR/HUF rate will never reach the knock-out barrier, so the conditional payment obligation will not cease to exist during the tenor of the deal

- if you close your position before expiry by means of a counterdeal, you may incur a loss
- 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 transaction is the combination of an interest rate swap and five "knock-out" barrier options. The explanation provided in the third part of chapter 1.3. of the "K&H Treasury Handbook of Market Risk Management" on the 5 basic products, will also apply to this product.

# 6 investments





## → structured investment products

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.

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.

## ➔ continuously available investment products

### ➔ 1. dual currency deposit

MIFID complexity

2

A dual currency deposit is an alternative to regular term deposits. It can be the optimum choice if your company executes conversions with more or less regularity in one or more currency pairs, as a result of your usual financial operations. In a given currency, a dual currency deposit gives you a higher yield in a short-term investment, if you accept the possibility that the capital will be repaid in another currency.

#### product description

A dual currency deposit includes the placement of an investment in a given currency (the primary currency) with the proviso that on expiry the bank will repay the capital in another currency

(or the secondary currency) if on the expiry date the exchange rate between the two currencies is above or below (depending on the direction of the conversion) a certain exchange rate level defined in advance (the conditional conversion rate). Such a conditional conversion obligation results in above market interest rates with respect to the investment placed. If the conversion condition is met, the client will receive back in the secondary currency the invested capital. Interest is paid, however, always in the primary currency, irrespective of whether or not the capital was converted eventually. During the tenor of the investment, the deposit cannot be broken (security deposit).

**example for a foreign currency investment:** An investor places EUR 100,000 with the bank for 3 months, and would like to receive higher interest than the regular term deposit interest rate. In return for such yield, the investor is willing to run the risk that if by the expiry date the forint depreciates against the euro to above a certain exchange rate (the conditional conversion rate), the invested capital will be repaid in HUF. On the date of placing the deposit, the EUR/HUF market rate is 250. With respect to the 3-month investment period, the client can choose from among the following combinations of conditional conversion rates and enhanced interest rates:

**a couple of possible combinations of conditional conversion rates and enhanced interest rates for investments in euros (one option must be chosen from this table on the date of placing the deposit)**

| conditional exchange rate (EUR/HUF) | enhanced annual interest rate of dual-currency deposit (%) | disbursement in 3 months' time – if conversion takes place |
|-------------------------------------|--|--|
| 253                                 | 10.00  | 25,300,000 HUF + 2500 EUR (interest)                       |
| 255                                 | 8.50   | 25,500,000 HUF + 2125 EUR (interest)                       |
| 258                                 | 7.00   | 25,800,000 HUF + 1750 EUR (interest)                       |
| 260                                 | 6.00   | 26,000,000 HUF + 1500 EUR (interest)                       |

#### parameters of the dual-currency deposit in EUR (if the first option above is chosen)

|   |   |
|---|---|
| notional  | EUR 100,000   |
| currency pair   | EUR/HUF   |
| tenor   | 3 months  |
| date of exchange rate monitoring                                    | 2 business days before end of tenor   |
| expiry date   | end of tenor  |
| 3-month EURIBOR at time of pricing (annualised)                     | 4.00%   |
| exchange rate at time of placing the deposit                        | 250 EUR/HUF   |
| ATMF volatility   | 10.00%  |
| conditional exchange rate   | 253 EUR/HUF   |
| guaranteed annual interest rate                                     | 10.00%  |
| currency of guaranteed enhanced interest refund                     | EUR   |
| condition of conversion of principal                                | the spot market rate at 12:00 p.m. on the date of exchange rate monitoring is above 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 below 253 EUR/HUF | the investment stays denominated in EUR, and the 10% interest is credited by the bank to the client's account (in EUR) on the expiry date of the investment             |
| B) exchange rate above 253 EUR/HUF | the investment is converted into HUF at 253 EUR/HUF, and the 10% interest is credited by the bank to the client's account (in EUR) on the expiry date of the investment |
| transaction charges                | none  |

**example for a HUF investment:** An investor places HUF 25,000,000 with the bank for 3 months, and would like to receive interest at a higher rate than the regular deposit interest rate. In return for this, the investor in question is willing to run the risk that if by the end of the investment period, the forint appreciates to below a specific exchange rate level (the conditional conversion rate) against the euro, then the invested capital will be repaid in euros. The current EUR/HUF rate is 250 on the date when the investment is fixed. With respect to the 3-month tenor, the client can choose from the following combinations of conditional conversion rates and enhanced interest rates:

