

Summer Internship Project

**A Study on Currency Risk and its Impact on
Firm's Profitability**

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Date: 1st September, 2020

Place: **Mumbai**

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C I M R

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Executive Summary

Currency risk is a common occurrence in many parts of the world in microfinance. Currency risk and its impact on the company's valuation is a common concept. In particular, the Company's cash flows, the assets, and liability, net profit as well as its stock market value from a shift in exchange rates, reflect a potential direct loss or indirect loss. Because of the lack of structured reporting by the firms and the multifaceted existence of monetary risks, this issue has been widely acknowledged.

This study looks at currency exposure from different angles. In this study, we look at the effect of currency fluctuation on the financial performance of the firm. IT firms are overexposed to foreign exchange risk. Understanding the fluctuations in the exchange rate of the currency is and its impact is important for the businesses to safeguard their profits from international operations.

To understand how the currency risk impacts the profitability of the firm Statistical Tools such as Excel and SPSS have been used.

Key findings in this report are: Forex exposures are managed by the treasury departments in Wipro, Reliance Industries Limited, and Tata Consultancy Services Limited. These three companies use a centralized approach to manage foreign exchange exposures. The companies have a clear understanding of their foreign exchange exposures which includes translation, transaction, and economic exposures. The companies change their hedging strategies in response to the fluctuations in exchange rates. However, all three companies have different hedging requirements to manage their foreign exchange exposures. Hence, these companies use a mix of foreign exchange derivatives in their strategies to manage their foreign exchange exposures. The management of forex exposure of RIL appears more complex than that of TCSs and Wipro's.

Chapter 1

1.1 Introduction

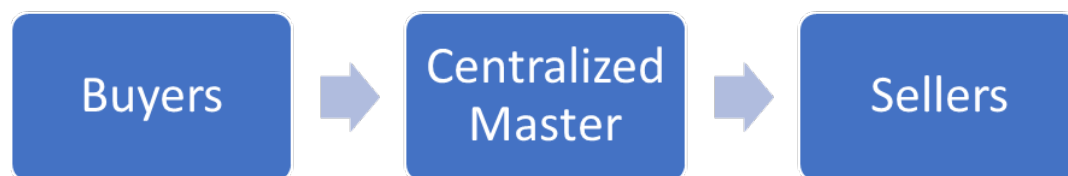
Foreign exchange (Forex or FX) is one currency trade to another. Forex constitutes any type of foreign trade. The explanation behind Forex's existence is intercountry trade in goods and services. One could exchange the U.S. dollar for the Indian rupee, for example.

Foreign exchange trades additionally called the Forex market, can occur on the interchange market. Currency exchange could be a world market wherever national currencies are listed with each other. interchange market uses currency pairs, priced against one another in terms of 1.

Foreign exchange at a local bank is maybe as easy as swapping one currency for another. It may also include foreign-exchange currency dealing.

A foreign exchange rate is the price at which to convert one currency into another. Any international receipts to a nation are foreign currency imports in exchange for domestic currency. Any exports to foreign countries, on the other hand, include purchasing or requesting foreign currency by paying in domestic currency.

The stock market tends to be very monopolistic, because of its very nature. There's only one entity that controls prices, one specialist. It is the centralized sector. All trades have to move through this specialist. Because of this, it is convenient to modify rates to favor the expert and not the traders.

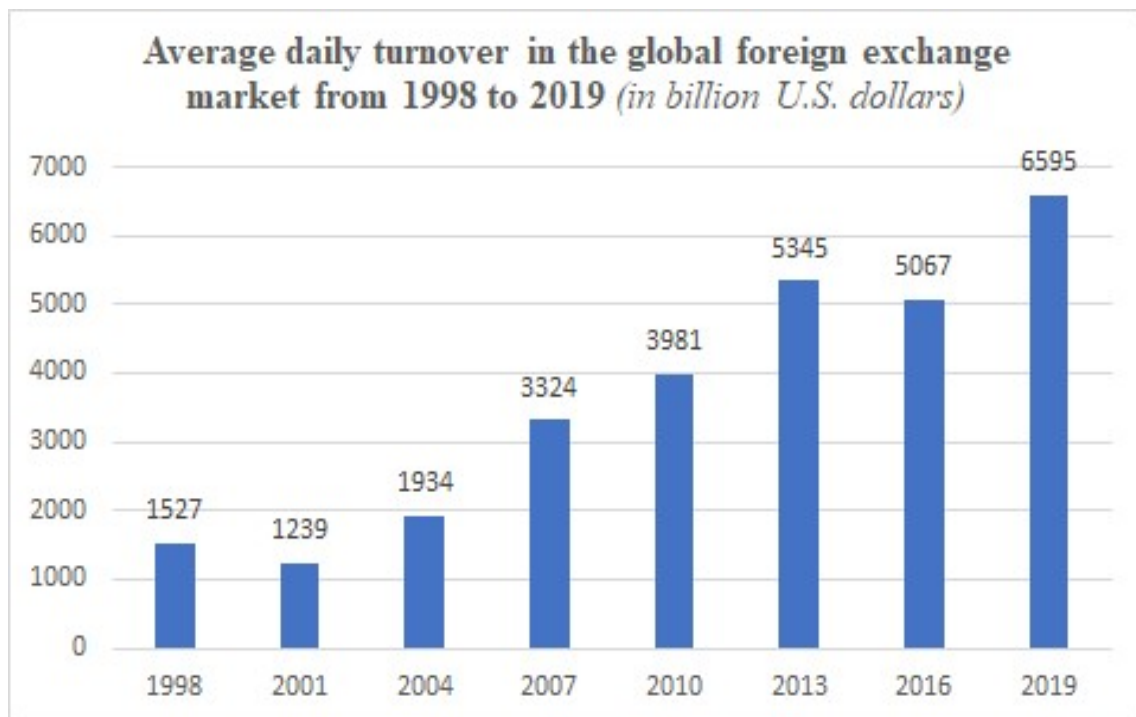


In addition, certain parties or currency dealers conduct transactions in foreign currencies seeking different kinds of financial benefit, i.e. buying and selling. Another way to look at the foreign exchange is to trade for debt adjustment. There is no institution of currency exchange situated in any country. By using technology, the exchange is streamlined. The participant does not need to be physically located near a market-trading platform. This definition is called OTC Business (Over-The-Counter).

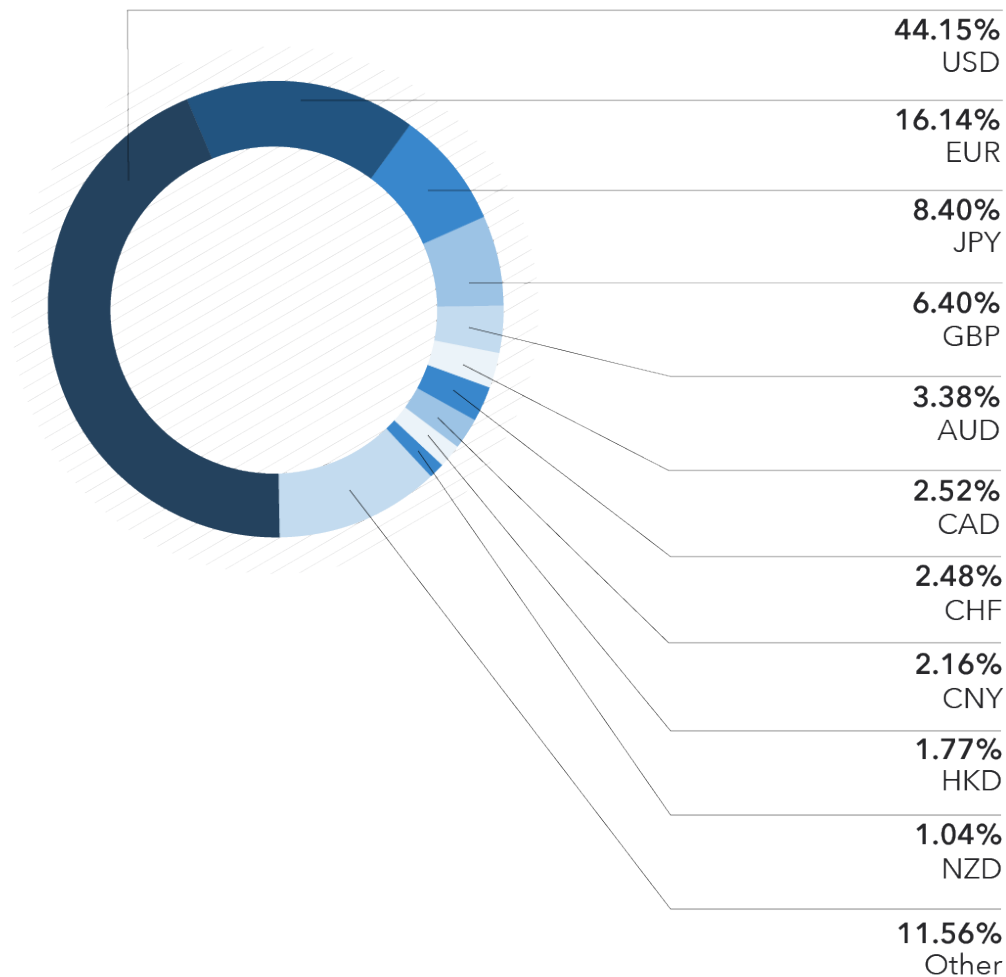


The uptight ones, who presumably have straight A's and followed every rule as children only regard as major currencies US\$, EUR, JPY, GBP and CHF. Then the commodity currencies are AUD, NZD, and CAD.

The average trading volume for the forex market in a day is shown in the following graph:



Here is a pie chart of top currencies:

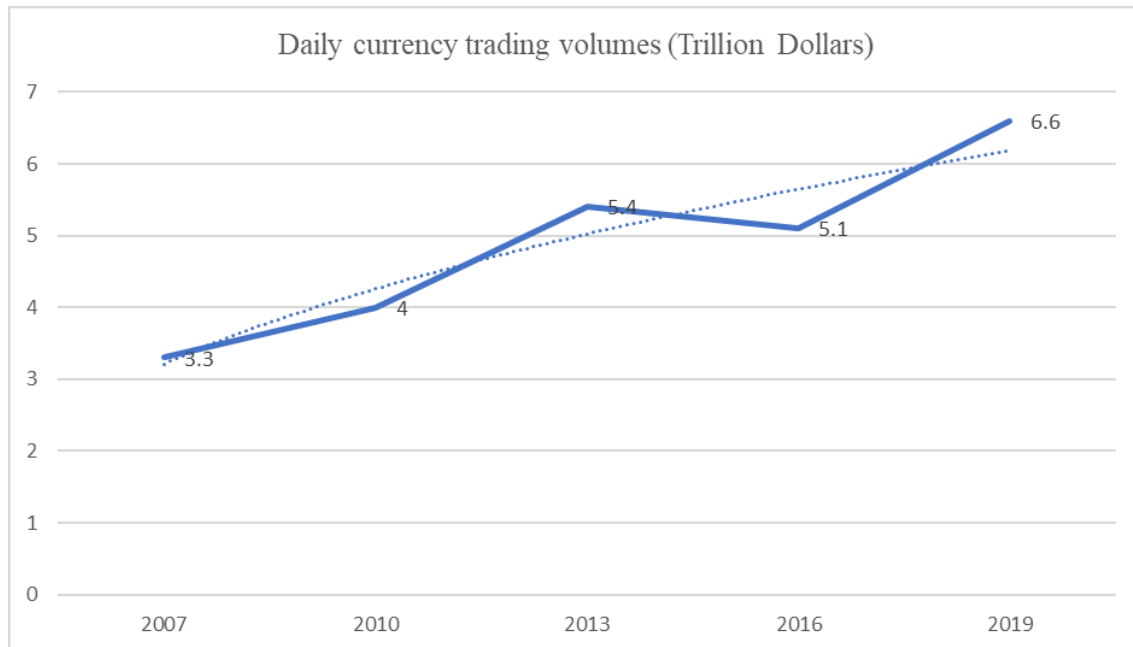


The Major Currency pairs are the most traded and hence it is not difficult in liquidating them. The Exotic Currency pair is a currency of a country which is not traded in huge volumes and are generally very volatile. The spreads for these currencies are generally large to make up for their illiquid nature.

