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The Effect of Macroeconomic Factors on the Contribution of Systematic Investment Plans of Mutual Fund Schemes in India

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Abstract:
This study investigates the effect of selected macroeconomic factors on the Systematic Investment Plan (SIP) contributions to mutual funds in India over the period from April 2016 to March 2024. The key objective is to examine how macroeconomic variables such as Dollar Rate, Foreign Exchange Reserve, Inflation, Gross Domestic Product (GDP), Sensex, and Interest Rate influence SIP contributions by using multiple regression analysis. The results confirm that Dollar Rate, GDP, Sensex, and Interest Rate significantly impact SIP contributions, while Foreign Exchange Reserve and Inflation do not. The study concludes that SIP investments are sensitive to major macroeconomic movements and calls for careful policy considerations to enhance retail participation in mutual funds.

Keywords: Macroeconomic Factors, Multiple Regression, Mutual Funds, SIPs.

Introduction

Mutual Fund performance is not solely driven by fund managers' strategies or market trends; it is deeply influenced by the macroeconomic factors. Changes in things like interest rates, inflation, dollar rate, foreign exchange reserve, stock market indices and GDP can have a big effect on how well Mutual Funds do, often explaining the ups and downs investors see from month to month. For retail investors aiming to make informed investment choices, understanding these macroeconomic variables is key to navigating the ever-changing financial landscape. Systematic Investment Plans (SIPs) have become a popular investment method for Indian retail investors due to its disciplined approach and potential to average market volatility. The Mutual Fund industry has witnessed a consistent surge in SIP contributions, making it a relevant area of study in the context of economic fluctuations. Understanding the factors influencing SIP contributions is crucial for investors, fund managers, and policymakers alike. Macroeconomic factors such as exchange rates, inflation, interest rates, and market indices play a vital role in shaping investment behavior and expectations.

The US dollar, as the world's primary reserve and most traded currency, is involved in 88% of global Forex transactions, according to the BIS. Its exchange rate with the Indian Rupee significantly impacts India's economy, especially the Mutual Fund sector. Equity Mutual Funds are sensitive to rupee fluctuations, as a stronger dollar affects corporate earnings and sector performance. Export-oriented industries like IT and pharma benefit from rupee depreciation.

In February 2025, AMFI reported a 26% drop in net equity Mutual Fund inflows to ₹29,303 crores, while SIP inflows declined to a three-month low of ₹25,999 crores amid market volatility and a rising dollar impacting import costs.

Foreign exchange reserves are assets held by a nation's central bank or monetary authority, commonly consisting of foreign currencies, gold, Special Drawing Rights (SDRs) and reserve positions in the International Monetary Fund (IMF). They are essential tools for managing exchange rates, enabling the country to fund imports during economic downturns and enhancing investor confidence. Central banks utilize these reserves to curb sharp fluctuations in their currency's value, thereby reducing the

risks posed by exchange rate volatility, something especially important for Mutual Fund investors. A robust level of foreign exchange reserves reflects a country's financial resilience, helping to attract foreign investment and promote a stable environment for Mutual Fund investments.

Inflation rate indicates the annual percentage increase in the price of goods and services, indicating a decline in the currency's purchasing power. It is measured using indicators like the Consumer Price Index (CPI) and Wholesale Price Index (WPI). Inflation has a notable impact on the Mutual Fund industry in India by diminishing the real value of investment returns and influencing the performance of various asset classes within Mutual Funds. As inflation rises, the purchasing power of money declines, so even if a Mutual Fund shows nominal growth, the actual benefit may be lower because of the increasing cost of goods and services.

Gross Domestic Product (GDP) represents the total value of all goods and services produced in a country over a specific time, usually annually or quarterly. It reflects economic health and is measured in two ways: Nominal GDP (at current prices) and Real GDP (adjusted for inflation). Rising GDP signals economic expansion which can uplift performance of the Mutual Funds, but falling GDP may indicate a recession, companies cannot generate good profits. This leads to lowering investor confidence and negatively impacts Mutual Funds which reduces returns over the long term.

