



FOREIGN EXCHANGE (FX): MARKET AND BASIC TOOLS

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

- 1 General features of global FX markets
- 2 Various market participants and their respective roles
- 3 FX quote conventions and processes
- 4 FX forward rates concept and calculation



Basic Concepts

- Definitions and some statistics
- Macro drivers and exchange rate regimes



FX Quotation

- Quotation:
Direct vs. Indirect
- Bid / Ask spread



FX transactions by delivery date

- FX spot transactions
- FX forward transactions



FX forward

- Definition
- Calculation

- The foreign exchange market (also known as Forex, FX, or currency market) is a **global decentralized market** for the trading of currencies.
- It is the **most liquid** global market, working 24 hours a day, and determines the relative values of different currencies.
- In terms of **market participants**, the FX market is divided into levels of access:
 - | **Market makers:**
this group include mainly large commercial and investment banks, which keep a risk warehouse in some (or all) of the currency traded (see table on the next slide);
 - | **Market "takers":**
this group includes all other institutions which deal directly with the market makers, for example smaller banks, commercial companies, exchange houses, investment funds etc..
 - | **Other participants:**
this group includes participants like governments and central banks.

• **As of 2019¹:**

| **Average daily turnover** | London accounts is around USD 6.6tln, out of which USD 3.20tln comes from FX swap and USD 1.98tln from spot. | London accounts for 54% of global trading volumes, the US for 21%, Singapore for 10%, Japan for 6% & Hong Kong for 10%.

Rank	Name	Market share ²
1	JPMorgan	10.78%
2	UBS	8.13%
3	XTX Markets	7.58%
4	Deutsche Bank	7.38%
5	Citi	5.50%
6	HSBC	5.33%
7	Jump Trading	5.23%
8	Goldman Sachs	4.62%
9	State Street	4.61%
10	Bank of America	4.50%

Source:

1. 2019 Triennial Central Bank Survey of Foreign Exchange and OTC Derivatives Markets Activity (Dec 2019)
2. Euromoney FX survey 2020



- An exchange rate between two currencies is the rate at which one currency will be exchanged for another. **It is also regarded as the value of one country's currency in terms of another currency (generally, the USD).**

- The exchange rate regime determines the dynamics of that rate movements:

Free-floating:

the FX rate will move according to the demand and supply for the currency;

Fixed rate (full peg):

the FX rate (generally to the USD) is fixed over time, unless an official de-peg is carried out;

Hybrid models

any combination of the two on the left, like a peg to a basket of currency, a managed floating band etc.

- A number of theories have been proposed to **explain the short-term and long-term fluctuations** of the exchange rates (balance of payments adjustments, purchasing power parity, uncovered interest rate parity etc.).

- **Truth is that – in such a big and globalized market – the number and variety of players makes it very hard to forecast or explain in details what determines currency movements. Also political factors, especially for Emerging Markets, can have a significant impact on market prices.**



Rank	Currency	Symbol	Daily Share(%)
1	United States dollar	USD	88%
2	Euro	EUR	32%
3	Japanese yen	JPY	17%
4	Pound sterling	GBP	13%
5	Australian dollar	AUD	7%
6	Canadian dollar	CHF	5%
7	Swiss franc	CAD	5%
8	Chinese yuan	CNY	4%
9	Hong Kong dollar	HKD	4%
10	New Zealand dollar	NZD	2%
11	Swedish krona	SEK	2%
12	Korean won	KRW	2%
13	Singapore dollar	SGD	2%
14	Norwegian krona	NOK	2%
15	Mexican peso	MXN	2%

Source: 2019 Triennial Central Bank Survey of Foreign Exchange and OTC Derivatives Markets Activity (Dec 2019)

