

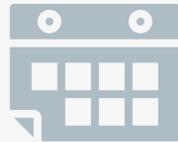


Introduction to FX Products

Foreign Exchange (FX) Transactions

Foreign Exchange transactions are **agreements between the counterparties to:**

Purchase **one currency against another**



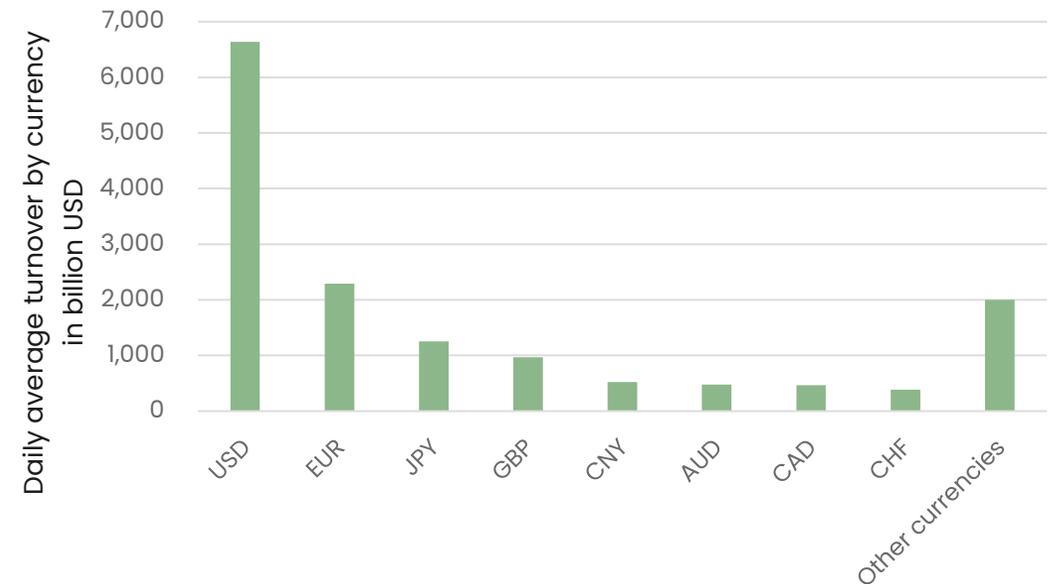
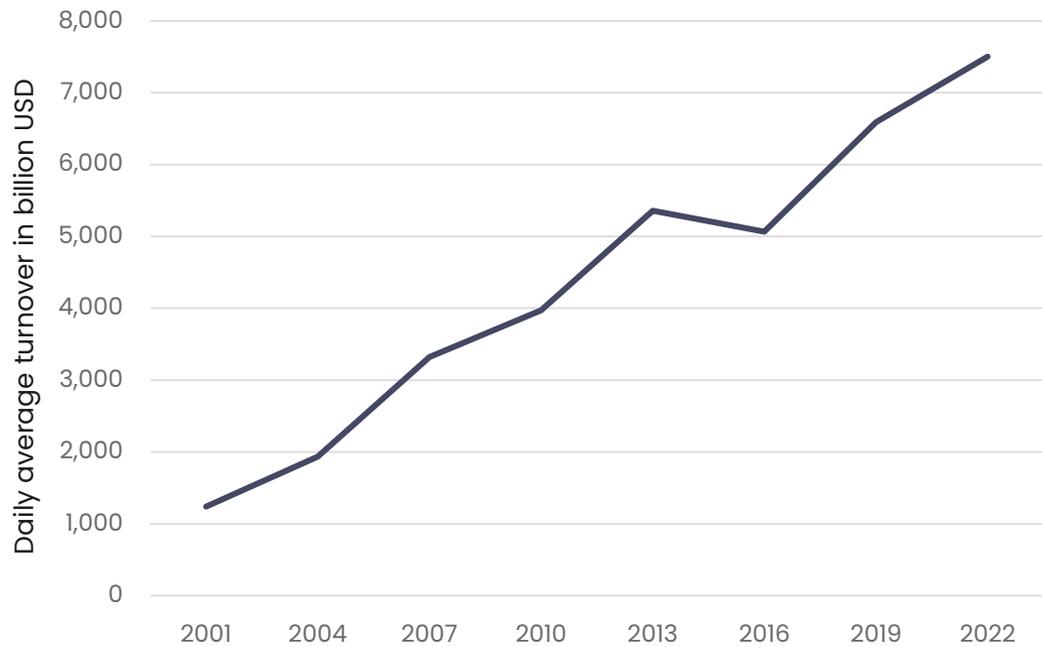
At a specific date



