1. INTRODUCTION:

Stock markets play an essential role in the economics of many countries. With the implementation of free and open economic policies and advanced technologies, the emergence of new capital markets, the adoption of more flexible exchange rate arrangements in emerging and transition countries, gradual abolishment of capital inflow barriers and foreign exchange restrictions, access to the stock markets around the world is easy for an investor. All the above mentioned developments have not only increased the types of investment opportunities but also increased the volatility of exchange rates and interest rates by adding a substantial portion of risk to the portfolio diversification process and overall investment decision. The health of a country's economy depends on the stock market indices which point out the relevance of stock markets. Formations of many theories are influenced by the increasing importance of functioning of stock markets. A well working financial system hikes economic growth through appropriate and efficient allocation of resources. As an element of a financial system, the priority and role of stock market towards achieving economic growth is essential. The buying and selling decision of the investors influences the working of a stock market which in turn is influenced by a number of economic factors. Recurrent changes in the prices of stocks, makes it more risky for the investors and for which they are continuously interested to be informed around the factors and the extent to which they influence share prices. Many researches have examined the impact of economic factors on the working of stock markets. Exchange rates and Interest rates are considered to be important economic variables which have a momentous impact on stock prices [1].

The financial architecture of the Indian economy is affected by financial sector reforms and globalization. In the present scenario, the movements in the financial markets and their link with the real sectors have simulated significant importance. Since the initiation of reforms in the financial sector in the 1990’s, application of different measures has brought a sensational change in the functioning of the financial sector of the Indian economy. Implementation of a floating exchange rate in 1991, promotes greater trade volumes and high volatility in both the equity and Foreign Exchange markets, raising its
exposure to financial and economic risks. During the 1997 economic crisis in Asian countries, the relationship between financial variables like stock returns and exchange rates became more significant, which resulted in the fall of stock prices and exchange rates across Asian markets. Many have suggested that a difference in expected returns from stocks should be related to exchange rate changes. In recent years due to increasing international diversification, gradual abolishment of foreign exchange restrictions and capital inflow barriers, cross market correlations, adoption of flexible exchange systems in transition and emerging countries, the interdependency between these two markets has become significantly important. This in turn has resulted in a wide variety of investment opportunities.

The Indian government has implemented liberalization and globalization more seriously than before, due to which there arises doubt regarding the growing importance of stock markets from the viewpoint of the aggregate economy. Many observations from many researchers suggest that a major cause of raising resources for Indian corporations is from Indian capital markets. Indian stock markets have also peaked attention from global investors and the influence of foreign institutional investors. The interrelationship between the stock market and the economy has strengthened.

As the Indian economy is growing at a faster rate, keeping all the economic and financial reforms in mind, there arises a necessity to test the linkage between macro-economic variables and stock markets using modern techniques and models with the help of new technology.

If Practitioners and academicians know the actual macroeconomic variables that impact the stock prices and also the nature and relationship, then understanding and anticipating stock market behavior is much simpler with the aid of these variables. The policy makers with the help of such knowledge will try to influence the markets or the investors. Managers will also able to make relevant investments and make appropriate managerial decisions.

Capital markets are the most important sector of the economic system of a country as it plays a crucial part in mobilizing savings from the deficit to surplus sector. Stock markets
are repeatedly referred to as barometers of a country's economy as they reflect the variations and modifications of the working of an economy.

The order of an economy is usually reflected by the changes and drifts in the stock market. Since the outset of stock markets many researchers have been attempting to build a relationship between the stock markets and macroeconomic variables which is evident from the available literature. Many robust models have been developed by various researchers across the world who have tried to build a link between stock markets and the macroeconomic variables like Discounted cash flow models (DCF), Capital asset pricing model (CAPM), and the Arbitrage pricing model (APG) to date. Whereas the existing models also have some limitations and lack clarity based on the theories of perfect markets and market equilibrium. Market imperfections and other market characteristics have made these existing models improper and incompatible for developing countries like India. From the past literature it is evident that the asset pricing theories do not indicate the basic macroeconomic factors which affect stock prices. Availability of data along with the statistical models are very important in selection of models for the empirical analysis. Therefore the variable selection criteria basically depend on the intuitive financial theory [2-4]. The major sources of risk that affects the long run return on individual stocks are the macroeconomic variables that are captured by the modern economic theories. In order to plan and design the investment policies and strategies of an individual, policy maker or an investor, an analysis on macroeconomic variables with different and appropriate methodologies advised in finance literature would help them in doing so. Among the many important issues and emerging financial challenges, valuation of stocks in India and across the globe is one of the challenging issues. Srivastava [5]