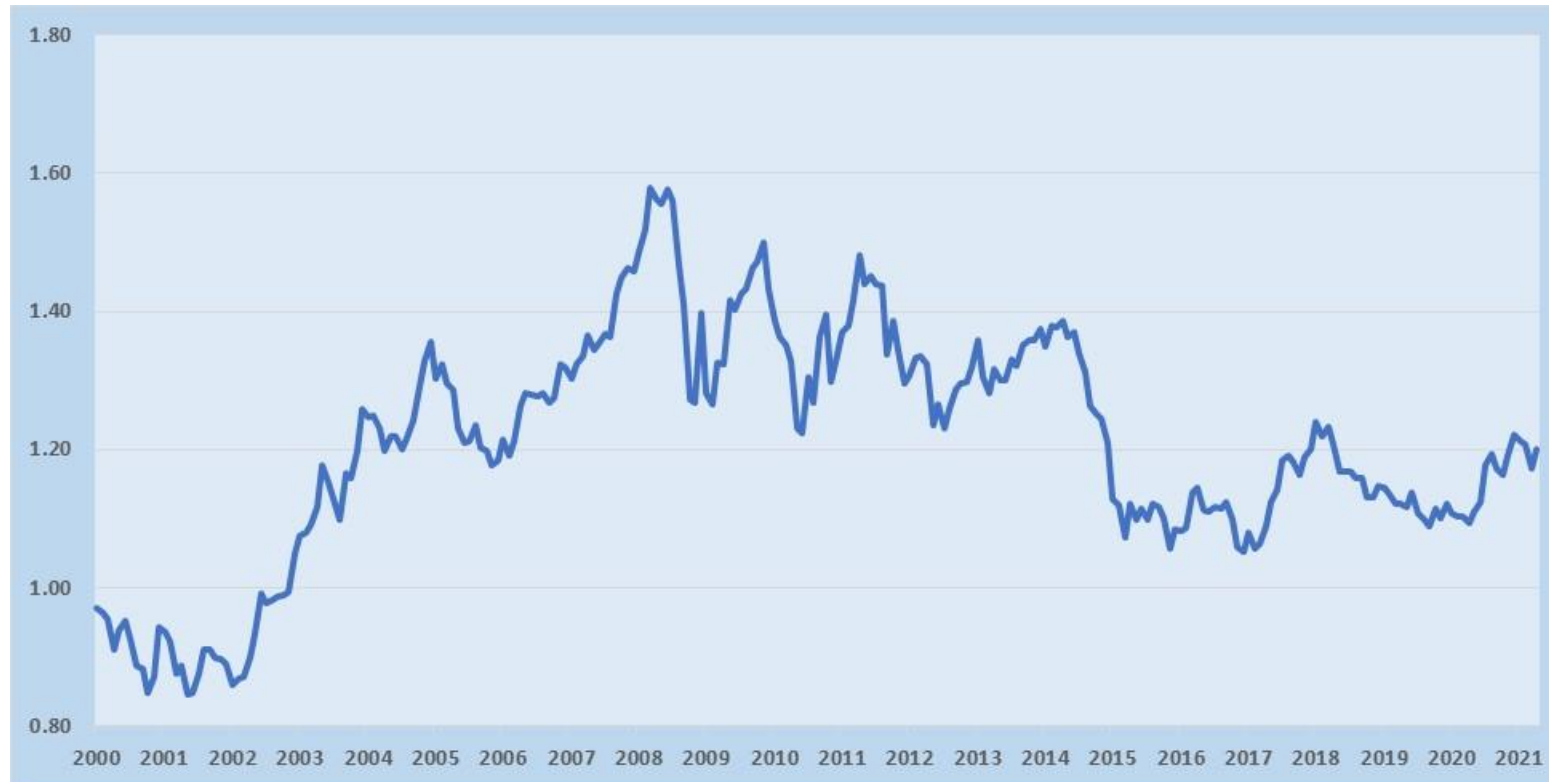
- The chart at the bottom shows the historical **EUR/USD exchange rate from 2001 to 2020.**

- You might note, for example:

- | The USD was still strong during the Internet bubble in 2001, despite it being mainly an “American” issue;
- | The USD weakened during the period 2008 – 2002, which was one of the most prosperous for the US from a financial standpoint;
- | The USD started strengthening at the beginning of the meltdown in 2008 for the “flight-to-quality” effect.

