

Article

Macroeconomic forces and equity market dynamics: an empirical investigation of the Indian stock market

Kiran Saini

Research Scholar

Department of Commerce

Apex University, Jaipur, Rajasthan

kiransaini560777@gmail.com

Dr. Deepa Sankhla

Assistant Professor

Department of Commerce

Apex University, Jaipur, Rajasthan

deepasankhlapd@gmail.com

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Abstract

The present study examined the influence of macroeconomic variables on stock market performance in India, with specific reference to the exchange rate, inflation, labour force participation rate, and gross domestic product. Against the backdrop of India's deepening financial integration with global capital markets and the growing complexity of its domestic macroeconomic environment, the study sought to identify which economic forces most meaningfully shaped equity market behaviour over the period 2014 to 2024. Secondary annual data were sourced from the World Bank Open Data platform and the Reserve Bank of India database, and the analysis was conducted using linear regression within the Jamovi statistical software environment. The findings revealed a nuanced and differentiated pattern of relationships among the variables under investigation. The exchange rate emerged as the only statistically significant predictor of stock market performance, underscoring the dominant role of currency dynamics and foreign capital flows in shaping Indian equity market behaviour. In contrast, inflation, labour force participation rate, and GDP did not demonstrate statistically significant relationships with stock market performance during the study period, suggesting that short-run equity market movements in India were more strongly governed by external macroeconomic pressures than by domestic economic fundamentals. These findings contributed to the growing body of empirical evidence on macroeconomic determinants of stock market performance in emerging economies and carried significant implications for monetary policymakers, institutional investors, retail market participants, and academic researchers. The study further highlighted the need for future research employing higher-frequency data, extended time horizons, and broader variable sets to deepen the understanding of the dynamic and complex relationship between macroeconomic conditions and equity market performance in the Indian context.

Keywords: *Exchange rate, inflation, gross domestic product, labour force participation rate, stock market, macroeconomic variables*

1 INTRODUCTION

The relationship between macroeconomic variables and stock market performance had long occupied a central position in financial economics research, particularly in the context of emerging economies

where equity markets were characterised by rapid growth, structural transformation, and heightened sensitivity to both domestic and global economic forces. Stock markets, as forward-looking mechanisms, were widely regarded as barometers of economic health — reflecting not only current macroeconomic conditions but also investor

expectations regarding future economic trajectories (Tripathi & Seth, 2014). Understanding the forces that drove stock market performance was therefore of considerable significance, both for the formulation of informed economic policy and for the investment decisions of institutional and retail market participants alike (Campbell, 2006). The Indian equity market, one of the fastest growing and most dynamic among emerging economies, presented a particularly compelling context for such an investigation, given the country's sustained economic expansion, progressive financial liberalisation, and deepening integration with global capital markets over the past two decades (Giri & Joshi, 2017). Against this backdrop, the present study sought to empirically examine the influence of key macroeconomic variables — specifically the exchange rate, inflation, labour force participation rate, and gross domestic product — on stock market performance in India, with a view to identifying which economic forces most meaningfully shaped equity market behaviour over the study period (Barakat, Elgazzar, & Hanafy, 2016).

The theoretical foundation for examining the relationship between macroeconomic variables and stock market performance was well established in the financial economics literature. Stock prices, in theory, reflected the discounted present value of expected future corporate earnings, and were therefore sensitive to any macroeconomic force that altered either the earnings outlook of firms or the discount rate applied to future cash flows (Greenwood & Jovanovic, 1990). Macroeconomic variables such as GDP, inflation, interest rates, and exchange rates operated precisely through these channels, making their relationship with equity markets a subject of sustained empirical inquiry across both developed and developing economies (Mohammad et al., 2009; Celebi & Hönig, 2019).

In the Indian context, the stock market had undergone remarkable transformation since the liberalisation of the early 1990s, evolving from a relatively thin and insulated domestic market into a sophisticated and globally connected financial ecosystem. The Bombay Stock Exchange and the National Stock Exchange

emerged as among the largest equity markets in Asia by market capitalisation, attracting substantial foreign institutional investment and serving as critical channels for corporate capital formation (Srivastava, 2010). This deepening of the equity market occurred alongside significant macroeconomic changes — including periods of robust GDP growth, fluctuating inflation driven by food and energy price dynamics, structural shifts in the labour market, and considerable exchange rate volatility linked to global monetary policy cycles and capital flow reversals (Narwal & Mittal, 2011). The interaction between these macroeconomic developments and stock market performance had therefore become an increasingly important area of investigation for researchers, policymakers, and market practitioners seeking to understand the determinants of equity market behaviour in a rapidly evolving economic environment (Singh, 2010; Ray, 2012).

Prior empirical research had documented mixed and often context-dependent relationships between macroeconomic variables and stock market performance in India and comparable emerging economies. While some studies established significant positive associations between GDP growth and equity returns, others found that short-run speculative dynamics frequently decoupled stock prices from underlying economic fundamentals (Abdelbaki, 2013; Giri & Joshi, 2017). Similarly, the relationship between inflation and stock market performance had been shown to vary considerably depending on the nature and magnitude of inflationary pressures, the monetary policy response of the central bank, and the prevailing stage of the economic cycle (Geetha, Mohidin, Chandran, & Chong, 2011; Garg & Kalra, 2018). Exchange rate movements, by contrast, had emerged with greater consistency in literature as a significant driver of equity market performance, particularly in economies with high foreign portfolio investment participation and substantial trade openness (Barakat et al., 2016; Tripathi & Seth, 2014). The labour force participation rate, as a structural indicator of economic capacity, had received comparatively less attention in the stock market literature, yet its inclusion in the present study was motivated by the recognition that labour market

conditions constituted an important dimension of the broader macroeconomic environment within which equity markets operated (Gaur & Dash, 2015).

It was within this theoretical and empirical context that the present study was situated. By examining the simultaneous influence of exchange rate, inflation, labour force participation rate, and GDP on Indian stock market performance over the period 2014 to 2024, the study aimed to contribute fresh empirical evidence to the existing body of knowledge, while also addressing the question of which macroeconomic forces held the greatest explanatory relevance for equity market dynamics in the contemporary Indian economic landscape (Callen, 2012; Greenwood & Jovanovic, 1990). The study thus sought to bridge the gap between macroeconomic theory and financial market practice, offering insights of relevance to policymakers, investors, and researchers engaged with one of the world's most significant and rapidly evolving emerging equity markets (Celebi & Hönig, 2019; Giri & Joshi, 2017).

2 REVIEW OF LITERATURE

The literature reviewed spans two interrelated but distinct research streams. The first examines how macroeconomic variables — such as GDP, inflation, interest rates, and exchange rates — shape stock market performance and development, with a concentration on emerging economies including India, Bahrain, Egypt, and Pakistan. The second stream investigates the micro-level decision of households to participate in stock markets, drawing upon behavioral economics, demographic factors, financial literacy, social interaction, and institutional trust. Together, these streams offer a macro-to-micro continuum of understanding equity market dynamics.

Gross domestic product is consistently identified as one of the most fundamental macroeconomic determinants of stock market performance. Callen (2012) defines GDP as the broadest measure of an economy's output, providing the foundational economic context within which equity markets operate. Abdelbaki (2013) finds a causal relationship

between macroeconomic variables including GDP and stock market development in Bahrain, while Greenwood and Jovanovic (1990) establish the theoretical groundwork, arguing that financial development and economic growth are mutually reinforcing — financial markets channel savings into productive investments, which in turn accelerates GDP growth. Studies on the Indian market, such as those by Giri and Joshi (2017), Tripathi and Seth (2014), and Indian, Malarvizhi and Jaya (2012), empirically confirm that GDP growth positively co-moves with stock price indices, suggesting that equity markets serve as leading indicators of macroeconomic health.

