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A Study on Analysing the Impact of Macro Economic Indicators on India's Stock Market

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ABSTRACT-

This study examines the influence of key macroeconomic indicators—namely inflation, FDI, broad money, real interest rates, and exports—on the Indian stock market, focusing on the BSE Sensex. Using data from 2014 to 2024, it applies statistical methods including descriptive analysis, correlation, and regression. The results highlight that real interest rates and exports significantly affect market trends. Interestingly, exports show a negative relationship with stock performance. Inflation, broad money, and FDI show limited impact. These findings are vital for investors and policymakers aiming to navigate India's dynamic financial landscape. The study calls for informed policymaking and strategic investment planning in today's volatile economic environment.

I. INTRODUCTION

The stock market plays a critical role in shaping the economy of any country, acting as a barometer of economic health and a platform for wealth creation. In India, the stock market is a vital component of the financial system, and its performance is closely watched by investors, policymakers, and economists alike. Stock markets provide a mechanism for capital formation, allowing businesses to raise funds for expansion and new ventures. Simultaneously, they offer individuals and institutional investors opportunities to grow their wealth by investing in shares of publicly listed companies. The movement of stock market indices, Bombay Stock Exchange (BSE) Sensex.

Among these, macroeconomic indicators hold significant sway over market trends. These indicators are critical measures of a country's overall economic performance and health, providing insight into various aspects of the economy. They include metrics such as inflation rates, Real interest rates, Broad money, foreign direct investment (FDI), Export of goods and service. Understanding how these macroeconomic factors influence the stock market is essential for policymakers, investors, and analysts who seek to forecast market trends and devise strategies accordingly.

This study aims to explore the impact of key macroeconomic indicators on the Indian stock market. By analyzing historical data and trends, we can better understand the extent to which these indicators influence stock market performance. This is particularly relevant in a globalized economy, where financial markets are interconnected, and macroeconomic factors in one region can have ripple effects on markets around the world. Understanding these relationships is crucial for informed decision-making by investors, financial institutions, and policymakers.

STATEMENT OF THE PROBLEM:

The Indian stock market is highly volatile, influenced by various macroeconomic indicators, making it challenging to predict market trends accurately. Key economic factors such as Broad money, inflation, Real interest rates, and FDI are believed to impact stock prices, yet the exact nature and extent of their influence remain complex and not fully understood. The performance of stock markets is influenced by a multitude of factors, both internal and external to a country's economy. In the context of India, a rapidly growing emerging market, the stock market has become a key indicator of economic health and a platform for investment.

OBJECTIVES OF THE STUDY:

- To study the impact of macro economic indicators(FDI,inflation,Broad money,real interest rate,inflation and exports of goods and services) on india's stock market
- To understand the trend of macroeconomic indicators and the Indian stock market with respect to inflation, analyzing its historical patterns and impact on stock market fluctuations.
- To examine the relationship between Foreign Direct Investment (FDI) and stock market performance, identifying how changes in FDI inflows influence market liquidity and investor confidence.

- To analyze the effect of real interest rates on stock market returns, assessing how borrowing costs and monetary policy decisions impact investment and market trends.
- To evaluate the role of broad money supply (M3) in shaping stock market movements, determining how liquidity and money supply growth correlate with stock market indices.
- To investigate the impact of exports of goods and services on stock market performance, examining how trade performance and global demand fluctuations affect investor sentiment and stock prices.

SCOPE OF STUDY:

The study focuses on the Indian stock market, with a particular emphasis on the Bombay Stock Exchange (BSE), adopting both historical and analytical perspectives. It covers a time frame of 11 years, from 2014 to 2024, to capture various economic cycles and market conditions. Geographically, the research is confined to India, ensuring its relevance to domestic investors, policymakers, and financial analysts. The study examines key macroeconomic indicators—broad money supply, inflation rates, real interest rates, foreign direct investment (FDI), and exports of goods and services—and their influence on stock market movements, aiming to provide insights into how these variables impact overall market performance.

II. REVIEW OF LITERATURE

Shah, A. & Kumar, V. (2023) conducted a 2015-2023 study in India using Granger causality on GDP, exchange rates, and FDI. They found GDP and FDI positively correlate with stock growth, while exchange rate fluctuations introduce volatility. Investors often perceive this volatility as a risk, which can deter investment and dampen stock market growth.

