

FINANCIAL RISK MANAGEMENT

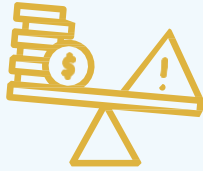


Understanding
Financial Markets

Session
Three

By the end of this session you should have a fair understanding of

- 1 Identify risk factors
- 2 Understand the basics of risk management
- 3 Appreciate the trade-off between hedging vs. not hedging
- 4 Basic FX and IR hedging tools



Financial Risk Management

- The Risk Management approach
- How to identify risk



Hedging IR risk

- Understanding an Interest Rate Swap



Hedging FX risk

- Understanding FX forwards
- Understanding options

Financial Risk Management is a disciplined and structured approach aimed at identifying, measuring and – if appropriate – mitigating the impact of uncertainty on an institution's cash flows. Every commercial business should envisage having one.

Our Approach

- Discuss with the clients and analyze their financials / business models
- Identify relevant risk factors and analyze their potential impact
- Design appropriate tailor-made solutions
- Client feed-back
- Execution

Our Dos and Don'ts

- We are not product pushers, but solution providers. We do not approach clients to sell something, but we work with them to identify their needs.
- We are objective in our analysis, providing – where possible – analytical evidence of our assessment through scenario analysis of market data etc.
- We have got wide structuring capabilities internally and also full access to all major investment banks if needed. This gives us unique product expertise.
- Well, this is all about relationship and communication skills!
- Again, through our wide access to international financial institutions we are able to execute transactions at the best possible price for our clients.

Generally, the definition of risk recalls the concept of financial losses. Technically, though, risk is defined as any situation whose outcome is not certain (although in finance we tend to focus more on the negative tail of the distribution, i.e. losses).

Do corporate clients fully understand their risk exposure? Do you? No? Then you need to find out...

This is a true conversion with a corporate client with a clear FX exposure in their EUR receivables:

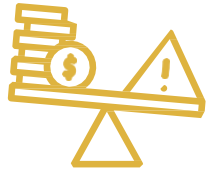
- Treasury Sales: I think you are sitting on a significant exposure and you should consider hedging at least part of it.
- Client: Look, I am not interested to hedge. I do not want to take a view on the market: we are a corporate, not a currency speculator!
- Treasury Sales: habibi, if you do not hedge this is exactly what you're doing! You are taking the strong view that EUR will not go down in the following months...
- Client: ...uhm...

"Mining for information": asking the right questions as a first step will take you a long way...

First, you need to know their business model... Then:

- Do you have a formal risk management policy?
- Do you quantify your exposure to market risk?
- What is your view on the (relevant) market?
- What is your method of borrowing?
- Is your Treasury a cost or profit center? Is it centralized?
- What are your business KPI?
- Are you able to pass on cost increase to your clients?
- What is your business / payment cycle?
- Do you have long-term contracts with your clients?
- How do you "insure" your margin?
- Do you currently use derivatives for hedging purposes?
If yes: which one? If no: why?

If by now you still have not figured out what type of client this is...well...



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IR Risk

Interest rate risk – generally speaking – refers to unforeseeable fluctuations in specific interest rate market benchmarks (like Libor) that might affect the institution's future cash flows. Notably, the risk might sit on both side of the balance sheet, either asset and liability side.



IR Hedge

The main tool to hedge IR risk is the swap (IRS). In an IRS, two parties agree to exchange future cash flows calculated on a fixed and / or floating interest rate. Details of the IRS include currency and notional amount, tenor, calculation conventions and so on.

