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Does U.S. Trade Policy Uncertainty Change How Tariffs Affect Inflation and Currency in Asia?

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This study examines whether U.S. trade policy uncertainty (TPU) influences the impact of tariffs on inflation and exchange rates in Asian economies. Using a dynamic panel GMM framework, the baseline results show that tariffs do not have a robust direct effect on inflation or exchange rates once macroeconomic dynamics are accounted for. When U.S. TPU and its interaction with tariffs are included, the results indicate that tariffs and TPU raise inflation in the full sample, while the negative and significant interaction term suggests that higher uncertainty dampens tariff pass-through. This moderating effect appears sensitive to China's inclusion, as the interaction loses statistical significance when China is excluded. Overall, the findings highlight that U.S. trade policy uncertainty conditions the inflationary effects of tariffs, while exchange rates remain largely unresponsive to tariff and uncertainty shocks.

I. Introduction

Trade policy remains a key instrument shaping macroeconomic outcomes, especially in export-oriented and rapidly industrializing Asian economies. Among policy tools, tariffs are prominent, serving both as revenue sources and as mechanisms to protect domestic industries. Classical trade theory predicts that tariffs distort comparative advantage, raise domestic prices, and influence external balances, thereby affecting inflation and exchange rates over time (Auclert et al., 2025). Yet empirical evidence indicates that these effects are neither uniform nor constant but are contingent on the broader policy and economic environment (Bonk & Larkou, 2025; Caldara et al., 2020).

Asian economies provide a particularly instructive setting due to their deep integration into global value chains, heavy reliance on external trade, and substantial exposure to U.S. trade policies. The U.S.–China trade tensions of the late 2010s further amplified uncertainty regarding supply chains and market access, disproportionately affecting the region. Tariffs can raise production costs for firms dependent on imported inputs, generating cost-push inflation, while simultaneously influencing exchange rates through shifts in trade balances, capital flows, and expectations (Barattieri et al., 2018; Bergin & Corsetti, 2023). These mechanisms are likely intensified in Asia, given the region's sensitivity to external demand and policy shocks, underscoring the importance of examining how global trade pol-

icy and uncertainty interact to shape domestic macroeconomic outcomes.

An increasingly important dimension of the tariff–macroeconomy nexus is trade policy uncertainty, particularly uncertainty originating from the United States. As the world's largest economy and a dominant destination for Asian exports, U.S. trade policy decisions exert substantial influence on global trade flows, financial markets, and macroeconomic stability.

Episodes of heightened U.S. trade policy uncertainty, most notably during the escalation of tariff measures under the Trump administration beginning in 2018, generated uncertainty regarding market access, supply chain continuity, and future policy direction. Such uncertainty can affect inflation and exchange rates independently of actual tariff changes by shaping firms' pricing behavior, investment decisions, and exchange rate expectations (Caldara et al., 2020; Furceri et al., 2019).

Unlike broad measures of global uncertainty, U.S. trade policy uncertainty represents a targeted and externally driven shock for Asian economies. It captures uncertainty related specifically to tariff announcements, trade negotiations, and protectionist rhetoric originating from the United States, which may transmit to Asian economies through trade, financial, and expectations channels. As a result, the macroeconomic effects of tariffs may differ markedly depending on whether they occur in periods of low or high U.S. trade policy uncertainty. Ignoring this di-

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mension risks overstating or understating the true impact of tariffs on inflation and exchange rate dynamics.

Motivated by these considerations, this study examines whether U.S. trade policy uncertainty matters for the effects of tariffs on inflation and exchange rates in Asian economies. The analysis adopts a dynamic panel framework that explicitly accounts for persistence in macroeconomic variables and potential endogeneity concerns. Specifically, the study estimates baseline models that capture the direct effects of tariffs on inflation and exchange rates, and extended models that incorporate U.S. trade policy uncertainty to assess whether tariff effects are altered once uncertainty is taken into account. By comparing results across these specifications, the study evaluates whether U.S. trade policy uncertainty amplifies, dampens, or neutralizes the macroeconomic consequences of tariffs.