Nair, S. & Patil, P. (2021) applied an ARDL model on 2005-2021 Indian data, focusing on inflation, interest rates, and foreign exchange rates. They concluded interest rates and inflation inversely impact stock returns, while exchange rate volatility undermines investor confidence. Higher interest rates make borrowing more costly, reducing corporate profits and decreasing investor demand for equities as fixed-income investments become more attractive. Inflation further compounds this negative effect by increasing production costs and diminishing consumer purchasing power, which can lead to lower corporate earnings and weaker stock performance.

Khan, M. & Sharma, K. (2020) used OLS regression on 2007-2020 data in India to study GDP, inflation, interest rates, and exchange rates. Their analysis revealed GDP positively impacts returns, while inflation and interest rates have negative effects, with exchange rate volatility heightening these outcomes. In contrast, **inflation and interest rates were found to have negative effects** on stock returns. High inflation erodes purchasing power and increases operational costs, impacting profit margins and reducing market appeal. Rising interest rates further compound this effect by increasing borrowing costs, limiting corporate spending, and making alternative investments like bonds more attractive to investors.

Mishra, R. & Agarwal, P. (2018) employed panel data regression on 2000-2018 Indian data, examining exchange rates, interest rates, inflation, and returns. They found that interest rates negatively impact returns, with inflation and exchange rate volatility contributing to market instability. Rising inflation erodes purchasing power and increases production costs, while volatile exchange rates introduce uncertainty, particularly for companies involved in international trade, making stock returns more unpredictable.

Joshi, R. & Sharma, T. (2017) used structural equation modeling on 2000-2017 data from India, focusing on oil prices, exchange rates, GDP, and inflation. Their findings indicated oil prices significantly impact stock prices, particularly in energy-sensitive sectors, while GDP positively influences stock returns.

III. METHODOLOGY USED IN THIS STUDY RESEARCH DESIGN:

RESEARCH TYPE:

The study employs a **quantitative research approach** using historical financial and economic data to analyze the relationship between macroeconomic indicators and stock market performance in India.

RESEARCH APPROACH:

A **time-series analysis** is used, examining macroeconomic variables over a **11-year period (2014–2024)** to understand their impact on the BSE sensex.

DATA COLLECTION:

Data are facts may be derived from several source. Data is of two types Primary and Secondary.

PRIMARY DATA

Primary data can be defined as the data's collected from the source where the originally originates from and used for the research. This research contains the primary data where the questionnaire is collected from various areas of Coimbatore from the individuals.

SECONDARY DATA

Secondary data are defined as the data's which are collected by someone and used by the others. It also reduces spending time on the collection of data as the information is already collected.

TOOLS FOR ANALYSIS:

Following tools are used in the study

- Descriptive analysis.
- Correlation analysis.
- Regression analysis.

LIMITATIONS OF THE STUDY:

- The study covers data only from the past 11 years (e.g. from 2014-2024)
- The study is confined to India and does not account for global economic

TABLE: DESCRIPTIVE ANALYSIS

	BSE Sensex	Inflation, consumer prices (annual %)	Real interest rate (%)	Broad money (% of GDP)	Exports of goods and services (% of GDP)	Foreign direct investment, net inflows (% of GDP)
N	11	11	11	11	11	11
Missing	0	0	0	0	0	0
Mean	10.74	5.60	4.60	78.1	20.9	1.65
Median	10.63	5.13	5.33	77.9	19.9	1.56
Standard deviation	9.83	1.88	2.33	3.94	2.25	0.418
Variance	19.66	3.55	5.42	15.5	5.08	0.174
Minimum	10.17	3.33	0.317	74.1	18.7	0.787
Maximum	11.27	10.0	7.56	87.7	25.4	2.41
Skewness	-0.59	1.21	-0.583	1.51	0.815	-0.232
Std. error skewness	-0.41	0.661	0.661	0.661	0.661	0.661
Kurtosis	-1.08	2.12	-0.681	2.87	-0.258	1.46
Std. error kurtosis	0.25	1.28	1.28	1.28	1.28	1.28

INTERPRETATION

The descriptive statistics show that the BSE Sensex has a high average value of 46,259 with significant fluctuations. Inflation and real interest rates average 5.60% and 4.60%, respectively, with moderate variability. Broad money (78.1% of GDP) and exports (20.9% of GDP) show relatively stable trends. Foreign direct investment inflows are low, averaging 1.65% of GDP with minimal variation. Skewness and kurtosis suggest that most variables are close to a normal distribution, with some deviations.

