Analysis of India's Bilateral Trade Patterns: A Gravity Model Approach Using Panel Data (1999-2023)*

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Abstract

This study examines the patterns of India's bilateral exports using a gravity model framework, analyzing panel data over a 25-year period. The investigation focuses on India's exports to 49 partner countries, exploring the impact of economic size, distance, and historical ties on trade flows. Additionally, it assesses the influence of institutional factors, including political stability and democracy, on export patterns. The results confirm the robustness of traditional gravity model variables while highlighting the significant role of institutional factors. Notably, the findings regarding electoral democracy diverge from initial expectations, and potential explanations for this outcome are discussed.

Keywords: Gravity Model; India's Exports; Panel Data; Trade Determinants; Institutional Factors; Historical Ties

I. INTRODUCTION

India's international trade landscape has undergone a trans formative journey over the past few decades, driven by a dynamic interplay of economic, historical, and institutional factors. India has leveraged its diverse economic sectors and growing global presence to become a significant player in international trade. This growth has been remarkable, with exports outpacing GDP expansion and contributing increasingly to the country's economic openness.

Between 2000-01 and 2010-11, the share of exports in India's GDP rose from 14 percent to 22 percent, reflecting a marked shift towards a more open economy. According to the World Development Indicators (WDI) published by the World Bank, India's trade-to-GDP ratio surged from 13.9 percent in 1991 to 40.5 percent in 2011, highlighting the profound impact of trade reforms initiated in the early 1990s. Furthermore, the export value index experienced a dramatic increase from 41.8 percent in 1991 to 700.7 percent in 2011, relative to the base period of 2000, underscoring India's rapid integration into global markets.

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However, the global economic downturn, particularly in industrialized countries, has introduced uncertainty into export markets. This was evident in the decline of India's export growth rate from 40.5 percent in 2010-11 to 20.9 percent in 2011-12, as reported by the Reserve Bank of India (RBI). Despite these gains, India's share of global exports remains modest, just over 1 percent, and its export growth rate lags behind that of China, highlighting significant competitiveness challenges.

In response to these challenges, India's trade policies are shifting towards market diversification. Efforts are underway to expand trade relationships with emerging regions such as Latin America, Africa, parts of Asia, and Oceania. This strategic shift aims to enhance India's trade competitiveness and reduce its dependence on traditional export markets.

Against this backdrop, this paper seeks to analyze the key determinants of India's bilateral trade flows with some of its major trading partners. By employing a pooled ordinary least squares (OLS) approach, the study incorporates country-specific characteristics such as GDP, geographical distance, common colonial history, the Electoral Democracy Index, and the Political Corruption Index. This analysis aims to provide a nuanced understanding of how economic, historical, and institutional factors influence India's trade relationships, offering valuable insights for policymakers seeking to enhance trade competitiveness and navigate the complexities of the global trade landscape.

II. LITERATURE REVIEW

The gravity model of international trade has been extensively used to analyze the impact of various factors on bilateral trade flows. Recent studies have incorporated political corruption, democracy, and common colonial links as independent variables to provide a more nuanced understanding of trade dynamics.

In the realm of democracy and trade, Decker and Lim (2009) [1] applied the gravity equation to a comprehensive dataset of bilateral trade spanning from 1948 to 1999, incorporating measures of democratic governance. Their findings indicate that democracy is positively related to trade flows, particularly after accounting for trade pair heterogeneity.The relationship between democracy and trade has been explored by Miaojie Yu [2], who augmented the gravity model with democracy indicators. The findings suggest that democratization can enhance product quality and lower trade costs, thereby fostering bilateral trade. However, democratization in the importing country might increase trade barriers, potentially reducing imports.

Several studies have examined the role of common colonial ties in shaping trade patterns using the gravity model. For instance, Rose (2000) [3] found that former colonies tend to trade more with their colonizers due to established cultural and institutional linkages. Similarly, Head, Mayer, and Ries (2010) [4] highlighted that colonial ties significantly boost trade, particularly when combined with shared

language and legal systems. These findings collectively emphasize the lasting impact of colonial relationships on global trade patterns.

Research on corruption and trade has shown mixed results. A study by Salvador Gil-Pareja (2019) [5] used three different measures of corruption in a gravity model framework, finding that corruption can both impede and facilitate trade. The "extortion effect" of corruption acts as a tax on trade, while the "evasion effect" can increase trade by allowing exporters to bypass formal tariff barriers, especially in low and middle-income countries. Another study highlighted that corrupt customs officials can either hinder trade through extortion or facilitate it by enabling evasion of tariffs [6].