Balance Sheet

Asset

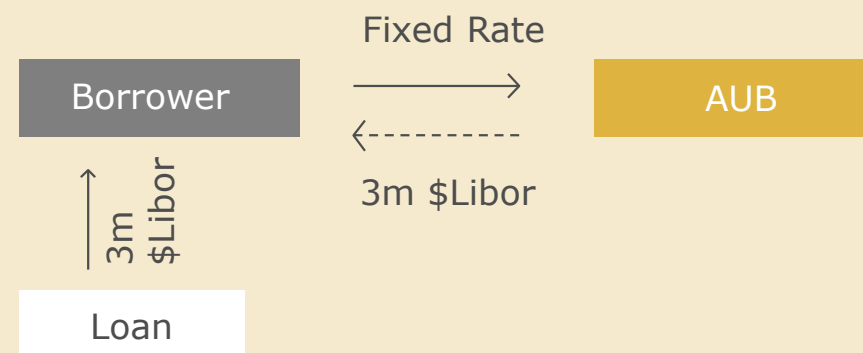
An investor has a fixed-coupon bonds in the portfolio and has got a view that rates will go up.

Why is this a risk?

Liabilities

A corporate borrower has a floating-rate loan in the books and has got a view that rates will go up.

Why is this a risk?





Example

A corporate borrower (XYZ) has taken USD 100mln, 5year bullet loan priced at 6m \$Libor + a spread. As they are of the view that Libor will go up (earlier than market is anticipating), they decide to hedge their exposure through an IRS.

Start: 1 March 2016
Tenor: 5 years
Notional: USD 100mln
XYZ to receive: 6m \$Libor
XYZ to pay: %1.4638 fixed

Every payment date (semiannually), XYZ will receive 6m \$Libor from the swap, which will be used to service their debt.

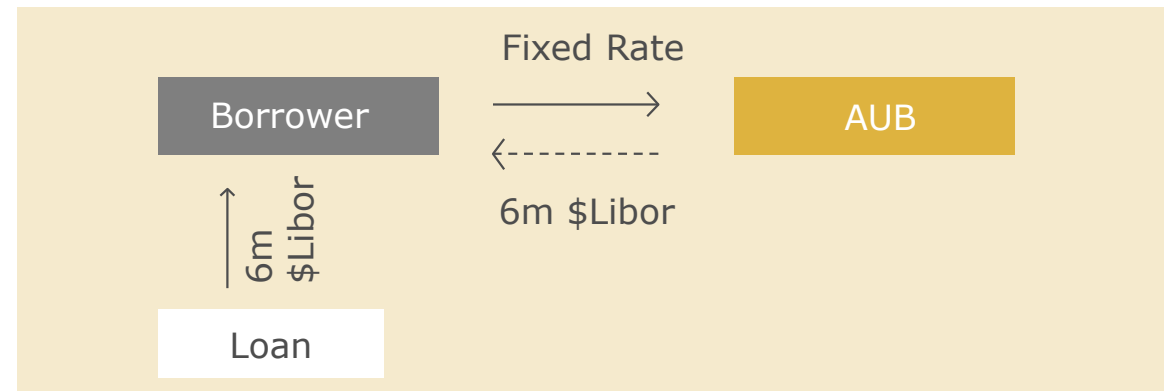
In turn, they will pay a fixed rate of 1.4638%, which will effectively become – adding the spread – the cost of their debt

From now on, they will not be concerned about market fluctuations.

**The DV01
of the swap is
approximately
USD 47k.**

Considerations

- Before considering hedging, the company should quantify their risk. The DV01 of the swap serves this purpose as it measures – in USD terms – the impact of a parallel shift in market yield curve of 1 basis point. Not quite clear? More later...
- Hedging means eliminating the uncertainty: the future payments are fixed as of today.
- There is an initial cost associated with hedging: the negative carry, i.e. the difference between the flows received and the flows paid. This cost can also be viewed as an insurance cost: have you ever thought of not insuring your car hoping you will not need it?
- The negative carry derives from the fact that – in the first half of the swap – the fixed rate paid by the client is higher than the Libor received. In the second part of the swap, the opposite should be true, according to market pricing (do you remember the Libor forward?)





