

Analyzing How Exchange Rates Determined in the Foreign Exchange Market

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Abstract

The Foreign exchange market is far more complicated as compared to stock or bond markets. Predicting the foreign exchange rate includes predicting the performance of entire economies. There are a multitude of factors which come into play when exchange rates are being determined. This article lists down and explains some of the important factors which have a major influence on the exchange rates. The foreign exchange market (Forex, FX, or currency market) is a global decentralized or over-the-counter (OTC) market for the trading of currencies. This market determines foreign exchange rates for every currency. It includes all aspects of buying, selling and exchanging currencies at current or determined prices. In terms of trading volume, it is by far the largest market in the world, followed by the credit market. The main participants in this market are the larger international banks. Financial centers around the world function as anchors of trading between a wide range of multiple types of buyers and sellers around the clock, with the exception of weekends. Since currencies are always traded in pairs, the foreign exchange market does not set a currency's absolute value but rather determines its relative value by setting the market price of one currency if paid for with another. Ex: US\$1 is worth X CAD, or CHF, or JPY, etc. The foreign exchange market works through financial institutions and operates on several levels. Behind the scenes, banks turn to a smaller number of financial firms known as "dealers", who are involved in large quantities of foreign exchange trading. Most foreign exchange dealers are banks, so this behind-the-scenes market is sometimes called the "interbank market" (although a few insurance companies and other kinds of financial firms are involved). Trades between foreign exchange dealers can be very large, involving hundreds of millions of dollars. Because of the sovereignty issue when involving two currencies, Forex has little (if any) supervisory entity regulating its actions. The foreign exchange market assists international trade and investments by enabling currency conversion. For example, it permits a business in the United States to import goods from European Union member states, especially Eurozone members, and pay Euros, even though its income is in United States dollars. It also supports direct speculation and evaluation relative to the value of currencies and the carry trade speculation, based on the differential interest rate between two currencies. In a typical foreign exchange transaction, a party purchases some quantity of one currency by paying with some quantity of another currency.

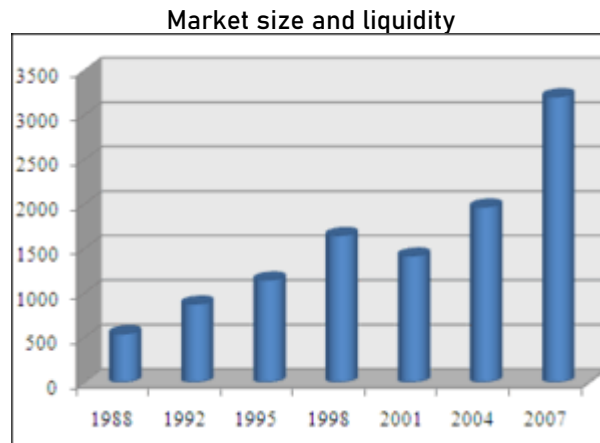
Keywords: Inverted Yield Curve, Exchange Rates, Foreign Exchange Market,

1.0 INTRODUCTION

Currency trading and exchange first occurred in ancient times. Money-changers (people helping others to change money and also taking a commission or charging a fee) were living in the Holy Land in the times of the Talmudic writings (*Biblical times*). These people (sometimes called "kollybistès") used city stalls, and at least times the Temple's Court of the Gentiles instead. Money-changers were also the silversmiths and/or goldsmiths of more recent ancient times. During the 4th century AD, the Byzantine government kept a monopoly on the exchange of currency. Papyri PCZ I 59021 (c.259/8 BC), shows the occurrences of exchange of coinage in Ancient Egypt. Currency and exchange were important elements of trade in the ancient world, enabling people to buy and sell items like food, pottery, and raw materials. If a Greek coin held more gold than an Egyptian coin due to its size or content, then a merchant could barter fewer Greek gold coins for more Egyptian ones, or for more material goods. This is why, at some point in their history, most world currencies in circulation today had a value fixed to a specific quantity of a recognized standard like silver and gold.

