

Corporate Risk Management with the help of Futures and Options

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Abstract: Derivatives have increased in popularity since their introduction because they allow the creation of new investment products and the management of risk at a lower cost. Derivatives may also be used to mitigate potential risk. Risk management can be done using derivatives instruments by the corporates and banking institutions. Risk management process is an iterative process that helps companies and banking institutions reduce the chances and effects of adverse events while enhancing the realisation of opportunities. This process includes mainly five steps: setting objectives, detecting and identifying events, assessing and prioritising risks, selecting a risk response, and controlling and monitoring activities. Hence, the present study is an attempt to know the risk management process, strategies and techniques of corporates and banking institutions and to determine that investors decisions of investing in derivative market can affect corporate risk management or not. The study finds that firms utilise derivative products for a variety of reasons, including reducing financial restraints and alleviating the company's financial suffering. It has been noticed that while derivatives can reduce risk, they don't necessarily result in higher earnings.

Keywords: Corporate Risk Management, Futures and Options, Derivatives, risk exposure

Introduction

Origin of Indian Derivatives Market in India

Derivatives market in India has been in existence from 1875. The Bombay Cotton Trading Association started futures trading way back in 1875 in the area of commodities. Looking way back in history it suggests that India became one of the world's largest futures trading industry by 1900. However, in 1952, which is after independence, the government of India officially banned cash settlement and options trading. Derivatives trading was shifted to informal forwards markets. The notice of the Securities Laws (Amendment) Ordinance, 1995 provided for withdrawal of prohibition on options in securities. The ban on futures trading in many commodities was uplifted in the last decade, beginning the year 2000. Around that period, there was also the setup of National Electronics Commodity Exchange. The National Stocks Exchange, an electronic based trading exchange came into existence in 1993 and the Bombay Stock Exchange was already functional for more than 100 years. The NSE started to trade in CNX Nifty Index Futures on June 12, 2000 based on CNX Nifty 50 index. Over BSE, although forward trading was in the form of Badla trading, but derivatives trading formally lifted in its present form after 2001 only.

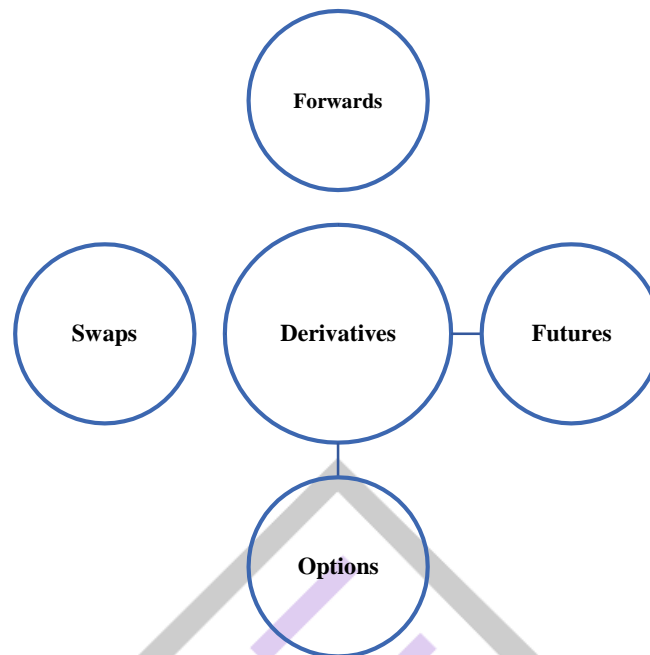
How is derivative market in India?

As mentioned earlier, Derivative market in India commenced in 2000 when NSE and BSE started trading in equity derivatives. Since then, India has become an enormous and vibrant market for derivatives and has beheld huge growth in terms of trading value and number of traded contracts. Derivatives in share market has become more prominent as investors for avoiding risk wanted to protect themselves against uncertainties due to fluctuations in prices of assets. The derivative products reduce the impact of the fluctuations in asset prices and thus it serves as a tool of risk management. Risk is transferred from risk averse investors to risk takers through these strategies. Value in derivatives is derived from other existing asset classes such as equity, commodity, currency, etc. There are three participants in the derivatives market namely Hedgers, Speculators and Arbitrageurs and four types of derivative instruments such as forwards, futures, options and swaps.

How derivative market in India works?

Derivatives is the financial instrument which derives its value from the value of underlying asset. The party which agrees to buy in future is called as long party and which sells in future is called as short party. The underlying assets from which values can be derived can be stocks, bonds, indices, currencies or commodities like gold, silver, oil, natural gas, sugar, cotton, coffee etc. Derivatives serves the purpose of risk management. Among the three participants in the derivatives market hedgers and speculators/traders are the most prominent ones. Derivative market works due to these three market players. **Hedgers** are the owners of the underlying asset who use derivative markets to eliminate or to reduce the risk which is associated with the asset price. They wish to transfer the future price fluctuation risk and majorly there are hedgers in the derivative market. **Speculators** take positions in market based on the predictions of the future movement of price of the underlying asset. They are the ones who consumes risk. To get the extra leverage they transact the futures and options contracts. Speculators can own or not own the underlying assets when they hold derivative positions. **Arbitrageurs** are the third market participants in the derivatives market. They are the ones who take the advantage of the price difference in a product of two different market locations. They purchase an asset of cheaper price from one market / location and sells the same in another market at a higher price. They are in the market only for profits. They take offsetting positions in the two markets to lock in a profit.

□ **Different products available in derivatives market**



□ **Risk associated with derivative products**

The value of derivatives is derived from the underlying securities and likewise the risks in derivatives are also derived from those underlying assets.

1. Counterparty Risk
2. Market Risk
3. Liquidity Risk
4. Foreign Exchange Risk
5. Credit risk

□ **Advantages of derivative products as risk management**

1. Hedging risk exposure
2. Underlying asset price discrimination
3. Market efficiency
4. Access to unavailable assets or markets

□ **Reasons why corporations engage in risk management**

- Reduced uncertainty lowers the cost of financial distress.
- There is comparative advantage to managers in hedging certain types of risk.
- Firms can maintain their optimal capital budget by reducing the need for external equity.
- Lower volatility decreases the risk of bankruptcy, allowing the company to expand its debt ability.
- Reduced volatility also reduces the costs of borrowing.
- Reduced uncertainty lowers the higher taxes that fluctuating earnings entails.

Objectives of the study

1. To study about Corporate Risk Management with the help of Futures and Options.
2. To determine or compute whether investors decision of investment in derivative market affects corporate risk management.
3. To determine the behavioural difference of F&O in the corporates and banking institutions and how does it impact them differently.

Research Methodology

The research is descriptive in nature. The research is based on both primary and secondary sources of information.

Research Design

Sampling Frame	Investors of Financial derivatives
Sampling Unit	Individual investors of Financial derivatives
Sample size	25
Sampling Technique	Convenience random sampling
Project Instrument	Questionnaire (Primary Data), Websites and annual reports of companies and bank (Secondary data)
Analysis Techniques for primary data	Chi square Test
Statistical tools	MS-Excel

Hypothesis

- ☐ H1: Corporates risk management is dependent on investor's technique to manage their own risk of investment.
- ☐ H2: Risk factor in corporates is dependent on investor's decision of investment.
- ☐ H3: Investor's awareness about corporates uses futures and options to manage their risk is dependent on investor's experience of investing in futures and options.

Methodology

- ☐ A structured questionnaire was developed to find out the complete information of investors investing in Derivatives Market.
- ☐ Questionnaire was designed to obtain the information about the investment characteristics, attitude, behaviour and perception of risks of corporates who are managing their risks using Futures & Options.
- ☐ Convenient random sampling technique was used to gather the information from the respondents.
- ☐ The survey was conducted in April 2021 and covered 25 investors investing in derivative market and the results were analysed using Chi-Square test using MS-Excel.

