INFLATION OR EXCHANGE RATES? RETHINKING THE SOURCES OF TRADE VOLATILITY IN ASIA

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Abstract
This study investigates the macroeconomic determinants of trade volatility in twelve Asian economies from the period 2011 to 2024 using panel estimation techniques, including fixed effects, random effects, and two-way fixed effects models. The analysis explores how exchange rate volatility, inflation, trade openness, and economic growth influence trade stability across the region. The results indicate that inflation is the primary driver of trade volatility, emphasizing the importance of price stability in maintaining consistent trade performance, while exchange rate volatility shows limited statistical significance. Trade openness exerts a stabilizing effect, particularly in East and Southeast Asia, reflecting the moderating influence of regional and global value chain integration. Regional sub-sample estimations further reveal that economic growth intensifies trade volatility in South Asia but mitigates it in Southeast Asia. Overall, the findings underscore that sustained price stability and deeper structural integration are crucial for strengthening trade resilience in Asia, whereas exchange rate management alone provides limited stability benefits.
Keywords: Trade volatility, Inflation, Trade openness, Exchange rate volatility, Asia, Panel data

INTRODUCTION

Asia has undergone profound economic transformation, consolidating its position as a central hub of global production and trade since 1970's. Economies ranging from the industrialized exporters of East Asia to the rapidly expanding markets of South and Southeast Asia have become deeply integrated into international trade networks. At the same time, the period from 2009 to 2026 has been characterized by repeated external and internal disturbances, including shifts in global monetary conditions, large swings in commodity prices, and the unprecedented disruption caused by the COVID-19 pandemic. These developments have heightened uncertainty in international markets and raised concerns about the stability of trade flows. In this context, identifying the macroeconomic factors that influence trade performance and its volatility has become increasingly important for both policymakers and researchers (Ali & Rehman, 2015; Duval et al., 2021; Baldwin & Freeman, 2022; WTO, 2024).

Trade volatility, defined as fluctuations in trade flows over time, provides a useful lens through which broader macroeconomic stability can be assessed. Persistent volatility can weaken firms' investment incentives, complicate fiscal and monetary planning, and ultimately constrain long-term growth prospects (Ali & Audi, 2018; Miroudot, 2023; OECD, 2023). Traditional analyses have emphasized exchange rate volatility as the primary source of trade volatility, arguing that unpredictable currency movements increase transaction risk and discourage cross-border exchange. However, recent research suggests that this perspective may be incomplete, particularly for Asian economies. The increasing prevalence of dominant-currency invoicing, the use of financial hedging instruments, and the deepening of regional value chains appear to have reduced the sensitivity of trade to exchange rate fluctuations (Sajid & Ali, 2018; Gopinath et al., 2020; Berthou et al., 2022; Ito & Kawai, 2022).

At the same time, a growing body of literature highlights the importance of domestic macroeconomic conditions in shaping trade resilience. Inflation, economic growth, and trade openness influence firms' cost structures, competitiveness, and capacity to absorb external shocks. High and volatile inflation has been shown to distort price signals and increase uncertainty in international transactions (Ghosh et al., 2023), while sustained growth and

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greater openness can promote diversification and stabilize export performance through stronger participation in global and regional value chains (Arshad & Ali, 2016; Athukorala & Narayanan, 2021; Duval et al., 2021). These findings suggest that trade volatility may increasingly reflect internal macroeconomic instability rather than purely external exchange rate movements.

PROBLEM STATEMENT

Despite extensive research on the relationship between macroeconomic variables and trade, there remains limited consensus on how these relationships differ across Asian subregions. Much of the existing literature either treats Asia as a homogeneous entity or concentrates on large economies such as China and Japan, thereby overlooking the structural diversity of South and Southeast Asia. Differences in exchange rate regimes, inflation histories, degrees of trade openness, and growth trajectories imply that the sources of trade volatility are unlikely to be uniform across the region. As a result, important heterogeneity in trade responses to macroeconomic conditions remains insufficiently explored (UNESCAP, 2022; ADB, 2024).

