Influence of Macroeconomic Factors on Foreign Portfolio Investment in India – An Empirical Analysis

Prof. Sreeramoju Narasimha Chary[1], Chilumula Banupriya[2]

[1]Professor of Commerce, Department of Commerce and Business Management, University College of Commerce and Business Management, Kakatiya University, Warangal.

[2]Research Scholar, Department of Commerce and Business Management, University College of Commerce and Business Management, Kakatiya University, Warangal. & Assistant Professor, Department of Master of Business Administration, Jyothishmathi Institute of Technology and Science (AUTONOMOUS), Karimnagar, Telangana.

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ABSTRACT

The main aim of this article is to examine the influence of macroeconomic factors on FPI inflows into India, and Hypothesis states, in its alternative form, that macroeconomic variables significantly affect FPI inflows. Net FPI equity investment as the dependent variable and a set of domestic and global macroeconomic variables — real GDP growth, consumer price inflation, growth in the Index of Industrial Production (IIP), the RBI policy repo rate, the central government's fiscal deficit (per cent of GDP), the INR/USD exchange rate, the US federal funds rate, the US 10-year Treasury yield, and the Brent crude oil price — as independent (explanatory) variables. this article reverses the implicit causal story: instead of asking what FPI does to the market, it asks what pulls FPI in and pushes it out. This distinction — between domestic 'pull' factors and global 'push' factors — is developed.

INTRODUCTION

GDP growth, CPI inflation, IIP growth, the repo rate, the fiscal deficit, and the INR/USD exchange rate are treated as pull variables — they describe the state of the Indian economy and its currency. The US federal funds rate, the US 10-year Treasury yield, and the Brent crude oil price are treated as push/global variables — they describe the opportunity cost of holding emerging-market risk from a global investor's vantage point (US rates) and a key external shock variable for an oil-importing economy like India (the oil price, which affects India's current account, the rupee, and inflation, and so enters indirectly as a pull-side stressor as well).

Macroeconomic Variables:

Real GDP growth (annual, 2011-12 base, constant prices) proxies the pull of economic momentum: a faster-growing economy offers higher expected corporate earnings growth and should, in the conventional pull narrative, attract more FPI. Consumer Price Index (CPI, combined, all-India) inflation proxies macroeconomic stability; persistently high inflation erodes real returns and raises the likelihood of monetary tightening, both of which are conventionally expected to deter FPI. Growth in the Index of Industrial Production (IIP, general index) proxies the health of the real, production side of the economy at a higher frequency than GDP and is often watched closely by portfolio managers as a leading indicator. The RBI policy repo rate proxies the domestic interest-rate environment and, via the interest-rate differential with US rates, the relative carry available to a foreign investor. The central government's gross fiscal deficit (per cent of GDP) proxies fiscal sustainability; a widening deficit can signal future inflation, currency pressure, or crowding-out, each a conventional deterrent to foreign portfolio capital. The INR/USD exchange rate (annual average) proxies currency risk, since FPI returns earned in rupees must be converted back to the investor's home currency. On the push side, the US federal funds rate and the US 10-year Treasury yield proxy the opportunity cost of risk capital in the world's largest capital

market — when US yields rise, the relative attractiveness of emerging-market risk, other things equal, falls. The Brent crude oil price proxies a global commodity shock that is particularly consequential for India as a large net oil importer, feeding into the current account deficit, the exchange rate, and inflation simultaneously.

Objectives and Hypothesis:

This research article is aimed at analysing the data with the following objective:

Objective: To evaluate the influence of macroeconomic factors on FPI inflows.

Hypothesis: Macroeconomic variables significantly affect Foreign Portfolio Investment inflows.

DATA AND METHODOLOGY

The dependent variable is net FPI investment in Indian equities, financial-year basis (April-March), sourced from the Reserve Bank of India's Handbook of Statistics on Indian Economy (Monthly/Net Investment by FPIs in the Indian Capital Market tables), which reproduces data compiled by the National Securities Depository Limited (NSDL) (Reserve Bank of India, 2025c, 2026).