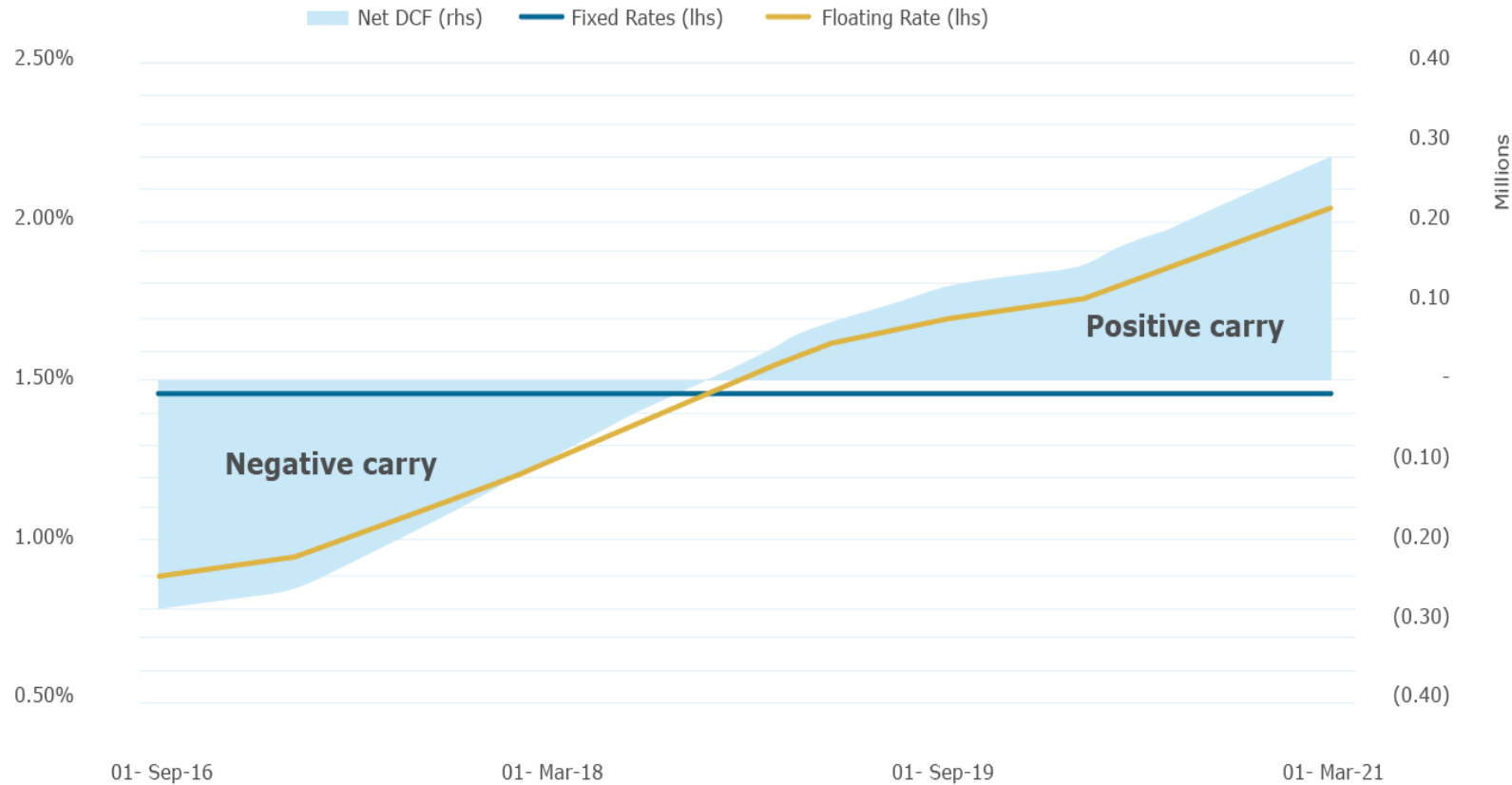
Pricing

- A swap is a sum of cash flows PVs, both on the pay and on the receive side.
- To price the Libor leg of the swap, market practice is to use the Libor forward quoted by the market.
- On trade date, the total sum of the cash flows (i.e. the MtM of the swap) will be equal to zero. But then, the Libor forward rate will move on a continuous basis and this will determine the change in the MtM of the swap throughout its life.
- Don't confuse Libor forwards (it is an estimate) with the actual fixing.
- **As right now rates are still low, paying fixed in a swap can be a good opportunity.**