Empirical evidence on the impact of exchange rate volatility on trade volumes is particularly mixed. While some studies report a negative relationship, suggesting that higher volatility suppresses trade, others find weak or statistically insignificant effects, pointing to firms' ability to hedge exchange rate risk or adjust invoicing practices (Berthou et al., 2022; Marc & Ali, 2023; Gopinath et al., 2020). This lack of consensus poses a practical policy dilemma. An exclusive focus on exchange rate stabilization may divert attention from other domestic sources of trade instability, such as persistent inflation or limited openness to international markets. Moreover, much of the earlier empirical work relies on data that predate the structural shifts associated with global supply-chain reorganization and the COVID-19 shock. Without re-examining these relationships using more recent data, regional groupings such as ASEAN and SAARC may face difficulties in designing policies capable of sustaining stable trade flows during periods of global stress. This study re-examines the macroeconomic determinants of trade volatility in selected Asian economies over the period 2011–2024, with particular emphasis on exchange rate volatility, inflation, trade openness, and economic growth. By adopting a panel data framework and conducting regional sub-sample analysis, the paper aims to provide a more nuanced understanding of how internal and external factors jointly shape trade stability across different parts of Asia.

RESEARCH OBJECTIVES

Against this backdrop, the present study examines the key factors that sustain trade volumes and reduce volatility across twelve major Asian economies: Bangladesh, China, India, Indonesia, Japan, Malaysia, Pakistan, Sri Lanka, the Philippines, Thailand, Viet Nam, and the Republic of Korea. The analysis focuses on the period 2011–2024, a time window that captures both pre-- and post-pandemic dynamics. The study is guided by two main objectives:

- To empirically assess how exchange rate volatility, inflation, trade openness, and GDP growth influence trade volatility in selected Asian economies.
- To break down the analysis into South Asia, East Asia, and Southeast Asia, in order to uncover region-specific patterns and identify which factors are most closely associated with trade stability in each bloc.

SIGNIFICANCE OF THE STUDY

This research adds to the existing literature by offering a more disaggregated and up-to-date examination of trade determinants in Asia during a period of heightened global uncertainty. Using data from 2011 to 2024 and constructing three-year rolling measures of volatility allows the study to capture both medium-term fluctuations and the effects of recent shocks on trade patterns. The focus on a broad set of Asian economies also helps move beyond the usual emphasis on a few large countries. The results have clear policy relevance. For example, if the findings show that trade openness consistently dampens volatility while exchange rate volatility plays only a minor role, this would suggest that policymakers should give greater priority to reducing trade barriers, diversifying markets, or improving logistics rather than concentrating solely on exchange rate management. Similarly, distinguishing between South, East, and Southeast Asia makes it possible to tailor recommendations: measures that stabilize trade in East Asia may not be as effective in South Asia or vice versa. In this way, the study can inform regional cooperation efforts and help governments design more targeted strategies to enhance economic resilience.

LITERATURE REVIEW

TRADE VOLATILITY AND MACROECONOMIC INSTABILITY

There is a substantial consensus in economic literature connecting trade volatility directly to macroeconomic instability, with a particular focus on the roles of inflation and output fluctuations. Inflation is increasingly viewed

not just as a price metric but as a barometer for policy credibility and the uncertainty surrounding price levels. Recent empirical studies consistently demonstrate that elevated inflation and its volatility tend to amplify the uncertainty faced by exporters and importers, resulting in erratic and irregular trade flows.

This study builds on NOEM (Obstfeld & Rogoff, 1995) and OCA theory (Mundell, 1961), where nominal shocks amplify trade volatility absent deep integration patterns confirmed in Asian subregional estimates.

For instance, Aisen and Veiga (2021) illustrate that inflation volatility acts as a significant brake on trade volumes, notably increasing export instability within emerging markets. Similarly, Ghosh et al. (2023) observe that persistent shocks to inflation disrupt the delicate machinery of production planning and contract enforcement, thereby driving up trade variability. These insights are especially pertinent for developing Asian economies, where inflationary pressures are frequently rooted in supply-side bottlenecks and volatile energy prices.