Inflation and interest rates represent the most widely studied macroeconomic variables in relation to stock prices, with predominantly negative relationships documented across multiple markets. Geetha et al. (2011) examine evidence from Malaysia, the United States, and China, finding that inflation expectations significantly affect equity valuations, as rising prices erode real returns and increase the cost of capital. Barakat, Elgazzar, and Hanafy (2016) extend this analysis to emerging markets (Egypt and Tunisia), confirming that interest rate hikes dampen stock market performance by raising discount rates used in equity valuation models. Srivastava (2010), Narwal and Mittal (2011), and Mohammad et al. (2009) — studying India and Pakistan respectively — document that exchange rate depreciation and money supply fluctuations introduce additional volatility, particularly in open economies exposed to foreign institutional investor flows.

A significant portion of the literature deploys Granger causality tests and cointegration frameworks to determine the direction of the macroeconomy–stock market relationship. Ray (2012) and Singh (2010), using Indian data, find bidirectional causality between macroeconomic variables and stock prices in the long run, though short-run dynamics tend to be unidirectional — moving from macroeconomic changes to market responses. Gaur and Dash (2015) corroborate this, noting that macroeconomic indicators have predictive power for Indian stock market performance over medium-term horizons.

Celebi and Hönig (2019) add a crisis-period dimension by analyzing Germany's DAX index across pre-crisis, crisis, and post-crisis periods, demonstrating that macroeconomic sensitivity is heightened during financial downturns, implying structural instability in the macro–market relationship. Garg and Kalra (2018) further validate these patterns in the Indian context using regression-based analysis.

Financial literacy emerges as one of the most robust determinants of household stock market participation in the micro-level literature. Van Rooij, Lusardi, and Alessie (2011) provide landmark evidence that households with low financial literacy are significantly less likely to invest in stocks, even after controlling for income and wealth. Christelis, Jappelli, and Padula (2010) extend this by showing that cognitive abilities — numeracy, memory, and verbal fluency — independently predict portfolio diversification and stock ownership. Bernheim and Garrett (2003) and Bernheim, Garrett, and Maki (2001) demonstrate that financial education interventions, particularly those embedded in formal schooling curricula, produce long-lasting improvements in saving behavior and market participation, establishing a policy channel through which participation gaps may be narrowed.

A persistent gender gap in stock market participation is well-documented across multiple national contexts. Almenberg and Dreber (2015) find that women are less likely to hold stocks than men, and that financial literacy partially mediates this gap, suggesting that education-targeted interventions could reduce gender-based disparities. Croson and Gneezy (2009) attribute gender differences in risk preferences as a fundamental driver, while Halko, Kaustia, and Alanko (2012) and Dwyer, Gilkeson, and List (2002) provide empirical confirmation of women's greater risk aversion in financial contexts. Niessen-Ruenzi and Mueden (2023) and Ke (2018) introduce the role of gender norms and financial socialization, arguing that cultural conditioning — not merely financial knowledge — shapes women's investment behavior. Fey et al. (2020) document this gap specifically for Germany, while Grohmann et al. (2021) nuance the

picture by showing that Thai middle-class women do not lag behind men once financial literacy is equalized. [um](https://doi.org/10.2139/ssrn.3614441)

Age and marital status further modulate participation. Ameriks and Zeldes (2004) find that portfolio shares vary non-monotonically with age, while Love (2010) and Christiansen, Joensen, and Rangvid (2015) show that marriage and divorce substantially affect investment behavior through changes in background risk sharing and household financial resources.

The adoption of lean supply chain practices also leads to increased productivity and operational efficiency thus fostering industrial growth, increasing output and demand for labour. This establishes a link between the performance of firms and the dynamics of GDP growth and employment (Chaturvedi et al., 2021). The factors that determine the growth of business and employment opportunities in the sector are competitiveness, innovation, consumer demand, and market expansion in the pharmaceutical and retail sectors that affect absorption of workforce and unemployment trends (Rathore et al., 2023; Verma & Sharma, 2012). Foreign direct investment, free trade agreements and institutional investor participation (Gupta et al., 2020; Sharma et al., 2020) impact macro-level determinants of economic growth and labour market performance such as capital flows, business confidence, market development and governance quality. The findings of the studies thus indicate that aggregate indicators are not the only factor affecting macroeconomic growth and labour trends, but also sectoral policies, organisational efficiency, investment behaviour and structural economic transformation.

The canonical household finance literature highlights that fixed entry costs — both monetary and informational — create participation thresholds that disproportionately exclude lower-income households. Vissing-Jorgensen (2002) formalizes this argument, showing that non-financial income volatility and fixed participation costs jointly explain much of the observed heterogeneity in portfolio choice. Heaton and Lucas (2000) emphasize the role of entrepreneurial risk, arguing that households with

income tied to private businesses hold less equity as a hedge against correlated background risk. Briggs et al. (2021) and Cheng et al. (2022) exploit windfall gains (lottery wins and inheritance) to causally identify wealth effects on participation, finding that exogenous increases in wealth significantly raise the probability of entering equity markets. Bach, Calvet, and Sodini (2020) further show that wealthier households earn superior risk-adjusted returns, suggesting compounding wealth inequalities through differential market access.

Trust in financial institutions and social networks plays a pivotal role in the participation decision. Guiso, Sapienza, and Zingales (2008) provide foundational evidence that individuals who distrust the stock market are significantly less likely to own equities, even when controlling risk aversion and wealth. Hong, Kubik, and Stein (2004) demonstrate that socially connected individuals who interact with neighbors, attend church, or belong to social organizations — have higher participation rates, interpreting this through an information diffusion channel. Bu, Hanspal, and Liao (2022) document that political corruption erodes household trust in markets, reducing participation, while Giannetti and Wang (2016) show that corporate scandals have persistent negative effects on local household stockholding. Osili and Paulson (2008) introduce an institutional quality dimension, showing that immigrants from countries with stronger financial institutions are more likely to participate in U.S. equity markets, even after controlling for individual characteristics.

Behavioral economics provides a complementary lens to the standard rational participation framework. Barberis, Huang, and Thaler (2006) argue that narrow framing and loss aversion jointly explain the equity participation puzzle — households that evaluate stock returns in isolation (rather than as part of a broader portfolio) find equity risk unacceptable at prevailing risk premiums. Benartzi and Thaler (1995) link myopic loss aversion to the equity premium puzzle, while Dimmock and Kouwenberg (2010) and Dimmock et al. (2016) provide empirical evidence that both loss aversion and ambiguity aversion

independently depress stock ownership rates. Experience effects constitute a powerful behavioral channel: Malmendier and Nagel (2011) demonstrate that individuals who lived through macroeconomic downturns develop persistently lower risk tolerance, a finding reinforced by Knüpfer, Rantapuska, and Sarvimäki (2017) using Finnish Depression data and Laudenbach, Malmendier, and Niessen-Ruenzi (2024) who show that exposure to communism leaves lasting negative attitudes toward financial markets.

The diffusion of internet access and digital technology is increasingly recognized as a structural driver of stock market democratization. Bogan (2008) provides early evidence that internet usage is positively associated with stock market participation in the United States, interpreting the mechanism as a reduction in information acquisition costs. Hvide et al. (2022) offer quasi-experimental evidence using broadband rollout in Norway, showing that high-speed internet access causally increases individual stock market investment. Glaser and Klos (2013) corroborate this finding using German data. Agarwal et al. (2021) extend the access argument to financial infrastructure — roads and connectivity — showing that physical market access barriers significantly constrain participation in developing contexts, a finding particularly relevant to the Indian research agenda represented in this review.