Literature review

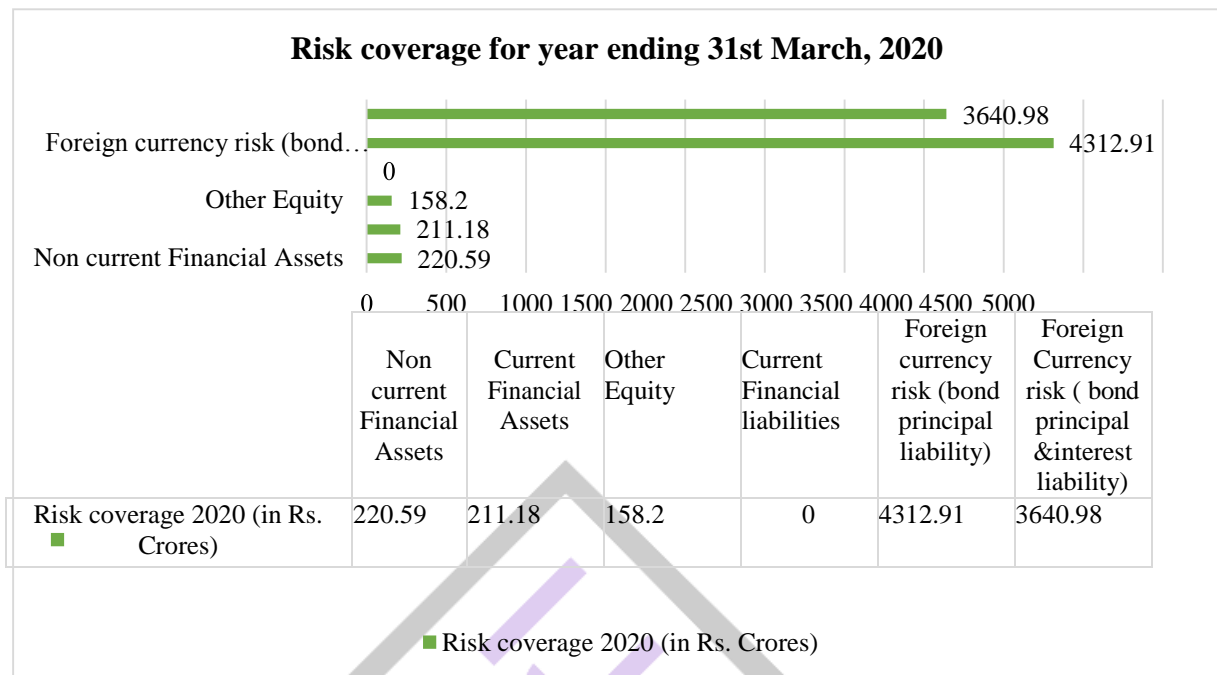
I reviewed five research papers related to derivatives market out of which 2 were international and 3 were national research papers. **Li Fen Lei (1992)** investigated a risk-averse maize producer's optimal reactions to price and quantity risk in a framework that included both futures and option contracts as risk management strategies. The optimal solution indicates that put options are used not only as for hedging purposes but also as speculative tools. The gap here was location as well as time gap. Along with that various models were used in this research paper for the study. **Ignacia Mas and Jesus Saa Requejo (1995)** examined the features of an array of trend of separating conventional financial products into futures contracts and their basic components and their basic pricing relationships. The gap here is this study is done on futures trading and risk management whereas my study has covered all derivative for main products for risk management. Along with that there is location and time gap. **Shailesh Rastogi and Chaitaly Athaley (2019)** investigated volatility integration in spot, futures and option market with a regulatory standpoint. Gap here is my study has excluded regulatory perspective. **Vasanth G, T. Mallikarjunappa** examined derivative and price risk management of nifty. Gap is that this paper mainly focuses on price risk management. My study is done from corporates point of view of risk management. **Nilesh P. Movalia (2015)** examine the impact of F&O on stock market volatility with reference to S&P CNX Nifty. He has observed the positive impact or relationship between derivatives trading and cash market and CNX Nifty. My study fills the gap by studying the impact on corporates and what are the after effects.

Data Analysis and Interpretation

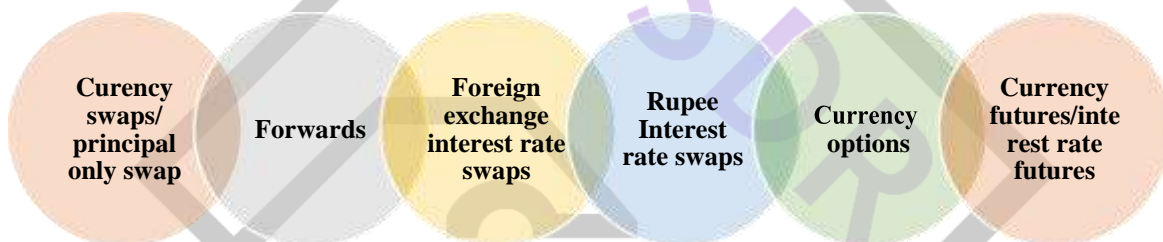
❖ ADANI TRANSMISSION LIMITED (ATL)

Business Background: Power transmission sector in India is all around ready for development with an empowering policy framework set up, large capacity additions and more opportunities for private participation through tariff-based competitive bidding. Adani Transmission Limited is a transmission company for electric power. It is headquartered in Ahmedabad, India. It is currently one of the largest private sector power transmission companies operating in India, As of July 2020, the company controlled a total network of 12,200 circuit kilometres, with more than 3,200 circuit kilometres in various stages of development. The company uses derivatives instruments as part of its management of risks relating to exposure to fluctuation in foreign currency exchange rates and interest rates. It does not acquire derivative financial instruments for trading or speculative purposes neither it does enter into complex derivative transactions to manage the below mentioned risks.

Yearly Risk Coverage of the company



F&O products of the company



Risk Management:

ATL follows the risk management policy for currency and interest rate risks while dealing with futures and options.

□ Objective of the Risk Management Policy

- To mitigate the interest rate risk
- To minimize cash flow volatility
- To achieve greater predictability to earning and protect the margin of the business.
- To mitigate the currency risk of foreign currency payables/receivables Risk Management Process

□ Risk Identification

The company is exposed to foreign currency risk and interest rate risk arising out of the following exposures.

Foreign currency risk: The Company is exposed to foreign currency risk arising out of the revenue exposures given below:

- Import of raw materials.
- Import of consumable.
- Import of services.
- Import of Capital Goods under Foreign Letter of Credit (FLC)
- ECB/FCL

Interest rate risk: The interest rate risk is due to fixed or floating rate asset or liability on the balance sheet. This occurs because of borrowing in INR or in foreign currency.

□ Risk Measurement, Revaluation and Monitoring

All currency and interest rate risk as identified above are measured on daily basis by monitoring the mark to market (M2M) of open and hedged position. The M2M is calculated using the Bloomberg/Reuters closing price of the related instrument.

Risk Management

Foreign Currency Risk

- a) The company maintains a 'Core Hedge' for the prudent risk management strategy. The core hedge is decided by Risk Management Board (RMB). The exposure management team has 3 days grace period to comply with the 'Core Hedge'.
- b) Company for converting INR loan into other foreign currency may also enter into currency swap for taking advantage of lower cost of borrowing in stable currency environment which is decided by RMB.

Interest Rate Risk

- a) INR and foreign currency interest rate risk may be hedged with the suitable products like interest rate futures and will be decided by Risk Management Board. The exposure management team has 3 days grace period to comply with the hedge.

□ **Risk Control**

- a) Risk control means to maintain effective internal controls on risk management activities to avoid unexpected losses. The company strategy is to achieve this by maintaining functional segregation so that risk control is independent of hedging.
- b) Thus, the activities of the exposure management team are then separated into Front, Middle and Back-office activities.
- c) Middle office exercises the risk control to ensure risk management is being conducted and reported correctly and properly.
- d) Risk control is also achieved by proper reporting to Board of Director via Audit Committee on quarterly basis.

□ **Separation of Duties**

The responsibilities and roles of the Front, Middle and Back Office are given in to minimize conflict of interest as part of detailed internal processes, consistent with the best practice principle of functional separation. The role of each is as defined below:

Front Office

- a) It comprises of head of exposure management and team.
- b) As imposed by lenders/ banks execution of hedges is done in line with risk management policy and external mandates.

Middle office

- a) This comprises of head of middle office and team.
- b) Exposure reports are generated and provided and monitored adherence to risk management policy and deviations from the policy are reported to the risk management board.
- c) Risk Monitoring, MTM computation and exercising control checks on the activities of front office.

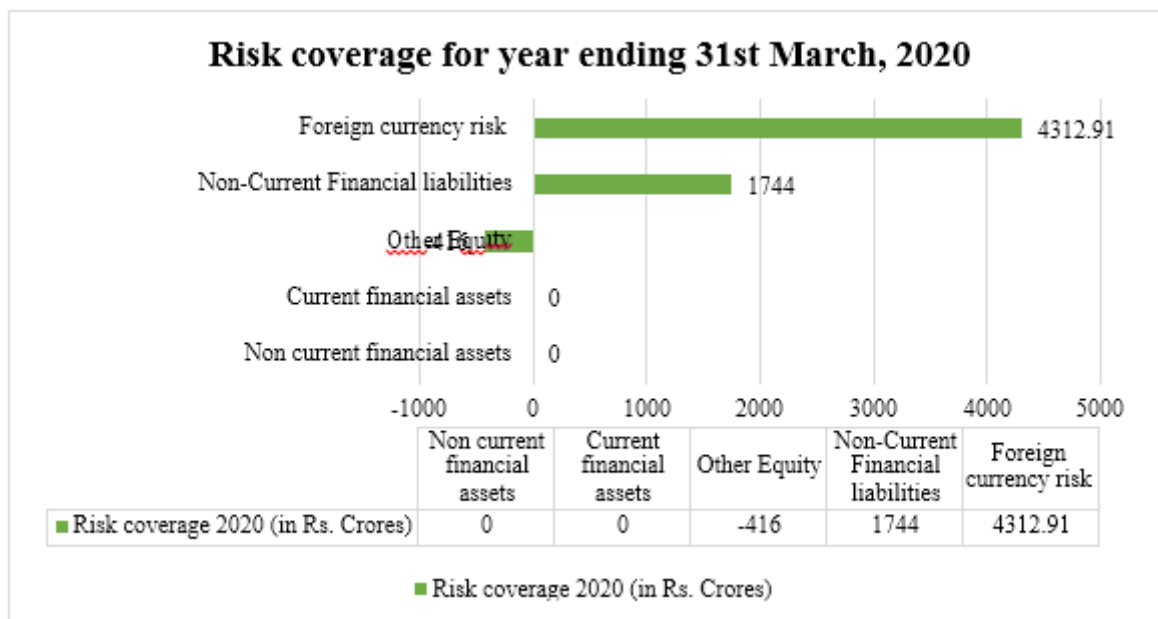
Back Office

- a) It comprises of head back office and team.
- b) Back office is responsible for accurate and timely entry of all the transactions data of hedges on real time basis, settlement of derivatives trades and confirmation with counterparties and underlying document submission.