Various researches have tested the linkage between the Stock market and the state of the economy. In-depth debate has been developed in finance research suggesting, emerging and developed financial markets might be able to benefit economic growth. Outcomes also show a positive relation and correlation between financial development and economic growth. So if the economy functions well, the stock market is expected to do the same. Most of this research is based on the economic and financial theories, such as
market efficiency theory [6], quantity theory of money [7] [8], capital asset pricing model [9], and arbitrage pricing theory [10].

Past studies for ex, Nai-Fu Chen [3],[11] have focused on finding the effectiveness of macroeconomic variables on financial markets. Several new studies like Diamandis and Drakos [12], Kearney [13], Ghosh [14], Kim, McKenzie [15], Gosnell and Nejadmalayeri [16], Hussain [17], have proved a long-run equilibrium relationship between relevant macroeconomic variables and stock prices. However emerging market stock price indices are identified as having higher volatility than prices in more developed markets. One question that has emerged and still needs more evidence relates to whether macroeconomic variables cause the volatility or structural breaks of an emerging market’s stock index.

1.1 Financial Markets

Financial markets are broadly described as a place where many buyers and sellers engage in the business of assets like equities, currencies, bonds and derivatives. A typical definition of financial markets are to have a transparency in pricing, primary regulations on trading, costs and fee, factors that determine the pricing of the securities that are traded. Nearly every nation in the world has its own financial markets. Some markets are big like the New York Stock Exchange which has a business of trillions of dollars every day and some are small with very few players. Financial markets in recent times are accessible for many investors all around the world with a very widespread and huge number of financial products. Until the end of the twentieth century these markets were exclusively traded by international banks and financial professionals while some were limited for private investors.
Components of Financial markets are:

Capital Markets are where individual investors along with institutional investors trade financial securities. Many institutions and firms both in private sector and public sector regularly sell in the capital markets for raising funds hence this type of market consists of both primary and secondary markets. Governments as well as firms need funds to carry on its functions and plan its long term investments. For doing this, a firm or a company pool money by selling its stocks and bonds in its name. Those stocks and bonds are traded in capital markets.

Primary and Secondary Markets

Primary markets are markets where the issue of new shares and securities are executed. Companies and Government bodies in order to raise funds for financing their business needs issue bonds and shares in Primary markets. It is also called “New Issue Markets” where the price range will be set for a given bond or security and directly sold to the investors. They are facilitated by the underwriting groups like investment banks who are responsible for price setting of the securities. Investors of such markets have the first privilege to own the new securities in the form of IPO’s. The funds raised by selling of such securities are used to finance their day to day operations or to expand their business.

Secondary Markets, also called Stock Markets are markets where reselling of shares and securities happen between various investors with the help of a regulatory body called SEBI. Securities and Exchange Board of India serve as a regulatory body with the help of brokers in settling the transactions on a daily basis. Volatility in trading is more prevalent in primary markets when compared to secondary markets as it is difficult to calculate the demand for new security for several days. Prices are determined based on the demand and supply for a particular security in secondary markets. The cash proceeds in secondary markets directly goes to an investor and not to an underlying company or an entity.

Bond markets, bonds are a debt instrument where an investor lends money to a firm (organizational or governmental) for a fixed period and for a fixed rate of interest. These bonds are used to finance different projects as well as for long term investments by the companies and the government bodies. Credit markets serve as a platform to buy and sell
bonds to the investors around the world. Fixed income markets, debt markets, and credit markets are the alternative names for the bond market. Corporate bonds, municipal bonds, and treasury bills are the main types of bonds sold in the bond market.

**Money Markets**, High liquid instruments with a shorter maturity are the main components of this part of financial markets. Short term lending and borrowing from days to less than a year are traded by the participants of such markets in order to fulfill their short term financial needs. The securities traded in such markets consist of certificate of deposits, banker’s acceptance, treasury bills, commercial papers, municipal notes, repurchase agreements etc. Investors of such markets are called cash investors as the maturity time and amount are very short. Usually companies sell their commercial papers to an investor as it is a safer place of investment due to high liquidity and shorter maturities. Due to its extremely conservative nature, it attracts lower rates on investments compared to other types of securities. Risk is also a part of the parcel of any investment; here risk of default is a type of risk involved with commercial paper.