Political uncertainty represents an underexplored but growing theme in the participation literature. Agarwal, Ayyagari, Cheng, and Ghosh (2021) highlight road-to-participation barriers, while Gábor-Tóth and Georgarakos (2018) directly link economic policy uncertainty to lower household stock market participation, using an index-based approach akin to Baker, Bloom, and Davis's (2016) EPU framework. Agarwal, Aslan, Huang, and Ren (2022) find that political uncertainty depresses household equity ownership, with effects concentrated among politically engaged households. Kaustia and Torstila (2011) add a partisan dimension, documenting that left-leaning political preferences are associated with stock market aversion, suggesting ideological channels beyond pure financial reasoning.

The macro-level studies — heavily concentrated on India and the MENA region — establish that stock markets are significantly responsive to GDP growth, inflation, and monetary policy, yet most rely on aggregate index data and linear causality frameworks, leaving non-linear and threshold effects underexplored. The household participation literature, dominated by Western and Scandinavian datasets, has made substantial progress in identifying causal mechanisms through natural experiments, yet relatively few studies address participation dynamics in emerging market households where institutional trust deficits and digital exclusion compound traditional barriers. Future research bridging these two streams — examining how macroeconomic volatility shapes household-level participation decisions in developing economies — represents a productive frontier, particularly in the Indian context where rural financial inclusion and digital infrastructure are rapidly evolving policy priorities. Based upon literature following hypotheses have been proposed -

H₁: A depreciation in the exchange rate positively influences stock market performance in India.

H₂: An increase in inflation negatively influences stock market performance in India.

H₃: An increase in the labour force participation rate positively influences stock market performance in India.

H₄: An increase in gross domestic product positively influences stock market performance in India.

3 METHODOLOGY

3.1 Research Design

The present study adopted a quantitative research design to examine the influence of macroeconomic variables on stock market performance in India. A quantitative approach was deemed appropriate given the objective of establishing empirical relationships between numerically measurable economic indicators and equity market indices over a defined temporal horizon. The study employed secondary data, which

was considered suitable for the research objectives as it drew upon systematically recorded, publicly available macroeconomic and financial time-series data. The research followed an explanatory design, seeking to identify the nature and direction of relationships between the selected predictor variables and the dependent variable, rather than merely describing trends or patterns.

3.2 Data Sources and Study Period

The data for the study were sourced from two principal repositories: the World Bank's Open Data platform and the Reserve Bank of India (RBI) database, both of which are recognised as credible and authoritative sources of macroeconomic and financial data. The study covered the period from 2014 to 2024, encompassing eleven annual observations. This time frame was selected to capture a sufficiently dynamic economic landscape that included periods of currency volatility, inflationary pressure, structural labour market shifts, and varying GDP growth trajectories, including the economic contraction associated with the global pandemic period. Annual data frequency was employed throughout the study, consistent with the availability and reporting cycles of the macroeconomic variables under consideration.

3.3 Variables

The study incorporated five variables — one dependent and four independent. The stock market performance of India, measured through the benchmark equity index, served as the dependent variable, representing the overall direction and magnitude of equity market movements across the study period. The four independent macroeconomic variables included: the Exchange Rate expressed as the Indian Rupee per US Dollar, reflecting the external value of the domestic currency and its implications for foreign investment flows and trade competitiveness; Inflation, measured as the percentage change in the Consumer Price Index (CPI) as reported by the World Bank, capturing the prevailing price level environment faced by investors and corporates; the Labour Force Participation Rate

(expressed as a percentage), representing the proportion of the working-age population either employed or actively seeking employment, and serving as a structural indicator of productive economic capacity; and Gross Domestic Product (GDP) of India, reflecting the aggregate economic output and serving as the broadest available measure of macroeconomic health, consistent with the conceptualisation advanced by Callen (2012). The inclusion of these variables was guided by prior empirical literature, including Barakat, Elgazzar, and Hanafy (2016), Tripathi and Seth (2014), and Giri and Joshi (2017), all of whom identified exchange rate, inflation, GDP, and labour market conditions as theoretically and empirically relevant determinants of stock market behaviour in emerging economies.

3.4 Model Specification and tools

To examine the influence of the selected macroeconomic variables on stock market performance, the study employed a linear regression framework wherein stock market performance was regressed on the exchange rate, inflation, labour force participation rate, and GDP simultaneously. This multivariate specification allowed for the isolation of the independent contribution of each macroeconomic predictor while controlling for the simultaneous

influence of the remaining variables. The regression model was expressed in the general form where stock market performance was treated as a function of the four macroeconomic predictors, with the parameter estimates, standard errors, and confidence intervals used to interpret the strength, direction, and statistical significance of each relationship.

The data were analysed using Jamovi (Version 2.x), an open-source statistical software platform that provides a comprehensive suite of regression and structural modelling tools. Jamovi was selected for its analytical precision, accessible interface, and compatibility with advanced regression diagnostics. The analysis proceeded through ordinary least squares (OLS) regression estimation, from which parameter estimates, standard errors, z-statistics, p-values, and ninety-five percent confidence intervals were derived for each predictor variable. The standardised beta coefficients were additionally examined to assess the relative magnitude of each predictor's contribution to stock market performance, independent of measurement scale differences across variables. The significance threshold was set at the conventional five percent level, consistent with standard practice in quantitative financial and economic research (Tripathi & Seth, 2014; Celebi & Hönig, 2019).

Table-1 Exchange Rate US Dollar

Year	Exchange Rate US Dollar
2014	60.95
2015	66.79
2016	67.63
2017	64.94
2018	70.64
2019	72.15
2020	74.31
2021	75.45
2022	81.62
2023	82.5
2024	83.28

Table-1 shows the trend of the exchange rate of US Dollar against the Indian Rupee between the years 2014 and 2024, which indicate that the Indian

currency has generally depreciated over the years. The exchange rate was 60.95 US Dollars to 1 in 2014 and further to 66.79 and 67.63 in 2015 and 2016

respectively which shows that the rupee is weakening. In 2017 however, it appreciated slightly with the rate going down to ₹64.94. This was not sustained as the rupee went back down the slide in 2018 to 70.64, and went further down in 2019 (72.15), and 2020 (74.31). This trend of depreciation continued in the year 2021 with the rate standing at 80.7545 and a significant increase in the year 2022 with the rate standing at 81.62 which is due to the fact that the external pressure has been on the currency in the form of the global economic

uncertainty. The exchange rate also increased in the latest years, 2023 and 2024, to 82.5 and 83.28 respectively and continued to depreciate, though more slowly. In general, the table shows that there is an evident long-term downward trend of the value of the Indian Rupee on the US Dollar, with slight short-term oscillations, which implies the rising import rates, foreign sector pressure, and possible effects on inflation and trade balance within the Indian economy.