At an agreed upon price (the FX rate)

FX Market Overview

The FX market is considered to be the **largest** and **most liquid OTC market**.
It is truly **global** and **trades 24 hours a day**



Source: BIS, Triennial Central Bank Survey

Why FX is Traded

Payment Facilitation



Make a **payment** in a **foreign currency**

Risk Management



Protect **value** of **future payments** against **fluctuation** in **FX rates**

Speculation



Generate profit from an **expected change** in **FX rates**

Diversification



Diversify **asset holdings** into **other currencies**

FX Product Overview



Spot

FX transactions for **“immediate” settlement** (usually T+2 but there are exceptions)

Outrights

“**Outrights**” stands for **outright forwards**

These are regular forward trades with a **price agreed today** and settlement at an **agreed upon date** that **differs** from **spot**

FX swaps

The combination of an **FX spot** and an **FX forward trade**

Effectively the **purchase** of a **currency at spot** and the simultaneous **sale** of this **currency** at the **forward date**

XCCY swaps

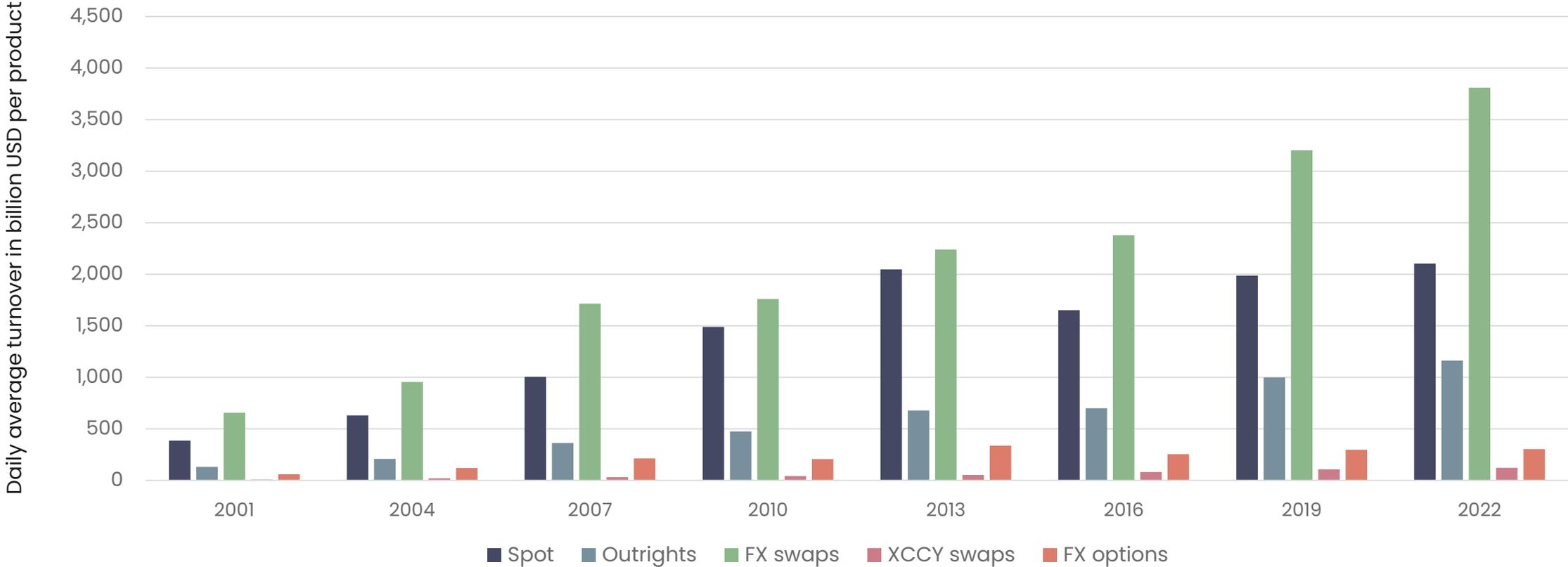
Agreement between **two counterparties** to **exchange principal amounts** in different **currencies** for an **agreed upon period of time**