This paper aims to examine whether these established findings on the influence of colonial ties, alongside other determinants, hold true in the context of India's bilateral trade patterns.

III. DATA AND METHODOLOGY

The gravity model of international trade is a widely used framework that explains bilateral trade flows between countries based on their economic sizes and distances. This model, analogous to Newton's law of gravitation, posits that trade between two countries is directly proportional to their economic masses (often measured by GDP) and inversely proportional to the distance between them.The basic gravity equation is given by:

$$T_{ij} = \beta_0 \cdot \frac{Y_i \cdot Y_j}{D_{ij}}$$

Where T_{ij} is the trade flow between countries i and j. Y_i and Y_j represent the economic sizes (often measured by GDP) of countries i and j. D_{ij} is the distance between countries i and j.

Recent theoretical developments have shown that gravity-like specifications can be derived from various trade models, including those involving monopolistic competition and differentiated goods [7]. The model's flexibility allows it to incorporate a range of variables beyond GDP and distance, such as cultural and political differences, making it a powerful tool for analyzing trade dynamics [8].

A. The Model

The gravity model employed in this paper is based on the gravity equation, where the logarithm of the volume of exports from India to other countries is stochastically determined by the economic sizes (measured by Gross Domestic Product) of the countries and the distance between them. The model is augmented to include several additional variables that may influence exports from India to other countries, beyond the natural logarithms of GDP and distance. These supplementary variables encompass a dummy variable and others that assess the

political state of the partner countries, providing a more comprehensive analysis of the factors affecting India's bilateral trade flows. This form is equipped to handle the multiplicative relationship better and makes the estimation more tractable. The augmented gravity equation used in the paper is as follows:

$$\log X_{ijt} = \beta_0 + \beta_1 \log Y_{it} + \beta_2 \log Y_{jt} + \beta_3 \log D_{ij} + \beta_4 \text{colonial\_link} + \beta_5 \text{EDI} + \beta_6 \text{PCI} + \epsilon_{ijt} \quad (1)$$

Where:

$i =$	1 (India),
$j =$	2,3,4.....,50 (partner country),
$t =$	1999,2000,...,2023
$\log X_{ijt}$	is the logarithm of the volume of exports from India to the partner country at time t,
β_0	is the intercept,
$\log Y_{it}$	is the logarithm of India's GDP at time t,
$\log Y_{jt}$	is the logarithm of the partner country's GDP at time t,
$\log D_{ij}$	is the logarithm of the distance between India and the partner country,
colonial_link	is a dummy variable for common colonial history between India and country j,
EDI	is the Electoral Democracy Index of the partner country,
PCI	is the Political Corruption Index of the partner country,
ϵ_{ijt}	is the error term.

The same regression equation is specified for the pooled OLS method.

B. Data Sources and Sample Selection

This study utilizes panel data for India's exports spanning from 1999 to 2023 to analyze the determinants of India's bilateral trade flows. Panel data helps to control for unobserved heterogeneity across countries and to exploit variations over time. The panel data used for the analysis is balanced and includes 49 countries[†], excluding India. The time period under consideration is of 25 years, from 1999 to 2023.

Balanced Panel: i=1, j= 49, T= 25, N=1225

Time Invariant Variables: Distance, Common Colonial History

[†]The list of countries chosen for analysis- Australia, Bahrain, Bangladesh, Belgium, Brazil, Canada, Chile, China, Egypt, France, Germany, Ghana, Guyana, Hong Kong, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Malaysia, Maldives, Mexico, Mongolia, Myanmar, Nepal, Netherlands, New Zealand, Nigeria, Oman, Pakistan, Poland, Qatar, Russian Federation, Saudi Arabia, Singapore, South Africa, Spain, Sri Lanka, Sweden, Thailand, Turkey, United Arab Emirates, United Kingdom, United States, Vietnam.

Table 1 below presents the summary statistics for the variables included in the regression analysis. It provides key descriptive measures such as the mean, standard deviation, minimum, and maximum values, offering insights into the distribution and range of each variable.

