LISSA ANDREA F. DE MESA

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September 6, 2026

Selection Committee
Workshop on Development Economics and Networks for Early-Career Researchers
National Bureau of Economic Research
Cambridge, MA

Dear Selection Committee,

I am writing to apply to the NBER Workshop on Development Economics and Networks for Early-Career Researchers. I am a dissertation-writing Ph.D. candidate in Economics at Texas Tech University and expect to complete my degree in May 2027. My research lies at the intersection of international macroeconomics and development economics, with a particular focus on how policy and financial uncertainty originating in the United States is transmitted to emerging markets.

For presentation consideration, I am submitting my paper, *Uncertainty Beyond Borders: Spillover Effects of U.S. Uncertainty in Emerging Economies*. The paper studies how a common U.S. uncertainty shock is transmitted across five Latin American and five Asian economies. Using a panel vector autoregression and country-specific shift-share measures based on predetermined trade and financial exposure, I examine why economies facing the same external disturbance experience different macroeconomic responses. The results point to an important role for trade structure, financial exposure, energy dependence, and monetary policy in shaping the ability of emerging economies to absorb global shocks.

The workshop is particularly relevant to the next stage of this research. My current framework captures differences in countries' direct exposure to the United States, but external shocks may also propagate indirectly through trade, production, and financial relationships among economies themselves. I am therefore interested in how empirical network methods can help characterize these broader connections and distinguish direct from indirect channels of transmission. Learning from researchers working at the frontier of networks and development would help me develop this aspect of the paper and, more broadly, strengthen my research on the sources of emerging-market vulnerability to global disturbances.

I would also value the opportunity to receive feedback on the paper and exchange ideas with other early-career researchers studying how economic linkages shape outcomes in developing and emerging economies. Enclosed with my application are my CV, research motivation statement, and working paper for presentation consideration. Should I be shortlisted for participation, my dissertation chair, Dr. Xiaohan Ma, can provide a letter of recommendation. His contact information is provided below:

Dr. Xiaohan Ma
Associate Professor and Director of Graduate Studies
Department of Economics, Texas Tech University
Email: Xiaohan.Ma@ttu.edu | Phone: +1 806 834 8373

Thank you for considering my application. I would be grateful for the opportunity to participate in the workshop and contribute to its discussions.

Sincerely,



Lissa Andrea F. De Mesa
Ph.D. Candidate in Economics
Texas Tech University

LISSA ANDREA F. DE MESA

Department of Economics, Texas Tech University

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EDUCATION

Texas Tech University expected graduation: Spring 2027
Ph.D. in Economics
Major in Applied Macroeconomics - International Economics
Master of Arts in Economics Fall 2022 - Fall 2025

University of the Philippines Los Baños August 2018 - May 2022
BS Economics, Development Economics
Thesis Topic: Cashless Payments and Economic Growth: Evidence from Selected ASEAN Countries
Honors: Magna Cum Laude, nominated for Best Thesis Award 2022

PH.D. COURSEWORK

2025–2026: Environmental Economics
2024–2025: Microeconomics III, Econometrics III, Monetary Economics, Energy Economics, Labor Economics I
2023–2024: Mathematical Economics I, Empirical Studies in Macroeconomics, Advanced Microeconomics, Macroeconomics III, Econometrics II, Consumption and Investment
2022–2023: Macroeconomic Theory & Policy, Microeconomic Analysis, Econometrics I, Mathematical Economics II, History of Economics

RESEARCH

Working Papers

- **U.S. Financial Uncertainty and Emerging-Market Vulnerability: Evidence from a Two-Country New Keynesian DSGE Model of Mexico**
  This paper examines the transmission of U.S. financial uncertainty to Mexico, modeled as a small open emerging economy. To analyze these spillovers, it develops a non-linear two-country New Keynesian DSGE model with an endogenous sovereign risk premium and evaluates its implications against empirical Structural Vector Autoregression (SVAR) evidence. The empirical results show that a U.S. financial uncertainty shock triggers a flight-to-safety episode characterized by equity price declines, currency depreciation, and a persistent contraction in economic activity. The DSGE model replicates these responses and identifies nominal rigidities, sovereign risk premia, and investment adjustment costs as key transmission mechanisms. Counterfactual exercises indicate that greater trade dependence amplifies the effects of foreign uncertainty through exchange-rate pass-through and imported inflation. The analysis also reveals a policy trade-off: while a more aggressive monetary response better stabilizes inflation and exchange-rate dynamics, it does so at the cost of tighter financial conditions, lower asset valuations, and weaker real activity. Overall, the findings highlight the joint role of financial frictions, trade exposure, and monetary policy in shaping emerging-market vulnerability to external financial shocks.
- **The Spillover Effects of U.S. Uncertainty in Latin America** (Under Review: Emerging Markets Review)
- **U.S. Uncertainty Shocks and Labor Market Outcomes: Gender, Ethnicity, and Educational Attainment**

- **Uncertainty Beyond Borders: Spillover Effects of U.S. Uncertainty in Emerging Economies**
- **Domestic and Cross-Border Effects of Trade Policy Uncertainty: Evidence from the United States and China** with Ali Mahmoud (Under Review: Open Economies Review)

Work in Progress
- **The Messi Effect: Pre and Post 2026 World Cup** with James Kemper and Murad Latifov

TEACHING

Instructor (Texas Tech University)
Principles of Economics: Microeconomics (large class, 100+ students) Fall 2025 - Fall 2026
Principles of Economics: Microeconomics and Macroeconomics Spring 2025

Teaching Assistant (Texas Tech University) 2023 - 2024
Microeconomics and ECO 2305: Principles of Economics
Introduction to Econometrics and Graduate Econometrics 1

LEADERSHIP & EXPERIENCE

Graduate Student Research Seminar Fall 2025 - Spring 2026
Co-organizer (inaugural)

- Organized seminars for graduate students to share ideas and present their papers

Isle Utilities, Asia-Pacific July 2021 - August 2021
Intern

- Assisted with the online content of the W-lab project in partnership with the Water Services Association of Australia
- Helped in the creation of the Hunter Water Digital Meter Horizon Scan for AU and UK

CONFERENCES

North Texas Economics Conference (NTxEC) November 2025
Working Paper: The Spillover Effects of U.S. Uncertainty in Latin America

ISA-South 2025 October 2025
Working Paper: The Spillover Effects of U.S. Uncertainty in Latin America

Midwest Macroeconomics Meeting 2023 Fall 2023

2022 Bangko Sentral ng Pilipinas Research Fair July 2022
Cashless Payments and Economic Growth: Evidence from Selected ASEAN Countries