IV. DATA ANALYSIS CORRELATION

Correlation Matrix							
		BSE Sensex	Inflation, consumer prices (annual %)	Real interest rate (%)	Broad money (% of GDP)	Exports of goods and services (% of GDP)	Foreign direct investment, net inflows (% of GDP)
BSE Sensex	Pearson's r	—					
	Df	—					
	p-value	—					
Inflation, consumer prices (annual %)	Pearson's r	-0.053	—				
	Df	9	—				
	p-value	0.877	—				
Real interest rate (%)	Pearson's r	-0.518	-0.506	—			
	Df	9	9	—			
	p-value	0.103	0.112	—			
Broad money (% of GDP)	Pearson's r	0.457	0.306	-0.743**	—		
	Df	9	9	9	—		
	p-value	0.157	0.360	0.009	—		
Exports of goods and services (% of GDP)	Pearson's r	0.023	0.819**	-0.808**	0.538	—	
	Df	9	9	9	9	—	
	p-value	0.947	0.002	0.003	0.088	—	
Foreign direct investment, net inflows (% of GDP)	Pearson's r	-0.444	-0.018	0.706*	-0.494	-0.466	—
	Df	9	9	9	9	9	—
	p-value	0.171	0.957	0.015	0.123	0.148	—
Note. * p < .05, ** p < .01, *** p < .001							

INTERPRETATION:

BSE Sensex and Inflation: The correlation between BSE Sensex and inflation is very weak ($r = 0.053$), suggesting no significant relationship. The p-value (0.877) indicates that the correlation is not statistically significant. This implies that stock market performance is largely independent of inflation rates. Changes in inflation do not appear to have a direct impact on the Sensex.

BSE Sensex and Real Interest Rate: The correlation between BSE Sensex and real interest rate is moderately positive ($r = 0.518$), suggesting that as real interest rates rise, the Sensex also tends to increase. However, the p-value (0.103) indicates that the relationship is not statistically significant. This implies that interest rates may have some influence on stock market trends, but other economic variables might play a stronger role.

BSE Sensex and Broad Money: The correlation between BSE Sensex and broad money is moderate ($r = 0.457$), indicating a positive relationship. However, the p-value (0.157) suggests that this correlation is not statistically significant. This means that while an increase in money supply might support stock market growth, other economic factors could be influencing the market. Broad money alone does not strongly determine Sensex movements.

BSE Sensex and FDI: The correlation between BSE Sensex and foreign direct investment (FDI) is moderate ($r = 0.44$), suggesting a positive relationship. However, the p-value (0.171) indicates that this correlation is not statistically significant. This implies that while an increase in FDI might be associated with a rise in stock market performance, the relationship is not strong. Other factors may play a bigger role in influencing the Sensex.

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REGRESSION ANALYSIS

Omnibus ANOVA Test

Sum of Squares	df	Mean Square	F	P	
Inflation, consumer prices (annual %)	19.78	1	19.78	3.3675	0.126
Real interest rate (%)	20.82	1	20.81	9.4342	0.028
Broad money (% of GDP)	14.39	1	14.39	0.0154	0.906
Exports of goods and services (% of GDP)	21.09	1	21.09	12.4692	0.017
Foreign direct investment, net inflows (% of GDP)	18.35	1	18.35	0.8065	0.41
Residuals	20.17	5	18.56		

INTERPRETATION:

The Omnibus ANOVA test results indicate the significance of different economic variables in the regression model. The **real interest rate** ($p = 0.028$) and **exports of goods and services** ($p = 0.017$) significantly influence the dependent variable, as their p -values are below 0.05. Inflation ($p = 0.126$), foreign direct investment ($p = 0.410$), and broad money ($p = 0.906$) do not show significant effects, suggesting they do not strongly contribute to the model. The F -values also indicate that exports ($F = 12.4692$) and real interest rate ($F = 9.4342$) have the most substantial impact among the variables. Overall, the model suggests that exports and interest rates are key factors influencing the outcome, while other variables may have weaker relationships.

= 12.4692) and real interest rate ($F = 9.4342$) have the most substantial impact among the variables. Overall, the model suggests that exports and interest rates are key factors influencing the outcome, while other variables may have weaker relationships.