The Foreign Exchange Market is highly Liquid. Liquidity is the ability of an asset to be bought and sold in a short period. Liquidity is a huge concern as it can cause the issue of cash flow. Liquidity of Foreign Exchange depends on the currency trade. Because of high liquidity, brokerage costs are low.

Volume of a market is related to its liquidity. High Liquidity attracts more traders as it allows quicker entry and exit. The currency with the highest volume is USD, resulting to 88% of the total transactions. the next being EUR resulting to about 32% of the total transactions.

We can notice that the USD accounts to such a high percentage because of the fact that USD is used by every country to facilitate International Trade and accounts to huge amounts in a country's foreign exchange reserves.



Of 10 trades, nine are against the greenback. As a hub for trading, the United States has lost ground to London, and the United States has maintained its dominant currency status, with 88% of all transactions on one hand.

Share of the euro-related trades rose to 32 percent, while the yen fell to 17 percent, still holding its position as the third most active traded. A Group-of-Seven currency JPMorgan Volatility Index collapsed to its lowest since 2014 that month.

1.2 Participants

The exchange market is so high in liquidity and trading volume every day; the question arises for us; who participates in the exchange market? Since the market is so huge, exploitation becomes difficult. In other words, the central banks of different countries are the most important players. The Central Banks are doing their best to support the market, but the Exchange Rate is too large for them to be pushed.

Forex Market Hierarchy



Different kinds of participants are likely to encounter in this market.

1. Central Banks

The largest participants of the Forex would be the Central Banks. Hence, the market where dealers interact with one another can also be known as the interbank market. The Central Banks, use the Monetary Policy to maintain the money supply. It helps them to achieve optimal Inflation. Open market operations and interest rate policies affect currency rates to a very large extent.

Any actions taken by a central bank in the foreign exchange market aimed at stabilizing the economy. Currency interventions might be obtained by central banks (as well as by speculators) to enhance or depreciate their currency.

During low inflation, the central bank can weaken its very own currency by producing additional supply that is subsequently used for foreign exchange buying. This weakens domestic money efficiently and makes exports around the global market more competitive.

2. Commercial Banks

Commercial banks offer the core of the market. Governments and central banks, like the European Central Bank, the Bank of England, and the Federal Reserve, are regularly involved in the forex market.

These banks operate on two levels in the foreign currency market. They deal with customers, exporters, and so forth at the retail level. In a wholesale level, banks either directly or via specialist foreign exchange brokers assert an inert banking market in foreign exchange.

The bulk of activity in the foreign exchange market is conducted in an inter-bank wholesale sector. A network of large international banks and brokers is called as an inter-bank wholesale sector. Whenever a bank buys foreign currency, it sells just another currency simultaneously. A bank that purchases a certain currency is said to be in that currency for a long time.

A couple of these banks include Citi, JPMorgan, UBS, Barclays, Deutsche Bank, Goldman Sachs, HSBC, and Bank of America.

3. Investment Managers and Hedge Funds

The second-biggest collection of players on the forex market alongside banks and central banks have been portfolio managers, pooled funds, and hedge funds. Trade monies for large accounts like pension funds, foundations, and contributions are handled by investment managers.

An investment manager with a global portfolio will need to purchase and sell foreign currencies for trade. Speculative forex trading can also occur with investment managers, whereas hedge funds execute speculative currency trading as a portion of their investment plans. They take advantage of the fluctuations in the market to earn profits for their clientele.

4. Multinational Corporations

Businesses involved with the importation and export of foreign exchange goods and services transactions. As they are vulnerable to foreign exchange risk, companies engage in foreign exchange. At the interbank market, they hedge the foreign exchange. Due to currency risk, companies face enormous business issues.

Take a German firm X that imports American parts in India and sells its own finished products. The Indian Rupee received by the producer shall be converted to euros after the final purchase is made. To be able to purchase more American parts, the German firm must then exchange euros for dollars.

5. Retail

We cannot just barge to Deutsche Bank and start throwing Euros and Yen around. To take part in the Forex, we are in need of a retail agent, where you are able to trade with many inferior quantities.

Brokers are large companies with huge turnover in trading. The infrastructure for trading on the interbank market is offered by individual investors. Nearly all of them are retail dealers' market manufacturers, who should adapt to technological changes in the business, as we've observed above, in order to provide competitive two-way rates.

1.3 Segments of Foreign Exchange Market

Foreign Exchange Derivative Instruments

Traders came up with a number of different ways to invest or speculate in currencies. The different derivative strategies- a combination of like - forwards, swaps, options, futures, invoice pricing, matching etc. used by the companies to meet these foreign exchange exposures have been analyzed.

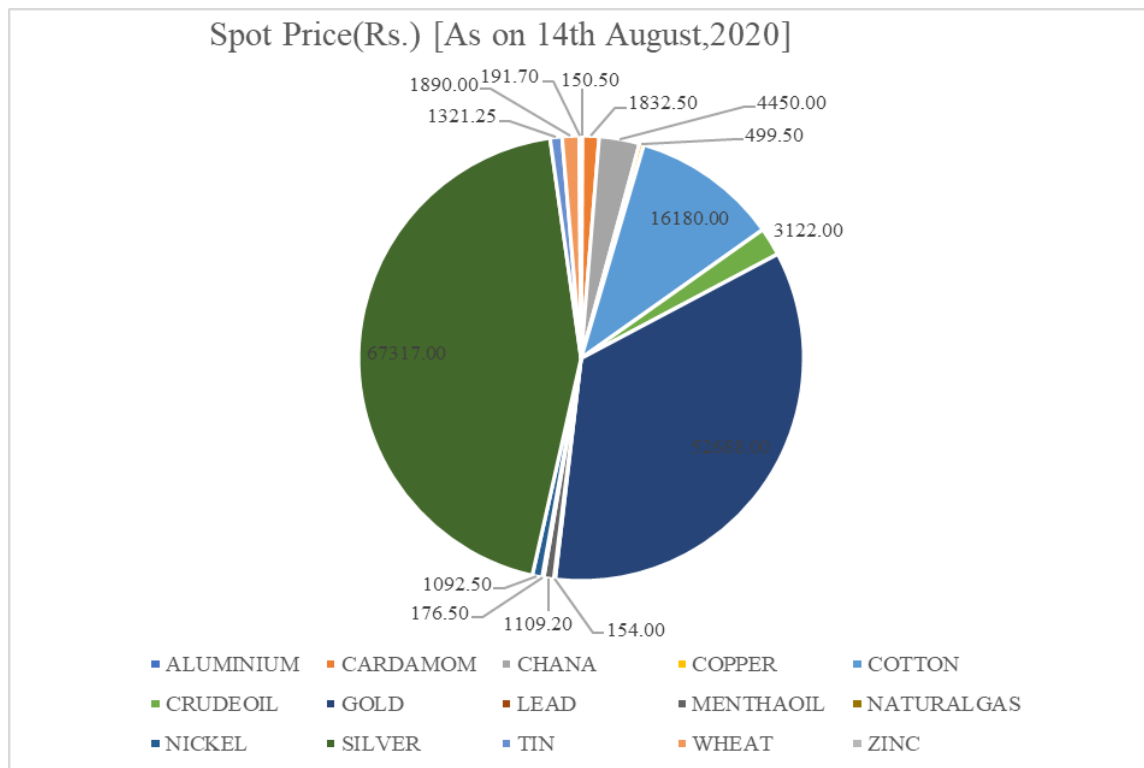
Spot

Spot refers to the price of the asset to be delivered immediately or the value of the asset at a given time. It varies from the future price of a commodity which is the production price or its estimated price at some point in the future. Each commodity that can be exchanged in the future can be quoted as a price per spot.

Spot values can be used by forex traders because currency distribution typically happens 48 hours after a transaction has been carried out. It's important to point out that you don't transact the underlying currencies themselves. It is necessary to point that they are a deal with the underlying currencies.

In fact, the actual transaction is not resolved until two days after the date of trading while the FX spot is being traded at the current market rate. This ensures that the distribution of the goods you purchase or sell will take place within two working days. An entity, for example, purchases EUR/USD on the FX market spot.

The trade opened and closed on Tuesday has a value date on Thursday. Therefore, on Thursday it is going to collect euros. Not all currencies settle T+2. For example, USD/CAD, USD/TRY, USD/RUB and USD/PHP value date is T+1, meaning one business day going forward from today (T).



Forwards

A forward contract is a non-standard arrangement between two parties that conclude a deal in the future. The buyer takes the "long" position of the asset, while the seller takes the "short" position. The price agreed between the buyer and the seller is the delivery price.

FX forward is an arrangement in which two parties agree to supply a given sum of a currency on a predetermined future date in exchange for another FX forward contract.

The only difference is that the FX forward is paid by the agreed-upon date of 3 or more working days after the contract, while the FX position is settled or shipped by the time of the transaction at the nearest 2 working days after the contract.

FX Forwards are contracts which establish an agreement at a predetermined future date for exchanging a specified amount of currency. A forward contract is a private transaction between two parties and is traded in a network of banks and brokers through the counter (OTC). A futures contract is a commodity traded on a regulated market that can be resold at the market price before the end of the commodity transaction and a fixed size and settlement date.

In a forward contract, however, if a holder wants to close out or reverse a position, there has to be a second contract, and if the second contract is arranged with a different counterparty from the first, there are two contracts and two counterparties, with two separate types of counterparty credit risk.

The future value of a currency is the addition of present value of the currency and the interest that it earns over time in the country of issue.

