

➔ 4. forward rate agreement, FRA

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IR 2

Product description – deposit holders

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

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

Product description – borrowers

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

The advantage of the transaction is that you will know in advance how much interest you will have to pay on your loan in the next interest period. However, if the market interest rate is lower at the start of the interest period in question than the rate specified in the forward rate agreement, your company will still have to pay interest according to the latter, i.e. more than it would have done if it had opted for the market rate. An FRA can be a partial alternative to an IRS if your company does not want to fix the interest rate for a large number of interest periods in advance, only for a shorter time or for one or a few interest periods (by concluding several FRAs for various periods).

If your company is taking out a loan, it buys an FRA from the Bank; if it is placing a deposit, it sells an FRA.

Settlement always occurs on a net basis in cash at the start of the interest period in question.

Notation used in forward rate agreements:

FRA $t \times n$

where

t is the number of months left before the start of the next interest period and

n is the end date of the future interest period calculated from the transaction date.

For example, FRA 1x4 = a 3-month interest rate with the relevant interest period starting in one month.

example for fixing a deposit interest in advance – selling an FRA: a company is planning to deposit HUF 50 million in a month for a three-month term. It is concerned that the interest rate achievable for a three-month deposit on the start date of the deposit will be lower than the interest rate of the FRA, which is currently 7.00%. This 7.00% is acceptable to the company for a three-month term deposit so it decides to fix it now in a 1 month forward rate agreement.

One month later, on the second banking day before the start date of the deposit, we compare the 3-month BUBOR (the reference interest rate for the three-month period starting on day $T+2$) against the 7.00% set out in the forward rate agreement. The company and the Bank settle on the start date of the deposit as follows:

- if the 3-month BUBOR < 7.00% (forward interest rate) => the company is paid the discounted value of the time proportional difference between the two interest amounts.
- if the 3-month BUBOR > 7.00% (forward interest rate) => the company pays the discounted value of the time proportional difference between the two interest amounts.

The deposit and the forward rate agreement are legally separate transactions. The deposit of the company will be fixed for three months at the current interest rate (applicable in a month's time) and it will be paid/pay the discounted value of the time proportional difference between the BUBOR and the forward rate multiplied with the FRA notional under the forward rate agreement.

So, the interest realised by the company on its term deposit will be calculated from the rate set out in the forward rate agreement. (We assumed in the above description that the deposit would be normally fixed at the 3-month BUBOR applicable in one month's time.)

Parameters of a forward rate agreement – selling an FRA

notional	HUF 50 000 000
start of the future interest period	in one month
tenor of the future interest period	three months
settlement date	in one month (at the start of the interest period)
number of days in future interest period (N)	90
FRA 1x4 (interest rate applicable for a 3-month tenor starting in one month)	7.00%
market reference rate	3-month BUBOR
interest due to client	7.00% fixed interest (per annum)
interest payable by client	3-month BUBOR
interest calculation method	actual number of days / 360
fixing date of market reference rate	two banking days before the start date of the future interest period
settlement of interest payments	net, on the settlement date
current 3-month BUBOR	7.00%
transaction cost	zero

possible scenarios on the settlement day, assuming that in one month the 3-month BUBOR is

below 7.00%	received by the company at the start of the interest period: [notional value * (FRA – market reference rate) / 360 * N] / (1 + market reference rate * N / 360) here: [50 000 000 * (7.00% – 3-month BUBOR) / 360 * 90] / (1 + 3-month BUBOR * 90 / 360)
above 7.00%	paid by the company at the start of the interest period: [notional value * (market reference rate – FRA) / 360 * N] / (1 + market reference rate * N / 360) here: [50 000 000 * (3-month BUBOR – 7.00%) / 360 * 90] / (1 + 3-month BUBOR * 90 / 360)
best case scenario (treasury transaction on a standalone basis)	On the fixing the 3 month BUBOR is below 7.00%. Your company receives the discounted value of the time proportional difference between 7.00% and 3 month BUBOR.
worst case scenario (treasury transaction on a standalone basis)	On the fixing the 3 month BUBOR is above 7.00%. Your company pays the discounted value of the time proportional difference between 7.00% and 3 month BUBOR with an unlimited interest rate loss potential.

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

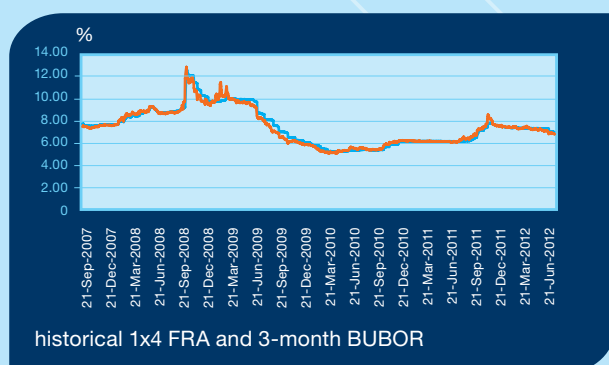
market value : the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions. The market value of the position is the value calculated as of the settlement date and discounted to the closing/market evaluation date. The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