AWARDS

Dr. Rashid B. Al-Hmoud Competitive Scholarship in Economics Fall 2023 - present
A $1 Million scholarship endowment: the Department of Economics, TTU

SKILLS

STATA • Matlab • Dynare • R • Python • GTAP • Microsoft Office • Google Workspace

LANGUAGES

English (native) • Filipino (native) • Spanish (B1 level) • French (beginner)

ELIGIBILITY

Civil Service Exemption for Honor Graduates (Philippines)

- Certificate of Eligibility with number 100104264186

REFERENCES

Dr. Xiaohan Ma (Dissertation Chair)
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Research Interests and Motivation for Attending the Workshop

Lissa Andrea De Mesa

My research in international macroeconomics examines how external uncertainty shocks are transmitted across emerging economies and why countries exposed to the same global disturbance can experience very different macroeconomic outcomes. I am particularly interested in how trade exposure, financial integration, production structure, sovereign risk, and domestic policy constraints shape these differences. Methodologically, my work combines structural vector autoregression (SVAR), panel vector autoregression (PVAR), and structural macroeconomic models. Motivated in part by growing up in the highly open economy of the Philippines, my broader research goal is to understand how global disturbances interact with domestic vulnerabilities and what makes developing economies more resilient to external shocks.

My current work, *Uncertainty Beyond Borders: Spillover Effects of U.S. Uncertainty in Emerging Economies*, studies the transmission of U.S. uncertainty shocks across five Latin American economies—Argentina, Brazil, Chile, Colombia, and Mexico—and five Asian economies—India, Indonesia, Malaysia, the Philippines, and Thailand. Using a PVAR together with country-specific shift-share measures based on predetermined trade and financial exposure, I examine why responses to the same external shock differ across countries and regions. The results point to important differences in trade structure, financial exposure, energy dependence, and monetary policy. Latin American economies generally exhibit greater vulnerability, while several Asian economies display more policy space to absorb common external disturbances.

Working on this project has made me increasingly interested in the limits of measuring international exposure primarily through bilateral relationships. Emerging economies are not connected only to the United States; they are embedded in broader systems of trade, production, and financial relationships. A shock originating in one country may therefore affect another economy directly, but it may also propagate indirectly through trading partners, production chains, financial relationships, or other interconnected markets. I see empirical network methods as a promising way to better characterize these indirect channels and to understand how the structure of economic relationships shapes the transmission and amplification of global shocks.

This is my primary motivation for attending the Workshop on Development Economics and Networks. I would like to develop a stronger understanding of empirical network methods and how they can be applied to questions of international shock transmission and emerging-market vulnerability. In particular, I am interested in learning how network approaches can distinguish direct from indirect exposure, identify important transmission channels, and characterize heterogeneity in countries' positions within international economic relationships. Feedback from researchers working at the frontier of networks and development would be especially valuable as I consider how to extend my current multi-country framework beyond bilateral exposure measures.

More broadly, my research agenda seeks to understand why some emerging economies are more resilient than others to global disturbances and what structural characteristics or policy choices can reduce vulnerability. I view this workshop as an opportunity not only to strengthen the methodological foundation of my current work, but also to develop new research questions at the intersection of international macroeconomics, development economics, and economic networks.

Uncertainty Beyond Borders: Spillover Effects of U.S. Uncertainty in Emerging Economies

Lissa Andrea De Mesa*

Abstract

This paper investigates the heterogeneous spillover effects of U.S. uncertainty shocks on emerging market economies using a Panel Vector Autoregression (PVAR). While U.S. uncertainty triggers a synchronized contraction across all emerging markets, the transmission mechanism varies critically by region. Latin American economies exhibit structural vulnerability, characterized by a procyclical "fear of floating" monetary response to defend against exchange rate pass-through. This sensitivity is amplified by deep vertical integration with U.S. trade, making the region uniquely sensitive to cross-border supply chain disruptions. In contrast, Asian economies display relative resilience, supported by countercyclical policy space and the positive supply shock derived from net energy imports. These findings suggest that structural idiosyncrasies, specifically trade composition and monetary credibility, are the dominant determinants of cross-border spillovers.

JEL Classification: E32, F41, F42, Q43

Keywords: Uncertainty Shocks, International Spillovers, Latin America, Asia, Panel VAR.

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1 Introduction

The global economy has become increasingly interconnected, yet the sources of volatility remain disproportionately concentrated in major advanced economies, particularly the United States. Since the Global Financial Crisis of 2008 and the subsequent eras of trade tensions and pandemic-induced instability, the transmission of U.S. shocks to the rest of the world has been an interest in international macroeconomics. Among these shocks, "uncertainty," which is defined as the inability of economic agents to predict the future probability distribution of events, has emerged as a distinct and potent driver of business cycles (Bloom, 2009). While the theoretical mechanisms of uncertainty are well-documented for advanced economies, there remains a critical need to understand how distinct types of U.S. uncertainty, specifically Economic Policy Uncertainty (EPU) and Financial Uncertainty (UF), transmit heterogeneously across emerging market economies (EMEs), known to be more vulnerable in times of crises.

The literature suggests two primary channels through which U.S. uncertainty affects emerging markets. First, the "real options" channel, associated with EPU, suggests that heightened policy uncertainty induces firms to adopt a "wait-and-see" approach, delaying investment and hiring, which contracts trade and global demand (Baker et al., 2016; Gulen and Ion, 2016). Second, the "financial channel," associated with financial market uncertainty, often proxied by the VIX, triggers rapid shifts in global risk aversion. This creates a "Global Financial Cycle" where shocks in the U.S. drive capital flows, credit growth, and asset prices in the domestic macroeconomic conditions of emerging markets (Rey, 2015). While these mechanisms are often studied in isolation or largely focused on aggregate emerging market groups, few studies empirically disentangle how these two distinct shocks interact with the structural idiosyncrasies of specific regions.

This paper addresses this gap by examining the spillover effects of U.S. uncertainty shocks on ten major emerging economies, specifically analyzing the heterogeneity between Asia: India, Indonesia, Malaysia, Philippines, Thailand; and Latin America: Argentina, Brazil, Chile, Colombia, Mexico [1]. Unlike traditional approaches that assume a uniform external shock, this study con-

[1]This classification is from the World Economic Outlook Database: Groups and Aggregates Information (IMF).

structs country-specific uncertainty measures by interacting aggregate U.S. uncertainty series with time-invariant bilateral trade and financial exposure weights. By employing a Panel Vector Autoregression (PVAR) model with a First Difference (FD) transformation to control for unobserved heterogeneity, this paper provides an analysis of how U.S. shocks transmit through specific trade and financial linkages.