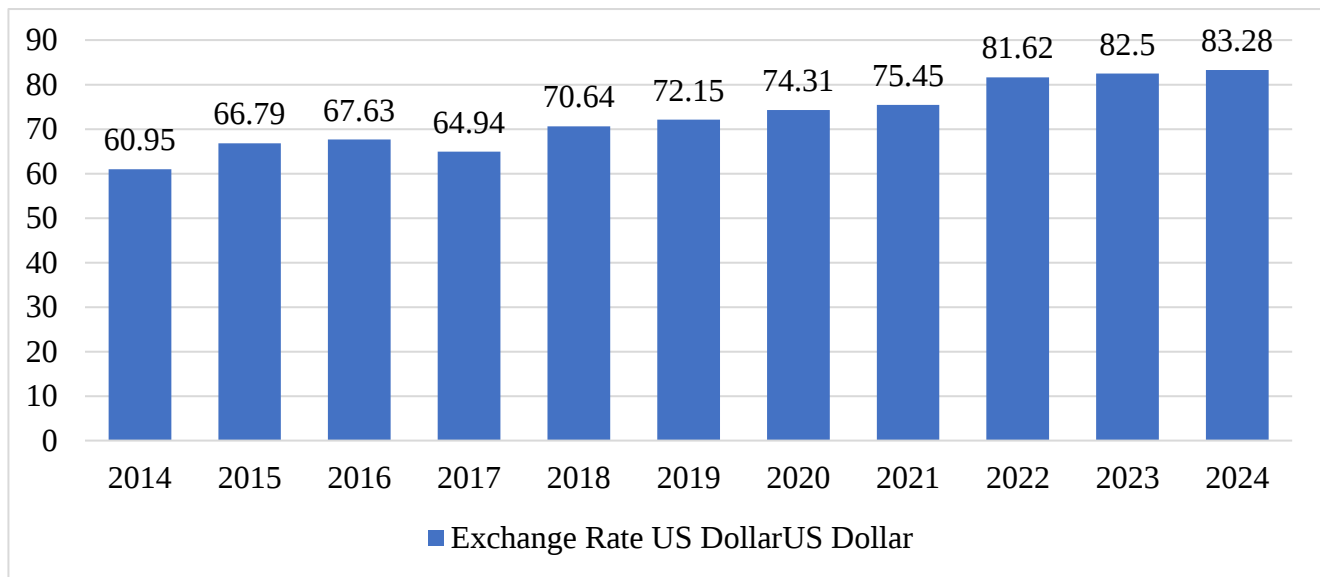


Figure-1 Exchange Rate US DollarUS Dollar

Table-2 Inflation: percent change in the Consumer Price Index (world bank)

Year	Inflation: percent change in the Consumer Price Index (world bank)
2014	6.7
2015	4.9
2016	4.9
2017	3.6
2018	3.9
2019	3.7
2020	5.16.6
2021	5.1
2022	6.7
2023	5.6
2024	5

The trend in inflation in terms of percentage change in Consumer Price Index (CPI) is shown in Table-2,

using the World Bank data of 2014 to 2024 that reflects a variation in the general price level with

time. In 2014, the inflation was quite high at 6.7 but in 2015 and 2016 the inflation was down to 4.9 which shows better price stability. The negative trend persisted in 2017, with the inflation decreasing to 3.6, which was one of the lowest rates of the time. Nonetheless, inflation was relatively stable with mild growth of 3.9 percent in 2018 and 3.7 percent in 2019. The table seems to have a typographical error in 2020 (5.16.6) but can be viewed as a trend in inflation, probably 5-6 percent, indicating price pressures in 2020, potentially caused by global shocks. Inflation was high at 5.1% in 2021 and

further rose to 6.7% in 2022 implying that there were high inflationary pressures in the economy. Inflation in the following years was on a downward trend, declining to 5.6 in 2023 and to 5% in 2024, indicating slow price stabilization. In general, according to the table, inflation was initially on a downward trend, then it stabilized in a somewhat moderate way, then a spike in the early 2020s, and then a consistent decline, which shows that price changes are cyclical, and this process is affected by domestic and global economic factors.

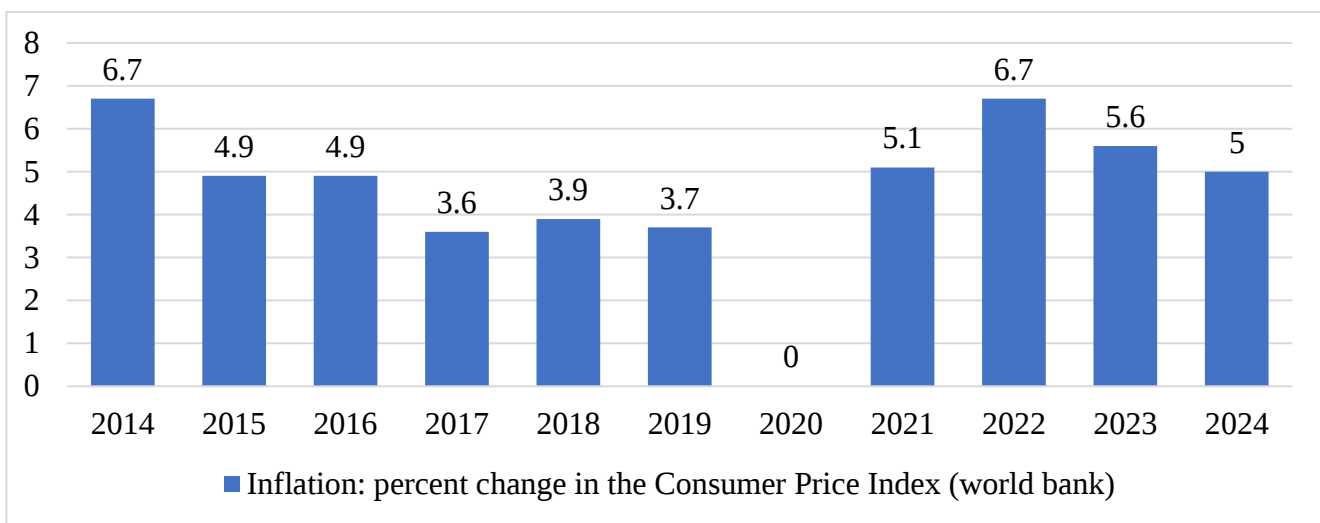


Figure -2 Inflation: percent change in the Consumer Price Index (world bank)

Table-3 Labour Force Participation Rate (%)

Year	Labour Force Participation Rate (%)
2014	53.206
2015	53.031
2016	52.852
2017	52.671
2018	36.9
2019	37.5
2020	40.1
2021	41.6
2022	41.3
2023	42.4
2024	45.1

Table-3 shows the trend in the Labour Force Participation Rate (LFPR) in the years 2014 to 2024,

and it shows that the workforce engagement has changed significantly in the structure during the

years. Between 2014 and 2017, the LFPR shows a downward trend, which is decreasing by a small percentage of 53.206 to 52.671, which is a small change in the percentage of the working-age population that is actively engaged in the labour market. However, there is a sharp and evident decrease in 2018, when the LFPR significantly reduces to 36.9, which indicates a significant shift, perhaps because of the changes in the measurement of the data or the underlying factors in the economy and society which impact employment participation. The LFPR starts to recover slowly after 2018, reaching 37.5% in 2019, and further to 40.1% in

2020, even during the global economic disruptions. This trend is on the rise in 2021 with a rate of 41.6 but there is a slight decline in 2022 at 41.3. However, the recovery is once more enhanced in 2023 and 2024 when the LFPR hits 42.4% and 45.1% respectively, showing that the labour market has been improving in terms of participation in the years of recent past. On the whole, the table represents a period of stability, which is followed by a steep fall, and, finally, a gradual upsurge, which implies changing labour market dynamics depending on economic situations, policy adjustments, and demographics.

