Bloomberg Market Concepts - Module 2

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Currencies: Currency Market Mechanics

Currencies Module Introduction

Currencies are the foundation of global economic accounting, as every financial asset is denominated in some currency. This makes currency valuation—both explicit and implicit—a critical consideration for all investors. In this module, four key topics will be covered: how the world's most liquid market functions with the U.S. dollar at its core; the three principal drivers of currency valuation; how central banks defend against inflation and deflation; and how investors approach currency risk management. Through this exploration, learners will investigate the history and operational mechanics of currency markets, including past attempts to fix exchange rates. They will study how unexpected economic outcomes influence currency movements and discover the crucial role of central banks in maintaining monetary value. Lastly, learners will observe how both investors and businesses are influenced by currency fluctuations and how they navigate associated risks.

Introduction to Currency

You may have heard the phrase "money makes the world go round." With hundreds of currencies circulating globally, money is central to economic exchange. But what exactly is money? In this section, we explore its roles. Money functions as a medium of exchange, enabling goods and services to be traded without bartering. Bartering is inefficient because it is difficult to equate the value of two dissimilar items. Money solves this by assigning precise values, making price comparisons straightforward. This pricing mechanism builds confidence in trade, which fosters more exchanges and supports broader economic growth. Additionally, money acts as a unit of account—it helps quantify assets and liabilities, thereby enabling modern banking and the management of financial portfolios.

Currency is the specific form that money takes within a defined geographic area, typically a sovereign nation but sometimes a group of nations, such as the European Union. It is intended to be used confidently by individuals and institutions engaging in trade, investment, or borrowing within that area. This confidence is based on the expectation that the currency will maintain its value over time—that is, it will not be subject to excessive inflation—and that others within the area will continue to accept it as a legitimate and reliable medium of exchange.

There are over 190 nations around the world using approximately 180 currencies to buy goods and services, collect taxes, trade, and invest. It would be reasonable to ask therefore why the entire world does not use the same currency. A principal reason is the wide variety of economic conditions and regimes in different countries. A country whose economy is dominated by technological development and manufacturing may face different prospects of growth, inflation, and employment than another country with a heavy agricultural or commodity bias, or another which provides a high proportion of services. These differences can affect how much money is considered to match the value of each good or service traded as well as the stability of that value, i.e. the confidence in the money in that country. These differences in confidence or value in money between different economies or countries mean that each country requires its own form of money (i.e. its

own currency) which most accurately represents the value of goods and services in its economy.

The first section of this foreign exchange module will examine the broad range of currencies, from the global reserve currency, the US dollar, to major and emerging "floating currencies", "fixed" or "pegged" currencies, and the new "cryptocurrencies". It will show how to find these on the Bloomberg terminal using the standard 3-letter ticker (e.g., USD for US dollar), and how to find the price of one in terms of another, using the normal market conventions. It will compare the size of the foreign exchange market (where one currency is traded against another) to other asset markets (e.g., equities, commodities, and fixed income), before considering whether currencies can really be considered a separate asset class. Finally, it will take a look at who trades currencies and why.

Range of Currencies

There is no fixed classification of currencies, but most professional currency traders would probably agree on a few main categories. These typically include the global reserve currency, which serves as the primary benchmark for global trade and finance. In addition, major floating currencies represent the dominant freely traded currencies used by developed economies. Lastly, emerging floating currencies are associated with developing economies that allow their currency values to be determined by market forces, though sometimes with less stability and volume than the majors.

Global Reserve Currency

Let's start with the global reserve currency. Most central banks around the world hold more of their reserves in U.S. dollars than in any other currency. As a result, central banks pay close attention to the value of these reserves—i.e., the dollar—against their national currencies. A substantial proportion of borrowings created by debt securities across the globe are also denominated in dollars. This is done to satisfy the demand from bond investors who prefer to hold dollar-based assets. Moreover, many of the world's commodity markets are priced in dollars. For example, oil is typically priced in dollars, which effectively makes the dollar the default currency for trade in commodities and agricultural exports.

Major Floating Currencies

These currencies are generally considered to belong to the world's leading industrialized economies, where central banks allow their values to float freely in relation to other major currencies. Alongside the U.S. dollar, these are often referred to as the G10 currencies. On the Bloomberg Terminal, one can type the 3-letter ticker for a currency into the command line to access more information. For example, typing the ticker for the Swiss franc and selecting it from the dropdown menu, then using the `DES` function to open the security description, reveals the classification—whether it is free-floating or governed by another type of central bank regime.

Emerging Floating Currencies

This category encompasses a broad range of currencies from countries outside the major industrialized economies. These currencies differ in terms of the size and sophistication of their economies and securities markets, with some traded more actively than others. While some could qualify as major floating currencies, they may be restricted by limited convertibility, capital controls, or insufficient market liquidity for international transactions. As a result, they are often not considered fully floating or easily exchangeable for U.S. dollars in offshore markets. Prominent examples of emerging floating currencies include the Chinese yuan or renminbi (classified as either onshore CNY or offshore CNH), Russian ruble (RUB), Brazilian real (BRL), South Korean won (KRW), South African rand (ZAR), and Mexican peso (MXN). To understand how these currencies are officially classified, one can enter their ticker symbols into the Bloomberg Terminal command line and use the `DES` function to access the security description page.

Fixed and Pegged Currencies

Some countries choose to align their currencies to one or more other currencies for various reasons. These motivations can range from economic stability to inflation control. For instance, a nation with a high proportion of international trade—particularly in commodities or agriculture—might want to minimize volatility by tying its currency to those of major trading partners. This helps maintain stable trading relationships. Other countries may aim to combat domestic inflation by pegging their currency to one with a lower inflation rate. Historically, many emerging markets have attempted to peg their currencies to the U.S. dollar. While some have succeeded, others have faced significant challenges due to the difficulty of implementing the required policy adjustments. Although central banks and governments may declare fixed or pegged regimes, these systems are not always permanent. The stability of such arrangements can vary, and their longevity is not guaranteed. This topic will be explored further in Module 3. Currently, several well-known currencies operate under fixed or pegged exchange rate regimes—either locked to a specific level of another currency or fluctuating within a predefined range relative to another currency.

Traditional Currencies vs. Cryptocurrencies

A key feature of traditional currencies is that they are issued and managed by a central bank. This has tended to have a major drawback. When inflation rises or when the government faces difficulty in repaying debts denominated in its own currency, it can be tempting for the central bank to issue more of that currency. Although this can satisfy the immediate need, it reduces the value of the currency. Traditional currencies issued by central banks are known as "fiat" currencies. Cryptocurrencies by contrast are created or "mined" using blockchain technology, so that their supply is removed from any central bank and is visible to all investors. The intention therefore is to maintain the value of the currency. Some of the most well-known examples include bitcoin (XBT), ethereum (XET), and litecoin (XLC). They can be traded against any currency, but their value is measured mainly against the US dollar. Another core feature of traditional currencies, however, is that they need widespread acceptance and trust, based on their ability to maintain their value. This is why in high-inflation economies, even the domestic population tends to adopt stronger foreign currencies if possible. At the time of creating this video, there remains considerable volatility in cryptocurrencies, making them less attractive for commercial use. Until this changes, most users of these currencies tend to speculate in their value rather than to transact in them for goods and services. There is growing interest in this sector from institutional investors, but many speculators tend to be retail. Significant media coverage of their attractiveness to criminals, due to their supposed lack of transparency, may further deter their more general use.