In developed nations, state control of foreign exchange trading ended in 1973 when complete floating and relatively free market conditions of modern times began. Other sources claim that the first time a currency pair was traded by U.S. retail customers was during 1982, with additional currency pairs

becoming available by the next year. On 1 January 1981, as part of changes beginning during 1978, the People's Bank of China allowed certain domestic "enterprises" to participate in foreign exchange trading. Sometime during 1981, the South Korean government ended Forex controls and allowed free trade to occur for the first time. During 1988, the country's government accepted the IMF quota for international trade. Intervention by European banks (especially the Bundesbank) influenced the Forex market on 27 February 1985. The greatest proportion of all trades worldwide during 1987 were within the United Kingdom (slightly over one quarter). The United States had the second highest involvement in trading. During 1991, Iran changed international agreements with some countries from oil-barter to foreign exchange.



Main foreign exchange market turnover, 1988–2007, measured in billions of USD.

The foreign exchange market is the most liquid financial market in the world. Traders include governments and central banks, commercial banks, other institutional investors and financial institutions, currency speculators, other commercial corporations, and individuals. According to the 2019 Triennial Central Bank Survey, coordinated by the Bank for International Settlements, average daily turnover was \$6.6 trillion in April 2019 (compared to \$1.9 trillion in 2004). Of this \$6.6 trillion, \$2 trillion was spot transactions and \$4.6 trillion was traded in outright forwards, swaps, and other derivatives.

Foreign exchange is traded in an over-the-counter market where brokers/dealers negotiate directly with one another, so there is no central exchange or clearing house. The biggest geographic trading center is the United Kingdom, primarily London. In April 2019, trading in the United Kingdom accounted for 43.1% of the total, making it by far the most important center for foreign exchange trading in the world. Owing to London's dominance in the market, a particular currency's quoted price is usually the London market price. For instance, when the International Monetary Fund calculates the value of its special drawing rights every day, they use the London market prices at noon that day. Trading in the United States accounted for 16.5%, Singapore and Hong Kong account for 7.6% and Japan accounted for 4.5%.

Turnover of exchange-traded foreign exchange futures and options was growing rapidly in 2004–2013, reaching \$145 billion in April 2013 (double the turnover recorded in April 2007).^[57] As of April 2019, exchange-traded currency derivatives represent 2% of OTC foreign exchange turnover. Foreign exchange futures contracts were introduced in 1972 at the Chicago Mercantile Exchange and are traded more than to most other futures contracts. Most developed countries permit the trading of derivative products (such as futures and options on futures) on their exchanges. All these developed countries already have fully convertible capital accounts. Some governments of emerging markets do not allow foreign exchange derivative products on their exchanges because they have capital controls. The use of derivatives is growing in many emerging economies. Countries such as South Korea, South Africa, and India have established currency futures exchanges, despite having some capital controls.

Foreign exchange trading increased by 20% between April 2007 and April 2010 and has more than doubled since 2004. The increase in turnover is due to a number of factors: the growing importance of foreign exchange as an asset class, the increased trading activity of high-frequency traders, and the

emergence of retail investors as an important market segment. The growth of electronic execution and the diverse selection of execution venues has lowered transaction costs, increased market liquidity, and attracted greater participation from many customer types. In particular, electronic trading via online portals has made it easier for retail traders to trade in the foreign exchange market. By 2010, retail trading was estimated to account for up to 10% of spot turnover, or \$150 billion per day.

2.0 DETERMINANTS OF EXCHANGE RATES

In a fixed exchange rate regime, exchange rates are decided by the government, while a number of theories have been proposed to explain (and predict) the fluctuations in exchange rates in a floating exchange rate regime, including:

- *International parity conditions:* Relative purchasing power parity, interest rate parity, Domestic Fisher effect, International Fisher effect. To some extent the above theories provide logical explanation for the fluctuations in exchange rates, yet these theories falter as they are based on challengeable assumptions (e.g., free flow of goods, services, and capital) which seldom hold true in the real world.
- *Balance of payments model:* This model, however, focuses largely on tradable goods and services, ignoring the increasing role of global capital flows. It failed to provide any explanation for the continuous appreciation of the US dollar during the 1980s and most of the 1990s, despite the soaring US current account deficit.
- *Asset market model:* views currencies as an important asset class for constructing investment portfolios. Asset prices are influenced mostly by people's willingness to hold the existing quantities of assets, which in turn depends on their expectations on the future worth of these assets. The asset market model of exchange rate determination states that "the exchange rate between two currencies represents the price that just balances the relative supplies of, and demand for, assets denominated in those currencies."