The empirical analysis yields four main contributions. First, unlike existing literature that relies predominantly on the VIX or VXO indices, which inherently capture broad, global risk aversion and synchronize with the global financial cycle (Carrière-Swallow and Céspedes, 2013; Bhattarai et al., 2020), this paper explicitly isolates U.S.-originated uncertainty. By utilizing structural shocks derived from U.S. Economic Policy Uncertainty (EPU) and Financial Uncertainty (UF), this study identifies the directional spillover of U.S. uncertainty shocks rather than a generalized global panic. Second, it confirms that this U.S. uncertainty is a systemic shock that triggers synchronized contractions across emerging markets. EPU and UF shocks lead to immediate declines in the stock markets, depreciation of the exchange rate, and contractions in industrial production. Third, and most notably, the results reveal a stark "regional divergence" in policy responses. Asian economies demonstrate relative resilience, utilizing countercyclical monetary policy and benefiting from supply-side buffers. In contrast, Latin American economies exhibit a "fear of floating" response (Calvo and Reinhart, 2002); constrained by high exchange rate pass-through and unanchored inflation expectations, central banks in this region are forced to hike interest rates procyclically to defend their currencies, thereby exacerbating the output contraction.

Fourth, the paper emphasizes distinct transmission mechanisms driven by regional integration structures. In Latin America, the results point to deep vertical integration with U.S. supply chains (e.g., Maquiladoras), where trade cycles are mechanically tied to U.S. inputs. Conversely, the Asian sample displays a unique buffering mechanism where financial shocks, which depress global commodity prices, act as a positive supply shock for energy-importing nations. These findings suggest that vulnerability to U.S. uncertainty is not merely a function of exposure magnitude, but is fundamentally shaped by the structural and institutional frameworks of the recipient region.

The remainder of this paper is organized as follows. Section 2 outlines the related literature. Section 3 details the data, the construction of the weighted uncertainty shocks, and the Panel VAR methodology. Section 4 presents the empirical results, discussing the aggregate effects on emerging economies and the comparative analysis of the Asian and Latin American sub-regions. Finally, Section 5 concludes with policy implications.

2 Review of Related Literature

The analysis of uncertainty shocks has evolved significantly since the seminal work of Bloom (2009), which established that increased uncertainty generates sharp, although temporary, contractions in output and employment within the United States. While early literature focused primarily on domestic transmission[2], a strand of literature has pivoted to examining the cross-border spillovers of U.S. uncertainty, particularly its heterogeneous impact on emerging markets (EMEs). This section reviews the theoretical and empirical foundations of these spillovers, categorizing the literature into three distinct streams: the global transmission of U.S. shocks, the structural vulnerability of emerging markets, and the regional heterogeneity between Asia and Latin America.

There is a broad consensus that U.S. uncertainty acts as a systemic driver of the global business cycle. Kamber et al. (2016) and Choi and Shim (2019) document that U.S. policy and financial uncertainty are highly correlated with global economic fluctuations, often leading domestic business cycles in emerging market economies. In the context of financial transmission, Rey (2015) argues that U.S. monetary and financial conditions set the tone for global liquidity, creating a potent "Global Financial Cycle" that renders domestic monetary policy in EMEs ineffective unless accompanied by capital controls. Bhattarai et al. (2020) provide empirical support for this, finding that U.S. uncertainty shocks transmit forcefully to EMEs through a "flight to safety" channel, where shifts in U.S. risk appetite trigger synchronized capital outflows and asset price corrections. Similarly, Kalemli-Ozcan (2019) demonstrates that these spillovers are transmitted via risk premia,

[2]See, for instance, Leduc and Liu (2016) with consumers' perceived uncertainty and characterize uncertainty shocks as aggregate demand shocks that raise unemployment and lower inflation; Basu and Bundick (2017) using VXO index, who demonstrate that there is contraction in output by increasing the precautionary savings of households; and Bachmann et al. (2013), who utilize business survey data to show that uncertainty dampens domestic production activity.

forcing EME central banks to respond to U.S. conditions rather than domestic fundamentals.

Transmission to emerging markets may operate in trade and financial channels. The trade channel, emphasized by Novy and Taylor (2020), posits that uncertainty acts as a tax on investment, causing U.S. firms to cut back on orders for intermediate inputs. This mechanism is particularly potent for economies deeply integrated into Global Value Chains (GVCs)[3], as disruptions in the U.S. ripple through upstream suppliers. Crucially, Bruno and Shin (2017) argue that this trade collapse is often amplified by the financial channel, where the tightening of dollar liquidity restricts the working capital required to sustain these cross-border supply chains. Alternatively, the financial channel is often cited as the main driver of volatility in EMEs. Carrière-Swallow and Céspedes (2013) find that uncertainty shocks induce a more severe and persistent drop in investment and private consumption in emerging markets compared to advanced economies. They attribute this asymmetric response to financial frictions that restrict firm access to external financing during periods of global stress. This vulnerability is exacerbated by the "original sin" phenomenon, which is the inability of EMEs to borrow abroad in their own currency, amplifying the shock through balance sheet effects when the local currency depreciates (Eichengreen et al., 2005).

A critical gap in the literature, which this paper addresses, is the distinct structural response of Asian versus Latin American economies. This heterogeneity is frequently analyzed through the lens of differing industrialization strategies: the export-oriented manufacturing networks of Asia , often termed "Factory Asia" (Baldwin, 2008; Athukorala, 2011), versus the commodity-dependent export structures prevalent in Latin America (Jenkins, 2012)[4]. The Latin American region is often characterized by financial fragility and commodity dependence. Calvo et al. (2004) argue that the high degree of liability dollarization in Latin America necessitates a procyclical monetary policy response, "fear of floating," to defend the currency, often exacerbating real output

[3]Global Value Chain (GVC) refers to the international fragmentation of production, where intermediate inputs cross borders multiple times during the manufacturing process. EMEs often function as upstream suppliers of intermediate goods for final consumption in the United States. Moreover, a rise in U.S. uncertainty that delays final demand transmits rapidly up the chain, causing a magnified contraction in intermediate production in these supplier economies (Baldwin and Lopez-Gonzalez, 2015).

[4]"Factory Asia" denotes the vertical specialization of Asian economies as assembly hubs that import intermediate inputs to export finished manufactures such as electronics, automotive vehicles, and machinery. In contrast, Latin America is characterized by a heavy reliance on raw material exports, exposing them to global commodity price shocks.

losses. Furthermore, Fernández et al. (2017) highlight the role of commodity prices, noting that U.S. uncertainty often triggers a collapse in global commodity demand. This creates a "double whammy" for Latin American exporters, who suffer from both tighter financial conditions and deteriorating terms of trade.