The BSE SENSEX is a stock market index based on the free-float market capitalization method. Established in 1986, it reflects the performance of 30 of the biggest, most financially stable and most actively traded firms on the BSE. It significantly influences the performance of Mutual Funds. Stock market index used as a benchmark for Index funds and Actively managed funds. Index funds strive to mirror the performance of a specific index, meaning their returns closely follow the index's movements. Actively managed funds also often rely on indices to assess their performance and the composition of these funds can be shaped by the structure of the index they track. Rising indices indicate positive market sentiment, often boosting investments in equity mutual funds. However, index volatility can greatly affect equity fund performance.

Interest rates significantly influence the economy by affecting consumer spending, business investment and overall growth. In the mutual fund industry, interest rate changes have a direct impact on debt funds, as bond prices move inversely to interest rates. Rising rates lead to falling bond prices and lower NAVs, while falling rates boost NAVs.

Long-duration funds are more sensitive to rate shifts than short-duration ones. Equity funds are indirectly affected, higher rates increase corporate borrowing costs, potentially lowering profits and reducing stock valuations. Additionally, rising rates may shift investor preference toward fixed-income options. Diversifying across fund types and aligning duration with interest rate trends can help manage risks in both debt and equity investments.

This study aims to assess the stationarity of SIP mutual fund contributions and key macroeconomic indicators over an eight-year period (April 2016 – March 2024), followed by evaluating the influence of these indicators on SIP flows. The study adopts a quantitative, analytical approach using secondary data sourced from authentic government and financial regulatory portals. Employing the Augmented Dickey-Fuller (ADF) unit root test, the study examines time series characteristics, and then applies multiple regression analysis to determine the relationship between SIP flows and macroeconomic variables. This research provides empirical evidence on how broader economic trends shape micro-level retail investment behaviors in India.

Significance of the Study

This study is significant as it explores the influence of key macroeconomic factors on SIP contributions, which are a major component of retail investment in India. By establishing the stationarity of variables and identifying which economic indicators significantly affect SIP flows, the research aids policymakers, financial planners, and mutual fund managers in understanding investor behavior. The findings provide insights into how changes in the Dollar Rate, GDP, Sensex, and

Interest Rate can impact investment decisions. This understanding is essential for formulating effective financial policies and strategies to boost Mutual Fund participation and promote long-term financial inclusion and economic stability.

Review of Literature

Macro-economic variables are consistently linked to fund performance. Kusuma and Kumar (2022) identified GDP, inflation, and interest rates as significant influencers for Indian midcap and small-cap funds, while Gyimah et al. (2021) found that exchange rates, inflation, and GDP growth strongly affected mutual funds in Ghana. Likewise, Yadav et al. (2016) found
CPI, oil prices, and foreign exchange reserves to be influential in India's equity-oriented growth funds. Alternative fund types and strategies have also been evaluated. Malhotra and Nippani (2024) reported that energy mutual funds outperformed key benchmarks over a long period, and Komal and Joshi (2021) highlighted that debt mutual funds offered more stability than equity and hybrid schemes. Bozovic (2021) and Kurbatskii (2022) both found that active management often failed to outperform passive benchmarks, except during select sub-periods. Sharma and Tripathi (2023) evaluated top 30 SIP schemes and reported consistent returns in large, flexi, and mid-cap funds. Demographic influences were highlighted by Thakkar et al. (2023), Poddar and Dmello (2023), and Jayalakshmi and Amma (2019), all of whom confirmed age, income, and education significantly influenced SIP investment preferences. Supekar and Lasune (2021) emphasized that younger and better-informed investors favored SIPs for their risk-mitigated returns and diversification. Further, studies like Anbarasu and Prakash (2020) noted that SIP NAVs exhibit lower volatility, making them less risky than lump-sum investments. While Gajera et al. (2020) found lump-sum investments yielded higher but riskier returns, Manoharan and Nair (2018) and Madhavilatha and Bandi (2017) found that SIPs often outperformed over the long term. Moreover, Uddin (2016) and Adeyele and Solomon (2015) stressed that SIPs, when aligned with retirement goals, can enhance long-term income security, although they are limited by platform and awareness issues.

