

A STUDY ON RISK AND RETURN ANALYSIS OF INDIAN BANKING SECTOR

Submitted in partial fulfilment of the requirements for the award of
Master of Business Administration

By

M NISHOTHA JESMENT

Register No. 39410139



SCHOOL OF BUSINESS ADMINISTRATION

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE

Jeppiaar Nagar, RAJIV GANDHI SALAI, CHENNAI - 600 119

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **M NISHOTHA JESMENT 39410139** who have done the Project work entitled **A STUDY ON RISK AND RETURN ANALYSIS OF INDIAN BANKING SECTOR** under my supervision from **JANUARY 2021 to MARCH 2021.**

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DECLARATION

I, **M NISHOTHA JESMENT 39410139**, hereby declare that the Project Report entitled **A STUDY ON RISK AND RETURN ANALYSIS OF INDIAN BANKING SECTOR** done by me under the guidance of **Dr R Thamilselvan**, M.Com., M.B.A., M.Phil., B.Ed., Ph.D., Associate Professor, Department of Management Studies is submitted in partial fulfilment of the requirements for the award of Master of Business Administration degree.

DATE:

PLACE:

M NISHOTHA JESMENT

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M NISHOTHA JESMENT

ABSTRACT

Indian Banking Sectors is one of the major role in the country's economy. It has always been playing a major key role in prevention of the economic disaster from reaching horrible situation in the country. Risk is a concept that shows a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. It has received huge appreciation for its strength, particularly in the wake of the latest worldwide economic disasters, which pressed its worldwide counterparts to the edge of fall down. The Indian Equity market's are extremely volatile. Equity Markets are volatile across the world but India has a higher level of volatility. Stock market risk is the tendency of stock prices to decrease due to the change in value of the market risk factors. Value of units or shares is directly related to the market value of those investments held by the stock market. Though banking and financial services sector funds have accelerated on generating superior risk adjusted returns until now, they suffer from the risk of portfolio concentration as a single stock accounts for equity portfolio in some gear. The market value of those investments will go up and down depending on the financial performance of the issuers and general economic, political, tax and market conditions. Standard market risk factors are stock prices, interest rates, foreign exchange rates, and commodity prices Banks play an important role in supporting economic growth and have proved to be more volatile than the pure diversified equity funds which make some of them a high risk proposition. Usually Equity Investments includes high risk at the same time it earns higher return unusually high returns may not be maintainable. Because of this, there is a high instability in the share price that reduces the real investor's interest. This study is focused to analyse the performance of the selected banks in the Indian Banking Sector to show the risk and return in a particular period of time.

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CHAPTER - I

INTRODUCTION

The risk of investing in the banking sector does not appear to be subsiding. Bank share prices remain exceptionally volatile and ongoing regulatory developments continue to weigh on the sector. One important measure of risk is the beta for a bank. This combines the volatility of bank shares and their correlation with the equity markets in general. It is a key risk measure because it helps to set banks cost of capital and therefore the appropriate level of returns they should be targeting. This may be surprising. Given the substantial recapitalization of the banks across the world and the implementation of a raft of regulatory reforms, we may have expected risk levels across the sector to begin to fall by now. However, offsetting impacts including the fallout from the Eurozone crisis (which impacts banks directly through holdings of Government bonds) and continued sector uncertainties have contributed to this continued elevated state. We must remember that the equity beta, by its calculation, is a lagging indicator of risk so it will take time for risk reductions to show in the empirical data, but the key questions remains of whether and by how much risk will reduce in the banking sector.

The future track of risk in the banking sector is of critical importance to banks, their shareholders and policy makers. Some envisage a “back to basics” world of low risk/low return utility banking. Others suggest that credit risk, interest rate risk and liquidity risk mean such a world is impossible to achieve – the fortunes of the banking sector will always be entwined with the broader economy.

Where we end up is crucially dependent upon the effectiveness of the banking reforms underway and the impact of leverage on the cost of capital for banks. In theory as more equity is used to finance a bank, the risks to that equity are dissipated, so the cost of equity should fall. There are obstructions to the theory, such as taxes and government involvement in the banking sector (through implicit guarantees), but the Bank of England showed empirically that leveraging effects should reduce the cost of

equity for banks in Optimal Bank Capital and other risk reduction measures should also have an impact as reforms are implemented.

For an answer on where we should end up, we commend a recent PwC report: “Banking Industry Reform : A New Equilibrium”. The report envisages a post-crisis equilibrium in which bank equity costs fall from current figures of around 12% to a range between 8%-10% following reform-driven reductions in bank leverage and a gradual return to financial market normality. Capacity overhang, competitive pressures, subdued underlying economic growth and a substantial adjustment and compliance cost burden will continue to impact performance severely in the short term, and keep long run equity returns to no more than 1-2% over equity costs thereafter. This is starkly different to the pre-crisis norms, where bank investors became accustomed to returns in the high teens, and will therefore require adjustment by both bank executives and investors.

Such a new equilibrium need not be feared. Returning to a positive spread over the cost of capital should restore bank valuations – price to book ratios currently languish at levels of around 0.5 times. A target return on equity of 9-11% should be achievable with some, but not drastic, re-pricing of banking products and a re-opening of debt and equity markets to enable banks to resume business on economic terms. On a reduced cost of capital of 8-10%, investors should welcome such returns given the risk profile of the sector should become much lower. By putting up the money, they could help transform what is now a vicious circle (capital scarcity; credit scarcity; deleverage; deflation; asset impairment; capital scarcity ... in a word, procyclicality) into a virtuous one. For their part, banks need to help make themselves investable again, not by promising unrealistic equity returns, or by straining to deliver them through overly aggressive business and cost rationalizations, but by setting out a credible and sustainable strategic agenda, being proactive with their disclosures, and avoiding making the headlines for the wrong reasons!

Otherwise, the challenge is one of timing. Eurozone risks are not likely to be resolved in the short-term and economic weakness will continue to hold back bank performance. This new equilibrium will take time to materialize, but it is important that

the sector and its investors are making long-term strategic decisions based on the longer-term direction of the industry.

1.1 INDUSTRY PROFILE

NSE

The National Stock Exchange (NSE) is India's leading stock exchange covering various cities and towns across the country. NSE was set up by leading institutions to provide a modern, fully automated screen-based trading system with national reach. The Exchange has brought about unparalleled transparency, speed & efficiency, safety and market integrity. It has set up facilities that serve as a model for the securities industry in terms of systems, practices and procedures.

NSE has played a catalytic role in reforming the Indian securities market in terms of microstructure, market practices and trading volumes. The market today uses state-of-art information technology to provide an efficient and transparent trading, clearing and settlement mechanism, and has witnessed several innovations in products & services viz. demutualization of stock exchange governance, screen based trading, compression of settlement cycles, dematerialization and electronic transfer of securities, securities lending and borrowing, professionalization of trading members, fine-tuned risk management systems, emergence of clearing corporations to assume counterparty risks, market of debt and derivative instruments and intensive use of information technology

1.1.1 Purpose

- Committed to improve the financial well-being of people.

1.1.2 Vision

- To continue to be a leader, establish global presence; facilitate the financial well-being of people.

1.1.3 Values

NSE is committed to the following core values:

- Integrity.
- Customer focused culture.
- Trust, respect and care for the individual.
- Passion for excellence.
- Teamwork.

1.1.4 Logo



1.1.5 History & Milestones

NSE was promoted by leading financial Institutions at the behalf of the Government of India and was incorporated in November 1992 as as tax-paying company unlike other stock exchanges in the country.

- March 24, 2019: Commencement of trading of CNX Nifty Futures on OSE.
- February 26, 2019: NSE launches NVIX Futures- Futures on India VIX Index
- January 21,2019: NSE Launches 'NSE Bond Futures II'
- May 13, 2019: NSE launches the first dedicated Debt Platform on the Exchange
- January 10, 2019: Agreement on Launch of S&P CNX Nifty Futures in Japan
- January 03, 2019: NSCCL Rated CCR AAA for fifth consecutive year
- September 18, 2018: NSE launches SME operations
- June 27, 2018: NSE launches financial literacy initiative ' Jagruti' in Mohali, in partnership with India Post
- May 03, 2018: Futures and Options contracts on FTSE 100
- March 22, 2018: NSE and India Post start Unique Financial Inclusion Initiative "Jagruti"
- March 14, 2018: NSE launches “EMERGE” - SME Platform
- December 2017: NSCCL Rated “CCR AAA” for fourth consecutive year - 28th Dec 2017
- September 2017: Launch of derivatives on CNX PSE and CNX

Infrastructure Indices

- August 2017: Launch of derivatives on Global Indices
- July, 2017: Commencement of trading in 91 Day GOI Treasury Bill – Futures
- January, 2017: NSE receives "Financial Inclusion" Award.

1.1.6 The Organisation:

The National Stock Exchange of India Limited has genesis in the report of the High Powered Study Group on Establishment of New Stock Exchanges. It recommended promotion of a National Stock Exchange by financial institutions (FIs) to provide access to investors from all across the country on an equal footing. Based on the recommendations, NSE was promoted by leading Financial Institutions at the behest of the Government of India and was incorporated in November 1992 as a tax-paying company unlike other stock exchanges in the country.

The National Stock Exchange (NSE) operates a nation-wide, electronic market, offering trading in Capital Market, Derivatives Market and Currency Derivatives segments including equities, equities based derivatives, Currency futures and options, equity based ETFs, Gold ETF and Retail Government Securities. Today NSE network stretches to more than 1,500 locations in the country and supports more than 2, 30,000 terminals.

With more than 10 asset classes in offering, NSE has taken many initiatives to strengthen the securities industry and provides several new products like Mini Nifty, Long Dated Options and Mutual Fund Service System. Responding to market needs, NSE has introduced services like DMA, FIX capabilities, co-location facility and mobile trading to cater to the evolving need of the market and various categories of market participants.

NSE has made its global presence felt with cross-listing arrangements, including license agreements covering benchmark indexes for U.S. and Indian equities with CME Group and has also signed a Memorandum of Understanding (MOU) with Singapore Exchange (SGX) to cooperate in the development of a market for India-linked products and services to be listed on SGX. The two exchanges also will look into a bilateral securities trading link to enable investors in one country to seamlessly trade on the other country's exchange.

NSE is committed to operate a market ecosystem which is transparent and at the same time offers high levels of safety, integrity and corporate governance, providing ever growing trading & investment opportunities for investors.

1.1.7 Corporate Structure

NSE is one of the first de-mutualized stock exchanges in the country, where the ownership and management of the Exchange is completely divorced from the right to trade on it. Though the impetus for its establishment came from policy makers in the country, it has been set up as a public limited company, owned by the leading institutional investors in the country.

From day one, NSE has adopted the form of a demutualized exchange - the ownership, management and trading is in the hands of three different sets of people. NSE is owned by a set of leading financial institutions, banks, insurance companies and other financial intermediaries and is managed by professionals, who do not directly or indirectly trade on the Exchange. This has completely eliminated any conflict of interest and helped NSE in aggressively pursuing policies and practices within a public interest framework.

The NSE model however, does not preclude, but in fact accommodates involvement, support and contribution of trading members in a variety of ways. Its Board comprises of senior executives from promoter institutions, eminent professionals in the fields of law, economics, accountancy, finance, taxation, and etc, public representatives, nominees of SEBI and one full time executive of the Exchange.

While the Board deals with broad policy issues, decisions relating to market operations are delegated by the Board to various committees constituted by it. Such committees include representatives from trading members, professionals, the public and the management. The day-to-day management of the Exchange is delegated to the Managing Director who is supported by a team of professional staff.

1.2 COMPANY PROFILE

1.2.1 Indian Bank

A premier bank owned by the Government of India

- ❖ Established on 15th August 1907 as part of the Swadeshi movement
- ❖ Serving the nation with a team of over 19429 dedicated staff as on 31.03.2020
- ❖ Total Business crossed Rs.2,86,633 Crores as on 31.03.2020
- ❖ Operating Profit : Rs. 2,901 Crores as on 31.03.2020
- ❖ Net Profit : Rs.1,159 Crores as on 31.03.2020
- ❖ Core Banking Solution(CBS) in all 2250 branches as on 31.03.2020

International Presence

- Overseas branches in Singapore , Colombo including a Foreign Currency Banking Unit at Colombo and Jaffna
- 240 Overseas Correspondent banks in 70 countries

Diversified banking activities -2 Subsidiary companies

- Indbank Merchant Banking Services Ltd
- IndBank Housing Ltd.

Indian Bank Mutual Fund

A front runner in specialized banking

- 97 Forex Authorized branches inclusive of 1 Specialized Overseas Branch at Chennai exclusively for handling forex transactions arising out of Export, Import, Remittances and Non Resident Indian business
- 73 Special SME Branches extending finance exclusively to SSI units
- Established MSME CPUs at 9 key centers at Chennai, Mumbai, Kolkata, New Delhi, Ahmedabad, Bangalore, Pune, Coimbatore and Kanchipuram.
- MoU entered with National Small Industries Corporation (NSIC) to focus on MSME Segment

➤ Leadership in Rural Development

- Under Financial Inclusion Plan, Indian Bank has been allotted with 1523 villages with population above 2000 ,all the 1523 villages have been provided with banking services as on 30thSeptember 2018 as below:
 - * 1425 villages through Smart card based Business Correspondent (BC) Model
 - * 53 villages through Brick and mortar branches /Banking Service Centers (BSCs)
 - * 45 villages through Mobile Branch/Van
- Pioneer in introducing Self Help Groups and Financial Inclusion Project in the country
- Award winner for Excellence in Agricultural Lending from Honorable Union Minister for Finance
- Best Performer Award for Micro-Finance activities in Tamil Nadu and Union Territory of Pondicherry from NABARD

- Established 45 specialized exclusive Microfinance branches called "Microsate" across the country to cater the needs of Urban poor through SHG (Self Help Group)/JLG (Joint Liability Group) concepts
- A special window for Micro finance viz., Micro Credit Kendras are functioning in 44 Rural/Semi Urban branches
- Harnessing ICT (Information and Communication Technology) for Rural Development and Inclusive Banking
- Provision of technical assistance and project reports in Agriculture to entrepreneurs through Agricultural Consultancy & Technical Services (ACTS)

A pioneer in introducing the latest technology in Banking

- 100% Core Banking Solution(CBS) Branches
- 100% Business Computerization
- 2172 Automated Teller Machines(ATM)
- 24 x 7 Service through more than 99242 ATMs under shared network

- Internet and Tele Banking services to all Core Banking customers
- e-payment facility for Corporate customers
- Cash Management Services
- Depository Services
- Reuter Screen, Telerate, Reuter Monitors, Dealing System provided at Overseas Branch, Chennai
- I B Credit Card Launched
- I B Gold Coin
- I B Prepaid Cards Launched (GIFT Card, International Travel Card)

1.2.2 South Indian Bank



- TOTAL NUMBER OF BRANCHES : 824
- SERVICE BRANCHES : 4
- EXT.COUNTERS : 25
- ATM : 1233

Building Blocks

One of the earliest banks in South India, "South Indian Bank" came into being during the Swadeshi movement. The establishment of the bank was the fulfillment of the dreams of a group of enterprising men who joined together at Thrissur, a major town (now known as the Cultural Capital of Kerala), in the erstwhile State of Cochin to provide for the people a safe, efficient and service oriented repository of savings of the community on one hand and to free the business community from the clutches of greedy money lenders on the other by providing need based credit at reasonable rates of interest.

Translating the vision of the founding fathers as its corporate mission, the bank has during its long sojourn been able to project itself as a vibrant, fast growing, service oriented and trend setting financial intermediary.

Milestones

The FIRST among the private sector banks in Kerala to become a scheduled bank in 1946 under the RBI Act.

- The FIRST bank in the private sector in India to open a Currency Chest on behalf of the RBI in April 1992.
- The FIRST private sector bank to open a NRI branch in November 1992.
- The FIRST bank in the private sector to start an Industrial Finance Branch in March 1993.
- The FIRST among the private sector banks in Kerala to open an "Overseas Branch" to cater exclusively to the export and import business in June 1993.

- The FIRST bank in Kerala to develop in-house, fully integrated branch automation software in addition to the in-house partial automation solution operational since 1992.



- The FIRST Kerala based bank to implement Core Banking System.
- The THIRD largest branch network among Private Sector banks, in India, with all its branches under Core banking System.

Future Perfect

The South Indian Bank with a new logo and image, marches on. With branches all over India and a clientele across the world, the bank is considered one of the most pro active banks in India with a competent tech savvy team of professional at the core of services.

1.2.3 Indian Overseas Bank Profile

Indian Overseas Bank
Central Office, Chennai.

VISION STATEMENT – 2019-2020

“To be among the top five nationalized banks in terms of business volumes and sustained profitability with global recognition guided by high standards of governance and ethics; and emerge as the “Most Preferred Banking Partner” to unlock value to all its stakeholders.”

CORE VALUES

- Customer Centricity:
 - Good people to grow with
 - Touching Hearts and Spreading Smiles
- Honesty , Integrity, Fairness & Transparency
- Build Leaders for Industry
- Team of Skilled & dedicated Employees
- Innovation & Risk Appetite
- Green Banking

MISSION STATEMENT – 2019-2020

- Deliver the best of competitive products in terms of quality, range, utility and cost effectiveness
- Optimize our HR resources through training, exposure, mentoring and incentive, relying on the “soft touch” instead of the “big stick“.
- Develop quality bankers who would rise to be future leaders of the industry.
- Contribute to country’s economic growth through dedicated efforts and customer focus.
- Streamline the process of service delivery from time to time to meet emerging requirements.
- Nurture a climate of creative problem-solving to resolve customers’ grievances with alacrity ensuring that the Bank is regarded as Customer Centric.

