



AN ANALYTICAL STUDY OF FOREIGN TRADE POLICY AND ECONOMIC GROWTH OF INDIA

CA Sachin Darji¹, Dr. Hemal Pandya²

¹Research Scholar

²Professor

S D School of Commerce, Ahmedabad

ABSTRACT

DOI No: 10.36713/epra28209

Article DOI: <https://doi.org/10.36713/epra28209>

This paper examines the association between India's trade-policy-led external integration and economic growth during 1991–2024. Using World Bank World Development Indicators (WDI) annual data for India, the study tracks GDP growth and measures openness through trade (% of GDP), exports (% of GDP) and imports (% of GDP). The empirical section estimates an ordinary least squares (OLS) model of real GDP growth on trade openness with controls for inflation, investment (gross capital formation) and net FDI inflows. The paper provides the full year-by-year input dataset in a properly formatted table for transparency.

OBJECTIVES

1. To describe the evolution of India's external sector integration after 1991 using authentic annual macro indicators.
2. To test whether trade openness is statistically associated with GDP growth for 1991–2024 when key macro controls are included.
3. To interpret descriptive, correlation, and regression tables in a policy-relevant way.

HYPOTHESES

H0: Trade openness (trade % of GDP) has no statistically significant association with India's real GDP growth in 1991–2024.

H1: Trade openness (trade % of GDP) is positively associated with India's real GDP growth in 1991–2024, controlling for inflation, investment and net FDI inflows.

DATA AND AUTHENTIC SOURCES

All numeric data comes from the World Bank World Development Indicators (WDI) for India (IND), annual 1991–2024, retrieved through the official World Bank Indicator API. Variables used are: GDP growth (NY.GDP.MKTP.KD.ZG), trade (% of GDP, NE.TRD.GNFS.ZS), exports (% of GDP, NE.EXP.GNFS.ZS), imports (% of GDP, NE.IMP.GNFS.ZS), net FDI inflows (% of GDP, BX.KLT.DINV.WD.GD.ZS), inflation (FP.CPI.TOTL.ZG), and gross capital formation (% of GDP, NE.GDI.FTOT.ZS).

Input Data (Year-by-year, 1991–2024)

Table A below reports the complete input dataset used for analysis (rounded to 2 decimals for readability). This table is placed before the methodology so that the reader can see exactly what data was used prior to discussing techniques.

Year	gdp_growth	exports_gdp	imports_gdp	trade_gdp	fdi_net_inflow_gdp	inflation_cpi	gross_cap_form_gdp
1991	1.06	8.49	8.49	16.99	0.03	13.87	24.58
1992	5.48	8.84	9.59	18.43	0.1	11.79	25.09
1993	4.75	9.83	9.82	19.65	0.2	6.33	23.67
1994	6.66	9.89	10.19	20.08	0.3	10.25	23.36
1995	7.57	10.84	12.02	22.87	0.59	10.22	25.14
1996	7.55	10.39	11.54	21.93	0.62	8.98	24.52
1997	4.05	10.69	11.93	22.62	0.86	7.16	25.35
1998	6.18	11.02	12.68	23.7	0.63	13.23	25.46
1999	8.85	11.45	13.36	24.82	0.47	4.67	27.54
2000	3.84	13.0	13.9	26.9	0.77	4.01	26.02
2001	4.82	12.56	13.43	25.99	1.06	3.78	29.93
2002	3.8	14.26	15.24	29.51	1.01	4.3	28.33
2003	7.86	14.95	15.64	30.59	0.61	3.81	28.33