In contrast, Asian economies are often viewed as more resilient to financial shocks due to their substantial current account surpluses and larger reserve buffers (Jeasakul et al., 2014). However, they remain highly sensitive to the trade channel. For instance, while Kilian (2009) establishes that lower oil prices can act as a positive supply shock for the U.S., Cashin et al. (2014) demonstrate that this benefit extends to other net energy importers, particularly in emerging Asia, where the decline in input costs helps buffer adverse external demand shocks. This literature provides the basis for the asymmetric responses observed in this study, where the manufacturing-heavy, net-energy-importing economies of Asia may experience a temporary buffering effect distinct from the financial distress observed in Latin America.

3 Data and Methodology

This section details the data used in the panel VAR model, comprising U.S. uncertainty shocks and macroeconomic, trade, and financial variables for ten emerging economies.

3.1 Data

The dataset consists of a balanced panel of monthly observations for ten major EMEs, from 2002M1 to 2023M12[5]. The sample is divided into two regional sub-panels to capture structural heterogeneity: five Latin American economies (Argentina, Brazil, Chile, Colombia, and Mexico) and five Asian economies (India, Indonesia, Malaysia, the Philippines, and Thailand). The data is sourced primarily from the CEIC, International Monetary Fund (IMF), and CEPALSTAT.

The exogenous uncertainty shocks are proxied by two distinct U.S.-based indices. First, to capture policy-related volatility, the Economic Policy Uncertainty (EPU) index developed by

[5]Detailed data descriptions are available on the Appendix section.

Baker et al. (2016), which is a news-based uncertainty index, is utilized. Second, to capture financial market volatility, the Financial Uncertainty (UF) index constructed by Jurado et al. (2015), which measures the implied volatility in financial markets, is employed. These indices are used to construct structural shocks[6], which are standardized to facilitate the interpretation of impulse responses.

3.2 Panel VAR of Ten Emerging Economies

Unlike the traditional Vector Auto Regression (VAR) approach, the econometric method in this paper employs a panel VAR structure to control for unobserved individual country heterogeneity. A panel VAR model can be expressed as follows:

$$Y_{it} = \sum_{j=1}^{p} A_j Y_{i,t-j} + BX_t + a_i + \varepsilon_{it} \tag{1}$$

where Y_{it} is a $K \times 1$ vector of endogenous variables for a panel data of countries $i = 1, ..., N$ and time $t = 1, ..., T$; X_t is the global price of the energy index; j is a number of lags and A_j is a $K \times K$ matrix in l; a_i is a $K \times 1$ vector of time-invariant country fixed effects representing permanent unobserved individual country heterogeneity that does not vary over time; $\varepsilon_{it} \sim (0, \sum i)$ is a $K \times 1$ vector of random error terms. The specification of the panel VAR in equation 1 poses an estimation challenge from dynamic interdependencies among variables and heterogeneity across cross-sectional units. In this framework, time-invariant country fixed effects capturing the heterogeneity across cross-sectional units may be correlated with the independent variables. Therefore, the application of ordinary least squares (OLS) is inappropriate, as dynamic panel models are subject to correlation with the unobserved terms (a_i within $a_i + \varepsilon_{it}$). This correlation renders OLS estimates inconsistent and biased, a concern first highlighted by Nickell (1981). In addition, due to the correlation between the fixed effects and the regressors, the standard mean-differencing of the data also causes biased coefficients (Holtz-Eakin et al., 1988).

Regarding this, either first difference or forward mean-difference, for instance, removal of only the mean of all future observations available for each country-year, which is referred to as

[6]The structural shocks are constructed using structural vector autoregressive (SVAR) models based on Baker et al. (2016) for EPU and Ludvigson et al. (2021) for UF.

Helmert procedure, Arellano and Bover (1995) can be considered. If country-specific fixed effects or unobserved individual country heterogeneity are correlated with the independent macroeconomic variables and their past behavior in the regression system, u_i needs to be removed by using first difference (FD) approach. FD using appropriate lagged instruments can help the panel VAR structure increase estimation consistency.

3.2.1 First Difference Transformation (FD)

We can solve the problem of unbiased estimation due to the existence of time-invariant unobserved fixed effects u_i by using FD transformation. Taking the first difference, we have:

$$\Delta Y_{it} = Y_{it} - Y_{i,t-1}, \qquad t = 2, \ldots, T \tag{2}$$

Applying this logic to the panel VAR, we have:

$$\Delta Y_{it} = \sum_{j=1}^{p} A_j \Delta Y_{i,t-j} + B\Delta X_t + \Delta\varepsilon_{it}, \qquad t = p+1, \ldots, T \tag{3}$$

where $\Delta\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{i,t-1}$. The FD transformation removed time-invariant unobserved fixed effects u_i, which was the source of unbiased estimation. The lagged original variables are used as instruments in the regression system.

Given this transformation, the variables considered in the FD panel VAR system include the following: the $K \times 1$ vector of endogenous variables included in the system can be represented as Y_{it} consisting of the following with the specific ordering:

$$Y_{it} = \begin{bmatrix} u_{it} & smi_{it} & stir_{it} & reer_{it} & cpi_{it} & exports_{it} & exus_{it} & imports_{it} & imus_{it} & ip_{it} \end{bmatrix}' \tag{4}$$

where u_{it} is the uncertainty shock linked to each emerging economy, either the Economic Policy Uncertainty (EPU) or the financial uncertainty (UF) shocks. Other variables are: log of stock market index, short-term interest rate, log of real exchange rate, log of consumer price index, log of industrial production, log of exports to other trade partners, log of exports to the U.S., log of imports from other trade partners, and log of imports from the United States.

The recursive Cholesky ordering in this specification is guided by the foundational uncertainty frameworks of Jurado et al. (2015) and Baker et al. (2016), and the relative adjustment speeds of the endogenous variables. First, the U.S. uncertainty shock is ordered first, as U.S.-based uncertainty is identified as a primary, exogenous driver of macroeconomic fluctuations that subsequently depresses real activity and alters financial conditions (Basu and Bundick, 2017). Furthermore, under this model, U.S. uncertainty shocks affect domestic variables in emerging economies contemporaneously, but domestic economic conditions in these emerging markets cannot contemporaneously influence U.S. uncertainty. Second, the financial block: stock market index, short-term interest rate, and real exchange rate, is ordered immediately after the U.S. shock. These financial variables and asset prices are highly liquid, allowing them to react instantly to external uncertainty. Finally, the macroeconomic and trade variables: prices, trade flows, and industrial production, are ordered last. These are traditionally classified as "slow-moving" variables because real economic activity, price levels, and trade volumes face nominal rigidities and adjustment costs. Consequently, they respond to domestic financial shocks with a lag rather than contemporaneously within the same period (Christiano et al., 1999; Bloom, 2009). The vector of instruments, $Y_{i,t-j}$, include:

$$Y_{i,t-2} \ \ldots \ Y_{i,t-5} \qquad \text{for } \Delta Y_{i,t-j} \text{ for both the EPU and financial uncertainty shocks}^{7}$$

The model uses an FD transformation to eliminate unit-specific fixed effects. This may introduce serial correlation into the transformed error terms by construction. Hence, adopting further lags or deeper lags as instruments to diminish the problems due to serial correlation will be valid for FD approach using the lags of the regressors as instruments (Blundell and Bond, 1998).