- Emphasize a policy-oriented and rule-driven culture of compliance to meet evolving requirements.
- Engineer CRM (Customer Relationship Management) and insights gained for further enhancement of products and service quality.
- Expand IT infrastructure to deliver all banking services from “one tap” irrespective of customer location.
- Adopt a multi disciplinary approach to facilitate future growth through the evolution of “banks within the Bank”

1.2.4 ICICI Bank

History

ICICI Bank was originally promoted in 1994 by ICICI Limited, an Indian financial institution, and was its wholly-owned subsidiary. ICICI's shareholding in ICICI Bank was reduced to 46% through a public offering of shares in India in fiscal 1998, an equity offering in the form of ADRs listed on the NYSE in fiscal 2000, ICICI Bank's acquisition of Bank of Madura Limited in an all-stock amalgamation in fiscal 2001, and secondary market sales by ICICI to institutional investors in fiscal 2001 and fiscal 2002.



ICICI was formed in 1955 at the initiative of the World Bank, the Government of India and representatives of Indian industry. The principal objective was to create a development financial institution for providing medium-term and long-term project financing to Indian businesses.

In the 1990s, ICICI transformed its business from a development financial institution offering only project finance to a diversified financial services group offering a wide variety of products and services, both directly and through a number of subsidiaries and affiliates like ICICI Bank. In 1999, ICICI become the first Indian

company and the first bank or financial institution from non-Japan Asia to be listed on the NYSE.

After consideration of various corporate structuring alternatives in the context of the emerging competitive scenario in the Indian banking industry, and the move towards universal banking, the managements of ICICI and ICICI Bank formed the view that the merger of ICICI with ICICI Bank would be the optimal strategic alternative for both entities, and would create the optimal legal structure for the ICICI group's universal banking strategy. The merger would enhance value for ICICI shareholders through the merged entity's access to low-cost deposits, greater opportunities for earning fee-based income and the ability to participate in the payments system and provide transaction-banking services.

The merger would enhance value for ICICI Bank shareholders through a large capital base and scale of operations, seamless access to ICICI's strong corporate relationships built up over five decades, entry into new business segments, higher market share in various business segments, particularly fee-based services, and access to the vast talent pool of ICICI and its subsidiaries.

In October 2001, the Boards of Directors of ICICI and ICICI Bank approved the merger of ICICI and two of its wholly-owned retail finance subsidiaries, ICICI Personal Financial Services Limited and ICICI Capital Services Limited, with ICICI Bank. The merger was approved by shareholders of ICICI and ICICI Bank in January 2002, by the High Court of Gujarat at Ahmedabad in March 2002, and by the High Court of Judicature at Mumbai and the Reserve Bank of India in April 2002. Consequent to the merger, the ICICI group's financing and banking operations, both wholesale and retail, have been integrated in a single entity.

ICICI Bank has formulated a Code of Business Conduct and Ethics for its directors and employees.

1.2.5 HDFC Bank

The Housing Development Finance Corporation Limited (HDFC) was amongst the first to receive an 'in principle' approval from the Reserve Bank of India (RBI) to set up a bank in the private sector, as part of RBI's liberalization of the Indian Banking Industry in 1994.



The bank was incorporated in August 1994 in the name of 'HDFC Bank Limited', with its registered office in Mumbai, India. HDFC Bank commenced operations as a Scheduled Commercial Bank in January 1995.

Business Focus

HDFC Bank's mission is to be a World Class Indian Bank. The objective is to build sound customer franchises across distinct businesses so as to be the preferred provider of banking services for target retail and wholesale customer segments, and to achieve healthy growth in profitability, consistent with the bank's risk appetite.

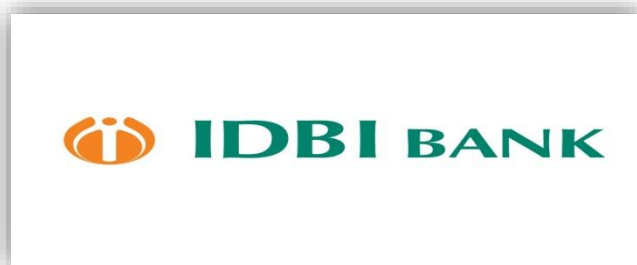
The bank is committed to maintain the highest level of ethical standards, professional integrity, corporate governance and regulatory compliance. HDFC Bank's business philosophy is based on five core values: Operational Excellence, Customer Focus, Product Leadership, People and Sustainability.

Capital Structure

As on 31st March, 2020 the authorized share capital of the Bank is Rs. 550 crore. The paid-up share capital of the Bank as on the said date is Rs501,29,90,634/- (2506495317) equity shares of Rs. 2/- each). The HDFC Group holds 21.67 % of the Bank's equity and about 18.87 % of the equity is held by the ADS / GDR Depositories (in respect of the bank's American Depository Shares (ADS) and Global Depository Receipts (GDR) Issues). 32.57 % of the equity is held by Foreign Institutional Investors (FIIs) and the Bank has 4,41,457 shareholders.

1.2.6 IDBI Bank

IDBI Bank Ltd. is today one of India's largest commercial Banks. For over 40 years, IDBI Bank has essayed a key nation-building role, first as the apex Development financial Institution (DFI)



(July 1, 1964 to September 30, 2004) in the realm of industry and thereafter as a full-service commercial Bank (October 1, 2004 onwards).

As a DFI, the erstwhile IDBI stretched its canvas beyond mere project financing to cover an array of services that contributed towards balanced geographical spread of industries, development of identified backward areas, emergence of a new spirit of enterprise and evolution of a deep and vibrant capital market. On October 1, 2004, the erstwhile IDBI Bank converted into a Banking company (as Industrial Development Bank of India Limited) to undertake the entire gamut of Banking activities while continuing to play its secular DFI role.

Post the mergers of the erstwhile IDBI Bank with its parent company (IDBI Ltd.) on April 2, 2005 (appointed date: October 1, 2004) and the subsequent merger of the erstwhile United Western Bank Ltd. with IDBI Bank on October 3, 2006, the tech-savvy, new generation Bank with majority Government shareholding today touches the lives of millions of Indians through an array of corporate, retail, SME and Agri products and services.

As on March 31, 2020 IDBI Bank has a balance sheet of Rs.3, 28,997 crore and business size (deposits plus advances) of Rs.4,33,460 crore. As an Universal Bank, IDBI Bank, besides its core banking and project finance domain, has an established presence in associated financial sector businesses like Capital Market, Investment Banking and Mutual Fund Business. Going forward, IDBI Bank is strongly committed to work towards emerging as the 'Bank of choice' and 'the most valued financial conglomerate', besides generating wealth and value to all its stakeholders.

1.2.7 Canara Bank

A Brief Profile of the Bank
Widely known for customer centricity, Canara Bank was founded by Shri Ammembal Subba Rao Pai, a great visionary and philanthropist, in July 1906, at Mangalore,



then a small port town in Karnataka. The Bank has gone through the various phases of its growth trajectory over hundred years of its existence. Growth of Canara Bank was phenomenal, especially after nationalization in the year 1969, attaining the status of a national level player in terms of geographical reach and clientele segments.

Eighties was characterized by business diversification for the Bank. In June 2006, the Bank completed a century of operation in the Indian banking industry. The eventful journey of the Bank has been characterized by several memorable milestones. Today, Canara Bank occupies a premier position in the comity of Indian banks. With an unbroken record of profits since its inception, Canara Bank has several firsts to its credit. These include:

- Launching of Inter-City ATM Network
- Obtaining ISO Certification for a Branch
- Articulation of 'Good Banking' – Bank's Citizen Charter
- Commissioning of Exclusive Mahila Banking Branch
- Launching of Exclusive Subsidiary for IT Consultancy
- Issuing credit card for farmers
- Providing Agricultural Consultancy Services

Over the years, the Bank has been scaling up its market position to emerge as a major 'Financial Conglomerate' with as many as nine subsidiaries/sponsored institutions/joint ventures in India and abroad. As at December 2020, the Bank has further expanded its domestic presence, with 5641 branches spread across all geographical segments. Keeping customer convenience at the forefront, the Bank provides a wide array of alternative delivery channels that include 7599 ATMs, covering 3839 centers.

1.3 NEED FOR THE STUDY

1. The study covers the information related to the risk – return relationship of banking sector.
2. The study shows the five year data of banking sector.
3. The study includes the calculation of individual standard deviations.

1.4 STATEMENT OF THE PROBLEM

The severe global shutdown and recession has resulted in volatility of stock markets. There is no proper framework for the investors to analyse the risk profile of the stocks and the investors also not aware about the valuation of risk and return of stock.

This research will provide inputs to the investors about various aspects of analyzing the risk profile of the stocks which in turn will help the investors to take decisions on holding their stock in banking sector.

1.5 OBJECTIVES OF THE STUDY

PRIMARY OBJECTIVE

To study about the risk and return of share prices in banking sector for ICICI Bank, HDFC Bank, Indian Overseas Bank, South Indian Bank, IDBI Bank, Canara Bank, Indian Bank.

SECONDARY OBJECTIVE

1. To analyze the rate of return of various banking sector over the period of five year.
2. To find the variance and standard deviation (risk) on each banking sector over the period of five year.
3. To compare the risk and rate of return of different banking sector.
4. To compare the coefficient of variation and beta of the banking sector.
5. To identify the best investment from selected banks

1.6 LIMITATIONS OF THE STUDY

1. The study is based on the data for the period of five years only. Hence the changes taken place before and after these periods have not been taken into considerations.
2. The study is limited to selected companies only. Hence the overall risk and return of the market cannot be analyzed.

1.7 CHAPTER FRAMEWORK

The report entitled "A study on risk and return analysis of Indian Banking Sector" is organized into five chapters.

Chapter-1

This Chapter deals with the introduction of the study, Industry Profile, Company Profile, Theoretical Study, Need for the study, Statement of the Problem, Objectives of the Study and Limitations of the Study.

Chapter-2

This Chapter deals with the Review of Literature

Chapter-3

It deals with Research Methodology, Research Design, Data Collection, Sample Size and Period of Study.

Chapter-4

It consists Data Analysis and Interpretation.

Chapter-5

It consists of Findings, Suggestions and Conclusion

CHAPTER - II

2.1 REVIEW OF LITERATURE

Porter (2000) explain the effect of combining banking and non-bank. Financial activities on banking organization's risk and return. In general, securities activities, insurance agency, and insurance underwriting are all riskier and more profitable than banking activities. They also have the potential to provide diversification benefits to banking organizations. While real estate operations are more profitable than banking. Real estate development may not be real estate activities in general and their diversification benefits for banking organization are less clear.

Zebras and Cabman (2000) presented a set of summary statistics of returns and risks for asset classes that may be used as benchmarks for establishing allocation levels, a subsequent article comments on how customized benchmarks may provide a more appropriate basis of comparison than generic indexes.

Raghavan R S (2000) opinion is risk measures are related to return measurements; Minimum risks have to be taken to get adequate returns. Investment Returns can be increased or made quicker by taking more financial and operating risks. But the environmental risks typically do not increase investment returns.

Harein (2003) investigate the risk and return characteristics of risk arbitrage for a sample of 187 stock swap offers in the form of collars for the 1994-2003 periods. Using cross sectional analysis, they find that initial arbitrage spread is significantly positively correlated with acquirer's stock volatility and the deal duration. using time series analysis, we identify a significant non- linear relationship in risk return profile for risk arbitrage portfolio: both strategy 1 (long the target for the fixed value collar offers; long the target and short the acquirer for the fixed ratio collar offers) and strategy 2.(delta hedging) produce returns that are strongly positively correlated with the market return in a severely declining market and are not significantly correlated with the market return in a flat or rising market.

David P, Yoshikawa T, Chari M D R and Rasheed A A (2006) argue the effect of foreign ownership on strategic investment in Japanese corporations by developing and testing two competing perspectives, they found that foreign ownership is move

positively associated with strategic investments for firms with growth opportunities than those lacking such opportunities. The relationship is robust across both types of strategic investments studies. R and D capital intensity.

Dr M Muthu Gopalakrishnan & Dr K V Ramanathan (2013) studied post and prerecession period Indian stock market price fluctuations. The volatility in the market required to estimate the risk on investment. Researcher analyses the selected indexed stock volatility of sectoral in Nifty as on 28-03-2013 daily opening and closing price of 31 selected companies. This analysis helps in identifying volatility relationship during pre and post recession period.

Dr Sudarsana Reddy G (2013) the study is done for the purpose of analysing the factors influencing the volatility of the stock prices of the selected FMCG companies which are listed on the NSE in order to compare them with that of the market. Three FMCG company's data for a period of one year was being collected. The tools such as mean, SD, alpha, co-variance and beta are being used. They analysed that the performance of HUL was better when compared to the other two (ITC & Britannia). They concluded by telling that it was not easy to analyse the performance of the FMCG companies due to lot of fluctuations, and that the performance of the market index was better when compared to the company.

Nagarajan and Prabhakaran (2013) the authors conducted the study in order to analyse the risk and return aspects associated with the selected 10 major FMCG companies listed on NSE and also the fluctuations of their stock prices. The stock prices data was being collected for a period of one year. The tools such as standard deviation, correlation, beta and covariation was being used. They concluded that the stock prices of the companies HUL & ITC were comparatively more volatile than other companies under the study period, and that the companies had a positive movement in the prices in relation to the market. Beta of all the selected companies were below 1. They also analysed that Dabur Company's share prices were more variable compared to other companies due to high SD & Variation. They explained as to it is very important to always analyse the financial mix, the benefits and the costs of debts should be analysed before making an investment.

Kevin S (2013) made an attempt to analyse the extent of volatility of the selected stocks share prices across different countries for different time periods. The study

was based on the data which is collected for a period of 18 months. The monthly Co-variance values were derived for all the stock exchanges of different selected countries and geographic regions in order to perform t-test. They concluded that there was no major difference in the volatility between the stock exchanges with in the specific regions such as Asian, Latin American, Pacific and European region, but there was a significant difference in volatility of the stock exchanges from different regions.

Dr Ratna Sinha (2013) conducted a study on Risk and Return analysis in equity investment in banking sector. The study tries to make a comparative study on banking equity performance with two other major sectors such as IT and Real. In order to undertake the study, he takes sample of eight banking companies listed in Indian stock market. The major tools used for analysis are Beta, Alpha, variance, standard deviation and correlation. And the study suggests that there is no significant relation of return in between the banking and non-banking equity.

Mr Sunil Rashinkar M and Mrs Divya U (2014) conducted a study on Market Risk Analysis of selected Banking Stock in India, the study was limited to five nationalized banks in India. And it includes State Bank of India, Industrial Development Bank of India, Syndicate Bank, Punjab National Bank, Bank of Baroda. And the duration of study was 1 year (1 July 2013- 31 march 2014), and the tool used for analysis was Beta Coefficient. The study reveals that the betas of State Bank of India, Industrial Development Bank of India, & syndicate bank were negative which implies that these stocks are moved against the market and less affected by market risk. On the other hand the betas of Punjab National Bank & Bank of Baroda were more than one. It indicates that these stocks were exposed to high market risk.

Mr Emenike K O and Mr Ani W U (2014) conducted a study on Volatility of banking sector stock returns in Nigeria. The study was based on most capitalized and liquid banks listed on the Nigerian stock exchange, and it include Access bank Plc, ETI Plc, Diamond bank Plc, Fidelity bank Plc, and GTB Plc. Others are: Skye bank Plc, Sterling bank Plc, United Bank for Africa, Union bank Plc, and Zenith bank Plc. The period of study begins from 3rd January 2006 and ends on 31st December 2012. And the tool used for analysis is ARMA-GARCH Model, and the study suggest that stock returns volatility of the Nigerian banking sector move in

cluster and that volatility persistence is high for the sample period. The results also indicate that stock returns distribution of the banking sector is leptokurtic and that sign of the innovations have insignificant influence on the volatility of stock returns of the banks.

Dr Krishnaprabha S & Mr Vijayakumar M (2015) conducted a study on risk & return analysis of selected stocks in India, the study was not only confined to banking sector it also include IT, Automobile sector, Pharmaceutical Sector, Fast Moving Consumer Goods Sector. The study to incorporate at least five companies from every sector, and the period of the study was 5 years (1st January 2010 to 31st december2014), and the major tool used for analysis are Beta, Standard Deviation & variance. And the study suggest that Banking sector and Automobile Sector possess high risk and gives low return on the other hand Information Technology, Fast moving consumer goods & Pharmaceutical possess low risk and high return.

Narayan Gaonkar and Dr Kushalappa (2015) made an attempt to analyse the risk and returns assessments of the selected 30 companies which are listed on NSE and to find out the extent of the variation of the stock of the selected companies for a period of one year. They also analysed the portfolio of these companies. They used tools such as beta and CAPM model. They found out that Axis Bank had the highest CAPM returns, HCL had highest abnormal and actual returns, whereas Asian Paints had the least actual returns. They concluded that thirteen companies have less returns than the portfolio returns and also concluded that the stocks which has high systematic risk would not be preferable for an investor due to the high risk involved.

Dr Premachandran (2016) conducted a study on Volatility and Return of Indian Banking sector index, this study also intended to analyze risk and return of 12 banks listed in Bank Nifty. The study was limited to a period of one year starting from first April 2015 to 31 March 2016. Tool used for analysis are daily returns, Beta and standard deviation as measure of volatility and correlation. And the study suggest that except HDFC bank all other highly volatile than the market because the Beta appearing more than 1 for all other stocks.