Future Value of Currency (FV) Formula:

$$\mathbf{FV = P(1 + r)^n}$$

FV = Future Value of Currency

P = Principal

r = interest rate per year

n = number of years

If the forward exchange rate is equal to the future values of the base currency, then this can be represented in this equation:

Forward Exchange Rate × Future Value of Base Currency = Spot Price × Future Value of Quote Currency

Dividing both sides by the future value of the base currency yields the following:

$$\begin{array}{ccccccc} & & & \textbf{Future Value of} & & & \\ & & & \textbf{Quote Currency} & & & \\ \textbf{Forward} & & & & & & \textbf{S(1+r}_q\text{)}^n \\ \textbf{Exchange} & = & \textbf{Spot Price} & \times & \frac{\textbf{Future Value of}}{\textbf{Base Currency}} & = & \frac{\textbf{(1+r}_b\text{)}^n}{\textbf{(1+r}_b\text{)}^n} \\ \textbf{Rate} & & & & & & \end{array}$$

S = Spot Price

r_q = Interest Rate of Quote Currency

r_b = Interest Rate of Base Currency

n = Number of Compounding Periods

Note that if:

- r_q < r_b then Forward Rate < Spot Price
- r_q > r_b then Forward Rate > Spot Price
- r_q = r_b then Forward Rate = Spot Price

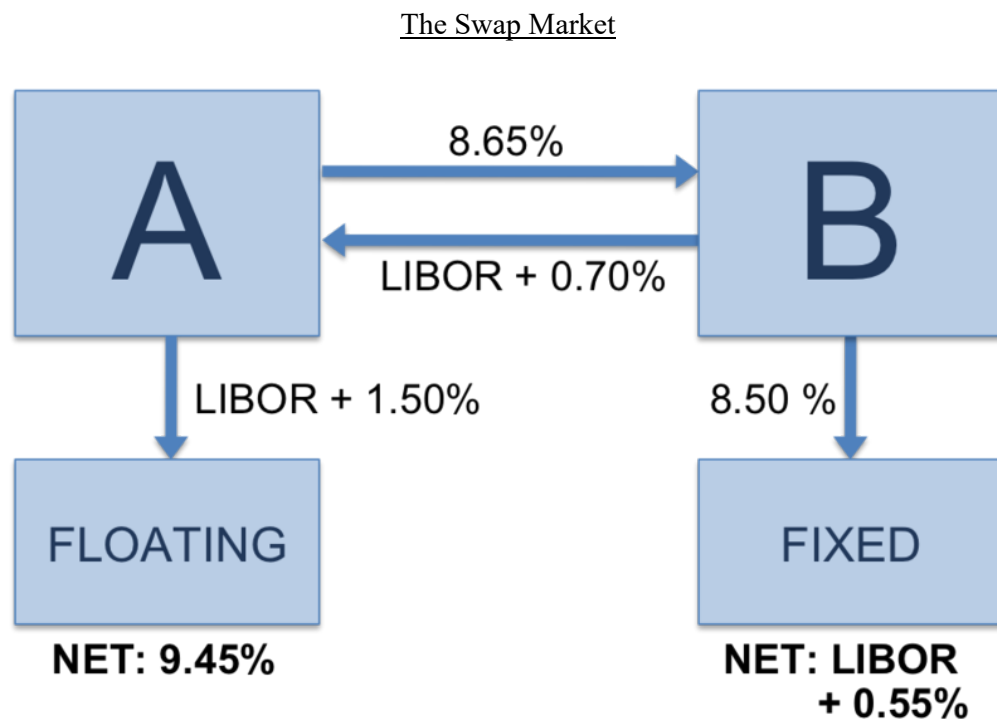
Swaps

Swaps are a derivative which deal with exchange cashflows. Swaps are deals with two participants who want to exchange currencies and hold on to the newly exchanged currency for a period of time. After a previously decided upon period, they pay back the original amount of currency to the lenders as well an interest to the original amount.

Swap is an agreement between two parties. In this agreement, a specified amount of one currency is swapped with an equivalent amount of another currency on the basis of the current spot rate. Later, the two parties will return the original amounts at a specific forward rate.

Swaps have lower interest rates than offered by the local Banks. Multi-National Companies require foreign currency initially to set up their business. Here, they can make use of Currency Swaps as it is generally lower than the Interest Rate of the Banks. Some Banks may even deny giving a loan to a new business but Foreign Exchange Market is open to provide cash for as mutual benefit.

Multinationals and exporting firms, this makes forex swaps particularly useful. A variety of market players, such as financial institutions and companies, institutional investors wish to protect their foreign currency positions, while foreign currency swaps are used by speculators.



A global approved key reference interest rate indicating borrowing cost among banks is LIBOR, which stands for the London Interbank Offered Rate. Every day, the values are measured and reported on the Intercontinental Exchange.

A Japanese business that sells goods in the United States may wish to move US dollars on yen to fund its Japanese operations. In the meantime, it has to pay its American suppliers, and it needs dollars to pay for that.

If dollars are now and then converted back to yen in a month, that will not be possible. Yen will be returned to yen. This is because the corporation needs to spend more yen to get the same sum of dollars if the dollar is valued against a coin.

The company executes an FX swap to prevent such losses. Swaps are nice because the interest rates are lower than the local banks bid. Swaps are usually used to mitigate the risks of currency adjustment in the short term.

Options

Options Market is a market which deals with Options Contracts. Foreign Exchange Options are contracts for various currency pairs. In this type of an agreement the participant who holds the contract has the right to buy or sell the currency in a future date which was decided in the contract itself.

These contracts are like commitments and do not guarantee the fulfillment of the commitment. There are different aspects of Options Contract namely- Call Option, Put Option, and lastly- Single Payment Option Trading.

The Call Option is a power, when exercised, gives the holder of the Call Option to buy an underlying asset at a predetermined price after a fixed period of time. Companies use Call Options when they speculate that the exchange rate of a currency may go up in the near future and they wish to lock the current price for the future by paying a premium.

The Put Option is a power, when exercised, gives the holder of the contract at right to buy a mentioned underlying asset for a certain price at the end of a period decided upon mutually and termed in the Put Contract. This contract is only a right but not a necessity for the buyer to buy it.

1.4 Foreign Exchange Market in India

Foreign exchange transactions in India has two segments: Interbank market and Retail market. Within these segments, market participants can trade in various ways such as future futures, locations, swaps and forwards.

Trading at the National Stock Exchange (NSE) began in 2008 for currency futures (Indian Rupee and US Dollars). The currency future contracts can only be provided by exchanges authorized by Reserve Bank of India (RBI). Currency options were introduced at NSE and USE in 2010 after RBI permitted introduction of USDINR options. Currency derivatives at BSE started in 2013.

The Foreign Exchange Regulation Act of 1973 (FERA) in India was replaced by the Foreign Exchange Management Act (FEMA). Any violation of law under FERA was a criminal offense and hence liable to imprisonment. On the other hand, FEMA focuses on foreign exchange civil offenses.

With pro-liberalization policies of Government of India, FEMA was in charge. FERA became incompatible with the policies. Along with FEMA, World Trade Organization came into picture.

FERA had stringent laws. Under FERA, nothing was permitted unless made an exception. Hence, the consequences of any violation were rigorous and harsh. A person was presumed guilty unless proven innocent which is opposite of what other laws state.

FERA	FEMA
Regulation	Management
Government's asset	Earners' asset
Criminal Act Imprisonment	Civil Act Monetary - Penalty
Enforcement Directorate played a major role	RBI and SEBI are major players

FEMA broadened the scope of activities for a person / company to carry out forex transactions. The government's Export-Import Regulation, FDI and other restrictions liberalized through FEMA. Under FEMA, foreign exchange withdrawal limits were eliminated for current account transactions.

The conversion of currency from a foreign currency into Indian Rupees and vice versa is possible through an authorized dealer (AD). An authorized dealer is a person authorized by the Reserve Bank under Section 10(1) of FEMA, 1999, to deal in foreign exchange.

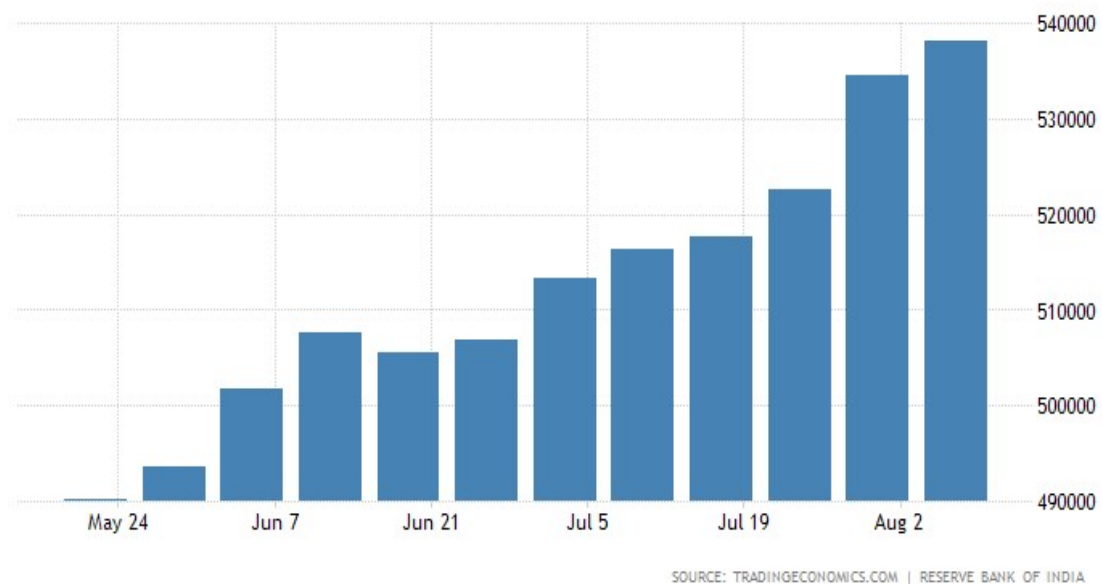
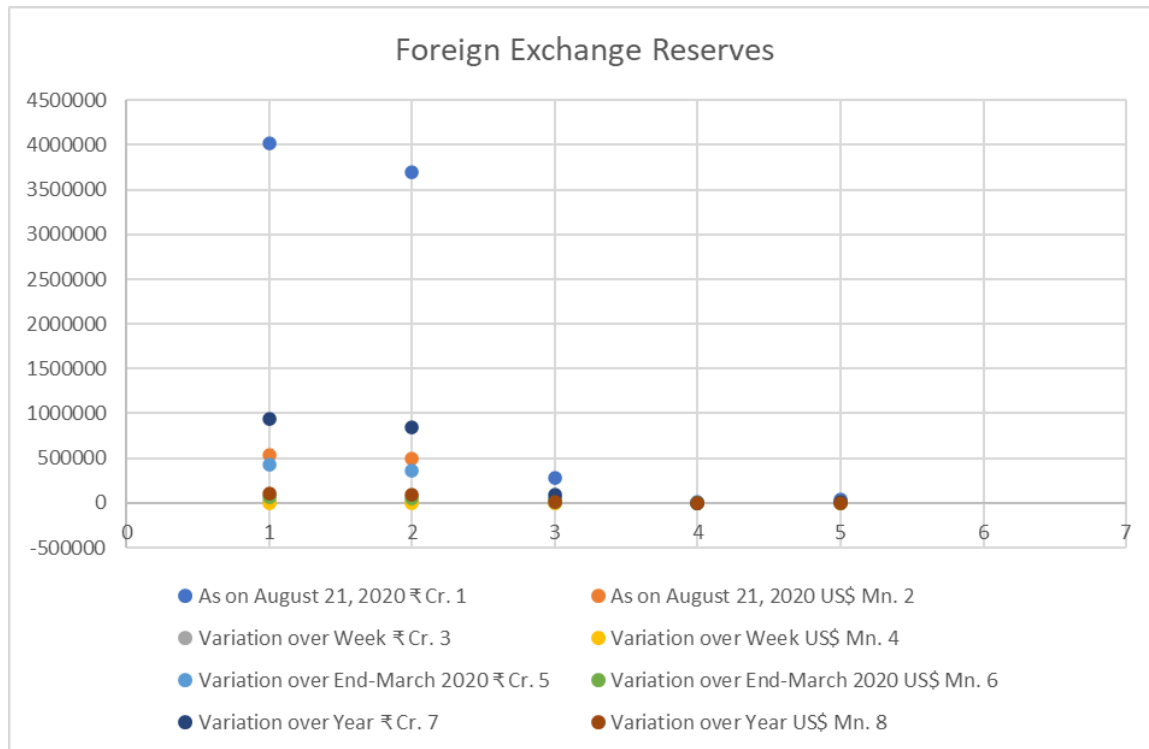
There are Authorized dealers in banks, franchisees, commercial banks and others.