Furthermore, the credibility of macroeconomic policy itself has emerged as a cornerstone of trade stability. Countries that maintain robust monetary frameworks generally experience fewer trade fluctuations because firms operate with greater certainty regarding their future costs and revenues (IMF, 2023). This body of literature suggests that inflation functions on two levels: as a direct price variable and as a vital signal of institutional and policy stability.

EXCHANGE RATE VOLATILITY AND TRADE DYNAMICS

The relationship between exchange rate volatility and trade performance has been a subject of long-standing debate. While traditional economic models predict that uncertainty in exchange rates should discourage trade by heightening risk and hedging costs, the empirical evidence paints a more ambiguous picture.

Recent contributions have begun to challenge this conventional wisdom. Gopinath et al. (2020), for example, highlight how the dominance of vehicle currencies—particularly the US dollar—dilutes the sensitivity of trade flows to bilateral exchange rate movements. Building on this, Berthou et al. (2022) argue that the modern firm's arsenal of financial hedging instruments significantly reduces exposure to currency risk, effectively muting the potential trade impact of exchange rate volatility.

Within the specific context of Asia, Ito and Kawai (2022) find that managed exchange rate regimes and frequent foreign exchange interventions have been effective in stabilizing effective exchange rates, limiting their disruptive influence on trade volatility. Likewise, Kim and Park (2022) report that deep participation in regional production networks helps offset the negative effects of currency fluctuations. These relationships are increasingly anchored in long-term contracts rather than reactive spot prices. Collectively, this recent scholarship suggests that exchange rate volatility may no longer be the primary driver of trade instability, especially in regions defined by dense supply-chain integration.

TRADE OPENNESS AND INTEGRATION EFFECTS

The impact of trade openness is often viewed through a dual lens: as a potential source of vulnerability or as a stabilizing mechanism. Earlier studies tended to argue that openness exposes economies to external shocks, thereby increasing volatility. However, the prevailing academic tone has shifted toward emphasizing the stabilizing powers of diversification and integration.

Bems and Johnson (2022) demonstrate that economies deeply embedded in global value chains tend to experience smaller trade contractions during global crises, benefiting from a network-based ability to absorb shocks. Duval et al. (2021) further find that export diversification and regional integration work to reduce the volatility of export revenues by effectively spreading risk across a broader portfolio of markets and products.

This trend is clearly visible in Asia. Athukorala and Narayanan (2021) document that ASEAN economies boasting higher degrees of openness and deeper value-chain participation exhibit markedly more stable trade patterns over time. Similarly, the OECD (2023) reports that when openness is paired with industrial upgrading, it reduces the sensitivity of trade to global downturns. These findings imply that openness is not inherently destabilizing; rather, its effect depends heavily on the underlying structure of trade and the degree of integration into production networks.

ECONOMIC GROWTH AND TRADE VOLATILITY

The interaction between economic growth and trade volatility has historically received less attention in comparative studies, yet the relationship is complex. Growth can potentially increase trade volatility if it is driven by import-intensive expansion or commodity booms. Conversely, growth that is supported by sustained industrialization may actually stabilize trade by expanding production capacity and alleviating supply constraints.

McMillan et al. (2021) argue that in low-industrialized economies, growth often leads to temporary trade imbalances and volatility as the economy undergoes the painful pressures of structural transformation. In contrast, Rodrik (2023) emphasizes that manufacturing-led growth tends to stabilize export performance by fostering scale economies and facilitating technological learning.

Empirical evidence from developing Asia suggests that the effect of growth on trade volatility is contingent on the level of development. For example, UNESCAP (2022) finds that South Asian economies tend to experience stronger trade fluctuations during growth phases compared to their East Asian counterparts. This discrepancy reflects weaker export diversification and infrastructure constraints in the South Asian region.

REGIONAL HETEROGENEITY IN ASIA

Treating Asia as a monolithic economic bloc would be a mistake; recent studies increasingly stress the importance of regional differentiation. The continent is a mosaic: East Asia is characterized by vertically integrated production networks, Southeast Asia by export-oriented industrialization, and South Asia by relatively lower levels of trade integration.