Mallikarjunappa T and Shaini Naveen (2016) conducted a study on Comparative Analysis of Risk and Return with Reference to Stocks of CNX Bank Nifty. This study

analyzes the risk and returns in the banking sector. The researchers compare the 12 listed banks in the Nifty through analyses of the performance of banking stocks mainly to understand the required rate of return and risk. In this analysis found some stocks move in the opposite direction to the Stock market, some stocks move along with the market, some stocks are less volatile compared to the market and some stocks are more volatile compared to the market.

Dr Poornima S and Swathiga P (2017) analysed the relationship between risk & return of 10 selected companies. These ten companies are selected from 2 different sectors i.e. automobile and IT sector, which are listed on NSE. The tools like average return, SD and CAPM model are used to perform the analysis. Analysis is done for a period of 3 years. They concluded that the analysis helps the investors to select the stock based on their own choice. They advised that in case of the automobile sector it was preferable for the investors to invest in Maruthi Suzuki and Bosch where as in the IT sector it was HCL Technologies. They concluded that the automobiles sector had better market growth than the ITsector.

Dr Muthu Gopalakrishnan M & Amal Vijay A K (2017) attempted to analyse the risk return aspects of ten selected pharmaceutical companies which are listed on NSE. The tools which were used to perform the analysis were mean, beta, standard deviation, alpha, correlation and covariance. The data collected was for a period of five years, from 2012 to 2015. By analysing these companies, they understood that if the investor has to get high returns it is very important to consider the risk and return factors of the stocks. They concluded that Sun Pharmaceutical Company is giving the high returns but the volatility associated with the returns of the company is also high, whereas for Divi's Laboratories company had less volatility in the returns and also had good high returns for the stock. So, they concluded that Divi's Laboratories was the company the investors should prefer in investing.

Dr Subramanyam P and Dr Nalla Bala Kalyan (2018) analysed the return and risk assessments of the equity purchased from the secondary market for ten different companies for a period of one month. The tools and techniques used in this research are beta, expected return and co-efficient of variation. This paper emphasizes on the market fluctuations relations to the prices of Scrip's though it is difficult to observe a pattern for the price movements but efforts have been taken using fundamental analysis and technical analysis. They concluded that one method is

not sufficient to analyse and interpret the fluctuations. However, suggested that these tools help the investor to define the trends to some extent. They also concluded from the research that, the month February 2017 was not favorable to invest in the infrastructure companies.

Lakshman Raj Kandel (2018) the author made an attempt to analyse the risk and return relationship of two selected commercial banks which are listed on the Nepal stock exchange. The data was collected for a period five years and tools such as correlation, SD, covariance, and also portfolio analysis & t-test were used for the purpose of analysis. They analysed that both the banks had high proportions of unsystematic risk, and the prices of the stocks were overpriced. So, they concluded that it was preferable for the investors to go for short selling.

Andrew Worthington and Helen Higgs (2018) examines risk, return and the prospects for portfolio diversification among major painting and financial markets over the period 1976-2001. The art markets examined are contemporary masters, French impressionists, Modern European, 18th century European, old master, surrealists, 20th century English and modern us paintings. The financial markets comprise us treasury bills. Corporate and government bonds and small and large company stocks in common with the literature in this area, the study finds that the returns on paintings are much lower and the risk much higher than conventional investment markets, moreover, while low correlation of returns suggest that opportunities for portfolio diversification in art works also and in conjunction with equity markets exist, the construction of Markowitz mean-variance efficient portfolios indicates that no diversification gains are provided by art in financial assets portfolios. However diversification benefits in portfolios comprised solely of art works are possible, with contemporary masters, 19th century European, old masters and 20th century English paintings dominating the efficient frontier during the period in question.

2.2 THEORETICAL STUDY

Risk Management

Risk management is the process of measuring, or assessing, risk and developing strategies to management it. Strategies include transferring the risk to another party, avoiding the risk reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk.

DEFINITION of 'Risk'

The chance that an investment's actual return will be different than expected. Risk includes the possibility of losing some or all of the original investment. Different versions of risk are usually measured by calculating the standard deviation of the historical returns or average returns of a specific investment. A high standard deviation indicates a high degree of risk.

Many companies now allocate large amounts of money and time in developing risk management strategies to help manage risks associated with their business and investment dealings. A key component of the risk management process is risk assessment, which involves the determination of the risks surrounding a business or investment.

DEFINITION of 'Return'

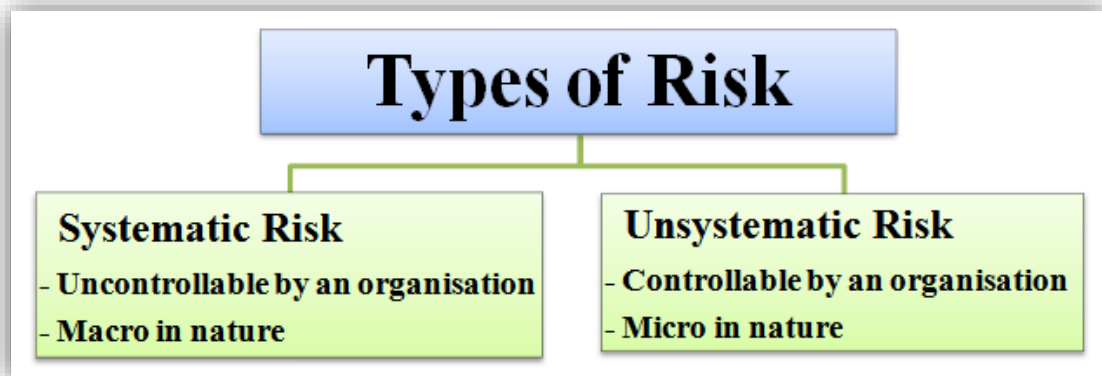
The gain or loss of a security in a particular period. The return consists of the income and the capital gains relative on an investment. It is usually quoted as a percentage.

Types of risk

First let's revise the simple meaning of two words, viz., types and risk.

In general and in context of this finance article,

1. Types mean different classes or various forms / kinds of something or someone.
2. Risk implies the extend to which any chosen action or an inaction that may lead to a loss or some unwanted outcome. The notion implies that a choice may have an influence on the outcome that exists or has existed.



However, in financial management, risk relates to any material loss attached to the project that may affect the productivity, tenure, legal issues, etc. of the project.

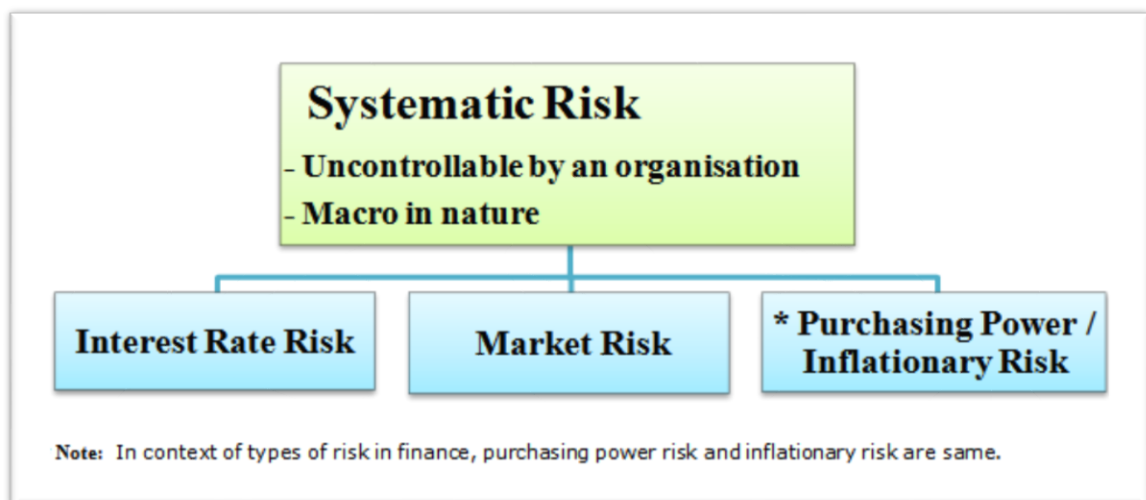
In finance, different types of risk can be classified under two main groups, viz.,

1. Systematic risk.
2. Unsystematic risk.

The meaning of systematic and unsystematic risk in finance:

1. Systematic risk is uncontrollable by an organization and macro in nature.
2. Unsystematic risk is controllable by an organization and micro in nature.

A. Systematic Risk



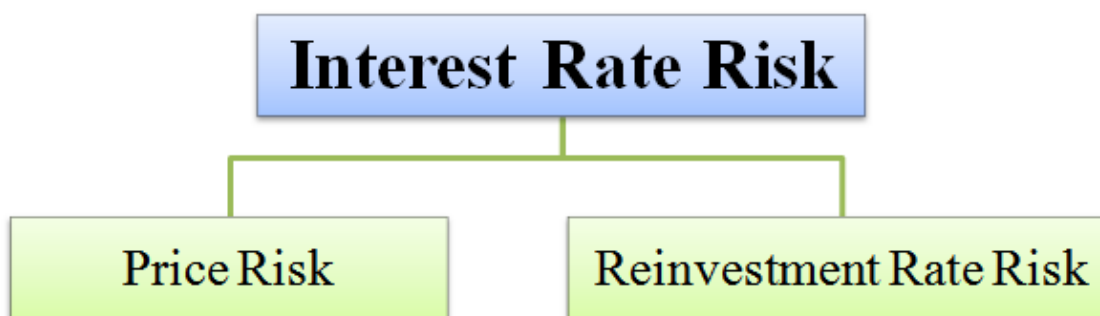
Systematic risk is due to the influence of external factors on an organization. Such factors are normally uncontrollable from an organization's point of view. It is a macro in nature as it affects a large number of organizations operating under a similar stream or same domain. It cannot be planned by the organization.

The types of systematic risk are depicted and listed below.

1. Interest rate risk,
2. Market risk and
3. Purchasing power or inflationary risk.

Now let's discuss each risk classified under this group.

1. Interest rate risk



Interest-rate risk arises due to variability in the interest rates from time to time. It particularly affects debt securities as they carry the fixed rate of interest.

The types of interest-rate risk are depicted and listed below.

- ❖ Price risk and
- ❖ Reinvestment rate risk.

The meaning of price and reinvestment rate risk is as follows:

- ❖ Price risk arises due to the possibility that the price of the shares, commodity, investment, etc. may decline or fall in the future.
- ❖ Reinvestment rate risk results from fact that the interest or dividend earned from an investment can't be reinvested with the same rate of return as it was acquiring earlier.

2. Market risk



Market risk is associated with consistent fluctuations seen in the trading price of any particular shares or securities. That is, it arises due to rise or fall in the trading price of listed shares or securities in the stock market.

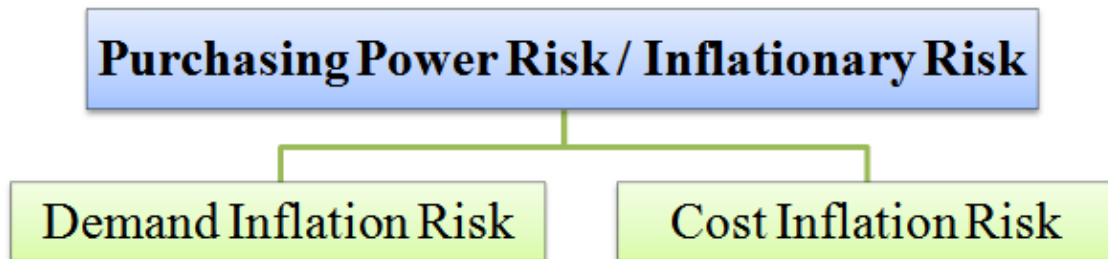
The types of market risk are depicted and listed below.

1. Absolute risk,
2. Relative risk,
3. Directional risk,
4. Non-directional risk,
5. Basis risk and
6. Volatility risk.

The meaning of different types of market risk is as follows:

1. Absolute risk is without any content. For e.g., if a coin is tossed, there is fifty percentage chance of getting a head and vice-versa.
2. Relative risk is the assessment or evaluation of risk at different levels of business functions. For e.g. a relative-risk from a foreign exchange fluctuation may be higher if the maximum sales accounted by an organization are of export sales.
3. Directional risks are those risks where the loss arises from an exposure to the particular assets of a market. For e.g. an investor holding some shares experience a loss when the market price of those shares falls down.
4. Non-Directional risk arises where the method of trading is not consistently followed by the trader. For e.g. the dealer will buy and sell the share simultaneously to mitigate the risk
5. Basis risk is due to the possibility of loss arising from imperfectly matched risks. For e.g. the risks which are in offsetting positions in two related but non-identical markets.
6. Volatility risk is of a change in the price of securities as a result of changes in the volatility of a risk-factor. For e.g. it applies to the portfolios of derivative instruments, where the volatility of its underlying is a major influence of prices.

3. Purchasing power or inflationary risk



Purchasing power risk is also known as inflation risk. It is so, since it emanates (originates) from the fact that it affects a purchasing power adversely. It is not desirable to invest in securities during an inflationary period.

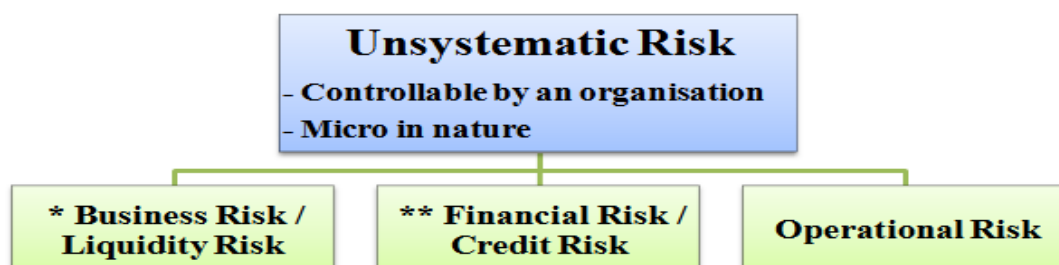
The types of power or inflationary risk are depicted and listed below.

1. Demand inflation risk and
2. Cost inflation risk.

The meaning of demand and cost inflation risk is as follows:

1. Demand inflation risk arises due to increase in price, which result from an excess of demand over supply. It occurs when supply fails to cope with the demand and hence cannot expand anymore. In other words, demand inflation occurs when production factors are under maximum utilization.
2. Cost inflation risk arises due to sustained increase in the prices of goods and services. It is actually caused by higher production cost. A high cost of production inflates the final price of finished goods consumed by people.

B. Unsystematic Risk



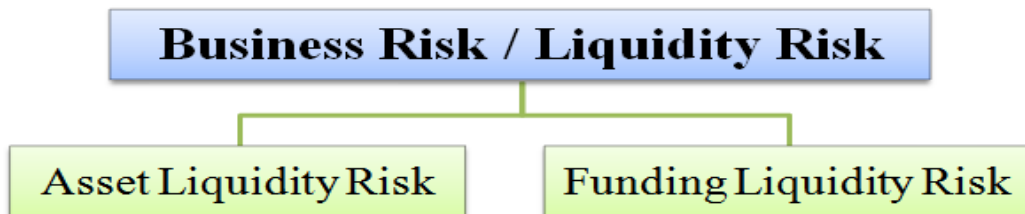
* Note: In context of types of risk in finance, business risk and liquidity risk are same.

** Note: In context of types of risk in finance, financial risk and credit risk are same.

Unsystematic risk is due to the influence of internal factors prevailing within an



1. Business or liquidity risk



Business risk is also known as liquidity risk. It is so, since it emanates (originates) from the sale and purchase of securities affected by business cycles, technological changes, etc. The types of business or liquidity risk are depicted and listed below.

1. Asset liquidity risk and
2. Funding liquidity risk.

The meaning of asset and funding liquidity risk is as follows:

1. Asset liquidity risk is due to losses arising from an inability to sell or pledge assets at, or near, their carrying value when needed. For e.g. assets sold at a lesser value than their book value.
2. Funding liquidity risk exists for not having an access to the sufficient-funds to make a payment on time. For e.g. when commitments made to customers are not fulfilled as discussed in the SLA (service level agreements).

3. Financial or credit risk

Financial risk is also known as credit risk. It arises due to change in the capital structure of the organization. The capital structure mainly comprises of three ways by which funds are sourced for the projects. These are as follows:

1. Owned funds. For e.g. share capital.
2. Borrowed funds. For e.g. loan funds.
3. Retained earnings. For e.g. reserve and surplus.

The types of financial or credit risk are depicted and listed below.

1. Exchange rate risk,
2. Recovery rate risk,
3. Credit event risk,
4. Non-Directional risk,
5. Sovereign risk and
6. Settlement risk.

The meaning of types of financial or credit risk is as follows:

1. Exchange rate risk is also called as exposure rate risk. It is a form of financial risk that arises from a potential change seen in the exchange rate of one country's currency in relation to another country's currency and vice-versa. For e.g. investors or businesses face it either when they have assets or operations across national borders, or if they have loans or borrowings in a foreign currency.
2. Recovery rate risk is an often neglected aspect of a credit-risk analysis. The recovery rate is normally needed to be evaluated. For e.g. the expected recovery rate of the funds tendered (given) as a loan to the customers by banks, non-banking financial companies (NBFC), etc.
3. Sovereign risk is associated with the government. Here, a government is unable to meet its loan obligations, reneging (to break a promise) on loans it guarantees, etc.
4. Settlement risk exists when counterparty does not deliver a security or its value in cash as per the agreement of trade or business.

