Macroeconomic Factors and SENSEX Performance in India : Unveiling the Post-Liberalization Era (1980 – 2020)

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Abstract

Background : One of the world's largest developing nations, India, has seen tremendous economic progress since the Liberalization Reforms in 1991, but rather than functioning independently, the market was impacted by several macroeconomic factors that were active simultaneously.

Purpose : The study examined how various macroeconomic factors have affected the SENSEX's performance in India between 1980 and 2020.

Methodology : Secondary data regarding the stock market and the Reserve Bank and World Bank reports have been considered.

Findings : The Indian stock market and inflation were inversely correlated, while GDP growth and inflation were directly correlated. The foreign currency rate varies with respect to US dollars.

Practical Implications : This research filled in important gaps in the literature regarding the relationship between the stock market, macroeconomic factors, and economic development. It also offered suggestions for investors and organizations on how to analyze and forecast the movement of Indian stock markets, as well as theoretical insights for future forecasts.

Research Originality : While the previous research has addressed the singular impact of variables or included the pre-liberalization period, this study has provided an analysis of stock market data using multiple macroeconomic factors during the post-liberalization period.

Keywords : Indian stock market development, economic growth, BSE, NSE, GDP, exchange rate

JEL Classification Code : E44, G15, O53

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According to Ahmed et al. (2021), economic growth is the rise in the total value of goods produced in a nation or economy over a given time, adjusted for inflation. In this regard, Younsi and Bechtini (2020) noted that economic development is a more comprehensive term consisting of the citizens' overall economic well-being within the economy. Additionally, Ibrahim and Alagidede (2018) stated that developing more industries and economic growth in the country will lead to better economic development for citizens. Nwosa (2021) mentioned that a country's stock market is one of the major factors that can influence economic growth in the region. Additionally, it encourages financial involvement from outside investors. Al Samman and Jamil (2018) said that while FDI contributes to development, it does not have a major impact unless private industry welcomes investment and the government supports commercial prospects. Tsagkanos et al. (2019) concluded that accommodating policies and foreign direct investment can affect the region's financial growth. According to Prabheesh (2020), foreign investors may also purchase financial securities or the securities of indigenous organizations to benefit from a country's economic success.

Additionally, it was mentioned that this kind of investment depends on several variables, such as the status of

the economy and the relationship between the nations (Badawi et al., 2019). Oyerinde (2019) asserted that such foreign investment can catalyze a country's growth and raise GDP. Thus, countries should encourage the receipt of such investments. The current study will address the relationship between India's GDP and the stock market's performance. The impact of different macroeconomic factors and foreign portfolio Investment has also been considered. This will create a theoretical framework linking stock market performance with India's economic growth. It will assist in more accurately analyzing stock market performance and adjusting national policies as necessary.

This study aims to explore the relationship between India's GDP and stock market performance, considering various macroeconomic factors and foreign portfolio investment (Ahmed et al., 2021; Al Samman & Jamil, 2018; Badawi et al., 2019; Ibrahim & Alagidede, 2018; Nwosa, 2021; Oyerinde, 2019; Prabheesh, 2020; Younsi & Bechtini, 2020). This research aims to improve the analysis of stock market performance and help change national policies to better support economic growth goals by creating a theoretical framework. It is imperative to comprehend this link to stimulate economic growth and draw in foreign investments that can spur additional GDP growth. In the context of India, there is a research vacuum that highlights the necessity for this study's exploration and possible contribution to the body of current literature.

Aims and Objectives

In the case of India, the primary goal of the current study is to compare the development of the stock market with economic growth. To achieve the aforementioned goal, the study will concentrate on addressing the following goals:

(1) To examine the causal relationship between stock market development in India and economic growth.

(2) To evaluate the role of macroeconomic determinants like GDP, exchange rate, and inflation rate on the Indian stock market index.

(3) To delineate the complexity of the relationship between macroeconomic contributors and stock market growth before and after liberalization.

Literature Review

Development of the Indian Stock Market

The current stock market of India has undergone significant changes from its initial inception in 1830 and the formalization of the market after the establishment of company regulations in 1850, which was further improved after the country's independence (Asghar et al., 2019). Additionally, it was claimed (Idrees et al., 2019) that establishing the SEBI, or regulatory board, in 1988 ensured the security of smaller investors and foreign investors who sought to engage in India but encountered significant obstacles because of the country's close economic ties. In their study, Lenka and Sharma (2020) considered the 1991 reforms as a major factor behind the present structure of the Indian stock market due to two major factors: the allowance of establishing private industries and the encouragement of foreign investment in multiple sectors. However, it was also mentioned that liberalization didn't lead to significant development in the short term. According to Naghavi et al. (2018), Indian organizations needed to adapt their operating mechanism, which was heavily regulated by the government, to attract greater investment. In this regard, Roy and Shijin (2020) added that liberalization had, on the one hand, led to significant growth but, on the other hand, also increased volatility in Indian stock markets by connecting them with other developed countries of America and Europe.