Real GDP growth, CPI inflation, and IIP growth are financial-year series sourced from the Ministry of Statistics and Programme Implementation (MoSPI) as reproduced by StatisticsTimes (2026) and the Reserve Bank of India's Handbook of Statistics (Reserve Bank of India, 2025a). The repo rate is the rate prevailing at the close of each financial year (31 March), reconstructed from the Reserve Bank of India's published policy-rate change history. The fiscal deficit is the central government's gross fiscal deficit as a percentage of GDP, as reported in Union Budget documents and summarised in contemporaneous Economic Survey and press data (Ministry of Finance, Government of India, various years). The three global/push variables — the INR/USD exchange rate, the US federal funds rate, and the US 10-year Treasury yield — together with the Brent crude oil price, were compiled on a calendar-year basis from the Reserve Bank of India (exchange rate; Reserve Bank of India, 2026b) and from FRED/Macrotrends (US rates and oil price) and converted to financial-year equivalents using a nine-month/three-month weighted average of the two overlapping calendar years (0.75 x first calendar year + 0.25 x second calendar year), since a financial year running April to March draws nine months from the earlier calendar year and three from the later one. This weighting is an approximation, flagged here explicitly, and is a secondary limitation alongside the calendar-year/financial-year basis difference noted throughout this thesis.

Ten annual observations provide too few degrees of freedom to estimate a VAR with more than one or two lags, or a multiple regression with more than two or three regressors, without over-fitting. This article therefore reports: (i) descriptive statistics and the full correlation matrix between FPI and each of the nine candidate variables; (ii) bivariate OLS regressions of FPI on each variable individually; (iii) two deliberately parsimonious multiple regressions, one combining a domestic pull variable with a global push variable, and (iv) an Augmented Dickey-Fuller (ADF) unit-root check reported with an explicit power caveat.