3.2.2 Uncertainty Shocks

Relying solely on a time-varying U.S. uncertainty shock (u_t) poses an identification challenge, as it may inadvertently proxy for global uncertainty cycles or shocks from other major economies. Furthermore, a uniform shock assumes identical exposure across all ten emerging markets, ignoring heterogeneous linkages. To address this problem, a necessary cross-sectional variation

[7] The number of instrumental lags is based on the Hansen J-test, which estimates the validity of the instruments. The estimates for the Hansen J-test are shown in the Appendix.

is introduced. Country-specific U.S. uncertainty measures are constructed by interacting the aggregate U.S. series with bilateral weights where u_{i_t} is either US_{it}^{EPU} or US_{it}^{UF}:

$$US_{it}^{EPU} = w_i^{EPU} \times EPU_t^{US} \tag{5}$$

$$US_{it}^{UF} = w_i^{UF} \times UF_t^{US} \tag{6}$$

wherein w_i are the predetermined, time-invariant exposure weights between the U.S. economy and a specific emerging economy i calculated over the monthly pre-sample period:

$$w_i^{EPU} = \frac{\sum_{t=1996}^{2001}(Imports_{it}^{US} + Exports_{it}^{US})}{\sum_{t=1996}^{2001}(Total\,Imports_{it} + Total\,Exports_{it})} \tag{7}$$

$$w_i^{UF} = \frac{\sum_{t=1996}^{2001}(|Purchases_{it}^{US}| + |Sales_{it}^{US}|)}{\sum_{t=1996}^{2001}(Total\,Reserves_{it} - Gold_{it})} \tag{8}$$

To address endogeneity, country-specific uncertainty measures are constructed using the shift-share (Bartik) methodology of Goldsmith-Pinkham et al. (2020). A shift-share instrument is constructed by taking the inner product of two components: a set of local, pre-determined exposure weights, the "shares," and a set of aggregate, common changes, the "shifts." Applying this to the model, the "shifts" are the aggregate U.S. uncertainty shocks (EPU and UF) while the "shares" are the country-specific trade and financial exposure weights (w_i^{EPU} and w_i^{UF}) constructed using data from a pre-sample period of 1996M1 to 2001M12. Fixing these weights prior to the estimation period of the panel VAR (2002M1–2023M12) ensures that the measure of exposure is strictly predetermined and does not reflect endogenous adjustments in trade or financial flows that may occur in response to subsequent U.S. uncertainty shocks. Furthermore, by averaging these flows over this initial six-year window, short-term volatility and idiosyncratic country-specific anomalies are smoothed out, providing a robust measure of long-run structural integration.

It is worth noting that the pre-sample period utilized to construct the exposure weights coincides with significant episodes of financial distress, including the Asian Financial Crisis (1997) and localized volatility in Latin America. Specifically, the region suffered from systemic sudden stops and currency devaluations, most notably the Brazilian currency crisis of 1999 (Amann and

Table 1: Predetermined Exposure Weights (w_i) based on 1996M1–2001M12 Averages

Country	**Trade Weight** (w_i^{EPU})	**Financial Weight** (w_i^{UF})
Latin America		
Argentina	0.146	0.369
Brazil	0.222	0.300
Chile	0.176	0.098
Colombia	0.392	0.157
Mexico	0.798	0.243
Asia		
India	0.142	0.032
Indonesia	0.130	0.050
Malaysia	0.186	0.048
Philippines	0.250	0.096
Thailand	0.165	0.069

Note: Weights are calculated using the average flows from 1996M1–2001M12. w_i^{EPU} represents the share of total trade conducted with the U.S., while w_i^{UF} represents the ratio of gross U.S. financial flows to liquid foreign reserves.

Baer, 2000), the profound financial sector collapse in Colombia (Villar and Ricon, 2005), and the sovereign debt default in Argentina in 2001 (Mussa, 2002). Consequently, the calculated financial weights (w^{UF}) may reflect elevated gross capital flows and low reserve levels characteristic of crisis periods. Although this may arguably amplify the magnitude of the estimated transmission, it offers a distinct characteristic where it calibrates the model to reflect the "stress-state" connectivity of these markets. Since uncertainty shocks are theoretically most potent during periods of fragility, these weights provide a conservative upper-bound estimate of vulnerability, ensuring that the spillover risks are not understated by calibrating on a stable period of high liquidity.

4 Results and discussion

This section presents the empirical findings on the spillover effects of U.S. uncertainty shocks across the ten emerging economies, followed by a comparative analysis of the Asian and Latin American sub-regions.

4.1 Emerging Economies

Following the estimation of the panel VAR, Figure 1 illustrates the orthogonalized im-

pulse responses of key macroeconomic, trade, and financial variables in emerging economies to a one-standard-deviation shock in U.S. Economic Policy Uncertainty (EPU) and U.S. Financial Uncertainty (UF)[8]. The results provide strong empirical evidence that U.S. uncertainty shocks act as a significant source of global instability, triggering a synchronized contraction in both financial and real sectors across emerging markets. This transmission is remarkably rapid, with most variables reacting within the first month, confirming a high degree of integration with the U.S. financial cycle.

It is important to note that the seemingly large magnitude of aggregate impulse responses is masked by significant regional heterogeneity. A decomposition of the sample reveals that these aggregate results are driven by the Latin American subsample, which exhibits a much higher sensitivity to U.S. shocks compared to the relatively resilient Asian economies. as shown in Section 4.2. This amplification is largely attributable to the inclusion of historically volatile economies such as Argentina, which has experienced repeated episodes of hyper-depreciation and financial distress, most notably during the 2001 sovereign default and the 2018 currency crisis (Sturzenegger, 2019). Furthermore, this magnitude is mechanically reinforced by the high frequency of the data and the exposure weighting matrix. As detailed in Section 3, the weights are explicitly calibrated on a period of financial distress (1996M1 to 2001M12). Consequently, the aggregate estimates naturally reflect a "stress-state" transmission elasticity, where high-volatility observations from Latin America are assigned greater structural importance than the stable periods observed in Asia (Calvo et al., 2004)[9]. This approach assigns greater structural importance to periods of financial fragility.