According to Naghavi et al. (2018), Indian organizations needed to adapt their operating mechanism, which was heavily regulated by the government, to attract greater investment. They also ensured that economic shocks didn't lead to negative shocks for the entire economy. The results were analyzed by Tripathy and Mishra (2023), who stated the Indian stock market has the potential to rise as the world is moving towards integrating their businesses with indigenous firms.

Foreign Portfolio Investment in the Indian Stock Market

SEBI has regulated the investment by foreign investors in India under three broad divisions: government bond investment, corporate bond, share investment by dedicated houses, and investment in such assets by distinct individuals without assistance from such institutions (Prabheesh, 2020). Pujari and Mamilla (2022) stated that such investors are currently allowed to invest in most sectors except some priority sectors like defense. These instruments are taxed at different rates based on taxation agreements among the countries. Furthermore, Hussain and Goswami (2022) claimed that characteristics common to both client countries and India impact the rate of foreign portfolio investment (FPI) in India. These factors must be considered in their integral nature rather than singular form.

According to Gupta et al. (2021), there was also a claim that the foreign exchange rate and the taxation policies implemented by the government for foreign investors may affect overall investment rates. The government must adopt a collaborative stance rather than a discouraging stance. In accordance with this, a few scholars stated that FPI rates have varied across different sectors as well, as investors or institutions might have different perceptions regarding the growth of the economy, which might differ from government and business institutions (Rai et al., 2022). A few other scholars highlighted in their study that the pandemic saw a significant withdrawal of foreign investment from India, which led to a major disruption in the industries. However, LI et al. (2021) noted that this was an isolated episode and should not be used to represent the state of the economy. Rai and Garg (2022) stated in their study that India has been a major destination for FPI due to its growth potential, which the government shall utilize efficiently.

Role of Macroeconomic Factors on the Stock Market

The nation's overall economy is impacted by macroeconomic issues, which also affect the Indian stock market. It is unlikely that industry will be immune to the effects of these factors, even though different sectors may react to them differently (Megaravalli & Sampagnaro, 2018). Gopinathan and Durai (2019) suggested through their study that the relation of different macroeconomic factors varies and can differ across different periods. Therefore, both timeframes and linearity must be considered to comprehend the influence. Alam et al. (2020) also argued that the COVID-19 pandemic 2020 was a singular occurrence. As such, the correlation between variables during that period cannot be extrapolated to broader contexts, as people's emotional states were altered during the epidemic. Shankar and Dubey (2021) mentioned the volatility of a sector due to macroeconomic factors can also vary based on the linkages across the stock market as well as the clients in different countries and their relative position in the economy. In his research, Bhama (2022) identified two worldwide factors: the price of crude oil and the foreign exchange position, which impact various industries despite the government's limited authority. These factors also extend varying impacts to financial and non-financial institutions. According to research by Kaur and Chaudhary (2022), macroeconomic issues might also affect the stock market's sustainability in the short term. The government should take this into account before making any new decisions. Last, an analysis of the same data revealed that macroeconomic issues significantly influence price level and stability, necessitating careful observation and intervention (Yadav et al., 2022).

Relationship Between the Indian Stock Market and the GDP of India

The Stock Market in the country, as well as the GDP of the country show a dual-way relationship. This connection results from these institutions' substantial GDP contributions to the nation (Pal & Garg, 2019). In this context, it was observed that government actions that affect GDP, like demonetization, can also impact other businesses (Anoop et al., 2018). However, the impact recorded varies, and some firms may see growth due to additional opportunities. Misra (2018) found that while there may not be a direct correlation between these factors and the sectors, there may be an indirect one depending on the pace of gold production in the economy, the exchange rate with other nations, and the amount of money supply in the economy. In the study, Parab and Reddy (2020) suggested that the returns provided by firms in the Indian stock market can be impacted due to changes in GDP. This assumes that GDP is directly connected to the growth of output.