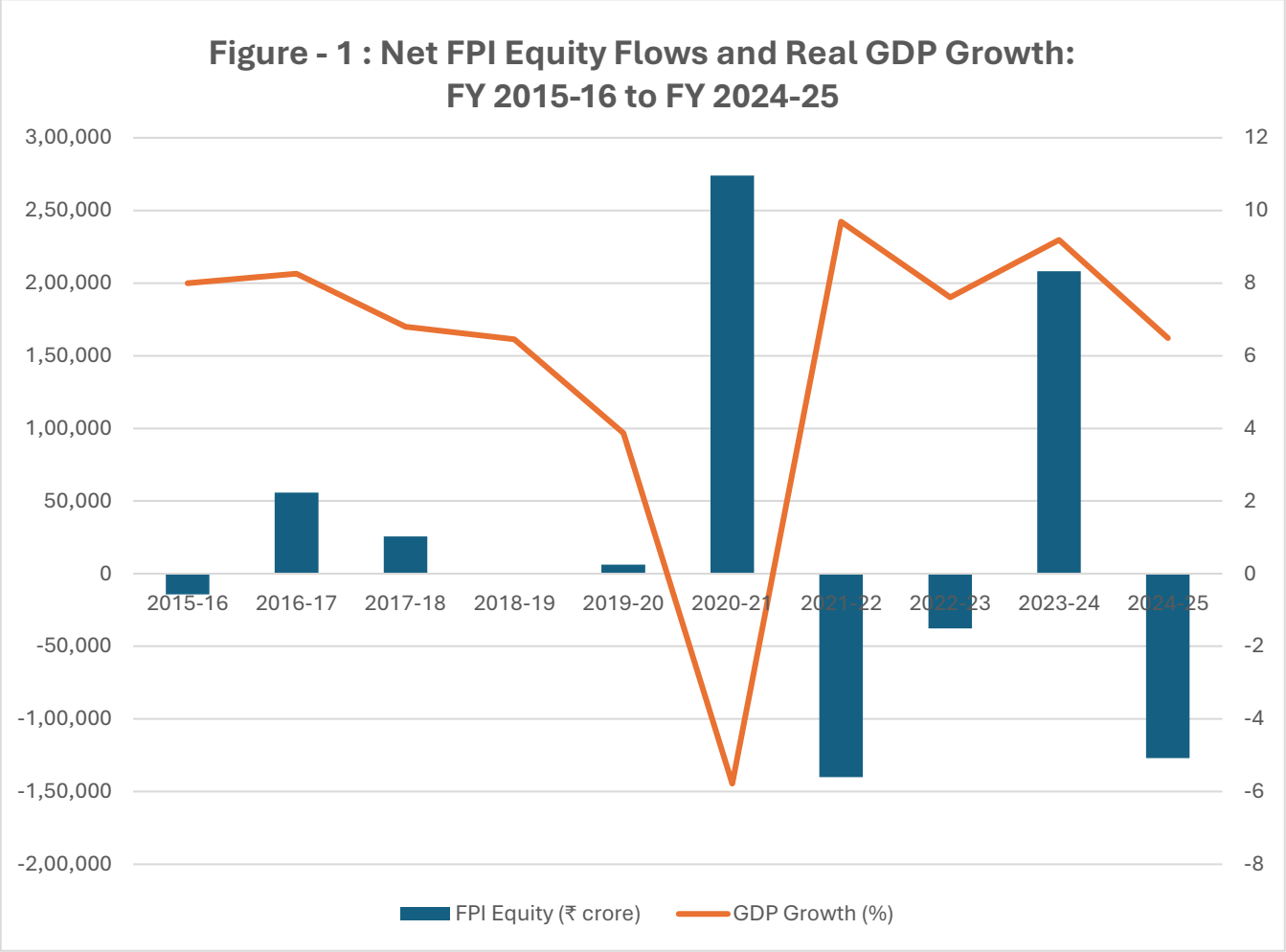
Trend of FPI and Key Macroeconomic Indicators, FY2015-16 to FY2024-25

Table - 1: Net FPI Equity Investment and Key Macroeconomic Variables, FY2015-16 to FY2024-25

FY	FPI Equity (₹ crore)	GDP Growth (%)	CPI Inflation (%)	IIP Growth (%)	Repo Rate (%)	Fiscal Deficit (% GDP)
2015-16	-14,172	8.00	4.9	3.3	6.75	3.9
2016-17	55,703	8.26	4.5	4.6	6.25	3.5
2017-18	25,634	6.80	3.6	4.4	6.00	3.5
2018-19	-88	6.45	3.4	3.8	6.25	3.4
2019-20	6,152	3.87	4.8	-0.8	4.40	4.6

FY	FPI Equity (₹ crore)	GDP Growth (%)	CPI Inflation (%)	IIP Growth (%)	Repo Rate (%)	Fiscal Deficit (% GDP)
2020-21	2,74,032	-5.78	6.2	-8.4	4.00	9.2
2021-22	-1,40,010	9.69	5.5	11.4	4.00	6.7
2022-23	-37,632	7.61	6.7	5.2	6.50	6.4
2023-24	2,08,211	9.19	5.4	5.9	6.50	5.6
2024-25	-1,27,041	6.49	4.6	4.0	6.25	4.8

Source: FPI — Reserve Bank of India (2025c, 2026a), Net Investment by FPIs in the Indian Capital Market (NSDL data). GDP, CPI, IIP — StatisticsTimes (2026); Reserve Bank of India (2025a). Repo rate — reconstructed from RBI policy rate change history. Fiscal deficit — Union Budget documents / Economic Survey, Government of India.



Source: Author's computation from Table 1.