Miroudot (2023) highlights that while participation in global supply chains significantly reduces trade volatility in East and Southeast Asia, this effect is limited in South Asia due to weaker backward and forward linkages. Baldwin and Freeman (2022) add that regional production networks enhance trade resilience not by suppressing trade, but by allowing for the rapid reallocation of production during shocks.

Furthermore, the Asian Development Bank (2024) reports that inflationary pressures have had uneven trade effects across the continent. East Asian exporters appear more sensitive to cost shocks, whereas South Asian exporters are more constrained by supply-side rigidities. These regional differences are critical, implying that a single aggregate model risks masking the specific dynamics at play in these subregions.

RESEARCH GAPS AND CONTRIBUTION

Despite the expanding literature on trade resilience and macroeconomic instability, three significant gaps remain that this study addresses.

First, most recent studies have focused predominantly on trade volumes or growth rates, rather than explicitly modeling trade volatility as the primary dependent variable. Second, the complex interaction between inflation, exchange rate volatility, and openness has rarely been examined within a unified empirical framework specifically for Asia. Third, there is a scarcity of studies that conduct rigorous subregional comparisons—between South Asia, East Asia, and Southeast Asia—using a consistent econometric methodology.

This study contributes to the academic discourse by filling these gaps. It offers a comparative panel analysis of major Asian economies over the period from 2011 to 2024, explicitly modeling trade volatility and allowing for regional heterogeneity through sub-sample estimation. By combining macroeconomic variables with measures of trade integration, this paper provides fresh evidence on the relative importance of price stability, openness, and growth in shaping the landscape of trade volatility in Asia.

METHODOLOGY

DATA AND SAMPLE SELECTION

This study utilizes an unbalanced panel dataset covering 12 Asian economies: Bangladesh, China, India, Indonesia, Japan, Malaysia, Pakistan, Sri Lanka, the Philippines, Thailand, Viet Nam, and the Republic of Korea. The sample spans from 2011 to 2024—a period chosen to capture recent shifts in Asia's trade dynamics while avoiding the structural disruptions and data limitations associated with earlier decades.

Most macroeconomic and trade-related variables are sourced from the World Bank's World Development Indicators (WDI). However, measures of trade and exchange rate volatility are constructed by the authors. The selected economies represent varied stages of development and degrees of integration within global trade networks, making it possible to compare patterns across South Asia, East Asia, and Southeast Asia.

Since data quality and consistency may vary across countries and years, the analysis relies on annual observations and applies uniform data transformations across all variables to ensure comparability.

VARIABLE DEFINITION AND CONSTRUCTION

Trade volatility serves as our key dependent variable here, tracking ups and downs in a country's overall trade volume exports plus imports through a three-year rolling standard deviation of the growth rates (Calderón & Kubota, 2017; Aizenman & Marion, 2023; Marc et al., 2023). This setup lets us zero in on those medium-run swings without getting thrown off by one-off blips or brief disruptions. The main explanatory variables include the following:

Exchange Rate Volatility (exrte_vol): The three-year rolling standard deviation of annual changes in the nominal exchange rate, used to represent sustained currency instability. Panda's (2015) used a rolling standard deviation for exchange rate volatility.

Inflation (inf): The year-over-year percentage change in the Consumer Price Index (CPI), reflecting domestic price stability and macroeconomic discipline. Year-on-year CPI change, capturing domestic price stability and overall macro discipline [World Bank, 2023; IMF, 2022]

Trade Openness (trd_gdp): The ratio of total trade to GDP, serving as an indicator of a country's exposure to global markets. Total trade as a share of GDP, gauging a country's global market exposure [UNCTAD, 2023; di Giovanni & Levchenko, 2008]

GDP Growth (gdp_grw): The annual real GDP growth rate, incorporated to control for the effect of domestic economic performance on trade behavior. Annual real GDP growth rate, added to account for how domestic economic performance shapes trade patterns [Calderón & Kubota, 2024]

By employing rolling measures of volatility, the study highlights persistent fluctuations instead of isolated disruptions, aligning the empirical approach with the broader concept of trade instability.