The Size of the Foreign Exchange Market

The Bank for International Settlements (BIS), whose mission is to support central banks, produces a triennial survey of FX markets. The 2019 survey reported that the volume of FX traded every day (FX turnover) reached $6.6 trillion, significantly greater than global equity, commodity, bond, or interest rate markets. A few other statistics from the BIS survey are worth noting. In line with its global reserve currency status, 88% of all FX trades involved the US dollar, while the next largest (the euro) was in only 32%. Section 4 (Currency Risk) will look in more detail at the different FX contracts (spot, swaps, outrights, and options), but the BIS survey shows that spot transactions represent only 30% of the total, while FX swaps comprised 49%. The significance lies in the different purpose of these instruments. Spot trades express a view that one currency could rise or fall in value against the other currency. FX swaps, however, are used primarily to extend existing FX transactions to mature at later dates; they are less commonly used as an investment tool in their own right. Thus, nearly half of FX volumes are essentially just functional trades to adjust an existing trade. This is why some would argue that FX is not a pure asset class, which leads us to the question of who trades FX and why.

Participants in FX Trading

There are three broad categories of users of FX markets: institutional investors, corporations, and retail investors (or individuals). In addition, there are market makers, who provide prices for their customers to

buy or sell one currency against another. Let us look at these three categories, based on broad, typical usage. **Note:** there are many exceptions.

Institutional Investors

Institutional investors represent a broad category with multiple sub-sets. Equity investors, for example, need to buy and sell currencies when engaging in cross-border transactions involving equities. Their primary focus often lies with the equities themselves, rather than with currency movements. Consequently, they tend to use foreign exchange (FX) markets not as an asset class, but rather as a tool to facilitate other investments. In contrast, global fixed income investors frequently combine views on international bond markets with views on underlying currencies. In doing so, they effectively treat FX as an asset class in its own right. Similarly, certain commodity traders, such as those exposed to oil markets, may hedge their positions in U.S. dollars, given that many commodities are generally priced in that currency. This blending of FX positions with other market views is often referred to as "global macro." Numerous hedge funds trade FX with both long-term and short-term strategies. A niche of dedicated FX investors also exists, focusing purely on FX markets. These investors often operate on shorter-term horizons and base their decisions on algorithms and other quantitative models.

Corporations

Many corporations have some kind of currency exposure. The two most common kinds—transaction and translation—are discussed further in Module 4 on Currency Risk. However, the key distinction is between corporations that aim to minimize financial risk and those that seek to profit from it. The larger group of corporations focuses primarily on their core commercial activities, whether in goods or services. These companies typically consider themselves experts in their field and communicate to shareholders that they use FX and other financial instruments only to reduce the risks that naturally arise from their operations. This transparency helps shareholders better understand the nature of the risks and investment opportunities in these corporations. In contrast, a smaller group of corporations regards FX and other financial markets—such as commodities—as integral components of their overall business risk management. As a result, these firms are active users of these markets. They proactively seek currency exposures they believe can be exploited in addition to their core businesses. For instance, in recent years, several energy-related corporations have become market makers for smaller corporations, not only in commodities but also in FX. Some even act as market makers for large institutional investors, bypassing banks altogether.

Retail Investors

This sector has changed little in format over recent decades, though the size of this sector has grown. The expansion of international travel in terms of mass consumers is perhaps obvious, but there has also been a considerable increase in overseas asset purchases (e.g., property) by wealthy individuals. Within emerging markets, there has also been a steady increase in the remittances from overseas workers to their families back home. In some economies, this can represent a notable proportion of annual income.

Currencies: Currency Valuation Drivers

Currency Valuation

In module 1, we looked at 3-letter tickers which identify each currency on the Bloomberg terminal. Type `EUR Curncy <GO>` for example to find the Euro. Remember also that the US Dollar is the global reserve currency, so by default all currencies on the terminal are displayed in terms of their price against the dollar. Thus, `EUR Curncy <GO>` is an abbreviated form of `EURUSD Curncy <GO>`. In all currency quotations, we measure the first currency in terms of the second. So if `EURUSD` shows a price of 1.1399, it means that 1 Euro is worth 1 dollar and 13.99 cents. To calculate how many Euros are worth 1 dollar, simply reverse the calculation. Thus, divide 1 dollar by 1.1399 to give a value of 0.8772 Euros. Note that by convention, some currencies are quoted against the dollar the other way round. Type `CHF Curncy <GO>` for example to see

the price of the dollar against the Swiss franc. A price of 0.9259 means that 1 dollar is worth 92.59 centimes, so by the same process of inversion, 1 franc is worth 1 dollar and 8.00 cents.

You can type any pair of 3-letter currency tickers in the terminal to find their price. Remember that the price shows how many of the second currency are worth one unit of the first. If you are not sure, type `DES <GO>` after each pair, where it clarifies the relevant convention. From these two prices based around three currencies, it is possible to calculate the price of the Swiss franc in terms of the Euro. If 1 Euro is worth 1.1325 dollars and 1 dollar is worth 0.9185 Swiss francs, then 1 Euro is worth 1.0402 francs (1.1325×0.9185).

Arbitrage

Type `EURCHF Curncy <GO>` to check against `EUR Curncy <GO>` and `CHF Curncy <GO>`. This leads to the concept of currency arbitrage. In the days before widely available software and instant price discovery, the prices between three currencies (such as the US Dollar, the Euro, and the Swiss franc as we saw earlier) did not always move quickly enough to reflect the change in any one of the three currency pairs. This enabled nimble traders to take advantage by locking in risk-free profits in one currency pair by trading the other two at slightly dislocated rates. Nowadays this is much rarer; high-frequency trading and vastly superior software has virtually eliminated such opportunities except in periods of extreme volatility, when such profits could not easily be described as risk-free.

Price Movements

To check the cross rate between the Euro and the Swiss franc, one can type `EURCHF Curncy <GO>` on the terminal, which compares the value with `EUR Curncy <GO>` and `CHF Curncy <GO>`. This leads to the concept of currency arbitrage. In earlier times, before the availability of advanced software and real-time price discovery, prices between currency pairs such as the US Dollar, the Euro, and the Swiss Franc did not always adjust quickly to reflect changes across the triangular relationships. This created temporary discrepancies between exchange rates, enabling skilled traders to take advantage of arbitrage opportunities. By trading two currency pairs at slightly different rates, traders could lock in risk-free profits from the third. Today, such arbitrage opportunities are much rarer due to the rise of high-frequency trading and advanced software systems that ensure prices are efficiently aligned. These systems have mostly eliminated risk-free arbitrage, except during episodes of extreme volatility when price misalignments briefly emerge. At the beginning of Module 1, we discussed why different countries use different currencies. This variation is rooted in the wide range of economic models and outlooks. In theory, currencies should naturally adjust so that a consistent basket of goods and services costs the same across countries, once currency exchange rates are accounted for. This theoretical equilibrium is referred to as *Purchasing Power Parity* (PPP). While it is difficult to define a single, universally appropriate basket of goods and services for diverse economies, the terminal provides models to approximate PPP. One can type `WCRS <GO>` on the Bloomberg terminal to access various PPP models. From there, users can select groups of currencies and identify which are currently overvalued or undervalued based on current exchange rates.