Table 1: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
Year	1,225	2,011.00	7.21	1,999	2,023
GDP of India (US dollar billion)	1,225	1,733.45	965.00	458.82	3,567.55
GDP of Country j (US dollar billion)	1,225	1,135.83	2,862.58	0.59	27,720.70
Distance (km)	1,225	6,023.90	4,071.55	683.37	16,936.54
Exports (US dollar million)	1,225	3,732.66	6,957.32	1.00	80,327.00
Colonial Link	1,225	0.37	0.48	0	1
Electoral Democracy Index	1,225	0.55	0.30	0.01	0.92
Political Democracy Index	1,225	0.39	0.31	0.004	0.95

The augmented gravity equation used models exports as the dependent variable, with several independent variables included. Provided below is an outline of these variables along with their respective data sources.

Nominal GDP: The economic size of a country, as represented in the gravity model, is measured using its Gross Domestic Product (GDP). For this study, GDP data has been sourced from the World Bank's Open Data platform[‡]. The World Bank provides nominal GDP figures in *current US dollars* for various countries, reflecting the total market value of goods and services produced within a country's borders at prevailing market prices.

Volume of Exports: For the purpose of analytical simplicity, this study considers gross exports from India to its partner countries. The export data is sourced from the IMF's Direction of Trade Statistics (DOTS)[§], which offers comprehensive trade flow information expressed in *US dollar millions*. Exports are reported on a free-on-board (FOB) basis, ensuring consistency and comparability across countries.

Distance between India and partner country: The geographical distance data used in this study is sourced from the CEPII database under the variable titled 'dist'.The CEPII's GeoDist database[¶] provides comprehensive geographical distance data between countries, which is available in *kilometers (km)*.This dataset provides bilateral distances between country pairs, measured in kilometers

[‡]https://data.worldbank.org/indicator

[§]https://data.imf.org/?sk=9D6028D4-F14A-464C-A2F2-59B2CD424B85

[¶]https://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele.asp

(km). The 'dist' variable represents the population-weighted great-circle distance between the largest cities of the respective countries, ensuring a more accurate reflection of economic proximity.

Common Colonial History: The colonial history data used in this study is sourced from the CEPII database[‖] under the variables 'col45' and 'colony', which capture different aspects of colonial relationships. The 'col45' variable is a dummy equal to 1 if two countries were in a colonial relationship post-1945, while the 'colony' variable is a dummy equal to 1 if two countries ever had a colonial link, regardless of the time period. In this study, the gravity model dummy is set to 1 if either 'col45' or 'colony' equals 1, and 0 otherwise. This ensures comprehensive coverage of historical ties. These ties are critical in the gravity model, as colonial relationships often shape trade patterns by reducing informational and institutional barriers between countries, even long after independence. These links can significantly enhance bilateral trade flows by fostering familiarity and thereby lowering trade barriers, improving diplomatic relations, and enhancing business networks.

Electoral Democracy Index: In addition to the cultural dummy variable, the augmented model includes variables that capture the political and democratic state of a country. One such variable is the Electoral Democracy Index The Electoral Democracy Index (EDI) from the V-Dem database[**]measures the quality of representative democracy within a country. It captures key elements such as free and fair elections, universal suffrage, freedom of association, freedom of expression, and the independence of media. The index combines two components: the multiplicative polyarchy index, which emphasizes the interaction between democratic features, and the additive polyarchy index, which weights individual democratic characteristics like elected officials and comprehensive suffrage. *The EDI is scaled from 0 to 1*, with higher values indicating stronger democratic practices. Including this index in the gravity model is essential to assess how democratic governance in partner countries influences bilateral trade flows. Democracies often foster transparency, institutional stability, and trust, which are conducive to international trade.

Political Corruption Index: The Political Corruption Index (PCI) from V-Dem[††] measures the extent and pervasiveness of corruption across different branches of government within a country. It aggregates indicators for executive corruption (bribery and embezzlement), public sector corruption, legislative corruption, and judicial corruption into a single score ranging from *0 (least corrupt) to 1 (most corrupt)*. This comprehensive measure captures both grand corruption at higher levels of government and petty corruption within public institutions. Including PCI in the gravity model helps evaluate how corruption in partner countries affects trade flows. High levels of corruption can increase transaction

[‖] `https://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele.asp`

[**] `https://v-dem.net/data/the-v-dem-dataset/`

[††] `https://v-dem.net/data/the-v-dem-dataset/`

costs, reduce trust between trading partners, and create barriers to efficient trade processes, making this variable critical for understanding trade dynamics in diverse institutional contexts.