4. Operational risk



Operational risks are the business process risks failing due to human errors. This risk will change from industry to industry. It occurs due to breakdowns in the internal procedures, people, policies and systems.

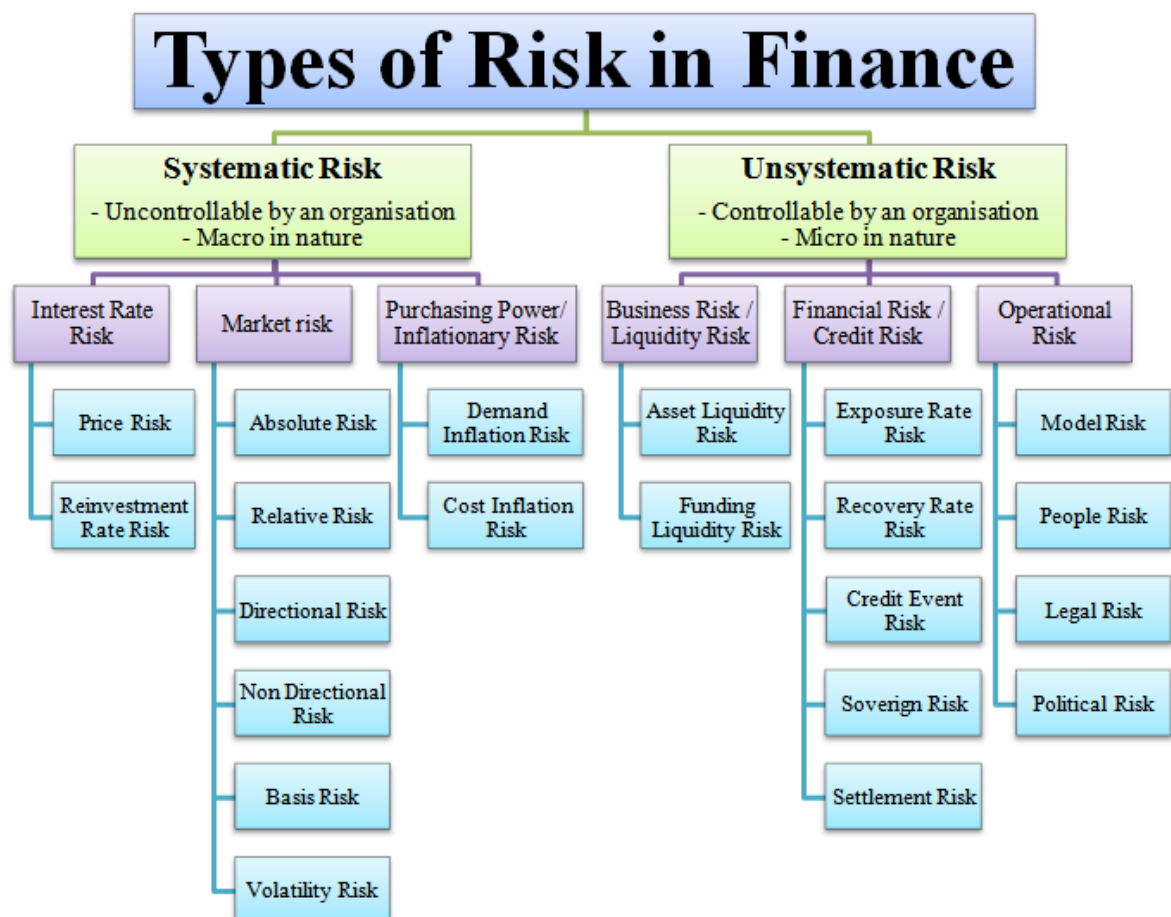
The types of operational risk are depicted and listed below.

1. Model risk,
2. People risk,
3. Legal risk and
4. Political risk.

The meaning of types of operational risk is as follows:

1. Model risk is involved in using various models to value financial securities. It is due to probability of loss resulting from the weaknesses in the financial-model used in assessing and managing a risk.
2. People risk arises when people do not follow the organization's procedures, practices and/or rules. That is, they deviate from their expected behavior.
3. Legal risk arises when parties are not lawfully competent to enter an agreement among themselves. Furthermore, this relates to the regulatory-risk, where a transaction could conflict with a government policy or particular legislation (law) might be amended in the future with retrospective effect.
4. Political risk occurs due to changes in government policies. Such changes may have an unfavorable impact on an investor. It is especially prevalent in the third-world countries.

C. Conclusion



Following three statements highlight the gist of this article on risk:

1. Every organization must properly group the types of risk under two main broad categories viz.,
 - a. Systematic risk and
 - b. Unsystematic risk.

2. Systematic risk is uncontrollable, and the organization has to suffer from the same. However, an organization can reduce its impact, to a certain extent, by properly planning the risk attached to the project.
3. Unsystematic risk is controllable, and the organization shall try to mitigate the adverse consequences of the same by proper and prompt planning.

Understanding risk and return

Some investments are riskier than others – there's a greater chance you could lose some or all of your money. For example, Canada Savings Bonds (CSBs) have very low risk because they are issued by the government of Canada. GICs and bank deposits also carry low risk because they are backed by large financial institutions. With GICs and deposits you also have the additional protection of deposit insurance on amounts up to \$100,000 if your financial institution goes bankrupt. With these low-risk investments you are unlikely to lose money. However, they have a lower potential return than riskier investments and they may not keep pace with inflation.

Over the long-term, bonds have a potentially higher return than CSBs and GICs, but they also have more risks. Their prices may drop if the issuer's creditworthiness declines or interest rates go up. If prices drop, you will incur a loss.

Stocks have a potentially higher return than bonds over the long term, but they are also riskier. Bond investors are creditors. As a bond investor, you're legally entitled to fixed amounts of interest and principal and are repaid in priority if the company goes bankrupt. However, if the company is successful, you won't earn more than the fixed amounts of interest and principal. Shareholders are owners. As a shareholder, if the company is unsuccessful, you could lose all of your money. But if the company is successful, you could see higher dividends and a rising share price.

Some investments, such as those sold on the exempt market are highly speculative and very risky. They should only be purchased by investors who can afford to lose all of the money they have invested.

CHAPTER - 3

RESEARCH METHODOLOGY

Research Methodology is a systematic way of solving the problem. It includes the overall research design, the sampling procedure, data collection method and analysis procedure.

3.1 Research Design

The research design used in this study is Descriptive research. The major purpose of descriptive research is description of the state of affairs as it exists at present.

3.2 Data Collection

- The data for this study is Secondary Data.
- The data is collected from secondary sources such as various websites, journals, newspapers, books, etc.

3.3 Source of Data

The Study is based on the secondary data collected from NSE India Ltd.

3.4 Sample Size

Top seven banks on the basis of Capitalization (Indian Bank, South Indian Bank, Indian Overseas Bank, ICICI Bank, HDFC Bank, IDBI Bank, Canara Bank).

3.5 Period of Study

This is the study of risk-return analysis for the period of five years (2015-2016 to 2019-2020).

3.6 Statistical Tool to be used

- Rate of Return
- Sample Mean
- Standard Deviation
- Variance
- Coefficient of Variation

➤ **Beta**

➤ **Rate of Return:**

The gain or loss on an investment over a specified period, expressed as a percentage increase over the initial investment cost. Gains on investments are considered to be any income received from the security plus realized capital gains.

$$\text{Annual Rate of Return} = (\text{Ending Value} / \text{Beginning Value}) * (1 / \text{Number of years})$$

➤ **Sample Mean**

Sample Mean in securities analysis, is the expected value, or mean, of all the likely returns of investments comprising a portfolio. A sample mean is also known as an expected return or mean return.

$$\text{Sample Mean} = (\text{Total Annual Rate of Return} / \text{Total Number of Years}) * 100$$

➤ **Variance**

A measurement of the spread between numbers in a data set. The variance measures how far each number in the set is from the mean.

Variance is calculated by taking the differences between each number in the set and the mean, squaring the differences (to make them positive) and dividing the sum of the squares by the number of values in the set.

➤ **Standard Deviation**

A measure of the dispersion of a set of data from its mean. The more spread apart the data, the higher the deviation. Standard deviation is calculated as the square root of variance. In finance, standard deviation is applied to the annual rate of return of an investment to measure the investment's volatility. Standard deviation is also known as historical volatility and is used by investors as a gauge for the amount of expected volatility.

➤ **Coefficient of Variation**

The Coefficient of Variation is a statistical measure of the dispersion of the data around the mean value. The Coefficient of Variation helps the investors

to find the volatility or risk in comparison to the return expected from the Investments.

$$\text{Coefficient of Variation} = \text{Standard Deviation} / \text{Mean}$$

➤ **Beta**

Beta is a measure of the volatility or systematic risk of a security or portfolio compared to the market as a whole. A beta coefficient can measure the volatility of an individual stock compared to the systematic risk of the entire market. In statistical terms, beta represents the slope of the line through a regression of data points. In finance, each of these data points represents an individual stock's returns against those of the market as a whole. Beta effectively describes the activity of a security's returns as it responds to swings in the market. A security's beta is calculated by dividing the product of the covariance of the security's returns and the market's returns by the variance of the market's returns over a specified period.

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

INDIAN BANK

Table 4.1 Annual Rate of Return of Indian Bank

YEAR	OPENING PRICE	CLOSING PRICE	ANNUAL RATE OF RETURN	Growth Rate of Indian Bank
2015-2016	163.28	99.82	0.123	1.123
2016-2017	98.1	272.96	0.556	1.556
2017-2018	276.9	294.24	0.213	1.213
2018-2019	312.84	261.61	0.167	1.167
2019-2020	269.64	55.05	0.041	1.041
TOTAL			1.1	6.1
Mean(Total Annual Rate of Return / No of Years)				0.22

Source: Annual Report of Indian Bank 2015-2016 to 2019-2020 from NSE India Ltd.

Interpretation

If an investor invest rupee 1 at the end of 2016, the investor would have earned rupees 6.1 at the end of 2020 i.e., the investor's total return is Rs.5.1.

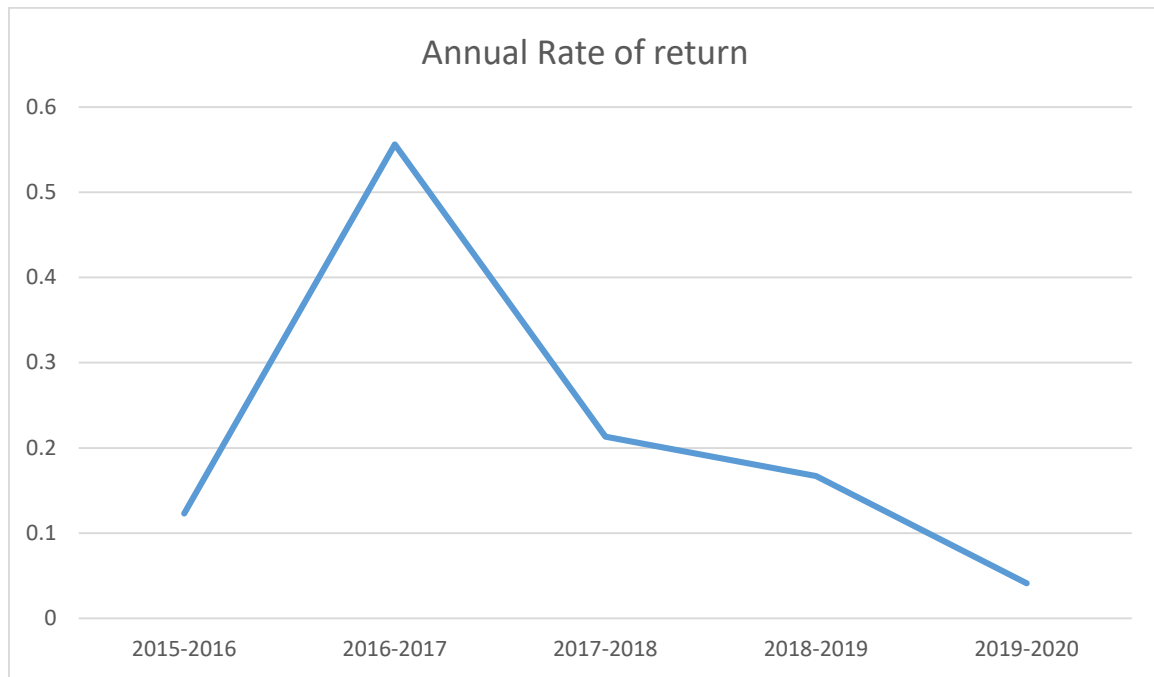


Fig. 4.1 Annual Rate of Return for Indian Bank

Table 4.2 Standard Deviation of Indian Bank

YEAR	ANNUAL RETURN (P)	Q = P – AVERAGE ANNUAL RETURN	Q ²
2015-2016	12.3	-9.7	94.09
2016-2017	55.6	33.6	1128.96
2017-2018	21.3	-0.7	0.49
2018-2019	16.7	-5.3	28.09
2019-2020	04.1	-17.9	320.41
TOTAL	99		1572.04
Variance ($\sum Q^2 / n-1$)		393.01	
Standard Deviation		19.82	

Interpretation

Indian bank return deviates about 19.82% from the average rate of return. So it is difficult to assess the future returns from the past returns.

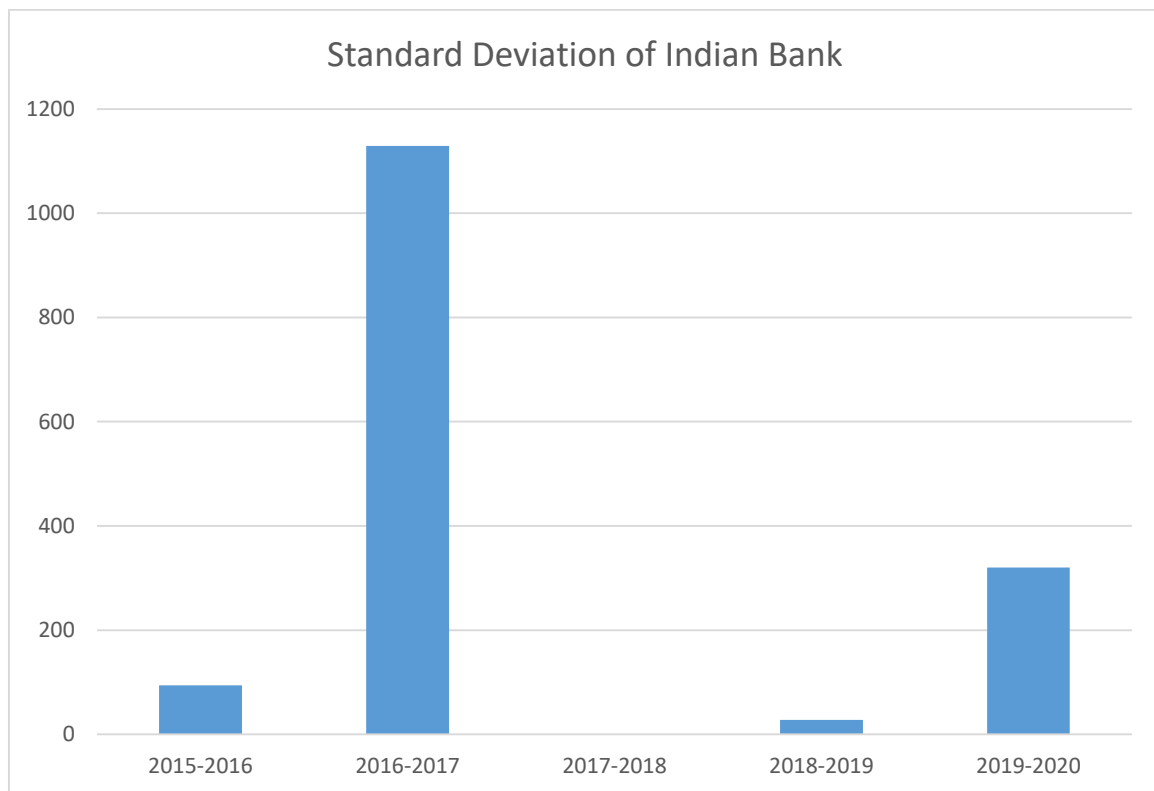


Fig. 4.2 Standard Deviation of Indian Bank

SOUTH INDIAN BANK

Table 4.3 Annual Rate of Return of South Indian Bank

Year	Opening price	Closing price	Annual rate of return	Growth Rate
2015-2016	25.29	17.5	0.138	1.138
2016-2017	17.89	20.37	0.228	1.228
2017-2018	22.88	24.52	0.214	1.214
2018-2019	25.61	15.47	0.121	1.121
2019-2020	17.09	6.70	0.078	1.078
Total			0.78	5.78
Mean(Total Annual Rate of Return/ No of years)				0.156

Source: Annual Report of South Indian Bank 2015-2016 to 2019-2020 from NSE India Ltd.

Interpretation:

If an investor invests rupee 1 at the end of 2016, the investor would have earned rupees 5.78 at the end of 2020 i.e., the investor's total return is Rs.4.78.