2004	7.92	17.86	19.64	37.5	0.77	3.77	30.71
2005	7.92	19.61	22.4	42.0	0.89	4.25	32.76
2006	8.06	21.27	24.46	45.72	2.13	5.8	33.58
2007	7.66	20.8	24.89	45.69	2.07	6.37	35.81
2008	3.09	24.1	29.27	53.37	3.62	8.35	34.72
2009	7.86	20.4	25.87	46.27	2.65	10.88	33.95
2010	8.5	22.4	26.85	49.26	1.64	11.99	33.23
2011	5.24	24.54	31.08	55.62	2.0	8.91	34.31
2012	5.46	24.53	31.26	55.79	1.31	9.48	33.44
2013	6.39	25.43	28.41	53.84	1.52	10.02	31.3
2014	7.41	22.97	25.95	48.92	1.7	6.67	30.08
2015	8.0	19.81	22.11	41.92	2.09	4.91	28.73
2016	8.26	19.16	20.92	40.08	1.94	4.95	28.19
2017	6.8	18.79	21.95	40.74	1.51	3.33	28.18
2018	6.45	19.93	23.69	43.62	1.56	3.94	29.46
2019	3.87	18.66	21.24	39.91	1.78	3.73	28.45
2020	-5.78	18.68	19.08	37.76	2.41	6.62	27.32
2021	9.69	21.4	24.02	45.42	1.41	5.13	29.58
2022	7.61	23.25	26.82	50.08	1.49	6.7	31.22
2023	9.19	21.45	23.54	44.99	0.77	5.65	30.43
2024	6.49	21.16	23.49	44.65	0.69	4.95	29.9

Research Techniques / Methodology

The research design is quantitative and descriptive-analytical. First, time-series trend charts summarize patterns in growth and external integration. Second, descriptive statistics (mean, standard deviation, min, max) describe the typical level and volatility of variables. Third, a correlation matrix measures pairwise linear co-movement. Fourth, an OLS regression

Results: Trends (Figures)

estimates the partial association between trade openness and GDP growth while controlling for inflation, investment and net FDI inflows. Because macro variables are jointly determined and affected by global shocks, results are interpreted as association rather than definitive causality.

Figure 1: Real GDP growth (annual %), 1991–2024 (WDI)

