

Project Dissertation Report on

IMPACT OF MACROECONOMIC VARIABLES ON STOCK MARKET RETURNS

Submitted by

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CERTIFICATE

This is to certify that the work titled '**Impact of Macro Economic Variables on Stock Market Returns**' as part of the final year Major Research Project submitted by Saarang in the 4th Semester of MBA, Delhi School of Management, Delhi Technological University during January-May 2020 was conducted under my guidance and supervision.

This work is his original work to the best of my knowledge and has not been submitted anywhere else for the award of any credits/ degree whatsoever.

The project is submitted to Delhi School of Management, Delhi Technological University in partial fulfillment of the requirement for the award of the degree of Master of Business Administration.

Prof. P.K. Suri

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DECLARATION

I hereby declare that the work titled '**Impact of Macro Economic Variables on Stock Market Returns**' as part of the final year Major Research Project submitted by me in the 4th Semester in MBA, Delhi School of Management, Delhi Technological University, during January-May 2020 under the guidance of Prof. P.K. Suri is my original work and has not been submitted anywhere else.

The report has been written by me in my own words and not copied from elsewhere. Anything that appears in this report which is not my original work has been duly and appropriately referred/ cited/ acknowledged.

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I have put all my efforts to ensure that the project is completed in the best possible manner and also ensured that the project is error-free.

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ABSTRACT

This study shows the impact of Macro Economic Variables on stock market returns, has provided a complete understanding of the Indian Financial Market. Current findings suggest that the effect of these two variables namely , Dollar Rate and Gold Price has been studied and certain correlations have been derived using the data from the last 10 years. Financial Markets are basically the individual investors, financial institutions and other intermediaries who are linked by a formal trading rules and communication network for trading the various financial assets and credit instruments.

This study is carried out with a help of a statistical tool correlation with the help of E-Views as a software. This study is majorly carried out while taking to objectives in mind under chapter 3 research methodology and then followed by a systematic analysis and interpretation of the same in chapter 4.

Chapter 5 contains the findings and suggestions provided from this side with the conclusion at the end.

TABLE OF CONTENTS

Certificate	i
Declaration	ii
Acknowledgement	iii
Abstract.....	iv
Table of Contents	v
List of Figures... ..	vii
List of Tables... ..	viii
1. Introduction.....	01
1.1. Overview	01
1.2. Purpose of the Research	21
1.3. Objectives of the Research.....	21
2. Literature Review	22
2.1. Previous Research Work.....	22
3. Research Methodology	25
3.1. Research Design	25
3.2. Tools & Techniques.....	25
3.3. Limitations.....	26
4. Analysis & Interpretation	27
4.1 Stationarity Tests	27
4.2 Correlation.....	28
4.3 Interpretation.....	33
5. Findings.....	35
6. Conclusion	36
References and Bibliography.....	37

LIST OF FIGURES

Figure 1.1 Classification of Financial Markets.....	04
Figure 1.2 Types of Debt Instruments	05
Figure 1.3 Stock Market	09
Figure 1.4 Stationarity for Graph of Sensex	28
Figure 1.5 Stationarity for Graph of Gold	30
Figure 1.6 Stationarity for Graph of Dollar	33

LIST OF TABLES

Table 1.1 Stationarity Test of Sensex	27
Table 1.2 Stationarity Test of Gold.....	29
Table 1.3 Correlation between Sensex and Gold.....	31
Table 1.4 Stationarity Test of Dollar	32
Table 1.5 Correlation between Sensex and Dollar.....	34

CHAPTER 1

INTRODUCTION

Introductory note: This chapter talks about the financial market and its different classifications in detail. It also states the purpose and the objectives of this study.

1.1 Overview

Financial market is the market that facilitates transfer of funds between investors/ lenders and borrowers/ users. Financial market may be defined as ‘a transmission mechanism between investors (or lenders) and the borrowers (or users) through which transfer of funds is facilitated’. It consists of individual investors, financial institutions and other intermediaries who are linked by a formal trading rules and communication network for trading the various financial assets and credit instruments. It deals in financial instruments (like bills of exchange, shares, debentures, bonds, etc).

Financial markets attract funds from investors and channel them to corporations—they thus allow corporations to finance their operations and achieve growth. Money markets allow firms to borrow funds on a short term basis, while capital markets allow corporations to gain long-term funding to support expansion (known as maturity transformation).

Without financial markets, borrowers would have difficulty finding lenders themselves. Intermediaries such as banks, Investment Banks, and Boutique Investment Banks can help in this process. Banks take deposits from those who have money to save. They can then lend money from this pool of deposited money to those who seek to borrow. Banks popularly lend money in the form of loans and mortgages.

More complex transactions than a simple bank deposit require markets where lenders and their agents can meet borrowers and their agents, and where existing borrowing or lending commitments can be sold on to other parties. A good example of a financial market is a stock exchange. A company can raise money by selling shares to investors and its existing shares can be bought or sold.

Much effort has gone into the study of financial markets and how prices vary with time. Charles Dow, one of the founders of Dow Jones & Company and The Wall Street Journal, enunciated a set of ideas on the subject which are now called Dow theory. This is the basis of the so-called technical analysis method of attempting to predict future changes. One of the tenets of "technical analysis" is

that market trends give an indication of the future, at least in the short term. The claims of the technical analysts are disputed by many academics, who claim that the evidence points rather to the random walk hypothesis, which states that the next change is not correlated to the last change. The role of human psychology in price variations also plays a significant factor. Large amounts of volatility often indicate the presence of strong emotional factors playing into the price. Fear can cause excessive drops in price and greed can create bubbles. In recent years the rise of algorithmic and high-frequency program trading has seen the adoption of momentum, ultra-short term moving average and other similar strategies which are based on technical as opposed to fundamental or theoretical concepts of market Behaviour.

The scale of changes in price over some unit of time is called the volatility. It was discovered by Benoit Mandelbrot that changes in prices do not follow a normal distribution, but are rather modeled better by Lévy stable distributions. The scale of change, or volatility, depends on the length of the time unit to a power a bit more than $1/2$. Large changes up or down are more likely than what one would calculate using a normal distribution with an estimated standard deviation.

Financial markets play a vital role in facilitating the smooth operation of capitalist economies by allocating resources and creating liquidity for businesses and entrepreneurs. The markets make it easy for buyers and sellers to trade their financial holdings. Financial markets create securities products that provide a return for those who have excess funds (Investors/lenders) and make these funds available to those who need additional money (borrowers).

The stock market is just one type of financial market. Financial markets are made by buying and selling numerous types of financial instruments including equities, bonds, currencies, and derivatives. Financial markets rely heavily on informational transparency to ensure that the markets set prices that are efficient and appropriate. The market prices of securities may not be indicative of their intrinsic value because of macroeconomic forces like taxes.

Some financial markets are small with little activity, and others, like the New York Stock Exchange (NYSE), trade trillions of dollars of securities daily. The equities (stock) market is a financial market that enables investors to buy and sell shares of publicly traded companies. The primary stock market is where new issues of stocks, called initial public offerings (IPOs), are sold. Any subsequent trading of stocks occurs in the secondary market, where investors buy and sell securities that they already own.

It's a broad term and includes various types of markets where money can be borrowed at a low cost

by companies requiring investment. Investors often trade in securities to earn profit be it in the long term or short term. Depending upon the economy, millions of dollars of money are traded daily in the financial market. For example, the New York Stock Exchange (NYSE), National Stock Exchange (NSE), etc.

These financial markets are regulated by independent regulatory bodies with strict rules and regulations. They have stringent and mandatory reporting and compliance standards. Any violation by companies, investors, brokers, banks, financial institutions or any other authorized bodies, can lead to heavy penalties and in extreme cases cancellation of license.

- Financial markets create liquidity that allows businesses to grow and entrepreneurs to raise money for their ventures.
- They reduce risk by having information publicly available to investors and traders.
- These markets calm the economy by instilling confidence in investors.
- Investor confidence stabilizes the economy.

A financial market is a place where firms and individuals enter into contracts to sell or buy a specific product such as a stock, bond, or futures contract. Buyers seek to buy at the lowest available price and sellers seek to sell at the highest available price. There are a number of different kinds of financial markets, depending on what you want to buy or sell, but all financial markets employ professional people and are regulated.

If you want a loan or a savings account you would go to the bank or credit union, if you want to buy stock, a mutual fund or a bond you go to a securities market. The purpose of a securities market is primarily for business to acquire investment capital. Examples of securities markets include the New York Stock Exchange and the American Stock Exchange. Another securities market is the Over-the-Counter market, where a computer network of dealers buy and sell shares.