Objective

- To determine the stationarity of SIP Mutual Fund contribution
- To determine the stationarity of selected macroeconomic factors
- To determine the effect of macroeconomic factors on the contribution of Systematic Investment Plans of Mutual Fund schemes in India.

Hypothesis

- H0: The SIP Mutual Fund contribution has unit root.
- H0: The selected macroeconomic factors have unit root.
- H0: The macroeconomic variables dollar rate, foreign exchange reserve, inflation, gross domestic product, Sensex and interest rate do not have a significant impact on the SIP Mutual Fund contribution in India.

Research Methodology

This study is planned as an analytical method based on secondary data. This study evaluates the effect of macroeconomic factors on the contribution of Systematic Investment Plans of Mutual Fund schemes in India over 8 years (April 1, 2016 – March 31, 2024). Secondary data was gathered from official regulatory websites, periodicals, journals, books and research reports etc. Statistical tools like Unit Root Test and Multiple Regression Analysis were used for analysis. **Unit Root Test**

A unit root test is used to determine whether a time series is stationary or not.
A time series is considered stationary if its mean and auto-covariance do not depend on time. If a series has a unit root, it is non-stationary and not suitable for further analysis.

A non-stationary series is said to follow a random walk, which can be represented by the equation:
$Yt = Y\ (t-1) + \mathcal{E}i$
Where $\mathcal{E}i$ is a stationary random disturbance. The variance of this series increases over time.
If the first difference of the series $Yt - Y\ (t-1)$ is stationary, then the original series is said to be difference stationary. This can be represented as
$Yt - Y\ (t-1) = (1-L)\ Yt = \mathcal{E}i$
where L is the lag operator.
A difference stationary series is said to be integrated of order d, denoted as I(d), where d represents the number of differencing operations required to make the series stationary.
There are various tests to check for stationarity, with the Augmented Dickey-Fuller (ADF) test being one of the most commonly used.

Unit Root Test - SIP Mutual Fund Contribution
H_0: The SIP Mutual Fund Contribution has Unit root.

Table No. 1 - Unit Root Test - SIP Mutual Fund Contribution

2016 – 2024	Variable	ADF Test Statistics	Critical Value @ 5%	p-Value	S/NS
Level	SIP Mutual Fund Contribution	-1.8716	-2.89	0.6295	NS
First Difference	SIP Mutual Fund Contribution	-6.1809	-2.89	0.01	**

Note: NS – Not Significant, ** - Significant at 1% level of significance

The test statistic |t| (1.8716) is less than its critical value (2.89) for the SIP Mutual Fund Contribution and the p-value (0.6295) is also greater than 0.05. Therefore, the null hypothesis is accepted, which means that SIP Mutual Fund Contribution is non-stationary at its level. At the first difference, the calculated value of the test statistic |t| (6.1809) is greater than its critical value (2.89) and the p-value (0.01) is less than the significant value 0.05. Hence, the null hypothesis is rejected. Therefore, the SIP Mutual Fund Contribution is stationary in the first difference I (1).
It is concluded that SIP Mutual Fund Contribution is stationary at its first difference I (1).

Unit Root Test - Select Macro-Economic Factors
H_0: The Selected Macro-Economic Factors have Unit Root.

