

Lesson 1: The Foreign Exchange Market

Exchange Rates

An exchange rate represents the price of one currency in terms of another currency.

- It is stated in terms of the number of units of a particular currency (**price currency**) required to purchase a unit of another currency (**base currency**).
- Stated differently, it is the cost of one unit of the base currency in terms of the price currency.

Nominal and Real Exchange Rates

- When the value of a currency is stated in terms of units of another currency it is referred to as a **nominal exchange rate**.
- **Real exchange rates** measure changes in the relative purchasing power of one currency compared with another.

Purchasing power parity (PPP) asserts that nominal exchange rates adjust to ensure that identical goods (or baskets of goods) have the same price in different countries.

- Another way of saying this is that the purchasing power of all currencies (in terms of a standardized basket of goods) should be the same.
- For example, if a basket of goods costs 2 GBP in the U.K and 3 USD in the U.S, the nominal exchange rate should be 1.5USD/GBP. A consumer would be indifferent between purchasing the basket from either country.
- Whether she purchases it from the U.K or the U.S, the exchange rate ensures that it costs her the same ($2 \text{ GBP} \times 1.5 \text{ USD/GBP} = 3 \text{ USD}$).

An increase in purchasing power implies a decrease in the real exchange rate (in terms of DC/FC) i.e., purchasing power and the real exchange rate are **inversely** related.

A *decrease* in the real exchange rate implies that in real terms, less units of DC are needed to purchase a unit of FC, which means that domestic currency has *increased* in real value relative to the foreign currency (which makes domestic consumers better off).

Therefore, we can say that the real exchange rate is:

- An increasing function of the nominal exchange rate (in terms of DC/FC).
- An increasing function of the foreign price level.
- A decreasing function of the domestic price level.

Example: Nominal and Real Exchange Rates

Over a period of time, Alexis (a U.S. resident) notes that the nominal exchange rate (USD/EUR) has decreased by 3%, the price level in the Eurozone has increased by 5%, while the price level in the U.S. has increased by 6%. Compute the change in the real exchange rate and interpret your results.

Spot and Forward Exchange Rates

Spot exchange rates (S) are quotes for transactions that call for immediate delivery.

- For most currencies, immediate delivery means “T + 2” delivery i.e., the transaction is actually settled 2 days after the trade is agreed upon by the parties.
- Spot transactions make up a relatively small portion of total turnover in the global FX market.

Forward exchange rates (F) are quotes for transactions that are contracted (agreed upon) today, but settled at a pre-specified date in the future (settlement occurs after a longer period than the two days for spot transactions).

Other Currency Contracts

Futures contracts are *standardized* contracts that trade on *exchanges* in contrast to forward contracts that are *customized* and are traded on *OTC markets*.

- Although there are technical differences between forward and futures contracts, the underlying concept is the same
- The price is agreed upon today for settlement at a specified future date.

An **FX swap** consists of simultaneous spot and forward transactions.

- FX swap transactions are undertaken for the purpose of extending (rolling) an existing forward position to a new future date.
- Note that the process of rolling the position (on to a new future date) leads to a cash flow on the settlement date, which effectively serves as a mark-to-market on the forward position.
- FX swaps may also be used by companies that need to borrow in some other currency (swap funding).

FX options: These are contracts that, in return for an upfront premium or fee, give the purchaser the right, but not the obligation, to make an FX transaction (buy or sell) at some pre-specified future date at an exchange rate agreed upon today.

- Options are only exercised if it is advantageous for the holder to do so i.e., the exchange rate specified in the option contract is better than the exchange rate prevailing in the market at option expiration.

Market participants typically use a combination of spot, forward, swap, and option contracts to manage their specific FX risk exposures.

Further, FX transactions are also frequently used in conjunction with transactions in other financial markets (e.g. equities, fixed income, etc.).

Functions of the Foreign Exchange Market

- FX markets **facilitate international trade** in goods and services, allowing individuals and companies to purchase items produced in foreign countries.
- FX markets allow **investors to convert between currencies** in order to move funds into (or out of) foreign assets. The bulk of FX market volumes comes from capital market transactions, which include **direct investments** (e.g. investments in fixed assets in other countries) and **portfolio investments** (e.g. the purchase of stocks, bonds, and other financial assets denominated in foreign currencies).
- Market participants who face exchange rate risk **hedge their risks** through a variety of FX instruments.
- Other market participants undertake FX transactions to **speculate** on currency values. They aim to profit from their views regarding future changes in exchange rates.

Market Participants

FX market participants can be broadly categorized as **buy side** and **sell side**. The sell side includes large FX trading banks, while the buy side consists of clients who use these banks to undertake FX transactions (buy FX products).

Sell Side

- The very largest dealing banks
- All other regional and local banks

Buy Side

Corporate accounts:

- Cross-border purchases and sales of goods and services.
- Cross-border investment flows (e.g. international M&A transactions, investments in foreign assets, and foreign currency borrowings).

Real money accounts: These are investment funds managed by insurance companies, mutual funds, pension funds, endowments, exchange-traded funds (ETFs), and other institutional investors.

- The term real money is used to refer to these accounts because they typically face restrictions on their use of leverage and financial derivatives.

Leveraged accounts: Often referred to as the professional trading community, leveraged accounts include hedge funds, proprietary trading shops, and all trading accounts that accept and manage FX for profit.

- These trading accounts vary widely in terms of their trading styles and form a growing proportion of daily FX market turnover.

Retail accounts: These include individuals, such as tourists, who exchange currencies from retail outlets.

- Note that with the advent of online trading technology, there has been quite a surge in speculative trading by retail accounts.

Governments: Public entities may enter FX markets for transactional purposes, or to achieve public policy goals of the government.

- Governments (both at the federal and state level) also issue debt in foreign currencies, which results in FX flows.

Central banks: These entities may enter FX markets to influence the level or trend in the domestic exchange rate. Central bank intervention may occur when:

- The domestic currency has become too weak or too strong such that it no longer reflects underlying economic fundamentals.
- Appreciation of the domestic currency is hurting the country's exports
- The exchange rate has become too volatile for businesses to transact in the FX market.
- The central bank also manages a country's foreign exchange reserves. Countries that have significant foreign exchange reserves (e.g. China) can have a very significant impact on exchange rates even if they are not intervening for public policy purposes.

Sovereign wealth funds (SWFs): Countries with large persistent capital account surpluses have recently started investing their capital flows into SWFs (that are managed for pure investment purposes), rather than hold them as FX reserves (that are managed by the central bank very conservatively).

Market Size and Composition

- Investment pools and professional traders account for a large (and growing) proportion of FX market volumes. Portfolio flows and speculative activities dominate FX market volumes.
- High frequency algorithmic traders are accounting for a growing proportion of FX market volumes.
- Purchases and sales of foreign goods and services by individuals and corporations form a relatively small proportion of FX market volumes.
- London, New York and Tokyo account for the highest FX market volumes.
- The majority of FX market transactions occur in the FX swap market.