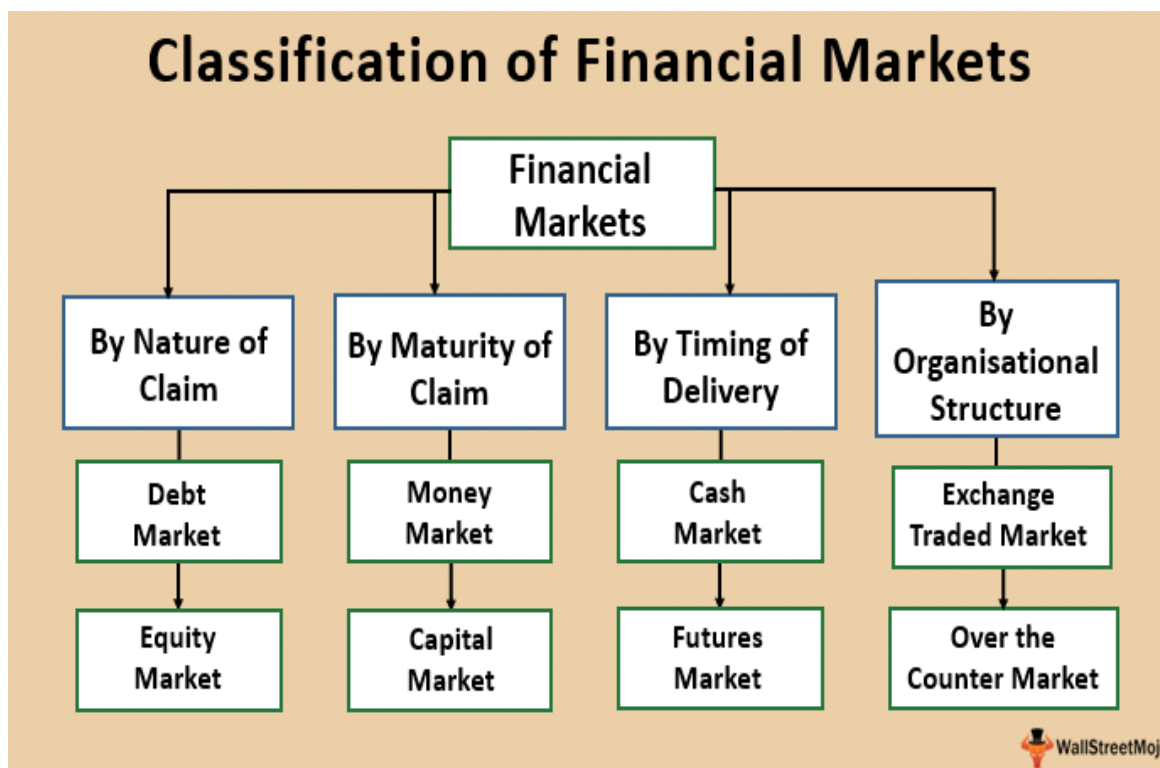


Figure 1.1- Classification of Financial Markets

Source- WallStreetMojo

1. By nature of claim

(i) Debt market

The bond market—often called the debt market or credit market—is the collective name given to all trades and issues of debt securities debt securities. Governments typically issue bonds in order to raise capital to pay down debts or fund infrastructural improvements. Publicly-traded companies issue bonds when they need to finance business expansion projects or maintain ongoing operations.

The bond market is broadly segmented into two different silos: the primary market and the secondary market. The primary market is frequently referred to as the "new issues" market in which transactions strictly occur directly between the bond issuers and the bond buyers. In essence, the primary market yields the creation of brand new debt securities that have not previously been offered to the public.

In the secondary market, securities that have already been sold in the primary market are then bought and sold at later dates. Investors can purchase these bonds from a broker, who acts as an intermediary between the buying and selling parties. These secondary market issues may be packaged in the form of pension funds, mutual funds, and life insurance policies—among many other product structures.

Debt funds invest in various securities, based on their credit ratings. A security’s credit rating signifies whether the issuer will default in disbursing the returns they promised. The fund manager of a debt fund ensures that he invests in high rated credit instruments. A higher credit rating means that the entity is more likely to pay interest on the debt security regularly as well as pay back the principal amount upon maturity.

Debt funds which invest in higher-rated securities are less volatile when compared to that of low-rated securities. Additionally, maturity also depends on the investment strategy of the fund manager and the overall interest rate regime in the economy. A falling interest rate regime encourages the fund manager to invest in long-term securities. Conversely, a rising interest rate regime encourages him to invest in short-term securities.

Instruments

Types of Debt Instruments

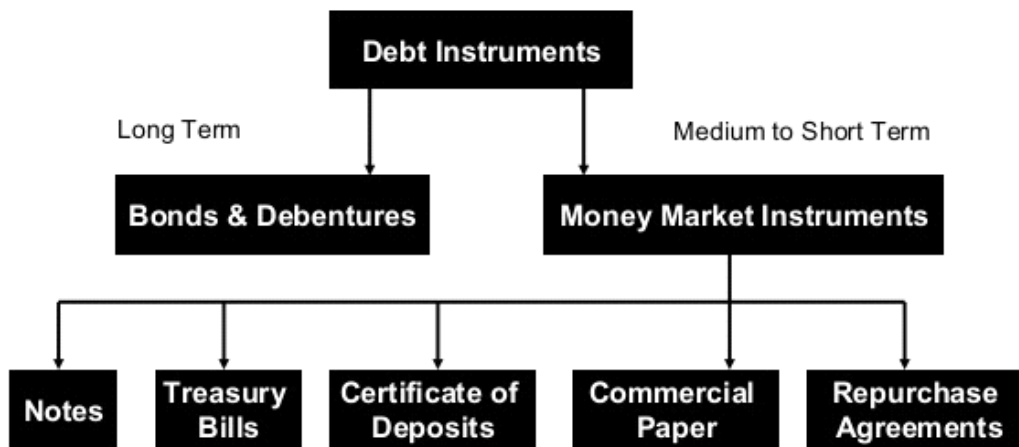


Figure 1.2- Types of Debt Instruments

Source- BBA Lectures

A Treasury Bill

(T-Bill) is a short-term U.S. government debt obligation backed by the Treasury Department with a maturity of one year or less. Treasury bills are usually sold in denominations of \$1,000. However, some can reach a maximum denomination of \$5 million in non-competitive bids. These securities are widely regarded as low-risk and secure investments.

The Treasury Department sells T-Bills during auctions using a competitive and non-competitive bidding process. Noncompetitive bids—also known as non-competitive tenders—have a price based on the average of all the competitive bids received. T-Bills tend to have a high tangible net worth.

T-bills can have maturities of just a few days or up to a maximum of 52 weeks, but common maturities are 4, 8, 13, 26, and 52 weeks. The longer the maturity date, the higher the interest rate that the T-Bill will pay to the investor.

T-Bill Redemptions and Interest Earned

T-bills are issued at a discount from the par value—or the face value—of the bill, meaning the purchase price is less than the face value of the bill. For example, a \$1,000 bill might cost the investor \$950 to buy the product.

When the bill matures, the investor is paid the face value—par value—of the bill they bought. If the face value amount is greater than the purchase price, the difference is the interest earned for the investor. T-bills do not pay regular interest payments as with a coupon bond, but a T-Bill does include interest, reflected in the amount it pays when it matures.

Certificate of deposit

A callable certificate of deposit is an FDIC-insured CERTIFICATE OF DEPOSIT that contains a call feature similar to other types of callable fixed-income securities. Callable CERTIFICATE OF DEPOSIT can be redeemed (called away) early by the issuing bank prior to their stated maturity, usually within a given time frame and at a preset call price. Due to the possibility of the CERTIFICATE OF DEPOSIT being called before maturity, which would result in a loss of interest earnings, interest rates on callable CERTIFICATE OF DEPOSITs are usually higher than those for regular Certificate of deposits. Nevertheless, it is wise to read the fine print before investing in a callable CERTIFICATE OF DEPOSIT.

A callable security is one that can be redeemed early by the issuer, allowing the issuer to refinance its interest-bearing securities. A bank adds a call feature to a CD so it does not have to continue paying

a higher rate to the CD holder if interest rates drop. Callable CDs often pay a call premium to the investor when redeemed early, as an incentive for investors to take on the call risk associated with the investment.

The call premium is an amount over the par value of the CD, and it typically decreases as the CD nears its maturity date. It is stated in the disclosure statement that stipulates the terms of the CD. The call date is the date the bank can call back its shares, and it is also included in the disclosure statement.

Most (CDs) are not strictly money market funds because they are sold with terms of up to 10 years. However, CDs with terms as short as three months to six months are available.