Over the period, both parties also **exchange interest rate payments** on the **exchanged amounts**

Options

A wide range from **regular calls** and **puts** to **exotic options**

FX Product Overview

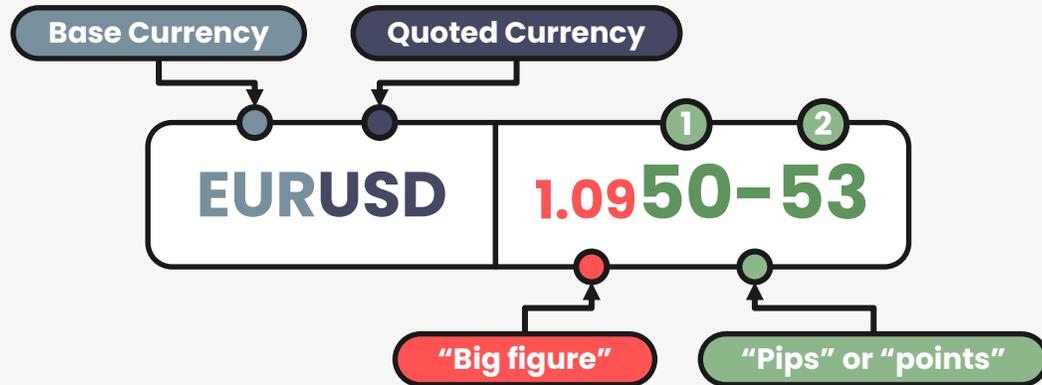


Source: BIS, Triennial Central Bank Survey

FX Spot Quotation

The left-hand currency (named first in the quote) is commonly referred to as the **base currency**, the right-hand currency as the **quoted currency**.

The quote is given as the number of units in **quoted currency per one unit of base currency**



- 1 For **selling** 1 EUR you receive **1.0950** USD
- 2 For **buying** 1 EUR you must sell **1.0953** USD

For EURUSD one pip/point equals 1/10,000 USD. For **other currency pairs** this might be different:



One point equals 1/100 JPY

Strengthening vs. Weakening



Source: Infront

The FX Quote Waterfall

EUR is **always the base currency**

GBP, AUD, NZD are base against every currency **except EUR**

USD is base against every currency except **EUR, GBP, AUD, NZD**

If neither of the **currencies above** is part of the pair the **stronger currency** tends to be the **base**

Carry Trade

An **FX carry trade** is a **strategy** in **foreign exchange markets** where an investor **borrow money** in a currency with a **low interest rate** and uses the funds to **invest** in **another currency** that **yields a higher interest rate**.