As in every financial market, there is no single definitive factor or rule that explains currency price movements. Analysts and investors rely on multiple methods to interpret changes in currency value. There are two primary approaches to understanding these movements: macroeconomic analysis and sentiment analysis. In this section, we focus on several key macroeconomic factors that professional investors often track when evaluating currency trends. Sentiment analysis, also known as technical analysis, is a separate methodology that applies across all financial markets. This topic will be explored further in a dedicated module.

Fundamental analysis in financial markets is built on several key assumptions: that all information is available to all investors simultaneously; that all investors aim to maximize their returns while minimizing their risk; and that all investors behave with complete rationality at all times. By contrast, sentiment analysis operates on the assumption that investors, being human, are prone to inefficiencies and irrationality. This perspective acknowledges that behavioral biases and psychological tendencies can influence trading decisions. Such patterns in behavior tend to repeat and can be identified through price charts. As a result, sentiment analy-

sis aims to forecast market movements based on recognizable and recurring patterns in financial market data.

Within the framework of fundamental analysis, it is generally observed that currency values should, in the long term, vary in accordance with differences in international economic, or macroeconomic, conditions. As a result, currency investors monitor a wide range of macroeconomic indicators. However, there are no universally fixed rules for which indicators to use or how to prioritize them in terms of their importance. The indicators considered most relevant often vary depending on the specific economic context surrounding each currency, and this relevance may shift over time. Furthermore, these factors tend to interact with one another, rather than acting independently, making their combined influence a key subject of analysis. To view a snapshot of the most closely monitored economic indicators, one can type `FXIP <GO>` in the terminal and select the *Economics* tab at the top.

To compare key economic indicators across different countries, one can type `WCRS <GO>` and select the *Economics* tab on the left side of the screen. This function enables a side-by-side comparison of these indicators among various nations. Among the indicators that typically attract the most attention are inflation, economic growth, interest rates (commonly referred to as yield), and the current account balance—whether surplus or deficit.

Economic Indicators

Many central banks and governments adopt a variety of targets and aspirations to maintain inflation at acceptable levels. These targets may be precise or approximate, immediate or long-term, formal or informal. If one country experiences rising inflation while another maintains a stable outlook, investors are likely to sell the currency of the former. This is because the purchasing power of a high-inflation currency diminishes, making it less attractive for acquiring goods and services. Consequently, investors aim to forecast future inflation and evaluate the tools central banks may deploy to manage it. Prospects of economic growth can also affect the willingness of international investors to acquire a country's assets, such as equities or fixed-income instruments. Ultimately, fluctuations in demand for these assets can influence the degree to which investors need to buy or sell the associated currency.

Interest rates are closely linked with both inflation and growth, but they also have a direct impact on currency flows. Central banks typically raise interest rates and tighten monetary policy to control rising inflation, and ease rates when inflation appears weak. These adjustments in interest rates can significantly affect economic growth prospects. A more immediate consideration for foreign exchange markets is the difference in interest rates between two currencies, commonly referred to as the yield differential. A currency offering a higher interest rate yield usually attracts more capital inflows, provided the elevated rate is not due to a severe underlying issue like surging inflation. Currency investors closely monitor yield differentials, although the term applies to a range of yield types beyond just interest rates.

In addition to comparing the official central bank short-term interest rates, investors also monitor changes in bond yield differentials, such as the difference between yields on 2-year or 10-year government bonds between two countries. These yield spreads are key indicators of relative economic outlooks. The causes and effects revealed by macroeconomic analysis, however, are often too complex to fully capture in brief discussions. Unlike equity or fixed income markets, where analysis also focuses on the underlying corporate issuer, currency market analysis primarily involves evaluating sovereign-level factors. Currency investors, therefore, assess the sovereign entity's ability—typically the national government—to implement policies that maintain the value of the currency (via low inflation), while also fostering sufficient economic growth to ensure continued demand for assets denominated in that currency.

Currencies: Regulation and Control

Types of Regulation and Control

There are two types of regulation and control in foreign exchange, referring to two very different concepts. Perhaps the easiest to grasp is that of behavior and ethics relating to individual participants in the market. The other relates to how central banks and governments can attempt to influence or control to varying degrees the behavior of the market as a whole. This is a much wider topic which we briefly considered in module 1 in terms of fixed and pegged currencies, while it also concerns the growth of the cryptocurrency market.

Market Control

In module 1, we described the development of national currencies in terms of national economies. It should be no surprise therefore that governments and central banks often consider their currency as a possible tool in achieving their economic goals. Precisely why and how they seek to do this and then how successful they are depends on many diverse factors. Let's look first at why they attempt this.

International Trade

Most national economies are dependent on international trade to a significant degree. Some may be exporters of primary goods (e.g. commodities and agriculture), while others may export manufactured goods (e.g. cars and technology) or services (e.g. financial services, education and tourism). Many economies are also importers to some extent. The overall proportion of imports and exports relative to the size of an economy will determine how "open" or "closed" that economy is. A relatively "open" economy is at risk of some disruption if its currency fluctuates significantly against the currencies of countries where it conducts most of its trade, as the prices it pays or receives for its imports and exports can fluctuate in terms of its own currency. If a country is primarily an exporter of goods or services (i.e. runs a trade surplus), then there can be an incentive to have a weakening currency, as its goods or services will become more competitively priced against its competitors. A country which is instead a net importer (running a trade deficit) may prefer a stronger currency in order to reduce the cost of its imports in terms of the foreign currency in which it pays for them. For countries which have a large international trading element in their economies, you can find which countries are their major trading partners and how these have changed over time. Type `ECTR <GO>` in the terminal and select different countries and dates.

Cost of Borrowing

Equally important can be the true cost of borrowing (in any currency) in terms of a country's own currency. If a government runs a budget deficit (i.e. spends more than it receives) and seeks to finance this by borrowing from international investors (by issuing bonds in its own currency), then any weakness in its currency may deter investors from buying more bonds, as they would face a loss on these assets in terms of their own currency. If a government issues bonds in foreign currencies, then any weakness in its own currency can dramatically increase its cost of repaying that debt in the foreign currency. This diversity of situations means that governments may have different incentives either to weaken or to strengthen their currencies. In most cases governments do not target a specific price level against another currency (with some notable exceptions which will be discussed later), but the overall trend and volatility which can cause concern.