As with money market accounts, bigger deposits and longer terms yield better interest rates. Rates in mid-2019 for six-month CDs ranged from about 0.02% to 0.65% depending on the size of the deposit. Unlike a money market account, the rates offered with a CD remain constant for the deposit period. There is a penalty associated with early withdrawal of funds deposited in a CD.

Commercial Paper

Commercial paper is an unsecured, short-term debt instrument issued by a corporation, typically for the financing of accounts payable and inventories and meeting short-term liabilities. Maturities on commercial paper rarely range longer than 270 days. Commercial paper is usually issued at a discount from face value and reflects prevailing market interest rates

Commercial paper is not usually backed by any form of collateral, making it a form of unsecured debt. As a result, only firms with high-quality debt ratings will easily find buyers without having to offer a substantial discount (higher cost) for the debt issue. Because commercial paper is issued by large institutions, the denominations of the commercial paper offerings are substantial, usually \$100,000 or more. Other corporations, financial institutions, wealthy individuals, and money market funds are usually buyers of commercial paper.

A major benefit of commercial paper is that it does not need to be registered with the Securities and Exchange Commission as long as it matures before nine months, or 270 days, making it a very cost-effective means of financing. Although maturities can go as long as 270 days before coming under the purview of the SEC, maturities for commercial paper average about 30 days, rarely reaching that threshold. The proceeds from this type of financing can only be used on current assets, or

inventories, and are not allowed to be used on fixed assets, such as a new plant, without SEC involvement.

This is where the professional market for institutions start and traders who deal in large-volume transactions. The commercial paper market is for buying and selling unsecured loans for corporations in need of a short-term cash infusion. Only highly creditworthy companies participate, so the risks are low.

(ii) Equity market

An equity market is a market in which shares are issued and traded, either through exchanges or over-the-counter markets. Also known as the stock market, it is one of the most vital areas of a market economy because it gives companies access to capital and investors a slice of ownership in a company with the potential to realize gains based on its future performance.

In the equity market, investors bid for stocks by offering a certain price, and sellers ask for a specific price. When these two prices match, a sale occurs. Often, there are many investors bidding on the same stock. When this occurs, the first investor to place the bid is the first to get the stock. When a buyer will pay any price for the stock, he or she is buying at market value; similarly, when a seller will take any price for the stock, he or she is selling at market value.

Companies sell stocks in order to get capital to grow their businesses. When a company offers stocks on the market, it means the company is publicly traded, and each stock represents a piece of ownership. This appeals to investors, and when a company does well, its investors are rewarded as the value of their stocks rise. The risk comes when a company is not doing well, and its stock value may fall. Stocks can be bought and sold easily and quickly, and the activity surrounding a certain stock impacts its value. For example, when there is high demand to invest in the company, the price of the stock tends to rise, and when many investors want to sell their stocks, the value goes down.

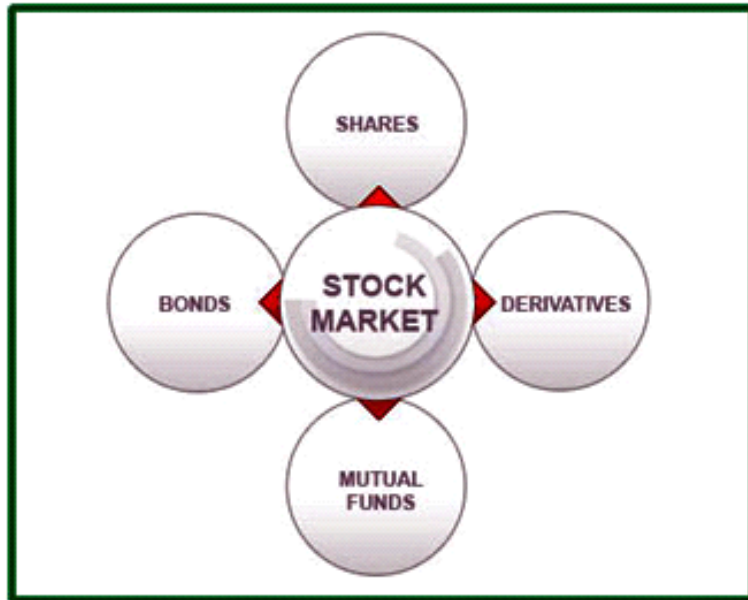


Figure 1.3- Stock Market

Source- KarvyOnline

Shares

Shares are units of ownership interest in a corporation or financial asset that provide for an equal distribution in any profits, if any are declared, in the form of dividends. The two main types of shares are common shares and preferred shares. Physical paper stock certificates have been replaced with electronic recording of stock shares, just as mutual fund shares are recorded electronically.

Most companies issue common stock. The stock may benefit shareholders through appreciation and dividends, making common stock riskier than preferred stock. Common stock also comes with voting rights, giving shareholders more control over the business. In addition, certain common stock comes with pre-emptive rights, ensuring that shareholders may buy new shares and retain their percentage of ownership when the corporation issues new stock.

In contrast, preferred stock typically does not offer appreciation in value or voting rights in the corporation. However, the stock typically has set payment criteria; a dividend that is paid out regularly, making the stock less risky than common stock. Also, preferred stock may often be redeemed at a more beneficial price than common stock. Because preferred stock takes priority over common stock, if the business files for bankruptcy and pays its lenders, preferred shareholders receive payment before common shareholders.

Authorized shares comprise the number of shares a company's board of directors may issue. Issued shares comprise the number of shares that are given to shareholders and counted for purposes of ownership.

Because shareholders' ownership is affected by the number of authorized shares, shareholders may limit that number as they see appropriate. When shareholders want to increase the number of authorized shares, they conduct a meeting to discuss the issue and establish an agreement. When shareholders agree to increase the number of authorized shares, a formal request is made to the state through filing articles of amendment.

Bonds

A bond is a fixed income instrument that represents a loan made by an investor to a borrower (typically corporate or governmental). A bond could be thought of as an I.O.U. between the lender and borrower that includes the details of the loan and its payments. Bonds are used by companies, municipalities, states, and sovereign governments to finance projects and operations. Owners of bonds are debt holders, or creditors, of the issuer. Bond details include the end date when the principal of the loan is due to be paid to the bond owner and usually includes the terms for variable or fixed interest payments made by the borrower.

Governments (at all levels) and corporations commonly use bonds in order to borrow money. Governments need to fund roads, schools, dams or other infrastructure. The sudden expense of war may also demand the need to raise funds.

Similarly, corporations will often borrow to grow their business, to buy property and equipment, to undertake profitable projects, for research and development or to hire employees. The problem that large organizations run into is that they typically need far more money than the average bank can provide. Bonds provide a solution by allowing many individual investors to assume the role of the lender. Indeed, public debt markets let thousands of investors each lend a portion of the capital needed. Moreover, markets allow lenders to sell their bonds to other investors or to buy bonds from other individuals—long after the original issuing organization raised capital.

Derivatives

A derivative is a contract between two or more parties whose value is based on an agreed-upon underlying financial asset (like a security) or set of assets (like an index). Common underlying instruments include bonds, commodities, currencies, interest rates, market indexes, and stocks.

Generally belonging to the realm of advanced investing, derivatives are secondary securities whose value is solely based (derived) on the value of the primary security that they are linked to. In and of itself a derivative is worthless. Futures contracts, forward contracts, options, swaps and warrants are commonly used derivatives.

A futures contract, for example, is a derivative because its value is affected by the performance of the underlying asset. Similarly, a stock option is a derivative because its value is "derived" from that of the underlying stock. While a derivative's value is based on an asset, ownership of a derivative doesn't mean ownership of the asset.

There are two classes of derivative products - "lock" and "option". Lock products (e.g. swaps, futures, or forwards) bind the respective parties from the outset to the agreed-upon terms over the life of the contract. Option products (e.g. interest rate swaps), on the other hand, offer the buyer the right, but not the obligation, to become a party to the contract under the initially agreed upon terms.

The risk-reward equation is often thought to be the basis for investment philosophy and derivatives can be used to either mitigate risk (hedging) or assume risk with the expectation of commensurate reward (speculation).

Mutual Funds

A mutual fund is a type of financial vehicle made up of a pool of money collected from many investors to invest in securities like stocks, bonds, money market instruments, and other assets. Mutual funds are operated by professional money managers, who allocate the fund's assets and attempt to produce capital gains or income for the fund's investors. A mutual fund's portfolio is structured and maintained to match the investment objectives stated in its prospectus.