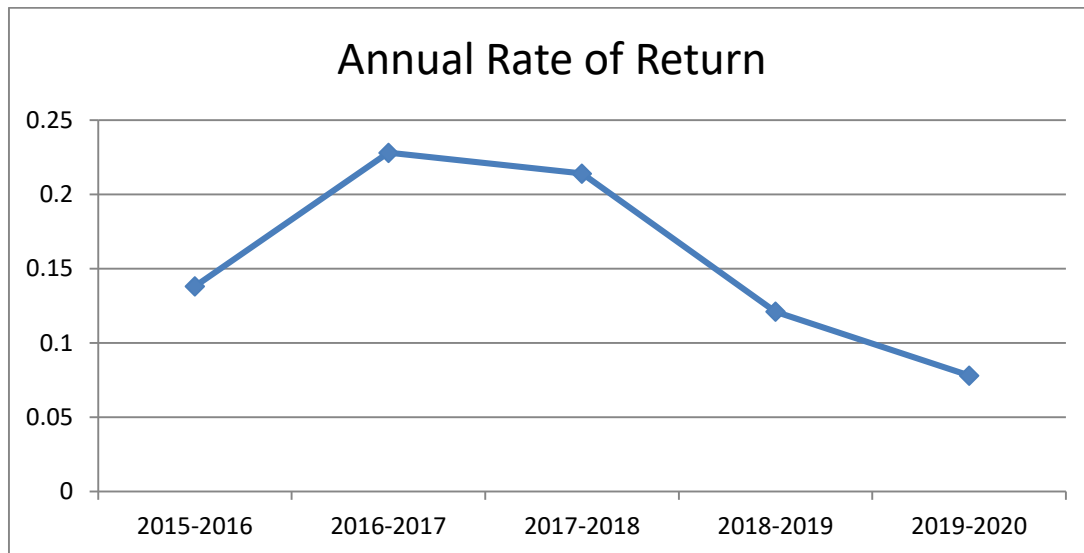


Fig. 4.3 Annual Rate of Return OF South Indian Bank

Table 4.4 Standard Deviation of South Indian Bank

Year	Annual return (P)	Q = P- Average annual return	Q ²
2015-2016	13.8	-1.8	3.24
2016-2017	22.8	7.2	51.84
2017-2018	21.4	5.8	33.64
2018-2019	12.1	-3.5	12.25
2019-2020	7.8	-7.8	60.84
TOTAL			161.81
Variance ($\sum Q^2 / n-1$)		40.45	
Standard Deviation		6.36	

Interpretation

South Indian Bank return deviates about 6.36% from the average rate of return. So it is difficult to assess the future returns from the past returns.

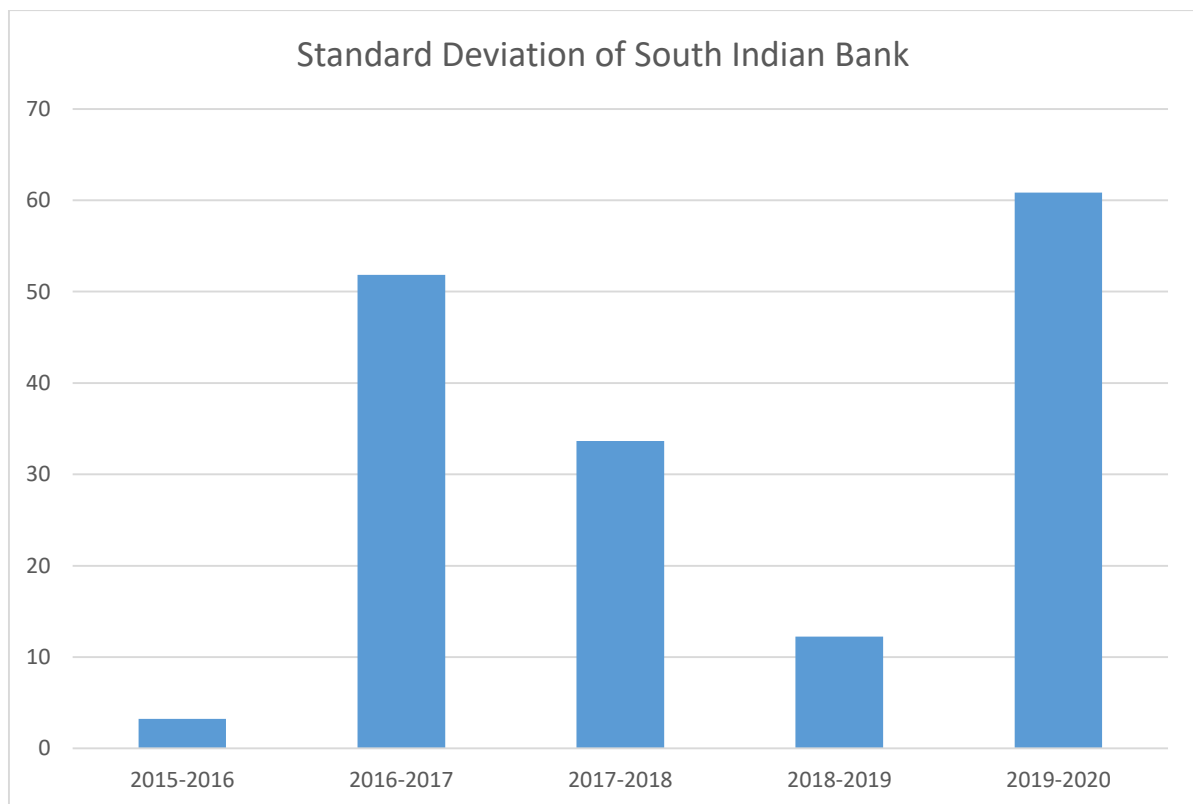


Fig. 4.4 Standard Deviation of South Indian Bank

Indian Overseas Bank

Table 4.5 Annual Rate of Return of INDIAN OVERSEAS BANK

Year	Opening price	Closing price	Annual rate of return	Growth Rate
2015-2016	43.97	27.35	0.124	1.124
2016-2017	31.09	26.73	0.172	1.172
2017-2018	27.93	18.26	0.131	1.131
2018-2019	17.95	14.7	0.164	1.164
2019-2020	14.86	7.65	0.103	1.103
Total			0.69	5.69
Mean(Total Annual Rate of Return / No of Years)				0.138

Source: Annual Report of INDIAN OVERSEAS BANK 2015-2016 to 2019-2020
from NSE India Ltd.

Interpretation

If an investor invests rupee 1 at the end of 2020, the investor would have earned rupees 5.69 at the end of 2020 i.e., the investor's total return is Rs.4.69.

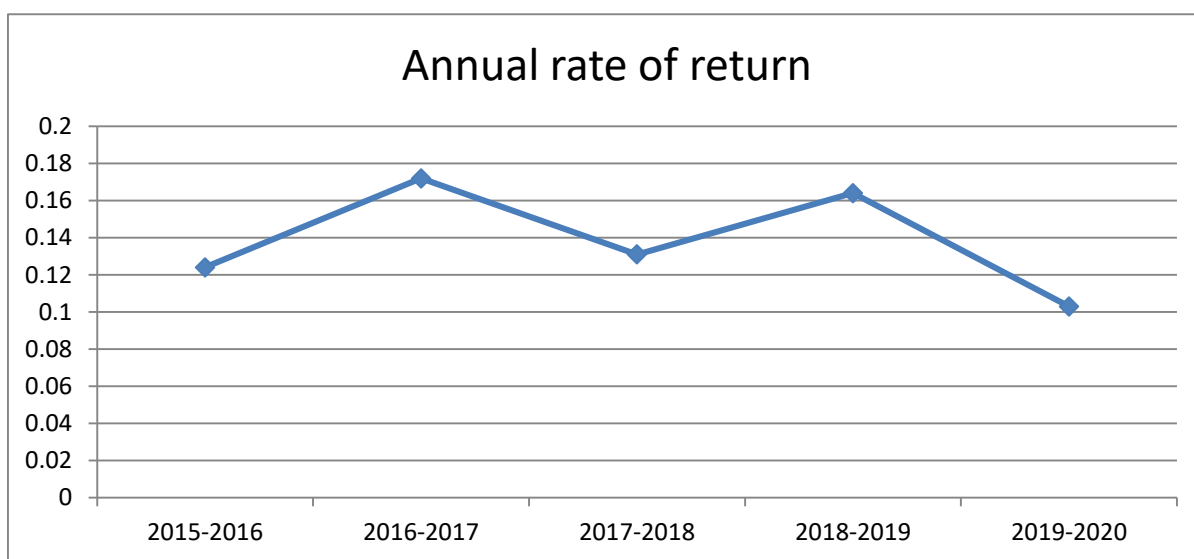


Fig. 4.5 Annual Rate of Return for Indian Overseas Bank

Table 4.6 Standard Deviation of INDIAN OVERSEAS BANK

Year	Annual return (P)	Q = P- Average annual return	Q ²
2015-2016	12.4	-56.6	3203.56
2016-2017	17.2	-51.8	2683.24
2017-2018	13.1	-55.9	3124.81
2018-2019	16.4	-52.6	2766.76
2019-2020	10.3	-58.7	3445.69
TOTAL	98		15224.06
Variance		3806.015	
Standard Deviation		61.69	

Interpretation:

Indian Overseas Bank return deviates about 61.69% from the average rate of return. So it is difficult to assess the future returns from the past returns.

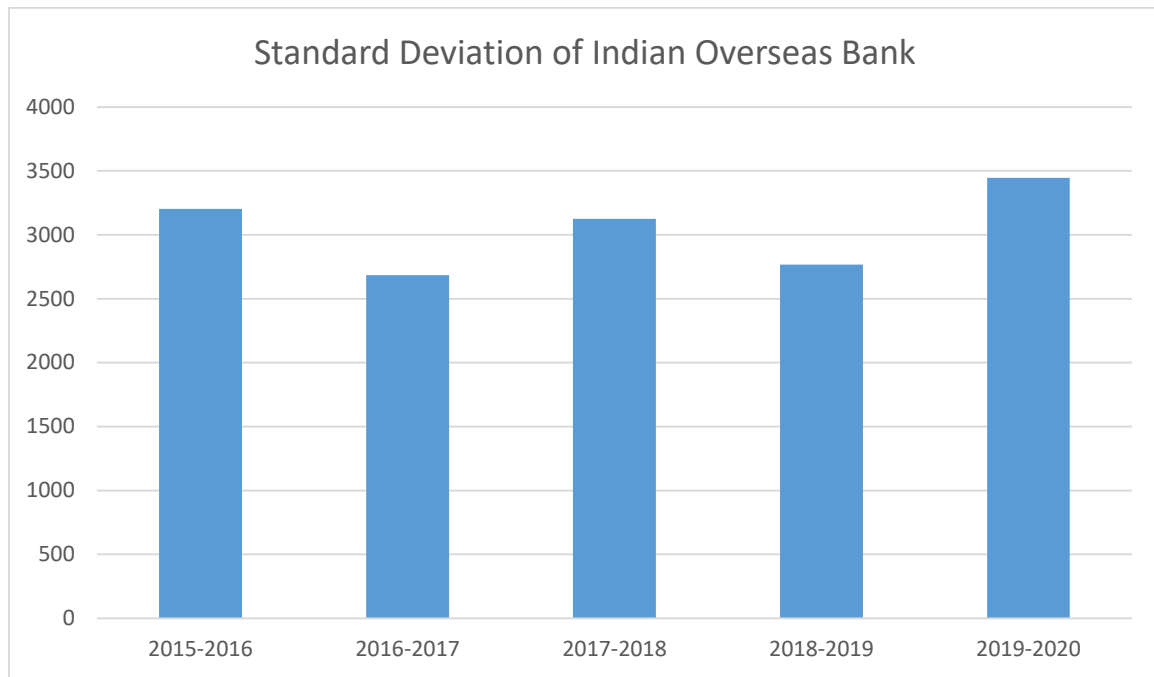


Fig. 4.6 Standard Deviation of Indian Overseas Bank

ICICI BANK

4.7 Annual Rate of Return of ICICI Bank

Year	Opening price	Closing price	Annual rate of return %	Growth Rate
2015-2016	317.21	329.12	2.075	3.075
2016-2017	238.28	276.67	0.23	1.23
2017-2018	278.43	293.09	0.211	1.211
2018-2019	281.06	282.07	0.201	1.201
2019-2020	397.49	396.69	1.99	2.99
Total			4.71	9.71
Mean(Total Annual Rate of Return / No of Years)				0.94

Source: Annual Report of ICICI Bank 2015-2016 to 2019-2020 from NSE India Ltd.

Interpretation:

If an investor invest rupee 1 at the end of 2016, the investor would have earned rupees 9.71 at the end of 2020 i.e., the investor's total return is Rs.8.71

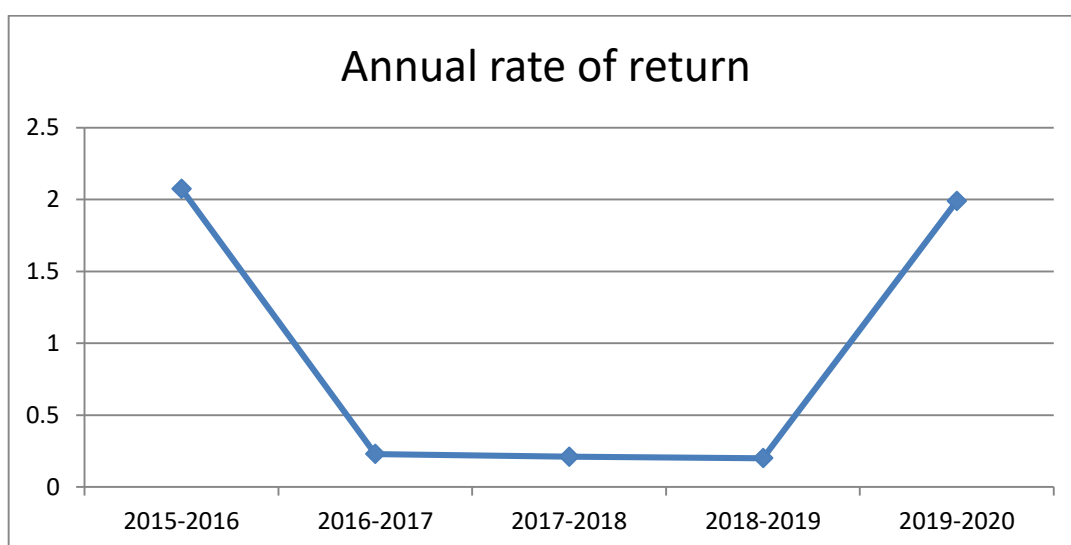


Fig. 4.7 Annual Rate of Return OF ICICI BANK

Table 4.8 Standard Deviation of ICICI Bank

Year	Annual return (P)	Q = P- Average annual return	Q ²
2015-2016	207.5	113.5	12882.25
2016-2017	23	-71	5041
2017-2018	21.1	-72.9	5314.41
2018-2019	20.1	-73.9	5461.21
2019-2020	190	96	9216
TOTAL			37914.6
Variance		9478.65	
Standard Deviation		97.35	

Interpretation:

ICICI bank return deviates about 97.35% from the average rate of return. So it is difficult to assess the future returns from the past returns.

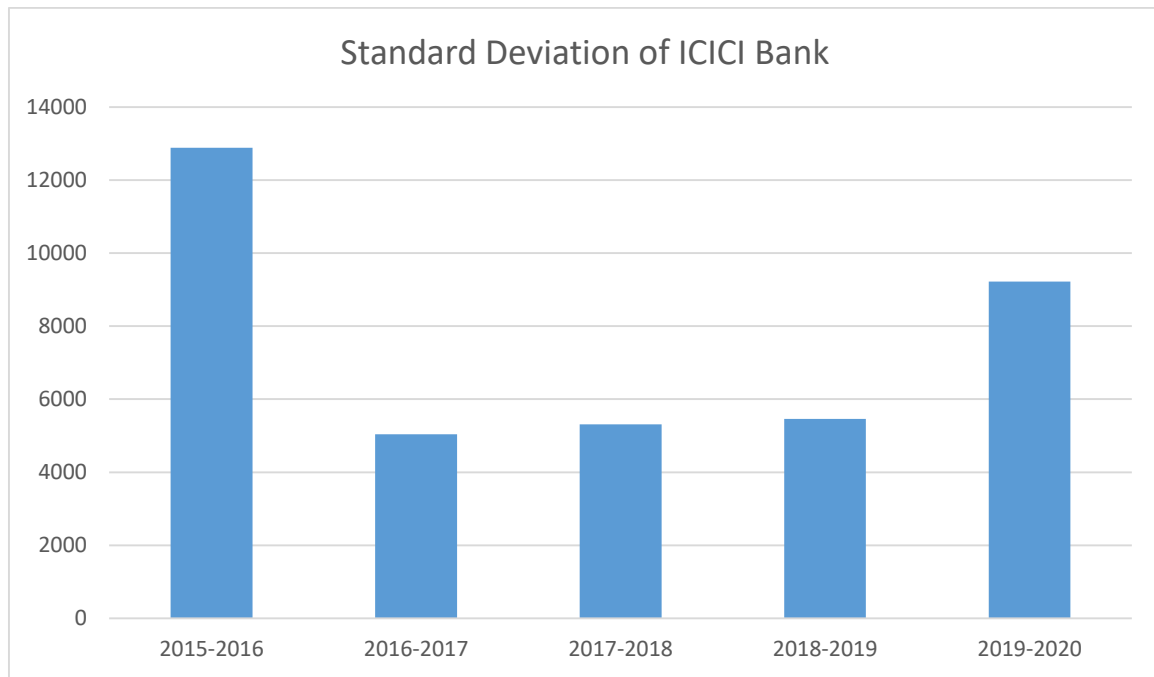


Fig. 4.8 Standard Deviation of ICICI Bank

HDFC Bank

Table 4.9 Annual Rate of Return of HDFC Bank

Year	Opening price	Closing price	Annual rate of return	Growth Rate
2015-2016	1022.67	1031.72	0.201	1.201
2016-2017	1082.65	1413.79	2.611	3.611
2017-2018	1468.4	1862.1	0.253	1.253
2018-2019	1927.61	2219.54	0.230	1.230
2019-2020	2284.42	982.56	0.860	1.860
Total			4.155	9.155
Mean (Total Annual Rate of Return / No of Years)				0.83

Source: Annual Report of HDFC Bank 2015-2016 to 2019-2020 from NSE India Ltd.