On the other hand, Sharma and Shrivastava (2021) noted an inverse relationship might sometimes form with special reference to demand-supply relationships in the labor market in developing economies like India. It can also occur in the case of oil price transition cycles. Agnihotri and Arora (2019) noted that fluctuations in GDP could also affect foreign investment in India, which in turn impacts the nation's stock markets. Haritha and Rishad (2020) stated that news and government information regarding the GDP may affect investors' sentiment, reflecting short-term price variations in the country's stock markets.

Literature Gap

Macroeconomic variables play a major role in the development of stock markets worldwide (Celebi & Hönig, 2019; Khan & Khan, 2018; Ndlovu et al., 2018). However, such studies have not addressed the impact of three variables (GDP, exchange rate, and inflation) simultaneously, which has been addressed here with reference to the Indian stock market. Significant changes are also seen in India's stock market, one of the world's fastest-growing countries (Alam et al., 2020; Hu et al., 2023; Misra, 2018). However, such studies don't establish the relationship between the stock market and India's economic growth, which has been covered in this study. Further reducing the complexity associated with earlier research on the Indian stock market, this study offers a more straightforward but thorough assessment because earlier research examined growth in the market both before and after liberalization, which complicated the analysis.

Methods and Materials

Research Type and Design

This study uses a quantitative research methodology to investigate the connection between India's GDP and stock market performance. Secondary data are gathered for the study design from a variety of sources. Data on GDP fluctuations, exchange rates (in relation to the dollar), inflation rates, and the SENSEX value are all included.

Data Collection

Secondary data are collected from reliable sources such as government reports, economic databases, and financial publications. The use of secondary data is justified as it provides a comprehensive and accurate representation of the variables of interest. In particular, secondary data have been used in the study since, as Serra et al. (2018) noted, gathering such data is more convenient for both time and money. From 1980 until 2020, various reports were released by the World Bank, Bombay Stock Exchange, and Reserve Bank of India. EViews is a software used for data analysis.

Sample Framework

This study does not apply a specific sampling framework because it is based on secondary data. The analysis's data encompasses the pertinent time frame and geographic information required to investigate the connection between India's GDP and stock market performance.

Data Analysis

Using EViews software, pairwise Granger causality and VECM Granger causality tests are performed on the data. While the VECM Granger causality test investigates the long-term effects of the SENSEX value on economic development, the pairwise Granger causality test looks at the causal relationship between variables.

Reliability

Since secondary data are utilized, reliability values of scales are not applicable in this study. However, the data sources' reliability is ensured by selecting reputable and authoritative sources.

Time-Period

The study covers a specific period relevant to analyzing the relationship between GDP and stock market performance in India. The exact time and geographical details are specified according to the availability and relevance of the secondary data sources.

Data Analysis Tools

As shown in Table 1, the analysis used data on changes in GDP, inflation, the exchange rate (in relation to the dollar), and the SENSEX value. Additionally, Table 2 shows that pairwise Granger causality and VECM Granger

Table 1. *VECM Granger Causality Test*

Inflation Rate	2.508655	2	0.2853
All	7.557764	6	0.2723
Dependent Variable : GDP			
Excluded	**Chi-square**	*df*	**Prob.**
Sensex	6.331372	2	0.0422
Exchange Rate	6.408660	2	0.0406
Inflation Rate	1.952031	2	0.3768
All	13.58020	6	0.0347
Dependent Variable : Inflation Rate			
Sensex	0.196859	2	0.9063
Exchange Rate	5.181241	2	0.0750
GDP	0.900353	2	0.6375
All	5.893535	6	0.4352

Table 2. *Pairwise Granger Causality Test (Significance Level 5%)*

Pairwise Granger Causality Test			
Sample : 1980 – 2020			
Lags : 2			
Null Hypotheses:	**Obs.**	***F*-statistic**	**Prob.**
The exchange rate does not cause SENSEX.	39	1.91442	0.1630
SENSEX does not cause exchange rates.		2.55353	0.0926
GDP does not Granger cause SENSEX.	39	13.7725	4.E–05
SENSEX does not Granger cause GDP.		2.49194	0.0477
The Granger cause of the SENSEX is not the inflation rate.	39	0.00815	0.9919
The SENSEX does not cause an inflation rate.		0.25718	0.7747

causality tests have been performed using the EViews software. The first test establishes the relationship between changes in the SENSEX value and GDP, while the second test establishes the relationship between the SENSEX value and economic development.