MODEL SPECIFICATION

To identify the main drivers of trade volatility, the following baseline panel model is estimated:

$$TV\_it = \alpha + \beta1\ EXVOL\_it + \beta2\ INF\_it + \beta3\ OPEN\_it + \beta4\ GROW\_it + \mu\_i + \lambda\_t + \varepsilon\_it$$

where TV_it denotes trade volatility for country i in year t; EXVOL_it represents exchange rate volatility; INF_it refers to inflation; OPEN_it denotes trade openness; GROW_it represents GDP growth; μ_i captures country-specific effects; λ_t accounts for time effects; and ε_it is the random error term.

This model structure incorporates both cross-country variation and time-specific influences, such as shifts in global financial conditions or shocks like pandemics that may simultaneously affect all economies.

ESTIMATION METHOD

The empirical estimation proceeds in several steps. Initially, the model is estimated using both fixed effects (FE) and random effects (RE) approaches. The fixed effects estimator controls for unobservable, time-invariant country attributes such as geography, historical trade orientation, and institutional quality. In contrast, the random effects model assumes that these country-specific factors are uncorrelated with the explanatory variables.

The Hausman test is employed to determine the more appropriate estimator. A failure to reject the null hypothesis implies that the random effects estimator is consistent and preferable for interpretation.

Subsequently, a two-way fixed effects model—including both country and time effects—is estimated to capture unobserved heterogeneity and time-specific shocks common across countries, such as fluctuations in global commodity prices or international financial turbulence.

ROBUSTNESS AND ERROR STRUCTURE

To ensure reliable inference, the study uses robust standard errors clustered at the country level. This adjustment allows for potential heteroskedasticity and serial correlation within countries over time. Additional estimates based on heteroskedasticity-consistent standard errors are also produced to check the stability of the results. The consistency of findings across alternative specifications reinforces the robustness of the analysis.

REGIONAL SUB-SAMPLE ANALYSIS

To explore regional differences, the dataset is divided into three subgroups:

South Asia: Bangladesh, India, Pakistan, Sri Lanka

East Asia: China, Japan, the Republic of Korea

Southeast Asia: Indonesia, Malaysia, Philippines, Thailand, Viet Nam

Separate two-way fixed effects models are estimated for each subregion, allowing coefficients to differ across groups. This approach helps identify region-specific dynamics shaped by variations in trade structures, policy environments, and integration into global value chains. Assessing the determinants of trade volatility across subregions provides valuable insights into the diverse economic contexts within Asia.

RESULTS AND DISCUSSION

Table 1 presents Fixed Effects (FE) and Random Effects (RE) estimates for trade volatility across Asian economies. Inflation stands out as consistently significant (positive coefficient, 1% level), linking price instability to erratic trade via heightened production/export pricing uncertainty—echoing Ghosh et al. (2023) and Kim & Park (2022) on weakened firm planning and adjustment costs. Exchange rate volatility remains insignificant in both, supporting Gopinath et al.'s (2020) dominant currency paradigm (major-currency invoicing mute's bilateral effects) and

Berthou et al.'s (2022) evidence on hedging insulation. Trade openness and GDP growth show insignificant positive coefficients: openness scales trade without stabilizing absent value chain depth (Duval et al., 2021; Miroudot, 2023), while growth ties hinge on structural/export diversification over cycles (McMillan et al., 2021).

Table 1: Baseline Panel Estimates (FE and RE)

Variables	Fixed Effects (FE)	Random Effects (RE)
Exchange Rate Volatility	-0.041	-0.008
	(0.189)	(0.170)
Inflation	0.005***	0.004***
	(0.002)	(0.002)
Trade Openness	0.0001	-0.0001
	(0.001)	(0.0001)
GDP Growth	-0.002	-0.002
	(0.002)	(0.002)
Constant	—	0.107***
		(0.017)
Observations	127	127
Adjusted R^2	0.007	0.124

Notes: Standard errors are reported in parentheses.
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 2: Hausman specification test results

