Stock Market as a Leading Economic Indicator in the context of the Indian economy

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Abstract-

Introduction: There have been many debates that have supported both sides of the discussion of if the stock market could be considered as an indicator of the economy. This topic is often debatable because many statistical tools support the other side of the discussion.

Research Objective: To examine a relationship between the stock market and the economy in the Indian context.

Literature Review: Previous researchers have found that economic growth plays a crucial role in determining the stock price movements and the growth in the economy can also result in a growth in the overall market but the question of if the stock market and its trends could be sued to determine the overall economic condition which would happen in a near future in a volatile and a developing market of India still holds one of the major points of discussions**.**

Research Methodology: Technical analysis, correlation, regression analysis would be used to analyse the relationship between stock index, stock prices, and economic activity. These tools would not only provide the relationship between the stock market and the economy but also define the degree of relationship between the two**.**

Recommendations: Stock markets are crucially linked to economic growth but considering the stock market as a leading indicator could indicate if the stock market and its trends could be considered as an indicator establishes a whole new question of concern. India is a developing country which means that it is in its growing phase and due to this factor, there is immense potential in both in terms of stock market growth and the economy.

Future Directions: Therefore, analysing and understanding that if the stock market can be considered as an indicator for the Indian economy can help us in future researchers in various domains.

Keywords: Indian stock market, economic indicator, Indian economic conditions, economic growth in India.

Introduction-

The stock market has always been considered as a tool that could be used to analyse the performance of the economy. The stock market has been used as an indicator to show the performance of the sectors concerning the economy. These references are often used by retail as well as institutional investors to invest in the market. In this crowd of investors, traders, economic advisors, researchers, the general public may believe that the trend of the market reflects the trend in the economy. This is that a decrease in the prices of the stocks reflect that a recession is going to take place and an increase in the prices indicate that there is going to be a growth in the economy and thus reflects stability and growth in investments. The stock market as an indicator of the economy does not go without controversy. Given the confusion around this topic, it is necessary to conduct further research in this regard. Schumpeter (1911) argues that a well-functioning financial system encourages innovations by promoting and reallocating resources to promote entrepreneurs and hence promote economic growth. The debate given by him revolves around whether stock market performance helps in the growth of the economy or whether the price movements are influenced by the economic changes.

The casual nexus between the economic growth and growth of the stock market has been of considerable attention. Several studies have tested the directional relationship between economic performance and financial development. Few studies which depicted the casual relationship between the stock market performance and the economic growth are (Levine and Zervos 1996; Jefferis and Okeahalam, 2000; Shirai, 2004; Adajaski and Biekpe, 2006; Mun et al., 2008). Studies of Demirguc-Kunt and Levine (1996); Levine and Zervos (1998) reflected that stock market development has played an important role in promoting economic growth. Certain studies such as (Odhiambo, 2008) also reflect that the results of the studies are sensitive to the kind of data used for doing the research.

Models such as the "traditional valuation model" suggest that stock prices reflect expectations about the future economy, and can therefore be used to predict the economy. Another theory

called the "wealth effect" says that prices of the stock lead to economic activity based on what happens in the economy.

The purpose of this paper is to evaluate stock prices as a leading indicator of economic activity. Correlation, Anova analysis would be used to analyse the relationship between stock index, stock prices, and economic activity. These tools would not only provide the relationship between the stock market and the economy but also define the degree of relationship between the two.

In this paper, we will explore the following questions. First, does the stock market serves as a leading indicator of the economy? We will calculate this by using past economic survey reports as provided by the governmental institutions and previous prices and values of the stocks and indexes respectively. Second, do the correlation, regression, and technical analysis show the same trend as a leading indicator over the years. The stock market as a leading indicator of the stock market can only be said to be true when they both show a consistent relationship with each other over the years.

The research will also clarify the doubts such as stock market's price is a current process and the values or the growth in the corporations would be reflected in the economy so if the prices or the value falls of the stock falls the economy will suffer a recession or downfall in the future. So, understating the relation between the past valuable data of the indexes and values of the economic survey would give a reflection of the correlation if any between the two and if the relation between the two can be used to forecast the trend of the economy in the future.

Literature Review-

The research on the Stock Market as a Leading Economic Indicator in the context of the Indian economy has been conducted by multiple researchers. This had been so as there has been a buzz of discussions and researches with confusion. The past studies which I have considered as a reference include [1995 The Stock Market as a Leading Economic Indicator: An Application of Granger Causality Brad Comincioli '95 Illinois Wesleyan University].

In the research different models were used to brings out relations between the real economy and the stock market. Further prediction based statistical tools such as "Granger cause" was used to explain the relationship between the variables. There have been various models that were used by multiple researchers to explain the relationship. The models of research were

not constant in any of the prior related reports between the stock market and the economy because the model was used to analyse the past data and should also have the capabilities to forecast the future trend by the usage of multiple statistical tools. The report further extended its views if the prediction of the past data helped in forecasting the future trend of the economy based on the current stock market performance.