**a couple of possible combinations of conditional conversion rates and enhanced interest rates for investments in forints (one option must be chosen from this table on the date of placing the deposit)**

| conditional exchange rate (EUR/HUF) | enhanced annual interest rate (%) of the dual-currency HUF investment | disbursement in 3 month's time – if conversion takes place |
|-------------------------------------|---|--|
| 248                                 | 13.50   | 100,806.45 EUR + 843,750 HUF (interest)                    |
| 246                                 | 12.70   | 101,626.02 EUR + 793,750 HUF (interest)                    |
| 244                                 | 12.00   | 102,459.02 EUR + 750,000 HUF (interest)                    |
| 242                                 | 11.00   | 103,305.79 EUR + 687,500 HUF (interest)                    |

**parameters of the dual-currency deposit in HUF (if the first option above is chosen)**

|   |   |
|---|---|
| notional  | HUF 25,000,000  |
| currency pair   | EUR/HUF   |
| tenor   | 3 months  |
| date of exchange rate monitoring                                    | 2 business days before end of tenor   |
| expiry date   | end of tenor  |
| 3-month BUBOR at time of pricing (annualised)                       | 10.00%  |
| exchange rate at time of placing the deposit                        | 250 EUR/HUF   |
| ATMF volatility   | 10.00%  |
| conditional exchange rate   | 248 EUR/HUF   |
| guaranteed annual interest rate                                     | 13.50%  |
| currency of guaranteed 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 248 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             |
| B) exchange rate below 248 EUR/HUF | the investment is converted into EUR at 248 EUR/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 |
| transaction charges                | none   |

**advantages**

- it is possible to achieve higher interest than in a standard deposit, with guaranteed enhanced interest
- it is possible to profit from your predictions with respect to a given currency pair, through higher interest rates, provided that 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 exchange rate can be set at your will, and the other parameter will be calculated accordingly; the change of one parameter will cause the rest of the parameters to change, too

**risks**

- if conversion takes place on expiry at the conditional exchange rate, this will always mean that the investment is converted to the secondary 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 deposit cannot be broken prior to the expiry date
- there is no capital guarantee (if the conversion takes place, the resulting amount upon immediate conversion back to the original currency may be lower than the original amount placed)
- 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 and a plain vanilla option. The explanation concerning the plain vanilla option, given in chapter 1.3. of the “K&H Treasury Handbook of Market Risk Management” on the 5 basic products, will also apply to the product discussed here.



## ➔ 2. tower deposit

MIFID complexity

2

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 you have a minimum interest 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 is a function of the fluctuation of a currency pair (one of them being the currency in which the deposit is placed).

If the exchange rate remains within the range defined when the deal is concluded, then an interest rate above the regular term deposit rate is achievable, but if only once the exchange rate leaves the range (or touches one of the boundaries), then the minimum interest rate will be guaranteed, and this is lower than the regular term deposit rate. In both cases, the client will be returned 100% of the capital placed, 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). This product has a variant in which one single exchange rate is defined instead of two (a range). In this variant, the deposit will pay higher interest if this exchange rate limit is not touched or crossed by the interbank market rate. As a consequence, not only a less volatile exchange rate, but also one which moves in the direction you have expected, can result in a high interest on your investment.

**example for a HUF investment:** An investor has HUF 100 million, which he wishes to deposit for the next 3 months. The regular market interest rate for t3-month term deposits is 10% per annum, and the EUR/HUF spot rate is 250. 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)**

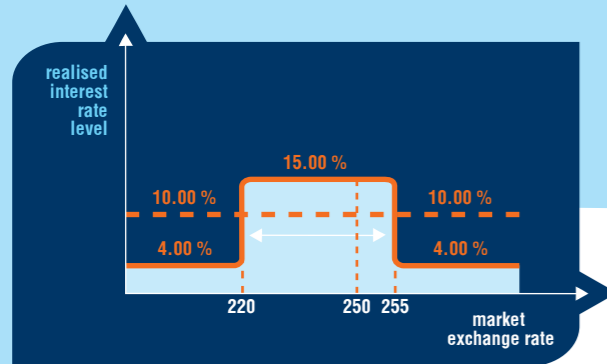
| exchange rate range (EUR/HUF) | maximum interest rate (%) | minimum interest rate (%) |
|-------------------------------|---------------------------|---------------------------|
| 240 – 260                     | 17.50                     | 0.10                      |
| 240 – 260                     | 13.50                     | 4.00                      |
| 242 – 258                     | 17.50                     | 4.00                      |
| 244 – 280                     | 18.00                     | 4.00                      |
| 220 – 255                     | 15.00                     | 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   | 15.00   | 4.00   |
| regular deposit | 10.00   | 10.00  |