Mutual funds give small or individual investors access to professionally managed portfolios of equities, bonds, and other securities. Each shareholder, therefore, participates proportionally in the gains or losses of the fund. Mutual funds invest in a vast number of securities, and performance is usually tracked as the change in the total market cap of the fund—derived by the aggregating performance of the underlying investments.

Mutual funds pool money from the investing public and use that money to buy other securities, usually stocks and bonds. The value of the mutual fund company depends on the performance of the securities it decides to buy. So, when you buy a unit or share of a mutual fund, you are buying the performance of its portfolio or, more precisely, a part of the portfolio's value. Investing in a share of a mutual fund is different from investing in shares of stock. Unlike stock, mutual fund shares do not give its holders any voting rights. A share of a mutual fund represents investments in many different stocks (or other securities) instead of just one holding.

That's why the price of a mutual fund share is referred to as the net asset value (NAV) per share, sometimes expressed as Navps. A fund's NAV is derived by dividing the total value of the securities in the portfolio by the total amount of shares outstanding. Outstanding shares are those held by all shareholders, institutional investors, and company officers or insiders. Mutual fund shares can typically be purchased or redeemed as needed at the fund's current NAV, which—unlike a stock price—doesn't fluctuate during market hours, but it is settled at the end of each trading day.

The average mutual fund holds hundreds of different securities, which means mutual fund shareholders gain important diversification at a low price. Consider an investor who buys only Google stock before the company has a bad quarter. He stands to lose a great deal of value because all of his dollars are tied to one company. On the other hand, a different investor may buy shares of a mutual fund that happens to own some Google stock. When Google has a bad quarter, she loses significantly less because Google is just a small part of the fund's portfolio.

2. By maturity of claim

(i) Money market

The money market is the trade in short-term debt investments. At the wholesale level, it involves large-volume trades between institutions and traders. At the retail level, it includes money market mutual funds bought by individual investors and money market accounts opened by bank customers. Money market account are a type of savings account. They pay interest, but some issuers offer account holders limited rights to occasionally withdraw money or write checks against the account. (Withdrawals are limited by federal regulations. If they are exceeded, the bank promptly converts it to a checking account.) Banks typically calculate interest on a money market account on a daily basis and make a monthly credit to the account.

In general, money market accounts offer slightly higher interest rates than standard savings accounts. But the difference in rates between savings and money market accounts has narrowed considerably since the 2008 financial crisis. Average interest rates for money market accounts vary based on the amount deposited. As of mid-2019, the best-paying money market account with no minimum deposit offered 2.25% annualized interest. The best with a minimum deposit of \$10,000 paid \$2.45%.

Banker's Acceptances

Another professional money market trade, the bankers acceptance is a short-term loan that is guaranteed by a bank. Used extensively in foreign trade, a banker's acceptance is like a post-dated check and serves as a guarantee that an exporter can pay for the goods. There is a secondary market for buying and selling banker's acceptances at a discount.

Repos

The repo, is part of the overnight lending money market. Treasury bills or other government securities are sold to another party with an agreement to repurchase them at a set price on a set date.

(ii) Capital market

Capital market is referred to as a place where saving and investments are done between capital suppliers and those who are in need of capital. It is, therefore, a place where various entities trade different financial instruments.

Capital market is where both equity and debt instrument like equity shares, preference shares, debentures, bonds, etc. are bought and sold.

Capital markets help channelize surplus funds from savers to institutions which then invest them into productive use. Generally, this market trades mostly in long-term securities. Capital market consists of primary markets and secondary markets. Primary markets deal with trade of new issues of stocks and other securities, whereas secondary market deals with the exchange of existing or previously-issued securities. Another important division in the capital market is made on the basis of the nature of security traded, i.e. stock market and bond market.

Functions of Capital Market:

- It acts in linking investors and savers
- Facilitates the movement of capital to be used more profitably and productively to boost the national income
- Boosts economic growth
- Mobilization of savings to finance long term investment
- Facilitates trading of securities
- Minimization of transaction and information cost
- Encourages a massive range of ownership of productive assets
- Quick valuations of financial instruments
- Through derivative trading, it offers insurance against market or price threats
- Facilitates transaction settlement
- Improvement in the effectiveness of capital allocation
- Continuous availability of funds

The capital market is the best source of finance for companies. It offers a spectrum of investment avenues to all investors which encourage capital creation

Types

- **Primary Market:**

The primary market is a new issue market; it solely deals with the issues of new securities. A place where trading of securities is done for the first time. The main objective is capital formation for government, institutions, companies, etc. also known as Initial Public Offer (IPO). Now, let us have a look at the functions of primary market:

- **Origination:** Origination is referred to as examine, evaluate, and process new project proposals in the primary market. It begins prior to an issue is present in the market. It is done with the help of commercial bankers.
- **Underwriting:** For ensuring the success of new issue there is a need for underwriting firms. These are the ones who guarantee minimum subscription. In case, the issue remains unsold the underwriters have to buy. But if the issues are completely subscribed then there will be no liability left for them.

- Distribution: For the success of issue, brokers and dealers are given job distribution who directly contact with investors.

- **Secondary Market:**

The secondary market is a place where trading takes place for existing securities. It is known as stock exchange or stock market. Here the securities are bought and sold by the investors. Now, let us have a look at the functions of secondary market:

- Regular information about the value of security
- Offers liquidity to the investors for their assets
- Continuous and active trading
- Provide a Market Place

3. By timing of delivery

(i) Cash Market

A cash market is a marketplace in which the commodities or securities purchased are paid for and received at the point of sale. For example, a stock exchange is a cash market because investors receive shares immediately in exchange for cash.

It's a financial market in which products are sold and delivered immediately, rather than one in which agreements are made for products to be delivered at some time in the future:

Cash markets are also known as spot markets, because their transactions are settled "on the spot." The opposite of a cash market is a futures market, where buyers pay for the right to receive a good, such as a barrel of oil, at a specified date in the future.

Sometimes, the line between cash markets and futures markets can get blurred. For example, stock exchanges like the New York Stock Exchange (NYSE) are mostly cash markets, but they also facilitate trading of derivative products which are not settled on the spot. Therefore, depending on the underlying assets being traded, the NYSE and other exchanges can also operate as a futures market.

Whether an investor chooses to transact on a cash market or a futures market will depend on their unique needs. For example, an industrial company that needs oil to fuel its production processes

might purchase barrels of oil on a cash market and take physical delivery at the point of sale. By contrast, that same company might wish to hedge against the risk that oil prices will rise in the following years. To do so, it might purchase futures contracts for oil, in which case no physical barrels of oil would exchange hands at the time of sale.

In deciding between cash and futures markets, investors will also consider the costs of transacting in each marketplace. For most commodities, the cost of purchasing that commodity in the spot market is lower than its cost in the futures market. This is because there are costs associated with taking physical possession of the commodity, such as storage costs and insurance.

It is important to know the difference between cash markets and futures markets, as well as the difference between spot prices and futures prices. This difference -- the time spread -- can be an economically important variable because it indicates the market's expectations about futures prices. Cash markets are influenced, for the most part, solely by supply and demand, whereas futures markets are also influenced by expectations about prices later, storage costs, weather predictions (for perishable commodities in particular), and other factors.

Cash markets differ from futures markets in that delivery takes place immediately. So, if you wish to purchase Company XYZ shares and own them immediately, you would go to the cash market on which the shares are traded (the New York Stock Exchange, for example). If, however, you wanted to purchase a contract that entailed taking possession of Company XYZ shares, you would seek out the futures exchange on which Company XYZ shares trade.

It contrasts with a futures market, in which delivery is due at a later date. In a spot market, settlement normally happens in T+2 working days, i.e., delivery of cash and commodity must be done after two working days of the trade date. A spot market can be through an exchange or over-the-counter (OTC). Spot markets can operate wherever the infrastructure exists to conduct the transaction.

(ii) Futures Market

A futures market is an auction market in which participants buy and sell commodity and futures contracts for delivery on a specified future date. Examples of futures markets are the New York Mercantile Exchange, the Kansas City Board of Trade, the Chicago Mercantile Exchange, the Chicago Board Options Exchange and the Minneapolis Grain Exchange.

Originally, such trading was carried on through open yelling and hand signals in a trading pit, though in the 21st century, like most other markets, futures exchanges are mostly electronic.

These are places (exchanges) to buy and sell futures contracts. There are several futures exchanges. Common ones include The New York Mercantile Exchange, the Chicago Board of Trade, the Chicago Mercantile Exchange, the Chicago Board of Options Exchange, the Chicago Climate Futures Exchange, the Kansas City Board of Trade, and the Minneapolis Grain Exchange.