Test Statistic	Value
Chi-square	0.8754
Degrees of Freedom	4
p-value	0.9281

Table 3: Two-Way Fixed Effects and Robust Fixed Effects Estimation Results (Dependent Variable: Trade Volatility)

Variables	Two-Way Fixed Effects	Clustered Robust Fixed Effects
Exchange Rate Volatility	0.2554**	-0.0415
	(0.1190)	(0.2807)
Inflation	0.00052	0.0049***
	(0.00114)	(0.0016)
Trade Openness	-0.00211***	0.00007
	(0.00056)	(0.00091)
GDP Growth	0.00002	-0.0021
	(0.00205)	(0.0021)
Fixed Effects	Country & Time	Country
Estimation Method	Two-Way FE	FE (Clustered)
Countries	12	12
Observations	127	127
R-squared	0.217	—
Adjusted R-squared	0.023	—
F-statistic / Wald	6.99	—
Prob > F	0.00005	—

Notes: Standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are clustered at the country level.

Table 2 Hausman specification test results (χ^2 = 0.8754, df = 4, p = 0.9281), failing to reject the null at 5% significance. This indicates no systematic difference between Fixed Effects and Random Effects estimators, implying uncorrelated unobserved country-specific effects with explanatory variables. Thus, the Random Effects model is preferred for its consistency and efficiency, exploiting both within- and between-country variation—as in recent panel studies on trade determinants (Duval et al., 2021; Miroudot, 2023; Ali et al., 2023).

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Table 3 reports two-way fixed effects (controlling country-time heterogeneity) and fixed effects with clustered robust standard errors (addressing heteroskedasticity/serial correlation). In the two-way FE model, exchange rate volatility is positive/significant, linking currency instability to trade fluctuations once time shocks are swept out; trade openness is negative/highly significant, supporting diversification via value chains as a stabilizer (Khalid & Sultan, 2019; Duval et al., 2021; Miroudot, 2023; Kumar et al., 2025). Clustered robust errors flip this: inflation alone remains positive/significant (1% level), robustly disrupting firm costs/pricing and amplifying trade volatility (Kumar & Kumar, 2020; Ghosh et al., 2023; Muhammad, 2023; Kim & Park, 2022), while exchange rate and openness effects vanish. GDP growth stays insignificant across both, implying cyclical output does not drive trade instability post-controls (McMillan et al., 2021; Iqbal & Nader, 2024). Robustness underscores inflation's primacy for trade resilience in Asia, prioritizing domestic price stability over external factors (Bashir & Rashid, 2019; Gopinath et al., 2020).

Table 4: Two-Way Fixed Effects Estimation for South Asia (Robust Standard Errors) (Dependent Variable: Trade Volatility)

Variables	Coefficient	Robust Std. Error	t-Statistic	p-Value
Exchange Rate Volatility	0.2362	(0.3920)	0.6026	0.5533
Inflation	0.00217	(0.00268)	0.8088	0.4277
Trade Openness	−0.00229**	(0.00088)	−2.6030	0.0166
GDP Growth	0.00827**	(0.00366)	2.2609	0.0345

Notes: Robust standard errors clustered at the country level are reported in parentheses. ** indicates significance at the 5 percent level.

Table 4 reveals that in South Asian economies, trade openness and GDP growth drive trade volatility under country-time fixed effects, while exchange rate volatility and inflation prove insignificant. Trade openness carries a negative/significant coefficient, indicating integration stabilizes flows via export diversification and value chain participation (UNCTAD, 2023; Miroudot, 2023). Conversely, positive/significant GDP growth signals procyclical volatility from import surges/export shifts during expansions (IMF, 2022; Calderón & Kubota, 2024; Chen & Yu, 2025). Exchange rate insignificance aligns with hedging/invoicing adjustments muting impacts (Imran et al., 2019; Gopinath et al., 2020; Duval et al., 2021). Thus, structural openness and growth dynamics outweigh price/exchange fluctuations for South Asian trade stability.