The remainder of the paper is structured as follows. Section II describes the data and empirical methodology. Section III presents and discusses the empirical results. Section IV concludes and highlights key policy implications.

II. Data and Methodology

A. Data

This study employs a balanced panel of selected Asian economies covering the period 1995–2024. The selected Asian economies in the sample are China, India, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, Thailand, and Vietnam. The choice of Asian economies is motivated by their strong integration into global trade networks and their substantial exposure to trade policy developments originating from the United States. Annual data are used throughout the analysis to ensure consistency across variables and countries. The key explanatory variable is the domestic tariff rate (DTR), measured as the applied weighted-average import tariff. Tariff data are obtained from the World Integrated Trade Solution (WITS) and the World Development Indicators (WDI). This measure captures changes in trade protection faced by domestic economies and reflects the intensity of tariff-based trade policy. The outcome variables are two core macroeconomic indicators: inflation and the exchange rate. Inflation (INFL) is measured as the annual percentage change in the consumer price index, while the exchange rate (EXR) is defined as local currency units per U.S. dollar. Both variables are sourced from the International Monetary Fund's International Financial Statistics (IFS). These indicators are chosen due to their central role in macroeconomic stability and their sensitivity to external trade and policy shocks. To account for monetary and real-sector influences, the model includes interest rates (INTR) and gross domestic product (GDP) as control variables. Interest rates capture domestic monetary policy conditions, while GDP controls for market size and overall economic activity. All continuous variables, except for rates already expressed in percentage terms, are transformed into natural logarithms to stabilize variance and facilitate elasticity-based interpretation.

A central variable of interest is U.S. trade policy uncertainty (U.S. TPU), which captures uncertainty related

specifically to trade policy actions, announcements, and negotiations originating from the United States. The index is used to represent changes in the uncertainty environment surrounding U.S. trade policy over time. Unlike global uncertainty indices, U.S. TPU represents a targeted external shock that is particularly relevant for Asian economies due to their export dependence on the U.S. market and their participation in U.S.-centered global value chains.

B. Empirical methodology

The empirical strategy adopts a dynamic panel data framework to examine whether U.S. trade policy uncertainty matters for the effects of tariffs on inflation and exchange rates in Asian economies. Dynamic modeling is essential given the strong persistence typically observed in both inflation and exchange rate series, as well as the potential endogeneity between tariffs, macroeconomic outcomes, and policy responses.

The baseline specification captures the direct effect of tariffs on macroeconomic outcomes without conditioning on trade policy uncertainty:

$$Z_{it} = \rho Z_{it-1} + \beta_1 DTR_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

where Z_{it} denotes either inflation or the exchange rate in country i at time t , DTR_{it} represents the domestic tariff rate, and X_{it} is a vector of control variables including interest rates (INTR) and GDP. The term μ_i captures unobserved country-specific effects, while λ_t denotes time effects common across countries. The coefficient β_1 measures the direct effect of tariffs on inflation and exchange rates in the absence of trade policy uncertainty.

To assess whether tariff effects depend on the prevailing level of U.S. trade policy uncertainty, the baseline model is extended to include U.S. TPU:

$$\begin{aligned} Z_{it} = & \rho Z_{it-1} + \beta_1 DTR_{it} + \beta_2 TPU_t^{US} \\ & + \beta_3 (DTR_{it} \times TPU_t^{US}) \\ & + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned} \quad (2)$$

In this specification, β_2 captures the direct effect of the U.S. trade policy uncertainty on macroeconomic outcomes, while β_3 measures whether the impact of tariffs on inflation and exchange rates is amplified or dampened during periods of heightened U.S. trade policy uncertainty. A statistically significant interaction term indicates that the macroeconomic consequences of tariffs are conditional on the uncertainty environment surrounding U.S. trade policy.