### 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)                   | 10.00%  |
| spot exchange rate  | 250 EUR/HUF   |
| ATMF volatility   | 10.00%  |
| EUR/HUF exchange rate range                                     | 220 – 255 EUR/HUF   |
| achievable maximum interest (annualised)                        | 15.00%  |
| 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%   |
| condition to crediting guaranteed minimum interest (annualised) | the EUR/HUF interbank market exchange rate leaves the fixed EUR/HUF exchange rate range, or touches either boundary, during the tenor                 |
| transaction charges   | none  |



tower deposit

#### 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 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 and a digital option. The explanation concerning digital options, provided in chapter 1.3. of the “K&H Treasury Handbook of Market Risk Management” will also apply to this product.

## ➔ 3. accrual deposit

MIFID complexity

2

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. 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 released before the end of the investment period (caution type deposit), and the interest will be paid in a single sum on expiry. This product has a variant in which only one exchange rate is set instead of two (a range). In this variant, the deposit will pay a high interest on days when the current NBH/ECB fixing rate does not touch (or cross) this exchange rate. Therefore, 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.

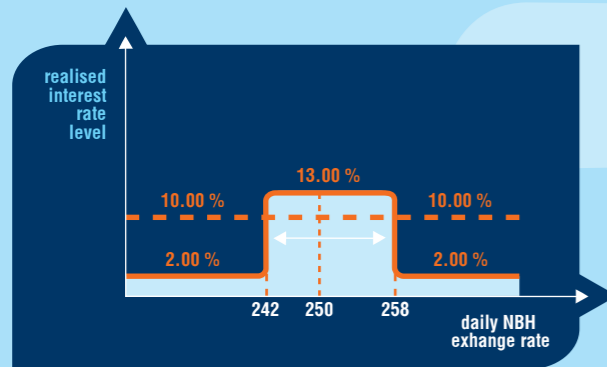
**example for the accrual deposit:** An investor has HUF 100 million, which he intends to deposit for the next three months. The regular market interest rate for three-month term deposits is 10% p.a. The spot EUR/HUF rate is 250, and the investor in question does not expect the exchange rate to fluctuate 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 242-258. 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 13% interest for the days when the fixing rate is within the range, while the 2% minimum interest is guaranteed for the rest of the days.



possible outcomes on expiry according to the example of the last line

| number of days, when NBH's fixing is within the pre-defined range | realized interest rate in case of a range accrual deposit (%) | realized interest rate in case of a standard deposit (%) |
|---|---|--|
| 30  | 7,00  | 10,00  |
| 60  | 10,00   | 10,00  |
| 90  | 13,00   | 10,00  |

| parameters of the range accrual deposit       |  |
|---|--|
| notional                                      | HUF 100,000,000  |
| tenor   | 3 months   |
| expiry day                                    | 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) | 10.00%   |
| spot exchange rate                            | 250 EUR/HUF  |
| ATMF volatility                               | 10.00%   |
| EUR/HUF exchange rate range                   | 242 – 258 EUR/HUF  |
| maximum interest (annualised)                 | 13.00%   |
| 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   |
| minimum interest (annualised)                 | 2.00%  |
| interest income (annualised)                  | 13.00% * (N/90)<br>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   |



accrual deposit

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 1.2. 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 1.3. of the "K&H Treasury Handbook of Market Risk Management" on the 5 basic products, will also apply to this product.

➔ periodically available investment products:

## ➔ the K&H bond programme

K&H Bank launched its own Bond Programme in 2007.

As part of this programme, the Bank (as issuer) sells registered and dematerialised bonds through either public or private placement, denominated in HUF, EUR, CHF and USD.

The bonds have a tenor of minimum 60 days and maximum 20 years, and are not traded on either the Budapest Stock Exchange or any other regulated markets.