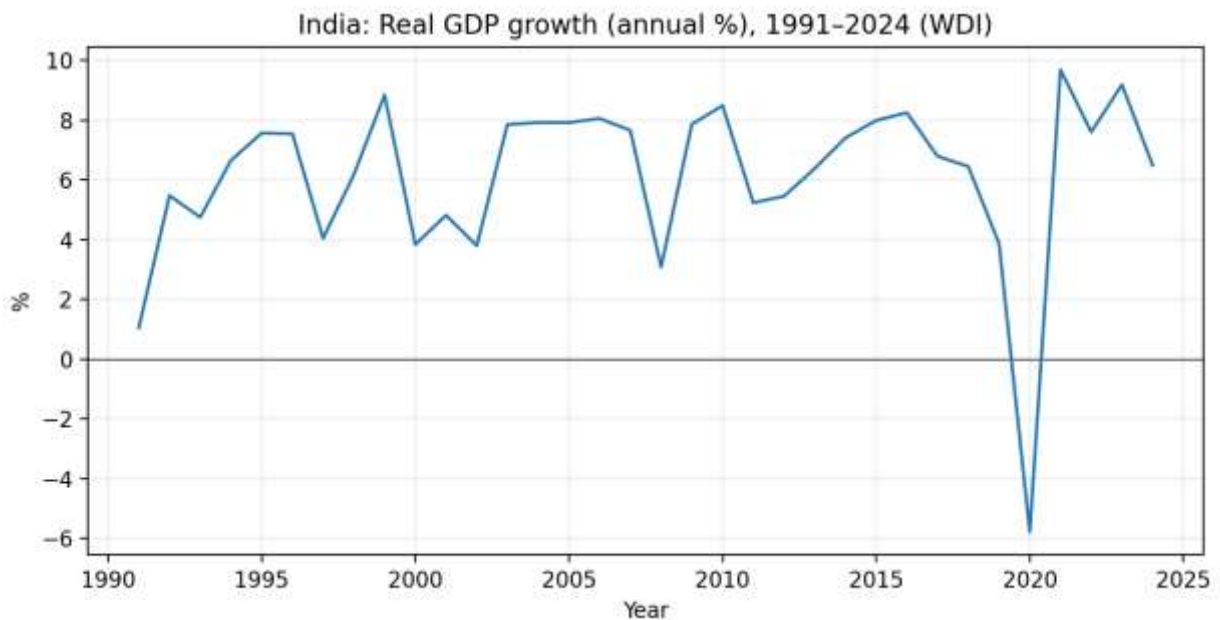


Figure 2: Trade openness and components (trade, exports, imports as % of GDP), 1991–2024 (WDI)

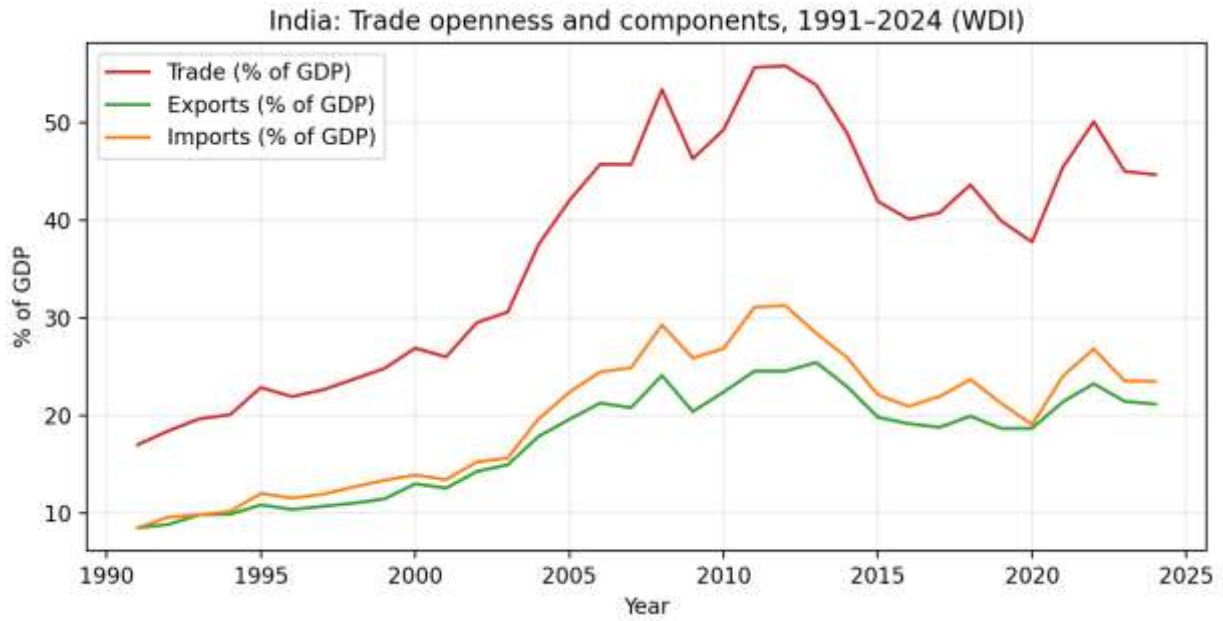
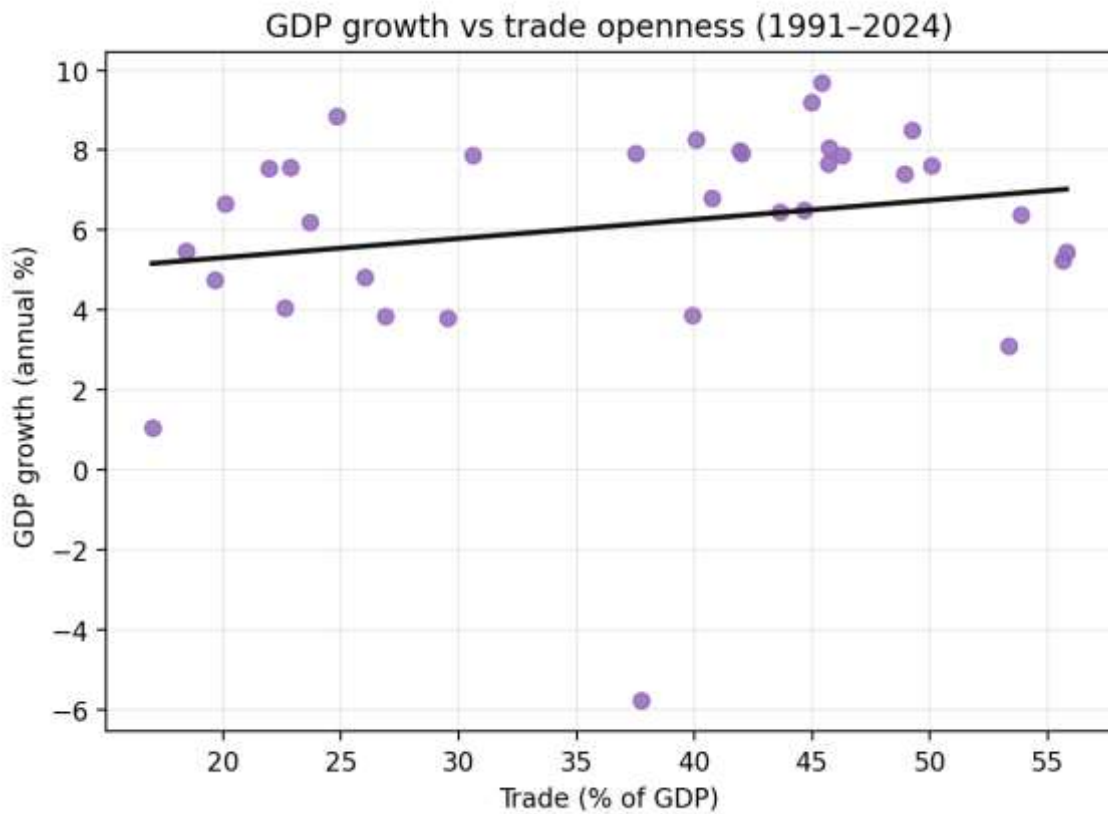