A list of few Authorized Dealers in Category-I (Banks, commercial banks, State Co-op banks and Urban Co-op banks as specified by RBI is as follows:

- Axis Bank Ltd.
- Bank of India
- Bank of Maharashtra
- BNP Paribas
- Citi Bank
- Deutsche Bank A.G.
- HDFC Bank Ltd.
- ICICI Bank Ltd.
- Union Bank of India
- Yes Bank Ltd.

Currency prices has an effect on demand and supply. Interest rates and the overall strength of the economy are the principal factors which influence monetary supply and demand. The health of the economy can be seen by the economic indicators such as GDP; foreign investment, and is therefore responsible for changes in supply and demand for this currency. If the market has a slight sign of uncertainty regarding interest rates, it can directly affect the currency market.

The biggest concern for the Reserve Bank of India is Leverage. Leverage is offered by Brokers which allows the traders to invest in several multiples of the actual amount of cash you possess. The Reserve Bank of India will have to shell out a huge chunk of Foreign Reserves for bailing us out, if several traders use leverage and lose deals.



From 1998 to 2020 the Indian Foreign Exchange Reserves have averaged USD 236083,54 million, hitting an all-time peak of USD538200 in August 2020 and a record low of USD29048 million in September 1998.

Exchange Rate Growth Chart – 2020

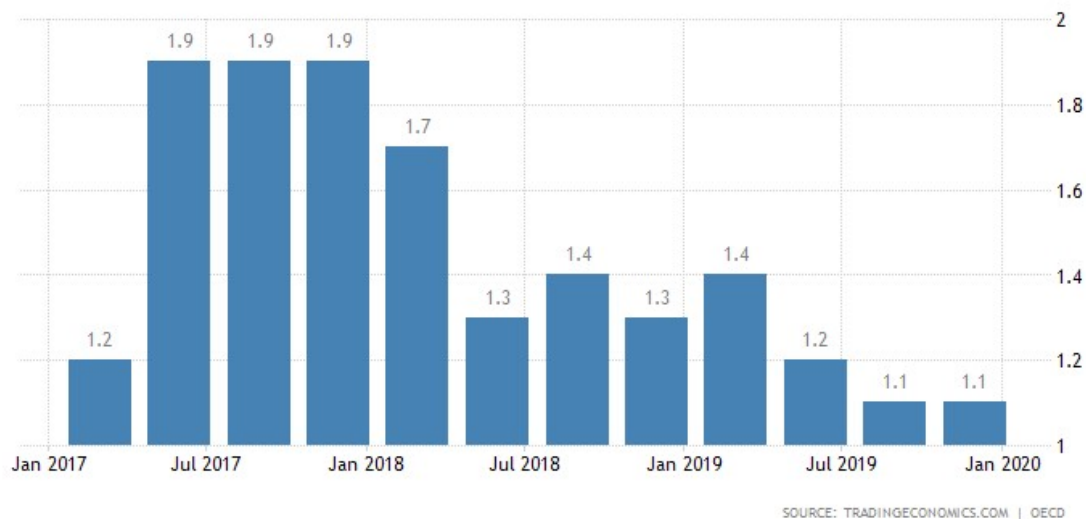


The following tables show the actual and forecasted values of the currency market:

Markets	Actual	Q3	Q4	Q1	Q2	2021
Currency	74.81	75.22	75.56	75.91	76.26	76.95
Stock Market (points)	38021.75	36999	36139	35302	34484	32847
Government Bond 10Y (%)	5.98	6.02	6.08	6.13	6.19	6.3

Overview	Actual
GDP Growth Rate (%)	1.1
Unemployment Rate (%)	11
Inflation Rate (%)	6.93
Interest Rate (%)	4
Cash Reserve Ratio (%)	3

The Gross Domestic Product (GDP) in India expanded 1.10 percent in the fourth quarter of 2019 over the previous quarter.



1.5 Typology of Risks

Risk is a slight deviation from the expected occurrence of an event. In financial terms, it is a possibility that gains will be different from an expected return. It is uncertainty about the implications.

In Finance, the risk is quantified using a common metric that is Standard Deviation. Standard deviation provided a measure of volatility in the prices. In simple terms, it shows how the prices have deviated from the past values in a given period of time. The higher the standard deviation, the higher is the volatility. It means higher fluctuations and hence higher the risk. There are several types of risk and different ways of reducing them using different strategies. There are also different ways of quantifying risk. Variance is another means of quantifying risk.

We all are exposed to various risks every day. It can include walking down the street, driving, riding, investments, etc. The fundamental relation in Finance is the relationship between risk and return. The greater the risk, the greater the likely return. There are several types of risk, including Market Risk, Investment Risk, Business risk, and more. These risks emerge under different conditions and circumstances. Risk also affects macroeconomic situations. Risks examine how inflation, GDP, market dynamics affect companies and countries.

1.5.1 Financial Risk

Financial risk is the possibility of losing money. It can result in a loss of capital. It comes in different sizes.

For governments, financial risk implies the need to control monetary policy and other debt issues. Debt issues can also be faced by corporates. The default on debt can hamper their business and cause a financial burden. The decisions made by individuals may affect their income and hence in turn result in the inability to pay the debt.

Financial markets face financial risk due to various economic factors. The changes in market rates, exchange rates, interest rates, affect countries, sectors, companies, and their profitability.

Common forms of Financial Risks include:

1. Asset-backed risk
2. Credit risk
3. Foreign Investment risk
4. Currency risk
5. Liquidity risk
6. Stock Market risk
7. Interest Rate risk

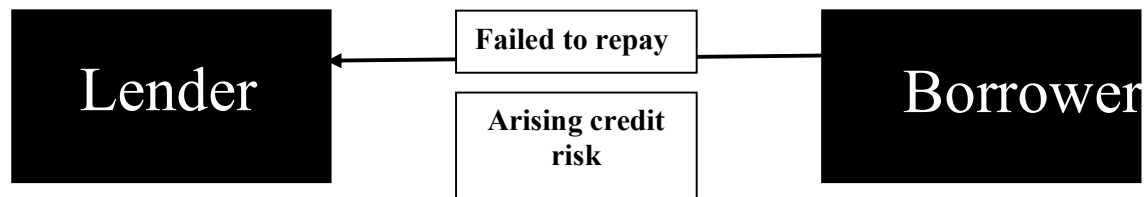
There are other forms of risk as well. If only a few companies are facing risk, it is called as a specific risk. The reasons behind these issues might include Capital structure, financial transactions, and an inability to handle currency exposure. From an investor's perspective, it results in monetary loss.

Operational risk comes into the picture when a business has poor management or flawed financial operations. If internal factors are to be considered, this is considered as one of the situations where a business is unable to meet its promise.

1.5.2 Credit Risk

In a financial transaction, it is common for people to borrow or lend money. Now, there are certain situations where the borrower may fail to repay the money to the lender. This situation is called as credit risk. It is the possibility of a loss in case the borrower fails to repay the money.

Since the expected money is now not received, that is we are facing credit risk. It naturally means that there will be an interruption in the cash flows. It will also result in an increased cost of the materials procured or gathered together.



There are a few credit risk mitigation strategies that can be implemented. One of them is to provide excess cash flows. It can also be mitigated by increasing the coupon rate which will, in turn, result in increase in cash flows.

Management of credit risk is a vital function of the banks.

Risk Management practices implemented are:

1. Accurate and detailed customer data.
2. Undertakings
3. Set right pricing models
4. Loan collection
5. Re-pricing on the basis of external factors

Offering interest rates lower than necessary can result in losses and ultimately bankruptcy.

1.5.3 Foreign Investment Risk

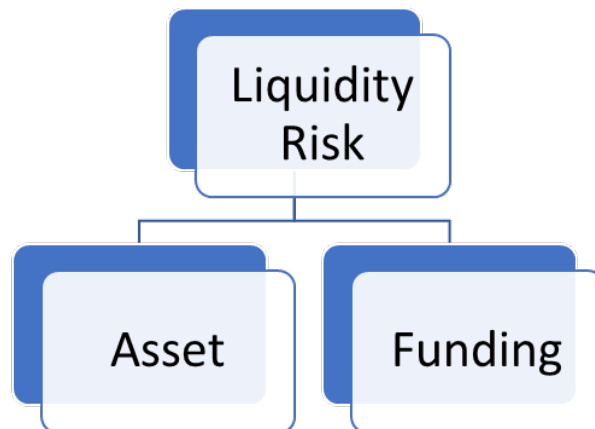
Fluctuations in the value of investment can result in foreign investment risk. This can happen due to external factors. External factors include:

- a. Changes in accounting standards
- b. Changes in taxation rules
- c. Nationalization
- d. Economic clash between countries. For examples: Trade war between China and India
- e. Political, legal changes

A graph showing financial and political risks is the foreign investment risk matrix (FIRM) in which countries can be measured by risk ratings in intervals.

1.5.4 Liquidity Risk

Liquidity is how quickly and easily an asset can be converted into cash. Going on the similar lines, inability to convert into cash can result in liquidity risk.

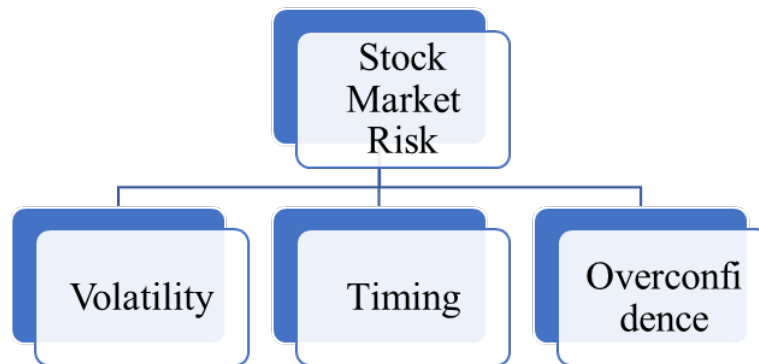


Asset liquidity occurs with houses. In worse conditions, it can push away buyers and demand will go less. Funding liquidity occurs when the borrower is unable to pay off the loan right before it's due.

For Example: A merchant is expecting goods to come this Friday. But, due to low production from the seller's side, it will be pushed to next week. This will create finding liquidity risk from the merchant's side.

1.5.5 Stock Market Risk

This is the risk experience by the whole market and is not pertinent to companies or industry or sector. It is the assumption of stock prices to be more volatile than expected.



Volatility is the fluctuations in price. Various economic factors such as inflation, trade wars, and other such factors affect volatility.

Quantitative measurement of volatility can be done using following statistical aspects:

1. Alpha
2. Beta
3. R-Squared
4. Standard Deviation

1.5.6 Interest Rate Risk

Similar lines as above, fluctuation in interest rates is interest risk. You buy a bond. At a par-price of ₹1,000, you bought one unit. Typically bond prices fall when interest rates rise. Let's say the value of the bond drops from ₹1,000 to ₹850. There is interest rate risk in this situation. Why do bond prices rise when interest rates fall? We are getting an annual interest payout as long as we hold the bond. We receive the principal back at the end of maturity. Since bonds are marketable securities which means anyone can buy and sell a bond before maturity, bond's market value will fluctuate depending on microeconomic factors such as interest rates, economy, and valuation.

1.5.7 Financial Risk: Pros/Cons

Pros	Cons
Informed decisions	Unpredictable
Assess value	Difficult to overcome risks
Analysis tools can be used	Can affect entire sector

1.5.8 Exchange Rate Risk

The impact of sudden changes in the exchange rate risk on the company's valuation is a common concept. The Company's cash flows, the assets, and liability, net profit as well as its stock market value from a shift in exchange rates, reflect a potential direct loss or indirect loss. The company must determine the type of current risk exposure, the hedging strategy as well as an available tool to deal with these currency risks to control the inherent exchange rate risk in MNC operations. Because of their international operations, multinational companies engage in currency markets.