Swap Full Rundown

End Period	Fixed Rate	PV Cash Flows	Floating Rate	PV Cash Flows	Discount Factor	Net DCF
01-Sep-16	1.4638%	(744,465.45)	0.9127%	464,171.25	0.995027	(280,294.20)
01-Mar-17	1.4638%	(728,857.99)	0.9516%	473,808.66	0.990313	(255,049.33)
01-Sep-17	1.4638%	(736,792.81)	1.1059%	556,630.35	0.984772	(180,162.47)
01-Mar-18	1.4638%	(720,157.89)	1.2818%	630,599.52	0.978492	(89,558.38)
04-Sep-18	1.4638%	(738,495.70)	1.4475%	730,251.04	0.971213	(8,244.66)
01-Mar-19	1.4638%	(697,447.27)	1.6057%	765,035.21	0.963606	67,587.95
03-Sep-19	1.4638%	(722,413.67)	1.7035%	840,685.85	0.955171	118,272.17
02-Mar-20	1.4638%	(696,792.53)	1.7619%	838,668.59	0.946745	141,876.07
01-Sep-20	1.4638%	(697,718.17)	1.9106%	910,658.30	0.937642	212,940.13
01-Mar-21	1.4638%	(683,074.47)	2.0481%	955,707.19	0.928106	272,632.72
Total						(0.00)

Swap Full Rundown



What happens to the swap MtM if market rates move up / down? Why?

More on swaps...



Swap sensitivity to market

- It is captured by the so called **DV01 (the \$ value of 1 basis point)**: it illustrates the effect – in present value \$ terms – of a one basis point change (0.01%) in the swap rate (or market rates, for outstanding swap).
- For example, for a 5yr, USD 100mIn, bullet swap: **DV01 = 0.01% * USD 100mIn * 5 * Discount Factor = USD 47,000.**
- Hence, the longer the tenor the higher the DV01 should be, everything else being equal. **Higher DV01 swaps are therefore more sensitive to market moves** (hence: more risk involved).



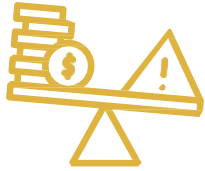
Swap start date: spot vs. forward

- If the start date of a swap is set at some future date (i.e.: longer than two working days, which is the conventional start date), the swap is referred to as **forward-starting.**
- This is relevant as it will have important implications: (1) in an upward-sloping yield curve environment, **the forward-start swap rate will be higher than an equivalent spot-start one;** (2) by doing a forward-start swap, though, **the negative carry will start accruing** later (from the later start date, that is), hence it might be an attractive proposition in some instances.



Documentation

- Before a swap can be executed, an **ISDA Master Agreement** has to be negotiated and executed between the counterparties.



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FX Risk

FX risk refers to unforeseeable exchange fluctuations in the price of a specific currency pair. Again, these fluctuations might have an impact on an institution's future cash flows and arise from both the business operations or from balance sheet items (ever heard of translation risk, for example?).



FX Hedge

The basic tool to fix the rate at which buy or sell a specific currency at some future date is the FX forward contract (as seen in Session 1). By setting a rate today for future delivery, the company is effectively eliminating the risk of adverse currency move.

Is FX a volatile class?

- The chart on the right is the daily EUR/USD price chart from 2000 to date.
- The minimum print of the chart is below 0.85; the maximum is above 1.55, giving about a 80% excursion between the two marks.