None of the models developed so far succeed to explain exchange rates and volatility in the longer time frames. For shorter time frames (less than a few days), algorithms can be devised to predict prices. It is understood from the above models that many macroeconomic factors affect the exchange rates and in the end currency prices are a result of dual forces of supply and demand. The world's currency markets can be viewed as a huge melting pot: in a large and ever-changing mix of current events, supply and demand factors are constantly shifting, and the price of one currency in relation to another shifts accordingly. No other market encompasses (and distills) as much of what is going on in the world at any given time as foreign exchange. Supply and demand for any given currency, and thus its value, are not influenced by any single element, but rather by several. These elements generally fall into three categories: economic factors, political conditions and market psychology.

2.1 Economic factors

Economic factors include: (a) economic policy, disseminated by government agencies and central banks, (b) economic conditions, generally revealed through economic reports, and other economic indicators.

- *Economic policy comprises government fiscal policy (budget/spending practices) and monetary policy* (the means by which a government's central bank influences the supply and "cost" of money, which is reflected by the level of interest rates).
- *Government budget deficits or surpluses:* The market usually reacts negatively to widening government budget deficits, and positively to narrowing budget deficits. The impact is reflected in the value of a country's currency.

- *Balance of trade levels and trends:* The trade flow between countries illustrates the demand for goods and services, which in turn indicates demand for a country's currency to conduct trade. Surpluses and deficits in trade of goods and services reflect the competitiveness of a nation's economy. For example, trade deficits may have a negative impact on a nation's currency.
- *Inflation levels and trends:* Typically, a currency will lose value if there is a high level of inflation in the country or if inflation levels are perceived to be rising. This is because inflation erodes purchasing power, thus demand, for that particular currency. However, a currency may sometimes strengthen when inflation rises because of expectations that the central bank will raise short-term interest rates to combat rising inflation.
- *Economic growth and health:* Reports such as GDP, employment levels, retail sales, capacity utilization and others, detail the levels of a country's economic growth and health. Generally, the healthier and robust a country's economy, the better its currency will perform, and the more demand for it there will be.
- *Productivity of an economy:* Increasing productivity in an economy should positively influence the value of its currency. Its effects are more prominent if the increase is in the traded sector.^[72]

2.2 Political conditions

Internal, regional, and international political conditions and events can have a profound effect on currency markets. All exchange rates are susceptible to political instability and anticipations about the new ruling party. Political upheaval and instability can have a negative impact on a nation's economy. For example, destabilization of coalition governments in Pakistan and Thailand can negatively affect the value of their currencies. Similarly, in a country experiencing financial difficulties, the rise of a political faction that is perceived to be fiscally responsible can have the opposite effect. Also, events in one country in a region may spur positive/negative interest in a neighboring country and, in the process, affect its currency.

2.3 Market psychology

Market psychology and trader perceptions influence the foreign exchange market in a variety of ways:

- *Flights to quality:* Unsettling international events can lead to a "flight-to-quality", a type of capital flight whereby investors move their assets to a perceived "safe haven". There will be a greater demand, thus a higher price, for currencies perceived as stronger over their relatively weaker counterparts. The US dollar, Swiss franc and gold have been traditional safe havens during times of political or economic uncertainty.
- *Long-term trends:* Currency markets often move in visible long-term trends. Although currencies do not have an annual growing season like physical commodities, business cycles do make themselves felt. Cycle analysis looks at longer-term price trends that may rise from economic or political trends.
- *"Buy the rumor, sell the fact":* This market truism can apply to many currency situations. It is the tendency for the price of a currency to reflect the impact of a particular action before it occurs and, when the anticipated event comes to pass, react in exactly the opposite direction. This may also be referred to as a market being "oversold" or "overbought".^[75] To buy the rumor or sell the fact can also be an example of the cognitive bias known as anchoring, when investors focus too much on the relevance of outside events to currency prices.
- *Economic numbers:* While economic numbers can certainly reflect economic policy, some reports and numbers take on a talisman-like effect: the number itself becomes important to market psychology and may have an immediate impact on short-term market moves. "What to watch" can change over time. In recent years, for example, money supply, employment, trade balance figures and inflation numbers have all taken turns in the spotlight.