In this research of 1995 The Stock Market as a Leading Economic Indicator: An Application of Granger Causality Brad Comincioli used multiple supporting tools to further simplify the process so that a clear relation could be shown in simple terms. Another research which was used as a reference and which threw light upon the important relation of the stock market and the economy.

An Empirical Analysis of Stock Market Performance and Economic Growth: Evidence from India Sudharshan Reddy Paramati Research Analyst, National Institute of Financial Management (NIFM) Ministry of Finance, Government of India, Rakesh Gupta Faculty at Department of Accounting, Finance, and Economics Griffith Business School.] This report/research investigated whether the stock market performance led to economic growth or vice versa. The study further explains the dynamics of short and long-term dynamics of the stock market. This helped in conducting further researches in this regard. The report used a different mode for researching than what was used by others. This research analysed the relationship by using the monthly index of industrial production and quarterly GDP data from April 1996 to March 2009. The report was based on Unit root (ADF, PP, and PSS) tests, Granger Causality test, Engle-Granger Cointegration test, and Error Correction Model. This model helped further researchers by providing them with the relationships between the index of industrial production and stock price of BSE and NSE. The quarterly results reveal that there is no relationship between GDP and BSE but in the case of NSE and GDP there is a unidirectional relationship and that runs from GDP to NSE. This report further challenged previous researches that displayed a degree of relationship between the two variables. The research further used the Engle-Granger residual-based test and error correction model displays a long-run relationship between the two variables. The main contribution of the report was mostly targeted towards identifying the role of economic growth in the stock market development. The data which would be used for the research has to be authentic, accurate, exact and the data provided by the economic survey has been used in this research for the same purpose. The data of the economic survey further explains different policies that

were implemented by the government to promote economic growth and development and also a definite structure for the weak economy.

The data of [Economic Survey 2019-20, Volume, Government of India Ministry of Finance, Department of Economic Affairs, Economic Division, North Block] would be therefore used to support the research. Studies that investigate the impact of the stock market on economic growth in India are a point of reference as they could be sued to visualize the growth pacts and relationships between the market and the economy.

The report of [Pacific Business Review International Volume 1, Issue 1, June 2016 Economic Growth Impact of Indian Stock Market: An Econometric Investigation, Attahir Babaji Abubakar Department of Economics, SRM University, Kattankulathur]. Uses ADF unit root test result to demonstrate the relationship between the two. Further, the Johansen Cointegration test shows the presence of a long-run relationship among the variables showed a positive and significant relationship between the investment, labour, and education with GDP, while the stock market and GDP were found to be negatively related. Further Vector Error Correction Model (VECM) short-run dynamics showed the stock market to have a short run positive impact on the economic growth of India. Impulse Response Function (IRF) shows the response of GDP to a shock in the stock market and interest rate to be negative, while the response to shocks in labour, investment, and education was shown positive.

The report of [The Impact of Stock Market Performance upon Economic Growth] displays the study which helped in exploring the causal link between stock market performance and economic growth in terms of a simple theoretical and empirical literature framework. In this, researchers used diverse opinions regarding the importance of stock markets playing a significant role in economic growth processes by performing the functions of improving liquidity, aggregating and mobilizing capital, observing managers and exerting corporate control, providing risk-pooling and sharing services including investment levels. The growing theoretical literature in this research argued that the stock market is crucially linked to economic growth and thus findings suggest a positive relationship between efficient stock markets and economic growth, both in the short run and long run. The report further provides evidence of an indirect transmission mechanism through the effect of stock market development on investment.

The report of [Stock markets and industry growth: an eastern European perspective financial development, economic growth, eastern Europe JEL Classification Number: O4, F3, G1] further reviews the relationship between the variables in an international context.

The paper reviews the stock market developments in Poland and the Czech Republic and provides a case-study of the direction of causality between stock market expansion and economic growth. The report further states that it finds no evidence that the relative failure of the security market in the Czech Republic affected the country's economy. It also analyses the composition of Polish private equity offerings and finds that industries traditionally considered financially dependent were not among the largest Polish equity issuers. Instead, the growth of the Polish equity market has been driven by otherwise well-performing industries, such as residential buildings and commercial banking.