Now, think from a business perspective: if you need buying or selling EUR/USD and only use the spot market with an “unfortunate” timing, you might seriously risk damaging your core business.





FX Forward

- It is the most **basic FX hedging tool** and every corporate client with third currency payables / receivables should at least consider it.
- It is a simple FX deal with settlement date some time in the future.
- As the rate is locked in on trade date, it **eliminates the uncertainty** around future FX rate moves
- It does **not require any additional premium** or fees to be paid by the client
- Main **draw-back:** client will not benefit if market moves in their favor as the rate **dealt is fixed** on trade date.

Illustration

Corporate Y exports goods to Europe and their functional currency is USD. They have just made a sale worth EUR 1mln: delivery of the goods and payment in 3 months.

They have two options:

- Wait to receive the money and go for a FX spot deal in 3 months: they will take whichever rate is available then in the market.
- Lock in the current forward rate: book today a 3month EUR/USD Forward.



- They go for Option b. (hedging): sell EUR in a 3month forward deal @ 1.0950 (spot is @ 1.0920).
- Doesn't matter where EUR/USD trades in 3 months: they will still sell EUR for USD at 1.0950.

Typical client's reaction in 3 months:

- EUR/USD < 1.0950: excellent, great deal hedging. I had a great idea!
- EUR/USD > 1.0950: what did **you** make me do??

This is the wrong way to look at it: **hedging is not about making money, it is all about having control of your cash flows and reducing the volatility of your P&L.**



FX Options

- An option gives its holder the **right to buy (Call option) or sell (Put option)** a specified asset (Underlying) at a predetermined price (Strike) at or by a certain maturity date (Expiry).
- The cost of the option is called **premium**.
- A vanilla option is basically **like a car insurance contract**: you pay a premium and use it only if / when needed.
- Hence, the **risks vs. benefits** profile is simple: an option buyer only stands to lose the premium against a potentially very large / unlimited benefit.
- Main **draw-back**: given their flexibility, vanilla options are **generally quite expensive** (depending on the variables. i.e. Strike Price, Expiry Date etc.).

Illustration

Call Option

Corporate Y imports goods from Europe. Their need is to buy EUR against USD. They decide to buy a EUR Call / USD Put:

- Expiry: 3 months • Strike: 1.1000 • Premium: x% of the Notional

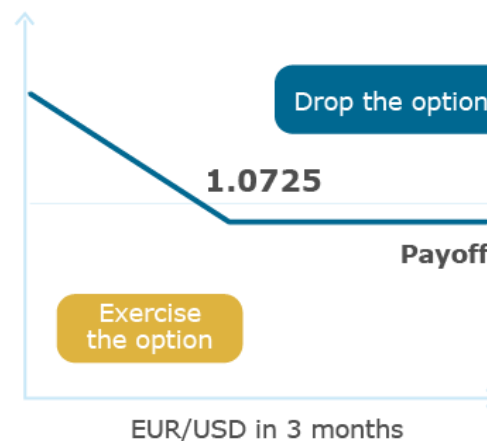


- If $\text{EUR/USD} > 1.1000$, then the option will be exercised. Corporate Y will buy EUR @ 1.1000
- If $\text{EUR/USD} < 1.1000$, then the option will not be exercised. Corporate Y will buy EUR at whatever price is then prevailing in the market.

Put Option

Corporate Z exports goods to Europe. Their need is to sell EUR against USD. They decide to buy a EUR Put / USD Call:

- Expiry: 3 months • Strike: 1.0725 • Premium: x% of the Notional



- If $\text{EUR/USD} < 1.0725$, then the option will be exercised. Corporate Y will sell EUR @ 1.0725
- If $\text{EUR/USD} > 1.0725$, then the option will not be exercised. Corporate Y will sell EUR at whatever price is then prevailing in the market.