In order to understand fully what a futures market is, it's important to understand the basics of futures contracts, the assets traded in these markets.

Futures contracts are made in an attempt by producers and suppliers of commodities to avoid market volatility. These producers and suppliers negotiate contracts with an investor who agrees to take on both the risk and reward of a volatile market.

Futures markets or futures exchanges are where these financial products are bought and sold for delivery at some agreed-upon date in the future with a price fixed at the time of the deal. Futures markets are for more than simply agricultural contracts, and now involve the buying, selling and hedging of financial products and future values of interest rates.

Futures markets are places (exchanges) to buy and sell futures contracts. There are several futures exchanges. Common ones include The New York Mercantile Exchange, the Chicago Board of Trade, the Chicago Mercantile Exchange, the Chicago Board of Options Exchange, the Chicago Climate Futures Exchange, the Kansas City Board of Trade, and the Minneapolis Grain Exchange.

4. By organizational structure

(i) Exchange Traded Market

Exchange-traded markets are the one in which all transactions are routed through a central source. In other words, one party is responsible for being the intermediary that connects buyers and sellers

Exchanges, whether stock markets or derivatives exchanges, started as physical places where trading took place. Some of the best known include the New York Stock Exchange (NYSE), which was formed in 1792, and the Chicago Board of Trade (now part of the CME Group), which has been trading futures contracts since 1851. Today there are more than a hundred stock and derivatives exchanges throughout the developed and developing world.

But exchanges are more than physical locations. They set the institutional rules that govern trading and information flows about that trading. They are closely linked to the clearing facilities through which post-trade activities are completed for securities and derivatives traded on the exchange. An exchange centralizes the communication of bid and offer prices to all direct market participants, who can respond by selling or buying at one of the quotes or by replying with a different quote. Depending on the exchange, the medium of communication can be voice, hand signal, a discrete electronic message, or computer-generated electronic commands. When two parties reach agreement, the price at which the transaction is executed is communicated throughout the market. The result is a level playing field that allows any market participant to buy as low or sell as high as anyone else as long as the trader follows exchange rules.

The advent of electronic trading has eliminated the need for exchanges to be physical places. Indeed, many traditional trading floors are closing, and the communication of orders and executions are being conducted entirely electronically. The London Stock Exchange and the NASDAQ Stock Market are completely electronic, as is Eurex, the world's second-largest futures exchange. Many others, as they phase out floor trading, offer both floor and electronic trading. The NYSE bought the electronic trading platform Archipelago as it moves increasingly toward electronic trading. Derivatives exchanges such as the CME Group maintain both old-style pits and electronic trading. Brazil's BM&F maintained both until 2009.

Exchanges bring together brokers and dealers who buy and sell these objects. These various financial instruments can typically be sold either through the exchange, typically with the benefit of a clearing house to reduce settlement risk.

Exchanges can be subdivided:

- **By objects sold:**
 - Stock exchange or securities exchange^[6]
 - Commodities exchange
 - Foreign exchange market – is rare today in the form of a specialized institution
- **By type of trade:**
 - Classical exchange – for spot trades
 - Futures exchange or futures and options exchange – for derivatives

In practice, futures exchanges are usually commodity exchanges, i.e., all derivatives, including financial derivatives, are usually traded at commodity exchanges. This has historical reasons: the first exchanges were stock exchanges. In the 19th century, exchanges were opened to trade forward contracts on commodities. Exchange-traded forward contracts are called futures contracts. These "commodity exchanges" later started offering future contracts on other products, such as interest rates and shares, as well as options contracts; now they are generally known as futures exchanges.

(ii) Over the Counter Market

An over-the-counter (OTC) market is a decentralized market in which market participants trade stocks, commodities, currencies or other instruments directly between two parties and without a central exchange or broker. Over-the-counter markets do not have physical locations; instead, trading is conducted electronically. This is very different from an auction market system. In an OTC market, dealers act as market-makers by quoting prices at which they will buy and sell a security, currency, or other financial products. A trade can be executed between two participants in an OTC market without others being aware of the price at which the transaction was completed. In general, OTC markets are typically less transparent than exchanges and are also subject to fewer regulations. Because of this liquidity in the OTC market may come at a premium.

- Over-the-counter markets are those in which participants trade directly between two parties, without the use of a central exchange or other third party.
- OTC markets do not have physical locations or market-makers.
- Some of the products most commonly traded over-the-counter include bonds, derivatives, structured products and currencies.

OTC markets are primarily used to trade bonds, currencies, derivatives and structured products. They can also be used to trade equities, with examples such as the OTCQX, OTCQB, and OTC Pink marketplaces (previously the OTC Bulletin Board and Pink Sheets) in the U.S. Broker-dealers that operate in the U.S. OTC markets are regulated by the Financial Industry Regulatory Authority (FINRA)

Sometimes the securities being traded over-the-counter lack buyers and sellers. As a result, the value of a security may vary widely depending on which market makers trade the stock. Additionally, it makes it potentially dangerous if a buyer acquires a significant position in a stock that trades over-the-counter should they decide to sell it at some point in the future. The lack of liquidity could make it difficult to sell in the future.

While OTC markets function well during normal times, there is an additional risk, called a counter-party risk, that one party in the transaction will default prior to the completion of the trade and/or will not make the current and future payments required of them by the contract. Lack of transparency can also cause a vicious cycle to develop during times of financial stress, as was the case during the 2007–08 global credit crisis.

Mortgage-backed securities and other derivatives such as CDOs and CMOs, which were traded solely in the OTC markets, could not be priced reliably as liquidity totally dried up in the absence of buyers. This resulted in an increasing number of dealers withdrawing from their market-making functions, exacerbating the liquidity problem and causing a worldwide credit crunch. Among the regulatory initiatives undertaken in the aftermath of the crisis to resolve this issue was the use of clearinghouses for post-trade processing of OTC trades.

For example, A portfolio manager owns about 100,000 shares of a stock that trades on the over-the-counter market. The PM decides it is time to sell the security and instructs the traders to find the market for the stock. After calling three market makers, the traders come back with bad news. The stock has not traded for 30 days, and the last sale was \$15.75, and the current market is \$9 bid and \$27 offered, with only 1,500 shares to buy and 7,500 for sale. At this point, the PM needs to decide

if they want to try to sell the stock and find a buyer at lower prices or place a limit order at the stock's last sale with the hope of getting lucky.

More than 200 market makers participate in the OTC market, and thousands of securities are accessed there. The issuers of the securities quoted in the OTCBB must make periodic filing requirements to the SEC and other regulators that somewhat vary from traditionally required filings.

1.2 Purpose and Objective

Purpose of the study

The main purpose is to investigate the relationship between Indian stock market and two macroeconomic variables namely Dollar Price (DP) and Gold Price (GP). BSE SENSEX has been considered as representing Indian stock market.

Objectives of the study

- To analyze how major macro economic variables, gold and dollar, are related to sensex
- To interpret the impact of such variables on the returns of stock market

Concluding note: It is noted that the financial market can be classified into different types on the basis of several classifiers. Also the Objectives of the study are made clear

CHAPTER 2

LITERATURE REVIEW

Introductory note: This chapter discusses the work that has been done in the past regarding this subject. It is culmination of pervious literature available.

In the past decades, many industry researchers, financial analysts and practitioners have attempted to predict the relationship between stock markets movement and macroeconomic variables. They have conducted empirical studies to examine the effect of stock price on macroeconomic variables or vice-versa or relationship between the two and the results of all those studies have provided different conclusions according to the combination of variables, methodologies and tests used. Here, we have discussed some previous research works/papers and their empirical conclusions that are related to this sector.

Fama and many other research studies like Fama and Schwert (1977), Gallagher and Taylor (2002), Geske and Roll (1983) empirically find that stock returns are negatively affected by both expected and unexpected inflation. Marshall (1992) also finds that negative effect of inflation on stock return is generated by real economic fluctuations, by monetary fluctuations or changes in both real and monetary variables.

Darat and Mukherjee applied a Vector Auto Regression (VAR) model and found that a significant causal relationship exists between stock returns and selected macroeconomic variables of China, India, Brazil and Russia which are emerging economies of the world using oil price, exchange rate, and moving average lags values as explanatory variables employed MA (Moving Average) method with OLS (Ordinary Least Square) and found insignificant results which postulate inefficiency in market. Finally they concluded that in emerging economies the domestic factors influence more than external factors, i.e., exchange rate and oil prices.

Bahmani and Sohrabian studied the causal relationship between U.S. stock market (S&P 500 index)

and effective exchange rate of dollar in the short period of time. Their theory established bidirectional causality between the two for the time period taken. However, cointegration analysis failed to identify any long run relationship between the two variables.