Interpretation

The chart explains that if an investor invest rupee 1 at the end of 2020, he would have earned rupees 9.16 at the end of 2020 i.e., his total return is Rs.8.16.

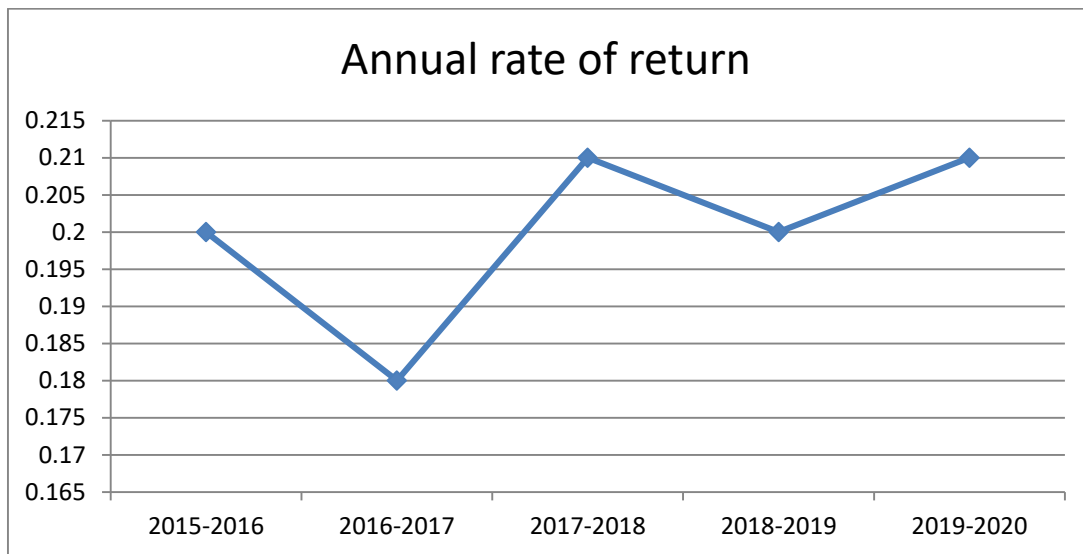


Fig. 4.9 CHART SHOWING THE RETURN OF HDFC BANK

Table 4.10 Standard deviation of HDFC Bank

Year	Annual return (P)	Q = P- Average annual return	Q ²
2015-2016	20.1	-62.9	3956.41
2016-2017	61.1	-21.9	479.61
2017-2018	25.3	-57.7	3329.29
2018-2019	23	-60	3600
2019-2020	86	3	9
TOTAL			11374.31
Variance		2843.57	
Standard Deviation		53.32	

Interpretation:

HDFC bank return deviates about 53.32% from the average rate of return. So it is difficult to assess the future returns from the past returns.

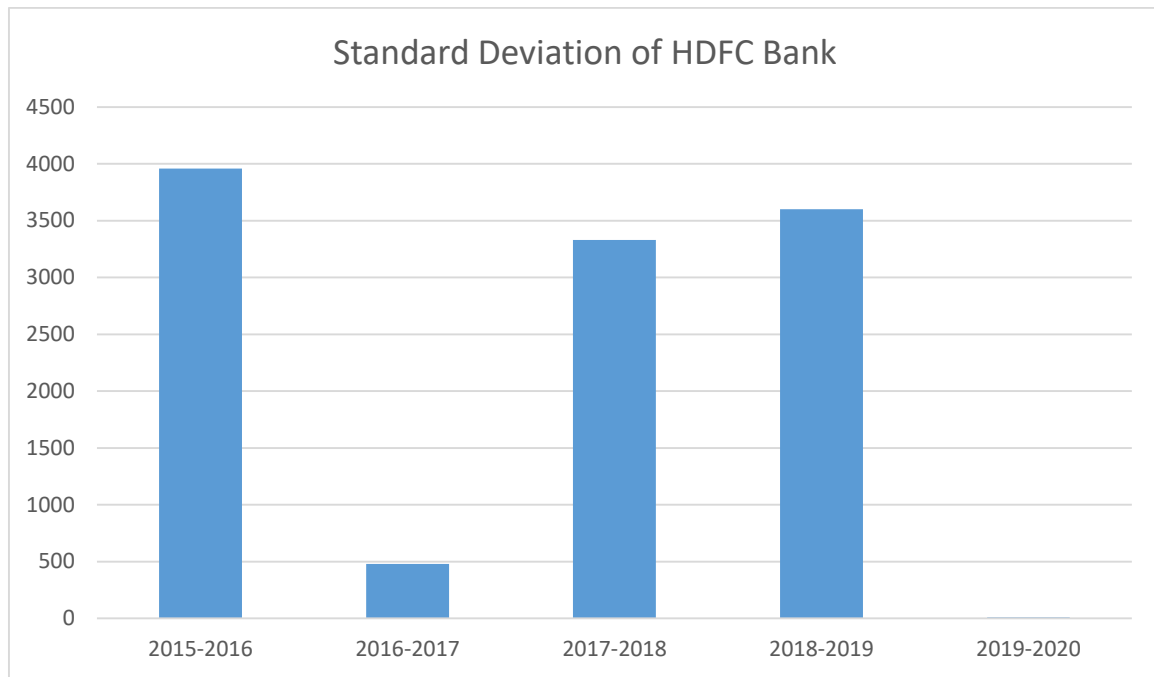


Fig 4.10 Standard deviation of HDFC Bank

IDBI Bank

4.11 Annual Rate of Return of IDBI Bank

Year	Opening price	Closing price	Annual rate of return %	Growth Rate
2015-2016	76.55	66.96	0.175	1.175
2016-2017	70.38	76.34	0.217	1.217
2017-2018	74.48	75.18	0.201	1.201
2018-2019	70.62	43.82	0.124	1.124
2019-2020	44.25	22.89	0.103	1.103
Total			0.82	5.82
Mean(Total Annual Rate of Return / No of years)				0.164

Source: Annual Report of IDBI Bank 2015-2016 to 2019-2020 from NSE India Ltd.

Interpretation

The chart explains that if an investor invest rupee 1 at the end of 2020, he would have earned rupees 5.82 at the end of 2020 i.e., his total return is Rs.4.82.

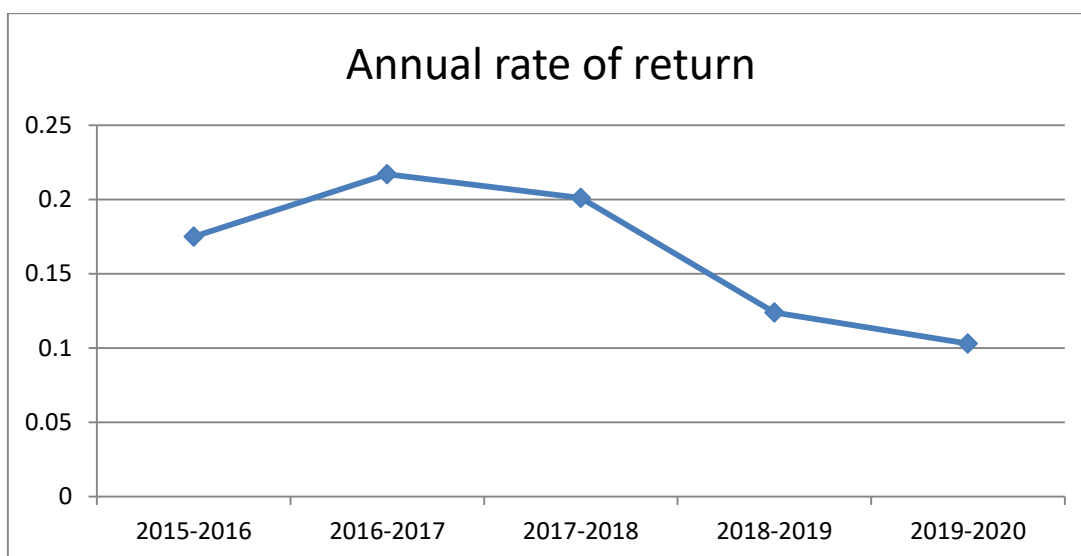


Fig. 4.11 Annual Rate of Return OF IDBI BANK

Table 4.12 Standard Deviation of IDBI Bank

Year	Annual return (P)	Q = P- Average annual return	Q ²
2015-2016	17.5	11.1	123.21
2016-2017	21.7	5.3	28.09
2017-2018	20.1	3.7	16.69
2018-2019	12.4	-4	16
2019-2020	10.3	-6.1	37.1
TOTAL			221.09
Variance		55.27	
Standard Deviation		7.43	

Interpretation:

IDBI bank return deviates about 7.43% from the average rate of return. So it is difficult to assess the future returns from the past returns.

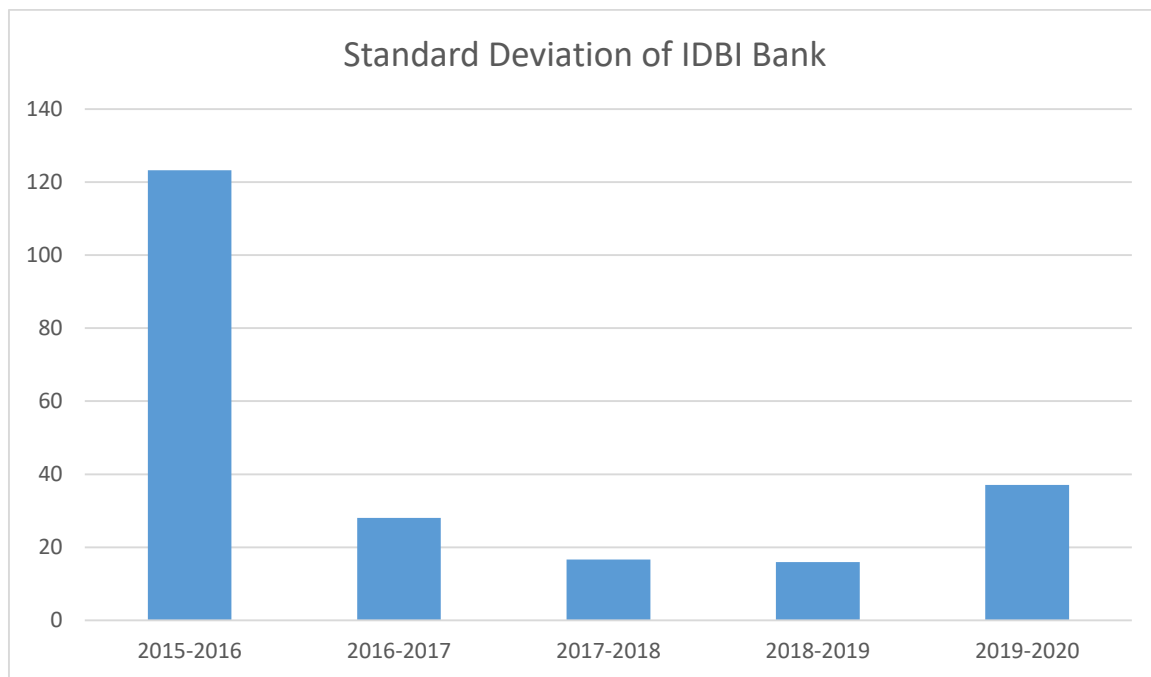


Fig 4.12 Standard Deviation of IDBI Bank

CANARA Bank

Table 4.13 Annual Rate of Return of Canara Bank

Year	Opening price	Closing price	Annual rate of return %	Growth Rate
2015-2016	389.02	184.06	0.095	1.095
2016-2017	197.41	291.78	0.296	1.296
2017-2018	316.86	259.80	0.164	1.164
2018-2019	272.06	267.73	0.197	1.197
2019-2020	280.89	105.60	0.075	1.075
Total			0.827	5.827
Mean (Total Annual Rate of Return / No of Years)				0.1654

Source: Annual Report of Canara Bank 2015-2016 to 2019-2020 from NSE
India Ltd.

Interpretation

If an investor invests rupee 1 at the end of 2016, the investor would have earned rupees 5.83 at the end of 2020 i.e., the investor's total return is Rs.4.83

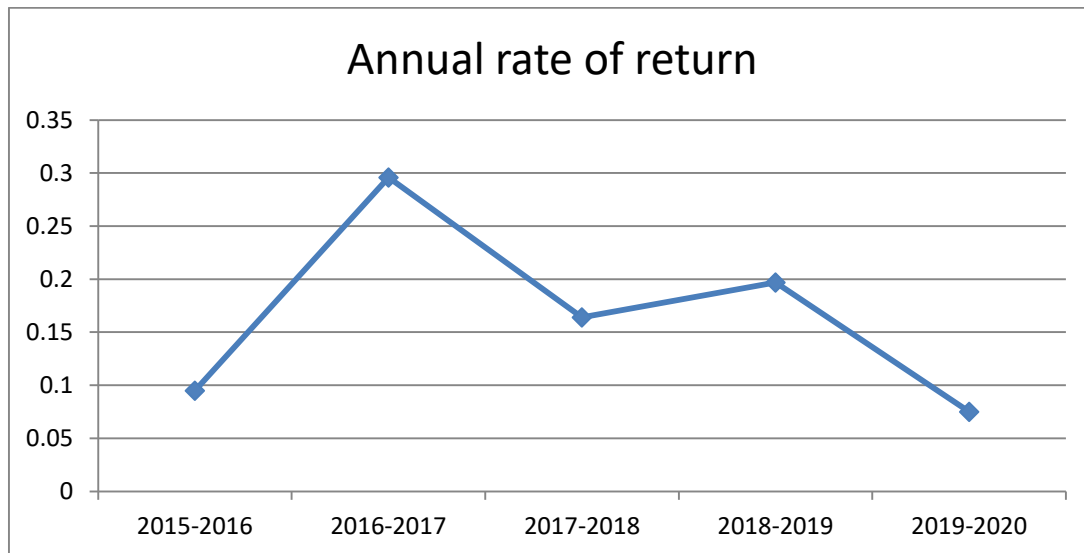


Fig. 4.13 Annual Rate of Return for CANARA bank

Table 4.14 Standard Deviation of Canara Bank

Year	Annual return (P)	Q = P- Average annual return	Q ²
2015-2016	9.5	-7.04	49.56
2016-2017	29.6	13.06	170.56
2017-2018	16.4	-0.14	0.020
2018-2019	19.7	3.16	9.99
2019-2020	7.5	-9.04	81.72
TOTAL			311.85
Variance		77.96	
Standard Deviation		8.82	

Interpretation:

CANARA bank return deviates about 8.82% from the average rate of return. So it is difficult to assess the future returns from the past returns.

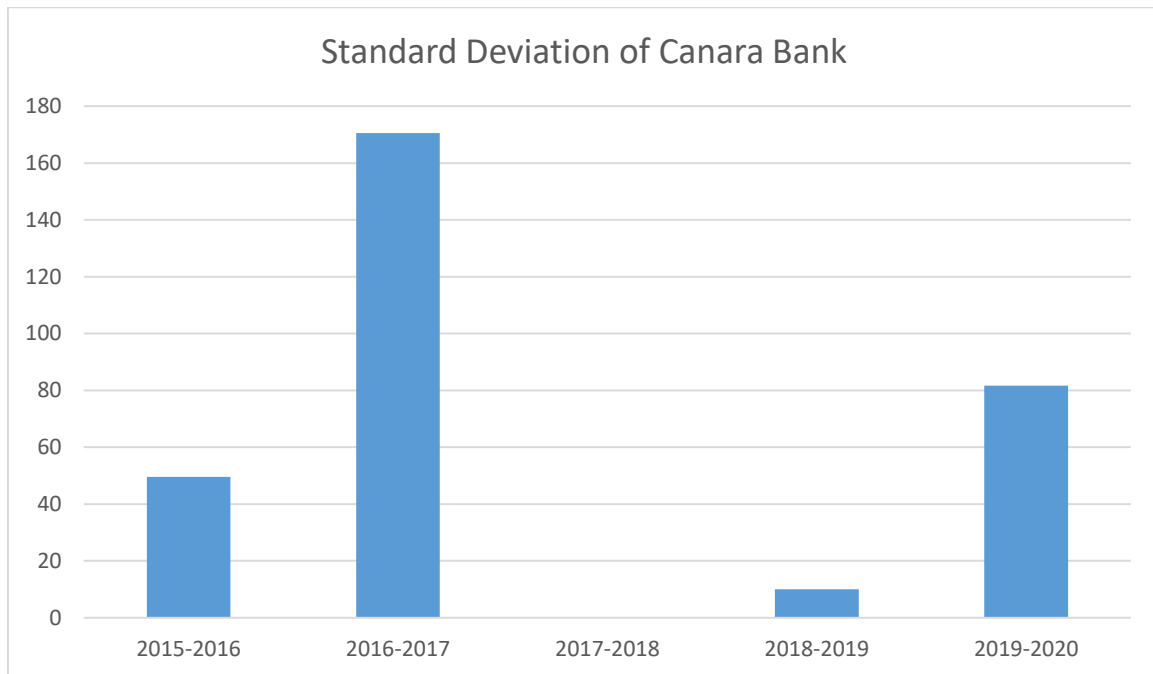


Fig. 4.14 Standard Deviation of Canara Bank

Table 4.15 The Comparative Analysis of annual rate of return of various banking sectors

Year	Indian Bank	South Indian Bank	Indian Overseas Bank	ICICI Bank	HDFC Bank	IDBI Bank	Canara Bank
2015-2016	0.123	0.138	0.124	2.075	0.201	0.175	0.095
2016-2017	0.556	0.228	0.172	0.23	2.611	0.217	0.296
2017-2018	0.213	0.214	0.131	0.211	0.253	0.201	0.164
2018-2019	0.167	0.121	0.164	0.201	0.230	0.124	0.197
2019-2020	0.041	0.078	0.103	1.99	0.860	0.103	0.075

Interpretation:

The above table shows that comparative annual return of the banking sector companies for the past 5 years. It shows that HDFC bank and ICICI Bank annual return were in high position compare to all other companies for overall period.