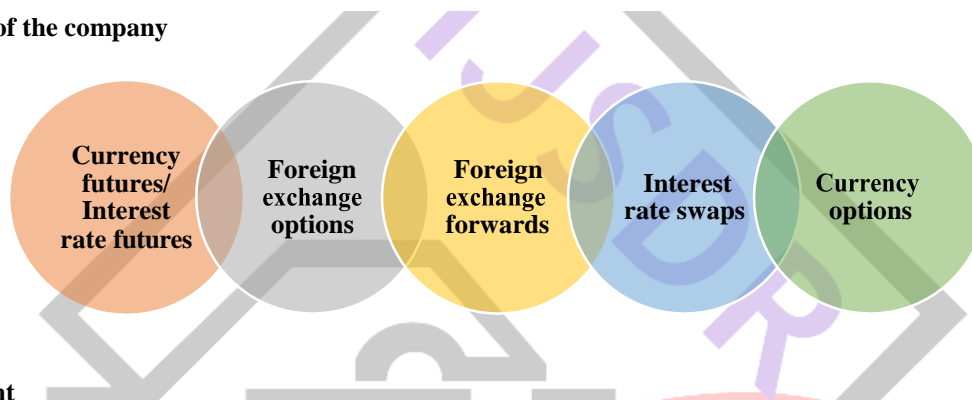
❖ **MINDTREE LIMITED**

Business Background: Mindtree Ltd. is a multinational IT and outsourcing firm based in India. Bangalore, India is the headquarters of this organisation. Derivative financial instruments, such as foreign exchange forward and option contracts, are used to mitigate the impact of variations in foreign exchange rates on foreign currency assets and liabilities, as well as expected cash flows denominated in foreign currencies. In most cases, a bank serves as the counterparty for these contracts. In most cases, a bank serves as the counterparty for these contracts.

Yearly Risk Coverage of the company



F & O products of the company



Risk Management

Mindtree Limited has a proactive and disciplined approach towards risk management using futures and options. At Mindtree, they have put in place a robust enterprise-wide risk management framework which enables identification, treatment, monitoring and reporting of internal and external risks while they pursue their business objectives. Their risk management methodology makes it easier to identify hazards in a methodical and proactive manner, and to treat them appropriately. This framework manages the risks associated with supplying products and services to customers.

Risk Management Objectives:

- ❖ To support the executive management in decision-making.
 - ❖ To reduce the magnitude of threat events.
 - ❖ To capitalize on potential opportunities.
- Risk Management Process
- Key Business Goals

Executive Management and the Board of Directors have established the enterprise risk management approach in the context of Mindtree's core business goals.

□ Risk Identification

Determining the uncertainties which could potentially impact the achievement of business objectives. The company is exposed to foreign currency risk and margin risk.

a) **Foreign currency risk**

A major portion of their revenues are in foreign currencies and a significant portion of their expenses are in Indian Rupees. The exchange rate between the INR and the USD, as well as other currencies has been very volatile in recent years and may continue in the future.

b) **Margin risk**

The company may face margin pressures due to competitive pricing, tactical movements by competitors to gain market share or escalating costs in this highly competitive environment.

□ Risk Assessment

To evaluate risks that are identified and possible impact on Mindtree.

Mindtree employs Enterprise Risk Management (ERM) as a critical tool for analysing and evaluating potential threats to the organization's scalability and long-term viability in order to meet its business objectives of creating value for investors, customers,

workers, and other stakeholders. The ERM system was created by combining elements from leading risk management standards including ISO 31000, COSO, and the IRM Risk Management Standard. The system is stewarded by the Chief Risk Officer, with risk management providing effective governance.

a) Foreign currency risk

The company has a formal Board-approved hedging policy that is assessed on a regular basis in light of macroeconomic scenarios such as US Federal Reserve actions, the effects of the COVID-19 pandemic, and other worldwide events. Judicious hedging against adverse foreign exchange exposures helps the company to minimize the impact of exchange volatility. Here, financial capitals are impacted.

b) Margin risk

Their high value and differentiated services, combined with deep domain expertise in their core business areas, enable them to mitigate the pricing pressures. An extensive cost optimization program is in progress to improve the margins. Here, financial capitals are impacted.

☐ **Risk Treatment**

Mitigate, transfer, tolerate, exploit, or terminate identified risks.

Risk treatment is done by Mindtree which follows a multi-layer integrated risk and assurance framework.

a) The operational controls layer is deployed by management which constitute the first level of protection for Mindtree. These controls are driven by internal policies and procedures. And are integrated into systems and processes.

b) The next layer of protection is of Finance, Insurance, Security, Legal and Delivery Excellence. To protect the confidentiality, risk is transferred by insurance/hedging, quality audits, contractual protections, and security controls.

c) Third layer is the oversight layer which means oversight for risks is provided through different risk and assurance programs. The Chief Risk Officer and the ERM team manage the Mindtree risk management framework to ensure the risks are identified, assessed, treated, monitored, and reported in the context of business objectives. The enforcement team makes sure that the processes in place to handle compliance with relevant laws and regulations are appropriate and functional. Mindtree has an Ethics and Compliance Committee and an Internal Complaints Committee (POSH Committee) to deal with all the issues such as whistle blowing, code of conduct violations etc. Internal audits are then conducted to evaluate and improve the effectiveness of risk management, control, and governance.

☐ **Monitoring and reporting**

To monitor and report risks and their treatment strategies.

a) The Audit Committee evaluates the internal financial controls, internal audit function and risk management systems.

b) The Risk Management Committee frame, implement, monitor, and review the Mindtree risk management policy/plan. It evaluates Mindtree risk management procedures, including risk recognition, assessment, minimization, and definition of risk appetite. It takes decisions on organization-level risk treatment options.

c) The Foreign Exchange Hedging Committee assess and monitors the ForeignExchange (forex) market conditions, review forex exposures and deciding on the hedging/de- hedging decisions within the framework of the Foreign Exchange hedging policy.

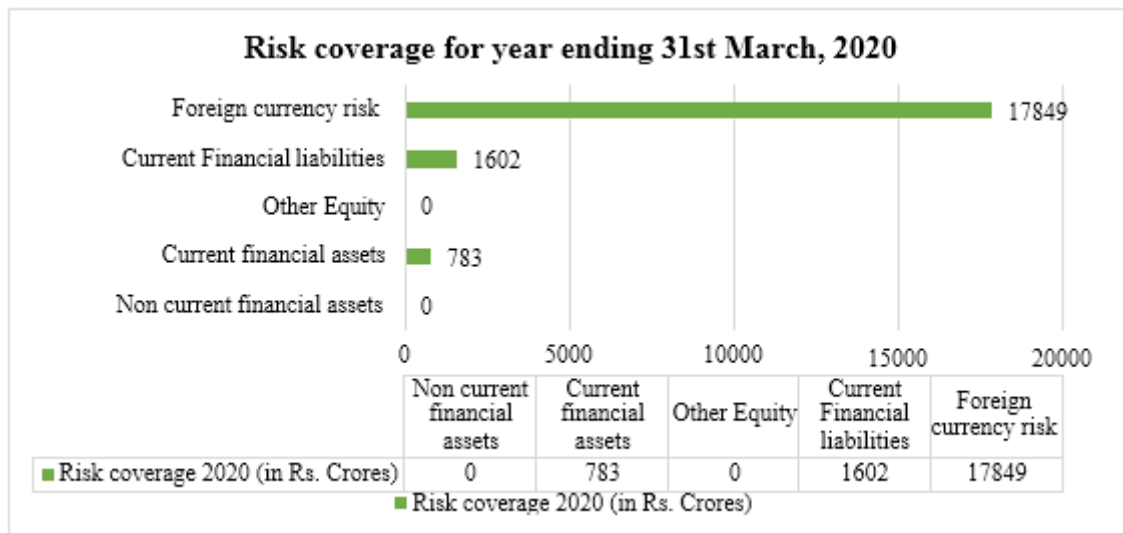
☐ **Pandemic risk**

The COVID-19 pandemic has had an impact on Mintree Limited on different levels. Risks of delivery disruptions as well as increase in financial, compliance and operations risks have impacted the company. In addition, the pandemic has impacted such that it resulted in increase in political and macro-economic risks. War room was set up and a core Crisis Management team was also formed.

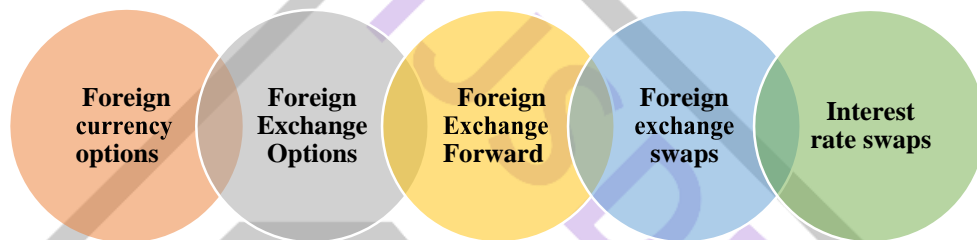
❖ **DR. REDDY'S LABORATORIES LIMITED**

Business Background: Dr. Reddy's Laboratories is a global pharmaceutical corporation headquartered in India. It is located in Hyderabad, Telangana, India. This company manufactures and markets a wide range of pharmaceuticals in India and overseas. It aims at becoming one of the top 25 discovery-led pharma companies in the world. Their challenge is to maintain current profitability and growth while undergoing the above transformation.