C. Preliminary Hypotheses

Based on the theoretical underpinnings of the gravity model and existing literature, the following hypotheses has been formulated regarding the determinants of India's bilateral exports:

Hypothesis 1: Both India's GDP and the GDP of the partner country are expected to have a positive effect on exports.

Hypothesis 2: Geographical distance will have a negative effect on exports.

Hypothesis 3: It is anticipated that common colonial links will have a positive effect on exports.

Hypothesis 4: It is expected that democracy, as measured by the Electoral Democracy Index, will have a positive effect on exports.

Hypothesis 5: It is hypothesized that political corruption, as measured by the Political Corruption Index, will have a negative effect on exports.

The aim of this paper is to test the aforementioned hypotheses and see whether they hold true in the Indian context.

IV. RESULTS

A. Pooled Ordinary Least Squares

The regression analysis as shown in Table 2 examines the determinants of bilateral exports between countries i and j, using a pooled ordinary least squares (OLS) model. The independent variables include the GDP of India, GDP of the partner country, the geographical distance between India and the partner country, whether they share a colonial link, and finally, the Electoral Democracy Index (EDI), and the Political Corruption Index (PCI) of the importing country. The model explains approximately 74.6 percent of the variation in bilateral exports indicating a strong fit for a cross-sectional trade model.The slope coefficients are significant at 1 percent level of significance as well.

Table 2: Regression Results of Pooled OLS

	Dependent variable:
	logX_ijt
logY_it	0.655^{***}
	(0.043)
logY_jt	0.781^{***}
	(0.017)
logD_ij	-0.469^{***}
	(0.049)
colonial_link	0.684^{***}
	(0.065)
EDI	-1.021^{***}
	(0.135)
PCI	-0.507^{***}
	(0.118)
Constant	-27.244^{***}
	(1.214)
Observations	1,225
R^2	0.746
Adjusted R^2	0.744
Residual Std. Error	0.945 (df = 1218)
F Statistic	594.799^{***} (df = 6; 1218)
Note:	*p<0.1; **p<0.05; ***p<0.01

The coefficients for India's GDP and the GDP of the partner countries are both positive and statistically significant, indicating that larger economies trade more due to higher production and consumption capacities. Specifically, a 1 percent increase in the GDP of India is associated with a 0.655 percent increase, on average, in bilateral exports, everything else remaining constant. A 1 percent increase in the importing country's GDP leads to an increase of 0.781 percent, on average, in exports from India, everything else remaining constant. These findings align with the hypothesis and the theoretical expectations from gravity models of trade.

Geographical distance, as expected, negatively affects trade flows. The coeffi-

cient for distance is -0.469, meaning that a 1 percent increase in distance between India and the partner country reduces bilateral exports by 0.469 percent, on an average. The coefficient is statistically significant at conventional levels as well. This result supports the notion that greater distances increase transportation costs and reduce trade. Furthermore, the coefficient of the dummy variable for common colonial links is positive and statistically significant at even the 1 percent level, indicating that countries with a colonial history shared with India experience significantly higher export volumes from India. This finding aligns with the hypothesis that historical ties can strengthen trade relationships, facilitated by shared language, institutional similarities, and cultural affinity.

However, the results also present some unexpected findings. The coefficient for EDI is negative and statistically significant, suggesting that higher levels of electoral democracy are associated with lower bilateral exports. A one-unit increase in EDI leads to a decrease in bilateral exports by approximately 64 percent. This contradicts conventional wisdom and the hypothesis that democracy promotes trade through better governance, transparency, or institutional quality. To investigate this anomaly further, a multicollinearity test is conducted in the subsequent analysis.

In contrast, the negative coefficient for PCI aligns with expectations. Higher corruption levels reduce trade by increasing transaction costs or distorting market incentives. A one-unit increase in PCI corresponds to a significant decrease in bilateral exports, approximately by 39.8 percent, supporting the notion that corruption hampers trade efficiency.

The model has an R^2= 0.746, indicating that approximately 74.6 percent of the variation in bilateral exports is explained by the independent variables.

The F-statistic confirms that the model as a whole is statistically significant at the 1 percent level.