In the year 2016-2017 the high rate of return that is 2.611, were recorded by HDFC bank shares. And lowest annual rate of return were recorded by Indian Bank that is 0.041 in 2019-2020.

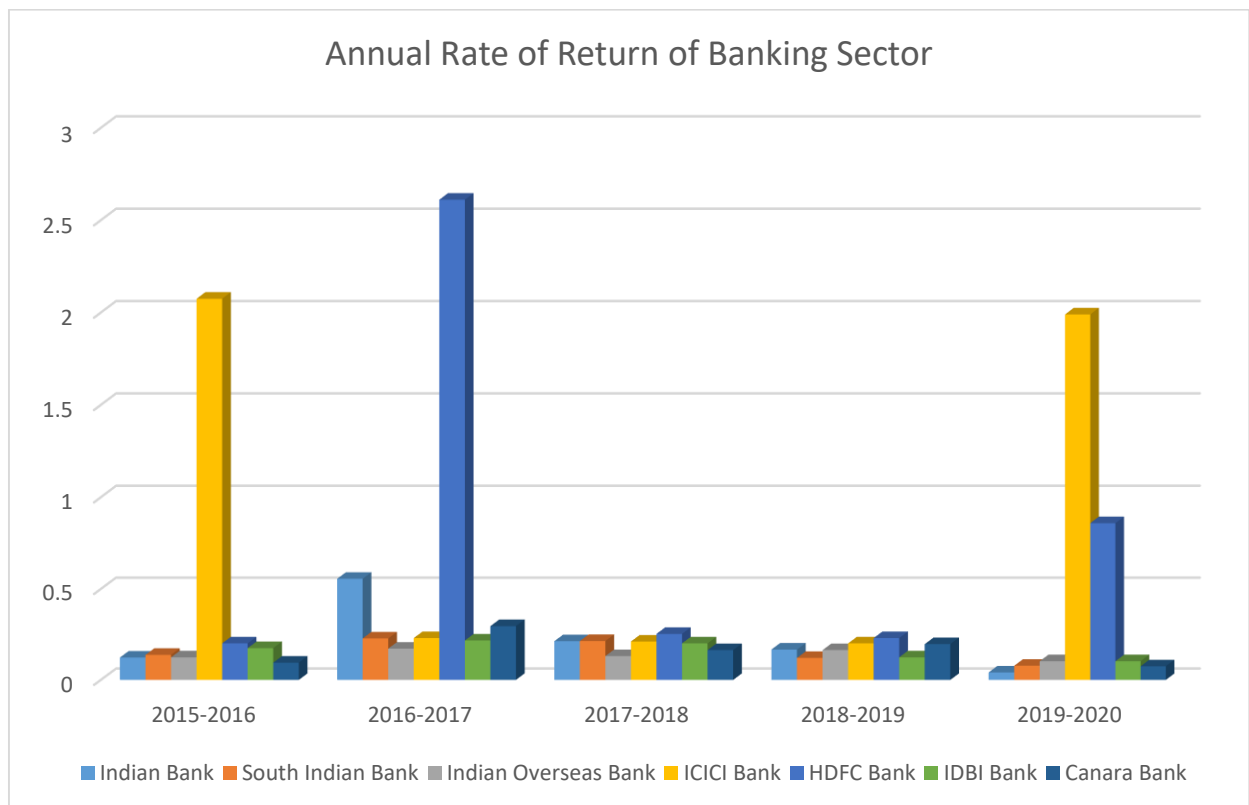


Fig 4.15 The Comparative Analysis of Annual Rate of Return of Banking Sector

Table 4.16 The comparative Analysis of Mean of various banking sectors

NAMES OF THE BANKS	Mean
INDIAN BANK	0.22
SOUTH INDIAN BANK	0.16
INDIAN OVERSEAS BANK	0.14
ICICI BANK	0.94
HDFC Bank	0.83
IDBI bank	0.16
Canara bank	0.17

Interpretation

The above table shows the comparative annual mean of the banking sector companies for the past 5 years. It shows that ICICI Bank and HDFC Bank has the highest compared to all other companies for overall period.

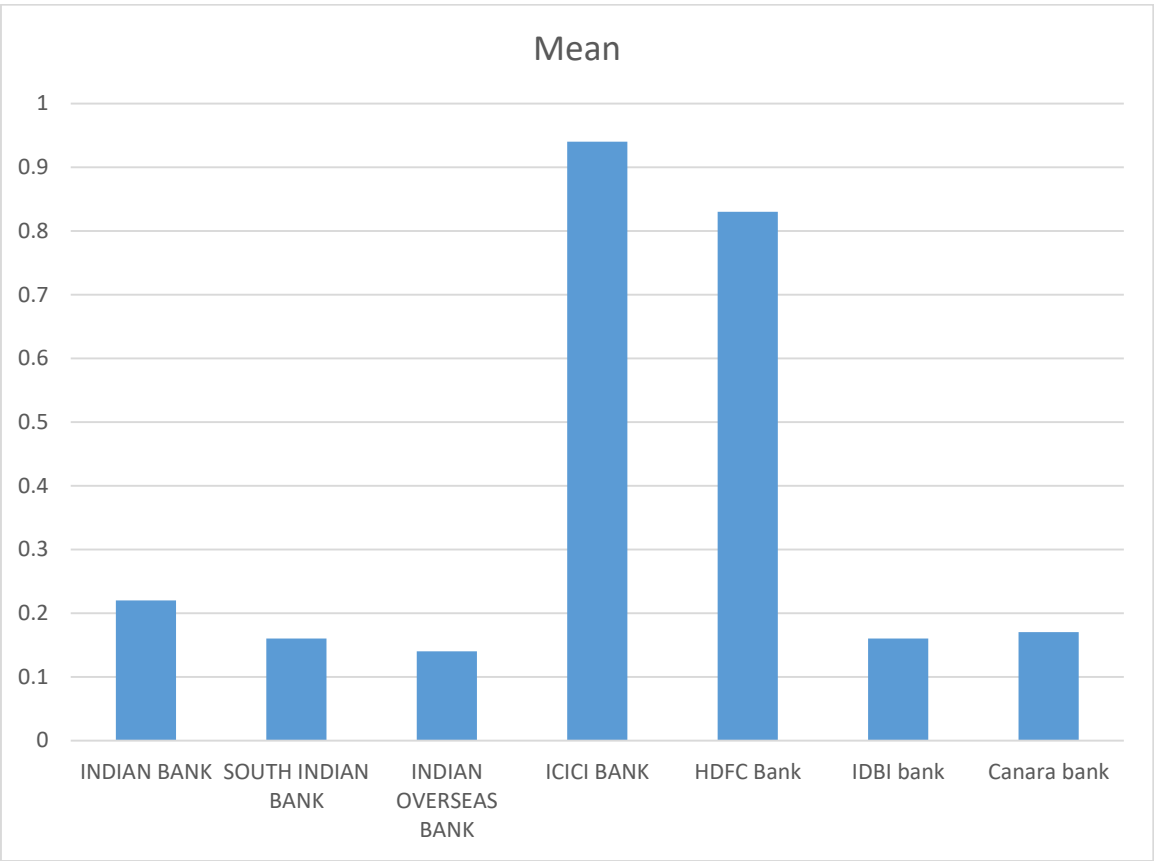


Fig 4.16 THE COMPARATIVE ANALYSIS OF MEAN OF BANKING SECTOR

**Table 4.17 The comparative standard deviation of the banking
Sector**

Name of the companies	Standard Deviation
Indian Bank	19.82
South Indian Bank	6.36
Indian Overseas Bank	61.69
ICICI Bank	97.35
HDFC Bank	53.52
IDBI Bank	7.43
Canara Bank	8.82

Interpretation

The high standard deviation shows that the investment is more volatile and more risky. Here, South Indian Bank and IDBI Bank has low significance difference. So they are less volatile and has a low risk.

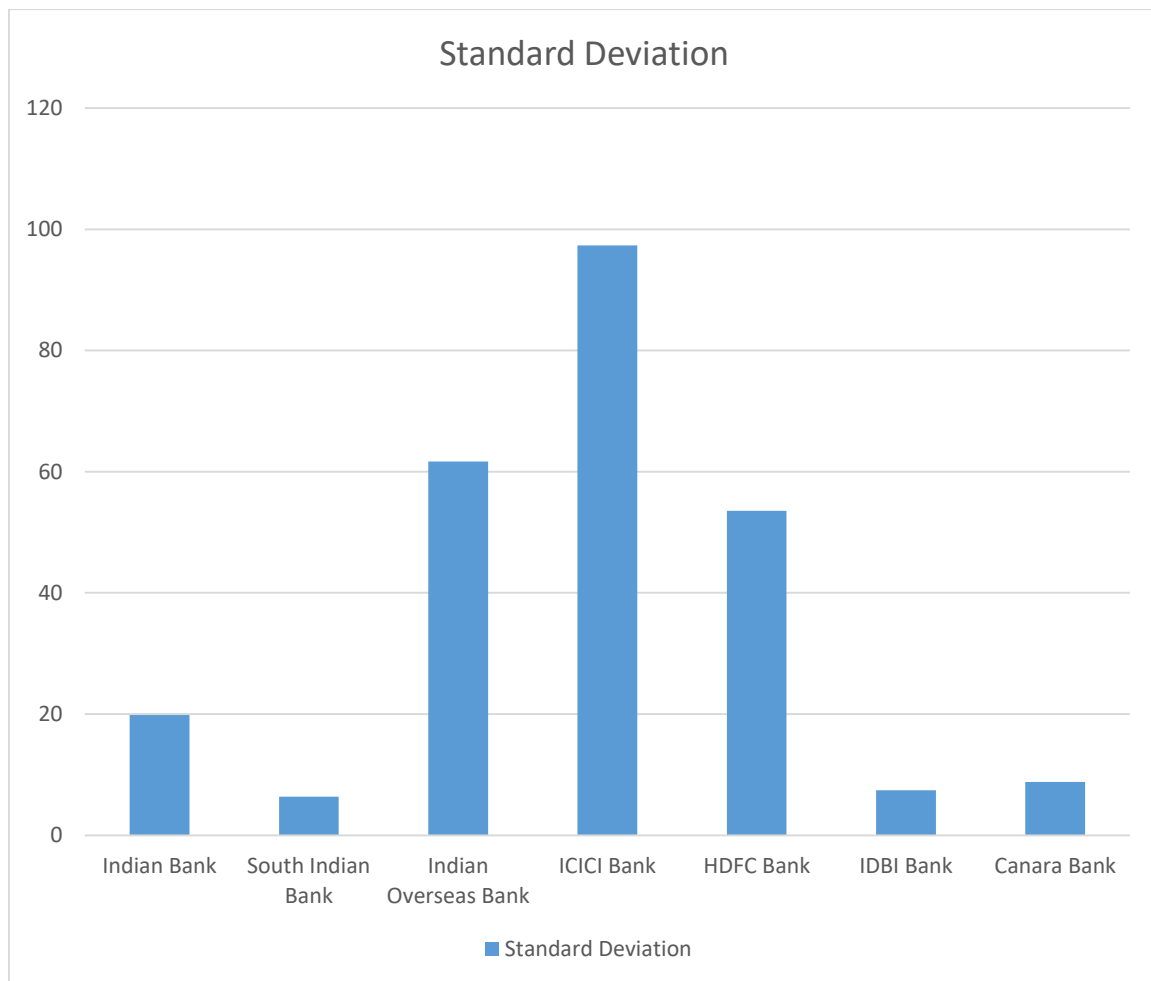


Fig. 4.17 THE COMPARATIVE ANALYSIS OF STANDARD DEVIATION OF BANKING SECTOR

4.18 The Coefficient of Variation of Banking Sector

Name of the companies	Coefficient of Variation
Indian Bank	90.1
South Indian Bank	39.8
Indian Overseas Bank	442.6
ICICI Bank	103.6
HDFC Bank	64.5
IDBI Bank	46.4
Canara Bank	51.9

Interpretation

The above table shows the coefficient of variation of the banking sector companies for the past 5 years. It shows that Indian Overseas Bank has the highest compared to all other companies for overall period. South Indian Bank, HDFC Bank, IDBI Bank and Canara Bank has less coefficient of variance.

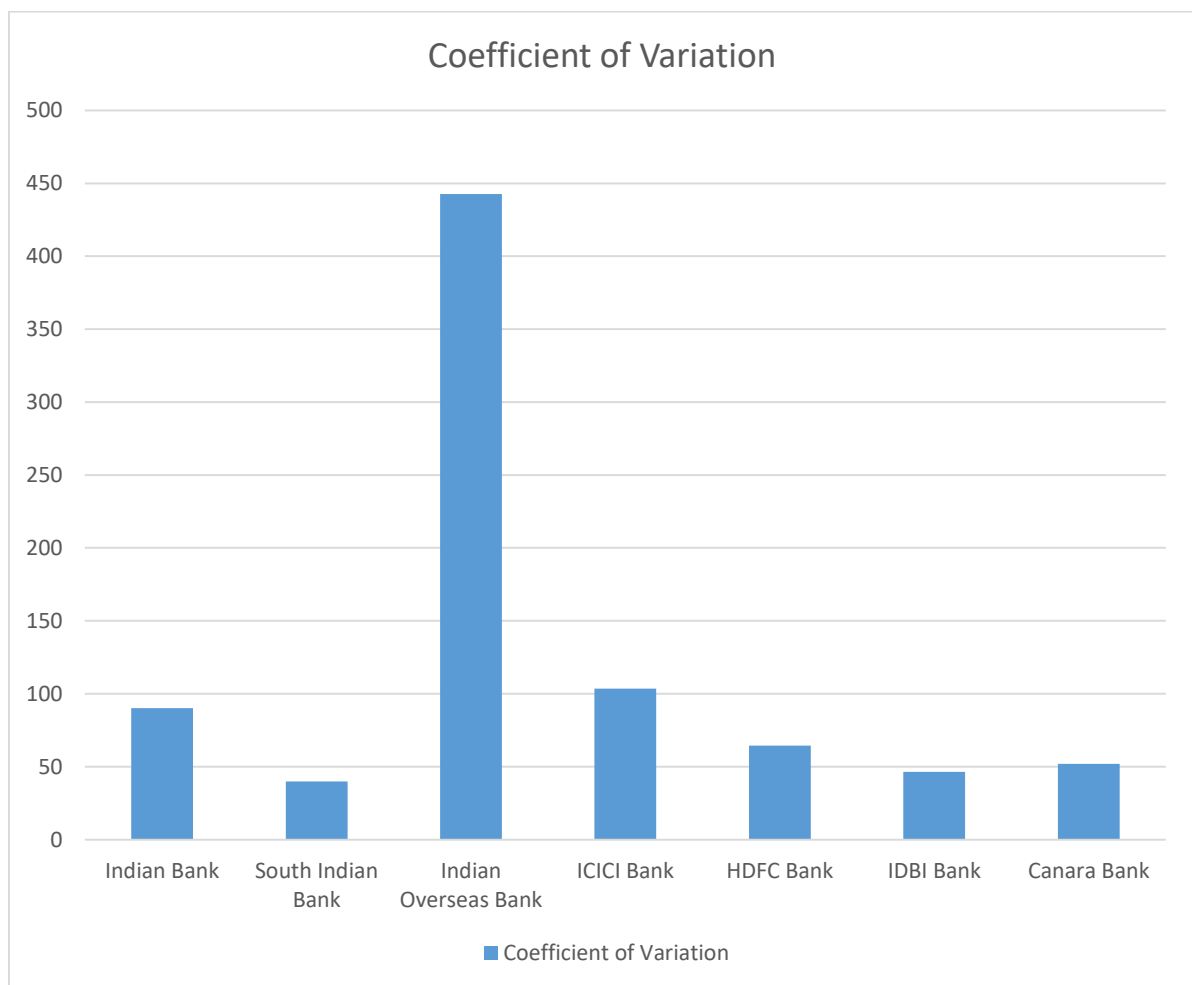


Fig. 4.18 The coefficient of variation of Banking Sector

Table 4.19 The Beta of Banking Sectors

Name of the companies	Beta
Indian Bank	1.42
South Indian Bank	1.09
Indian Overseas Bank	1.17
ICICI Bank	1.10
HDFC Bank	0.85
IDBI Bank	1.08
Canara Bank	1.22

Interpretation

The Beta of Indian Bank, South Indian Bank, ICICI Bank, Indian Overseas Bank, Canara Bank and IDBI Bank is more than one. Therefore, these banks are more volatile than the market. The Beta of HDFC Bank is lesser than one. Hence, it is less volatile.