Furthermore, the pronounced magnitude of these aggregate responses is highly consistent with the established literature regarding emerging market vulnerabilities to external fluctuations. Carrière-Swallow and Céspedes (2013) demonstrate that emerging economies suffer significantly deeper and more prolonged macroeconomic contractions compared to advanced economies, following uncertainty shocks. They attribute this amplified response to severe financial frictions and less developed credit markets, which restrict the ability of domestic firms and households to smooth

[8]This paper also tests for a one-standard-deviation shock in the VIX and results are comparable to the estimates of the Financial Uncertainty shock shown in the Appendix: Figure VI.1.4.

[9]Calvo et al. (2004) notes that countries such as Argentina, Chile, and Colombia entered a period of "Sudden Stop" around 1989 or 1999, making them more likely to enter a crisis. Sudden Stop is denoted by a huge contraction in the international capital flows linked to large depreciation and disruptions in the financial markets.

investment and consumption. This dynamic is also in connection with the "Sudden Stop" phenomenon extensively documented by Calvo (1998) and Calvo et al. (2008). When uncertainty spikes, it triggers a rapid retrenchment of global capital away from riskier emerging assets to safe havens. This forces sharp currency depreciations and domestic credit crunches. This then reflects the severe real economic contractions that structural financial fragility and sudden capital flight historically inflict on these emerging markets, most especially evident within Latin America.

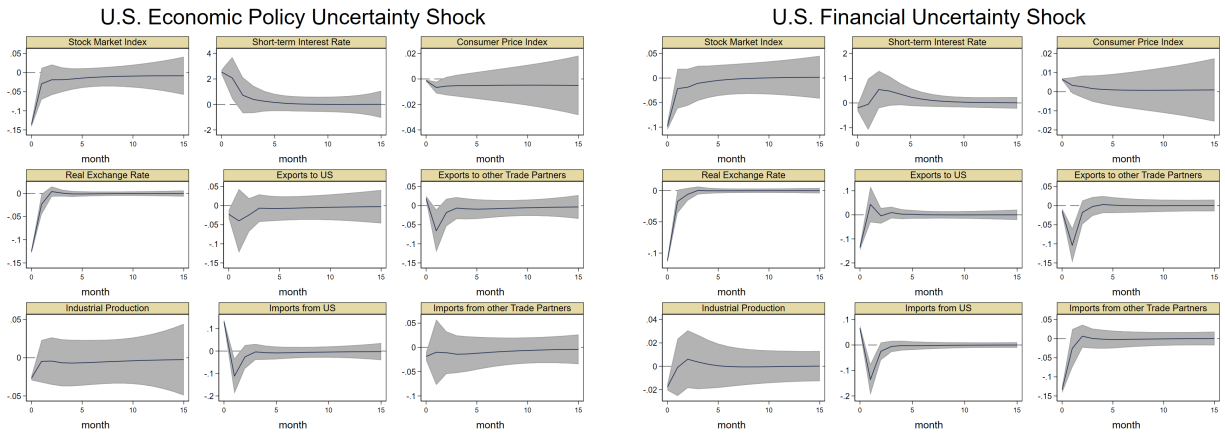


Figure 1: Spillover effects of the U.S. uncertainty shocks on emerging economies

Notes: The x-axis represents time (in months), while the y-axis shows the magnitude of the response. Specifically, the units are in percentages for log-transformed variables and percentage points for the short-term interest rate. The solid black line represents the estimated median response, and the shaded area indicates the 90% confidence interval generated via 200 Monte Carlo simulations.

The financial market reactions exhibit an immediate decline that aligns with the "Global Financial Cycle" hypothesis proposed by Rey (2015). The stock prices decline quickly on impact for both uncertainty shocks. This validates the existence of a robust risk channel, where heightened U.S. uncertainty increases global risk aversion and drives investors to liquidate risky emerging market assets in a "flight to safety" (Carrière-Swallow and Céspedes, 2013; Bhattarai et al., 2020). Similarly, the short-term interest rate responds with a positive spike given the EPU shock. This reaction shows the procyclical monetary policy, the "fear of free falling," and the constraint often faced by these economies Unlike advanced economies that typically lower rates to stimulate demand during downturns, emerging market central banks are frequently compelled to hike rates to defend their currencies and stem capital outflows (Kalemli-Ozcan, 2019). While these defensive measures are intended to maintain financial stability, they inevitably exacerbate the domestic economic con-

traction by increasing borrowing costs for local firms (Uribe and Yue, 2006).

This financial tightening then transmits rapidly to the real economy, leading to a significant and persistent decline in output. This contraction is consistent with the theoretical "wait-and-see" mechanism described by Bloom (2009), where firms facing heightened uncertainty and tighter credit conditions delay investment and hiring decisions. This also pertains to the real options effect wherein higher uncertainty increases the value of waiting to invest or hire given that these decisions are mostly irreversible. While these shocks capture a broad decline in economic activity; nonetheless, the CPI estimates did not react as much, indicating that while uncertainty sharply curtails real production, its immediate impact on price levels is considerably more muted.

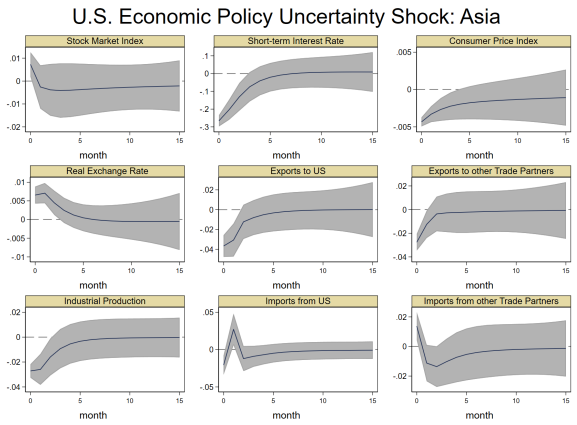
The results further indicate a broad-based trade decline that extends beyond bilateral relations with the United States. While exports and imports to and from the U.S. fall significantly, the decline in exports and imports to other trade partners suggests that U.S. uncertainty shocks disrupt global value chains and suppress global demand more broadly. This evidence supports the findings of Caldara et al. (2020), identifying trade linkages as a primary transmission channel for policy-related uncertainty. Interestingly, there is an initial although brief increase in the imports from U.S. for both shocks before the decline. This suggests an anticipatory effect facing uncertainty. Firms may front-load orders to mitigate the risk of future trade barriers or higher costs, indicating a "precautionary trading" motive. Ultimately, the persistence of these negative effects for most of the observed variables indicates that these shocks exert a contractionary pressure on emerging markets, driven by the combined weight of financial volatility and real-sector trade dependence.