B. Testing for Multicollinearity

The unexpected negative coefficient for the Electoral Democracy Index (EDI) in the regression model warrants further investigation. One potential concern is multicollinearity among the independent variables, which could lead to unstable or misleading coefficient estimates. Multicollinearity occurs when two or more predictor variables are highly correlated, potentially causing the model to incorrectly attribute the effects of one variable to another. To address this possibility, we are conducting a multicollinearity test using the Variance Inflation Factor (VIF). The VIF measures how much the variance of a regression coefficient is inflated due to multicollinearity. If the VIF values for any of the variables, including EDI, are high (typically above 5 or 10), it may indicate that multicollinearity is affecting the model's estimates. By identifying and addressing any multicollinearity issues, it can be better understood whether the negative EDI coefficient reflects a genuine relationship or is an artifact of model specification.

Table 3 presents the results of the multicollinearity test, specifically the Variance Inflation Factor (VIF) values for each variable in the model. All variables have VIF values below 5, which indicates no serious multicollinearity concerns. This suggests that the independent variables in the model are not excessively correlated with each other, and their individual effects on the dependent variable can be reliably interpreted.

Table 3: Multicollinearity Test Results

Variable	VIF
logY_it	1.104
logY_jt	1.634
logD_ij	1.756
colonial_link	1.366
EDI	2.237
PCI	1.890

1. Analysis of the Electoral Democracy Index

The VIF value is 2.237 for EDI, which is well below the common threshold of 5, confirming that the model does not suffer from problematic multicollinearity. The unexpected negative coefficient for the Electoral Democracy Index (EDI), despite no evidence of multicollinearity, suggests that the issue likely stems from other factors influencing the relationship between electoral democracy and trade.

One possible explanation is the presence of endogeneity, where unobserved factors simultaneously influence both democracy and trade outcomes. For instance, trade flows may be shaped by political factors such as lobbying, protectionist measures, or geopolitical alliances, which are not explicitly accounted for in the regression model. Moreover, omitted variables — such as sectoral trade composition, institutional capacity, or bureaucratic inefficiencies — could distort the true relationship between democracy and exports [9]. This bias may result in a misleading negative coefficient for EDI despite its theoretically positive impact.

Another possible explanation could be the democracy induced trade barriers. While democracies are often viewed as stable trade partners, certain democratic characteristics may inadvertently restrict trade. Democracies tend to adopt more stringent labor, environmental, and consumer protection regulations, which can increase production costs and reduce export competitiveness [10]. Additionally, democratic regimes are more accountable to public interests, potentially leading to protectionist trade policies designed to safeguard domestic industries [11]. These factors may explain the observed negative relationship.

Moreover, some studies suggest that democratic institutions may prioritize trade agreements or diplomatic ties with politically aligned nations, potentially

diverting trade away from other established partners. They may also introduce regulatory complexities, labor protections, or environmental standards that inadvertently raise trade barriers [12]. As a result, while democracy is often linked to improved governance, its impact on trade flows may vary depending on geopolitical factors, trade composition, and partner country profiles. The observed negative EDI coefficient may thus reflect these complexities, rather than contradicting established economic theories.

Lastly, there may be some country specific factors in the Indian context leading to this result, for instance India's extensive trade relationships with several non-democratic or less democratic countries. India maintains substantial trade ties with nations such as Russia, China, Saudi Arabia, the United Arab Emirates (UAE), and Vietnam, all of which rank lower on the democracy index. The inclusion of these countries in the sample may contribute to the observed anomaly. Many of these nations are major suppliers of essential resources such as oil and natural gas, or serve as important export markets for Indian products, including textiles, pharmaceuticals, and engineering goods. Consequently, they constitute a substantial share of India's total exports, potentially influencing the regression outcomes.

C. The Breusch-Pagan Test

Following the pooled OLS regression, it is essential to test for heteroskedasticity to ensure the reliability of the estimated coefficients. Heteroskedasticity occurs when the variance of the error terms is not constant across observations, potentially violating one of the key assumptions of the classical linear regression model. Since the dataset spans multiple countries over several years, variations in economic size, institutional quality, or trade volumes may introduce heteroskedasticity . Detecting and addressing it is hence crucial to improving the robustness of the regression results. Consequently, the Breusch-Pagan test is conducted to formally assess the presence of heteroskedasticity in the model.

Table 4 presents the results of the Breusch- Pagan test.

Table 4: Breusch-Pagan Test Results

	Statistic	p.value	df
BP	291.030	0	6

The test results indicate a significant presence of random effects in the model. The test statistic is 291.030, with a p-value of 0, suggesting that the null hypothesis of zero variance of the individual-specific error term is rejected at any conventional significance level. Since the null hypothesis implies that there are no significant random effects in the model, we can infer that there are significant differences

across entities countries that are not captured by the pooled OLS model.