- *Technical trading considerations:* As in other markets, the accumulated price movements in a currency pair such as EUR/USD can form apparent patterns that traders may attempt to use. Many

3.0 FINANCIAL INSTRUMENTS

Spot: A spot transaction is a two-day delivery transaction (except in the case of trades between the US dollar, Canadian dollar, Turkish lira, euro and Russian ruble, which settle the next business day), as opposed to the futures contracts, which are usually three months. This trade represents a "direct exchange" between two currencies, has the shortest time frame, involves cash rather than a contract, and interest is not included in the agreed-upon transaction. Spot trading is one of the most common types of forex trading. Often, a forex broker will charge a small fee to the client to roll-over the expiring transaction into a new identical transaction for a continuation of the trade. This roll-over fee is known as the "swap" fee.

Forward: One way to deal with the foreign exchange risk is to engage in a forward transaction. In this transaction, money does not actually change hands until some agreed upon future date. A buyer and seller agree on an exchange rate for any date in the future, and the transaction occurs on that date, regardless of what the market rates are then. The duration of the trade can be one day, a few days, months or years. Usually the date is decided by both parties. Then the forward contract is negotiated and agreed upon by both parties.

Non-deliverable forward (NDF): Forex banks, ECNs, and prime brokers offer NDF contracts, which are derivatives that have no real deliver-ability. NDFs are popular for currencies with restrictions such as the Argentinian peso. In fact, a forex hedger can only hedge such risks with NDFs, as currencies such as the Argentinian peso cannot be traded on open markets like major currencies.

Swap: The most common type of forward transaction is the foreign exchange swap. In a swap, two parties exchange currencies for a certain length of time and agree to reverse the transaction at a later date. These are not standardized contracts and are not traded through an exchange. A deposit is often required in order to hold the position open until the transaction is completed.

Futures: Futures are standardized forward contracts and are usually traded on an exchange created for this purpose. The average contract length is roughly 3 months. Futures contracts are usually inclusive of any interest amounts. Currency futures contracts are contracts specifying a standard volume of a particular currency to be exchanged on a specific settlement date. Thus the currency futures contracts are similar to forward contracts in terms of their obligation, but differ from forward contracts in the way they are traded. In addition, Futures are daily settled removing credit risk that exist in Forwards. They are commonly used by MNCs to hedge their currency positions. In addition, they are traded by speculators who hope to capitalize on their expectations of exchange rate movements.

Option: A foreign exchange option (commonly shortened to just FX option) is a derivative where the owner has the right but not the obligation to exchange money denominated in one currency into another currency at a pre-agreed exchange rate on a specified date. The FX options market is the deepest, largest and most liquid market for options of any kind in the world.

4.0 Speculation

Controversy about currency speculators and their effect on currency devaluations and national economies recurs regularly. Economists, such as Milton Friedman, have argued that speculators ultimately are a stabilizing influence on the market, and that stabilizing speculation performs the important function of providing a market for hedgers and transferring risk from those people who don't wish to bear it, to those who do. Other economists, such as Joseph Stiglitz, consider this argument to be based more on politics and a free market philosophy than on economics. Large hedge funds and other well capitalized "position traders" are the main professional speculators. According to some economists, individual traders could act as "noise traders" and have a more destabilizing role than larger and better informed actors. Currency speculation is considered a highly suspect activity in many countries. While investment in traditional financial instruments like bonds or stocks often is considered to contribute positively to economic growth by providing capital, currency speculation does not; according to this view, it is simply gambling that often interferes with economic policy. For example, in 1992, currency speculation forced Sweden's central bank, the Riksbank, to raise interest rates for a few days to 500% per annum, and

later to devalue the krona.^[82] Mahathir Mohamad, one of the former Prime Ministers of Malaysia, is one well-known proponent of this view. He blamed the devaluation of the Malaysian ringgit in 1997 on George Soros and other speculators.

Gregory Millman reports on an opposing view, comparing speculators to "vigilantes" who simply help "enforce" international agreements and anticipate the effects of basic economic "laws" in order to profit. In this view, countries may develop unsustainable economic bubbles or otherwise mishandle their national economies, and foreign exchange speculators made the inevitable collapse happen sooner. A relatively quick collapse might even be preferable to continued economic mishandling, followed by an eventual, larger, collapse. Mahathir Mohamad and other critics of speculation are viewed as trying to deflect the blame from themselves for having caused the unsustainable economic conditions.