**Cash or spot markets**, Spot markets or cash market investments are very sophisticated with a risk of huge loss or huge gain. Sale of goods is immediately followed by the delivery of the goods in a cash market. Immediate effect of the contracts that are bought and sold in a spot market happens by the same token. Current market prices act as the spot price to settle the transactions between the buyer and the seller. The market is notably a different type of market as the trades are settled at spot market rates whereas the prices are determined at a forward rate in other types of markets.

Experience plays a major role in trade activities involved in such markets as it is very delicate and complex in nature. Institutional market players play a predominant role in the trade involved in such markets like hedges, limited partnership and corporate investors. A very high level of trading skills along with a knowledge of the macro-economic variables, access to detailed information and far-reaching accessibility are the main criteria to trade in such markets.

**Derivatives markets**, the term derivative is derived for a reason as the value of the asset is derived from an underlying asset. It is basically a contract where the price of the same is calculated by the market price of the underlying asset or assets. All these sounds
complicate as it is actually complicated. This market is complicated as there is an extra layer of complexity involved in its trading activities and also the knowledge and experience required by the traders to speculate and make profits. However, derivatives market trading can be effective for risk management programs. Common types of derivatives are futures, forwards, options, swaps and contracts. Complexity exists not only in these types of instruments but also with the strategies to deal with such type of trading by the participants.

**Forex and Interbank Markets.** Interbank Markets are a financial system where trading happens between banks and financial institutions which exclude retail investors and small trading parties. Most of the interbank trading happens from a banks’ own account but in some exceptional cases trading activities are carried out by the banks on behalf of large customers. Forex Markets are the markets where trading of currency happens. This market is considered worlds largest and the most liquid market that trades all the currencies available globally with an average traded value of more than $1.9 trillion a day. Any individual, company or country can be a participant of such market. It is considered the largest market as the total cash traded is the highest among the other types of markets. Trade happens over the counter and it does not have a central market place for exchanging currencies. It is open 5 days a week and 24 hours per day. Trading of currencies happens between the major financial centers like London, New York, Hong Kong, Zurich, Frankfurt, Singapore, Sydney and Paris. Forex markets were a huge platform for trading in currencies for financial institutions, banks, corporations, wealthy individuals and hedge funds. Recent advancements in the technology, emergence of internet has now drastically changed the scenario. It is now possible for an individual investor to trade currencies very easily with the click of a mouse using online brokerage accounts.

**Third and Fourth Markets** There also exist another market which does not deal with individual investors, but large amount of trade takes place where shares are transferred in significantly huge volumes. These types of markets trade over the counter using the electronic channels. Trade takes place between the stock brokers and the dealers and even between large institutions. The major difference between third and fourth market is that
third market transactions happen between the dealers, stock brokers and large institutions whereas in fourth markets business happens only between large institutions. One of the important reasons for the existence of third and fourth markets is to avoid these huge transactions in the main stock exchanges which could affect the price of the stock in the secondary markets. As the accessibility to third and fourth markets are very limited there does not exist a major change in the stock price and does not affect an average investor.

1.2 Interest Rate and Exchange Rate:

Basically interest refers to the cost paid for using others money. Land lords are quite aware of this scenario. Bank’s money is used in the form of mortgage to buy a home or a plot and is supposed to pay for this privilege. Credit card holders also needs to pay certain amounts of interest for the short term loans that they barrow to buy goods and services. When it comes to share markets, the scenario is little different. Even though they are affected, it is different from the above mentioned examples.

Exchange rate is the price of a nation’s currency in terms of another currency. An exchange rate thus has two components, the domestic currency and a foreign currency, and can be quoted either directly or indirectly. In a direct quotation, the price of a unit of foreign currency is expressed in terms of the domestic currency. In an indirect quotation, the price of a unit of domestic currency is expressed in terms of the foreign currency.