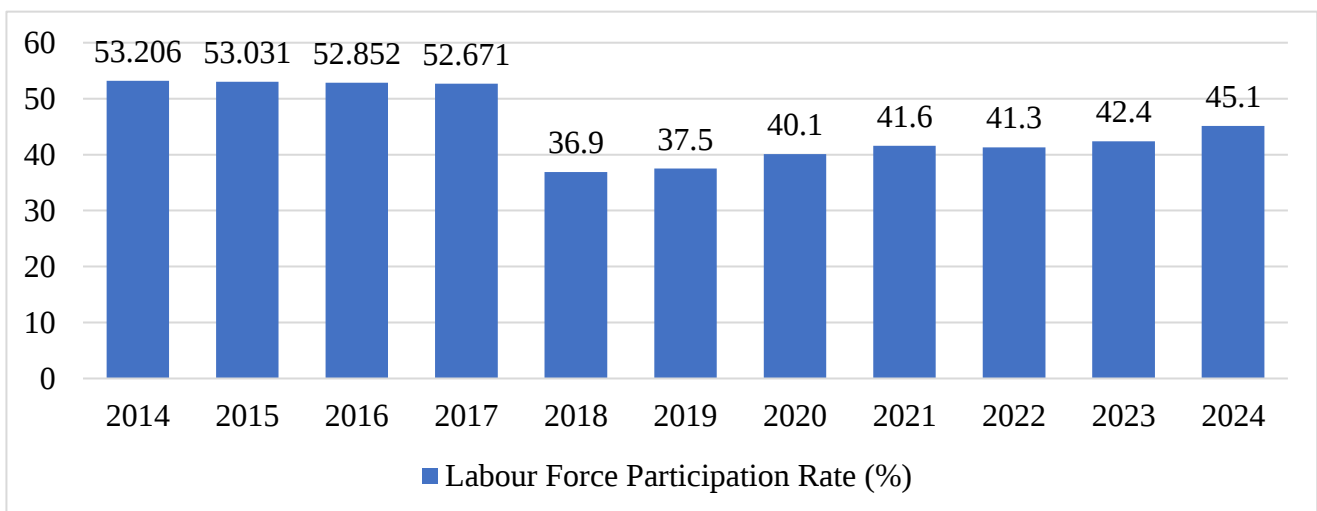


Figure -3 Labour Force Participation Rate (%)

Table-4 GDP Inida

Year	GDP Inida
2014	7.4
2015	8
2016	8.3
2017	6.8
2018	6.5
2019	3.9
2020	-5.8
2021	9.7
2022	7.6
2023	9.2
2024	6.5

Table-4 shows the growth rate of the Gross Domestic Product (GDP) of India between 2014 and 2024

indicating the general performance of the economy and changes over the time. The data demonstrates a

period of high growth rates during the early years with GDP rising between 7.4% in 2014 to 8% in 2015 and topping it at 8.3% in 2016, which is a sign of a strong economic growth. Nevertheless, since 2017, a downward trend is evident since growth decreased to 6.8 percent in 2017 and to 6.5 percent in 2018 with indications of some emerging economic problems. This deceleration was further aggravated in 2019 when the GDP growth declined drastically to 3.9 percent, indicating a deteriorating economic momentum. The largest contraction was made in 2020, with the GDP decreasing to -5.8, which is a sign of a critical economic downturn, which is

probably caused by worldwide disruptions, including the COVID-19 pandemic. The economy has had a very good recovery in 2021 with growth of 9.7 and growth in 2022 was stable but slightly muted at 7.6. Economic resilience and recovery were demonstrated by the upward trend in 2023 with a high growth rate of 9.2%. Nevertheless, within the year 2024, growth slowed down once again to 6.5, indicating that it has stabilized following the recovery period. Generally, the table shows that the Indian economic performance is dynamic with high growth, slowdown, sharp contraction, and recovery following this pattern.

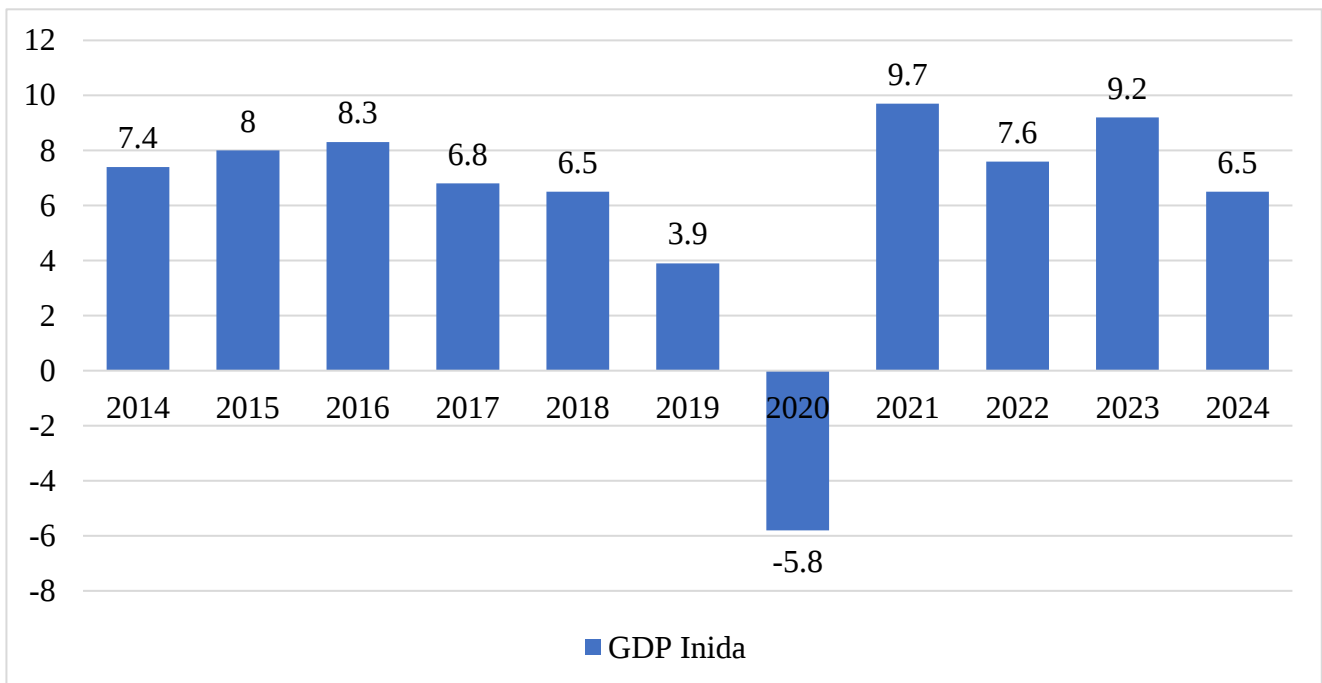


Figure -4 GDP Inida

Table-5 Stock Market

Year	Stock Market
2014	27499.42
2015	26117.54
2016	26626.46
2017	34056.83
2018	36068.33
2019	41253.74
2020	47751.33
2021	58253.82

2022	60840.74
2023	72240.26
2024	78139.01

Table-5 indicates the performance of the Indian stock market (measured by index values, presumably the BSE Sensex) over the years 2014-2024, and clearly indicated an upward trend over the long term (with slight variations). The market position is 27,499.42 points in 2014, which slightly dropped to 26,117.54 in 2015, showing that the market is corrected in the short run or volatile. There was a modest recovery in 2016 with the index improving to 26,626.46 and then a huge increase in 2017 to 34,056.83, which was a sign of high investor confidence and positive economic environment. This growth is sustained as the index has continued to rise in 2018 and 2019 to 36,068.33 and 41,253.74 respectively. The market is

very resilient and despite the uncertainties that are going on in the world, it has shown a great performance in the year 2020 and 2021, reaching 47,751.33 and 58,253.82 respectively. In 2022, the growth rate continued at 60,840.74 and acquired significant momentum in 2023, at 72,240.26. The highest point of the market was in 2024, which stood at 78,139.01, the highest value achieved in the discussed period. In general, the table shows that the Indian stock market has been in a strong bullish mode over the ten years, which is due to the growth of the economy, optimism among investors and a rise in financial markets, with only short-term fluctuations disrupting the long-term upward trend.