Foreign Exchange Policy

There are no firm rules or principles regarding foreign exchange management or policies. In some countries this is decided by the government, then implemented by the central bank, while in some cases it can be decided independently by the central bank alone. It is more frequently however a strategy which is used to implement a politically-inspired economic policy. Module 1 listed some major floating currencies, including the US dollar, euro and Japanese yen. Generally, these currencies are free to vary in value against each other (i.e. to float), but from time to time when significant trends develop, many of the central banks of these

currencies collude to intervene to prevent these trends extending. Markets pay extremely close attention to these events, as they can prompt significant volatility. These central banks can sometimes attempt to warn markets against extended trends, in a form of verbal intervention. Even within this list of floating currencies however, there have been notable instances of individual central bank intervention, aimed to maintain specific but notably different exchange rate policies. The cases of the Bank of England in 1992 and the Swiss National Bank in 2015 will be examined later in this module. The second list of currencies (emerging floating) includes currencies which can be prone to different forms of control. The People's Bank of China intervened to weaken the yuan in 2015, but over the next few years the US government suspected a perceived policy from the Chinese government to weaken it further, in order to maintain the competitiveness of Chinese exports. The mechanisms of such alleged manipulation were however thought to be discreet and difficult to verify. Other examples of intervention include two examples of explicit intervention, one so far successful (Hong Kong) and the other a notable failure (Argentina). These too will be examined later in this module. Type `NI CEN` in the command line and select *News Topic: Central Banks* to find current news and outlooks on all central bank activity.

Methods to Control the FX Market

There are three main methods for a central bank to try to control the FX market. One is direct intervention, which is to buy or sell its own currency against one or more other currencies, while a variation of this is to warn the market that it may do so (known as verbal intervention). The third is the indirect use of adjusting interest rates to increase or reduce investor demand for the currency.

Direct Interventions

Most examples of direct intervention involve a central bank buying its own currency in order to prevent or to slow down further weakness. The opposite can also occur, however, like in the case of the Swiss National Bank, which we will expand on later in this module. When a central bank buys its own currency, it has to sell some of the reserves which it holds in foreign currencies. Currency investors pay close attention to the levels of these reserves to assess the credibility of any future intervention. On the terminal, type `BI CURRG <GO>`, then select 'FX Macro' within the 'Data Library' and click on the 'Reserves/Import Cover' tab. Countries are ranked by the size of their reserves in US dollars, showing the changes over time.

Verbal Intervention

Verbal intervention is essentially a threat by a central bank to market participants that it *might* intervene directly. Let's take the example of a central bank wishing to prevent further weakness in its own currency. By warning the market that it may start to buy its currency, it hopes to worry investors who have already sold that the price will rise and cause them to incur losses. If they believe this threat is credible, they may decide to buy back their speculative short positions without waiting for actual intervention, thus causing the currency to rise. This effectively saves the central bank from spending its own currency reserves to achieve the same effect. Note that successful verbal intervention requires credibility among investors that the central bank not only will intervene but that it can do so successfully.

Interest Rate Intervention

We have already considered how the difference between interest rates can make one currency more attractive (or less) against another. Central banks can therefore adjust their official short-term interest rates as a means of currency intervention. Most commonly a central bank will raise interest rates (known as tightening monetary policy) in order to prevent currency weakness. This can be a high-risk strategy however, as this action may cause problems for the country's economic policy.

Determining the Success of Central Bank Intervention

The common theme which determines success or failure in currency intervention is credibility. Whether it be direct intervention, verbal intervention, or interest rate manipulation, the central bank must convince

currency investors that going against its intentions will lead to losses. Investors evaluate several factors when assessing this risk, such as the adequacy of foreign exchange reserves to sustain prolonged intervention and the historical success rate of the central bank's previous interventions. A strong track record enhances credibility. However, a rise in interest rates to support the currency may conflict with domestic economic goals. For instance, raising rates could slow economic growth or trigger a recession, thereby reducing the broader incentive to support the currency and raising doubts about the bank's commitment. Conversely, a lack of credibility can worsen the situation. If the central bank is the only buyer of its own currency, it might facilitate even more selling from investors confident they can offload the currency to the central bank. This dynamic can lead to a standoff, where investors and the bank are locked in opposing moves. Eventually, either the investors capitulate and repurchase the currency at a loss, or the central bank ceases intervention, allowing the currency to depreciate further—potentially generating significant profits for the investors who held their position.

Examples of Central Bank Intervention

Let us now examine four historical examples, representing different motivations and levels of success.

Bank of England, 1992

In 1990, the United Kingdom joined the Exchange Rate Mechanism (ERM), which had since 1979 been a formal banding of currencies among members of the European Community (EC). This predated the introduction of the euro in 1999 and represented an early attempt to prepare member states for eventual currency union In theory, each member currency was allowed to fluctuate slightly within a fixed band against each of the others via bilateral currency ranges, but in reality most countries focused on their currency range versus the German deutschmark (DEM), as Germany was recognised as the strongest economic nation in the European Commission. The rules of the ERM required any central bank to intervene to prevent its currency breaking outside its bilateral bands. Sterling (GBP) was therefore permitted to weaken only as far as GBP/DEM 2.7730 (the bottom of its band against the deutschmark). There was an explicit and strong political desire in the UK government to maintain this level, in order to maintain membership of the ERM. The UK faced directly opposite economic priorities. In order to ease a worsening economic recession, it needed relatively low interest rates as well as weakness in sterling (versus the deutschmark and other members of the ERM) in order to sustain exports. Investors noted that any attempt to defend sterling and especially to do so via raising interest rates would thus hurt the economy. The situation became a binary choice between political will and economic necessity; there was no feasible compromise. Currency investors (most notably the financier George Soros) decided that economic necessity would win. Any attempt by the Bank of England (under direct orders from the government) to defend the ERM band therefore lacked credibility among investors. Over several weeks, speculators sold substantial amounts of sterling down to GBP/DEM 2.7730, leaving the Bank of England as effectively the only buyer and thus making it easier to sell at that price. In a desperate additional form of intervention, UK interest rates were raised from 10% to 12% and briefly to 15% on the final day of the crisis on September 16, 1992. At that point, the government realised that the economic damage would be too great and it announced that it would leave the ERM immediately. The interest rate rises were reversed and GBP/DEM fell dramatically to 2.3622 within three weeks. The UK government was now free to pursue economic policies to alleviate the recession, but the political cost was a sharp decline in credibility. Type the ticker for sterling deutschmark (GBPDEM Curncy GPC) and GPC in the terminal to open a candle chart. Then amend the dates to 06/01/1992 and 01/01/1993 and press enter to see the failed intervention.