4.2 Sub-regions

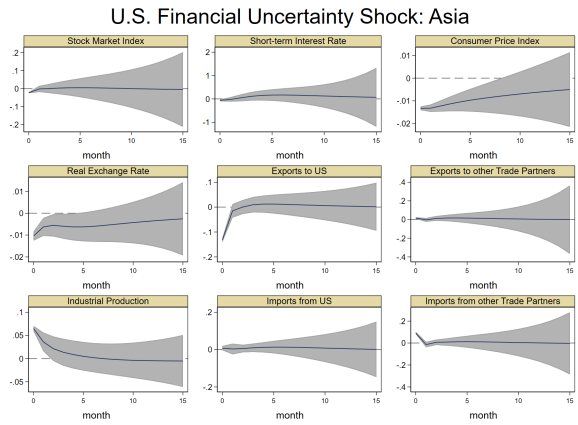
Figure 2 presents the empirical evidence on the spillover effects of U.S. uncertainty shocks in Asia (India, Indonesia, Malaysia, Philippines, and Thailand) and Latin America (Argentina, Brazil, Chile, Colombia, and Mexico). The four panels are subdivided by the nature of the shock: Economic Policy Uncertainty (EPU) and Financial Uncertainty (UF); and the geographic region.

Results indicate a significant divergence in regional resilience depending on the shock's

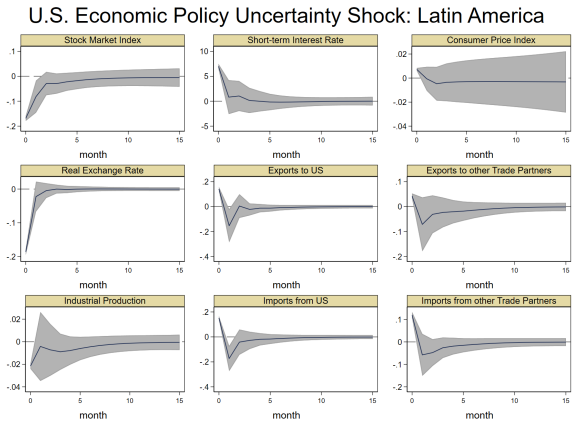
nature. Specifically, Asia show that EPU shocks trigger a demand-side contraction, while UF shocks are buffered by a positive supply shock. Conversely, Latin America proves to be significantly more vulnerable, displaying a consistent destabilization irrespective of the nature of the uncertainty. Fundamentally, U.S. shocks in this region result in a rapid tightening of local financial conditions and a persistent contraction in the real economy. This suggests that while Asia has developed buffers to external volatility, Latin America remains systemically vulnerable, transmitting shocks through global trade and financial networks regardless of regional idiosyncrasies.



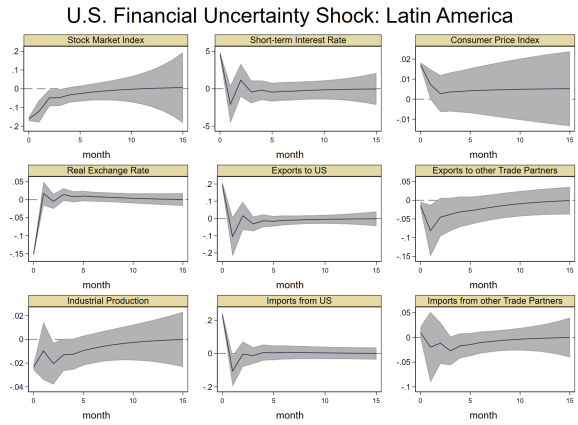
(a) EPU: Asia



(b) UF: Asia



(c) EPU: Latin America



(d) UF: Latin America

Figure 2: Spillover effects of the U.S. uncertainty shocks on Asia and Latin America

Notes: The x-axis represents time (in months), while the y-axis shows the magnitude of the response. Specifically, the units are in percentages for log-transformed variables and percentage points for the short-term interest rate. The solid black line represents the estimated median response, and the shaded area indicates the 90% confidence interval generated via 200 Monte Carlo simulations.

The U.S. Economic Policy Uncertainty (EPU) and Financial Uncertainty (UF) exert dis-

tinct pressures on Asian macro-financial variables through trade and financial channels. From panel (a), an EPU shock predominantly acts as a demand-side contraction, leading to a persistent decline in industrial production, exports, and consumer prices as firms adopt a "wait-and-see" approach to investment. However, the aggressive downward adjustment of short-term interest rates demonstrates the relative resilience of Asian economies. Unlike their Latin American counterparts, Asian central banks possess the credibility to execute countercyclical policies (Vegh and Vuletin, 2014), proactively adopting expansionary measures to mitigate the deflationary pressures of this external shock. Furthermore, while the appreciation of the exchange rate creates a 'double tightening' effect, the overall policy response suggests a capacity to buffer external shocks rather than merely react to them.

In contrast, a UF shock, as shown in panel (b), is linked to risk-aversion spikes that trigger a sharp "flight-to-safety" response (Kamber et al., 2016). This is evidenced by the immediate depreciation of the real exchange rate. Interestingly, the economy exhibits a supply-driven expansion where industrial production spikes temporarily even as consumer prices and exports to the U.S. decline. This counter-intuitive result is best explained by the composition of the sample economies: India, Thailand, and the Philippines, which are significant net energy importers. Data from the OEC (2024)[10] confirms that the Asian subsample comprises some of the world's largest net importers of crude petroleum. For instance, India ranks as the second-largest crude importer globally with a trade deficit of $142 billion. Similarly, Thailand runs a deficit, importing $32.2 billion. The Philippines exhibits a similar dependency with annual petroleum imports around $3 billion. Even Indonesia, often viewed as a commodity exporter, is a significant net importer of oil, with imports worth around $10 billion. As global financial uncertainty typically triggers a collapse in oil and commodity prices (Joëts et al., 2017), these economies experience a positive supply shock via reduced input costs. This allows manufacturers to temporarily boost output and lower prices even as external demand from the U.S. weakens.

In stark contrast to the Asian estimates, the response of Latin American economies with

[10]Data is available from The Observatory of Economic Complexity (OEC): https://oec.world/en/profile/hs/crude-petroleum

panels (c) and (d) presents the region's vulnerability to external shocks. Across both EPU and UF scenarios, the region experiences a sharp depreciation of the real exchange rate. However, unlike in Asia, this depreciation triggers a spike in the consumer price index. This confirms the high "exchange rate pass-through" often observed in Latin American economies, where currency weakness translates directly into higher domestic inflation due to a reliance on imported goods and unanchored inflation expectations (Burstein et al., 2005). Consequently, despite the sharp decline in output and exports, central banks are forced to increase short-term interest rates, which is a procyclical tightening designed to stem capital outflows and curb inflationary pressures at the expense of exacerbating these contractionary effects.