As an efficient market attracts investors and allows few people to make extraordinary profits it would lead to lose confidence of general public about the market. When there is an increase in the rate of interest paid by the banks to its customers, people switch their investment from stock markets to bank deposits which leads to decrease in the demand for shares and in turn results in the decrease of share price. On the other hand when there is a decrease in the interest rates that leads to lower cost of barrowings which has two implications on stock markets. Firstly, as loans gets cheaper people barrow money from banks and invest them in stock markets. Secondly, when the bond markets are less attractive from the decrease of interest rate, people move money from bond markets to share markets by selling their bonds. This movement of funds and investments creates
demand and in turn causes the price of stocks to rise. There exists a negative correlation between the interest rate and stock prices. A developing monetary policy leads to a decline in interest rate and so it becomes necessary to consider the impact of interest rates.

Financial sector reforms and globalization in India have directed a change in the financial engineering of the economy. In the recent scenario, the activities in the financial markets and their relationships with the real sector have gained significant attention. The implementation of floating exchange rates facilitates greater volume of trade and fluctuations in the equity and foreign exchange markets further increases its exposure to financial and economic risks. It has been suggested that the difference in expected stock returns should be correlated to changes in exchange rates. Due to cross market return correlations, increasing international diversifications, abolition of capital inflow barriers and foreign exchange restrictions, adoption of flexible exchange rate mechanism in the emerging and transition countries the interdependence of these two markets has become significant. Even though foreign exchange changes affect cash flows, profitability and investments, there is no consensus about the relationship and also they are inconclusive in the developing countries.

1.3 Interest Rate and its impact on stock market:

Interest rates play a major role in stock market operations. More than the Interest rates, Interest rate differentials play a major role affecting fund flows and exchange rates. Along with this effect it also affects the discount rates that are used in most of the valuation models which in-turn affects stock prices. Future cash flow streams and valuations are affected due to the availability of funds for business and investments.

Interest rate modifications affect asset prices to such an extent that such changes deliver new information regarding short- or long-term monetary policy objectives. Precisely, interest rate changes can affect equity prices in two ways, i.e. by affecting the rate at which the firm’s expected future cash flows will be capitalized, and by altering expectations about future cash flows. If both capitalization rates and expectations of
future cash flows are affected by interest rates, the effects of these also work in the same direction, i.e. an increase in interest rates will cause stock prices to decrease and a decrease in interest rates will cause stock prices to increase.

The below graph shows the movement of month wise Interest rates from April 1999 to October 2014

**Graph 1 : Month wise Interest rates from April 1999 to October 2014**

1.4 Exchange Rate and its impact on Stock market:

Changes in foreign investments would affect the interactions between Exchange rate and stock market returns. Spot exchange rates are used to convert rates of return on foreign investment from one currency to another. When the rate of return in a depreciating currency is converted to a stronger currency, a decline in the adjusted rate of return can be seen. Conversely, when the rate of return in an appreciating currency is converted to a depreciating currency, there will be an increase in the adjusted rates of return. The timing of their returns for foreign portfolio investors is very important. They give close attention to the timing of return conversions depending on the anticipated exchange rate movements. Furthermore, an increase in foreign investments in a countries stock market will lead to an appreciation of local currency in relation with the foreign currency through
inflows of foreign currency. In contrast, sales of a countries stock by foreign investors will lead to foreign capital outflows affecting the local currency to depreciate against a related foreign currency. The possible flow of bidirectional causality is because of the relationship between foreign exchange markets and stock markets. As stock market returns are adversely affected by the uncertainty and currency depreciation, investment in stock market decisions are readjusted by the international fund managers.

Stock prices are affected by the changes in exchange rates through changes in demand and supply in asset markets and goods market. Actual observed stock price aggregates depend upon the relative strengths of the two effects. International competitiveness of the country is affected by exchange rates, with lower(higher) exchange rates resulting in lower(higher) future export values and higher(lower) future import values by decreasing (improving) the competitiveness of the country’s goods and services. These changes in future import and export values translate into revised earnings expectations for domestic firms, leading to a change in their stock prices.

Overall, there may be an increase or decrease in exchange rates depending on that particular countries trading pattern compared to rest of the world, also on the relative market values of exports and import oriented firms in the stock market.

Investment flows are considered one of the immediate reactions of stock prices to exchange rates. By the arrival of new information, domestic currency will be influenced due to the movement based on asset markets. As exchange rates are priced risky in the stock valuation, information affecting local currency values also impact stock prices.