Yearly Risk Coverage of the company



F & O products of the company



Risk Management

Dr. Reddy's Laboratories Limited identify and assess potential financial risks and mitigate these risks through enterprise risk management (ERM) initiative. The company's activities are exposed to variety of financial risks, including market risk, credit risk and liquidity risk. The primary risk management focus of the company is to minimise the potential adverse effects of market risk on its financial performance. The policies and processes and risk management assessment are established to identify and analyse the risks faced by the company in order to set appropriate risk limits and controls and to monitor such risks and compliance with the same. These policies and process of the company review regularly to reflect changes in market conditions and company's activities.

Objectives of the ERM policy: The company's ERM function operates with the following objectives:

- To proactively identify and highlight risks to relevant stakeholders.
- To facilitate discussions around risk prioritization and mitigation.
- To provide a framework to assess the appetite.
- To develop systems to warn when the appetite is being breached.
- To provide analysis of residual risk. Risk Management Process:

□ **Risk Identification:** The ERM team's primary source for risk identification is to connect with their business units and functions. It also monitors external trends on liabilities and risks reported by peers in the industry. The team collaborates with compliance, internal audit and other assurance teams to identify and mitigate risks of business units. The identification of key business, operational and strategic risks is the main focus of the ERM function. Their response framework categorizes these risks into (i) internal (preventable), (ii) internal (strategic) and (iii) external risks. To prioritize organization-wide risks and to mitigate the risks a management level committee; the finance, investment and risk management (FIRM) council helps ERM.

□ **Risk Assessment:** To assess the risks the risk management committee follows a process for it. It consists of independent directors. Its key functions are to:

- Discuss with senior management regarding ERM and other key risks.
- Ensure it consists of significant risks along with mitigating actions taken by the management and
- Review risk disclosure statements in any public documents or disclosures, where applicable.

The risk management committee of the board oversees and reviews the risk management framework as well as risk assessment; their management and mitigation procedures. The chairman, CEO, CIA and the CCO are permanent attendees to all risk management committee meetings.

During FY2020, focus areas of risk management committee included review of the ERM framework, progress on various risks such as operating risk exposures, compliance etc.

□ **Risk Evaluation**

The company's internal audit team responsible for evaluating and improving the effectiveness of risk management, control and governance processes. To enhance and protect organizational value the internal audit team helps to provide risk-based objective assurance, advice and insight.

□ **Risk mitigation**

Risk mitigation is carried out by ERM team and is reviewed periodically and progress on key risks is discussed with the FIRM council, their senior management, as well as at the risk management committee of the Board of Directors. These include (i) the update on progress of mitigation of key risks; and (ii) specific risk-related initiatives carried out during the year.

□ **Following are the risks faced by the company in derivatives Market**

1. Market Risk: The company is exposed to market risk primarily related to foreign exchange risk, interest rate risk and the market value of its investments. Thus, the company's market risk exposure is a function of investing and borrowing activities and revenue generating and operating activities in foreign countries.

a) Foreign exchange risk: The foreign exchange risk of the company arises from its foreign operations, foreign currency revenues and expenses, (primarily in United States dollars, Russian roubles, UK pounds sterling and Euros) and foreign currency borrowings (in US dollars). A specific portion of company's revenues are in these foreign currencies and specific portion of its costs are in Indian Rupees. As a result, if the value of the Indian rupee appreciates relative to foreign currencies, the revenue measured in Indian Rupees may decrease. The exchange rate between the Indian rupee and these foreign currencies has changes substantially in recent periods and may continue to fluctuate in the future. The company uses both derivative and non-derivative financial instruments such as foreign exchange forward contracts, option contracts, currency swap contracts and foreign currency financial liabilities to mitigate the risk of changes in foreign currency exchange rate in respect of its highly probable forecast transactions and recognised assets and liabilities.

b) Interest rate risk: Company has loans with floating interest rates. These loans expose the company to risk of changes in the interest rates. The interest rate movements are monitored by the company's treasury department and manages the interest rate risk based on its policies which include entering into interest rate swaps as considered necessary. The investments in term deposits i.e., certificate of deposits with banks and short-term liquid mutual funds are for short durations and hence do not expose the company to significant interest rate risk.

c) Commodity rate risk: The commodity risk arises from the company's sales and purchases of active pharmaceutical ingredients. These commodity products prices may fluctuate over short periods of time. The raw material prices generally fluctuate in line with commodity cycles, although the prices of raw materials used in the active pharmaceutical ingredients of the company's business are generally more volatile. The commodity risk exposure is evaluated and managed through operating procedures and sourcing policies. The company had not entered into any material derivative contracts to hedge exposure to fluctuations in commodity prices.

d) Credit risk: Credit risk is financial loss risk to the company if any customer or the counterparty fails to meet its contractual obligations to a financial instrument and arises from the company's receivables from customers and investment securities. An allowance is established by the company for credit losses that represents its estimate of expected losses in respect of trade and other receivables and investments.

Trade and other receivables: Credit risk exposure of the company is influenced mainly by the individual characteristics of each customer. The customer demographics including the default risk of the industry and country in which company operates also has an influence on credit risk assessment.

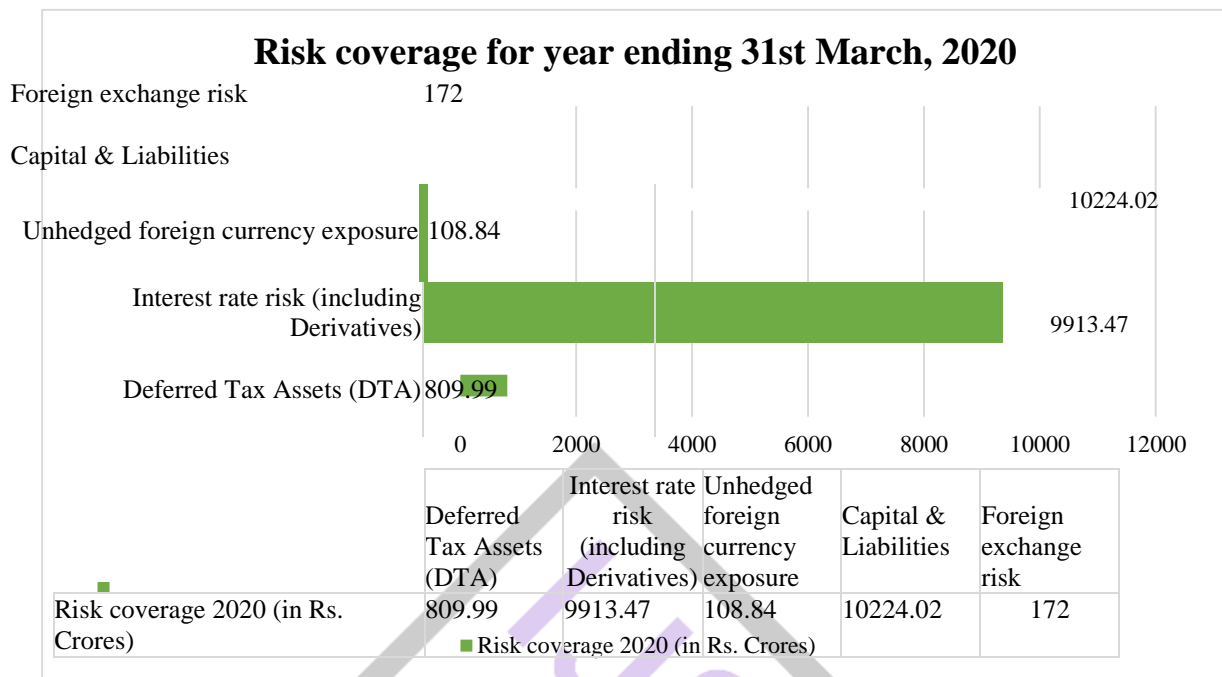
Investments: The company limits to credit risk by investing in liquid securities and only with the counterparties that have a good credit rating. It does not expect any losses from non-performance by these counter parties and does not have any significant concentration of exposures to specific industry sectors or specific country risks.

e) Liquidity risk: Liquidity risk is managed by the company by ensuring that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risk to the company's reputation.

❖ **STATE BANK OF INDIA (SBI)**

Business Background: The State Bank of India (SBI), headquartered in Mumbai, is a Fortune 500 corporation and an Indian international public sector banking and financial services statutory body. The bank has rich heritage and legacy of over 200 years and it is the most trusted Bank by Indians through generations. SBI is the largest Indian Bank with 1/4th market share which serves more than 44 crore customers through its vast network of more than 22,000 branches, 58,500 ATMs, 66,000 BC outlets. It has undeterred focus on innovation and customer centricity which stems from the core values of the Bank. Through its 11 subsidiaries, such as SBI General Insurance and SBI Mutual Fund, the bank has diversified its business. It has its presence globally and operates across different time zones through 233 offices in 32 foreign countries. The Bank is growing with time and it continues to redefine banking in India as it aims to offer responsible and sustainable banking solutions. SBI comes under top 10 largest Banks in India.