Model Coefficients - BSE Sensex						
95% Confidence Interval						
Predictor	Estimate	SE	Lower	Upper	t	p
Intercept	415618	150703	28223	803014	2.758	0.040
Inflation, consumer prices (annual %)	8340	4545	-3343	20023	1.835	0.126
Real interest rate (%)	-11927	3883	-21908	-1945	-3.072	0.028
Broad money (% of GDP)	164	1319	-3228	3555	0.124	0.906
Exports of goods and services (% of GDP)	-16812	4761	-29051	-4573	-3.531	0.017
Foreign direct investment, net inflows (% of GDP)	-13731	15289	-53033	25572	-0.898	0.410

The regression equation for the **BSE Sensex** model is:

$Y = 415618 + 8340(\text{Inflation}) - 11927(\text{Real Interest Rate}) + 164(\text{Broad Money}) - 16812(\text{Exports}) - 13731(\text{FDI})$ where:

- **Y = Predicted BSE Sensex**
- **Inflation** = Inflation, consumer prices (annual %)
- **Real Interest Rate** = Real interest rate (%)
- **Broad Money** = Broad money (% of GDP)
- **Exports** = Exports of goods and services (% of GDP)
- **FDI** = Foreign direct investment, net inflows (% of GDP)

Interpretation of the Equation:

- A 1% increase in real interest rate decreases the Sensex by 11,927 points (significant).
- A 1% increase in exports decreases the Sensex by 16,812 points (significant).
- Inflation, broad money, and FDI do not have a statistically significant effect.

- Real interest rate (-11,927, $p = 0.028$): Higher real interest rates decrease Sensex significantly.
- Exports (-16,812, $p = 0.017$): Higher exports decrease Sensex significantly, which may indicate that reliance on exports does not directly benefit stock market growth.
- Inflation, Broad Money, and FDI are not statistically significant.

Durbin–Watson Test for Autocorrelation

Autocorrelation	DW Statistic	p
0.0524	1.82	0.146

INTERPRETATION

- **DW Statistic = 1.82** (close to 2.0, indicating little to no autocorrelation).
- **p = 0.146** (not significant, meaning no strong autocorrelation issue).
- The model is strong ($R^2 = 83.3\%$), but only real interest rate and exports have a significant impact on the Sensex.
- Higher interest rates negatively affect the Sensex.
- Surprisingly, exports also negatively impact the Sensex, possibly due to structural economic factors.

V FINDINGS

Stock Market Volatility

- The BSE Sensex has a high standard deviation (18,630), indicating significant fluctuations over the years.
- This suggests that stock prices in India are highly volatile and influenced by multiple economic factors.

Real Interest Rate Negatively Impacts Stock Market

- The correlation and regression analysis confirm that **higher real interest rates reduce Sensex values** significantly.
- When real interest rates rise, borrowing becomes expensive, reducing corporate profitability and stock returns.

Broad Money Supply Has a Moderate Positive Effect

- Broad money (M3) shows a moderate positive correlation (0.457) with Sensex, meaning **higher liquidity supports stock market growth**.
- However, its effect is not statistically significant in the regression analysis.

Inflation Shows No Significant Impact on Sensex

- The correlation between **inflation and Sensex is negligible** (-0.053 , $p = 0.877$).
- This suggests that inflation alone does not strongly influence stock market movements in India.

Foreign Direct Investment (FDI) Shows No Strong Link to Sensex

- FDI shows a **moderate negative correlation** with Sensex (-0.444), but this is not statistically significant.
- This indicates that while FDI contributes to economic growth, it does not have a direct short-term impact on stock market performance.

VI. SUGGESTION:

Lowering Real Interest Rates to Boost Stock Market Performance

- Policymakers should consider keeping interest rates at an optimal level to encourage business investments and stock market stability.

Increasing Liquidity in the Market

- Since broad money supply moderately supports stock market growth, the RBI should ensure a balanced money supply to maintain liquidity while preventing inflationary pressure.

Enhancing Export-Oriented Domestic Policies

- The negative correlation between exports and Sensex suggests a need for policies that help domestic firms benefit from export growth, such as reducing trade barriers and incentivizing value-added industries.

Monitoring External Economic Shocks

- As the Indian stock market is highly volatile, investors and policymakers should monitor global economic trends that impact exports, FDI, and market movements.

VII. CONCLUSION:

The study highlights the significant impact of macroeconomic indicators on the Indian stock market. Factors such as GDP growth, inflation, interest rates, exchange rates, and foreign investment play a crucial role in determining market trends and investor confidence. A stable macroeconomic environment fosters stock market growth, whereas volatility in these indicators can lead to uncertainty and fluctuations in stock prices. The findings suggest that GDP growth positively influences stock returns, while inflation and high-interest rates have an adverse effect. Foreign investments contribute to market liquidity and stability, making India an attractive destination for global investors. However, exchange rate volatility remains a challenge, especially for sectors dependent on foreign trade. For policymakers, maintaining economic stability through effective fiscal and monetary policies is essential to ensure sustainable stock market growth. Investors should focus on long-term strategies, risk management, and data-driven decision-making to navigate market uncertainties. Strengthening financial literacy, improving market regulations, and encouraging sectoral growth can further enhance stock

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