Table No. 2 - Unit Root Test - Selected Macro-Economic Factors (At Level)

2016 – 2024	Variable	ADF Test Statistics	Critical Value @ 5%	p-Value	Significance
Level	Dollar Rate	-2.6809	-2.89	0.2951	NS
Level	Foreign Exchange Reserve	-1.6974	-2.89	0.7015	NS
Level	Inflation Rate	-2.6331	-2.89	0.3148	NS
Level	Gross Domestic Product	-3.8243	-2.89	0.02083	*

Level	Sensex	-2.2273	-2.89	0.4825	NS
Level	Interest Rate	-2.4038	-2.89	0.4096	NS

Note: NS – Not Significant, * - Significant at 5% level of significance

The test statistics are less than the critical value for all macroeconomic factors except Gross Domestic Product. The p-values are also greater than 0.05 except for Gross Domestic Product. Therefore, the null hypothesis is accepted for all macroeconomic factors except Gross Domestic Product. It is inferred that unit root exists for all macroeconomic factors, namely Dollar Rate, Foreign Exchange Reserve, Inflation Rate, Sensex, Interest Rate are non-stationary at its level and the Gross Domestic Product is stationary at its level I (0).
It is concluded that the Gross Domestic Product is stationary at its level I (0).

Table No. 3 – Unit Root Test - Selected Macro-Economic Factors (At First Difference)

2016 – 2024	Variable	ADF Test Statistics	Critical Value @ 5%	p-Value	Significance
First Difference	Dollar Rate	-4.1444	-2.89	0.01	**
First Difference	Foreign Exchange Reserve	-3.4617	-2.89	0.0495	*
First	Inflation	-4.627	-2.89	0.01	**
Difference	Rate				
First Difference	Sensex	-5.9184	-2.89	0.01	**
First Difference	Interest Rate	-4.0562	-2.89	0.01	**

Note: ** - Significant @ 1% level of significance, * - Significant @ 5% level of significance

The test statistics indicate that the Dollar Rate, Foreign Exchange Reserve, Inflation Rate, Sensex and Interest Rate are stationary at their first difference, I (1). The test statistic values are |t| (4.1444) for the Dollar Rate, |t| (3.4617) for the Foreign Exchange Reserve, |t| (4.627) for the Inflation Rate, |t| (5.9184) for the Sensex and |t| (4.0562) for the Interest Rate, which exceeds the critical value of 2.89 and the p-value is below 0.05, hence the null hypothesis of non-stationarity is rejected. This confirms that these variables achieve stationarity at their first difference. However, the Gross Domestic Product is an exception, as it is found to be stationary at its level, I (0).

Multiple Regression Analysis of SIP Mutual Fund Contribution and Select Macroeconomic Factors

In Multiple Regression Analysis, more than one independent variables are used to predict a single dependent variable. Multiple Regression helps to describe and understand the relationship between dependent and independent variables.

H_0: The macro-economic variables Dollar Rate, Foreign Exchange Reserve, Inflation, Gross Domestic Product, Sensex and Interest Rate do not have significant impact on the SIP Mutual Fund Contribution in India.

$$SIP\ MFC = Constant + Independent\ Variables\ (Beta) + Standard\ Error$$

Table No. 4 – Multiple Regression Analysis - SIP Mutual Fund Contribution and Select Macroeconomic Factors

Variables	Constant	R	Adj. R^2	Beta (β)	S.E	t	Sig. (p)
Dollar Rate	-24276.2	0.978	0.957	251.419	2071.35	6.532	0.000
Foreign Exchange Reserve	-24276.2	0.978	0.957	9.843	2071.35	0.220	0.827
Inflation	-24276.2	0.978	0.957	-26.499	2071.35	-0.340	0.735
Gross Domestic Product	-24276.2	0.978	0.957	0.001	2071.35	2.402	0.018
Sensex	-24276.2	0.978	0.957	0.151	2071.35	5.697	0.000
Interest Rate	-24276.2	0.978	0.957	618.352	2071.35	2.617	0.010

SIP MFC = -24276.2+ DR (251.419) + FER (9.843) + Inf (-26.499) + GDP (0.001) + Sensex (0.151) + IR (618.352) + 2071.35