1. Addressing Heteroskedasticity

To address the problem of heteroskedasticity, robust standard errors are employed to obtain corrected standard errors that are consistent in the presence of it. This adjustment ensures that the estimated coefficients remain unbiased while improving the reliability of statistical inference. The robust standard errors are subsequently reported in Table 5.

Table 5: Regression Results with Robust Standard Errors

	Dependent variable:
	logX_ijt
logY_it	0.655^{***}
	(0.042)
logY_jt	0.781^{***}
	(0.020)
logD_ij	-0.469^{***}
	(0.072)
colonial_link	0.684^{***}
	(0.071)
EDI	-1.021^{***}
	(0.158)
PCI	-0.507^{***}
	(0.118)
Constant	-27.244^{***}
	(1.187)
Observations	1,225
R^2	0.746
Adjusted R^2	0.744
Residual Std. Error	0.945 (df = 1218)
F Statistic	594.799^{***} (df = 6; 1218)
Note:	*p<0.1; **p<0.05; ***p<0.01

After applying robust standard errors to account for potential heteroskedasticity, all coefficients remained statistically significant, indicating that the relationships between the variables are robust to issues of non-constant variance. The coefficients themselves did not change, but the standard errors were adjusted to provide a more conservative estimate of their precision. Specifically, the positive effects of GDP (both $logX\_ij$ and $logY\_jt$, the negative effect of distance ($logD\_ij$), and the positive effects of colonial links and the negative effect of Political Corruption Index (PCI) and Electoral Democracy Index (EDI) on exports were all confirmed to be statistically significant at conventional levels. This robustness check enhances confidence in the validity of the findings.

V. CONCLUSION AND LIMITATIONS

This study examines the determinants of India's bilateral trade flows using a gravity model framework, incorporating economic, historical, and institutional factors. The analysis is conducted for 49 partner countries (countries with consistent export values for the period under study were chosen) and spans from 1999 to 2023, providing insights into how these factors influence trade dynamics over time. The analysis began with a pooled OLS regression, which revealed that most coefficients aligned with theoretical expectations. The coefficients for GDP of both India and its trading partners are positive and significant, reaffirming the core gravity model prediction that economic size plays a crucial role in driving trade flows. Larger economies inherently demand and supply more goods and services, fostering higher trade volumes.

Similarly, the coefficient for geographical distance is negative, which is consistent with the expectation that trade declines as the physical distance between trading partners increases due to higher transportation costs and logistical barriers.

The positive and statistically significant coefficient for the common colonial link dummy further supports the established view that historical ties can bolster trade. Former colonial relationships often result in shared institutions, legal systems, languages, and cultural affinities that reduce trade costs and facilitate smoother economic interactions. This result reflects India's stronger trade links with nations that share its colonial history.The negative and statistically significant coefficient for the Political Corruption Index (PCI) also indicates that higher corruption levels in partner countries are associated with lower exports.

However, the coefficient for the Electoral Democracy Index (EDI) was negative and statistically significant. This presents an intriguing departure from conventional expectations in trade theory. The gravity model framework typically predicts that improved democratic institutions enhance trade by fostering better governance, stronger property rights, and reduced corruption — all of which contribute to improved investor confidence and trade facilitation [13]. This could be attributed to India's substantial trade volumes with major non-democratic or less democratic economies such as China, Russia, and several Middle Eastern

nations, which are key trading partners despite scoring low on the democracy index. Moreover, trade relationships can be driven by economic pragmatism, where factors like resource dependency, geopolitical strategy, or market demand outweigh political regime characteristics. Moreover, trade relationships can be driven by economic pragmatism, where factors like resource dependency, geopolitical strategy, or market demand outweigh political regime characteristics.

To address potential issues arising from model misspecification, diagnostic tests were conducted. The results indicated no signs of multicollinearity, confirming that the independent variables were not excessively correlated. However, the presence of heteroskedasticity suggested that the error terms exhibited non-constant variance, which could bias standard errors and affect the reliability of significance tests. Consequently, robust standard errors were employed to ensure the reported results remain valid and robust.

While these findings contribute valuable insights, certain limitations should be acknowledged. The results must be interpreted with caution as India's trade patterns are influenced by several external factors not fully captured in the model. India's extensive network of Free Trade Agreements can lead to increased trade with countries irrespective of institutional factors such as colonial history, democracy, or corruption levels.

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