When exchange rate appreciation is based on new information that leads to changes in expectations towards further appreciation in the future, demand for domestic currency and domestic stocks decrease, lowering stock prices. A temporary appreciation, not associated with a change in expectations, can be viewed as a buying opportunity for domestic stocks, increasing the demand for domestic stocks and raising their prices.

Overall, stock price movements depends upon the strength of the goods market effect versus the asset market effect, the specific country’s trading patterns with the rest of the
world, as well as the effect of new information on the expected exchange rate changes in the near future.

The implementation of the Floating exchange rate in the year 1973, the financial reforms in the financial markets during early 90’s and the currency crisis in Asia 1997-98 collectively resulted in making a substantial ground for the effective relationship between the stock markets and the foreign exchange markets. The stock market and the foreign exchange markets are treated as the most important sectors of the financial markets as the effect of any such diversion is linked with the policy variables along with macroeconomic variables. Nonetheless stock markets have an indirect effect and foreign exchange markets have a direct effect. As a financial measure of the country, stock markets and foreign exchange markets have grabbed attention of fundamental and technical analysts as well as the researchers towards their effective linkages. Even though there (are) is no theoretical consensus on the linkage between stock prices and the exchange rates, the transitional variables like Demand for money, Wealth, Exchange rates, Interest rates etc., play an important role in establishing a linkage between the variables.(Mishra, 2004)

For example, the Flow oriented models of exchange rate calculations (Rudiger Dornbusch, 1980) focuses on the current a/c or trade balance whereas here the changes in the exchange rates influence international competitiveness and BOP positions, therefore affecting the output of the country in turn affecting the current and future cash flows of the organizations and there by affecting the prices of their stocks. The reason behind is most of the firms barrow in other currencies to meet their operations. Hence affecting both the ways depending on the type of their operations (exporting industry or uses imported raw materials for production

On the other hand Stock oriented models (Branson, 1983; Frankel, 1983) give different evidence on the linkage between the stock prices and the exchange rates. This model emphasizes on the capital account which acts as a major determinant of Exchange rate dynamics. The basis of the Portfolio balance model is established on the assumption that, the firms must invest their complete wealth in domestic and foreign assets along with currencies to form their portfolio. Therefore the balance between the demand and supply
of assets is managed by exchange rate dynamics. The logical deduction of negative effects of stock prices on the exchange rate is an increase in domestic stock price leads firms to demand more domestic assets. To buy more domestic assets, they need to sell foreign assets as they are comparatively less attractive. This will lead to an appreciation of local currency as the demand for the same is more. On the other hand, it can also be explained like: An increase in wealth due to the increase in domestic asset prices will make investors increase their demand for money, which would lead to an increase in domestic interest rate. Higher interest rates will attract more foreign capital which would result in appreciation of domestic currency. The below graph shows the movement of month wise Exchange rates from April 1999 to October 2014

Graph 2 : Month wise Exchange rates from April 1999 to October 2014

The main aim of our Research is to know the impact of macroeconomic variables like Exchange rate and Interest rate as causes of the Stock price Index (sector wise) in one of the emerging market namely, National Stock Exchange (NIFTY) in India. The main intension of this research is to find out the variables affecting the stock price index and causing sharp variations. It also investigates to make sure whether it is viable for NSE to respond to macroeconomic variables in the case of developing countries.
1.5 Inflation and Stock Markets:

Inflation refers to “The rate at which the general level of prices for goods and services is rising, and, subsequently, purchasing power is falling”. The central bank of a country attempts to control both Inflation and Deflation where it attempts in keeping the excessive growth.

As and when Inflation raises, every rupee can buy a lesser percentage of goods. To explain with an example, consider the inflation rate is 5%, a Rs. 100 pack of goods will be Rs.105 in a year. The central banks of most of the countries will try to maintain an inflation rate at 2-3%. The central bank, Investors and the business firms will constantly monitor and are the ones who are most concerned with the inflation rate. So change in the rate of inflation – rise in price levels of goods and services – will reduce the Purchasing power that can be bought with each unit of the currency – a rise in inflation level – insidious effect – increase in input prices – only fewer goods can be bought by the consumers – decline in profits and revenue – economy will slow down a little while until it reaches a steady state.