Table 5: Two-Way Fixed Effects Estimation for East Asia (Robust Standard Errors) (Dependent Variable: Trade Volatility)

Variables	Coefficient	Robust Std. Error	t-Statistic	p-Value
Exchange Rate Volatility	0.0481	(0.1344)	0.3580	0.7251
Inflation	0.00531**	(0.00239)	2.2203	0.0412
Trade Openness	−0.00250***	(0.00050)	−4.9562	0.0001
GDP Growth	−0.00211	(0.00673)	−0.3134	0.7580
Fixed Effects	Country & Time			

Notes: Robust standard errors clustered at the country level are reported in parentheses. *** and ** denote significance at the 1 percent and 5 percent levels, respectively.

Table 5 indicates that in East Asian economies, inflation and trade openness drive trade volatility under country-time fixed effects, with exchange rate volatility and GDP growth insignificant. Positive/significant inflation heightens trade fluctuations via production/export pricing uncertainty, echoing IMF (2022) and Aizenman & Marion (2023) on macro instability's toll. Negative/highly significant trade openness stabilizes via diversification and value chain absorption of shocks (UNCTAD, 2023; Miroudot, 2023). Exchange rate insignificance reflects invoicing/hedging reliance (Gopinath et al., 2020; Duval et al., 2021). Thus, integration and price stability outweigh exchange fluctuations for East Asian trade resilience.

Table 6 shows that in Southeast Asian economies, trade openness robustly drives trade volatility with a strong negative coefficient under country-time fixed effects; exchange rate volatility and inflation remain insignificant. This indicates deeper market integration stabilizes flows via export diversification and value chain participation, smoothing external shocks (UNCTAD, 2023; Miroudot, 2023). GDP growth exhibits a weakly negative effect (10% level), linking sustained expansion to reduced volatility through enhanced productive capacity over short-term surges (IMF, 2022; Calderón & Kubota, 2024). Exchange rate insignificance reflects hedging and dominant

currency pricing muting transmission (Gopinath et al., 2020; Duval et al., 2021). Overall, structural openness and growth outweigh nominal instability for Southeast Asian trade stability.

Table 6: Two-Way Fixed Effects Estimation for Southeast Asia (Robust Standard Errors) (Dependent Variable: Trade Volatility)

Variables	Coefficient	Robust Std. Error	t-Statistic	p-Value
Exchange Rate Volatility	0.1645	(0.2305)	0.7136	0.4801
Inflation	−0.00030	(0.00334)	−0.0892	0.9294
Trade Openness	−0.00206***	(0.00025)	−8.0979	< 0.001
GDP Growth	−0.00559*	(0.00282)	−1.9827	0.0551
Fixed Effects	Country & Time			

Notes: Robust standard errors clustered at the country level are reported in parentheses. *** and * denote significance at the 1 percent and 10 percent levels, respectively.

Table 7: Two-Way Fixed Effects Results by Region (Robust Standard Errors) (Dependent Variable: Trade Volatility; Robust SEs clustered by country; Country & Time Fixed Effects included)

Variables	South Asia	East Asia	Southeast Asia
Exchange Rate Volatility	0.236	0.048	0.164
	(0.392)	(0.134)	(0.231)
	[0.603]	[0.358]	[0.714]
Inflation	0.002	0.005**	−0.000
	(0.003)	(0.002)	(0.003)
	[0.809]	[2.220]	[−0.089]
Trade Openness	−0.002**	−0.002***	−0.002***
	(0.001)	(0.001)	(0.000)
	[−2.603]	[−4.956]	[−8.098]
GDP Growth	0.008**	−0.002	−0.006*
	(0.004)	(0.007)	(0.003)
	[2.261]	[−0.313]	[−1.983]
Country Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes

Notes: Robust standard errors in parentheses; t-statistics in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7 offers a comparative view of trade volatility determinants across Asian regions under country-time fixed effects. Exchange rate volatility proves insignificant everywhere, aligning with dominant currency pricing and hedging muting its trade effects (Gopinath et al., 2020; Duval et al., 2021). Inflation matters only in East Asia (positive/significant), stressing internal discipline there (IMF, 2022; Aizenman & Marion, 2023). Trade openness consistently stabilizes across South, East, and Southeast Asia via diversification and value chains (UNCTAD, 2023; Miroudot, 2023). GDP growth drives volatility solely in South Asia, tied to procyclical trade in less-diversified settings (Calderón & Kubota, 2024; World Bank, 2023). Thus, domestic factors like openness and price stability over external currency swings shape regional trade esilience, underscoring policy leverage.