Figure -5 Stock Market

Table-6 Models Info

Estimation Method	ML
Loglikelihood user model	-110.78
Loglikelihood unrestricted model	-110.78
Model	`Stock Market` ~ `Exchange Rate US Dollar` + Inflation + `Labour Force Participation Rate` + `GDP`

The basic model information such as the estimation method, the values of the log-likelihood and the

regression model structure are in Table-6. The estimation algorithm is the Maximum Likelihood

(ML), which is a common algorithm to estimate the model parameters by maximizing the probability of obtaining the observed data. The value of the log-likelihood of the user-specified model and the unrestricted (saturated) model is equal: -110.78, which means that the proposed model fits the data perfectly or almost perfectly because there is no difference between the constrained and fully unrestricted model. This indicates that the model is very effective in replicating the data patterns that are observed. The model specification reveals that the

Stock Market is the dependent variable which will be explained by four independent variables: Exchange rate (US Dollar), Inflation, labour force participation rate and GDP. This means that the research will examine the effect of these macroeconomic determinants on the stock market performance. In general, the table shows that the model was well-estimated with a good fit and it is well-designed to investigate the relationships between macroeconomic variables and stock market behavior.

Table-7 Model Tests

Label	X ²	df	p
Baseline Model	132	4	<.001

Table-7 shows the model test statistics results of the baseline model that show the overall fit of the model with the observed data. The Chi-square (X²) value of the base model is 132 and the degrees of freedom (df) are 4 and the corresponding p-value is less than 0.001. The large Chi-square value indicates that the difference between the observed data and the expected data at the baseline (null) model, which usually assumes that there are no relationships among the variables, is large. The p-value of the 0.001 means that the difference is statistically significant at

the 99 percent level, in that the baseline model does not fit the data. That is, the null hypothesis that the variables are not related to each other is rejected. This outcome suggests that the proposed or alternative model (in comparison to the baseline model) is expected to provide a more appropriate fit and describe the relationships between variables more successfully. Generally, the table notes that the baseline model is unsatisfactory, hence explaining why there is a necessity to have a more complicated and more fitting model in the analysis.

Table-8 Fit Indices

					RMSEA 95% CI		
AIC	BIC	adj. BIC	SRMR	RMSEA	Lower	Upper	RMSEA p
234	236	218	0.000	0.000	0.000	0.000	

In Table-8, different fit indices have been provided to test the adequacy and goodness of the estimated model such as AIC, BIC, adjusted BIC, SRMR, RMSEA, and its confidence intervals. Information criteria like AIC (234), BIC (236) and adjusted BIC (218) are used to compare models and lower values imply a more fitting model than others when compared to other competitive models; hence, the information criteria imply that the model can be relatively efficient although it can only be interpreted in relation to other competing models. The SRMR (Standardized Root Mean Square Residual) value is recorded as 0.000, thus a fit is perfect, since the value

that is nearer to zero depicts the slightest variation in the observed and predicted correlations. Likewise, the value of RMSEA (Root Mean Square Error of Approximation) is also 0.000 with both lower and upper bounds of the 95 percent confidence interval also 0.000 theoretically this means an excellent or perfect fit of the model as the value of RMSEA below 0.05 is an excellent model fit. The RMSEA p-value is however presented with value less than a number (NaN) and this could have been due to the computation constraints, perfect fit or other factors such as extremely low degrees of freedom or sample constraints. All in all, zero SRMR and RMSEA

values indicate that the model fits the data very well, but such perfection indices must be viewed with a grain of salt since they can sometimes be the result of

overfitting or other circumstances in the model instead of a true superiority of the model.

Table-9 Fit Indices

CFI	TLI	RNI	GFI	adj. GFI	pars. GFI
1.000	1.000	1.000	1.000	1.000	0.000

Table-9 shows the main goodness-of-fit indices that can be used to determine the appropriateness of the proposed model to the observed data and they are CFI (Comparative Fit Index), TLI (Tucker-Lewis Index), RNI (Relative Non-centrality Index), GFI (Goodness-of-Fit Index), adjusted GFI, and parsimony GFI. The values of all the major fit indices, including CFI, TLI, RNI, GFI, and adjusted GFI are all 1.000, indicating that the model fits the data perfectly with a slight deviation between the observed and the estimated covariance matrices. The implications of such results are that the proposed model has an (excellent) explanatory power and fits

the data best by these indices. The parsimony GPI is however reported as 0.000, indicating no model parsimony, that is, the model may just fit the data perfectly, but may be over specified or may not be efficiently specified in terms of simplicity. Generally, most of the indicators of fit are very much encouraging of the fact that the model fits very well and almost perfectly, but the value of parsimony GPI which is zero indicates that the simplicity and effectiveness of the model are to be looked into because sometimes the perfect fit could be as a result of overfitting, and not necessarily that the model is very strong.

Table-10 R-squared

		95% Confidence Intervals	
Variable	R ²	Lower	Upper
Stock Market	0.896	0.644	0.973

Table-10 shows the R-squared (R²) value and the 95% confidence intervals of the dependent variable, which is the stock market, which represents the explanatory strength of the model. The high value of R² (0.896) indicates that the independent variables used in the model explain nearly 89.6 percent of the variation in the stock market, indicating a very high degree of explanatory power and good fit of the model. This shows that the model is very effective in explaining the factors that affect the movements in the stock market. Moreover, the 95% confidence interval of R² is between 0.644 (lower bound) and 0.973 (upper bound), which suggests that at the

lowest point of its predictive power, the model still explains a significant percentage (64.4) of the variance, and at the highest point it explains all the way up to 97.3, which supports the robustness and reliability of the model. The relatively broad range, however, indicates a certain level of variation or uncertainty in the estimate, which could have been caused by sample size or data variation. In general, the table shows that the model is highly predictive and offers valid explanation of the stock market behavior and thus statistically significant and practically meaningful.

Table-11 Parameter Estimates

				95% Confidence Intervals				
Dep	Pred	Estimate	SE	Lower	Upper	β	z	p
Stock Market	Exchange Rate US Dollar	2467	343	1794	3140	0.9919	7.184	<.001

Stock Market	Inflation	369	1777	-3114	3853	0.0229	0.208	0.835
Stock Market	Labour Force Participation Rate	256	410	-549	1060	0.0899	0.622	0.534
Stock Market	GDP	127	502	-857	1112	0.0292	0.254	0.800

The provided table reports parameter estimates from a regression model predicting Stock Market performance using macroeconomic predictors like Exchange Rate (US Dollar), Inflation, Labour Force Participation Rate, and GDP. The unstandardized coefficient (B) for Exchange Rate stands out at 2467 (SE=343), with a 95% confidence interval of excluding zero, a standardized β of 0.9919, $z = 7.184$, and $p < .001$ —indicating a highly significant positive effect where a 1-unit USD exchange rate increase

predicts a substantial 2467-unit stock market rise. In contrast, Inflation's estimate is 369 (SE=1777), but its wide CI [-3114, 3853] crosses zero ($\beta = 0.0229$, $z = 0.208$, $p = 0.835$), showing no reliable impact. Similarly, Labour Force Participation Rate yields 256 (SE = 410, CI [-549, 1060], $\beta = 0.0899$, $z = 0.622$, $p = 0.534$), and GDP gives 127 (SE = 502, CI [-857, 1112], $\beta = 0.0292$, $z = 0.254$, $p = 0.800$)—both non-significant with CIs including zero and trivial effect sizes.