The types of currency risks considered here are as follows:

1. Transaction risk:

It is essentially the cash flow danger that affects exchange rate fluctuations on the exposure to transactional accounts related to receivables (export contracts), payable (import contracts) and/or dividend repatriation. The adjustment in the currency in which the contract is signed leads to a direct risk of the company's exchange rate for the deal.

2. Translation risk:

Translation risk is mainly the currency exchange rate risk and links exchange rate fluctuations to a foreign subsidiary's valuation. Translation risk is commonly calculated by the exposure of net assets to future exchange rate fluctuations for a foreign subsidiary. Thus, while income statements are usually translated at the average exchange rate throughout the duration, international subsidiaries' balance sheet exposure is usually translated at the moment of acquisition at the present exchange rate.

3. Economic risk:

It represents the peril that exchange rate fluctuations would bring to the company the present value of potential operating cash flows. It concerns the impact on sales and operating expenses of adjustments to the exchange rate. The current value of potential cash flow operations of a parent company and international subsidiaries is generally influenced by economic risks.

1.6 Quantitative Risk Measurement

The calculation of these risks is a key aspect of a company's exchange rate risk decisions, following the concept of the kinds of exchange rate danger a company is exposed to. At least concerning translation and economic risk, calculation of the currency risk could be difficult.

1.6.1 Value at Risk (VaR)

The VaR definition is the most important indicator of the business risk of adverse events. It limits losses in such a way that the VaR threshold can be surpassed with a limited target likelihood, which is usually chosen from 1 % to 5%. It can be used to calculate future market exposure in exposed positions by estimating probable losses.

VaR reflects the worst loss estimate possible. The fall in the market value of a foreign currency asset is also included. This is a situation that may, under normal market conditions and with a reasonable degree of confidence, be exacerbated over a certain period.

Companies are using the VaR exchange rate risk indicator to estimate the exposure in normal conditions of a foreign currency position resulting from the operations of a company over a certain time frame.

The calculation of VaR depends on 3 parameters:

1. The holding time, the term during which the exchange event is expected to take place. The usual holding period for financial institutions is 1 day, but for non-financial firms, the holding period ranges between 1 and 12 months.
2. The level of confidence to be reached in the calculation. The normal level of confidence is 99% and 95%.
3. The currency unit that should be used for the VaR. VaR can either be measured parametrically or not. The parametric approximation encompasses VaR or delta-gamma VaR variance-covariance. Non sampled VaR or historical VaR contains the nonparametric estimates.

Interpretation: The broader the VaR portfolio, the greater its potential losses and market risk exposure.

There are three commonly used methodologies to calculate VaR.

Parametric:

This approach assumes that returns are normally distributed. It estimates VaR directly from the standard deviation of the portfolio returns. It is easy to calculate and understand.

$$l_p = l_1 + l_2 + l_3 + \dots + l_n$$

$$\sigma_p^2 = \sigma_1^2 + \sigma_2^2 + \sigma_3^2 + \dots + \sigma_n^2 + \rho_{1,2,3,\dots,n} \sigma_1 \sigma_2 \sigma_3 \dots \sigma_n$$

Where:

σ_p^2 = Standard Deviation of the loss on portfolio

σ_1^2 = loss from instrument 1

$\rho_{1,2,3,\dots,n}$ = Correlation between losses 1 to n

Historical simulation:

In this approach, VaR is calculated from a distribution of historical returns. It reflects asset sensitivity captured in the time horizon.

$$\text{Value at Risk} = v_m \frac{v_i}{v_{i-1}}$$

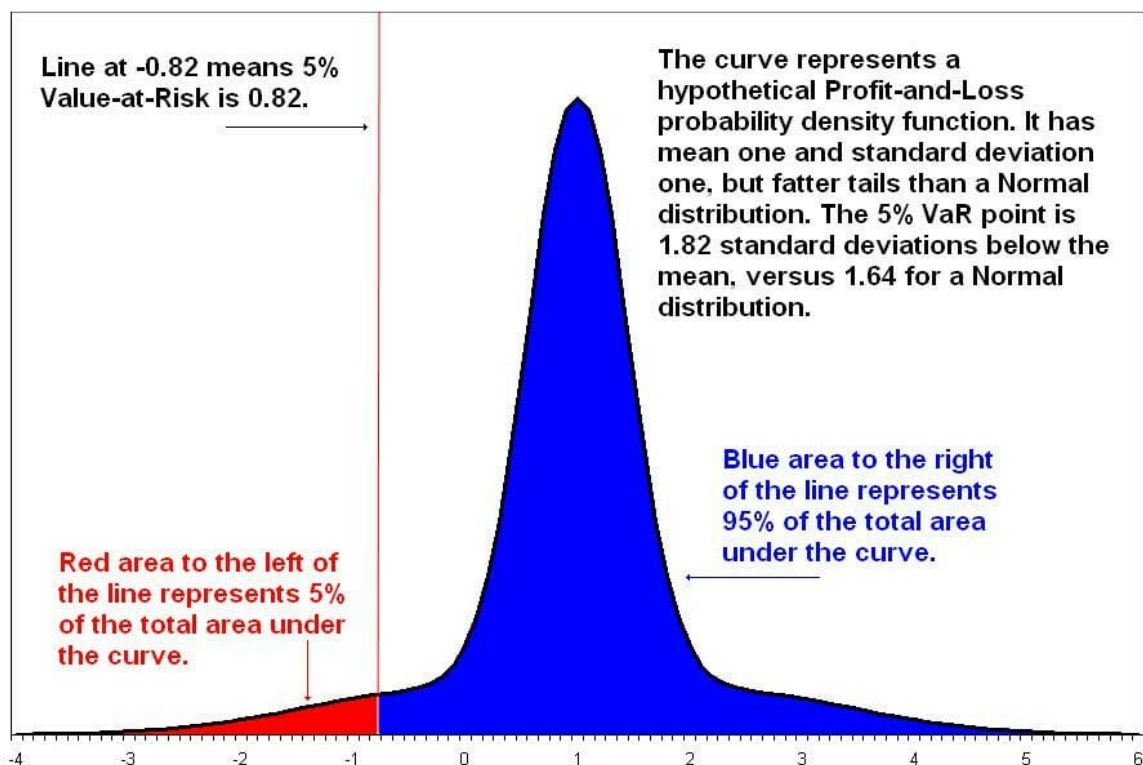
Where:

v_i = no. of variables on day i

m = no. of days from which historical data is taken

Monte Carlo simulation:

VaR is calculated from a distribution of random outcomes. It uses sensitivities to re-price assets using computer-intensive scenarios. These scenarios are run with each constituent asset which require repricing.



1.7 Hedging

Hedging is very similar to getting insurance. When we get insurance, we make sure that the impact of negative events is less. This does not prevent negative events altogether... however, in case something goes wrong, your insurance protects you from severe outcomes. Take Auto Insurance for example. When you buy Auto insurance, you know you are covered for any accidental damage to third-party, and even to you and your vehicle if you opt for it. Buying the insurance will not prevent accidents, but it prevents you from having to spend the sum for repairs / medical expenses out of your pockets.

Investing in the market is a risky affair. Hence insuring yourself against the market risk is highly desirable. However, hedging is not as simple as paying an insurance premium. Offsetting the risk of any negative impact of market movement is the primary goal when we hedge.

This can be achieved by investing in securities with negative correlations. As an example, in the current situation, we see the Pharma industry doing very well. Though we see multiple players in the field, we choose to invest Glenmark Pharma. As we make long investment in Glenmark, we want to also secure our position in the market for negative turnouts. So, we also short in Glenmark's competitor Sun Pharma. In this scenario, if the whole Pharma Industry goes up, we make a profit in Glenmark but a small loss in Sun, with a moderate overall gain. In case the industry takes a hit, we lose money in Glenmark but gain on Sun.

To summarize, we reduce our overall profit with Glenmark to ensure less risk. At the same time, we reduce our losses from the market drop as well. This is called pairs trade and it helps investment managers work in a volatile industry. This method can also be used in sectors with systemic risk.

Hedging usually involves the use of derivatives like options and futures. This works by hedging one fund against another, such that loss in one trade is offset by the hedged derivative trade that gained.

A futures hedge means the company can invest in a dependent commodity in advance. In the above example, let's say Glenmark depends on Glycerol. Glenmark, in this case, can buy a futures contract for glycerol for a certain fixed price for a date in future. This way, if the glycerol prices fluctuate and go up in future, Glenmark has hedged itself against such a price increase in future. However, if the price goes down, Glenmark still has to pay the cost in the contract, in that case, they end up paying more than the market price.

1.7.1 Currency swap

Currency Swap is an instrument used to tackle foreign exchange trade risks. In currency swap or FX swap, two entities exchange foreign currencies with each other. They agree to swap them back at a later date arranged at an arranged or predetermined exchange rate.

For example. Two entities A and B want to swap currencies. A gives 100 USD to B and in exchange, B gives 7300 to A. That sets the exchange rate to 73.

They arrange to swap them back at the same exchange rate after 2 years. As a result, both A and B swap the same amount with each other after 2 years, thus not letting the currency volatility affect their transactions. This may even mean one of the parties loses their profitability in this case. However, they both can ensure the losses are reduced cumulatively.

FX swaps are usually signed for multiple years. This increases the chances of the foreign currency exchange rates deviating too much from the time of swap. This is the exact reason why entities perform the FX Swaps. They have an idea of what they are going to get back after their arrangement ends, regardless of the ongoing exchange rates.

This is used especially when certain entities need to borrow money from a certain country where they expect the currency to strengthen in the coming years. For example, entities that borrow from India are wary that INR might strengthen in the coming years. And hence they might opt to perform FX swaps with Indian entities to reduce their payback cost in INR.

There is another variant of this method where both the entities, after swapping currencies, also share the interest payments during the time for which their arrangement lasts. The interest payment can be based on floating rates or fixed rates as decided in the arrangement during the swap.

This way, the borrower may even pay less interest than if they would have incurred in a traditional FX market.

Currency swaps have now become the largest portion of daily transactions in the global FX market. Financial institutions often perform FX Swaps for non-financial corporations.

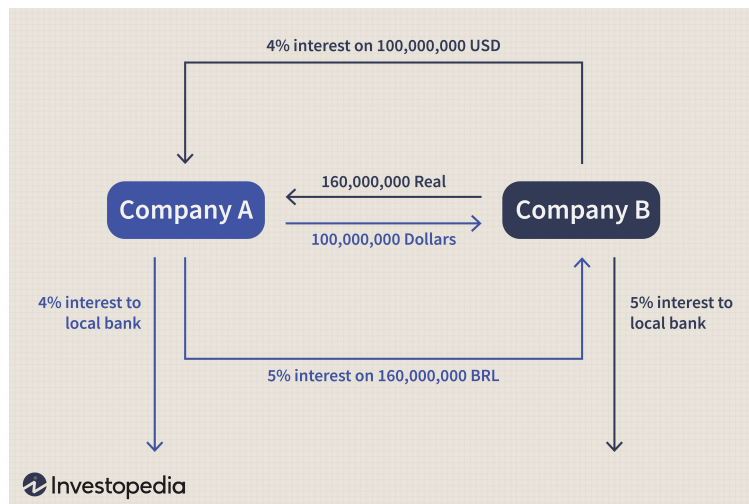


Figure 1 : FX SWAP Example; src: Investopedia

1.7.2 Futures Index Contracts

Futures contracts are an instrument used by investors to hedge investments in the stock market.