CONCLUSION

In this research, we set out to uncover the underlying macroeconomic forces driving trade volatility across selected Asian economies from 2011 to 2024. By focusing specifically on exchange rate fluctuations, inflation, the degree of trade openness, and economic growth and by dissecting the data through regional sub-samples we have been able to provide fresh evidence on how domestic conditions and structural integration influence the stability of trade flows throughout the continent.

Our analysis reveals a clear hierarchy of factors. At the aggregate level, inflation stands out as the primary engine of trade volatility. This finding underscores a fundamental truth: sustaining predictable trade performance relies heavily on maintaining domestic price stability. On the flip side, and perhaps counter-intuitively, exchange rate volatility did not prove to be a statistically significant driver in most of our models or regional groupings. This suggests that the traditional view—centering exchange rate uncertainty as a major drag on trade stability may be losing its relevance in modern Asia. With managed exchange rate regimes, the prevalence of dominant-currency

pricing, and the widespread use of financial hedging, firms in the region seem effectively insulated from the risks of currency swings.

Another compelling takeaway is the role of trade openness. Rather than exposing economies to risk, openness consistently acted as a stabilizing force, particularly in East and Southeast Asia. It appears that deeper integration into regional and global value chains helps dampen fluctuations by diversifying markets and fortifying production networks. However, the impact of economic growth tells a more nuanced story. While growth tends to coincide with higher trade volatility in South Asia likely reflecting structural growing pains it contributes weakly to stability in Southeast Asia. This divergence highlights the vast differences in production capacity, export diversity, and institutional quality across the continent.

From a policy perspective, these insights offer clear direction. First and foremost, macroeconomic stability specifically keeping inflation low and predictable must be treated as a central pillar of trade resilience. Second, policies that encourage trade openness, such as improving logistics and facilitating entry into regional value chains, should be pursued as they help smooth out volatility rather than exacerbate it. Third, our data suggests that relying solely on exchange rate management is insufficient for ensuring stable trade outcomes; it must be paired with broader structural and institutional reforms.

This paper adds to the existing academic conversation by shifting the focus from trade volumes to trade volatility itself and by offering a comparative lens that views Asia not as a monolith, but as a collection of distinct economic regions. By blending panel estimation with subregional analysis, we demonstrate that the drivers of trade volatility are not uniform; they are deeply contingent on a country's specific economic structure and its level of integration. That said, we must acknowledge the limitations of this study. Our analysis is constrained by the use of annual data and a specific set of macroeconomic variables, which means we may not have fully captured the influence of financial development, institutional nuances, or sectoral makeup. Future research could build on this framework by incorporating firm-level data, exploring alternative volatility metrics, or testing for non-linear effects. There is also ample room to further investigate how global shocks such as pandemics or geopolitical strife—interact with these factors to shape Asian trade dynamics.

Ultimately, our findings point to one overarching conclusion: keeping trade flows stable in Asia requires a balanced policy mix that prioritizes price stability, fosters structural integration, and encourages economic diversification. As these economies continue to weave themselves deeper into the fabric of global trade, these factors will only become more critical in determining the resilience of their external sectors.s

POLICY IMPLICATIONS

The policy implications of these findings are clear. For Asian policymakers looking to stabilize trade flows, the focus should shift away from managing exchange rates and toward strengthening domestic fundamentals. Priority should be placed on maintaining strict inflation control to bolster monetary credibility. Furthermore, governments should continue to lower trade barriers and encourage participation in regional value chains, as openness clearly dampens volatility. Finally, for South Asia specifically, addressing structural rigidities and supply-side constraints could help ensure that GDP growth becomes a source of stability rather than a source of fluctuation.

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