Yearly Risk Coverage of the Bank



F&O products of the Bank



Risk Management:

SBI's risk management includes risk identification, risk assessment, risk measurement and risk mitigation. Its main objective is to minimise the negative impact on profitability and capital. Bank is exposed to various risks that are the part of banking business. The major risks are credit risk, market risk, liquidity risk and operational risk. SBI has policies and procedures to measure, assess, monitor and manage these risks systematically across all their portfolios. SBI also has initiated the enterprise and group risk management projects which are being implemented with support from the external consultants.

□ **Risk Exposures by SBI Bank in Derivatives**

- The Bank currently deals in OTC, interest rate and currency derivatives as also in Interest rate Futures and Exchange Traded Currency Derivatives.
- Currency swaps, rupee dollar options, and cross-currency options are among the Bank's currency derivatives. Banks provide products to their clients to help them hedge their risks, as well as enter into derivative contracts to cover those risks.
- Derivative transactions expose the Bank to market risk, which is defined as the potential loss incurred as a result of interest rate/exchange rate fluctuations, as well as credit risk, which is defined as the potential loss incurred if counterparties fail to fulfil their obligations.
- Derivative deals are entered with only those interbank participants for whom counterparty exposure limits are sanctioned. Similarly, derivative deals are entered with only those corporates for whom credit exposure limit is sanctioned.
- The Bank retains the right to terminate the transactions as a risk mitigation measure in cases where collateral requirements for derivative transactions are not laid down.

□ **Following are the risks faced by the Bank in derivatives (Future/Option) Market**

1. **Credit Risk**

- Credit Risk Management encompasses identification, assessment, measurement, monitoring and control of the credit risk in exposures.
- For identification and assessment of Credit Risk, Bank has developed and refined the Credit Risk Assessment

(CRA) Models/Scoring Models to assess the counterparty risk by taking into account various risks.

- Conducts industry research to give specific policy prescriptions and sets quantitative exposure parameters for handling the portfolio in large/important industries.

2. Market Risk

- Market Risk Management Department (MRMD) functions as a part of risk management department of the Bank.
- MRMD is responsible for identification, assessment, monitoring and reporting of market risk associated with derivative transactions. It assists Asset Liability Management Committee (ALCO) in controlling and managing these risks and reports the compliance with policy prescriptions to RMCB at regular intervals.
- Forex open position limit, Stop Loss Limit, Aggregate Gap Limit, Individual Gap Limit is monitored when approved by the Board.
- Respective foreign offices keep track of the risk in their investment portfolios in accordance with local regulatory and RBI requirements.
- Value at Risk (VaR) and Back-testing of VaR number is carried out on daily basis. Stress testing is also done at quarterly intervals as a complement to Value at Risk.
- Market risk includes interest rate risk (including Derivatives), Equity position risk and foreign exchange risk.

Hypothesis analysis

Based on the information provided by the investors through questionnaire, the data has been analysed using Chi-square test. To know about the investor's demographic background like age, gender, educational qualification, occupation and monthly income, descriptive statistics was used.

❖ Investment Characteristics

Investors' investing characteristics

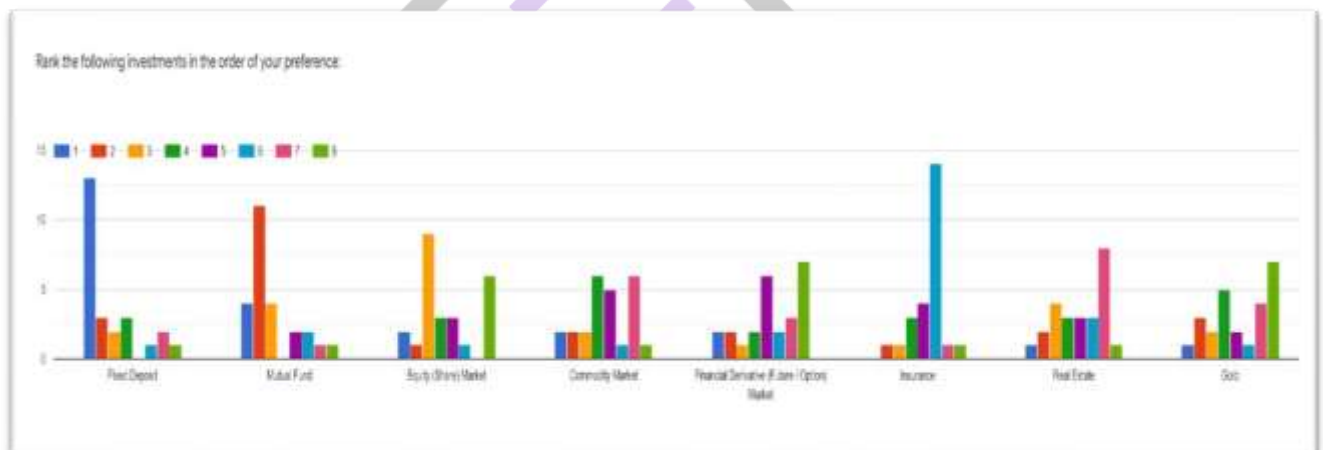
Investing characteristics		No. of Respondents	%
Investor type	Medium Term (1-5) years	12	48
	Long term (> 5 years)	13	52
Experience of investing in derivatives market	< 1 year	15	60
	1-2 years	6	24
	>2 years	4	16
Experience of investing in F&O	< 1 year	15	60
	1-2 years	7	28
	>2 years	3	12

Demographic Characteristic of Investors

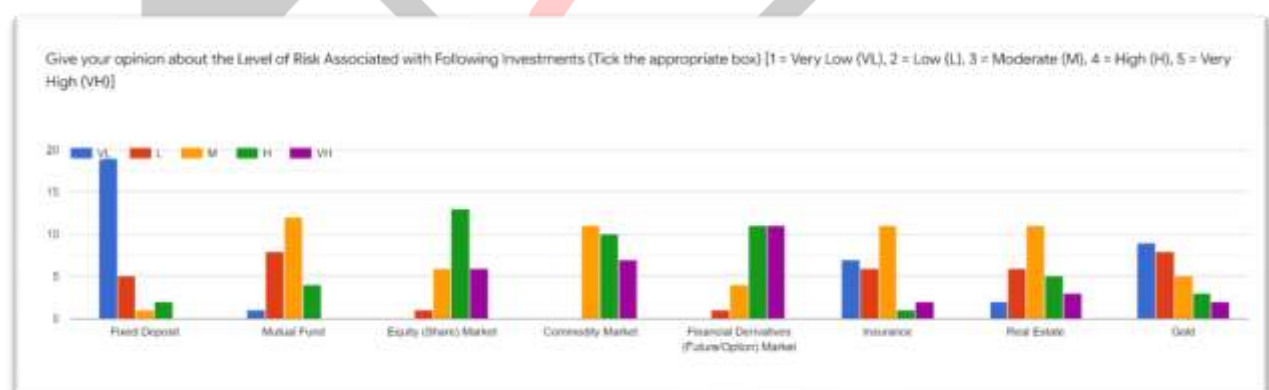
Personal Characteristics		No. of Respondents	% of total
Gender	Male	17	68
	Female	8	32
Age Group	Below 25	13	52
	25-30	3	12
	30-35	0	0
	35-45	0	0
	Above 45	9	36
Educational Qualification	Undergraduate	0	0
	Graduate	6	24
	Post Graduate	18	72
	Professional	1	4
Occupation	Student	8	32
	Salaried	11	44

	Self Employed	4	16
	Business	1	4
Area of Domicile	Rural	0	0
	Semi-urban	4	16
	Urban	21	84
Marital Status	Married	11	44
	Unmarried	14	56
Monthly Income of Family	Up to 30000	2	8
	31000-50000	7	28
	More than Rs. 50000	16	64
Total annual investment	Less than 50000	7	28
	50001-100000	11	44
	Above 1000000	7	28