The previous report of [randall morck university of alberta andrei shleifer Harvard university Robert w. vishny university of Chicago- the stock market and investment: is the market a sideshow stated that recent events and research findings increasingly suggest that the stock market is not driven solely by news about fundamentals. The report further elaborates that there are good theoretical as well as empirical reasons to believe that investor sentiment affects stock prices. Investors are sometimes trading just by overall market flow and therefore create buzz. This buzz is therefore just because of the retail traders. When investor sentiment affects the demand of enough investors, security prices diverge from fundamental values. The research elaborates that if the stock market would have been just for the sake of gambling it would have affected the real economy but on the contrary, it does affect it. The stock market influences real economic activity and also the investor's sentiment that affects stock prices could also indirectly affect real activity. The report also that investment has not always responded to sharp movements in stock prices. In this paper, they tried to address empirically the broader question of how the stock market affects investment. The tests which are done in the research measures how well the stock market explains investment when we control for the fundamental variables both that determine investment and that the stock market might be forecasting.

The research of Emerging Markets Queries in Finance and Business: Can Stock Market Development Boost Economic Growth? Empirical Evidence from Emerging Markets in Central and Eastern Europe.] Researchers and business analysts have given expanded consideration to the connection between money related advancement and financial development, because of past outcomes that demonstrated questionable points of view. some of them recognized a positive relationship between the factors and others had critical questions on this relationship. Significant investigations on this subject attempted to demonstrate the presence of any connection between the budgetary turn of events and financial development Arising financial exchanges displayed a critical part in the worldwide economy, and their consequences for financial development can be sent to the genuine area through their particular channels of liquidity, market capitalization, hazard sharing, and enhancement. Utilizing Indian securities exchange pointers such that of liquidity, the volume of exchanges, unpredictability Mukherjee, 2008 did a period arrangement examination and inferred a relationship between genuine GDP development and market capitalization, however from financial exchange action and genuine GDP development exists a unidirectional relationship. Liquidity, as a financial exchange pointer, alongside a sound and created monetary financial framework, assume a vital part in quickening monetary development. The stock market in Singh's, 1997 view is often seen as an intermediary in generating positive. Antje and Jovanovic, 1993 further demonstrated the presence of a relationship between financial development and the securities exchange esteem exchange which was separated by GDP and was distinguished by the key channels of monetary development. The research explains that securities exchange guarantees the best possible climate for getting more monetary assets to create venture activities and sharing dangers, and, here and there, they are viewed as a specialist who harms monetary advancement because of their powerlessness market disappointment.

The research of [Do stock markets have any impact on real economic activity? Katerina Krchniv á11 Department of Accounting and Taxation, Faculty of Business and Economics, Mendel University in Brno, Zemedelská 1, 613 00 Brno, Czech Republic] The paper examines the connection between the financial

exchanges and the movement of the economy. As the intermediary of the financial action, the Gross Domestic Product (GDP) at consistent costs of the year 2005 are utilized. Also, the concept which matches the line with the theory demonstrating the connection between the stock markets and the genuine financial movement. The paper further analysed the information of seven nations, where the European Association (EU27) is considered as one nation, further a portion of the European Union Member States (the Czech Republic, Germany, Poland, Hungary). This paper further supported the notion of relationships between the two variables. The report of [Greenwood and Smith (1997)] further reported that the cost of mobilizing savings is less in the large stock markets, while [Kyle (1984)] and Holmstrom and [Tirole (1998)] explained that liquid stock markets improve the market efficiency by delivering the timely and accurate information to the investor.

Method of Research

For analysing the relationship between the stock prices and the GDP movement. I took the data of forty years (1980-2019). I used the closing prices of the S&P BSE Yearly Data. I used the GDP growth rate in order to compare the relationship between the two. In order to analysis it was important to first understand that weather there is any relationship between the two variables for this I used corelation tool between various intragroup. These groups included the %change in the growth of the GDP, % change in GNP, Per capita GDP and Per capita GNP form the year 1980-2019. The analysis shows-

YEAR (a)	CLOSE (b)	INDIA GDP GROWTH RATE (c)	PER CAPITA GDP IN $ (d)	PER CAPITA GNP GROWTH RATE (e)	PER CAPITAL GNP IN $ (f)
1980	148.25	6.74%	267	6.85%	270
1981	227.72	6.01%	270	5.79%	290
1982	235.83	3.48%	274	3.13%	290
1983	252.92	7.29%	291	7.19%	280
1984	271.87	3.82%	277	3.68%	280
1985	527.36	5.25%	296	5.32%	290
1986	524.45	4.78%	310	4.72%	310
1987	442.17	3.97%	340	3.80%	350
1988	666.26	9.63%	354	9.30%	390
1989	778.64	5.95%	346	5.82%	390
1990	1048.29	5.53%	368	5.38%	380
1991	1908.85	1.06%	303	0.83%	350
1992	2615.37	5.48%	317	5.48%	340
1993	3346.06	4.75%	301	4.90%	320
1994	3926.9	6.66%	346	6.78%	340
1995	3110.49	7.57%	374	7.74%	370
1996	3085.2	7.55%	400	7.74%	400
1997	3658.98	4.05%	415	4.13%	410
1998	3055.41	6.18%	413	6.19%	410
1999	5005.82	8.85%	442	8.94%	440
2000	3972.12	3.84%	443	3.56%	440
2001	3262.33	4.82%	452	5.02%	450
2002	3377.28	3.80%	471	3.99%	460
2003	5838.96	7.86%	547	7.79%	520
2004	6602.69	7.92%	628	7.96%	610
2005	9397.93	7.92%	715	7.90%	710
2006	13786.91	8.06%	807	7.99%	790
2007	20286.99	7.66%	1,028	8.04%	910
2008	9647.31	3.09%	999	2.90%	1000
2009	17464.81	7.86%	1,102	7.86%	1120
2010	20509.09	8.50%	1,358	7.97%	1220
2011	15454.92	5.24%	1,458	5.45%	1360
2012	19426.71	5.46%	1,444	5.14%	1480
2013	21170.68	6.39%	1,450	6.31%	1520
2014	27499.42	7.41%	1,574	7.49%	1560
2015	26117.54	8.00%	1,606	8.02%	1600