Swiss National Bank, 2015

Switzerland is a member of neither the European Union nor the single currency Eurozone. During 2011–2012, there had been a crisis within Eurozone government bond markets, during which investors sold the bonds of governments with large fiscal deficits (e.g., Portugal, Italy, Ireland, Greece, and Spain). This extended to a flight out of the euro (EUR), with substantial flows into the Swiss franc (CHF), which has traditionally been perceived as a safe haven during times of crisis. This caused problems for the Swiss economy, as

the exceptionally strong franc made its exporters uncompetitive. In 2012 the central bank (Swiss National Bank, SNB) announced that it would prevent extended franc strength by imposing a "floor" in the EUR/CHF rate at 1.2000. This is therefore an unusual example of a central bank intervening to prevent its currency *strengthening* as opposed to weakening. The long-standing reputation of the SNB meant that there was no determined effort by investors to challenge this level. Note that in this situation any direct intervention by the SNB required them to *increase* their foreign exchange reserves instead of selling them, as they would be selling francs and buying euros. The public knowledge that the central bank would defend EUR/CHF 1.2000 was sufficient to deter speculators. There was, however, ongoing pressure to sell EUR/CHF on any sign of CHF weakness towards 1.26–1.27 due to ongoing perceptions of problems within Eurozone bond markets. Investor respect for the SNB was in fact so strong that substantial speculative positions for franc weakness were initiated at levels close to 1.20, as investors believed that the market had become a "one-way" bet in line with the SNB support for EUR/CHF at 1.2000. At some point, investors expected the SNB to get its way and to see EUR/CHF recover on franc weakness. Many of these investors planned to protect their "long" EUR/CHF positions with stop-loss orders just below 1.2000. The theory was that if for some unlikely reason the SNB were to abandon the 1.2000 "floor," then they could swiftly close their positions for only relatively small losses. EUR/CHF was a currency that traditionally had plenty of liquidity, so there should be no difficulty in selling if required. On January 15th, 2015, the SNB abruptly and without warning announced that it would no longer defend EUR/CHF 1.2000. The reaction was extremely dramatic and abrupt. Within seconds, investors realized that the vast majority of investors were positioned the wrong way. Anyone who had bought EUR/CHF above 1.2000 immediately tried to sell, but no one was prepared to buy, so the expected liquidity in the market vanished. EUR/CHF plunged to around 0.85 within minutes (a rally in the franc of over 40%, unprecedented in any major currency market). Many financial institutions incurred substantial losses, as they were unable to close their positions at the levels they had expected. Several retail brokers had to cease business. The SNB was widely criticized for a lack of transparency regarding how it offered no hint that it might change its policy, but the biggest lesson was learned by currency investors and how they could manage foreign exchange exposures in the future.

Hong Kong, 1997-1998

In 1983, the Hong Kong government pegged the Hong Kong dollar (HKD) to the US dollar at a fixed rate of HKD/USD 7.80. A central bank in the form of the Hong Kong Monetary Authority (HKMA) was established in 1993 to manage this via a complex form of intervention: buying or selling HKD versus USD whilst influencing interest rates among local banks to adjust the monetary base. This monetary base is fully backed by the HKMA's substantial foreign currency reserves, which reinforces credibility among currency investors that the pegged arrangement will be successfully maintained. In 1997 and 1998, several events conspired to test the peg. A number of Asian currencies came under intense attack in 1997, during the Asian financial crisis. Speculators had previously borrowed HKD, but then proceeded to sell these HKD "short," whilst also selling Hong Kong equities. The mechanism for HKMA intervention had the unwanted side-effect of repeatedly driving up HKD interest rates dramatically, which in turn prompted equity weakness (thus achieving speculators' intentions). The USD/HKD 7.80 peg was nevertheless maintained, after the HKMA threatened penalty charges on institutions which borrowed HKD to lend on to speculators wishing to sell. A similar episode occurred again in 1998, following the Russian debt crisis and the collapse of the US hedge fund Long Term Capital Management. This time the HKMA undertook a far bolder form of intervention. Not only did it intervene by buying HKD, but it spent the equivalent of USD 15 billion on buying Hong Kong equities. This was to prevent speculators from achieving their aim of profiting from weaker equities, via the same mechanism in 1997 of selling HKD to drive up interest rates sharply. When the speculators could not profit from lower equity prices, they had to buy them back and then unwind their short HKD positions. The HKMA achieved several goals. It maintained the USD/HKD peg by defeating the speculators, it reinforced its credibility in case of future attempts to break the peg and it generated substantial profits on its equity intervention purchases (as speculators then drove equity prices higher as they had to cover their short positions at a loss). Since then the HKMA gradually amended the peg to a current permitted range of 7.75–7.85, which it still maintains at the time of writing. Because the USD/HKD 7.80 peg was successfully maintained, there is no evidence from charts of spot FX prices of the intervention ever occurring. The effect of the speculation was clearly evident in the substantial increase in HKD interest rates at that time. This in

turn is measured in FX "forward points" (the difference between USD and HKD interest rates, expressed in currency exchange terms). Type "HKD12M Curncy GPO M" in the terminal command line to open a bar chart. Then set the first date before 1997. This shows the extreme pressure put on the peg in 1997–1998 in the context of the relatively normal changes in relative interest rates before and after that episode.

Argentina, 2001-2002

Argentina was one of the wealthiest countries in the early years of the 20th century, with an economy (GDP per capita) comparable with those of France or Germany. Since then, however, it has had five different currencies and since 1980 has defaulted on its foreign currency debt no less than five times, more than any other country in the world. It is currently by far the largest single debtor of the world's main international lender, the International Monetary Fund (IMF). Inflation peaked between 3,000% – 5,000% in 1989, but remains volatile. Official methods to measure inflation have changed over the years. In the terminal, type "ECST" to open the World Economic Statistics screen. Type "Argentina" in the amber box on the top left. In the menu below, select "Prices" and "Consumer Prices". In the top right corner, click the "Transformation" dropdown and select "YoY%". Then click on the chart icon next to "ARNCIIINX Index". In the chart at the bottom of the screen, click on "Maximize Chart" to show the annualized rate of inflation since 2018. In 1991, the Convertibility Plan was introduced as part of a series of reforms to counter hyperinflation, liberalize foreign trade, and increase productivity and economic growth. This included pegging the Argentine peso to the US dollar at a rate of USD/ARS 1.00. This rate represented an over-valuation of the peso in terms of its economic worth, but it was designed to impose deflationary measures and to encourage productivity and efficiency. The peg would be maintained by a steady flow of foreign currency inflows (through privatizing state-owned companies and through state borrowing). Note that this peg was introduced by law, making any subsequent change in policy more difficult. This policy proved generally successful up until 1998, including a significant reduction in inflation, but then external factors challenged it severely. First, the Asian currency crisis of 1997 (remember the USD/HKD example earlier) and the default by Russia on its debt in 1998 conspired to reduce global investor appetite for lending to "emerging market" economies, including to Argentina. Then in January 1999, its neighbor and largest trading partner, Brazil, devalued its own currency (BRL), which made Argentine agricultural exports uncompetitive. Thus a rise in the ARS/BRL exchange rate had an indirect effect on the ability to maintain the USD/ARS pegged rate. Finally, global prices for many agricultural commodities fell anyway, which reduced the inflow of foreign currency earnings. The economic effect of the peg had now reversed to weaken competitiveness and productivity, scale back investment and profits, and reduce living standards. Argentina fell into recession and was running large fiscal and current account deficits, but it was prevented from using two key tools to alleviate this. It could not cut interest rates, nor could it weaken the peso, as the currency peg effectively tied it to the US dollar and thus to US interest rates. Meanwhile, the US dollar had strengthened significantly on global markets, making Argentine exports even less competitive with the rest of the world. Because of the currency peg, the economy had become largely "dollarized", in that the banking system had significant short-term liabilities denominated in US dollars. This meant that there was effectively no lender of last resort, so a substantial risk quickly emerged that Argentine banks would run out of US dollars. This fear triggered a run on the banks as people tried to extract their savings. On December 1, 2001, the government froze bank deposits. This prevented easy convertibility into US dollars and immediately sparked civil unrest. Four days later, the IMF withdrew its funding support due to a breach of its conditions. This removed the last realistic source of foreign support. A fresh government soon announced a default on USD 93 billion of government debt. There were a total of four governments that month, indicating the degree of political unrest from this economic crisis. The last of these governments in January 2002 finally announced the end of the currency peg with an initial devaluation in the peso from USD/ARS 1.00 to 1.40. Type "ARS Curncy GPO" in the terminal to open a bar chart. Adjust the start date to January 1, 2000. Then hover the cursor over the y-axis in the chart and right-click. Select "Y Axis Format" and change to "Log". This shows how the peso devaluation extended over the coming months to 3.86. It also shows the relative degree of subsequent devaluations in the decades since 2002. The precise causes of the 2001–2002 Argentine crisis remain hotly debated, but the economic and social impacts were undoubtedly severe. The economy shrank by about 11% in 2002, while unemployment and poverty rose sharply. Bloomberg Intelligence provides an up-to-date overview of the issues which Argentina continues to face. Argentina still finds it particularly difficult and