FRA rate two weeks later (the FRA sold can be repurchased at this FRA rate) (%)	value of the position as of the settlement date (HUF)
6.00	+122 850
7.00	0
8.00	-122 850

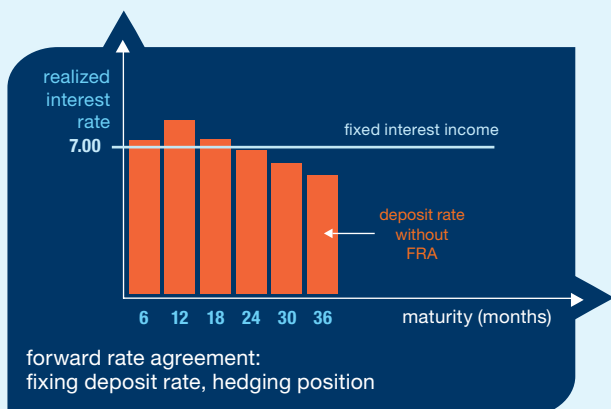
financial outcome of some possible scenarios at maturity supposing that the 3-month BUBOR evolves as below:

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

3-month BUBOR in 1 month (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest income without FRA, HUF)	profit/loss of the product on a standalone basis (net settlement at the start of the interest period, paid by the company if '-', HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (sum of the 2 previous columns, 3 months interest income with FRA, HUF)
5.00	625 000	245 700	875 000
6.00	750 000	122 850	875 000
7.00	875 000	0	875 000
8.00	1 000 000	-122 850	875 000
9.00	1 125 000	-245 700	875 000



The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month BUBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.



The loan and the forward rate agreement are legally separate transactions. The company will pay interest on its loan according to the 6-month BUBOR applicable in six months' time (the usual loan margins that banks charge to their clients are ignored and calculations are based on market reference rates) and it will receive/pay the discounted value of the time proportional difference between the BUBOR and the forward rates multiplied by the FRA notional under the forward rate agreement.

So, the interest payable on the loan in the given interest period will be equal to the rate set out in the forward rate agreement (+ loan margin).

example for fixing a loan interest rate in advance for one interest period – buying an FRA: a company pays interest semi-annually and it would like to know at the start of the year how much it will have to pay in the second half of the year so it fixes the interest rate for the six-month interest period starting in six months' time from now, with the help of a forward rate agreement. When the transaction is concluded, the FRA 6x12 is 6.00%. Six months later, on the second banking day before the start day of the interest period, we compare the 6-month BUBOR (the six-month reference rate starting on day T+2) against the 6.00% and the company and the Bank net settle in cash accordingly on the first day of the interest period as follows:

- if the 6-month BUBOR < 6.00% (forward rate) => the company pays the discounted value of the time proportional difference between the two interest amounts.
- if the 6-month BUBOR > 6.00% (forward rate) => the company will receive the discounted value of the time proportional difference between the two interest amounts.

parameters of a forward rate agreement – purchase of an FRA	
notional	HUF 50 000 000
start of the future interest period	in six months
tenor of the future interest period	six months
settlement date	in six months (at the start date of the interest period)
number of days in future interest period (N)	180
FRA 6x12 (interest rate applicable to a six-month term starting in six months)	6.00%
market reference rate	6-month BUBOR
interest due to client	6-month BUBOR
interest payable by client	6.00% fixed interest rate (per annum)
interest rate calculation convention	number of actual days/360
fixing date of market reference rate	two banking days before the start date of the future interest period
settlement of interest payments	net, on the settlement date
current 6-month BUBOR	7.25%
transaction fee	zero
possible scenarios on the settlement date assuming that on the fixing date the 6-month BUBOR is	
below 6.00%	paid by the company at the start of the interest period: $\frac{[\text{notional value} * (\text{FRA} - \text{market reference rate}) / 360 * N]}{(1 + \text{market reference rate} * N / 360)}$ here: $\frac{[50\,000\,000 * (6.00\% - \text{6-month BUBOR}) / 360 * 180]}{(1 + \text{6-month BUBOR} * 180 / 360)}$
above 6.00%	received by the company at the start of the interest period: $\frac{[\text{notional value} * (\text{market reference rate} - \text{FRA}) / 360 * N]}{(1 + \text{market reference rate} * N / 360)}$ here: $\frac{[50\,000\,000 * (\text{6-month BUBOR} - 6.00\%) / 360 * 180]}{(1 + \text{6-month BUBOR} * 180 / 360)}$
best-case scenario (treasury transaction on a standalone basis)	On the fixing day 6 month BUBOR above 6.00%. Your company receives the discounted value of the time proportional difference between 6.00% and 6 month BUBOR
worst-case scenario (treasury transaction on a standalone basis)	On the fixing day 6 month BUBOR below 6.00%. Your company pays the discounted value of the time proportional difference between 6.00% and 6 month BUBOR with an unlimited interest rate loss potential.