Mukherjee and Naka applied Johansen's VECM to analyze the relationship between the Japanese Stock Market and exchange rate, inflation rate, money supply, real economic activity, long-term government bond rate, and call money rate. They concluded that a cointegrating relation indeed existed and that stock prices contributed to this relation. Maysami and Koh (2000) examined such relationships in Singapore. They found that inflation money supply growth, changes in short- and long-term interest rate and variations in exchange rate formed a cointegrating relation with changes in Singapore's stock market levels.

Abdalla and Murinde investigated the intersections between exchange rates and stock prices in the emerging financial markets of India, Korea, Pakistan and the Philippines. They found that results show unidirectional granger causality from exchange rates to stock prices in all the sample countries, except the Philippines, where they found that the stock price lead the exchange rate.

Mookerjee and Yu studied the Singapore stock market pricing mechanism by investigating whether there were long-term relationships between macroeconomic variables and 7 | Page stock market pricing. They found that three out of four macroeconomic variables were cointegrated with stock market prices. Using bi-variate cointegration and causality tests, they noted significant interactions between M2 money supply and foreign exchange reserves and stock prices for the case of Singapore.

Kwon and Shin applied Engle-Granger cointegration and the Granger causality tests from the VECM and found that the Korean stock market was cointegrated with a set of macroeconomic variables. However, using the Granger-causality test on macroeconomic variables and the Korean stock index, the authors found that the Korean stock index was not a leading indicator for economic variables.

Ibrahim also investigated the dynamic interactions between the KLSE Composite Index, and seven macroeconomic variables (CPI, industrial production index, money supply M1 and M2, foreign reserves, credit aggregates and exchange rate) and concluded that Malaysian stock market was

informationally inefficient. Chong and Koh's (2003) results were similar and showed that stock prices, economic activities, real interest rates and real money balances in Malaysia were linked in the long run both in the pre- and post capital control sub periods.

Pethe and Karnik, using Indian data for April, 1992 to December, 1997, attempted to find the way in which stock price indices were affected by and had affected other crucial macroeconomic variables in India. But, this study had run causality tests in an error correction framework on non-cointegrated variables, which is inappropriate and not econometrically sound and correct. The study reported weak causality running from IIP to share price indices (i.e., Sensex and S&P CNX Nifty) but not the other way round. In other words, it holds the view that the state of economy had affected stock prices.

Naka, Mukherjee and Tufte analyzed long-term equilibrium relationships among selected macroeconomic variables and the BSE Sensex. The study used data for the period 1960 to 1995 and macroeconomic variables; namely, the Industrial production index, the consumer price index, a narrow measure of money supply, and the money market rate in the Bombay interbank market. The study employed a VECM to avoid potential misspecification biases that might result from the use of a more conventional VAR modeling technique. The study found that the five variables were cointegrated and there exists three long-term equilibrium relationships among these variables. The results of the study also suggested that domestic inflation was the most severe deterrent to Indian stock markets performance, and domestic output growth as its predominant driving force.

Bhattacharya and Mukherjee investigated the nature of the causal relationship between BSE Sensitive Index and the five macroeconomic aggregates in India (i.e., IIP, money supply, national income, interest rate and inflation rate) using monthly data for the period 1992- 93 to 2000. By applying the techniques of unit-root tests, co-integration and the long-run Granger non-causality test recently proposed by Toda and Yamamoto (1995), their major findings suggested that there was no causal linkage between stock prices and money supply, national income and interest rate while IIP lead the stock price, and there was two- way causation between stock price and inflation rate.

Concluding note: It is noted that there have been several researchers who have put their time on this topic and learnings can be made to take the study forward.

CHAPTER 3

RESEARCH METHODOLOGY

Introductory note: In this chapter we discuss the various tools and techniques used for this study.

3.1 Research Design

Descriptive research is a research conducted for a problem that has not been studied more clearly, intended to establish priorities, develop operational definitions and improve the final research design.

3.2 Tools of data collection

For this project report descriptive research is done by the help of techniques.

Source of data

Secondary data – from BSE website itself from the files and documents maintained by the Bombay stock exchange. Collection of secondary data on stock market returns of Indian stock market is done through BSE website, web pages and financial management books.

In order to analyze the pattern between different years of stock market returns of Indian stock market I have calculated or analyzed the volatility by graphical representation.

3.3 Tools of data Investigation

E-views Software was used to perform the stationary test and to calculate the correlation between different macroeconomic variables.

3.4 Explanatory variables

Dollar Price (DP)

The next macroeconomic variable used in this study has been the exchange rate/dollar price, which represents the bilateral nominal rate of exchange of the Indian Rupee (Rs.) against one unit of a foreign currency. US Dollar (\$) has been taken to be the foreign currency against which the Indian Rupee exchange rate is considered. This is because the US Dollar has remained to be the most dominating foreign currency used for trading and investment throughout the period of this study.

Generally, a depreciating currency causes a decline in stock prices because of expectations of inflation. On an average, export-oriented companies are adversely affected by a stronger domestic currency while import-oriented firms benefit from it. Though these arguments suggest a linkage between exchange rates and stock prices, the empirical evidence supporting such a linkage was weak at best. Also, at the micro level, exchange rate changes influence the value of a portfolio of domestic and multinational firms and it is predicted that a negative relationship exists between the strength of the home currency and the aggregate stock prices index.

Gold Price (GP)

Gold is a substitute investment avenue for Indian investors. As the gold price rises, Indian investors tend to invest less in stocks, causing stock prices to fall. Therefore, a negative relationship is expected between gold price and stock price. Thus this very important macroeconomic variable has also been included in this study.

3.5 Limitations

Reliability

This study is based on the analysis of the secondary data that has been collected. Secondary data is the data that is already available & has been used for analysis & thus might not be reliable.

Accuracy

The result & conclusion of this study might not be accurate due to reliability of the secondary data & limitation on the variables selected & the time span considered.

Time period

A time span of only 10 years has been considered for examining the relation between macroeconomic variables and Indian stock market.

Limited variables

This study mainly focuses on selected two independent variables which may not completely represent the macroeconomic variables.

Concluding note: The research design, variables, tools, software and limitations are explained.

CHAPTER 4

ANALYSIS AND INTERPRETATION

Introductory note: The Eviews software is used to carry out the analysis of different variables and the correlation between them is found out. The results are then interpreted to form conclusions

BSE Sensex

Sensex, otherwise known as the S&P BSE Sensex index, is the benchmark index of the Bombay Stock Exchange (BSE) in India. Sensex comprises 30 of the largest and most actively-traded stocks on the BSE, providing an accurate gauge of India's economy. The index's composition is reviewed in June and December each year. Initially compiled in 1986, the Sensex is the oldest stock index in India. Analysts and investors use the Sensex to observe the overall growth, development of particular industries, and booms and busts of the Indian economy.

Stationarity for Sensex

Table 1.1- Stationarity test of Sensex

Null Hypothesis: D(SERIES02) has a unit root				
Exogenous: Constant				
Lag Length: 1 (Automatic - based on SIC, maxlag=26)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-29.01771	0.0000
Test critical values:	1% level		-3.433074	
	5% level		-2.862630	
	10% level		-2.567396	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(SERIES02,2)				
Method: Least Squares				
Date: 05/20/20 Time: 00:47				
Sample (adjusted): 3/01/2011 3/18/2020				
Included observations: 2239 after adjustments				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SERIES02(-1))	-0.854703	0.029455	-29.01771	0.0000
D(SERIES02(-1),2)	-0.100547	0.021278	-4.725360	0.0000
C	4.058296	5.588004	0.726251	0.4678
R-squared	0.476187	Mean dependent var		-0.818254
Adjusted R-squared	0.475718	S.D. dependent var		364.9956
S.E. of regression	264.2834	Akaike info criterion		13.99326
Sum squared resid	1.56E+08	Schwarz criterion		14.00092
Log likelihood	-15662.45	Hannan-Quinn criter.		13.99606
F-statistic	1016.349	Durbin-Watson stat		1.979882
Prob(F-statistic)	0.000000			