The bonds to be issued have a wide range of varieties as is customary for investment notes, primarily including capital guaranteed instruments. The yield of the investments may be tied to a foreign exchange rate, a share price, a yield, a commodity price, an index or the rate of inflation, etc.

**As part of this Bond Programme, the Bank's aim is to create such investment instruments for its clients, in line with the current market situation and expectations, which can give the investor enhanced yield opportunities if certain scenarios happen (expected by analysts or by the individual client), while there is in most cases a capital guarantee.**

**Because of the individual and occasional character of these instruments, the range of the available bonds is continuously changing, and there is no fixed schedule for issuing them. If you would like to receive up to date information concerning the issuing of bonds, please contact the Treasury Sales staff at the contact addresses you will find at the back of this Handbook.**

Whatever the currency you want to make an investment in, K&H Treasury will be at your service, with a possibility to issue bonds tailored to your needs and preferences, with an individual structure. The minimum amount of the bond in question will be subject to the current market situation and the bank's case-by-case decision. As a routine, we assess our clients' needs, and in view of such needs we issue securities for public subscription on a continuous basis.

If you would like to subscribe for a bond, or submit a valid bid in an auction, you must have a securities account with K&H Bank, and a client account, already set up, in the currency of the issuing.

In the following section, we will give you two examples of how in case of our previous bonds the bank was able to translate the predictions of the market and of analysts into bonds with limited risk, in line with our investors' expectations.

## ➔ 1. 3-year commodity basket bond

MIFID complexity

2

The commodities market has undergone explosive growth in terms of turnover in the past decade. There has been increasing global demand for commodities, which, in combination with the increment of developing countries' industrial output, has had a significant impact on the prices of a large number of products. Also, both investors and speculators have become interested in this new market characterised by substantial liquidity and at times outstanding yields.

At the same time, investors have been concerned with the possibility that their investments may lose value fast if there is a slowdown in economic growth, or if speculators begin to sell instead of buying.

In response to investor's increase interest in commodities, K&H Bank created a 3-year bond which pays interest as a function of the current price of a basket consisting of three types of commodities (gold, crude oil and copper). Interest above that of a regular term deposit can be achieved if the price of the commodities comprising the basket shows a great degree of growth until the end of the tenor, but also if there is a slump of the price of the basket to below a specific level. In this way, investors will derive outstanding yield from this bond both if there is a significant price rise resulting from the global increase of consumption as well as production, and if there is substantial reduction in prices.

Upon the expiry of the commodity basket bond, interest is paid in a single sum which is calculated using the following formula:  
 $\text{Max}\{0; 70\% * [(\text{closing price of basket} / \text{initial price of basket}) - 1]\} \text{ PLUS } \text{Max}\{0; 50\% * [0.8 - (\text{closing price of basket} / \text{initial price of basket})]\}$

where:

initial price of basket: the closing trading price of the commodity basket weighed in equal proportions, on the starting date.

closing price of basket: the closing trading price of the commodity basket weighed in equal proportions, ten business days before the expiry date

weighing in equal proportions:

crude oil (Bloomberg ticker CO1)

gold (Bloomberg ticker GOLDLNP)

copper (Bloomberg ticker LOCADY).

In summary, this bond pays interest as a function of the prices of three commodities, where either a great increase or a great decrease in prices may result in high interest payment on expiry. In this case, the bond will pay 70% (as a percentage) of the price increment of the basket, and if there is a more than 20% decrease in the price of the basket, 50% of this will generate interest payment. Whatever the eventual outcome, the repayment of the capital invested is always guaranteed.

(This bond was used for purposes of illustration only, and it reflects conditions and market circumstances at the time of issuing).

## ➔ 2. the “Index Jumper” bond

MIFID complexity

2

Traditionally, the equity market (and indices) is the segment of the capital market which attracts most investors. Although K&H Treasury is not directly involved in the trading of shares, certain instruments representing this market are sometimes issued as part of our bond programme.

The equity market is characterised by significant short-term volatility, and the possibility of larger value losses occur (as for instance in October 2008); in the long run, however, this is the type of investment that can produce one of the highest rates of value increment. By means of structured bonds, it is possible to profit from the growth of share prices while excluding the possibility of loss of capital, or at least limiting it to certain circumstances (as in the case of the bond to be explained below).