4.1 Risk Aversion

Risk aversion is a kind of trading behavior exhibited by the foreign exchange market when a potentially adverse event happens that may affect market conditions. This behavior is caused when risk averse traders liquidate their positions in risky assets and shift the funds to less risky assets due to uncertainty. In the context of the foreign exchange market, traders liquidate their positions in various currencies to take up positions in safe-haven currencies, such as the US dollar. Sometimes, the choice of a safe haven currency is more of a choice based on prevailing sentiments rather than one of economic statistics. An example would be the financial crisis of 2008. The value of equities across the world fell while the US dollar strengthened. This happened despite the strong focus of the crisis in the US.

4.2 Carry Trade

Currency carry trade refers to the act of borrowing one currency that has a low interest rate in order to purchase another with a higher interest rate. A large difference in rates can be highly profitable for the trader, especially if high leverage is used. However, with all levered investments this is a double edged sword, and large exchange rate price fluctuations can suddenly swing trades into huge losses.

5.0 CONCLUSION

Foreign Exchange markets are also financial markets. The price reflected in any financial market does not reflect the price of today. Rather, it reflects the expectations about the future based on the information that we have on hand today. Therefore, the foremost and important determinant of Forex rates between any two countries is expectations about the future. The term "expectations about the future" sounds like a vague and generic term. The next question arises, "expectations about what?" The remainder of this article will explain the various factors that influence the exchange rates.

5.1 Comparison of Monetary Policy

Exchange rates are basically a comparison between the policies of two countries. It is essential to understand that exchange rates are not absolute rather they are relative. The following factors are considered amidst many others while comparing the monetary policies of any two countries.

Inflation: Exchange rate is basically a ratio between the expected number of units of one currency and the expected number of units of other currency in the market. Inflation increases the number of currency units. Therefore, if one currency is facing inflation at the rate of 6% whereas the other is only facing inflation at the rate of 2%, then the ratio between the two is bound to change. Hence, inflation rates are a major factor while determining exchange rates. However, the official inflation rates often do not tell the true picture. Therefore, participants of the market use their own estimates of inflation rate and come up with their own valuations for currency pairs.

Interest Rates: When investors hold a certain currency, they get a yield in terms of the interest rate that is applicable on that currency. Therefore, if investors were to hold a currency with a 6% yield as opposed to a 3% yield, they would end up profiting more! Therefore, the interest rate yields are also priced into the Forex rates that are quoted in the market. The currency valuations are extremely subjective to interest rate changes. A small change in this rate brings about a big reaction from the market participants.

Therefore, Central Banks become extremely important participants in the Forex market since they control the monetary policy which is one of the biggest determinants of the value of the currency.

5.2 Comparison of Fiscal Policy

While monetary policy is controlled by the Central Bank of the country, the fiscal policy is controlled by the government. This too has important implications because it signals the forthcoming changes in the monetary policy.

Public Debt: A large amount of public debt means that the government of a country will have to make huge interest payments. Investors will analyze whether these payments can be collected from the tax i.e. from existing money supply. If not, then this signals that the country will monetize its debt i.e. print more currency and pay off the debt. Since a huge public debt today is a signal of problems coming up in the future, the Forex market prices this too in the value that is quoted. However, it needs to be understood that once again there is a relative comparison between the public debts of the two countries in question. Absolute amounts may not matter as much!

Budget Deficit: Another major factor which influences the Forex rates is the budget deficit. This is because a budget deficit is a precursor to public debt. Governments spend more money than they have and as a result run up a budget deficit. This deficit then has to be financed by debt. The problems pertaining to public debt and how it impacts the Forex rate have already been discussed in the above point.

5.3 Political Stability

Political stability of the country in question is also of prime importance for Forex rates. This is because modern monetary system is a system of Fiat money. This means that money is nothing except the promise of the government. Therefore, if there is a danger to the government, there is a danger that the promise itself may be worthless once a new government takes over. It is possible that the new government may want to issue a new currency of its own! Therefore, whenever a country faces a geopolitical turmoil, its currency usually takes a beating in the Forex markets.

5.3 Speculation and Market Sentiment

Lastly, the Forex market is extremely speculative in nature. This is because Forex provides the leverage for investors to amplify their trade several times using borrowed money and then invest in the markets. Therefore, sentiments take over the Forex market more than they take over other asset markets because of the availability of easy money. Hence, just like all other markets, Forex markets are prone to irrational exuberance and they too can distort exchange rates in the short term creating long term investment opportunities. Many other factors like the price of commodities such as gold and oil also play a vital role in the determination of Forex rates. module.

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