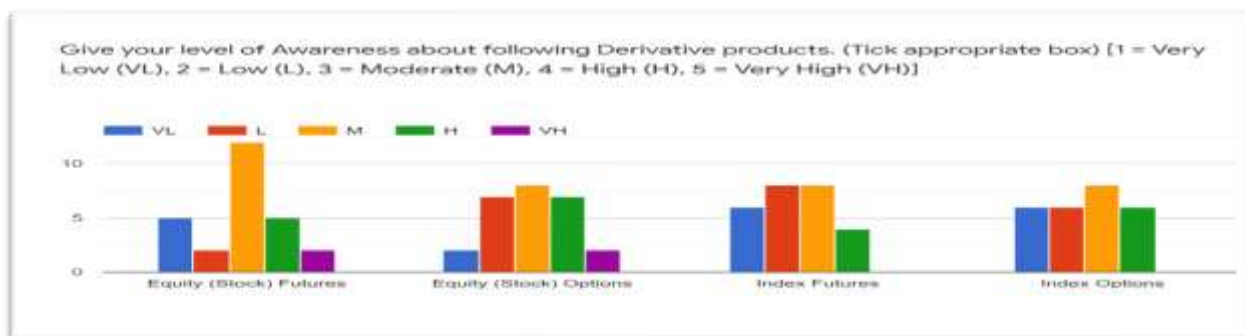
Investors' Investment Preferences



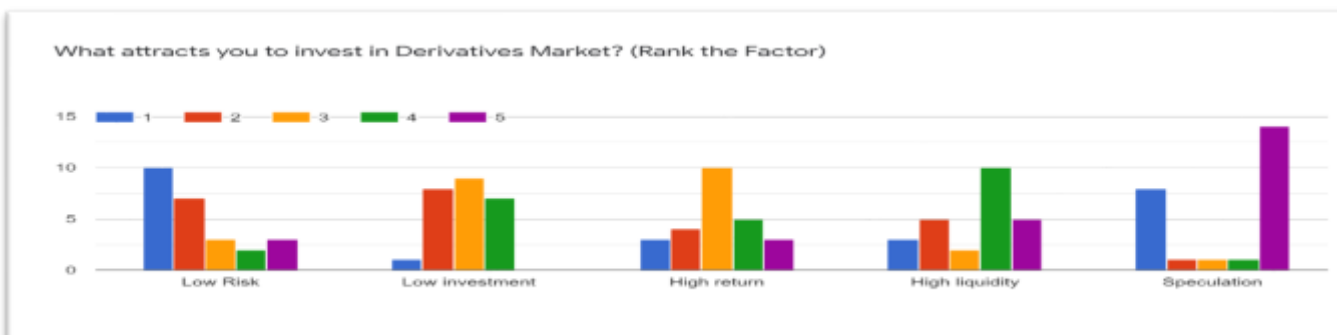
Investors' opinion of level of risk Associated



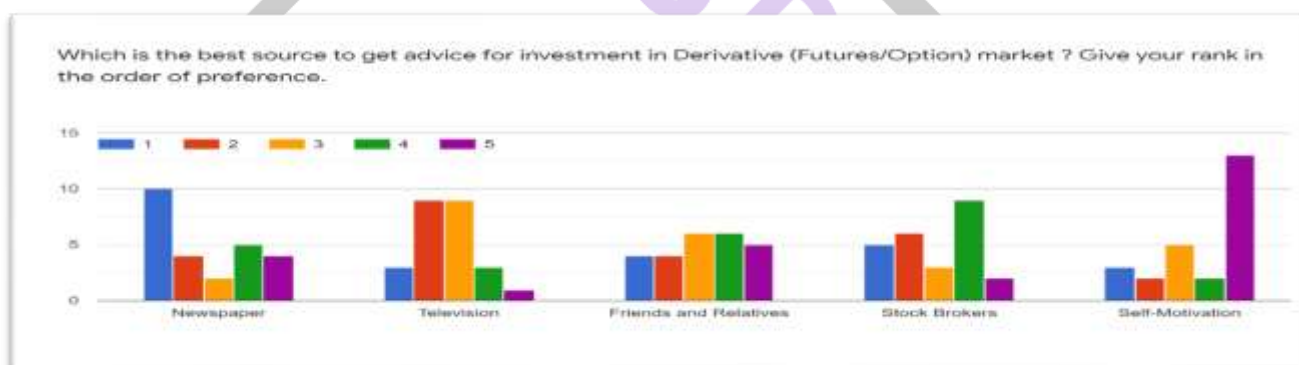
Level of awareness in derivative products



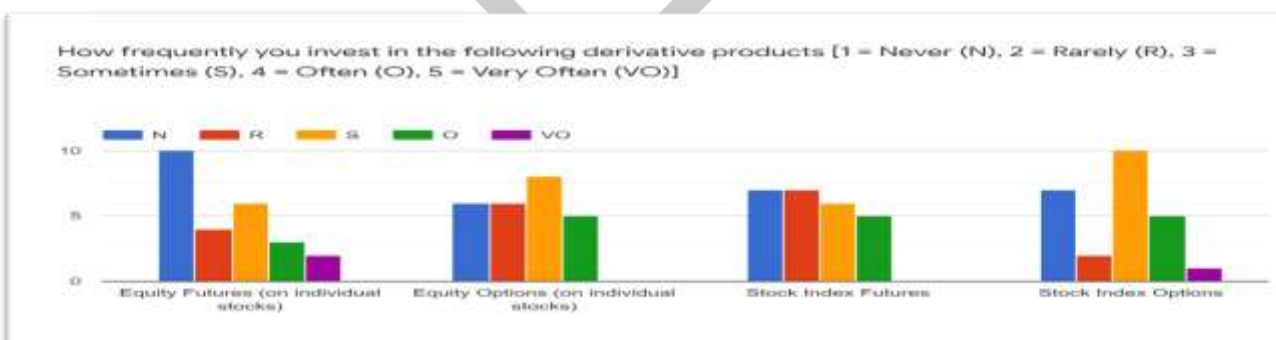
Reason behind investing in Derivatives market



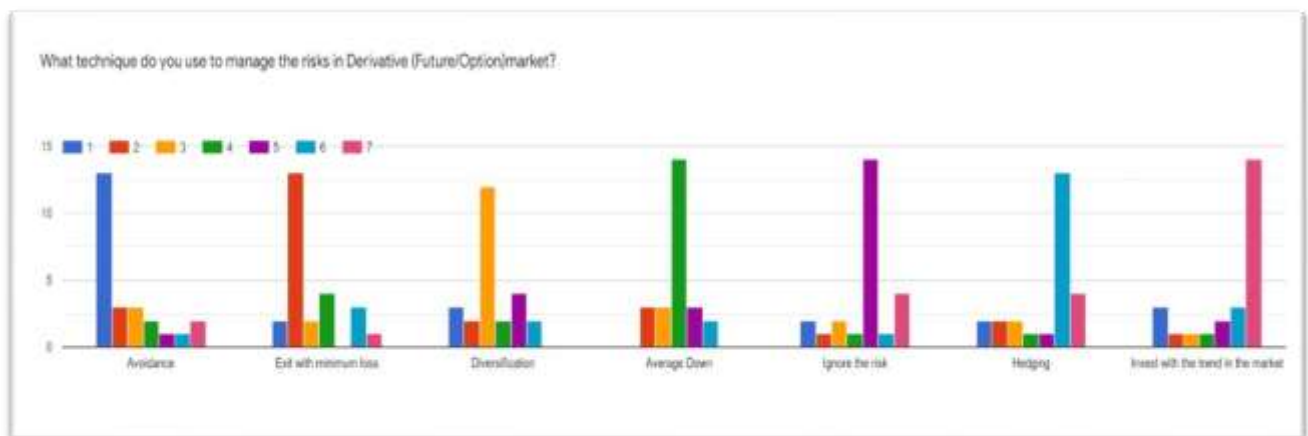
Best source of advice to invest in Derivatives (F&O) market



Frequently investing characteristics of investors'



❖ Perception of Derivative (F&O) Market Techniques used to manage risks



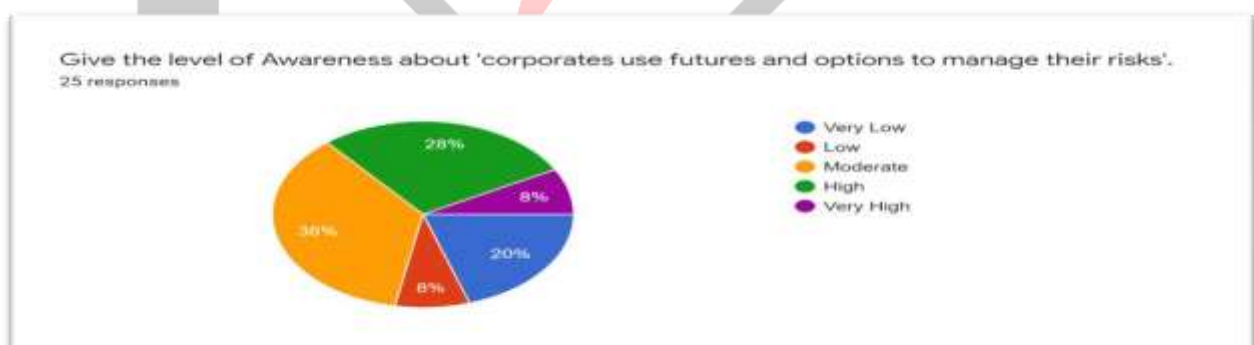
Techniques to manage investors' risk help corporates to manage their risks

Not at all	24%
Little extent	8%
Some extent	40%
Moderate extent	24%
Large extent	4%