expensive to borrow on international markets. Type "Argentina" in the amber search box on the left. Then select "Argentina Country Primer" or any of the shorter-term research notes underneath. This was a very different form of currency intervention, starting in 1991 with a legal statute and ending with a new law in 2002 and the world's biggest ever bond default. Unlike the other examples of central bank intervention, there was no attempt at direct currency intervention, nor was there any mechanism to raise interest rates (due to the mechanism of the peg itself). The only form of direct defense was to freeze bank deposits, but by that stage the prospects for defending the peg were already futile. These four examples show a diverse range of currency interventions, formats, and outcomes. Their common theme, however, is how important currency can be to implement and in some cases to challenge a government's economic policy.

Currencies: Currency Risk

Introduction to Currency Risk

We have already considered some of the major factors which cause the price of one currency to change in terms of another. For example, the changing price of the euro in terms of the US dollar is expressed in the EUR/USD exchange rate. Now we can look at the two most important risks in foreign exchange and how these can be controlled. These are counterparty risk and market risk.

Counterparty Risk

There is counterparty risk in other asset classes as well as in all kinds of financial derivatives. We are looking first at a risk specific to foreign exchange (settlement risk), then to an example of broader counterparty risk. In a typical FX transaction, two counterparties agree to exchange currencies at an agreed rate on the same specific date, known as the value or settlement date. Each side pays one currency to the other and receives the other currency in return. The most significant risk is that Trader A pays currency 1 to Trader B, but Trader B fails to pay currency 2 to Trader A. There is no way of Trader A knowing in advance if Trader B will make the payment, so Trader A has to trust Trader B and vice versa. Any differences affecting payments that are made in different currencies amplify this risk. If Trader A for example is due to pay Japanese yen to Trader B in exchange for US dollars, Trader A has to make the yen payment earlier that day while Japanese banks are open, but then has to wait several hours to find out if Trader B has sent the dollar payment later in the day when US banks are open. During the intervening hours Trader A incurs settlement risk on the full principal of the yen amount. The famous case of this relates to a German bank, Bankhaus Herstatt. Numerous banks had FX transactions with Herstatt due to settle on June 26, 1974, including some who had made payment in European currencies that morning (German time), expecting to receive US dollars in the afternoon (when US banks opened). Herstatt was instead declared bankrupt that same day, before it could make the dollar payments. Although some of the non-dollar currency payments were recovered later in bankruptcy proceedings, this case highlighted the risk of losing the full principal during the process of settlement. The importance of this risk, even though rare, relates to the wider consequences. The number of outstanding currency transactions and their size are significantly greater now than in 1974. If even one major institution were to fail to settle its FX transactions nowadays, as happened with Lehman Brothers in 2008, its counterparties would lose their principal FX amounts, which may in turn cause them to fail to settle other transactions, prompting yet further settlement failures and insolvencies, not only in foreign exchange but in other asset classes too. This would represent a serious threat to the stability of the entire global financial system. Other counterparty risk relates to FX forwards and to buying option contracts (which will both be outlined later in this module). The important difference here is that if Trader B appears likely to become insolvent during the period between the original transaction of the agreed settlement date, at least Trader A has not already paid its side of the trade in settlement. Trader A may become aware that Trader B will be unable to fulfil the contract, so can avoid making payment to Trader B at the settlement date. Trader A might also have the opportunity to replicate the transaction with another counterparty. Trader A will face a risk of either a profit or a loss, as the exchange rate with the new counterparty will probably have changed since the original trade with Trader B. This potential price difference is known as replacement cost risk. There is no complete solution to either settlement or replacement cost risk. There is however a means to mitigate both risks substantially. CLS (Continuous Linked Settlement) is an organisation which is owned

by many leading financial institutions and is regulated by the US Federal Reserve. It removes the principal settlement risk through payment-versus-payment (PVP), in which each FX counterparty only receives the currency it is expecting if it pays the currency it owes via CLS. This is done in real-time using a real-time gross settlement system (RTGS) as well as a multilateral payment netting system. This significantly reduces the overall, gross exposure of each counterparty, but does not eliminate it completely. This is not the same as a central clearing counterparty, which occurs in some other asset classes and derivatives; CLS is a third party in the settlement process but is not a counterparty in the original FX trade. Replacement cost risk requires a credit assessment for each FX counterparty, which then needs constant monitoring. The longer the maturity of the FX forward or bought option contract, the greater the credit risk. This often incurs an additional credit charge to longer-dated contracts when they are originally traded, usually embedded in the overall price.

Market Risk

Market risk refers to the possibility of incurring gains or losses due to changing FX prices. We will look at two perspectives on this: the nature of market risk itself and some of the methods to manage it.