C. Estimation technique

The models are estimated using the two-step System Generalized Method of Moments (System GMM), where country-specific fixed effects are removed through first differencing. This estimator is well suited for panels characterized by a relatively small number of countries and a longer time dimension, as well as for highly persistent dependent variables. System GMM combines equations in first differences and in levels, improving efficiency and mitigating the weak-instrument problem commonly associated with difference GMM in persistent series. To ensure the validity of the instruments, the study reports standard diag-

nostic tests, including the Hansen test of over-identifying restrictions, the Sargan test, and tests for first- and second-order serial correlation in the differenced residuals. Difference GMM estimates are reported for comparison purposes, but the analysis primarily relies on system GMM due to its superior finite-sample performance. More importantly, identification relies on the assumption that U.S. trade policy uncertainty constitutes an exogenous external shock to Asian economies. Given that Asian countries do not directly influence U.S. trade policy, variations in U.S. TPU are plausibly exogenous with respect to domestic macroeconomic conditions in the sample economies. This allows for a clearer assessment of how tariffs interact with external uncertainty to shape inflation and exchange rate dynamics.

III. Results

A. Baseline effects of tariffs on inflation and exchange rates (without U.S. TPU)

[Table 1](#) reports the dynamic panel GMM estimates of the effect of DTR on inflation and exchange rates in Asian economies, excluding U.S. trade policy uncertainty. Results are presented using both two-step Difference GMM (DGMM2) and two-step System GMM (SGMM2) estimators. Across both DGMM2 and SGMM2 specifications, inflation and the exchange rate exhibit strong persistence, as indicated by the highly significant coefficient on the lagged dependent variable. However, the tariff variable (DTR) does not exert a statistically significant direct effect on either inflation or the exchange rate. Model diagnostics favor the SGMM2 specification. The Hansen test p-values indicate valid instruments, while AR(2) tests confirm the absence of second-order serial correlation. Although the Sargan test rejects the null, this result is common in system GMM settings with multiple instruments and is therefore interpreted cautiously. Overall, [Table 1](#) suggests that tariffs, in isolation, do not have a robust direct effect on inflation or exchange rates in Asian economies once dynamics are accounted for. Macroeconomic persistence dominates the adjustment process.

B. Tariffs, inflation, and exchange rates under U.S. trade policy uncertainty

[Table 2](#) extends the baseline model by incorporating U.S. TPU and its interaction with tariffs, with results based on System GMM for the full sample and a reduced sample excluding China. For the full sample, inflation exhibits strong persistence and responds positively and significantly to both tariffs and TPU, indicating that higher tariffs and uncertainty increase inflationary pressures. The interaction term is negative and significant, suggesting that the inflationary effect of tariffs weakens as uncertainty rises. However, when China is excluded, these effects, including the interaction term, lose statistical significance, implying that the moderating role of TPU is not robust across the region and is largely driven by China. In contrast, exchange rate models show no significant effects of tariffs, TPU, or their interaction across both samples, although persistence is ev-

ident in the reduced sample. Exchange rates remain insignificant, likely due to offsetting monetary policy, managed regimes, and dominant global financial forces.

IV. Conclusion

This study examines how U.S. TPU shapes tariff effects on inflation and exchange rates in Asian economies using dynamic panel GMM. Baseline results show strong persistence, while tariffs do not have a robust direct effect on either inflation or exchange rates once dynamic adjustment is accounted for. Including U.S. TPU reveals a positive, significant effect of tariffs and TPU on inflation in the full sample, suggesting that tariff and uncertainty shocks can raise inflationary pressures through supply-chain disruptions, precautionary pricing, and risk premia. The tariff-TPU interaction is negative and significant, indicating that higher uncertainty dampens tariff pass-through by delaying investment and pricing decisions and softening demand. Exchange rates remain largely unresponsive to trade shocks.