- This goes to show that **macroeconomic fundamentals alone are not enough to explain the FX rate dynamics.**

- Also, institutional investors of the likes of hedge funds have become so sizeable, that they are able to affect currency trends.





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- A FX rate indicates the price of a currency in terms of another one. The two currencies together define a **currency pair** (e.g. EUR/USD).

- The first currency in the pair is called **base currency** (e.g. EUR), the second is called the **quote currency** (e.g. USD).

- The exchange rate defines how many units of the quote currency are "equivalent" to one unit of the base currency.

Conventions

- Every currency is quoted against the USD

- There are two sets of quote conventions:

Direct quote

(e.g. USD/BHD):
the amount of BHD
equal to one USD.

Indirect quote

(e.g. EUR/USD):
the amount of
USD equal to one EUR.

- As you can see, the base currency is always set at the value of one



Illustration

Direct Quote

USD/BHD = 0.3770

- **1 USD equivalent to 0.377 BHD**
- **Currency pair: USD/BHD**
- **Base currency: USD**
- **Quote currency: BHD**

Indirect Quote

EUR/USD = 1.2000

- **1 EUR equivalent to 1.2000 USD**
- **Currency pair: EUR/USD**
- **Base currency: EUR**
- **Quote currency: USD**

NOTE:

Most currencies follow the direct quote convention, with the important exceptions of EUR, GBP, AUD and NZD.

Currency pairs where the USD is not present (e.g.: EUR/AUD) are called **crosses**.

- A FX rate is quoted as a **two-way price**:

Bid: the price at which the market is willing to buy currency;

Ask (or Offer): the price at which the market is willing to sell currency.

- The Bid and Ask prices are quoted by the **"market makers"**.

- As a **"market taker"**, an institution will always buy at the higher price and sell at the lower price.

- The distance between Bid and Ask price is called the **spread**.

- The width of the spread varies across currency pairs: most liquid pairs will trade at tiny spreads.

- In any FX deal, a client would call a dealer on the trade date and agree:

Currency pair; Amount;
Buy / Sell side; Value (or settlement) date;

Illustration

INDIRECT QUOTE (EUR/USD)

EUR=	EURO		SPOT	EUR/USD
	Bid	Ask	Net.Chng	% chg
B↓	1.1881 81	1.1883 83	-0.0048	-0.44%
B↑	1.1883	1.1885		
B↓	1.1881	1.1884		
				Contributor
				RABOBANKGFM
				BANK BPH
				WGZ BANK

DIRECT QUOTE (USD/BHD)

BHD=	Bahraini Dinar		SPOT	USD/BHD
	Bid	Ask	Net.Chng	% chg
B↑	0.37696 696	0.37701 701	+0.00001	0.00%
B↑	0.37696	0.37701		
B↓	0.37696	0.37701		
				Contributor
				CA-CIB
				AUBB
				NBB

Let's assume a client wants to buy EUR and BHD against USD: what is the correct side of the quote?