These contracts ensure that the investor gets the returns on the index on a future date. Unlike stock futures, index futures are bought against indices like S&P500 instead of your stock.

Futures contracts are usually paid out quarterly. That is, they are short. While your stock holdings are usually long. This is very similar to the Pairs Trading, except that one part of the pair is an index and the other is stock.

This option is chosen especially when the invested stock has no derivative futures contracts available. While investing in Futures, the investor takes into consideration, the speculations about the movement of the indices. Index futures themselves are derivatives. Index futures can be used to hedge against multiple commodities like currency, equities, commodities etc.

A lot of these Index contracts or index futures are based on equities. The futures contract price determination usually involves a multiplier. For example, the E-Mini S&P500 Futures contract has a multiplier of 50. That means the futures contract will be 50 times the index value of E-Mini S&P500. Futures contracts are also available for NASDAQ, Dow Jones, Frankfurt Exchange and Hang Seng Index.

These index contracts have variable prices which fluctuate while the contract lasts. The investor is not needed to have the full contract amount paid upfront. They just need to maintain some amount in their account to move forward with the contract. The amount used to initialize the contract trade is called the Initial Margin.

Investors are also expected to always keep a Maintenance Margin, that is an amount that is a portion of the contract cost. This maintenance margin is used to cover any losses incurred to the trader during the contract period. NYSE requires the investor to maintain a minimum of 25% of the contract value in the account as the Maintenance Margin. Some brokers might request a higher margin to cover potential losses. In case the value of the trade increases before the end of the contract period, the broker can ask for an increase in the margin amount. This is called Margin Call.

Unlike Options contracts, which are more like a right that the users can choose to exercise, the Futures contracts are more of a legal agreement between the buyer and seller. The buyer agrees to purchase an Index on a specified future date at a predetermined price. These contracts are settled Quarterly, though there are several contracts available for yearly settlement as well.

If on the expiry of the contract, the index is trading at a higher amount than the price at which the contract was signed, the buyer has made a profit. In case the index has been bearish, the buyer has suffered a loss.

1.7.3 Foreign Currency Loans under Peg

A user can get a loan from a different country with a different currency. The loan is also repaid in the foreign currency. The bank that you apply for a loan to, borrows the money from a bank in a different country. Your bank then exchanges the currency of the foreign bank into your local currency. Then when you repay the loan in your local currency to your local bank, the local bank converts it to the foreign currency and transfers it to the foreign bank.

On both the transactions, of borrowing as well as repayment, Foreign Exchange Rate plays a big role. Individuals opt for foreign currency loans because other countries may offer lower interest rates than the local banks. Though this is much left to an educated guess as the interest rates of any country can go up and down anytime.

The exchange rates also play a crucial role. If the exchange rate drops after borrowing, the borrower has to repay less amount than borrowed. Similarly, if the exchange rate goes up, the borrower has to pay more plus the increased interest.

Foreign currency loans can turn out to be huge gambles as the most important factors, interest rates and exchange rates are bound to fluctuate. The borrower is hoping that the interest rates in the foreign country he's borrowing from would not significantly go up. At the same time, the borrower will also expect the FOREX rate to go up by much, and rather go down.

For example, consider a person who borrowed 100,000 INR in a foreign currency loan at an exchange rate of 100. If the exchange rate goes up to 105, the repayment amount goes as high

as 105,00 INR plus interest. Similarly, in case the exchange rate goes down to 90, your repayment amount goes down to 90,000 INR with interest.

If the exchange rate sways a lot, it may even wipe out any gains that the borrower was expecting from the lower interest rates. Forecasting changes in foreign exchange rates and foreign currency loan interest rates is not an easy task and hence, it is very risky to invest in foreign currency loans.

To tackle this, many countries choose to fix their exchange rate to a certain value for foreign currency. This policy is called Currency Pegging. Pegging fixes the exchange rates for the country's currency with another foreign currency. With the Forex rates pegged, foreign currency loans become much more predictable.

With the forex rates remaining stable the only variable in the equation is the interest rate, which can still go higher or lower. But with the risk of forex rates increase removed, the foreign currency loans can turn more predictable and profitable for the borrowers.

Currency Pegging has its risks though. Currency Pegs can distort the market if the pegged rate is too far from the actual rate. In this case, the central bank of the government needs to keep a lookout for the demand and supply as well as manage the cash flow in the country.

Pegging might need the country to use up all its reserves to maintain the forex rate of the currency. The country, in turn, will also have to maintain a large amount in forex reserves to save itself in the event of excessive trade against the currency. As a result, volatility in forex trading is stemmed.

Another side effect is that the liquidity in the country is affected. In the case where the forex rate is pegged too low; The consumers will have to pay more and hence the purchasing power is taken away. This can lead to higher inflation rates and lead to systemic failures.

If the forex rates are pegged too high, consumers will prefer buying imported goods than locally manufactured goods. As a result, it will get costlier to produce locally, leading to industry-wide shutdowns, unemployment and again, systemic failure. This has happened before in the instance of pegging the British Pound against the German mark during the early '90s.

In any case, the peg will need to be removed and the consumers will have to face the grunt.

1.7.4 Hedging Techniques

1.7.4.1 Forward Contract

Consider a scenario where you go out to buy vegetables. You go to the vegetable vendor and ask for a Kg of potatoes. The vendor claims he is out of potatoes, but he can get you some by the evening. The current Market price for potatoes is, let's assume, 10Rs per Kg. You and the vendor agree that you pay 10Rs now... and when you visit again in the evening, he will give you 1Kg Potatoes.

This agreement between you and the vendor is called a forward contract. Two parties agree to buy or sell a commodity on a future date or time at a certain rate.

The price of the potatoes may remain as agreed, increase or decrease based on the market. Let's say the potatoes are at the same price... once you get your commodity, the transaction is complete and no one owes anything to the other.

But if the price has increased to 12 Rs per kg, you now owe the vendor 2RS. If the price has decreased to 8 Rs, the vendor now owes you 2 Rs.

Since these contracts are usually done between two parties only, and nobody else is involved, they are not tracked / marked in the market. Forward contracts are similar to futures contracts in the concept but there are some differences.

The forward contracts are highly customized, to suit the needs of both the parties. Hence there is no standard to them, unlike futures. The forwards are also highly risk prone. Any party can default on their end of transaction and the other party has to bear the cost.

However, due to the customizable nature of these contracts, they are often used as a hedging technique. This is beneficial to both the parties as long as the contracted price of the commodity does not vary too much from the spot price at the date / time of the trade.

Since this method is not tracked and only between the parties that are part of the contract, the exact size of these contracts cannot be readily estimated.

Organizations usually make use of such contracts in barter style transactions where they share resources with each other instead of money. As a hedging technique, organizations use these contracts to hedge against price rise of commodities by agreeing with their vendors for a price.

This is also very similar to how you give out a contract to renovate your house to a contractor. They quote a price to you and you agree to it... however, price of material is subject to change and it would then affect the contract price too... in this case, either both parties agree to bear the change in cost, or agree to pay...

1.7.4.2 Currency Futures

Currency Futures are futures contracts where the trade is done with regards to one currency which is bought by another currency, instead of commodities. Currency futures are used to speculate the price movement of a currency against another until its expiration date.

A currency futures contract is also used to hedge against Over the Counter currency trades which are non-standard in nature.

With a currency futures contract, investors aim to hedge foreign exchange risks. Currency futures are worked using Spot rates of the currency. This may affect the futures rate of the currency in a long term... however, there is also a chance that the futures for a longer term may remain unchanged as the spot rate may fluctuate short term... but may not deviate a lot from the long-term futures rate.

The two currencies used in a Currency Futures contract are also known as currency pairs or simply pairs. Currency futures contracts are tracked and are updated on the market every day. The investors are then expected to have enough balance in their accounts, over and above the margin amounts, so as to cover additional losses if any are incurred.

Investors can choose to trade the currency before the contract expires. Futures contracts usually have delivery dates every quarter.

The way this works is a company can choose to buy a futures currency contract for a currency they are exposed to. The company, as a result, fixes the price at which they can sell it in the future. This in itself has a risk of its own. IF the currency depreciates against the investors buying currency, the investor is protected from the loss... however, the investor has to let go of any profit they could have made in case the currency appreciates.

For example, if a US company invests in India and now are exposed to Forex risks with INR. They want to hedge their risk against an expected receipt at a future date in March. The US company can choose to sell currency futures contracts that the hold against the INR that they would be getting, before March.

The company decides to sell INR futures because they want their receipt to be in USD. Hence, they can sell the INR contracts now and fix the price at which USD can be exchanged with INR, thus protecting themselves from forex risk in case of the exchange rate drops.

At the same time, the company also let go of any profit they would have made if the exchange rate would have gone up. It is important to note that the cost of the currency futures contract is fixed at the time when the investor initiates the trade.

1.7.4.3 Currency options

Currency options are a type of contracts where the buyer can choose whether they want to sell the currency on or before the expiration date. This also comes with an initial cost to be paid by the buyer in terms of a premium. This premium is sometimes very high.

Currency options are often the go-to methods for companies and investors to hedge against forex risk. Currency options make use of currency pairs. Options contracts cannot be sold to another investor or organization, hence in case of any loss, the buyer has to bear the grunt.

There are two types of options available.

A call option gives the ability to the buyer to get an asset at a fixed price (strike price) for a predetermined time frame. If the bought commodity does not reach the strike price before the contract ends, the options contract expires and thus is not useful anymore.

Investors usually sell a call if they think the price of the stock is going to fall and buy a call if they think the price is going to go up.

Put option gives an investor the ability to sell an asset at a predetermined cost. The seller then must purchase the stock at the strike price. Put options can be traded before the contract ends. Put are like opposites of calls. Puts are usually bought when the stock price is speculated to fall. When the investors think the stock price is going to rise, they tend to sell put options. Put options can be sold at a premium.

Currency options trade is always short on one currency and long on the other currency. In case the exchange rates for the currency drives the options contract Out of the Money, the contract loses all its value and the investors have to face a loss.

Another option is Single Payment Options Trading also known as SPOT. SPOT is also referred to as Binary trading or Binary Options. For example, the buyer will present a situation where INR/USD will break 0.800 in 14 days. If this event happens, the buyer earns a profit. To get this option, the buyer has to pay a very high premium amount. In case the event does not happen, the buyer loses the premium amount. SPOT can have a lot of variety and accordingly, the premium also differs.

1.7.4.4 Currency swap

Currency Swap is an instrument used to tackle foreign exchange trade risks. In currency swap or FX swap, two entities exchange foreign currencies with each other. They agree to swap them back at a later date arranged at an arranged or predetermined exchange rate.

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They arrange to swap them back at the same exchange rate after 2 years. As a result, both A and B swap the same amount with each other after 2 years, thus not letting the currency volatility affect their transactions. This may even mean one of the parties loses their profitability in this case. However, they both can ensure the losses are reduced cumulatively.