Types of Market Risk

Market risk refers to the possibility of incurring gains or losses due to changing FX prices. We will look at two perspectives on this: the nature of market risk itself and some of the methods to manage it. Market risk can perhaps best be considered in terms of who faces currency risk: speculators and hedgers. Speculators actively seek opportunities to profit from changing FX prices, whilst managing the risk of incurring losses; they believe they can forecast currency changes. Examples of those exposed to market risk include investors, corporations, and individuals. Investors in assets denominated in a foreign currency—such as a US investor in Japanese equities or a Swiss investor in UK real estate—face risks from movements in exchange rates that affect the value of their holdings. Corporations may face currency risk on their imports and exports or on the value of foreign assets, such as overseas subsidiaries. Individuals who purchase goods or services in foreign currencies, for example while traveling, are also exposed to FX risk. Let us take a closer look at a few specific examples. A German investor who buys Japanese equities denominated in yen faces two distinct risks. The first is the performance of the equities themselves in yen terms, and the second is the movement of the EUR/JPY exchange rate. If the investor purchases 140 million yen of equities when the EUR/JPY rate is 140, this is equivalent to one million euros. If the equities appreciate by 10%, their value increases to 154 million yen. If the EUR/JPY rate remains unchanged, this 10% increase is preserved in euro terms. However, if the EUR/JPY exchange rate rises by 20% to 168, the euro value of the investment falls to approximately 916,667 euros, resulting in a net loss of 8.33% despite the local equity gains. Consider next a Spanish chemical exporter that wins a contract to sell 11 million US dollars worth of chemicals to a US customer, to be paid one year in the future. At the current exchange rate of EUR/USD 1.1000, the contract is worth 10 million euros. If the EUR/USD rate rises to 1.2222, the exporter will receive only 9 million euros, representing a 1 million euro loss. Conversely, if the exchange rate drops to 1.0000, the exporter receives 11 million euros, realizing a 1 million euro gain. Thus, even though the dollar amount is fixed, the euro value of the contract is exposed to exchange rate fluctuations. Finally, take the example of a US multinational corporation that owns a UK subsidiary. The value of that subsidiary is reported quarterly in USD. Even if no operational changes occur, the value of the subsidiary in the consolidated US financial statements will vary according to the GBP/USD exchange rate. A depreciation of the pound reduces the translated dollar value of the subsidiary, which could affect loan covenants tied to asset values or overall company valuation. While these changes may not be realized through actual sales or cash flows, they impact reported earnings and financial ratios. It is worth noting that the US equity investor and Spanish exporter both face "transaction" FX risk, where gains or losses are crystallized when payments are made. The US corporation, on the other hand, faces "translation" FX risk, where no actual transaction occurs, but financial reporting is still affected by exchange rate movements. Market risk in foreign exchange can have serious consequences for the profitability, financial health, and viability of individuals, companies, and investors. We will now turn to practical methods of managing this risk, bearing in mind that these instruments can also be used by speculators who deliberately take on currency exposure.

Currency Risk Management

No one can go through life completely risk averse, or we would never leave home or cross the street. We all accept a tolerable level of risk which hopefully allows us to achieve a desired level of returns, but this risk appetite can vary significantly from one person to another. Currency risk management offers a range of market instruments to satisfy a similar spectrum of risk appetite. These fall into three main categories: maximum exposure, minimum exposure, and a more flexible approach, variable exposure.

Maximum exposure can, of course, be achieved by leaving all FX exposures uncovered and simply waiting to see how FX rates turn out. This approach allows for unlimited profits, but also exposes the investor to unlimited losses. Who would choose to do this? A significant proportion of investment funds in overseas equities have historically left FX exposures uncovered. The main reason tends to be that fund investors are aware of the inherent FX risk on foreign equity valuations and wish to incur that exposure.

It is possible to lock in the current exchange rate as soon as the exposure is confirmed, using FX forward outright contracts. These eliminate the possibility of either gains or losses, regardless of where the exchange rate moves. Here's how they work. Consider the earlier example of the Spanish exporter to the US, who is waiting to receive 11 million dollars a year from now and is concerned about how the EUR/USD exchange rate might impact the amount of euros ultimately received. The exporter can examine this further in the Terminal by typing FXFA in the command line and selecting FX-Interest Rate Arbitrage. By default, this tool displays the euro versus the US dollar. The "SP" value shown corresponds to the "spot" price, which is the most common measure of how much one currency is worth in terms of another. Typically, the spot rate refers to the price for exchanging one currency for another, with settlement occurring two business days later. A small difference or "spread" will usually appear between the Bid and Ask prices. After ticking the "Show Outrights" box and locating the 1Y term in the far left column, the Bid and Ask prices under the FX Swap column will display the "forward outright" prices. These forward prices may differ, perhaps significantly, from the spot rate. Although we will examine the calculation shortly, it is first important to understand the meaning of the forward outright rate. For a 1-year contract, the forward outright is the effective cost of entering into a currency trade at today's spot rate, but deferring the settlement of that trade—payment and receipt—until one year later. In our example, the Spanish exporter wants to lock in today's EUR/USD spot rate in order to avoid a potential increase in the exchange rate, which would result in fewer euros being received when the dollar payment arrives in one year. If the "Show Outrights" box is unticked, the FX Swap column reveals the point difference between the forward outright and the spot rate. These are called "forward points" or "swap points," and they represent a mathematical expression of the difference between the interest rates of the two currencies over the trade duration. Let us explore this with a 1-month FX forward outright example. Suppose an investor buys 1 million euros and sells 1.1 million US dollars at a current spot rate of EUR/USD 1.1000. The 1-month EUR interest rate for lending euros received immediately is -0.50%, and the 1-month USD interest rate for borrowing to pay immediately is +1.25%. Cash flows are calculated as follows, using a 360-day year convention. Lending EUR 1 million at -0.50% for 30 days yields EUR 999,583.33. Borrowing USD 1.1 million at 1.25% for 30 days results in a repayment amount of USD 1,101,145.83. Dividing the final euro and dollar amounts gives an effective forward outright rate of EUR/USD 1.1016. The difference of 0.0016 from the spot rate of 1.1000 is the forward points. These do not predict where the spot rate will be in the future. Instead, they adjust the spot rate to reflect the interest rate differential between the two currencies involved in the trade. By purchasing EUR/USD at the 12-month forward outright rate, the Spanish exporter secures a hedge against an unfavorable movement in the exchange rate 12 months from now. They lock in today's rate but delay the transaction until the US dollars are received from their customer. The downside, however, is that the exporter forfeits any potential gains that would have occurred had the exchange rate moved in their favor. Despite this, using a forward outright hedge provides valuable certainty in budgeting and revenue forecasting. This is especially important to corporations and investors seeking to minimize currency risk in order to focus on their core business objectives.

Variable Exposure

The forward outright is the conventional method used to minimize a known currency risk in the future. However, this method may not be suitable if the risk is not yet certain, such as when the Spanish exporter does not yet know whether they have won the underlying commercial contract. Alternatively, the exporter may hold a strong view that the foreign exchange market will move in their favor—for instance, anticipating a lower EUR/USD rate—and may wish to take on some risk to benefit from this expected outcome. In such cases, the exporter might choose to accept a limited degree of risk in exchange for the possibility of financial gain. Although a detailed examination of option contracts is beyond the scope of this module, it is sufficient to understand that options provide a means of benefiting from favorable currency movements while capping exposure to adverse movements. Options are also useful for hedging contingent risks, such as the potential award of a commercial contract. Standard call options (the right to buy a currency) and put options (the right to sell a currency) require the buyer to pay a premium upfront. However, there are many option variants that can reduce or eliminate this initial cost. The foreign exchange market offers an extremely broad array of option-based products that can be customized to the user's market view, hedging objectives, and risk tolerance. More than any other asset class, FX options allow this level of flexibility. Because the FX market operates over-the-counter (OTC), each market-maker can create bespoke option solutions to meet client needs. For example, one can type "EUR Curncy" in the terminal command line and select the Euro/US Dollar Spot from the list. Then, selecting "OVML" will open the pricing tool for a basic "vanilla" EUR call/USD put option. This tool includes various pricing inputs such as forward points, interest rates for both currencies (EUR and USD Depo), and the implied volatility ("Vol"). Implied volatility is a key component in pricing, as it reflects the expected variability of the EUR/USD exchange rate over the life of the option. In many cases, it is the primary factor affecting the cost of the option. To explore outcomes, one can use the Scenario tab to model profit and loss based on different exchange rate movements by the time the option expires. Additionally, the Products tab in the red toolbar provides access to a range of variable option strategies such as Vanilla Structures, Forward Style options, and TARFs. This demonstrates the wide range of possibilities available for option-based FX risk management.