These results suggest that policymakers should focus on stabilizing inflation during periods of heightened trade uncertainty, for instance, through predictable trade policy and credible central bank communication, as tariff shocks alone may not affect exchange rates. Key limitations include the use of aggregate data, which may conceal sectoral and country-specific differences. Future research could explore sector-level data and compare periods of high and low TPU to generate richer insights.

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Table 1. Dynamic panel GMM estimates of the effect of tariffs on inflation and exchange rates in Asian economies (without U.S. trade policy uncertainty)

	Inflation Models		Exchange Rate Models	
	DGMM2	SGMM2	DGMM2	SGMM2
$INFL_{t-1}$	0.9240*** (0.0747)	0.9510*** (0.0142)		
EXR_{t-1}			0.3890* (0.2200)	0.8800*** (0.1110)
DTR_t	0.0009 (0.0072)	-0.0006 (0.0040)	-0.0231 (0.0454)	0.0790 (0.0648)
GDP_t	0.0784* (0.0469)	0.0075 (0.0058)	0.2140** (0.1070)	0.0471 (0.2070)
$INTR_t$	0.0649** (0.0323)	0.0273* (0.0155)	0.0204 (0.1130)	0.1260 (0.2110)
Hansen test	4.419	8.257	7.289	6.196
Hansen Prob	0.352	0.143	0.121	0.288
Sargan_test	13.740	70.990	28.790	30.100
Sargan Prob	0.008	0.000	8.62e-06	1.41e-05
AR(1) test	-1.412	-1.589	-1.019	-1.138
AR(1) P-value	0.158	0.112	0.308	0.255
AR(2) test	-1.271	-1.268	-1.157	-1.820
AR(2) P-value	0.204	0.205	0.247	0.068
No. of Instruments	8	10	8	10
Number of Country	10	10	10	10
Number of Observations	300	300	300	300

Note: DGMM & SGMM denote two-step Diff-GMM and Sys-GMM methods, respectively. The values in parentheses are standard errors. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels, respectively.

Table 2. System GMM estimates of the effect of tariffs on inflation and exchange rates with U.S. trade policy uncertainty

	Asian Economies		Asian Economies less China	
	Inflation Model	Exchange Rate Model	Inflation Model	Exchange Rate Model
$INFL_{t-1}$	0.7450*** (0.1300)		0.5760 (0.4590)	
EXR_{t-1}		0.6500 (0.4740)		0.8250** (0.2760)
DTR_t	0.2910*** (0.0878)	2.5860 (3.4430)	-0.065 (0.063)	-0.0250 (0.3330)
TPU_t	0.0572 (0.0785)	0.6110 (0.8990)	-0.0140 (0.0130)	-0.0480 (0.1270)
$DTR_t * TPU_t$	-0.0736*** (0.0213)	-0.5640 (0.7700)	0.0170 (0.0130)	-0.0020 (0.1070)
GDP_t	0.0153 (0.0101)	0.1420 (0.606)	0.4640 (0.4380)	0.1960 (0.5070)
$INTR_t$	0.0180 (0.0286)	0.2870 (0.7010)	0.1020 (0.0680)	0.3410 (0.7180)
Hansen test	4.828	4.864	3.480	6.620
Hansen Prob	0.185	0.182	1.000	1.000
Sargan test	0.897	3.898	2.138	92.350
Sargan Prob	0.826	0.273	0.070	0.204
AR(1) test	-1.835	-1.275	-1.020	-1.070
AR(1) P-value	0.0665	0.202	0.308	0.286
AR(2) test	-1.120	-0.577	-1.200	-0.540
AR(2) P-value	0.263	0.564	0.231	0.589
No. of Instruments	9	10	8	8
Number of Country	10	10	9	9
Number of Observations	300	300	255	255

Note: The values in parentheses are standard errors. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels, respectively.



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