Table 4 reveals the multiple regression analysis of macroeconomic factors and SIP Mutual Fund contribution. The R value (0.978) explains that the macroeconomic factors have 97.8% impact on the SIP Mutual Fund contribution. The adjusted R^2 value (0.957) indicates that 95.7% of variations in the SIP Mutual Fund contribution are caused by macroeconomic factors. The p values of macroeconomic factors namely Dollar Rate, GDP, Sensex and Interest Rate are less than 0.05, hence the null hypothesis is rejected. It denotes that macroeconomic factors such as Dollar Rate, GDP, Sensex and Interest Rate have significant impact on the SIP Mutual Fund contribution. Beta values shows that the changes in 1 unit of Dollar Rate, GDP, Sensex and Interest Rate results in the variations of SIP Mutual Fund contribution by 251.419, 0.001, 0.151 and 618.352 units respectively.

It is concluded that the macroeconomic factors such as Dollar Rate, GDP, Sensex and Interest Rate have significant impact on the SIP Mutual Fund contribution.

Conclusion

Mutual Funds in India have emerged as a powerful force, enabling millions of Indians to take control of their financial prosperity. It has become a beacon of opportunity and growth, fundamentally transforming the way everyday investors access capital markets. The Mutual Fund industry has seen a significant growth in monthly SIP Mutual Fund contributions, with gross SIP Mutual Fund inflows reaching ₹8.80 lakh crore between April 2016 and March 2024. This growth has accelerated, with SIP Mutual Fund AUM increasing nearly threefold from 11.2% in March 2019 to 19.9% by March 2024.

The study provides significant insights into the dynamics between macroeconomic indicators and SIP contributions in the Indian Mutual Fund industry. The findings from the ADF unit root test reveal that SIP contributions and the majority of macroeconomic variables are non-stationary at their levels but become stationary after first differencing I (1), except GDP, which is stationary at level I (0). These results justify the use of regression analysis for modeling their relationships. The multiple regression analysis demonstrates a strong explanatory power, with an adjusted R^2 of 0.957, suggesting that macroeconomic factors explain over 95% of the variation in SIP contributions. Specifically, Dollar Rate, GDP, Sensex, and Interest Rate are found to significantly impact SIP flows, whereas Foreign Exchange Reserve and Inflation are statistically insignificant in this context. The positive association of these variables with SIP contributions emphasizes their role in influencing investor confidence and

financial planning behavior. The study inferred that the SIP Mutual Fund Contribution is influenced by the underlying factors such as Dollar Rate, Gross Domestic Product, Sensex and Interest Rate. Investors, before investing in SIP Mutual Fund schemes, can evaluate the abovementioned macroeconomic factors.

Macroeconomic stability and growth are critical in sustaining investor interest in SIPs. Policymakers and financial institutions should consider these economic indicators when designing investor outreach, awareness, and investment strategies. The present study covers the effects of macroeconomic factors on SIP Mutual Fund investment. Future research may extend this analysis by considering the market timing ability of the fund manager, incorporating additional behavioral and sentiment-related variables to enhance the predictive model.