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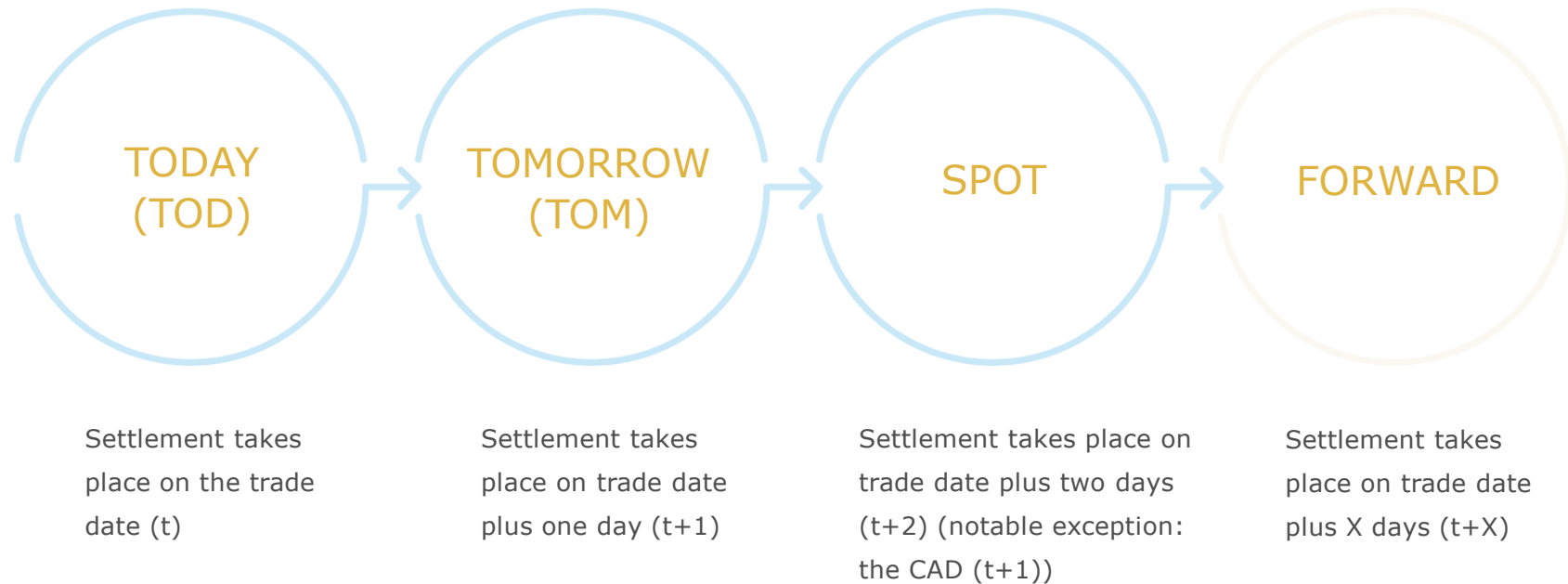


FX forward

- Definition
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- In essence, a FX deal is an agreement between the parties to deliver a certain amount of currency in exchange for another at a specified date (**settlement, delivery or value date**).

- Depending on the value date, a deal can be said to be:



Bear in mind: the deal flow is the same in all of these case, as all details are agreed on the trade date. The only variable is the settlement date of the deal.