Figure 3: Scatter plot of GDP growth vs trade openness, 1991–2024



RESULTS: DESCRIPTIVE STATISTICS

Descriptive statistics summarize the typical level and volatility of each variable over 1991–2024. The mean indicates the average macro condition, the standard deviation measures

volatility, and the minimum/maximum show the range (including shock years). GDP growth tends to show higher volatility than trade ratios because growth responds sharply to domestic and global business cycles.

Table 1: Descriptive statistics (regression sample, 1991–2024)

Statistic	gdp_growth	trade_gdp	fdi_net_inflow_gdp	inflation_cpi	gross_cap_form_gdp
count	34.0	34.0	34.0	34.0	34.0
mean	6.13	37.27	1.27	7.02	29.2
std	2.87	12.16	0.81	3.06	3.46
min	-5.78	16.99	0.03	3.33	23.36
25%	4.93	25.11	0.64	4.39	26.35
50%	6.73	40.41	1.18	6.35	29.1
75%	7.91	45.71	1.76	9.35	31.28
max	9.69	55.79	3.62	13.87	35.81

Correlation Matrix

The correlation matrix shows simple pairwise relationships. It is helpful for intuition but does not control for other drivers.

Strong correlations among explanatory variables can reduce the precision of regression estimates.

Table 2: Correlation matrix (regression variables)

	gdp_growth	trade_gdp	fdi_net_inflow_gdp	inflation_cpi	gross_cap_form_gdp
gdp_growth	1.0	0.203	-0.123	-0.127	0.244
trade_gdp	0.203	1.0	0.733	-0.151	0.869
fdi_net_inflow_gdp	-0.123	0.733	1.0	-0.112	0.696
inflation_cpi	-0.127	-0.151	-0.112	1.0	-0.126
gross_cap_form_gdp	0.244	0.869	0.696	-0.126	1.0

Regression

The OLS regression estimates the partial association between GDP growth and trade openness after controlling for inflation, net FDI inflows and gross capital formation. The trade coefficient measures the association between a 1 percentage

point change in trade openness and the predicted change in GDP growth, holding other controls constant. P-values summarize statistical uncertainty; a large p-value means the data does not strongly distinguish the coefficient from zero in this sample.

Table 3: OLS regression results (Dependent variable: GDP growth, annual %)

Variable	Coefficient	Std. Error	t	p-value
const	-3.2752	5.8961	-0.5555	0.5828
trade_gdp	0.0665	0.0824	0.8066	0.4264
fdi_net_inflow_gdp	-2.2803	0.8523	-2.6754	0.0121
inflation_cpi	-0.0953	0.1524	-0.6252	0.5368
gross_cap_form_gdp	0.3595	0.2738	1.3127	0.1996

Model fit: R-squared = 0.254; Adjusted R-squared = 0.151; N = 34.

Policy-phase descriptive comparison

The phase-wise averages provide descriptive context linking broad policy eras with typical macro outcomes. These averages

do not isolate policy effects, but they help show whether higher openness periods coincide with higher average growth and different inflation/investment/FDI environments.

Table 4: Phase-wise averages (descriptive)

policy_phase	years	avg_gdp_growth	avg_trade_gdp	avg_exports_gdp	avg_imports_gdp	avg_fdi	avg_inflation	avg_gcf
EXIM Policy era (1992–2002)	11	5.78	23.32	11.16	12.16	0.6	7.7	25.86
FTP 2004–09 (approx. 2003–2008)	6	7.09	42.48	19.76	22.72	1.68	5.39	32.65
FTP 2009–14	6	6.81	51.62	23.38	28.24	1.8	9.66	32.72
FTP 2015–20	6	4.6	40.67	19.17	21.5	1.88	4.58	28.39
FTP 2023 onwards	2	7.84	44.82	21.31	23.52	0.73	5.3	30.16
Transition/Other	3	6.12	37.5	17.71	19.78	0.98	8.57	28.46

CONCLUSION

Across 1991–2024, India’s trade openness increased materially and the economy experienced strong but cyclical growth. In the multivariate OLS model, trade openness has a positive estimated association with growth (coefficient 0.0665), but it is not statistically significant in this sample (p=0.4264). This

suggests that while openness and growth often move together in descriptive trends, growth outcomes are also heavily shaped by investment cycles, inflation conditions, global shocks and domestic reforms. Net FDI inflows are statistically significant in this specification (coefficient -2.2803, p=0.0121), but the sign should be interpreted cautiously because FDI can respond

to growth prospects and policy shifts. Gross capital formation has a positive coefficient (0.3595, $p=0.1996$) consistent with the role of investment in expanding productive capacity, while inflation shows a negative association (-0.0953, $p=0.5368$) consistent with macro instability dampening growth. Overall, the evidence supports a balanced policy view: foreign trade policy contributes most to growth when complemented by competitiveness improvements, investment, and macro stability.

HYPOTHESIS TESTING

Hypothesis testing: The study tests H0: Trade openness (trade % of GDP) has no statistically significant association with India's real GDP growth (1991–2024) against H1: Trade openness is associated with GDP growth. The estimated sign of trade openness is positive (coefficient = 0.0665). At the 5% significance level ($\alpha = 0.05$), the p-value for trade openness is $p = 0.4264$, so we fail to reject H0. Hence, in this specification, trade openness is not statistically significant after controlling for inflation, investment and net FDI inflows; nevertheless, the positive coefficient aligns with the descriptive trend evidence

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