Analyses of data disclosed in Table 1 and Figure 1 show a markedly volatile FPI series: large, single-year swings dominate the ten-year window, with the two biggest inflow years (FY2020-21, Rs 2,74,032 crore; FY2023-24, Rs 2,08,211 crore) and the two biggest outflow years (FY2021-22, -Rs 1,40,010 crore; FY2024-25, -Rs 1,27,041 crore) all occurring in the second half of the study period. The mean net FPI equity investment over FY2015-16 to FY2024-25 is Rs 25,078.90 crore with a standard deviation of Rs 1,30,517.28 crore — a coefficient of variation above 500 per cent, underscoring that the 'average' inflow figure conceals enormous year-to-year variability.

5.6 Correlation Analysis

Table - 2: Pearson Correlation between Net FPI Equity Investment and Macroeconomic Variables

Variable	Type	r	p-value
Real GDP growth	Pull	-0.593	0.071
CPI inflation	Pull	0.226	0.530
IIP growth	Pull	-0.651	0.041
Repo rate	Pull	-0.111	0.760
Fiscal deficit (% GDP)	Pull	0.395	0.259
INR/USD exchange rate	Pull	-0.023	0.949
US federal funds rate	Push	-0.040	0.913
US 10-year Treasury yield	Push	-0.268	0.455
Brent crude oil price	Push	-0.368	0.295

Source: Author's computation from Table 1 and the compiled push-variable series (Section 5.4). n = 10 financial years.

Two findings stand out. First, IIP growth shows a negative correlation with net FPI equity investment that is statistically significant at the 5 per cent level (r = -0.651, p = 0.041), and real GDP growth shows a negative correlation significant at the 10 per cent level (r = -0.593, p = 0.071). This is the opposite sign to the conventional pull hypothesis, which predicts that stronger domestic growth should draw in more FPI. Second, none of the three global push variables, nor the exchange rate, repo rate, or fiscal deficit, reach statistical significance in this ten-year annual sample, though the fiscal deficit (r = 0.395) and Brent crude (r = -0.368) point in directions a push-pull framework would anticipate (a wider deficit coinciding with higher, not lower, net inflows is itself counter-intuitive, discussed further in Section 5.9).

The negative GDP/IIP-growth finding is best interpreted in light of the specific years driving it rather than as a stable structural relationship. FY2020-21 combines India's sharpest GDP contraction in the series (-5.78 per cent) with the single largest FPI inflow (Rs 2,74,032 crore), as global investors treated the pandemic-era sell-off as a valuation opportunity and global liquidity was exceptionally abundant (US federal funds rate near zero). Conversely, FY2021-22 combines the sharpest growth rebound (9.69 per cent GDP growth, 11.4 per cent IIP growth) with the second-largest outflow (-Rs 1,40,010 crore), as valuations normalised and global rate expectations began shifting. With only ten annual observations, these two extreme, offsetting years exert disproportionate influence on the correlation coefficient, and the finding should be read as evidence of a contrarian or valuation-driven pattern specific to this window rather than a general refutation of the growth-pull hypothesis.

Regression Analysis

Table 3: Bivariate OLS Regressions of Net FPI Equity Investment on Each Macroeconomic Variable

Independent Variable	Slope (b)	p-value	R-squared
Real GDP growth	-17,309.32	0.071	0.352
CPI inflation	28,398.58	0.530	0.051
IIP growth	-16,690.77	0.041	0.424
Repo rate	-13,212.15	0.760	0.012

Independent Variable	Slope (b)	p-value	R-squared
Fiscal deficit (% GDP)	27,739.66	0.259	0.156
INR/USD exchange rate	-430.36	0.949	0.001
US federal funds rate	-2,925.11	0.913	0.002
US 10-year Treasury yield	-34,360.17	0.455	0.072
Brent crude oil price	-2,906.31	0.295	0.136

Source: Author's computation. Dependent variable: net FPI equity investment (₹ crore), n = 10.