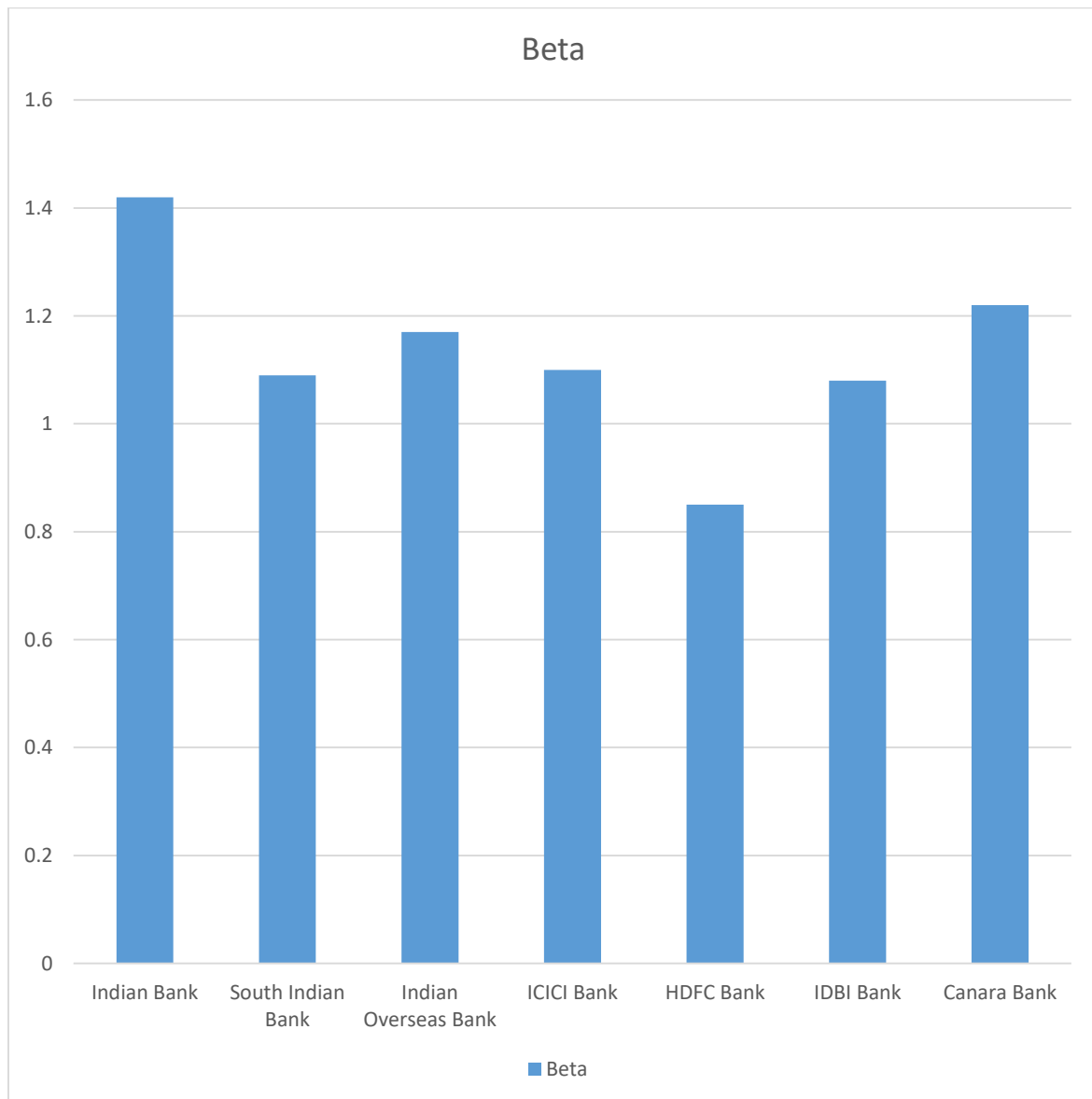


Fig. 4.19 THE BETA OF RETURN OF BANKING SECTOR

CHAPTER-V

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS

1. Indian bank return deviates about 19.82% from the average rate of return. So it is difficult to assess the future returns from the past returns. Beta is more than 1 so it is more volatile than other banks. So it is high risk to invest in this security.
2. If an investor invest rupee 1 at the end of 2016 in Indian Bank, the investor would have been earned rupees 6.1 at the end of 2020 i.e., the investor's total return is Rs.5.1.
3. South Indian bank return deviates about 6.36% from the average rate of return. So it is difficult to assess the future returns from the past returns. Beta is more than one so it is more volatile than other banks. So it is more risk to invest in this security.
4. If an investor invests rupee 1 at the end of 2016, the investor would have been earned rupees 5.78 at the end of 2020 i.e., the investor's total return is Rs.4.78.
5. Indian overseas bank return deviates about 61.69% from the average rate of return. So it is difficult to assess the future returns from the past returns. Beta is more than 1 so it is more volatile than market. So it is more risk to invest in this security.
6. If an investor invests rupee 1 at the end of 2016 in Indian Overseas Bank, the investor would have been earned rupees 5.69 at the end of 2020 i.e., the investor's total return is Rs.4.69.
7. ICICI bank return deviates about 97.35% from the average rate of return. So it is difficult to assess the future returns from the past returns. Beta is more than 1 so it is more volatile in market. So it is more risk to invest in this security.

8. If an investor invests rupee 1 at the end of 2016 in ICICI Bank, the investor would have been earned rupees 9.71 at the end of 2020 i.e., the investor's total return is Rs.8.71.
9. HDFC bank return deviates about 53.32% from the average rate of return. So it is difficult to assess the future returns from the past returns. Beta is less than 1 so it is less volatile in market. So it is less risk to invest in this security.
10. If an investor invests rupee 1 at the end of 2016 in HDFC Bank, the investor would have been earned rupees 9.16 at the end of 2020 i.e., the investor's total return is Rs.8.16.
11. IDBI bank return deviates about 7.43% from the average rate of return. So it is difficult to assess the future returns from the past returns. Beta is more than 1 so it is more volatile than market. So it is more risk to invest in this security
12. If an investor invests rupee 1 at the end of 2016, the investor would have been earned rupees 5.82 at the end of 2020 i.e., the investor's total return is Rs.4.82.
13. Canara bank return deviates about 8.82% from the average rate of return. So it is difficult to assess the future returns from the past returns. Beta is less than 1 so it is less volatile than market. So it is less risk to invest in this security
14. If an investor invests rupee 1 at the end of 2016 in Canara Bank, the investor would have been earned rupees 5.83 at the end of 2020 i.e., the investor's total return is Rs.4.83.

5.2 SUGGESTIONS

5.2.1 Awareness

Investment in stock market is subject to limited market risk. So every investor should be aware of the risk.

5.2.2 Potentiality

Stock market is justified underground of potentiality. This is due to increasing volume, market expansion & rapid growth in comparison to cash market.

5.2.3 Benefits

There are several benefits of stock market. Among them, the major benefits are cheaper trading in comparison to the cash market, interest stimulation, cash settlement and low brokerage cost. This would help to attract a number of investors.

1. Based on the Rate of Return, ICICI Bank and HDFC bank are best for investment. Since it has high Rate of Return compared to other banks.
2. Since HDFC Bank has low risk compared to ICICI Bank, in comparison, HDFC Bank is best for investment.

5.3 CONCLUSION

The analysis of testing the relationship between risk and return in the Indian stock market reveals that of all the different risk variables considered in the study, the distributional risk variables, variance and distribution, confirm the working of risk-return trade-off in the Indian context. Also, a positive association was exhibited between the security-market return correlation and the average rate of return during the period of study. The importance of beta as a measure of risk is also considered in the analysis, which shows that during the study period the beta values of the sample companies are stationary.

Hence it can be used for and considered as an important risk measurement in investment decision making process. It also exposes the relation between systematic risk and rate of return on equities in India. The presence of randomness of the return series of both monthly market and monthly security returns in India has proved that the Indian stock market is weakly efficient. It is noteworthy to express that the Indian capital market exhibits a positive risk-return relationship.

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APPENDIX

Annual Rate of Return = (Ending Value/Beginning Value) * (1/ Number of years)

$$2016 = 99.82 / 163.28 * (1 / 5)$$

$$= 0.123$$

$$2017 = 272.96 / 98.1 * (1 / 5)$$

$$= 0.556$$

$$2018 = 294.24 / 276.9 * (1 / 5)$$

$$= 0.213$$

$$2019 = 261.61 / 312.84 * (1 / 5)$$

$$= 0.167$$

$$2020 = 55.05 / 269.64 * (1 / 5)$$

$$= 0.041$$

$$\text{Total Annual Rate of Return} = 0.123 + 0.556 + 0.213 + 0.167 + 0.041$$

$$= 1.1$$

Average Annual Rate of Return $\bar{R}$ = Total Annual Rate of Return / Total Number of
Years

$$= 1.1 / 5$$

$$= 0.22$$

$$2016 \text{ to } 2020 = (1 + 0.123) + (1 + 0.556) + (1 + 0.213) + (1 + 0.167) + (1 + 0.041)$$

$$= 1.123 + 1.556 + 1.213 + 1.167 + 1.041$$

$$= 6.1$$

$$\text{Total Return} = 6.1 - 1$$

$$= 5.1$$

$$\text{VARIANCE} = \sum Q^2 / n - 1$$

$$= 1572.04 / 4$$

$$= 393.01$$

$$\text{Standard Deviation} = \sqrt{393.01}$$

$$= 19.82$$

SOUTH INDIAN BANK

$$\text{Annual Rate of Return} = (\text{Ending Value} / \text{Beginning Value}) * (1 / \text{Number of years})$$

$$2016 = 17.5 / 25.29 * (1 / 5)$$

$$= 0.138$$

$$2017 = 20.37 / 17.89 * (1 / 5)$$

$$= 0.228$$

$$2018 = 24.52 / 22.88 * (1 / 5)$$

$$= 0.214$$

$$2019 = 15.47 / 25.61 * (1 / 5)$$

$$= 0.121$$

$$2020 = 6.70 / 17.09 * (1 / 5)$$

$$= 0.078$$

$$\text{Total Annual Rate of Return} = 0.138 + 0.228 + 0.214 + 0.121 + 0.078$$

$$= 0.78$$

$$\text{Average Annual Rate of Return } \bar{R} = \text{Total Annual Rate of Return} / \text{Total Number of Years}$$

$$= 0.78 / 5$$

$$= 0.156$$

$$\text{Average Annual Rate of Return} = 0.156 * 100$$

$$= 15.6$$

$$\begin{aligned}
2016 \text{ to } 2020 &= (1+0.138) + (1+0.228) + (1+0.214) + (1+1.21) + (1+0.078) \\
&= 1.138 + 1.228 + 1.214 + 1.121 + 1.078 \\
&= 5.78
\end{aligned}$$

$$\text{Total Return} = 5.78 - 1 = 4.78$$

$$\text{Variance} = \sum Q^2 / n - 1$$

$$= 161.81 / 4$$

$$= 40.45$$

$$\text{Standard deviation} = \sqrt{40.45}$$

$$= 6.36$$

INDIAN OVERSEAS BANK

$$\text{Annual Rate of Return} = (\text{Ending Value} / \text{Beginning Value}) * (1 / \text{Number of years})$$

$$2016 = 27.35 / 43.97 * (1 / 5)$$

$$= 0.124$$

$$2017 = 126.73 / 31.09 * (1 / 5)$$

$$= 0.172$$

$$2018 = 18.26 / 27.93 * (1 / 5)$$

$$= 0.131$$

$$2019 = 14.7 / 17.95 * (1 / 5)$$

$$= 0.164$$

$$2020 = 7.65 / 14.86 * (1 / 5)$$

$$= 0.103$$

$$\text{Total Annual Rate of Return} = 0.69$$

$$\text{Average Annual Rate of Return } \bar{R} = \text{Total Annual Rate of Return} / \text{Total Number of Years}$$

$$= 0.69 / 5$$

$$=0.138$$

$$2016 \text{ to } 2020 = (1+0.124) + (1+0.172) + (1+0.131) + (1+0.164) + (1+0.103)$$

$$= 1.124 + 1.172 + 1.131 + 1.164 + 1.103$$

$$=5.69$$

$$\text{Total Return} = 4.69$$

$$\text{Variance} = 15224.06 / 4$$

$$= 3806.015$$

$$\text{Standard deviation} = \sqrt{3806.015}$$

$$=61.69$$

ICICI BANK

$$\text{Annual Rate of Return} = (\text{Ending Value} / \text{Beginning Value}) * (1 / \text{Number of years})$$

$$2016 = 329.12 / 317.21 * (1 / 5)$$

$$=2.075$$

$$2017 = 276.67 / 238.28 * (1 / 5)$$

$$=0.23$$

$$2018 = 293.09 / 278.43 * (1 / 5)$$

$$=0.211$$

$$2019 = 282.07 / 281.67 * (1 / 5)$$

$$=0.201$$

$$2020 = 396.69 / 397.49 * (1 / 5)$$

$$=1.99$$

$$\text{Total Annual Rate of Return} = 0.20 + 0.19 + 0.21 + 0.20 + 0.18$$

$$=4.71$$

Average Annual Rate of Return R^- = Total Annual Rate of Return/Total Number of Years

$$= 4.71 / 5$$

$$= 0.94$$

$$2016 \text{ to } 2020 = (1+2.075) + (1+0.23) + (1+0.211) + (1+0.201) + (1+1.99)$$

$$= 3.075 + 1.23 + 1.211 + 1.201 + 2.99$$

$$= 9.71$$

$$\text{Total Return} = 9.71 - 1 = 8.71$$

$$\text{Variance} = \sum Q^2 / n - 1$$

$$= 37914.6 / 4$$

$$= 9478.65$$

$$\text{Standard deviation} = \sqrt{9478.65}$$

$$= 97.35$$

HDFC BANK

Annual Rate of Return = (Ending Value/Beginning Value) * (1/ Number of years)

$$2016 = 1031.72 / 1022.67 * (1 / 5)$$

$$= 0.201$$

$$2017 = 1413.79 / 1082.65 * (1 / 5)$$

$$= 2.611$$

$$2018 = 1862.1 / 1468.4 * (1 / 5)$$

$$= 0.253$$

$$2019 = 2219.54 / 1927.61 * (1 / 5)$$

$$= 0.230$$

$$2020 = 982.56 / 2284.42 * (1 / 5)$$

$$=0.860$$

Total Annual Rate of Return = 4.155

Average Annual Rate of Return $\bar{R}$ = Total Annual Rate of Return/Total Number of Years

$$= 4.155 / 5$$

$$=0.83$$

$$2016 \text{ to } 2020 = (1+0.201) + (1+ 2.611) + (1+0.253)+ (1+0.230)+ (1+0.860)$$

$$= 1.201 + 3.611 + 1.253 + 1.230 + 1.860$$

$$=9.155$$

$$\text{Total Return} = 9.155-1 = 8.155$$

$$\text{Variance}=11374.31 / 4$$

$$=2843.57$$

$$\text{Standard Deviation}=53.32$$

IDBI BANK

Annual Rate of Return = (Ending Value/Beginning Value) * (1/ Number of years)

$$2016 = 66.96 / 76.55 * (1 / 5)$$

$$= 0.175$$

$$2017 = 76.34 / 70.38 * (1 / 5)$$

$$= 0.217$$

$$2018 = 75.18 / 74.48* (1 / 5)$$

$$=0.201$$

$$2019 = 43.82 / 70.62* (1 / 5)$$

$$= 0.124$$

$$2020 = 22.89 / 44.29 * (1 / 5)$$

$$=0.103$$

$$\text{Total Annual Rate of Return} = 0.82$$

Average Annual Rate of Return $\bar{R}$ = Total Annual Rate of Return/Total Number of Years

$$= 0.82 / 5$$

$$=0.164$$

$$2016 \text{ to } 2020 = (1+0.175) + (1+0.217) + (1+0.201) + (1+0.124) + (1+0.103)$$

$$= 1.175 + 1.217 + 1.201 + 1.124 + 1.103$$

$$=5.82$$

$$\text{Total Return} = 4.82$$

$$\text{Variance} = \sum Q^2 / n-1$$

$$=221.09 / 4$$

$$=55.27$$

$$\text{Standard Deviation} = \sqrt{55.27}$$

$$=7.43$$

CANARA BANK

Annual Rate of Return = (Ending Value/Beginning Value) * (1/ Number of years)

$$2016 = 184.06 / 389.02 * (1 / 5)$$

$$=0.095$$

$$2017 = 291.78 / 197.41 * (1 / 5)$$

$$=0.296$$

$$2018 = 259.80 / 316.86 * (1 / 5)$$

$$=0.164$$

$$2019 = 267.73 / 272.06 * (1 / 5)$$

$$=0.197$$

$$2020 = 105.60 / 280.89 * (1 / 5)$$

$$=0.075$$

$$\text{Total Annual Rate of Return} = 0.095 + 0.296 + 0.164 + 0.197 + 0.075$$

$$=0.827$$

$$\text{Average Annual Rate of Return } \bar{R} = \text{Total Annual Rate of Return} / \text{Total Number of Years}$$

$$= 0.827 / 5$$

$$=0.1654$$

$$2016 \text{ to } 2020 = (1 + 0.095) + (1 + 0.296) + (1 + 0.164) + (1 + 0.197) + (1 + 0.075)$$

$$= 1.095 + 1.296 + 1.164 + 1.197 + 1.075$$

$$=5.827$$

$$\text{Total Return} = 5.827 - 1 = 4.827$$

$$\text{Variance} = \sum Q^2 / n - 1$$

$$= 311.85 / 4$$

$$= 77.96$$

$$\text{Standard deviation} = \sqrt{77.96}$$

$$= 8.82$$