Source- Eviews

Log Differenced Series02

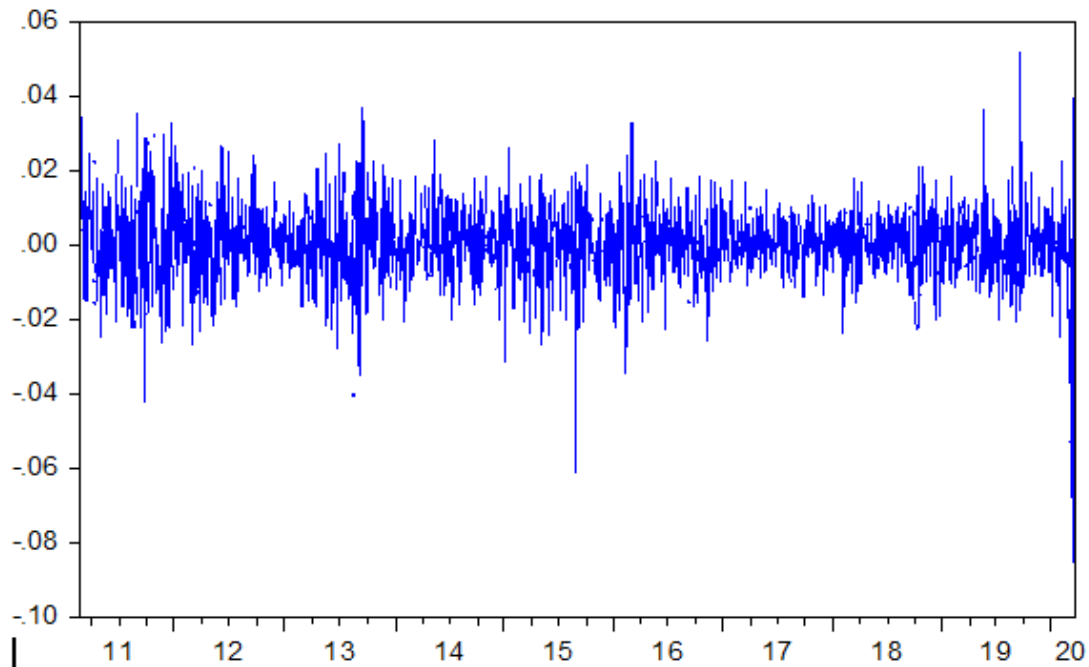


Figure 1.4- Stationarity graph for senssex

Source- Eviews

A stock's priceline may vary non-randomly and be dependent on previous prices, but if the rules which govern its variance keep changing, a technical analyst will be foxed, unless he can diagnose when exactly the stationarity is disturbed. So this feature is an attempt to explain the basic methods

of testing for stationarity and working out how much it has changed. Basically, the probability value under this augmented dickey fuller test is noted. Since the probability value turned out to be 0.00 hence the variable is stationary and thus correlation can be performed on it.

Gold Price

Gold is a substitute investment avenue for Indian investors. As the gold price rises, Indian investors tend to invest less in stocks, causing stock prices to fall. Therefore, a negative relationship is expected between gold price and stock price. Thus this very important macroeconomic variable has also been included in this study.

Stationarity for gold price

Table 1.2- Stationarity test for Gold

Null Hypothesis: D(SERIES02) has a unit root				
Exogenous: Constant				
Lag Length: 8 (Automatic - based on AIC, maxlag=26)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-15.47482	0.0000
Test critical values:	1% level		-3.432930	
	5% level		-2.862566	
	10% level		-2.567362	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(SERIES02,2)				
Method: Least Squares				
Date: 05/20/20 Time: 00:53				
Sample (adjusted): 3/10/2011 3/18/2020				
Included observations: 2356 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SERIES02(-1))	-1.052246	0.067997	-15.47482	0.0000
D(SERIES02(-1),2)	-0.004394	0.063832	-0.068831	0.9451
D(SERIES02(-2),2)	-0.013034	0.059693	-0.218346	0.8272
D(SERIES02(-3),2)	0.000506	0.055068	0.009183	0.9927
D(SERIES02(-4),2)	-0.037492	0.049905	-0.751268	0.4526
D(SERIES02(-5),2)	-0.041899	0.044125	-0.949547	0.3424

D(SERIES02(-6),2)	-0.046911	0.037982	-1.235097	0.2169
D(SERIES02(-7),2)	-0.037220	0.030519	-1.219572	0.2227
D(SERIES02(-8),2)	-0.066031	0.020855	-3.166138	0.0016
C	0.021419	0.311487	0.068764	0.9452
R-squared	0.531745	Mean dependent var	-0.021350	
Adjusted R-squared	0.529948	S.D. dependent var	22.04866	
S.E. of regression	15.11663	Akaike info criterion	8.273703	
Sum squared resid	536090.3	Schwarz criterion	8.298172	
Log likelihood	-9736.423	Hannan-Quinn criter.	8.282613	
F-statistic	296.0099	Durbin-Watson stat	1.995015	
Prob(F-statistic)	0.000000			

Source- Eviews

Log Differenced Series02

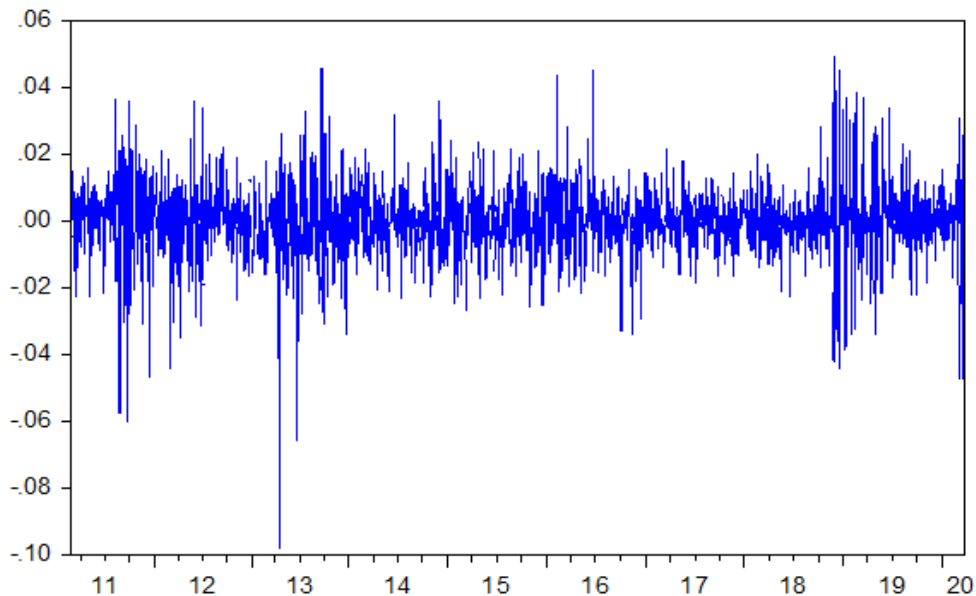


Figure 1.5- Stationarity Graph for Gold

Source- Eviews

Rather than pure price movements, the percentage price changes on day to day basis have been studied. This is because price movements over a long period tend to give confusing results, because there is often a pronounced secular trend in either direction. The Results show that the variable is stationary and correlation can be applied to it.

Taking the Sensex as base the correlation is performed between the Sensex and gold prices. Following are the results:

CORRELATION between sensex and gold :

Table 1.3- Correlation Between Sensex and Gold

Covariance Analysis: Ordinary			
Date: 05/20/20 Time: 01:05			
Sample: 2/24/2011 3/18/2020			
Included observations: 2188			
Balanced sample (listwise missing value deletion)			
Correlation			
Probability	SERIES02	SERIES01	
SERIES02	1.000000		

SERIES01	-0.397010	1.000000	
	0.0000	-----	

Source- Eviews

Interpretation

Rule of Thumb for Interpreting the Size of a Correlation Coefficient

Size of Correlation	Interpretation
.90 to 1.00 (-.90 to -1.00)	Very high positive (negative) correlation
.70 to .90 (-.70 to -.90)	High positive (negative) correlation
.50 to .70 (-.50 to -.70)	Moderate positive (negative) correlation
.30 to .50 (-.30 to -.50)	Low positive (negative) correlation
.00 to .30 (.00 to -.30)	negligible correlation

Gold is a substitute investment avenue for Indian investors. As the gold price rises, Indian investors tend to move their funds from markets to more in gold, causing stock prices to fall which the reason why the correlation is negative i.e. -0.397010. The correlation between prices of gold and BSE Sensex are negatively correlated. Negative correlation is a relationship between two variables in which one variable increases as the other decreases, and vice versa.

Average Dollar Rate

The next macroeconomic variable used in this study has been the exchange rate/dollar price, which represents the bilateral nominal rate of exchange of the Indian Rupee (Rs.) against one unit of a foreign currency. US Dollar (\$) has been taken to be the foreign currency against which the Indian Rupee exchange rate is considered. This is because the US Dollar has remained to be the most dominating foreign currency used for trading and investment throughout the period of this study. Generally, a depreciating currency causes a decline in stock prices because of expectations of inflation. On an average, export-oriented companies are adversely affected by a stronger domestic currency while import-oriented firms benefit from it. Though these arguments suggest a linkage between exchange rates and stock prices, the empirical evidence supporting such a linkage was weak at best. Also, at the micro level, exchange rate changes influence the value of a portfolio of domestic and multinational firms.