References

1. Malhotra, D., & Nippani, S. (2024, February). Assessing Energy Mutual Funds: Performance, Risk and Managerial Skills. *International Journal of Financial Studies, 12*(20), 1 - 18. doi:https://doi.org/10.3390/ijfs12010020
2. Kurbatskii, A. (2022, July). Active Strategy and Other Key Factors of Mutual Funds' Performance. *Montenegrin Journal of Economics, 18*(3), 99-107.
3. Kusuma, T., & Kumar, J. S. (2022, May). Macroeconomic Performance Analysis of Selected Indian Mutual Funds. *NeuroQuantology, 20*(5), 696-703. doi:10.14704/ nq.2022.20.5.NQ22225
4. Gyimah, A. G., Addai, B., & Asamoah, G. K. (2021, April). Macroeconomic determinants of Mutual Funds performance in Ghana. *Cogent Economics & Finance, 9*(1). https://doi.org/10.1080/23322039.2021.1913876
5. Bozovic, M. (2021, July - September). Mutual Fund Performance: Some Recent Evidence from
6. European Equity Funds. *ECONOMIC ANNALS, 66*(230), 7 - 33. https://doi.org/10.2298/EKA2130007B
7. Komal, S., & Joshi, P. (2021, April - June). A Comparative Study on Performance Evaluation
8. of Selected Debt, Equity and Hybrid Mutual Fund Schemes in India.
9. *A Global Journal of Social Sciences, 4*(2), 34 - 40. https://www.gapgyan.org/
10. Agarwal, S., & Khan, J. A. (2019, April). Investigation of Dynamics of Macroeconomy and
11. Commodity Mutual Funds: Empirical Evidence from India. *Theoretical Economics Letters,*
12. *9*(4), 872-894. doi:10.4236/tel.2019.94057
13. Yadav, S. C., Sudhakar, A., & Kumar, S. (2016, April - September). The Impact of Macroeconomic Factors on the Performance: A Study of Selected Equity Oriented Mutual Funds in India . *Journal of economic Policy and research, 11*(2), 49 – 55.
14. Thakkar, A., Parmar, M., & Patel, A. (2023, March). Evaluation of Systematic Investment Planning for Retail Investors. *International Journal of Creative Research Thoughts, 11*(3), a783 - a788. www.ijcrt.org
15. Poddar, N., & Dmello, S. (2023). An Empirical Study of Systematic Investment Plan (SIP) in India with Special Reference to Investor Perception towards SIP. *Journal of Namibian Studies, 35*(51), 4339-4359.
16. Sharma, K. B., & Tripathi, S. (2023, December). Performance Analysis and Risk Assessment of Indian Mutual Fund Through SIPs: A Comparative Study of Small, Mid and Large Cap Funds. *VIDYA - A Journal of Gujarat University, 2*(2), 108 - 117. http://vidyajournal.org
17. Supekar, P. M., & Lasune, S. V. (2021, June). Study on Growing the Systematic Investment Planning in Mumbai. *Aarhat Multidisciplinary International Education Research Journal, 10*(3), 111-118.
18. Anbarasu, J., & Prakash, R. (2020). Exponential Weighted Moving Average of Selected Systematic Investment Plans of Mutual Funds and Their Risks. *The IUP Journal of Financial Risk Management, 17*(1), 43-54.

19. Jayalakshmi, S., & Amma, K. S. (2019, November). A Study on Investor's Attitude towards Systematic Investment Plan in Mutual Funds - Kozhikode City Kerala State. *International Journal of Research & Review, 6*(11), 372 - 376.
20. Nagajyothi, S., & Srinivas, G. (2018). Investment awareness among women: A study on mutual funds. *Asian Journal of Multi-Disciplinary Research*, *4*(2), 66–69. https://doi.org/10.20468/ajmdr.2018.02.15
21. Manoharan, T., & Nair, G. V. (2018). Equity Funds or Mutual Funds? Through the Lens of SIP and LIP. *International Journal of Pure and Applied Mathematics, 118*(20), 4177-4185. http://www.ijpam.eu
22. Madhavilatha, J., & Bandi, M. (2017). Analysis of Investment in Mutual Fund Through Systematic Investment Planning - A Smart Investor. *IJIRMPS, 5*(6), 42 - 46.
23. Uddin, A. (2016, April). Investor Perception about Systematic Investment Plan (SIP): An
24. Alternative Investment Strategy. *International Journal of Research in Humanities &*
25. *Soc.Sciences, 4*(3), 22-28. www.raijmr.com
26. Adeyele, & Solomon, J. (2015). *Systematic Investment Plan and Employees' Retirement Income Security of Selected Universities in South-West Nigeria.* University of Ilorin, Department of Business Administration . Ilorin: Research Gate.