Consistent with the correlation results, IIP growth is the single strongest bivariate predictor (R-squared = 0.424, p = 0.041), followed by GDP growth (R-squared = 0.352, p = 0.071); every other variable, taken alone, explains under 16 per cent of the year-to-year variation in net FPI equity investment and fails to reach significance at conventional levels.

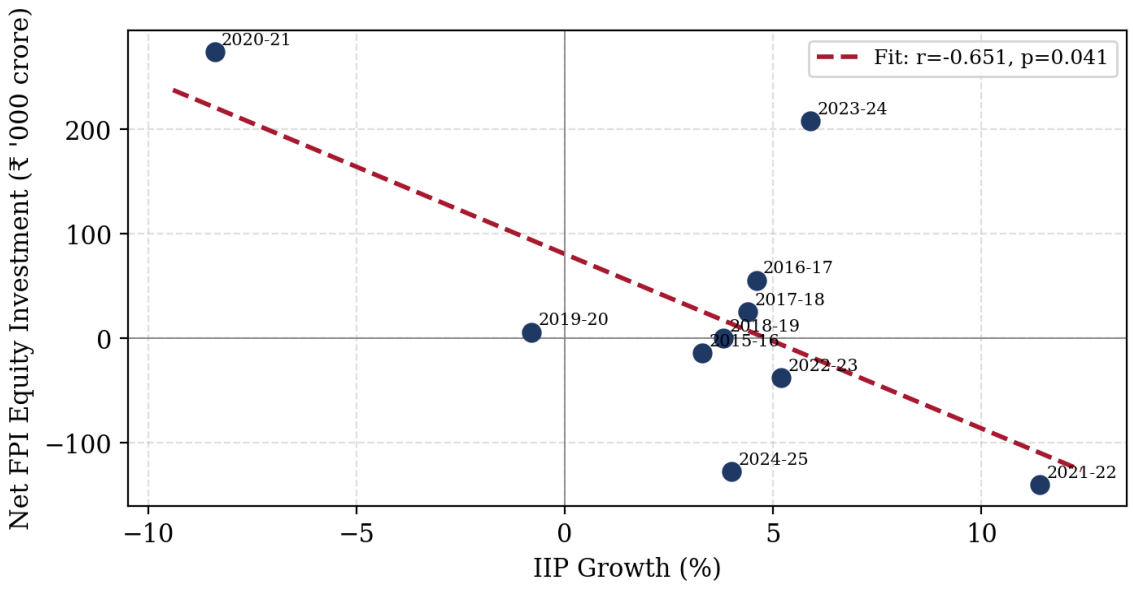
Because a kitchen-sink regression with all nine candidates against only ten annual observations would leave essentially no degrees of freedom and produce unstable, uninterpretable coefficients, this article reports two deliberately parsimonious two-variable specifications instead, each combining one pull and one push variable.

Table 4: Parsimonious Multiple Regressions of Net FPI Equity Investment

Specification	R-squared	Adj. R-squared	F-stat (p)	Significant terms (p<0.10)
FPI ~ GDP growth + US 10Y yield	0.353	0.168	1.91 (0.218)	GDP growth (p=0.125, not sig. at 0.10)
FPI ~ CPI inflation + EXR	0.077	-0.187	0.29 (0.756)	None

Source: Author's computation. n = 10 for both specifications; neither model nor any individual coefficient reaches significance at the 5 per cent level once a second regressor is added, reflecting the loss of degrees of freedom (df = 7) inherent in fitting a two-variable model to ten annual observations.

Figure 5.2: Net FPI Equity Flows vs. IIP Growth, FY2015-16 to FY2024-25



Source: Author's computation from Table 1.

The GDP-growth/US-10-year-yield specification (Table 4, first row) raises the explained variance only marginally above the GDP-growth-alone bivariate model (R-squared 0.353 versus 0.352), and the US 10-year yield term itself is far from significant ($p = 0.913$ in isolation, and still insignificant jointly), indicating that once domestic growth is accounted for, this particular global push variable adds little explanatory power over this specific ten-year window. The CPI-inflation/exchange-rate specification performs considerably worse (R-squared = 0.077), with neither term significant, suggesting that inflation and currency levels, at annual frequency, are weak standalone predictors of FPI direction in this sample.