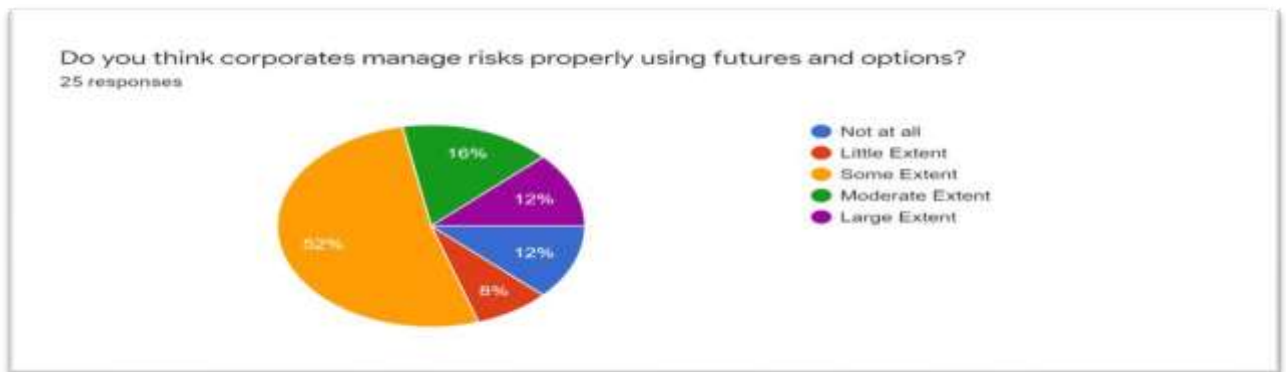
Investors' objective for their investments

	Not at all	Some extent	Moderate extent	Large extent	Mean	Rank
Speculation	8	6	10	2	6.5	II
Arbitrage	2	13	10	1	6.5	II
Hedging	3	7	10	7	6.75	I
Risk Management	8	5	7	6	6.5	II

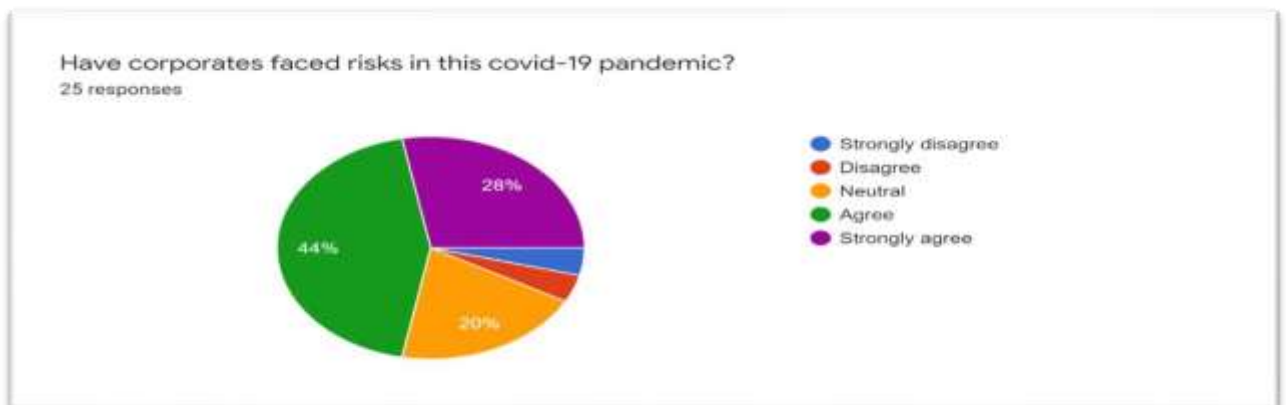
Awareness about corporates managing risks using F&O



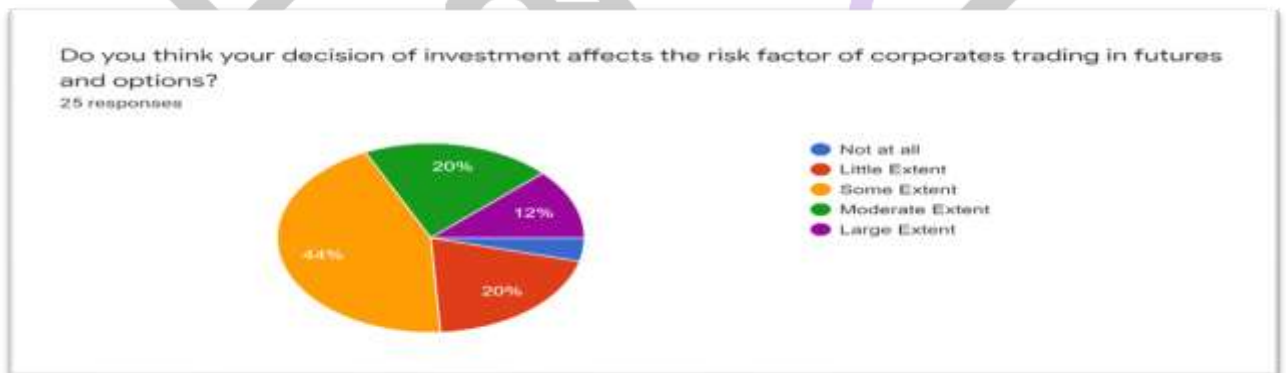
Thoughts regarding corporates risk management using F&O



Corporates facing risks in covid-19?



Investment decisions affecting risk factor of corporates?



To study the risk behavior of investors in Indian Derivatives Market following hypothesis were framed and tested statistically.

H1: Corporates risk management is dependent on investors' technique to manage their own risk of investments.

H2: Risk factor in corporates is dependent on investors' decision of investment.

H3: Investors' awareness about the corporates uses futures and options to manage their risk is dependent on investors' experience of investing in futures and options.

❖ Cross-tabulation and Chi-Square Tests

H01: Corporates risk management is independent on investors' technique to manage their own risk of investments

H1: Corporates risk management is dependent on investors' technique to manage their own risk of investments.

(a) Cross- tabulation

What technique do you use to manage the risks in Derivative (Future/Option) market? * Corporate risk management

What technique do you use to manage the risks in Derivative (Future/Option) market?	Corporate risk management					Grand Total
	Large extent	Little extent	Moderate extent	Not at all	Some extent	
Average down	0	1	0	0		01
Avoidance	1	1	1	1		03
Diversification	0	0	0	0		11
Exit with minimum loss	0	0	0	0		11
Hedging	0	0	2	0		13
Ignore the risk	0	0	0	0		22
Invest with the trend in the market	0	0	4	5		514
Grand total	1	2	6	6		1025

(b) Chi-square test

Chi-square	Corporate risk management					Grand Total
	Large Extent	Little extent	Moderate extent	Not at all	Some extent	
Average down	0.04	10.58	0.24	0.24	0.4	11.5
Avoidance	6.45	2.40	0.72	0.10	1.2	10.88
Diversification	0.04	0.08	0.24	0.24	0.9	1.5
Exit with minimum loss	0.04	0.08	0.24	0.24	0.9	1.5
Hedging	0.12	0.24	2.27	0.72	0.03	3.38
Ignore the risk	0.08	0.16	0.48	0.48	1.8	3
Invest with the trend in the market	0.56	1.12	0.12	0.80	0.06	2.66
Grand Total					X ²	34.44
Chi-square	Value		Df			
Critical value (CV)	36.4150285		24			
N of valid cases	25					

The above table shows that the majority of investors' use technique of investing with trend in the market to manage their own risks of investment with a thinking of corporate risk management till some extent. It is also proved that corporate risk management is independent on investors' technique to manage their own risk of investments. Since the calculated value (X^2) 34.44 is less than the critical value (CV) 36.41 calculated through critical value approach with significance value of 0.05 and degree of freedom (Df) of 24, the null hypothesis was failed to reject. $X^2 < CV$ that is why the variables are independent and are not related to each other.

H02: Risk factor in corporates is independent on investors' decision of investment.

H2: Risk factor in corporates is dependent on investors' decision of investment.

(a) Cross- tabulation

Do you think your decision of investment affects the risk factor of corporates trading in futures and options? * Do you think corporates manage risks properly using futures and options?

Investors' decision of investment	Risk Factor					Grand Total
	Large extent	Little extent	Moderate extent	Not at all	Some extent	
Large extent	1	0	0	1	13	
Little extent	2	2	0	1	05	
Moderate extent	0	0	1	0	45	
Not at all	0	0	0	1	01	
Some extent	0	0	3	0	811	
Grand Total	3	2	4	3	1325	

(b) **Chi-square test**

Investors' decision of investment	Risk factor					Grand Total
	Large extent	Little extent	Moderate extent	Not at all	Some extent	
Large extent	1.13	0.24	0.48	1.13	0.20	3.20
Little extent	3.26	6.4	0.8	0.26	2.6	13.33
Moderate extent	0.6	0.4	0.05	0.6	0.75	2.40
Not at all	0.12	0.08	0.16	6.45	0.52	7.33
Some extent	1.32	0.88	0.87	1.32	0.90	5.30
Grand Total					X ²	31.57
Chi-square	Value			Df		
Critical value (CV)	26.2962276			16		
N of valid cases	25					

The above table shows that majority of investors think that their decision of investment affects the risk factor of corporates trading in futures and options till some extent. Along with that, the risk factor in corporates affect their investment till some extent. It is also proved that risk factor in corporates is dependent on investors' decision of investment. Since the calculated value (X^2) is greater than the critical value (CV) 26.29 calculated through critical value approach with significance value of 0.05 and degree of freedom (Df) of 16, the null hypothesis was rejected. Here, $X^2 > CV$ that is why the variables are dependent on each other and are related to each other.

H03: Investors' awareness about the corporates uses futures and options to manage their risk is independent on investors' experience of investing in futures and options.

H3: Investors' awareness about the corporates uses futures and options to manage their risk is dependent on investors' experience of investing in futures and options.

(a) **Cross- tabulation**

How much experience do you have of investing in Futures and Options? * Give the level of Awareness about 'corporates use futures and options to manage their risks'.