2016	26626.46	8.26%	1,733	7.30%	1680
2017	34056.83	7.04%	1,982	8.08%	1830
2018	36068.33	6.12%	2,006	6.13%	2010
2019	41253.74	5.02%	2,104	5.02%	2130

Findings-

correlation between close and India's GDP growth rate	0.27559515	B+C
correlation between close and per capita GDP in $	0.97974306	B+D
correlation between close and per capita GNP growth rate	0.28954456	B+E
correlation between close and per capita GNP in $	0.97739192	B+F

From the above table, it can be seen that the stock market prices over the years are showing a positive correlation between the various variables. The further elaboration of the data shows that-

B+C= the correlation value between India's GDP value and the Closing price is 0.2. This in general terms would mean that there is a positive correlation between the two variables but it is weak in nature. But, in this case, this is not true. The value of correlation is low because there is a large numeric value gap between the closing prices and the GDP % change. GDP % change. The average of the closing price stands around10170.71 while the average of the % (when converted into numeric) the average value stands around 1619.87.

The low correlation value is due to this numeric difference. When compared with the correlation value and the per capita GNP we again get a low correlation due to this numeric difference. However, when we compare the closing price value of the index and the per capita GDP we get a correlation value of 0.97. This value shows that there is a strong association between the closing price value and the per capita GDP. This value shows that there is a strong positive relationship between the two factors. This means with the increase of one factor the other would increase and with the decrease of the other would decrease. We can see the same high degree of correlation between the B+F i.e. correlation between the closing price of the index and the per capita GNP. The correlation of 0.977 indicates a high positive relationship between the two factors.

The paper is further supported by ANOVA analysis. ANOVA helps in finding out that water too. Reject the H0 or not. ANOVA tests the impact or the effect of a sole factor on the response of the sole variable.

1)Linear Regression

Y=Assuming GDP as dependent variable	
X=assuming stock prices as independent variable	Assuming that GDP is a dependent variable on the Index prices. So, if the index price increases there would be an increase in the GDP too.

Regression Table SUMMARY OUTPUT

Regression Statistics

Multiple R	0.97974306
R Square	0.95989646
Adjusted R Square	0.9588411
Standard Error	118.11624
Observations	40

ANOVA

	df	SS	MS	F	Significance F
Regression	1	12689499.02	12689499.02	909.547	3.79E-28
Residual	38	530154.9512	13951.44608		
Total	39	13219653.98			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	274.105398	24.77953496	11.06176522	1.92E-13	223.9418521	324.2689	223.9418521	324.268944

X Variable 1	0.0495308	0.001642339	30.1587006	3.79E-28	0.046206063	0.052856	0.046206063	0.052855545

With the above-mentioned statistical output of the Linear regression tool, we can see that the R2 square value is 0.95. This states that the R2 value is nearer to 1 which means our dependent variable i.e. GDP is affected by our independent variable that is the stock price. From this, we can derive that the independent variable (index prices) that we used in the regression analysis affects the dependent variable (i.e. GDP value). Therefore, with the use of creation and the regression analysis, we can see that the high correlation between the market prices and the per capita GDP, the prices of the market can be used to identify a broader trend of GDP. The GDP shouldn't be affected by abnormal factors such as natural calamities or any abnormal natural disaster.

Conclusion-

By the above analysis, we can interpret that the stock prices can be used as a leading indicator to analyse the GDP as well as GNP per capital momentum over the years. The trend which the prices reflect can give us an idea of where the economy is heading. This can be further used to make decisions based on long term investing and even planning for retirements and other long-term finance-based goals. These results further reflect the data of 39 years and therefore this reflects the consistency between the two. The Independent variable as takes in this research was the prices of the S&P (BSE-SENSEX). The results should not be used as a sole factor of analysing the trend in the economy but should be sued as a tool that supports the decision while making the judgments based on discretion.

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