The K&H Index Jumper bond is a 5-year EUR-based investment, which may pay higher interest than a regular term deposit as a function of the evolution of the “Dow Jones Eurostoxx 50” index. The value of the index is fixed on the date of issue, to serve as the basis of later interest payments and of establishing the date of expiry, as follows.

One year after the bond is issued, the daily closing price of the index is checked. If this value is above 100% of the initial value, the bond redeems early, with a repayment of 111% of the notional. If the index value is below 100% of the initial value, there is no early redemption.

If after two years the value of the index is higher than 95% of its initial value, the bond redeems early with a repayment of 122% of the notional. If the index is below 100% of the initial value, there is no early redemption (the monitoring limit of the index will go on reducing by 5%, and repayment increasing by 11%, each year).

If after five years the index value is above 80% of its initial value, the bond will repay 111% of the notional. If the index is below 80% of the initial value, then the client will be repaid a percentage of the investment corresponding to the percentage value of the index on the date of expiry.

All this means that the bond can pay more than double the yield of a regular term deposit, for a EUR investment on a time proportional basis, provided that on any observation date the “DJ Eurostoxx 50” index has an appropriate value. At the same time, there is also a possibility to lose capital: if in five years’ time the index is below 80% of the initial value, this investment will have a negative yield of the same size as if the investment had been made directly in the index.

(This bond was used for purposes of illustration only, and it reflects conditions and market circumstances at the time of issuing).

# 7

□ **contacts**



If you would like to receive more detailed information concerning the hedging techniques and strategies described in this Handbook, our Treasury sales staff will be more than pleased to assist you at any time.

**Let us be your partner in managing market risks.**

| Treasury sales dealer | phone            | fax              | e-mail                  |
|-----------------------|------------------|------------------|-------------------------|
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# 8 glossary





**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 10% 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.

**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.

**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.

**Deliverability:**

The instrument becomes deliverable in a physical form as a result of the trade, that is, the parties enter into gross settlement (see above).

**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)

**Deviza I:**

At 6 a.m. every morning, K&H Bank quotes the so-called Deviza 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.

**Deviza II:**

At 2 p.m. every afternoon, K&H Bank quotes its official exchange rate (Deviza 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 foreign currency transfers accepted by the bank before 2 p.m. are credited at the Deviza II exchange rate and at value date T+2. Also, the Deviza II is 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 rate quoted by the bank will not be aware of the actual exchange rate when they submit their orders.

**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).

**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).

**Forward exchange rate:**

Exchange rate defined in advance for a certain value date.

**Forward value date:**

A Value Date that is later in time than the Spot Value Date.

**“FX Swap”**

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.

**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 at the end of the interest payment periods.

**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.

**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.

**Offer:**

The bank's selling rate at which the bank sells the currency in question, and the client purchases it from the bank.

**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.

**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 (Deviza I or Deviza 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.

**Treasury transaction/deal:**

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.

**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.

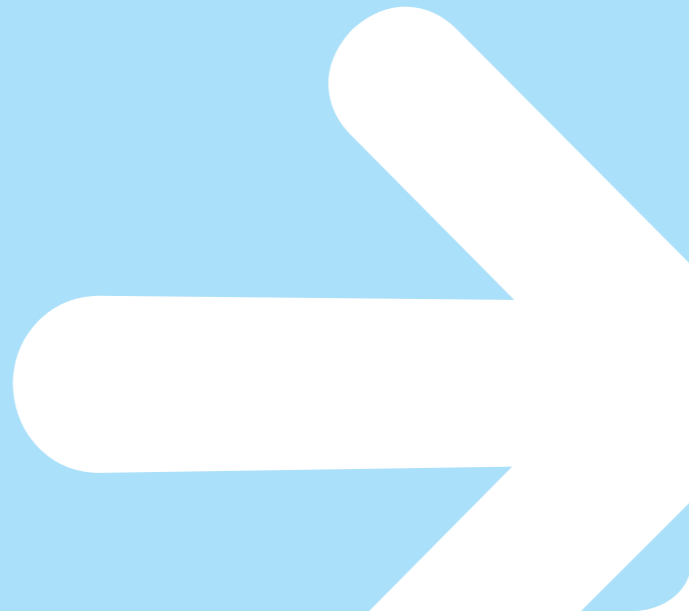
**Volatility:**

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.



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