Reward characteristics

The primary motive is to **capitalize** on the difference in **interest rates** between **two currencies**. Investors earn on the spread between the **high-yielding currency** and the **low-yielding one**

Carry trades tend to be more **profitable in stable** or **predictable market environments** where **exchange rates do not fluctuate significantly**



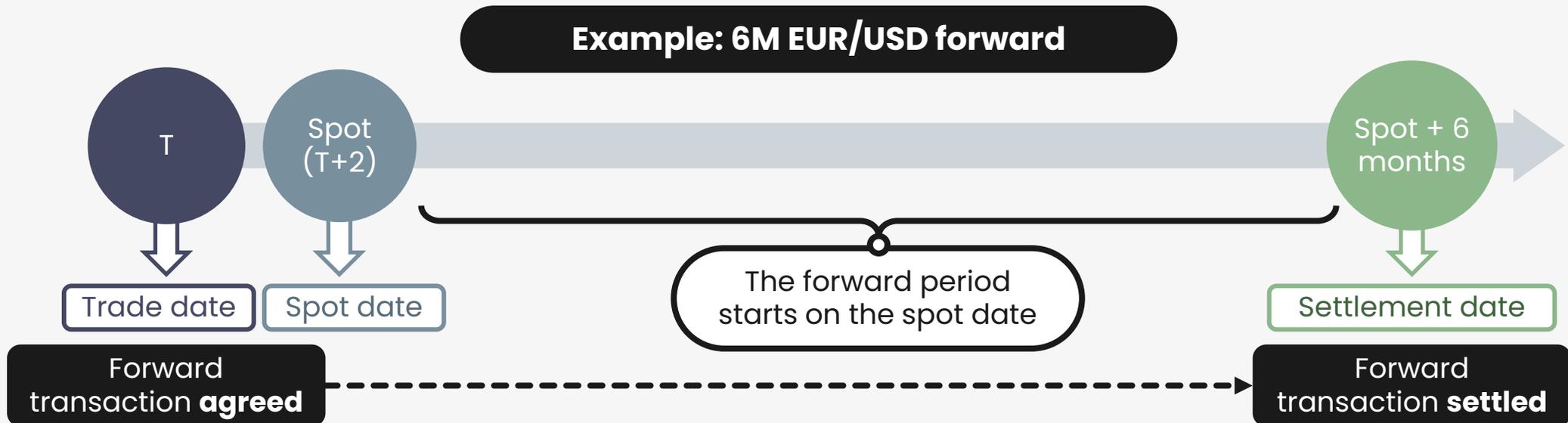
Risk characteristics

If the currency in which the **investor** has **invested depreciates** against the currency that was **borrowed**, the losses could **offset any gains** from the **interest rate differential**

During **global financial stress** or **market turmoil**, many investors might simultaneously **unwind carry trades**, leading to **rapid currency value changes** and **amplified losses**

FX Forwards

FX forwards (“outrights”) are **FX transactions** with a price agreed today and **settlement** at an **agreed** upon date that differs from **spot**. They are **liquid¹⁾** and **accessible** and a popular tool to manage **short dated FX exposures**



They usually trade most liquid for so called straight dates (1, 2, 3, 6, 9 and 12 months forward)

1) In April 2022 the average daily **turnover** in outright forwards was around **1.2 trillion USD**.

Source: BIS, Triennial Central Bank Survey (Oct. 2022)

FX Forward Quotation

FX Forwards are quoted in forward points which reflect the difference between the **spot FX rate** and the **outright forward rate**:

	EURUSD		GBPUSD		USDJPY	
Tenor	Bid	Ask	Bid	Ask	Bid	Ask
Spot	1.0950	1.0953	1.2621	1.2623	149.04	149.05
1W	3.210000	3.250000	0.500000	0.530000	-16.32	-16.27
2W	6.190000	6.270000	1.010000	1.050000	-32.48	-32.36
3W	9.240000	9.340000	1.540000	1.600000	-48.69	-48.6
1M	13.370000	13.470000	2.360000	2.460000	-69.78	-69.68
2M	30.620000	30.820000	6.450000	6.650000	-146.95	-146.75
3M	45.150000	45.350000	8.900000	9.200000	-219.2	-218.95
4M	58.300000	58.700000	11.100000	11.400000	-286.38	-285.98
5M	74.600000	75.100000	13.600000	14.000000	-361.19	-360.54
6M	89.100000	89.600000	15.200000	15.700000	-426.26	-425.41

Example

What is the 6M EURUSD outright forward bid?