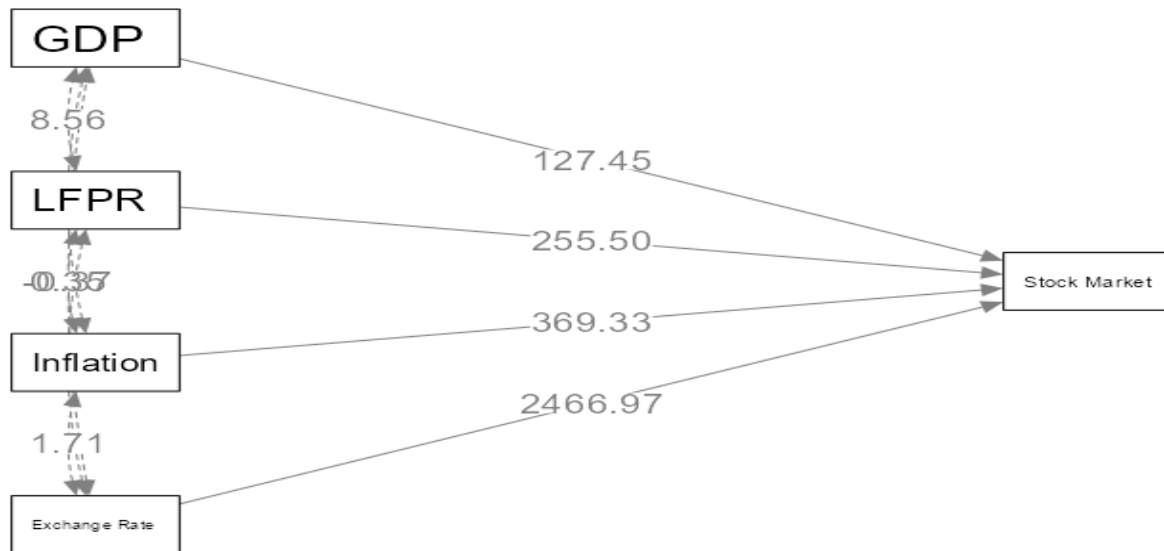


Figure-6 Path Diagram

Table-12 Parameter Estimates

Variable 1	Variable 2	Estimate	SE	95% Confidence Intervals		β	z	p
				Lower	Upper			
Stock Market	Stock Market	3.27e+7	1.40e+7	5.38e+6	6.01e+7	0.1038	2.35	0.019
Exchange Rate US Dollar	Exchange Rate US Dollar	51.012	0.00	51.012	51.012	1.0000		
Exchange Rate US Dollar	Inflation	1.710	0.00	1.710	1.710	0.2170		
Exchange Rate US Dollar	Labour Force Participation Rate	-27.014	0.00	-27.014	-27.014	-0.6050		
Exchange Rate US	GDP	-0.366	0.00	-0.366	-0.366	-		

Dollar						0.0126		
Inflation	Inflation	1.217	0.00	1.217	1.217	1.0000		
Inflation	Labour Force Participation Rate	0.354	0.00	0.354	0.354	0.0513		
Inflation	GDP	-1.039	0.00	-1.039	-1.039	-0.2314		
Labour Force Participation Rate	Labour Force Participation Rate	39.088	0.00	39.088	39.088	1.0000		
Labour Force Participation Rate	GDP	8.562	0.00	8.562	8.562	0.3365		
GDP	GDP	16.557	0.00	16.557	16.557	1.0000		

Table-12 gives the estimated correlations of the key variables, which are, Stock Market, Exchange rate (US dollar), Inflation, Labour force participation rate and GDP and their standard errors (SE), 95 percent confidence interval, standardized coefficient (β), z values and p values which gives insight on the strength of the relationship as well as the significance of the relationship. The Stock Market regression value ($3.27e+7$) has a statistically significant estimate ($3.27e+7$) with a standard error of ($1.40e+7$) and a p-value of 0.019 and the standardized coefficient (0.1038) indicates that the relationship is significant at conventional levels, with a positive yet relatively weak effect. The Exchange rate shows perfection of self-explanatory variance (1.000) and its relation with other variables shows that it is positively correlated with Inflation (0.2170) but negatively correlated with Labour Force Participation rate (-0.6050) and GDP (-0.0126) implying that an increase in the exchange rate (currency depreciation) is The inflation also displays a high internal consistency (

0.000) and weakly positive correlation with the Labour Force Participation Rate (= 0.0513) but a moderate negative effect on GDP (= -0.2314), which suggests that an increased inflation rate can suppress the economic growth. Similar results can be seen in the Labour Force Participation rate that has the perfect self-dependence (= 1.000) and moderately strong positive relation with GDP (= 0.3365), which means that increase in labor participation leads to the positive growth in the economy. Finally, GDP depicts full self-explanation (= 1.000). The fact that most of the remaining estimates have standard errors of zero and identical confidence interval limits implies that the model has fixed or constrained parameters as opposed to freely estimated parameters. Generally, the table indicates a combination of positive and negative cross-relationships between the macroeconomic variables, where only the stock market relationship is statistically significant and tested, other coefficients are mainly directional relationships in the model framework.

Table-13 Intercepts

Variable	Intercept	SE	95% Confidence Intervals		z	p
			Lower	Upper		
Stock Market	-147445.485	36045.373	-218093.119	-76797.852	-4.091	0.000
Exchange Rate US Dollar	72.751	0.000	72.751	72.751		
Inflation	5.156	0.000	5.156	5.156		
Labour Force Participation Rate	45.151	0.000	45.151	45.151		
GDP	6.191	0.000	6.191	6.191		

Table-13 shows the intercept values of each variable in the model, their standard errors (SE), 95%

confidence interval, z-values and p-values, which show the expected value of each variable in case all

the predictors take the value of zero. The Stock Market intercept is estimated at -147,445.485 and the standard error of the intercept is 36,045.373 and the 95% confidence interval is -218,093.119 to -76,797.852, indicating that the intercept is statistically significant and the negative intercept value and a significant value of the z. Conversely, all intercepts of Exchange Rate (72.751), Inflation (5.156), Labour Force Participation Rate (45.151) and GDP (6.191) have zero standard errors and the same lower and upper confidence interval bounds, and therefore, no z-values and p-values are given. In general, the table indicates that the stock market intercept is the only statistically tested and significant variable, and the rest of the variables in the model have the constant base values which are not related to estimation of the model, but are the structural assumptions or model specifications.

4 DISCUSSION

The present study sought to examine the influence of macroeconomic variables — specifically exchange rate (US Dollar), inflation, labour force participation rate, and GDP — on stock market performance. The findings revealed a nuanced and differentiated pattern of relationships, wherein the macroeconomic environment exerted varying degrees of influence on equity market behaviour.

Among all the macroeconomic variables examined, the exchange rate emerged as the only statistically significant predictor of stock market performance. This finding aligned closely with the conclusions drawn by Barakat, Elgazzar, and Hanafy (2016), who demonstrated that exchange rate movements exerted a pronounced impact on stock markets in emerging economies, attributing this to the sensitivity of investor sentiment and foreign capital flows to currency fluctuations. Similarly, Tripathi and Seth (2014) corroborated this relationship in the Indian equity market context, establishing that exchange rate volatility served as a critical channel through which external macroeconomic pressures transmitted into domestic stock market movements. The dominance of the exchange rate as a determinant in the present study could be interpreted in light of India's increasing integration with global financial markets, where currency appreciation or depreciation directly influences the profitability of export-oriented firms,

the behaviour of foreign institutional investors, and the broader cost of imported inputs — all of which collectively shape equity valuations (Mohammad et al., 2009).