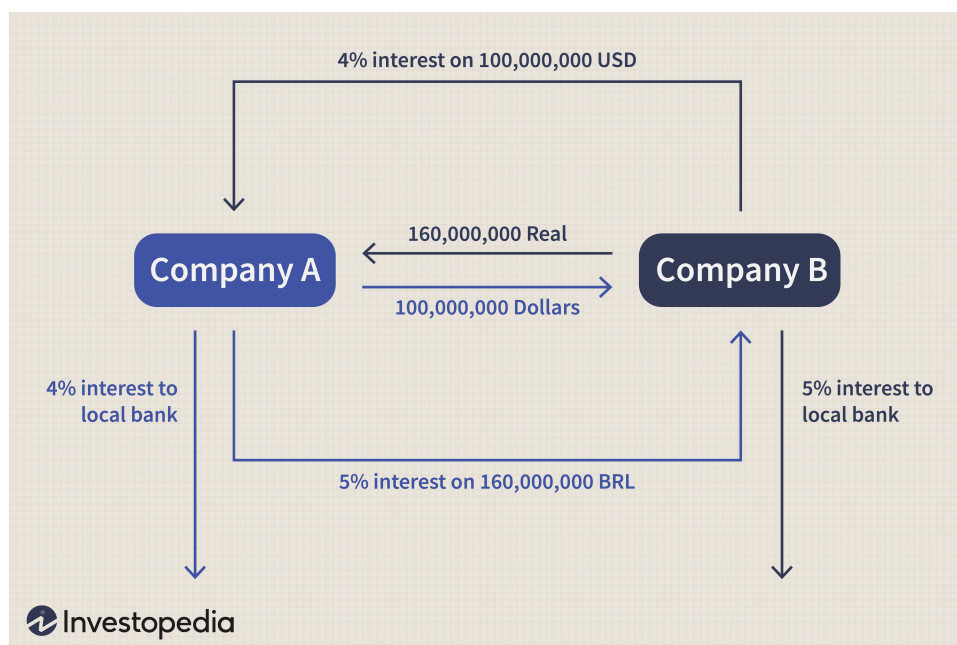
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This is used especially when certain entities need to borrow money from a certain country where they expect the currency to strengthen in the coming years. For example, entities that borrow from India are wary that INR might strengthen in the coming years. And hence they might opt to perform FX swaps with Indian entities to reduce their payback cost in INR.

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This way, the borrower may even pay less interest than if they would have incurred in a traditional FX market.

Currency swaps have now become the largest portion of daily transactions in the global FX market. Financial institutions often perform FX Swaps for non-financial corporations.



1.7.4.5 Foreign Debt

Foreign debt is when organisations, individuals and even the government borrows money from another country or an international organisation (like the World Bank). Money can be borrowed for various reasons including but not limited to taking care of disasters, epidemics, etc.

They have to borrow money from outside because the capacity to lend huge amounts may not be available locally, especially in countries that are still developing. Organisations like IMF and world bank provide such much-needed funding to developing or underdeveloped nations and lower interest rates on humanitarian grounds along with exceptional payment options.

However, too much foreign debt can lead to the downfall of the entire economy of the borrower, and in turn, even the lender may have to suffer huge losses. Such borrowing is often undertone with forex rates. Since the loan is taken in the currency of the lender, any drastic movement in forex of the borrower against the lender can initiate a huge cascading effect on both economies.

This is overshadowed also by the borrower's economic policies, debt management etc. If the borrower faces economic slowdown or severe market deficit etc, it can lead to a debt crisis and either the borrower will have to borrow more money to get out of it, or will have to file for bankruptcy.

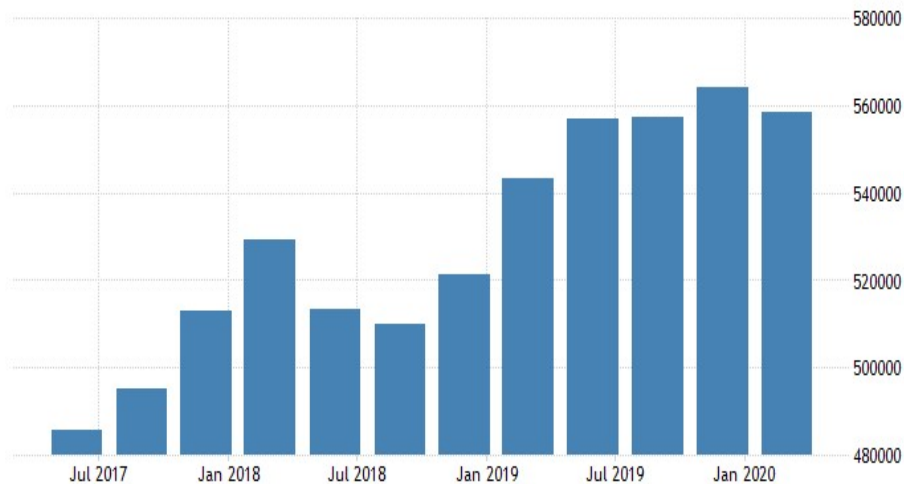
We have seen similar situations happen already in the recent past. One of the examples: the Greek Economic Crisis.

Whatever the nay says, foreign debt is also sometimes used as a Hedging technique. For example, Coca Cola India indulges in debt from the US as they are a US-based company. They aim to protect the Forex risk against movement of INR / USD. If they borrow in USD and USD / INR goes up, they have to pay less in INR to cover the same Debt. At the same time, if USD/INR falls, the amount they borrowed in USD can give them a better valuation when they are operating in India.

There are also losses that they may incur due to this movement in Forex, however, with their operations going on in INR, their risk is minimized along with their profit margin. Hence organizations do not usually look for foreign debt.

Developing nations like India usually borrow from developed nations like the US. India's Foreign Debt with the US as for First Quarter of 2020 stands at 558548 million USD.

India's Foreign Debt:



SOURCE: TRADINGECONOMICS.COM | MINISTRY OF FINANCE, GOVERNMENT OF INDIA

1.7.4.6. Cross Hedging

Cross Hedging is a technique used by investors to hedge against a commodity, using a similar commodity. The commodities that are invested in have a positive correlation. For example, an investor buys Gold but at the same time wants to invest in a cross and hence also buys Platinum as a hedge.

For example, a Transport company consumes a lot of Petroleum and decides to purchase futures in Petroleum so as to secure their budget against fluctuations in the price.

However, there are no suitable contracts available in Petroleum where they can invest in. But they find suitable futures contracts available in Jet Fuel instead.

So, the company invests in Jet Fuel futures as a hedge to secure their position against the rise in petroleum costs. Since Jet Fuel and Petroleum are closely related, any movement in one will more or less be also reflected in the other. Hence the company will always look to have an opposing position the Jet Fuel investment.

1.7.4.7 Currency Diversification

A traditional portfolio is usually invested in a single currency. Because of this, the forex risk is very high with a single point of failure. To mitigate this, investing in multiple currencies is preferred as a hedging technique.

Investors buy contracts in different regions/currencies to counter the movement in one currency. The investor would then usually buy foreign currency itself as a commodity to counter the movement in exchange rates. The investor would usually look for healthy and developed expanding economies to trade in.

For example, an investor is largely curating a portfolio in USD might want to diversify their portfolio. In that case they would be looking at economies like NZ or AUS. Australia is a healthily expanding economy which also offers its currency as a commodity to be purchased. Hence the investor would purchase Australian Dollars to minimize risk to Forex rates against USD.

The foreign currency used is often with a negative correlation. If the correlation is positive, the investor would try and get an opposing stand on the other currency so as to effectively mitigate the movement in forex rates.

Usually the buyer would look to invest in multiple foreign currencies and not just one. The more currencies are used in investment, the lower the risk for forex rates to impact the investment. Though it also increases the factors affecting the investment and thus a balance needs to be attained.

Chapter 2

2.1 Research Objective

- To understand the Foreign Exchange ecosystem.
- To understand the different types of Financial and currency risks.
- To study the hedging techniques used to mitigate currency risks.
- To examine various factors affecting currency risk and in turn the profitability of the company.

2.2 Research Methodology

2.2.1 Research Design:

It is a descriptive research as the factors affecting a firm's profitability due to currency risk were examined statistically.

2.2.2 Methods of Data Collection

Various macroeconomic factors affect the currency risk and hence the profitability of the firm. The main part of the Study deals with Indian corporate enterprises and their mitigation strategies towards foreign exchange risk exposure. The required data were collected through multiple channels. Information relating to contemporary practices in India and abroad was obtained from published sources such as journals, reports, and related websites.

The historical data for these factors and firms have been taken from secondary sources such as RBI, Annual reports of TCS, Wipro and Reliance and IMF.

2.2.3 Sample for the Study and Research Tools:

The study aims to understand Indian businesses' FERM practices which include an appreciation of the foreign exchange exposure policies or other restrictions or impediments faced by businesses. The research focuses on derivatives and is thus limited to non-banking firms. The banks have been not included in the framework of the study, as they use and sell derivatives. MNC 's Indian subsidiaries' risk management activities are decided by their parent companies and, thus, they are not included in this report. Microsoft Excel has been used to evaluate the responses.

Chapter 3

3.1 Data Analysis

In this study, I have considered three companies which include TCS, Wipro and Reliance. The reason behind choosing IT firms is they deal with currency risk on a frequent level and hence are prone to currency risk.

It is not easy to understand how and where currency fluctuations impact the working capital of a business. Different variables – from domestic macroeconomic dynamics to competitiveness within business segments – decide how currency rates impact the cash flows of a company. Mathematical risk-management tools help managers quantify risks. But it is important to understand where and how currencies will alter the company's value. Each variable has varying effects on profitability and cash flow and needs a different risk management strategy.

3.2 Findings

3.2.1 Tata Consultancy Services (TCS)

In different foreign currencies, revenues of the Company are transacted. Because of the nature of the business, the Indian Rupee covers a large proportion of its costs. This shows currency fluctuations in the Company. The Board of Directors has formed a Risk

Management Committee (RMC) to create, execute, and track the Group's risk management strategy covering the risks of foreign currency exposure. The group uses different financial tools, such as the foreign exchange forward, monetary options, and future transactions in which the counterpart is usually a bank according to guidelines and structures are given by the RMC.

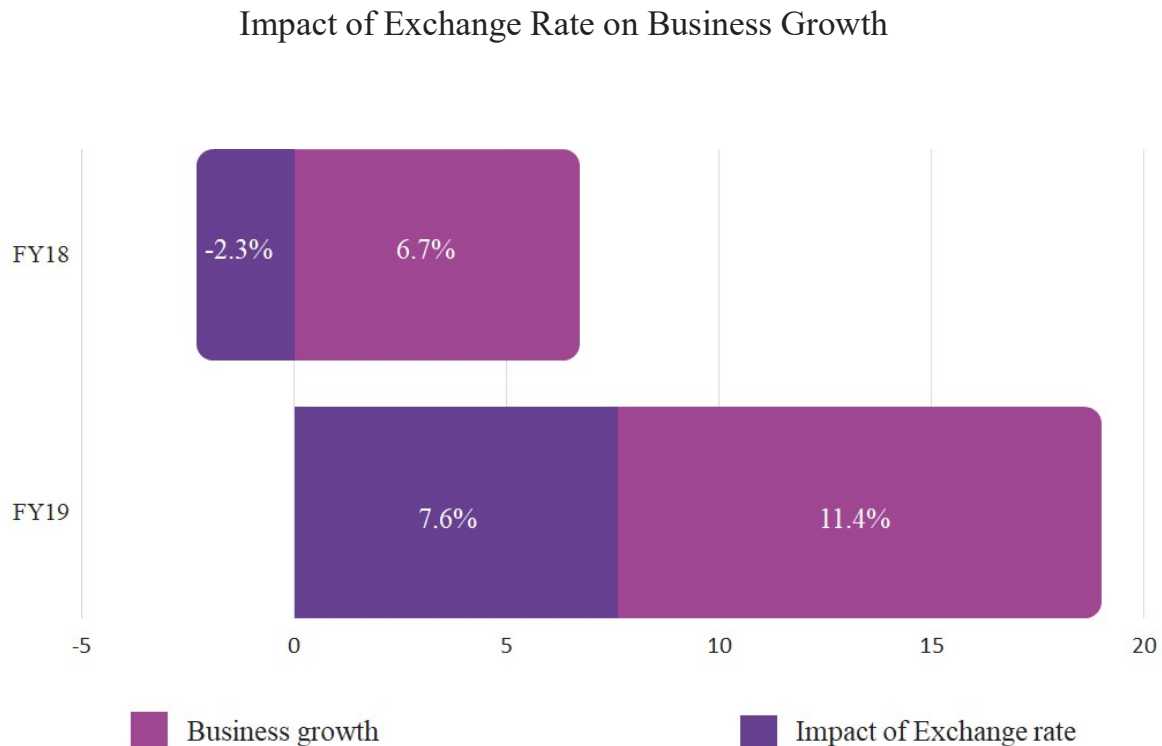
The following table gives an overview of the consolidated financial results of the company:

Parameters	FY 2020	% of Revenue	% Growth	FY 2019	% of Revenue
Revenue	156,949	100	7.2	146,463	100
EBITDA	42,109	26.8	6.6	39,506	27

In FY 2020, TCS revenue increased 7.2%, compared with 19.0% in the previous year. Part of the year-on-year decline is due to the lower monetary gain earned in FY 2020 which was

about 7.6% in 2019 and 0.1% in 2020. The demand for financial services and vertical retail services was unpredictable too.