FX Zero-Cost Option Strategies

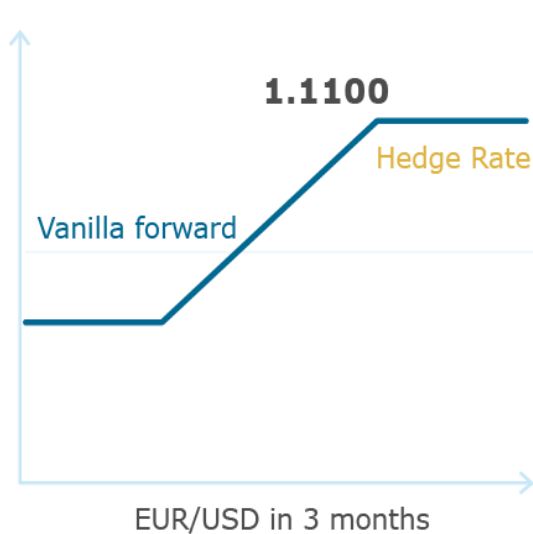
- Vanilla Call and Put options (and other types as well) can be mixed together to design so called **zero-cost strategies**.
- In their basic versions, these strategies combine some benefits and flexibility of the vanilla options, but they **do not involve any premium** paid by the client.
- The client will generally be **protected** – in full or in part - against their risk scenario, **but will have to give up some upside in exchange**.
- The most conservative of these strategies are designed so that **a worst-case scenario is known at inception**
- Two basic examples here:

Range Forward (or Zero-cost Collar);

Three-Way Collar (or “Seagull”).
- These products are widely used by corporate clients.

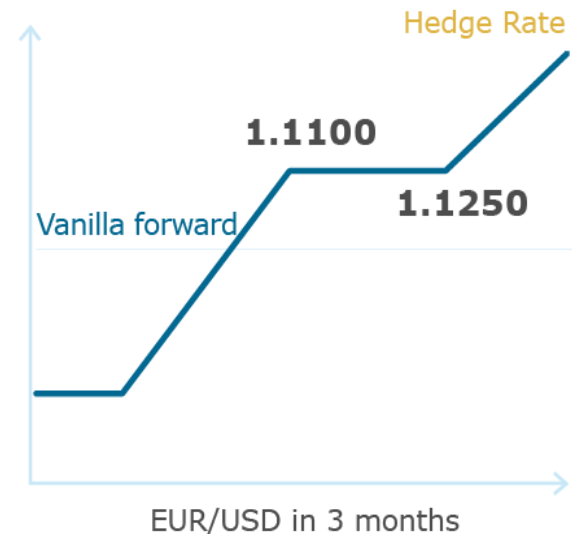
Illustration

Range Forward



- If EUR/USD < 1.0875: Client will have to buy EUR @ 1.0875
- If $1.0875 < \text{EUR/USD} < 1.1100$: Client will buy @ spot market rate
- If EUR/USD > 1.1100: Client will buy EUR @ 1.1100

Three-way collar



- If EUR/USD < 1.0775: Client will have to buy EUR @ 1.0775
- If $1.0775 < \text{EUR/USD} < 1.1100$: Client will buy @ spot market rate
- If $1.1100 < \text{EUR/USD} < 1.1250$: Client will buy EUR @ 1.1100
- If EUR/USD > 1.1250: Client will buy EUR @ spot market rate minus 150 pips.

- **Clients should always be aware of the financial risks they run in their business: if not properly managed, these risks could significantly affect their profitability.**
- **Some financial risks can be mitigated through basic hedging techniques. Corporate clients should always at least consider hedging and focus exclusively on their core business.**
- **Hedging is not about making money from the market: it is about being in control of future cash flows and reducing the volatility of the business P&L.**
- **We do not sell products, we sell ideas and views: hedging solutions can then be designed to meet almost any of the client's needs and degree of sophistication.**

Clients will be effectively managing their financials and the Bank will generate significant fee income.

ANY QUESTIONS?