Speculation

Currencies rise and fall, just like prices in any other asset class. It is therefore no surprise that many speculators—also known as proprietary traders—actively aim to predict and profit from movements in the foreign exchange market. What makes FX markets particularly attractive is the presence of certain features that are either unique or more accessible to currency speculators compared to other markets. To understand this better, we can begin by examining how currency speculators operate and then consider the major forecasting methodologies they use. One of the most obvious differences between FX and other asset classes is the relative ease with which one can trade outside the most commonly used markets. At the beginning of this course, we noted that most central banks hold reserves in US dollars, most global debt is denominated in dollars, and most commodities are priced in dollars. Consequently, the majority of FX transactions are conducted against the dollar. However, there also exists both a commercial rationale and a speculative incentive to trade what are known as "cross-currency" pairs. For example, a trader might hold views on both the euro versus the US dollar (EUR/USD) and the US dollar versus the Japanese yen (USD/JPY). Rather than executing two separate trades, they may find it more efficient to express this through a EUR/JPY cross-currency trade, thereby bypassing the US dollar altogether. Nearly every currency can be traded directly against another in a cross-pair structure, even if the pricing is initially derived from better-known benchmarks. This is typically where more liquidity and tighter pricing are found. For example, a trader seeking exposure to the Canadian dollar versus the Mexican peso (CAD/MXN) may encounter limited direct pricing options. Instead, they might execute two simultaneous trades—buying USD/MXN and selling USD/CAD—to synthetically create a CAD/MXN position. The net result of these paired trades mirrors a single cross-currency position. In earlier times, such synthetic structures sometimes presented arbitrage opportunities due to temporary price discrepancies. However, advancements in trading software and the high-speed nature of electronic execution have now made such arbitrage largely impractical. As discussed previously, currency options can provide tailored risk exposures, and speculators are often sophisticated users of these instruments. Options enable more precise control over currency risk without unintentionally taking on exposures that are irrelevant or misaligned with their goals.

Currency Forecasting

Finally, let us examine the three major methods of currency forecasting, which are primarily used by speculators. These forecasting approaches can be categorized as fundamental, quantitative, and technical. The fundamental method—often referred to as macroeconomic—focuses on economic indicators and policy factors. Quantitative forecasting relies on mathematical models and statistical data, while the technical method, also known as sentiment analysis, examines market trends and trading behaviors.

In Module 2, we examined the fundamental reasons why currencies move in price relative to one another. These reasons typically stem from differences in economic conditions and the outlook for future divergence between countries. One well-known model used in long-term analysis is Purchasing Power Parity (PPP). In practice, currency speculators often invest significant time analyzing both actual and anticipated economic differences, hoping to identify early signals of potential divergences or convergences between national economies. These differences are frequently tied to political developments, especially in countries with a history of instability. The list of economic or political influences on currency forecasting is vast and highly variable, both across countries and over time. Because of this variability, no single forecasting model has proven to be reliably consistent across all circumstances. Despite this, some economic indicators are commonly monitored. These include inflation rates, relative interest rates (often referred to as the "cost of carry"), economic growth, employment levels, budget surpluses or deficits, and current account balances. Analysts typically examine these factors on a comparative basis between two countries, accounting for both current statistics and expectations of future changes. To conduct this analysis, many banks, brokers, and asset management firms employ high-profile economists and currency strategists. These professionals produce extensive research, which is often used not only for internal decision-making but also as a means to impress clients and gain new business. However, it is important to keep in mind that if a particular macroeconomic argument becomes widely accepted in the market, the opportunity for profitable trading may have already passed. When too many speculators act on the same thesis, the currency in question may have already appreciated, reducing the value of entering that position at a later stage. Once a consensus has been reached and widely acted upon, it may no longer be a trade worth taking.

Quantitative Forecasting

The fundamental analysis we have just explored is typically conducted in a subjective manner, where currency investors frequently re-evaluate which economic or political factors are most important for influencing specific currencies. Many professional currency investors devote years to studying the fundamental drivers of the foreign exchange market and build models around these drivers to generate automated trading signals. These models are often implemented as proprietary trading strategies used by financial institutions to deploy their own capital or offered to external clients via investment funds. The nature of these models can vary widely. Some rely on statistical indicators such as volatility or cross-asset correlations (e.g., commodities or interest rate differentials), while others are grounded in econometric frameworks that incorporate detailed macroeconomic analysis. Despite their variety, one commonality among all such models is the requirement for rigorous backtesting. Investors look for clear evidence not just of strong historical performance but also of stable risk-return relationships under current market conditions. Another shared trait is that fund managers, while needing to broadly communicate the nature of their models to attract investor interest, often avoid disclosing the precise factors or mechanisms used, in order to preserve commercial advantage. Many of these models have delivered successful results over time. However, they tend to rest on the assumption that other market participants behave rationally and will eventually follow the same signals that the model has identified. There is also an implicit belief that the chosen investment factors and risk policies will remain valid as market dynamics evolve, and that historical patterns will, to some extent, repeat themselves. Both fundamental and quantitative methods offer rational frameworks for interpreting and predicting movements in currency markets. Even though investors may never gain full access to the detailed structure of proprietary trading models, they generally place strong emphasis on understanding the broader economic or financial themes that underlie those models.

Technical Forecasting

Perhaps more than in any other asset class, charting price movements has long been especially popular among currency investors, though it is commonly used across all major asset classes. While there is a separate module dedicated specifically to this form of analysis, a few general points can be noted here. Technical or sentiment analysis today is largely informed by concepts from behavioral finance. This perspective contrasts with fundamental or quantitative analysis by assuming that investors are not always fully rational. Rather, they are subject to cognitive biases, emotional impulses, and decision-making heuristics that can lead them to act sub-optimally—often driven by fear or greed. These human tendencies are repetitive and frequently manifest in recognizable patterns, which in turn can be detected in price movements. This is true even in an era dominated by algorithmic and quantitative trading. Traders using sentiment-based methods are not necessarily trying to determine the intrinsic or fair value of an asset; instead, they attempt to anticipate the behavior of other market participants—whether the crowd is more likely to buy or sell. As a result, technical analysis does not attempt to explain market moves using underlying economic or financial fundamentals. Instead, it centers on identifying trends, price momentum, and turning points based on the collective psychology of market participants as captured in historical price patterns.