The three major currencies considered in case of TCS are USD, GBP and EUR. The currency exchange rates movement impacted positively. It has a positive impact of 0.1% on the reported revenue.



The highlighted risk for the year 2020 was the impact of Covid-19 pandemic. Because of the incapacity of parts of the global workforce due to the exposure to the pandemic, the business activities were adversely affected. Owing to worker stress and emotional well-being during lockdown and quarantines, productivity was decreased. It was another explanation that some workers couldn't do their work from home on account of logistical or security reasons or contractual reasons, or that providers couldn't provide TCS service.

This affected growth in sales and delivery obligations of services. The company's demand for services has been adversely affected by a sharp slowdown in major world economies, not only in manufacturing but across other segments. In the short to medium term, this is expected to influence the company's profits.

Volatility in currency exchange movements resulted in transaction and translation exposure. Since the market was volatile and home currency of TCS is Rupee, appreciation of the Rupee

against any major currency impacted the revenue and hence face losses. However, the revenue steadily grows as the activities and services have not stopped.

Geographic Concentration of Credit Risk

As of March 31, 2020		
	Gross %	Net %
USA	44.94	45.66
India	11.56	10.01

To mitigate this risk, TCS used their hedging policy. It is aligned with the marker policies and practices which helps in reducing the impact of risk. TCS uses derivative instruments such as foreign exchange forward, currency options and futures contracts.

3.2.2 Wipro

Wipro operates internationally and hence a major portion of their business is transacted in several currencies. Consequently, the Company is exposed to foreign exchange risk through receiving payment for sales and services in the United States and elsewhere which includes making purchases from overseas suppliers in various foreign currencies. The exchange rate risk impacts the foreign exchange revenue, receivables, cash balances, forecasted cash flows, payables and foreign currency loans and borrowings.

A significant portion of our revenue is in U.S. Dollars, United Kingdom Pound Sterling, Euros, Australian Dollars and Canadian Dollars while a large portion of our costs are in Indian Rupees. The exchange rates between the rupee and these currencies have fluctuated significantly in recent years and may continue to fluctuate in the future.

Wipro mitigates the exchange rate exposure by using foreign currency derivatives. Derivatives such as foreign exchange forward/option contracts are used to hedge cash flow risk.

As of March 31, 2020, a `1 increase in the spot exchange rate of the Indian rupee with the U.S. dollar resulted in approximately `1,972 million decrease in the fair value. The total hedges shall be 45% to 100% of the next four quarters.

Wipro deals with derivative instruments which focus on mitigating the impact of foreign exchange exposure on Profit and Loss account. Wipro's Hedge Book stood at \$ 2.7 billion dollars.

As a Percentage of Revenue	FY 2019	FY 2020	YoY Change
Gross Margin	31.10%	30.00%	-1.10%
Revenues	568,253	594,041	4.50%
Effect of currency risk on cash and cash equivalent	526	1,922	1,396
EPS (Basic)	14.99	16.67	11.20%
EPS (Diluted)	14.95	16.62	11.20%

The results of Wipro for the first quarter were robust. The COVID-19, Wipro, carried out personnel and cost control activities to raise profits, played a major role in this. In constant currency terms, sales in the first quarter dropped 4% year-round. In all sectors, Wipro has seen tough demand and some of the hardest hits. The organization also displayed its success in cost control, even though the top line dropped. Owing to increased usage and offshore mix, Wipro's operating margin was 90 basis points year-round.

3.3.3 Reliance Industries Limited (RIL)

Foreign Currency Exposure						
Particulars	31st March 2020			31st March 2019		
	USD	EUR	JPY	USD	EUR	JPY
Borrowings	1,25,212	18,820	10,717	79,540	9,387	2,401
Trade and Other Payables	77,663	855	17	76,814	1,570	-
Trade and Other Receivables	-11,499	-1,738	-7	-9,257	-166	-3
Derivatives						
- Forwards & Futures	-52,219	-16,558	-10,704	-17,865	-10,504	-2,375
Currency Swap	-3,712	-	-	775	-	-
Options	-3,620	1,929	-	-3,987	-	-
Exposure	131,825	550	23	126,020	287	23

Foreign Currency Sensitivity						
Particulars	31st March 2020			31st March 2019		
	USD	EUR	JPY	USD	EUR	JPY
1% Depreciation in INR						
Impact on Equity	-601	-3	-	-753	6	-
Impact on P&L	288	-11	-	94	-9	-
Total	-313	-14	-	-659	-3	-
1% Appreciation in INR						
Impact on Equity	601	3	-	753	-6	-
Impact on P&L	-288	11	-	-94	9	-
Total	313	14	-	659	3	-

Reliance uses long-term debt of foreign currency, mainly to finance its capital assets in USD, EURO, and JPY. Reliance also provides its working capital with short-term foreign currency liabilities.

The market value of Foreign Exchange contracts and currency derivatives is estimated at the balance sheet date based on projected exchange rates and yield curves.

Chapter 4

4.1 Conclusion

In this report, an analysis of the effectiveness of foreign exchange derivatives in managing foreign exchange risks are explained. Forex exposures are managed by the treasury departments in Wipro, Reliance Industries Limited, and Tata Consultancy Services Limited. These three companies use a centralized approach to manage foreign exchange exposures. The companies have a clear understanding of their foreign exchange exposures which includes translation, transaction, and economic exposures. The companies change their hedging strategies in response to the fluctuations in exchange rates. However, all three companies have different hedging requirements to manage their foreign exchange exposures. Hence, these companies use a mix of foreign exchange derivatives in their strategies to manage their foreign exchange exposures. The management of forex exposure of RIL appears more complex than that of TCSs and Wipro's.

4.2 Recommendations

The companies aren't transparent about their foreign exchange exposure. As mentioned in this study, we see that TCS and Wipro do not show their foreign exchange exposure when compared to Reliance Industries. In the case of Reliance Industries, if they show sector-wise foreign exchange exposure, it might help in understanding the impact and do an in-depth study. The same goes for the other two companies i.e. TCS and Wipro. Reducing the secrecy and being transparent about the exposure and the hedging strategies used will help them in the future.

4.3 Limitations

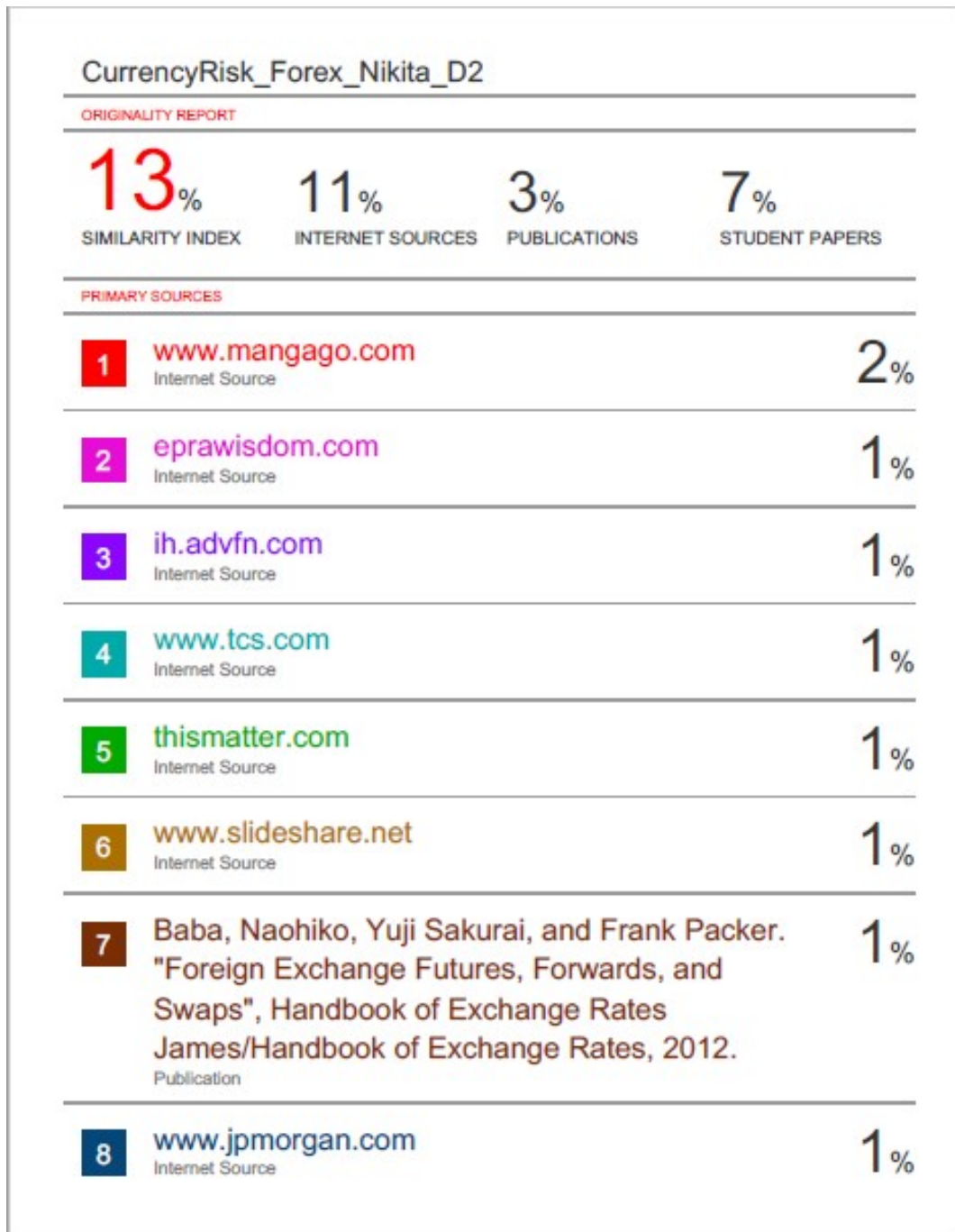
The study may not be accurate, as the data is not available on the internet or in the annual reports of the company. Currency rate changes so do the currency risk and since there is not enough transparency about the foreign exchange exposure, it is difficult to provide accurate data. The data for some information has not been taken from the official sites but news articles such as Mint and Bloomberg.

Annexures

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