Analysis and Results

Based on the data gathered for the study, Nguyen and Bui (2019) and Osaseri and Osamwonyi (2019) found a substantial correlation between the stock market and economic progress in India. These studies have also overlooked the relationship between the stock market and the economic development of the country (Hossin & Islam, 2019; Pan & Mishra, 2018). Those studies have helped to establish the relevance of these considerations with special reference to Indian share markets (SENSEX), which can then be used to develop growth models further and conduct comparative analysis based only on growth variables. The establishment of the dual relationship between the different variables has also ensured different stockmarket prediction models, which have been used both in developed as well as developing countries, can be applied as done in previous studies (Gandhmal & Kumar, 2019; Nabipour et al., 2020; Sim et al., 2019).

The stock market has a significant relationship with the nation's GDP, which is generally direct and positive to the country's growth (Li et al., 2022; Kuvshinov & Zimmermann, 2022; Setiawan, 2020). The Indian stock market from 1980 to 2020 provides additional evidence of this association. Inflation has been suggested to have an indirect relationship with the stock market if it sustains for a longer period, as suggested by a few studies (Jelilov et al., 2020; Kwofie & Ansah, 2018; Okorie et al., 2021). These studies, however, have suggested that a continuous lower rate of inflation for a longer period can lead to sustainable growth, which has been verified in the case of the Indian stock market as well. The foreign exchange market is seen to have a varying relationship with the stock market of the country and, as such, is dependent on other factors as well, as suggested in the studies (Jebran, 2018; Park et al., 2019; Zaiane & Jrad, 2020), and such has been reflected in the case of the Indian stock market as well. Consequently, the examination of the data acquired throughout the research shows a connection between different macroeconomic factors in global markets and that this relationship extends to India following the post-liberalization era.

The study has primarily focused on the growth of the Indian stock market as well as the economy during the post-liberalization period, which has been done in accordance with studies by previous scholars (Masharu & Nasir, 2018; Sangvikar et al., 2019; Vidyarthi, 2021). As a result, this study has provided a critical analysis of the Indian stock market (SENSEX) from 1980 to 2020 by comparing three macroeconomic variables that are a general indicator of the economy. This study has thus provided a critical overview of the stock market, which can be further used in the stock market analysis and investing by retail and institutional investors for better and more sustainable returns.

Conclusion and Recommendations

Following the liberalization measures in 1991, there were multiple structural and directional changes in the Indian stock market. The major factors behind this change have been inflation, GDP growth rate, and the foreign exchange rate of India with respect to dollars. The current study, however, has also addressed the growth of foreign portfolio investors in the Indian stock market, which is a major stakeholder in the Indian stock market, due to the higher rate of growth and growing strength and sustainability of the Indian economy. The study suggests investors and organizations closely track different macroeconomic variables and, as such, can predict the state of the economy. It also provides general recommendations that the GDP growth in India, with a limited growth rate of inflation and the exchange rate compared to US dollars, can significantly impact the growth of SENSEX in the upcoming years. Additionally, this study suggests that different geopolitical events and the economic crisis may impact the market's growth in the short term. However, as the data analysis from 1980 to 2020 demonstrates, such is only expected to have a minimal impact on the Indian stock market's long-term growth.

Theoretical Implications or Managerial Implications

The stock market has a major impact on the country's economic development and sustainability, but several macroeconomic variables like inflation, GDP, and foreign exchange impact it. Thus, it is important to analyze the dual-way relationship between both aspects. Thus, this study has both theoretical as well as managerial implications. From a theoretical aspect, the study has addressed the critical literature gap regarding the stock market's growth under the influence of different macroeconomic variables after the post-liberalization stage in India. This study has also addressed the literature gap regarding the impact of multiple economic variables simultaneously, which prior studies have not addressed. On a managerial front, this study has major implications for investors and organizations. Given the expanding state of the Indian economy, this study will aid in predicting the stock market (SENSEX in India) in relation to several macroeconomic indicators. The research also offers helpful advice on how to examine and forecast the development of Indian stock markets.

Limitations of the Study and Future Research Directions

The additional obstacles encountered during the study process are referred to as limitations. The main obstacle was removing data collected before 1980 and after 2020. If other Indian stock exchanges, such as the NSE, or particular industries are considered, the outcomes can also vary. Finally, the results may also differ if the same concepts are applied in other developing countries, thus reflecting the current geographical limitations of the study. In addition, the analysis needs to be conducted to consider additional macroeconomic factors and later economic developments like the demonetization of key international economies. Therefore, future studies must examine institutional and retail investors' perceptions, as this affects the stock market despite the expansion of macroeconomic factors. Ultimately, more research must be done to determine the effects of sector-specific movements in stock markets.

Author's Contribution

Dr. Marco I. Bonelli created the idea and the qualitative and quantitative framework for the empirical investigation. The author then individually carried out every action required to finish the project.

Conflict of Interest

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