Experience	Level of Awareness					Grand Total
	High	LowModerate	Very High	Very Low		
<1 year	3	2	5	2	3	15
>2 years	1	0	0	0	2	3
1-2 years	3	0	4	0	0	7
Grand Total	7	2	9	2	5	25

(b)

Chi-square test

chi square		Level of Awareness					
Experience	High	Low	Moderate	Very High	Very Low	Grand Total	
<1 year	0.34	0.53	0.02	0.53	0	1.43	
>2 years	0.03	0.24	1.08	0.24	3.26	4.85	
1-2 years	0.55	0.56	0.86	0.56	1.4	3.94	
Grand Total					X ²	10.23	

Chi-square	ValueDf
Critical value (CV)	15.5078
N of valid cases	25

From the above table, we can see that majority of the investors have less than 1 year of experience of trading in Futures and Options with level of awareness about 'corporates use futures and options to manage their risks' is at moderate level. This means investors are moderately aware that corporates use Futures and Options to manage their risks. It is also proved that investors' awareness about the corporates uses futures and options to manage their risk is independent on investors' experience of investing in futures and options. Since the calculated value (X^2) 10.23 is less than the critical value (CV) 15.507 calculated through critical value approach with significance value of 0.05 and degree of freedom (Df) of 8, the null hypothesis was failed to reject. $X^2 < CV$ that is why the variables are independent and are not related to each other.

Findings of the study

Based on the analysis, it is found that Derivatives have grown remarkably since their introduction because they help to provide innovative investment products and to manage risk at a considerably lower cost. Futures and Options also provide ways to manage the future risks of the corporates. Highest yearly risk coverage in above mentioned companies is done by Foreign Currency Risk except SBI which is a Bank, where Capital and Liabilities has highest yearly risk coverage. Every company and Bank mentioned above follows a proper Risk Management Process to identify, control, manage, assess, treat and to mitigate the risks using Futures and Options. It was also observed that Dr. Reddy Laboratories Ltd. company was the most covid-19 impacted company. The risks faced by the Bank differs from those faced by other corporates. It was observed that Corporate Risk Management strategies using F&Os of the corporates/companies are different from that of Banks. Mind Tree Ltd. took new initiatives for risk management during Covid-19 pandemic outbreak. Corporates and Banking institutions use F&O to hedge risk. Foreign Exchange risk is the most dominating risk in the above-mentioned corporates and corporates use it to hedge foreign currency risk or Foreign Exchange risk. Second most dominating risk found was the interest rate risk and market risk. It was found that volatility of F&O is different in Banks than those of corporates. The Banks and Corporates behave differently in order to mitigate/manage risks including their Risk management process, Risk management structure, Risk management Frameworks etc. It was found that Futures and Options are the dominating instruments companies use for Risk Management.

The survey shows that majority of the investors were male containing 68% of the total. However, majority of 52% were below age group of 25 while 36% were above 45 age group. Along with that it shows that the majority of the investors are post graduated with 72% of the total, 24% of the selected investors have bachelor's degree. Majority of the investors are salaried employees containing 44% of the investors. 84% of the selected investors are from Urban area. Majority of investors that is 56% are unmarried people. Most of the respondents (64%) have more than Rs. 50000 as their monthly income of the family. Majority of investors prefer insurance as their investment option. Financial derivatives market is their last investment preference to invest in. Investors find very high risk in financial derivatives (F&O) market. It was found that majority of investors invests in F&O market for long term (>5 years). They have less than 1 year of experience of investing in F&O market. This indicates that investors have started investing in F&O market recently. Majority of investors are highly aware about Equity (Stock) Options than other F&O products namely Equity (stock) Futures, Index Options and Index Futures. It was found that the respondents are attracted to invest in derivatives market majorly because of low risk, high return and high liquidity. However, speculation is the last possible reason they find attractive to invest in derivative market. Most of the respondents that is 13 out of 25 thinks that self-motivation is the best source of advice anyone can get for investment in derivative market. It was found that investors not at all or very often invests in Equity Futures (On individual stocks), rarely invests in Stock Index Futures, sometimes invests in Stock Index options. The investors often invest in Equity Options (On individual stocks)/ Stock Index Futures/ Stock Index options. Most of the investors invests with the trend in the market/ignore the risk/ down the average to manage their risks in derivative market. This is the most common technique used by the investors to manage their own risks. It was also found that 40% of the investors think that their own techniques to manage their own risks help corporates to some extent to manage their risk. Study found that investors objective to invest in F&O is hedging and their objectives match till moderate extent with the investment in F&O. 36% of the investors are aware that corporates use F&O to manage their risk. 52% of the investors think that to some extent corporates manage risks properly using F&O. 46% of the investors agree that corporates have faced risks in covid-19 pandemic. 44% majorly thinks to some extent the investors decision of investment affects the corporate risks.

The first hypothesis testing shows that majority of investors use technique of investing with trend in the market to manage their

own risks of investment with a thinking of Corporate Risk Management till some extent. The chi-square test was conducted and shows that chi-square value is less than critical value (CV) which indicates that null hypothesis H01 was failed to reject. That is why the variables are independent and not related to each other. Thus, Corporate Risk Management is independent on investors' technique to manage their own risk of investments. Chi-square was applied to evaluate the effect of risk factor on investors' decision of investments. Here it was found that chi-square value is greater than critical value (CV), hence null hypothesis H02 is rejected. Thus, the variables are dependent on each other and are related to each other. Hence, risk factor in corporates is dependent on investors' decision of investment. To analyze the effect of investors' experience of investing and their level of awareness the chi-square test was conducted which found that chi-square value is less than critical value (CV) and thus null hypothesis H03 was failed to reject. Thus, indicating that variables are independent and are not related to each other. Hence, investors' awareness about the corporates uses F&O to manage their risk is independent on investors' experience of investing in F&O.

Conclusion

Derivative instruments especially Futures and Options are used as a tool by the companies and banking institutions for risk management. Although in the investment industry, most companies have dedicated risk management functions, it is important to remember that risk is not just the responsibility of the risk management team where everyone is a risk manager. Therefore, even though one is not a risk management specialist, he/she should still seek to understand risk management process, systems, and tools and participate in risk management activities in the organization.

The companies deal with different foreign exchanges and they manage their risk with Futures and Options. They follow a proper risk management process to mitigate these risks. These companies use Futures and Options products to mitigate the foreign exchange risk or foreign currency risk. These companies often use a three lines of defense risk management model for risk management. Allocation of resources to risk management should be based cost-benefit analysis. Overall, risk management have a positive effect on an ability of the company to achieve its strategic objectives and to improve its operations which ultimately leading to value creation. Use of futures and options for risk management by the companies help market prices become better indicators of value, which improves resource allocation, an important benefit provided by the financial services industry. Companies take advantage of these futures and options products to successfully manage their risk and to maintain their position in the market. Companies have risk management committees and Enterprise Risk management Councils including Chief Risk Officer (CRO), Board of Directors, Business owners which altogether take initiatives to manage company's risks using these derivative products (Futures and Options). Some companies along with futures and options use swaps as well to manage the risks.

These companies who practice risk management send a signal to their creditors that they are serious about protecting the interests of creditors as well as shareholders. For such companies, creditors will be more favourably inclined to not only lend money but also charge an attractive interest rate. This results in companies having a considerable flexibility for future financing needs. When companies manage these risks using futures and options, they can avoid getting into a condition in which it has no incentive to undertake profitable projects.

The result of the survey reveals that there are very few investors who trade in derivative (F&O) market and has less than 1 year of experience of investing in this market. Very few know that companies use Futures and Options to manage their risks. There is a level of ignorance to these derivative products by the investors to hedge risk. They prefer other products such as insurance, fixed deposits, gold, real estate, etc to invest in. Derivative (F&O) market is preferred last which shows that the investors are unaware of the products and their use. There is a lack of knowledge amongst the investors that companies use these F&O products for risk management. It can be concluded that people who don't have knowledge about derivative market are all the small investors and futures and options are derivative instruments which are used to minimize the risk and cover the loss occurred in the companies. Managing the risks can give companies more returns and less risk.

Suggestions

- The authorities of firms should try their level best to improve the level of knowledge of the investors about derivative market and their uses, about that Futures and Options are risk mitigating products used by the companies dealing with derivative markets.
- To aid the growth of the derivative (F&O) market, market participants and investors must be educated on the dynamics of these new age products and their strategic applications.
- To improve the knowledge of the investors that they can hedge risk using futures and options as well.
- To facilitate awareness programs about how futures and options can potentially benefit investors based on expectations about the future performance of an underlying, about benefits of investing in futures and options.

Scope for further study

- Further research needs to explore and analyse other companies as well who do risk management using derivatives products and study their risk management process.
- Further research needs to explore and analyse the other variables that can influence investors decision, so as to gain better insight.
- This study can be used by the regulating authorities, firms and broker houses to increase awareness among the investors about corporate risk management using derivatives instruments can be done and also about derivative market.
- The derivative market is now established in India for a while now but it is not much popular in the market/ investors, so SEBI and other exchanges need to take steps to create awareness and organise programs like NSE Pathshala which was introduced by NSE. This was introduced to create awareness among the investors about derivatives and spot market.

□ The financial analysts and brokers should also provide more reliable and authentic information to the investors and motivate others to invest in derivatives market.

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