Deal flow: Spot vs. Forward

Spot

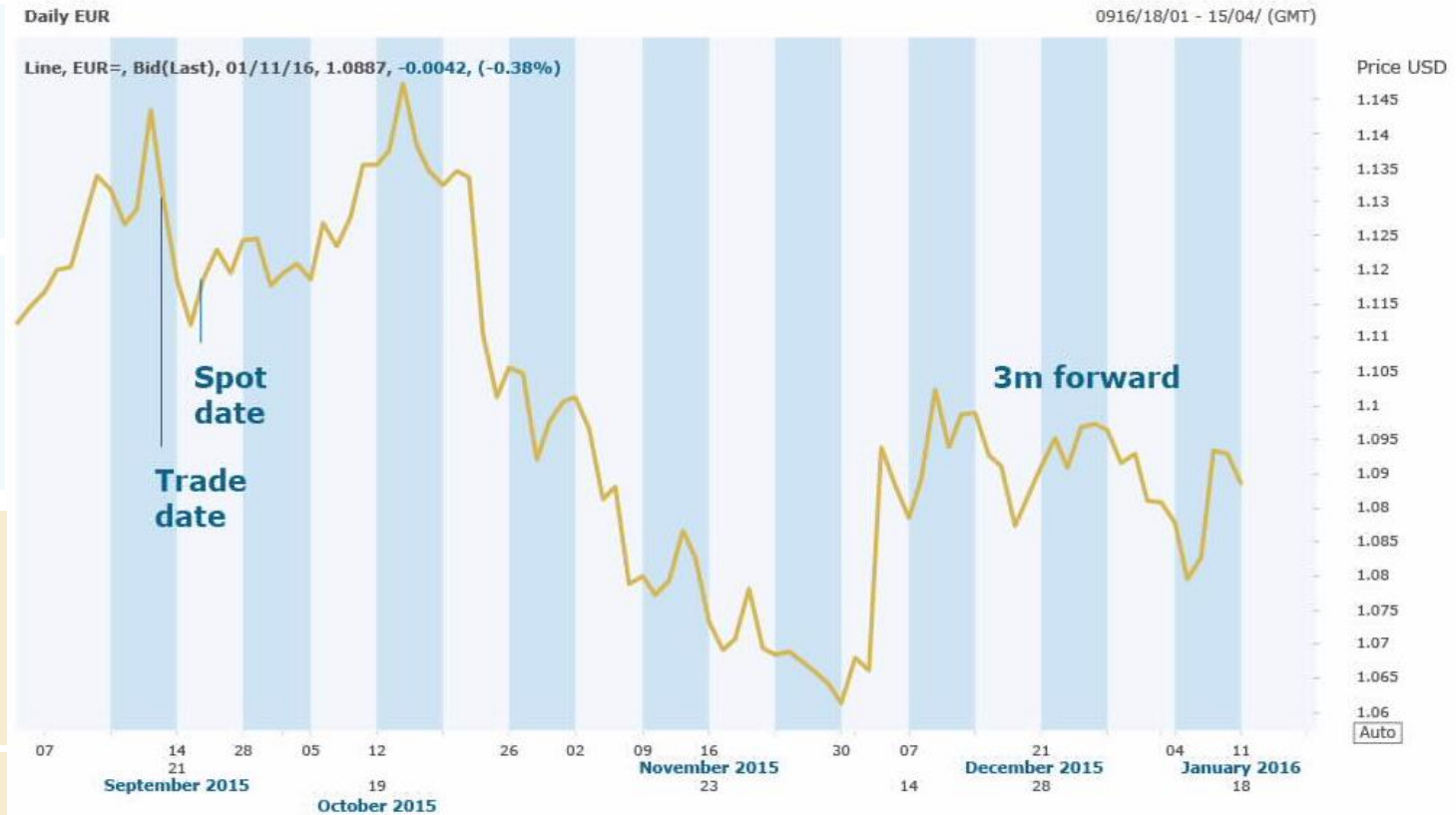
Trade date: 20 Sep 2015
Client buys EUR 10mln vs. USD, **value spot** (22 Sep'15)
Deal rate: 1.1118

Delivery date: 22 Sep 2015
AUB to deliver EUR 10mln to the client
Client to deliver USD 11.118mln to AUB

Forward

Trade date: 20 Sep 2015
Client buys EUR 10mln vs. USD3m forward (22 Dec'15)
Deal rate: 1.1215

Trade date: 22 Dec 2015
AUB to deliver EUR 10mln to the client
Client to deliver USD 11.215mln to AUB



QUESTION

On the 22 December (delivery date), EUR was trading at 1.0954. At what rate have client delivered USD to AUB?



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A FX forward is...

- A FX forward deal is an agreement between two parties to deliver a certain amount of currency in exchange for another at a specified date in the future.
- The rate (forward rate) is agreed on trade date: whatever happens to the market on delivery date, the rate is the one already agreed.
- The forward rate markets for most currency pairs are extremely liquid and quote maturities stretching out to several years (long-date forward).
- An FX forward is the most basic tool to hedge FX risk.