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

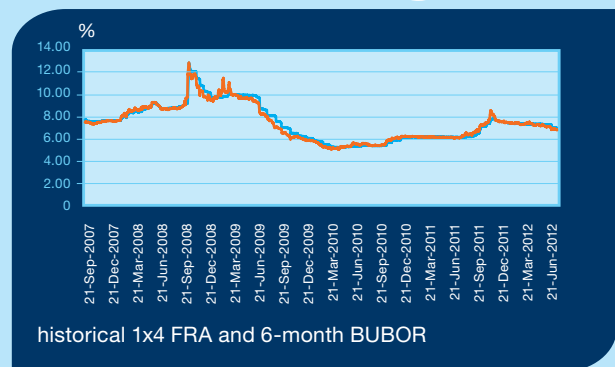
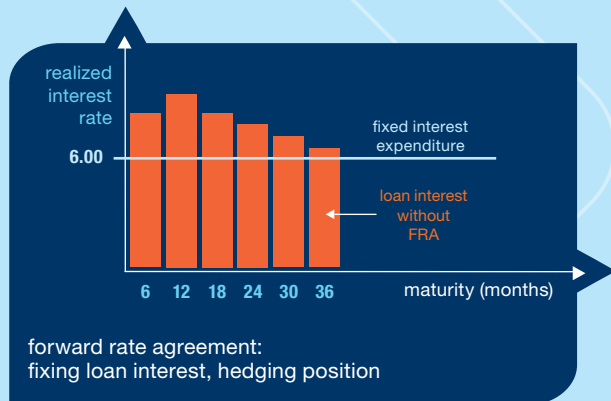
market value : the cost of closing the position calculated at a given point of time and under the prevailing market terms and conditions. The market value of the position is the value calculated as of the settlement date and discounted to the closing / market evaluation date. The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

FRA rate two weeks later (the FRA purchased can be sold at the following FRA rate) (%)	value of position as of the settlement date (HUF)
5.00	-233 714
6.00	0
7.00	+233 714

financial outcome of some possible scenarios at maturity supposing that the 6-month BUBOR evolves as below:

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

6-month BUBOR in six months (%)	underlying exposure's financial outcome with no treasury transaction (6 months' interest income without FRA, HUF)	profit / loss of the product on a standalone basis (net settlement at the start of the interest period, paid by the company if '+', HUF)	underlying exposure's financial outcome with the treasury transaction, hedged position (6 months interest expense with FRA, HUF)
4,00	1 000 000	+467 428	1 500 000
5,00	1 250 000	+233 714	1 500 000
6,00	1 500 000	0	1 500 000
7,00	1 750 000	-233 714	1 500 000
8,00	2 000 000	-467 428	1 500 000



The chart shows the interest level(s) of the treasury deal and the historical evolution of 6 month BUBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.

advantages of transaction

- protection against adverse changes in short-term interest rates for a predefined short period (the worst-case scenario is known).
- predictability: you can fix your interest expense or income in advance.
- if you conclude (buy) a forward rate agreement for a loan and the market rate is higher at the start of the interest period than the rate set in the forward rate agreement, then on the start of the interest period your account will be debited with the discounted value of the time proportional interest difference.
- if you conclude (sell) a forward rate agreement for a deposit and the market rate is lower at the start of the interest period than the rate set in the forward rate agreement, then at the start date of the interest period your account will be debited with the discounted value of the time proportional interest difference.
- you can conclude FRAs for loans extended by, or deposits placed with, other financial institutions, as well, because this deal is separate (in legal terms) from the underlying loan or deposit transaction.
- no cost or separate fees are charged.
- it can be concluded in most liquid currencies.
- the notional amount and the maturity date can be set according to your needs and expectations.
- the start and length of the future interest period can be set according to your expectations, plans and budget. Changing one parameter will also cause the other parameters to change.

- the position can be closed at any time before the maturity date, resulting in a profit or a loss depending on the current market situation at the time concerned.

risks of transaction

- if you conclude (buy) a forward rate agreement for a loan and the market rate is lower at the start of the interest period than the rate set in the forward rate agreement, then on the start of the interest period your account will be credited with the discounted value of the time proportional interest difference.
- if you conclude (sell) a forward rate agreement for a deposit and the market rate is higher at the start of the interest period than the rate set in the forward rate agreement, then at the start date of the interest period your account will be credited with the discounted value of the time proportional interest difference.
- because of the fluctuation of market rates, the closing of an FRA before expiry involves settlement obligations, which may result in a profit or a loss, depending on the current situation in the interest rate market at the time concerned.
- if the underlying loan is repaid or deposit is cancelled it is advisable to close the FRA too, since there is no longer any risk resulting from the clients core business.
- in principle any extent of interest rate loss is possible in the event that the evolution of interest rates takes an unexpected sharp turn to a more favourable level during the tenor of the deal.

- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day-count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also negatively affect the market value of the position.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead

to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.

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

product structure

The product is built up of a forward rate agreement. The sections on forward rate agreements of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.