Spot: 1.0950

6M forward points: 89.10

6m outright forward bid (spot + 6M forward points/10,000): 1.103910

What Determines FX Forward Points?

As for forwards on **other assets**, the starting point is the **no-arbitrage principle**:



Assuming:

EUR/USD spot: 1.0950

6M USD interest: 5.3950%

6M EUR interest: 3.7549%

Forward period: 182 days

$$EURUSD_{6m FWD} = \frac{FV_{USD \text{ borrowing}}}{FV_{EUR \text{ investment}}} = \frac{109.5M \text{ USD} * \left(1 + 5.3950\% * \frac{182}{360}\right)}{100M \text{ EUR} * \left(1 + 3.7549\% * \frac{182}{360}\right)} = \mathbf{1.10391}$$

The Interest Rate Parity Formula

$$\text{FX forward rate} = \text{FX spot rate} * \frac{1 + i_{\text{quoted}} \times \frac{\text{days}}{\text{basis}}}{1 + i_{\text{base}} \times \frac{\text{days}}{\text{basis}}}$$



Difference between **FX spot** and **FX forward** rate driven by interest rate differential



Lower yielding currency appreciates on a forward basis



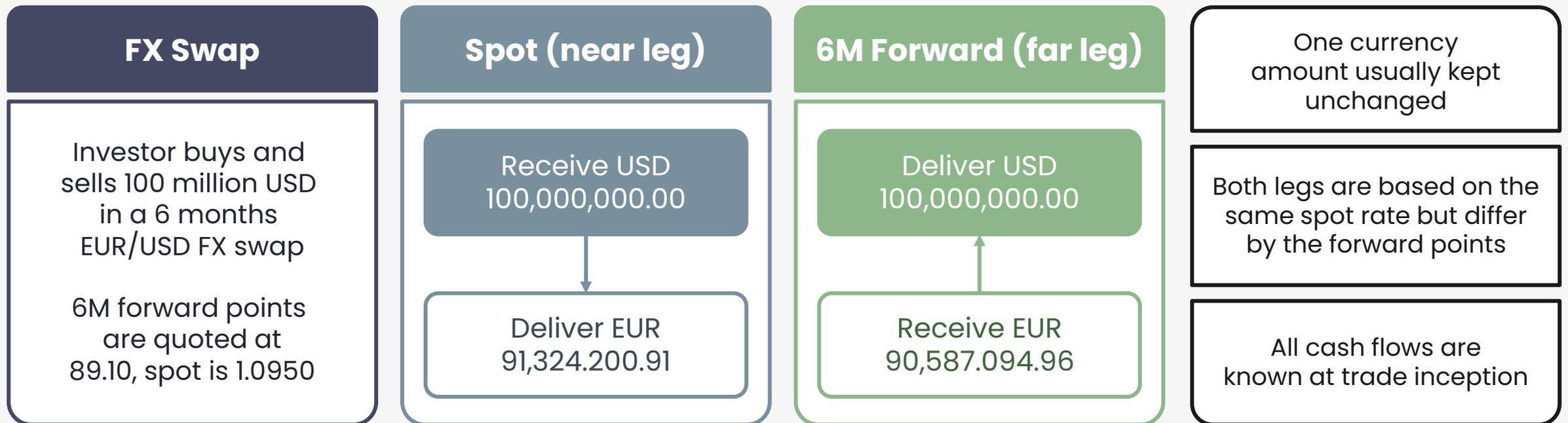
There is **no profit** on an **FX hedged carry trade**