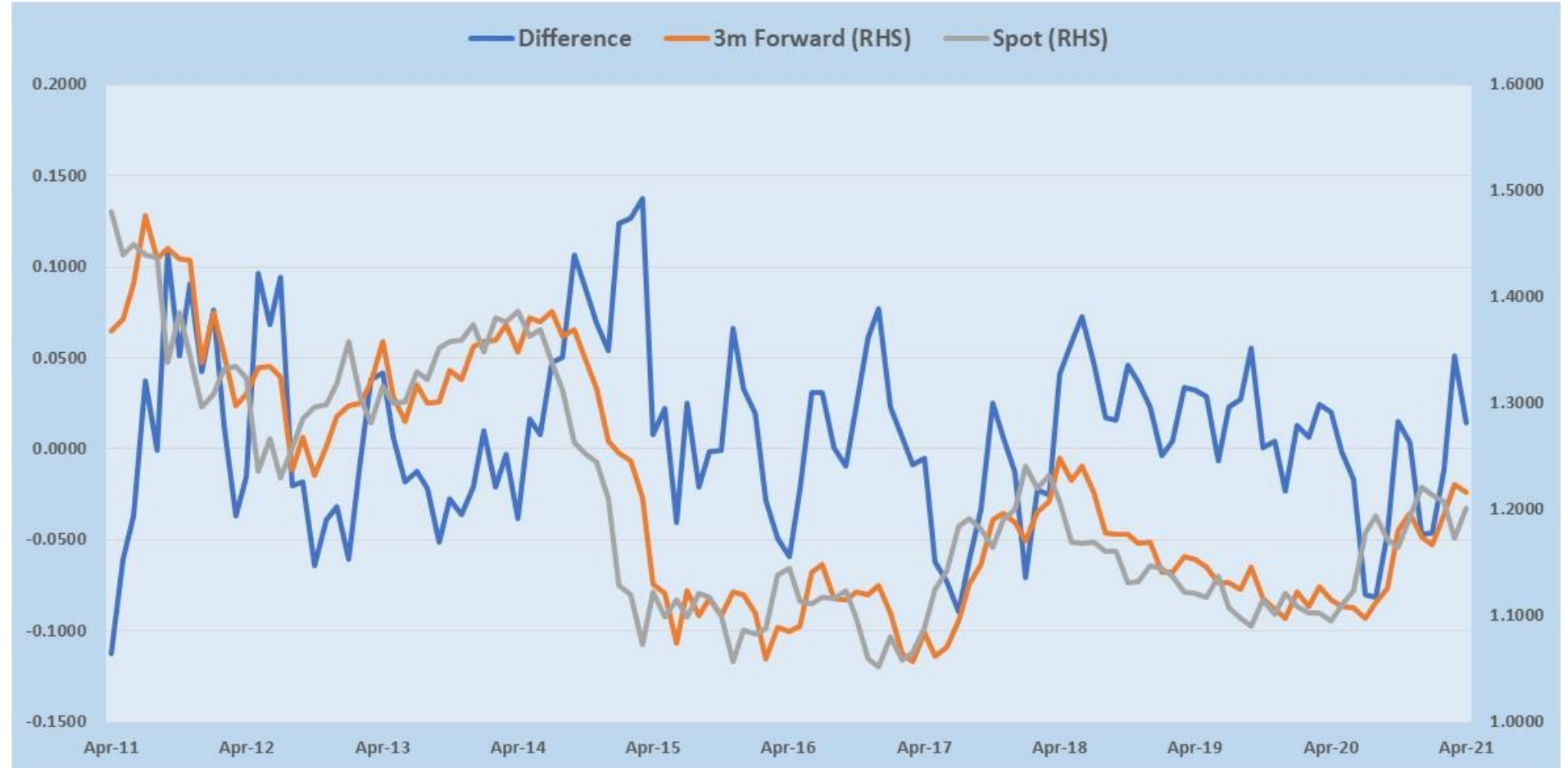
A FX forward is not...