In contrast, inflation did not emerge as a statistically significant predictor of stock market performance in the present study, a finding that appeared to challenge the conventional theoretical expectation of an inverse relationship between price levels and equity returns. This result, however, was not without precedent in the literature. Geetha, Mohidin, Chandran, and Chong (2011) noted that the inflation–stock market relationship was highly context-dependent, varying across national economic structures, monetary policy regimes, and the nature of the inflation shock — whether demand-pull or cost-push. Srivastava (2010) similarly observed that in the Indian context, the relationship between inflation and stock market returns was not consistently negative across all time periods, suggesting that moderate and anticipated inflation may be partially absorbed by corporate earnings adjustments, thereby muting its direct impact on equity prices. Garg and Kalra (2018) further supported this ambiguity by demonstrating that inflation's effect on the Indian stock market was conditioned by monetary policy responses, implying that central bank intervention could neutralise inflationary pressures before they materially affected market performance.

The labour force participation rate, included in the study as a structural macroeconomic indicator reflecting the productive capacity of the economy, did not demonstrate a statistically significant relationship with stock market performance. This finding suggested that, while labour force dynamics underpin long-run economic growth trajectories, their short-to-medium-term transmission to equity markets was limited. This was broadly consistent with the observation by Gaur and Dash (2015) that indirect macroeconomic indicators — those operating through intermediary channels rather than directly affecting corporate cash flows or investor returns — tended to exhibit weaker and more temporally diffuse relationships with stock market indices in emerging economy contexts.

GDP, which theoretically represents the most comprehensive measure of economic activity and is expected to positively co-move with stock market performance, did not yield a statistically significant result in the present study. This finding was

particularly noteworthy given the robust theoretical foundation provided by Greenwood and Jovanovic (1990), who posited a bidirectional relationship between financial development and economic growth, and the empirical work of Giri and Joshi (2017), who documented a significant positive relationship between GDP and Indian stock prices. However, the absence of significance in the present study could be understood through the lens offered by Ray (2012), who cautioned that while long-run cointegration between GDP and stock markets was well-established, short-run dynamics could diverge considerably due to speculative activity, global capital flows, and information asymmetries that temporarily decouple equity valuations from fundamental economic output. Abdelbaki (2013) similarly noted that in emerging and frontier markets, the GDP–stock market nexus was frequently disrupted by structural rigidities, market depth limitations, and the dominance of foreign portfolio investment over domestic fundamental drivers. Singh (2010) reinforced this perspective by highlighting that Indian equity markets, though increasingly mature, remained susceptible to periods where speculative and sentiment-driven forces overrode macroeconomic fundamentals.

Taken together, the study's findings contributed to a growing body of evidence suggesting that in emerging market contexts, not all macroeconomic variables exerted uniform or statistically discernible influence on stock market behaviour at any given point in time. The primacy of the exchange rate over domestic indicators such as GDP and inflation in the present study pointed toward the increasingly externally oriented nature of the Indian equity market, where global monetary conditions, currency dynamics, and foreign capital movements had come to exert a structurally dominant influence over domestic macroeconomic fundamentals (Celebi & Hönig, 2019; Tripathi & Seth, 2014).

5 CONCLUSION

The study examined the relationship between key macroeconomic variables and stock market performance, with a view to understanding which economic forces most meaningfully shaped equity market dynamics in the Indian context. The investigation revealed that of the macroeconomic variables under consideration, exchange rate movements stood out as the most consequential

determinant of stock market performance, underscoring the profound degree to which Indian equity markets had become integrated into the global financial architecture. The sensitivity of stock markets to currency fluctuations reflected the complex interplay of foreign investor behaviour, trade competitiveness, and capital account dynamics that characterised an economy in the midst of sustained financial liberalisation.

Contrary to theoretical expectations, neither GDP nor inflation demonstrated a meaningful direct relationship with stock market performance in the study period. This outcome pointed to a critical tension in the emerging market context — that macroeconomic fundamentals, however theoretically important, could be consistently overshadowed by short-term speculative dynamics, global monetary policy spillovers, and market sentiment, all of which operated with considerable independence from domestic economic conditions. The study thereby drew attention to the limitations of applying macroeconomic determinism to equity market behaviour in economies where institutional depth, investor diversity, and market maturity remained works in progress.

The labour force participation rate, as a structural indicator, similarly revealed little direct bearing on stock market performance, suggesting that the transmission of productive economic capacity into equity valuations operated through highly mediated and indirect channels that extended well beyond the scope of short-run market movements. This finding reinforced the importance of distinguishing between the drivers of long-run financial development and the determinants of short-run stock market fluctuations.

In a broader sense, the study underscored that the stock market in an emerging economy such as India could not be adequately understood through the lens of any single macroeconomic variable in isolation. Rather, it was the interaction of global currency conditions, domestic monetary policy, investor sentiment, and structural economic transformation that collectively sculpted equity market behaviour. Policymakers and market participants alike were thus

called upon to adopt a more holistic and internationally informed analytical framework — one that accorded appropriate weight to external macroeconomic pressures while remaining attentive to the evolving domestic economic landscape.

6 IMPLICATIONS OF THE STUDY

The findings of the present study carried significant implications for policymakers, investors, and academic researchers engaged with the Indian equity market. From a policy standpoint, the dominance of the exchange rate as the most consequential determinant of stock market performance underscored the importance of currency stabilisation as an instrument of financial market governance, calling upon the Reserve Bank of India to treat exchange rate management as integral to broader equity market stability rather than a peripheral trade concern. For institutional and foreign portfolio investors, the findings reinforced the necessity of incorporating currency risk forecasting as a central pillar of India-focused equity investment strategies, given that domestic macroeconomic indicators such as GDP and inflation demonstrated limited short-run predictive power over market movements. For retail investors, the study highlighted a critical financial literacy gap — the tendency to rely solely on domestic macroeconomic news for investment decisions represented an incomplete informational framework, suggesting that more structured investor education initiatives were warranted to equip individual market participants with a broader and more globally informed understanding of equity market dynamics. Academically, the study contributed to the ongoing debate on the applicability of conventional macroeconomic stock market models to emerging economy contexts, reinforcing the argument that frameworks developed for institutionally mature markets required critical adaptation before being applied to structurally distinct, foreign-capital-dependent economies such as India.

7 FUTURE SCOPE OF THE STUDY

The present study, while contributing meaningfully to the empirical understanding of macroeconomic determinants of Indian stock market performance, opened several productive avenues for future scholarly inquiry. Future research could extend this work by employing higher-frequency monthly or quarterly data over longer time horizons, enabling the application of more sophisticated time-series methodologies — such as ARDL bounds testing, Johansen cointegration, or Vector Error Correction Models — that were better suited to capturing the long-run dynamic interdependencies between macroeconomic variables and equity markets. The scope of variables could also be broadened to include foreign direct investment, money supply, fiscal deficit, and global commodity prices, which the wider literature identified as potentially significant determinants of stock market behaviour in emerging economies. Additionally, future studies could adopt a sector-specific disaggregated approach to examine how individual industries responded heterogeneously to macroeconomic shocks, or pursue a mixed-methods design that incorporated primary data from institutional investors and retail participants to capture the behavioural and perceptual dimensions of market responses — dimensions that aggregate time-series modelling was inherently unable to address. A comparative cross-country framework examining whether the exchange rate dominance documented in this study was representative of broader emerging market patterns would further enhance the external validity and theoretical generalisability of the present findings, while simultaneously contributing to the development of a more nuanced and context-sensitive understanding of macroeconomic determinism in emerging equity markets.

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