Stationarity Considerations

An Augmented Dickey-Fuller (ADF) test on the net FPI equity series (one lag) returns a test statistic of -5.11 ($p < 0.001$), nominally rejecting the null of a unit root, and GDP growth returns an ADF statistic of -2.68 ($p = 0.078$), also broadly consistent with stationarity. These results should be read with considerable caution: the ADF test's asymptotic critical values and power properties are derived for much longer time series, and with only ten annual observations and a single lag, the test has very limited power to distinguish a genuine unit-root process from a stationary one, and a 'reject' result here is only weak corroborating evidence rather than a definitive finding. Co-integration testing (Johansen) and a VAR/VECM system. A monthly or quarterly re-estimation of the model, pooling monthly FPI, IIP, CPI and exchange-rate data (all of which are natively available at monthly frequency from NSDL, MoSPI, and the RBI respectively), is identified as a priority extension.

Discussion of Findings in Relation to Hypothesis

Hypothesis (macroeconomic variables significantly affect FPI inflows): the evidence in this article offers qualified, partial support for Hypothesis. Of the nine macroeconomic variables examined, two domestic 'pull' variables — IIP growth and, at a weaker significance threshold, real GDP growth — are statistically associated with net FPI equity investment at the financial-year frequency, while the remaining seven variables, including all three global 'push' variables, show no significant bivariate association in this ten-year sample. The direction of the significant relationships, however, is the reverse of the conventional pull hypothesis: stronger domestic growth and industrial output coincide with lower, not higher, net FPI inflows over this specific window, a pattern driven substantially by the pandemic-era contrast between the deep FY2020-21 contraction (which attracted the largest inflow) and the sharp FY2021-22 rebound (which coincided with the second-largest outflow).

This qualified and partially counter-intuitive result is consistent with a growing strand of the international literature cautioning that push factors, and valuation/liquidity dynamics specific to crisis-and-recovery episodes, can dominate textbook pull fundamentals over short annual windows (Fratzscher, 2012; Ahmed & Zlate, 2014). It also underscores a specific limitation: ten annual observations, however real and carefully sourced, cannot support the lag structures, cointegration tests, and causality analysis that a macro-finance question like hypothesis ideally calls for. The finding should therefore be read as an annual-frequency, descriptive first pass rather than a definitive causal test of hypothesis, with the monthly-frequency extension outlined.

SUMMARY OF FINDINGS

This article examined the influence of nine domestic and global macroeconomic variables on net FPI equity investment in India over FY2015-16 to FY2024-25, using a financial-year NSDL-sourced FPI series. IIP growth ($r = -0.651$, $p = 0.041$) and real GDP growth ($r = -0.593$, $p = 0.071$) were the only variables showing a statistically meaningful association with FPI, and the direction — negative — ran contrary to the conventional growth-pull hypothesis, substantially reflecting the extreme and offsetting FY2020-21/FY2021-22 pandemic-recovery episode. The remaining seven variables, including all three global push variables (US federal funds rate, US 10-year Treasury yield, Brent crude oil price), the repo rate, the fiscal deficit, CPI inflation, and the exchange rate, showed no statistically significant bivariate relationship with FPI in this ten-year annual sample. Two parsimonious multiple regressions (GDP growth with the US 10-year yield; CPI inflation with the exchange rate) added little explanatory power over the best single-variable model, and an ADF stationarity check, while nominally supportive, carries limited power given the sample size. On balance, the article offers qualified, partial

support for Hypothesis, and identifies reconciliation with monthly-frequency data, enabling proper VAR/VECM, Granger causality, and impulse-response analysis as set out in the methodology, as the priority extension for future work.

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