FX forwards lead to risk on spot FX and changes in interest rate differential

FX Swap

FX swaps are a combination of an FX spot and an FX forward. Effectively they are the purchase of a currency at spot (“near leg”) and the simultaneous sale of this currency at the forward date (“far leg”)

Example: 6M EUR/USD swap



To reduce complexity, bid offer spreads have been ignored

Rolling FX Spot Positions with FX Swaps

Market participants might enter into spot transactions with no interest to take the delivery, for example, in cases of speculative long positions

Investor sold EUR/USD spot

Trade — T+1

T+2 Spot
- EUR
+ USD

Near leg neutralizes spot trade cash flows. Delivery is «delayed» for one day.

Buys and sells EUR/USD in a Spot/Next swap

Trade

T+2 Spot
Near leg
+ EUR
- USD

T+3 Next
Far leg
- EUR
+ USD

Renews the swap daily so that **“delivery”** is always **kept 2 days away**. This is called a **rolling spot**

Trade

Near leg
+ EUR
- USD

Far leg
- EUR
+ USD

Trade

Near leg
+ EUR
- USD

Far leg
- EUR
+ USD

Cash Management with FX Swaps

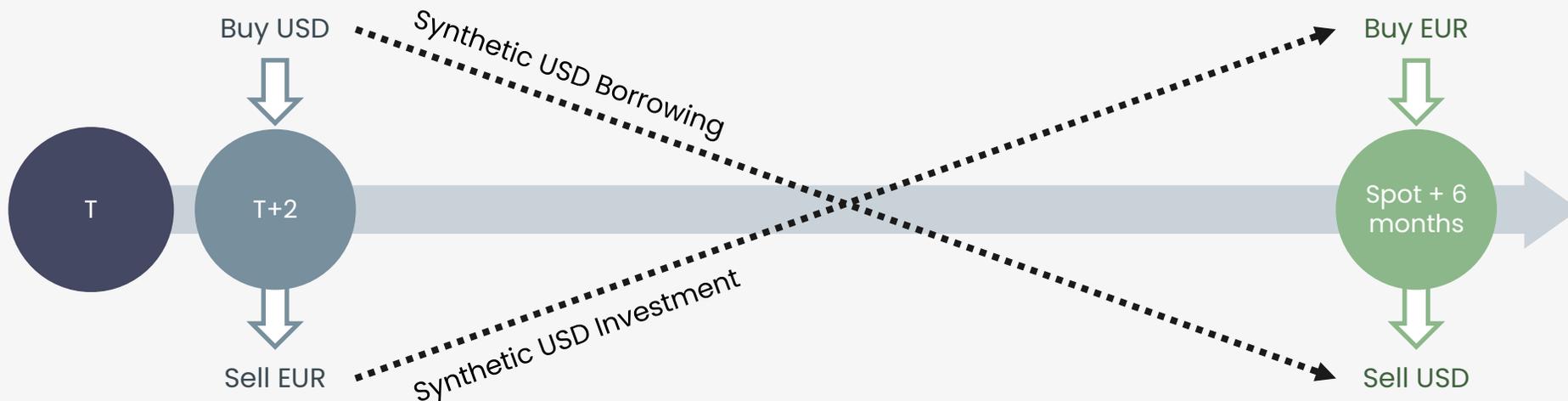
FX swaps are important cash management tools. They cannot be used to raise funds directly, but they allow existing funds in one currency to be used to temporarily fund cash shortfalls in another currency without introducing FX risk (like a spot trade would):

The surplus currency is synthetically invested over the swap period

The shortfall currency is synthetically borrowed over the swap period

An FX swap can therefore be interpreted as collateralized borrowing/lending

Example: A corporation has a 6 months surplus in EUR and a 6 months shortfall in USD and buys and sells USD in a 6 months FX swap



As FX swaps are very liquid, they often offer a cost advantage in comparison to investing the surplus and borrowing the shortfall.



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