Stationarity for Dollar rate

Table 1.4- Stationarity test of dollar

Null Hypothesis: D(PRICE) has a unit root				
Exogenous: Constant				
Lag Length: 4 (Automatic - based on AIC, maxlag=26)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-20.35017	0.0000
Test critical values:	1% level		-3.432927	
	5% level		-2.862564	
	10% level		-2.567361	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(PRICE,2)				
Method: Least Squares				
Date: 05/20/20 Time: 00:56				
Sample (adjusted): 3/04/2011 3/18/2020				
Included observations: 2359 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PRICE(-1))	-0.968719	0.047603	-20.35017	0.0000

D(PRICE(-1),2)	-0.010915	0.042744	-0.255349	0.7985
D(PRICE(-2),2)	-0.102756	0.036175	-2.840523	0.0045
D(PRICE(-3),2)	-0.136895	0.028718	-4.766819	0.0000
D(PRICE(-4),2)	-0.046875	0.020669	-2.267857	0.0234
C	0.012196	0.005734	2.126764	0.0335
R-squared	0.499776	Mean dependent var		0.000186
Adjusted R-squared	0.498713	S.D. dependent var		0.391341
S.E. of regression	0.277076	Akaike info criterion		0.273492
Sum squared resid	180.6427	Schwarz criterion		0.288158
Log likelihood	-316.5838	Hannan-Quinn criter.		0.278832
F-statistic	470.1776	Durbin-Watson stat		2.000986
Prob(F-statistic)	0.000000			

Source- Eviews

Log Differenced Price

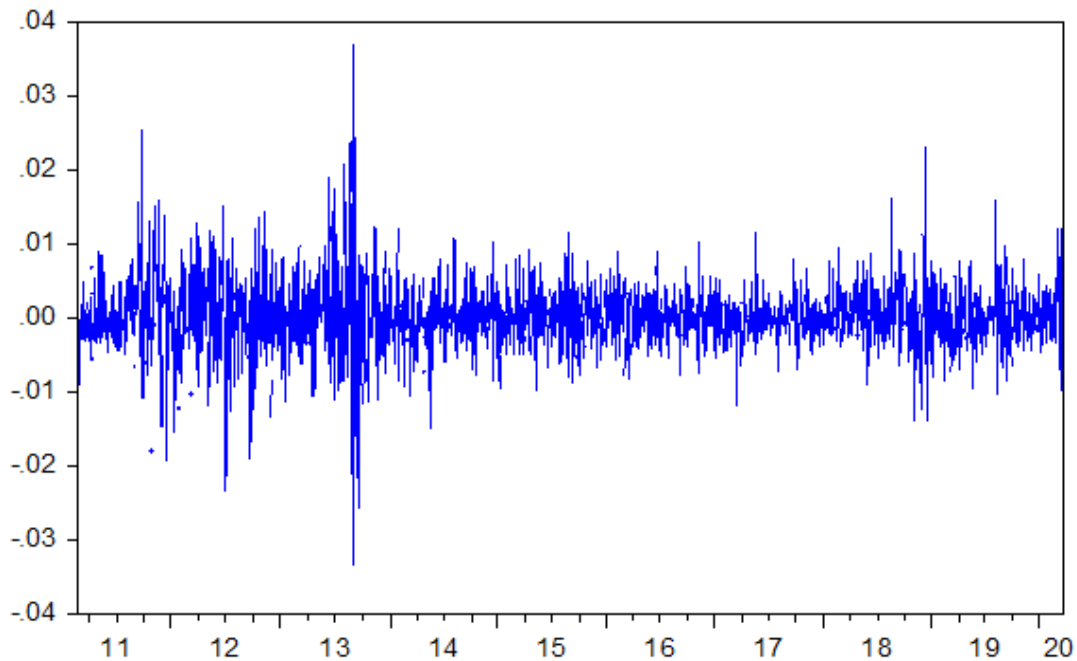


Figure 1.6- Stationarity Graph for Dollar

Source- Eviews

Rather than pure price movements, the percentage price changes on day to day basis have been studied. This is because price movements over a long period tend to give confusing results, because there is often a pronounced secular trend in either direction. The Results show that the variable is stationary and correlation can be applied to it.

Taking the Sensex as base the correlation between the Sensex and Dollar Rate is done. Following are the results:

CORRELATION between sensx and dollar:

Table 1.5- Correlation Between Sensex and Dollar

Covariance Analysis: Ordinary			
Date: 05/20/20 Time: 00:59			
Sample: 2/24/2011 3/18/2020			
Included observations: 2226			
Balanced sample (listwise missing value deletion)			
Correlation			
Probability	SERIES02	PRICE	
SERIES02	1.000000		

PRICE	0.824679	1.000000	
	0.0000	-----	

Source- Eviews

Interpretation

Rule of Thumb for Interpreting the Size of a Correlation Coefficient

Size of Correlation	Interpretation
.90 to 1.00 (–.90 to –1.00)	Very high positive (negative) correlation
.70 to .90 (–.70 to –.90)	High positive (negative) correlation
.50 to .70 (–.50 to –.70)	Moderate positive (negative) correlation
.30 to .50 (–.30 to –.50)	Low positive (negative) correlation
.00 to .30 (.00 to –.30)	negligible correlation

The correlation between BSE Sensex and change in dollar is positively correlated. Positive correlation is a relationship between two variables in which both variables move in tandem that is, in the same direction. The correlation between the two t is 0.824679 which is strongly positive and suggests that with increase in dollar the returns also show an upward trend. So far, from 2017, both the Sensex and the rupee have seen a strong performance due to US President Donald Trump’s policies leading to a weakening of the US dollar and a relative appreciation in the rupee.

Concluding note: This chapter is concluded with the end of our analysis. It is found that one variable has a strong positive impact and the other has a weak negative one

CHAPTER 5

FINDINGS:

Introductory note: In this chapter the several finding of the study are discussed.

In the past decades, many industry researchers, financial analysts and practitioners have attempted to predict the relationship between stock markets movement and macroeconomic variables. They have conducted empirical studies to examine the effect of stock price on macroeconomic variables or vice-versa or relationship between the two and the results of all those studies have provided different conclusions according to the combination of variables, methodologies and tests used.

- Augmented Fuller Dickey test was applied to check the stationarity of all the three variables. The results showed that all three of them were stationary and correlation can be applied on them. Sensex was taken as the base and Correlation was calculated between Sensex - Gold and Sensex - Dollar .
- Gold is a substitute investment avenue for Indian investors. As the gold price rises, Indian investors tend to invest less in stocks, causing stock prices to fall. The correlation between prices of gold and BSE Sensex is Negative. Negative correlation is a relationship between two variables in which both variables move in inverse that is, in the opposite direction
- US Dollar (\$) has been taken to be the foreign currency against which the Indian Rupee exchange rate is considered. The correlation between BSE Sensex and change in dollar is positively correlated. Positive correlation is a relationship between two variables in which both variables move in tandem that is, in the same direction

Concluding note: It is noted that the Gold prices have an inverse effect on the sensex and on the other hand the USD shows a positive correlation which shows a move in the same direction.

CHAPTER 6

CONCLUSION:

Recent research on the impact of Macro Economic Variables on stock market returns has provided a complete understanding of the Indian Financial Market. Current findings suggest that the effect of these two variables namely , Dollar Rate and Gold Price has been studied and certain correlations have been derived using the data from the last 10 years. Financial Markets are basically the individual investors, financial institutions and other intermediaries who are linked by a formal trading rules and communication network for trading the various financial assets and credit instruments.

Augmented Fuller Dickey test was applied to check the stationarity of all the three variables. The results showed that all three of them were stationary and correlation can be applied on them. Sensex was taken as the base and Correlation was calculated between Sensex - Gold and Sensex - Dollar While studying the Relationship between Stock markets movement and Macroeconomic Variables there were certain results which helped in having a clear understanding and improvising the conceptual knowledge about the Financial Markets

The correlation between prices of gold and BSE Sensex is Negative. Negative correlation is a relationship between two variables in which both variables move in Inverse that is, in the opposite direction.

The correlation between BSE Sensex and change in dollar is positively correlated. Positive correlation is a relationship between two variables in which both variables move in tandem that is, in the same direction

There was a clearer understanding of the relationships discussed above, so the study about the effect of these economic variables on the stock market comes to an end.

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