Investors get (a) clarity by examining the historical stock data during the times of high inflation and low inflation. Enormous research studies have examined the impact of inflation over stock market returns and have evidenced conflicting output due to various reasons like Geography, time period studied etc. Many studies have concluded that the expected inflation may have a positive or negative impact on the stock returns depending upon there capacity to hedge and also depends on the monetary policies formulated by the government. Many studies have evidenced a strong positive correlation with the stock returns due to an unexpected changes in inflation especially during the times of economic concentrations which creates an awareness among the investors that the timing is more important for investments in stock markets. It is clear from the above example that an unexpected change in inflation contains many new pieces of information regarding the future prices. Likewise a greater volatility in stock price movements was in correlation with a high inflation rate. It has been proved in geographical areas where high inflation is usually linked to developing countries and even the volatility of stock prices are higher when compared to developed countries.
Results from the research that are carried from 1930 suggests that most of the countries have suffered from high inflation due to worse real returns (Actual returns – Inflation = Real returns). When it comes to NIFTY S&P 500 returns decade wise while adjusted with inflation, it is evident that higher real returns occurred when the inflation was ranging from 2 to 3%. The rate of inflation lesser or greater than 2-3% signaled an U.S environment with more issues with varying impact on stock prices.

Investors keep on anticipating the elements that influence portfolio performance and take decisions on the basis of their expectations. One among those factors that impact the portfolio is Inflation. Theoretically stocks provide hedge against Inflation where a company’s profit and revenue have to grow in rapport with inflation after some period of adjustment. Varying effects of inflation over stocks creates confusion in deciding on whether to trade on the positions already held and also on the new positions to be taken. When the developed market like U.S are considered, it is evident that it is very noisy and shows a high degree of correlation with Inflation with lower returns at most times for the overall markets.

When stocks are categorized into value stocks and growth stocks, it proves that value stocks are better performers during high inflations and growth stocks are the better performers during low inflation periods. Another way an investor can analyze and predict inflation is by studying the commodity market. It is commonly assumed that the stock prices rise with the rise in prices of commodities as the firms have to produce commodities. But, actually higher prices of commodities will reduce profits and there by reduces the returns on stocks. Thus commodity markets can be an insight for future inflation rates.

The below graph shows the movement of month wise Inflation rate from April 1999 to October 2014
1.6 Industrial Production and Stock Markets

Industrial Production is an economic indicator that is released monthly by the Central Statistical Organization. Industrial production measures the quantity of output from manufacturing, electric and gas, mining industries. The year of reference for the industrial production index is 2002 with the level 100. The data on production (physical outputs and the inputs used in the process of production) is directly received from Bureau of Labour Statistics and Trade Associations. The Fisher Index formula is used to calculate the individual index of different industries and sectors.

The growth of any particular industry can be measured by the investors using the Industrial Production Index (IPI) of various industries. The growing IPI of a particular industry month by month symbolizes a good sign that the firms in that particular industry are doing well. Industrial Production and Capacity Utilization reports are released simultaneously. The figures of the Industrial Production are obtained on the basis of the monthly volumes of the goods produced by the industries like factories, electric utilities, mines etc. It also includes the data from newspapers, books, periodicals.
The data on industrial production is used in combination with different industry capacity calculations to estimate the capacity utilization ratio for each of the business lines, where the base year is used as a reference level of 100% (2002 at present). The figures of the Industrial production and the related capacity utilization are treated as Coincident indicators which means, a change in the level of these indicators normally reflect identical changes in the overall economic activities and there by affecting the GDP. The outcome of the IP values will give us the percentage change for month-to-month and on year-to-year levels and there by throwing light on the short term changes in the rates as well as on the business cycle growth. RBI will (have a close) watch (on) these figures very closely as it knows that the effect of inflation is first felt at the industry level, as the supplies of these basic materials gets tight for either the manufacturers or the corporate clients. A rise in the price of commodities and the materials will now slowly begin to pass down the line towards the individual customers with a higher price for the finished goods.

Investors concern: Even though the capacity utilization levels technically are upper bound to 100%, but doesn’t reach this value. Any level above 82-85% are considered as “tight” with an increased prices or shortages in supplies in the coming days. Economy is lacking if the capacity utilization levels are below 80% which may lead to fear of recession and employment loss. The below graph shows the movement of month wise Industrial Production Values from April 1999 to October 2014.

**Graph 4 : Month wise Industrial Production from April 1999 to October 2014**