- A FX forward deal is not an option, it is a contractual obligation. The counterparties have to deliver currencies at the agreed rate irrespective of where the market is trading on the delivery date.
- Surprisingly, a forward rate does not represent a market expectation of future FX spot rates: it is just an arithmetic calculation based on interest rate differentials between the two currencies in the pair.



- As mentioned, a forward rate is not a market expectation of future spot rate but a calculated rate based on interest rates differential between the two currencies.
- Upon delivery date, the actual spot rate might be significantly different from the past forward rate (i.e.: **if today we observe the 3m forward, in 3 months there is no guarantee that spot will be the same**).
- In reality, empirical evidence and several academic studies on the topic have shown that forward rates are very poor predictors of future spot rates.

- The chart on the right illustrates the historical EUR/USD exchange rate (both spot and 3m forward) and the "prediction error".
- This market misalignment can be exploited by the so called "carry trade" (more in the next slides).

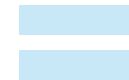


- The calculation to derive a forward rate from the spot rate and the interest rates on the two currencies is based on the **covered interest rate parity theory**.

- In a nutshell, this theory suggest that – for example – a USD-based investor who can choose to invest in either USD or EUR, should be indifferent between the following two strategies:

Strategy 1

Invest USD at the USD interest rate for the relevant tenor (say, one year)



Strategy 1

- Covert USD to EUR in the spot market
- Invest EUR at the EUR interest rate for the same tenor (one year)
- Enter a 1-year FX forward to buy back their USD (basically, hedging the FX risk)

$$(1 + IR_{USD})$$

$$\left(\frac{FX_{fwd}}{FX_{spot}} \right) * (1 + IR_{EUR})$$

If / when this relation is not fulfilled, there is an arbitrage opportunity. Basically, investors would start using the most profitable alternative and bring the market back to equilibrium.

The difference between the forward rate and the spot rate are the swap points. If swap points are negative, the quote currency is trading at a discount; if positive, the quote currency is trading at a premium.

Is this relation true in reality? Have you ever heard of the "carry trade"?

- The graph on the right shows how a Reuters page for forward rates looks like (in the specific case the USD/BHD).

- On the left hand side (in yellow), you can see the **spot rate** and the **swap points** across maturities.

For example:

Spot = 0.37696 / 0.37701
8month swap points = 98.21 / 114.84

- On the right hand side (in blue, column heading "Outright"), you can see the **outright forward rate**.

For example:

Spot = 0.37696 / 0.37701
8month forward rate = 0.37794/0.37816

- Basically, the forward rate is the sum of the spot rate and the swap points:
(0.37696 / 0.37701) + (0.0009821/ 0.0011484) = 0.37794/0.37816

#0BHDF USD/BHD FORWARD ENHANCED GUIDE					
BHD= 0.37696/0.37701					
Term	Bid	Offer	Source	Time	Outright
BHDON=	0.5	0.8	ENBD	13:14	0.37697/0.37702
BHDTN=	0.5	0.8	ENBD	13:14	0.37697/0.37702
BHDSN=	1.5	3.5	ENBD	13:14	0.37698/0.37705
BHDSW=	4	8	ENBD	13:14	0.37700/0.37709
BHD1M=	15	19	ENBD	13:14	0.37711/0.37720
BHD2M=	28	35	ENBD	13:14	0.37724/0.37736
BHD3M=	38	46	ENBD	13:14	0.37734/0.37747
BHD4M=	47.71	57.71	ENBD	13:14	0.37744/0.37759
BHD5M=	60.88	70.88	ENBD	13:14	0.37757/0.37772
BHD6M=	70	82	ENBD	13:14	0.37766/0.37783
BHD7M=	87.55	101.14	ENBD	13:14	0.37784/0.37802
BHD8M=	98.21	114.84	ENBD	13:14	0.37794/0.37816

What are the implications?

BHD is a pegged currency, meaning that its exchange rate to the USD is fixed over time. The fact that that spot rate and forward rate here are different opens up a potential opportunity... which one?

ANY QUESTIONS?