This monetary reaction aligns with the "Fear of Floating" hypothesis (Calvo and Reinhart, 2002), referring to emerging markets with lower institutional credibility are often constrained from implementing independent countercyclical policies. As shown in both panels, the immediate spike in interest rates successfully stabilizes the exchange rate over time but contributes to a deeper contraction in output compared to the Asian sample. This divergence illustrates that while some Asian economies may have "graduated" to countercyclical monetary policies, the Latin American sample, which is dominated by inflation-prone economies, remains constrained by the "emerging market dilemma" wherein when capital flees, they must tighten monetary policy to defend the currency, even as the real economy collapses (Vegh and Vuletin, 2014).

Interestingly, there is also an initial increase in the majority of trade estimates, regardless of the nature of the shock, as compared to the results for Asia, which experienced an immediate decrease with U.S. trade. This can be attributed to the high degree of vertical specialization and policy-driven inventory dynamics unique to this region. In this integrated framework, an acceleration in bilateral activity necessitates an antecedent export of U.S. intermediate inputs, such as components for assembly, before finished goods can be re-imported (Koopman et al., 2014)[11]. This sequential mechanism generates a mechanical improvement in the trade balance in the short run. Furthermore, this dynamic is likely amplified by anticipatory front-loading, where firms accelerate

[11]This concept is known as the "Maquiladoras" which are manufacturing plants in Mexico, typically near the U.S. border.

the cross-border movement of these intermediate goods to hedge against trade uncertainty. Consequently, the initial positive estimate observed in Latin America reflects a composite of supply-chain frameworks and precautionary inventory accumulation, which is not as evident in the less vertically integrated Asian trade relationships where it mostly exports finished goods. This aligns with the "Triangle Trade" phenomenon described by Baldwin and Lopez-Gonzalez (2015), where the U.S. imports finished goods assembled in China using inputs from other Asian economies, rather than the direct bilateral production sharing observed with Latin America.

5 Conclusion and Recommendation

This paper examines the spillover effects of U.S. uncertainty shocks on emerging economies, distinguishing between Economic Policy Uncertainty (EPU) and Financial Uncertainty (UF). Using a Panel VAR framework for ten emerging economies across Asia and Latin America, namely, India, Indonesia, Malaysia, Philippines, Thailand, Argentina, Brazil, Chile, Colombia, and Mexico. The empirical analysis yields three distinct results regarding the transmission of these shocks.

First, U.S. uncertainty shocks trigger a synchronized contraction across these emerging markets. It is important to qualify that these magnitudes reflect a "stress-state" scenario, as the exposure weights are calibrated on a period of high financial volatility (1996–2001). Consequently, the estimates serve as an upper-bound measure of vulnerability, capturing the amplified transmission that occurs during episodes of global distress. The results confirm the existence of a potent "Global Financial Cycle," where U.S. uncertainty triggers a rapid "flight to safety," leading to an immediate tightening of financial conditions, and a subsequent contraction in real economic activity across emerging markets. This transmission is amplified through trade channels, where the broad-based decline in exports and imports validates the significant role of international trade linkages as an important channel for uncertainty shocks. Notably, the detection of an initial "precautionary trading" effect, where firms temporarily front-load imports, suggests that economic agents actively adjust inventory behavior in anticipation of policy-driven trade barriers, highlighting the swift behavioral response of the private sector to external shocks.

Second, a decomposition of the results reveals significant regional heterogeneity in the monetary policy response. While Asian economies demonstrate the capacity for countercyclical monetary policy, lowering rates to support demand, Latin American economies display a procyclical "fear of floating" response. Constrained by high exchange rate pass-through and unanchored inflation expectations, Latin American central banks are compelled to hike interest rates to defend their currencies, thereby exacerbating the domestic output contraction. This highlights that despite decades of reform, the "Emerging Market Dilemma" remains a binding constraint for the region, forcing a trade-off between financial stability and real economic growth.

Third, the nature of the transmission mechanism differs fundamentally by region due to structural idiosyncrasies. In Asia, transmission is heavily influenced by its status as a net energy importer, where financial uncertainty shocks interestingly triggered a positive supply-side expansion due to lowered global commodity prices, effectively buffering the region against the external demand shock. Alternately, Latin America's response is dominated by its deep vertical integration with the U.S. manufacturing base (e.g., Maquiladoras). The unique sequential production sharing dynamics observed in the region suggest that Latin American trade cycles are mechanically tied to U.S. industrial inputs, making them uniquely vulnerable to disruptions in cross-border supply chains.

These findings hold significant implications for policymakers in emerging markets. For Latin America, the results underscore the urgency of reducing exchange rate pass-through and anchoring inflation expectations to promote countercyclical policy space. For Asia, while the region benefits from supply-side buffers, its heavy reliance on the global demand channel remains a vulnerability. Ultimately, this study suggests that U.S. uncertainty is not merely a bilateral issue but a systemic shock that exposes the structural and institutional vulnerabilities of emerging economies, necessitating stronger safety nets and deeper domestic financial markets to mitigate the adverse effects of the financial shock.

6 Appendix

6.1 Robustness Checks

6.1.1 Sample period used for Bartik Instruments

In the baseline model, the pre-sample period used to construct the bilateral weights is from 1996M1 to 2021M12 to avoid any endogeneity issues while averaging out high-frequency volatility in monthly flows. To ensure the validity of these weights, a shorter pre-sample window is computed from 1998M1 to 2001M12. The results are the following:

Table VI.1.1: Trade and Financial Exposure Shares: Baseline vs. Alternative Pre-sample Window

Country	**Trade (baseline)**	**Trade (1998–2001)**	**Financial (baseline)**	**Financial (1998–2001)**
Latin America				
Argentina	0.1463	0.1485	0.3691	0.2785
Brazil	0.2217	0.2287	0.2996	0.2631
Chile	0.1757	0.1759	0.0984	0.1131
Colombia	0.3924	0.4028	0.1566	0.1804
Mexico	0.7980	0.7977	0.2434	0.2272
Asia				
India	0.1417	0.1438	0.0317	0.0332
Indonesia	0.1299	0.1300	0.0496	0.0361
Philippines	0.2504	0.2524	0.0959	0.0861
Malaysia	0.1864	0.1935	0.0476	0.0271
Thailand	0.1654	0.1712	0.0685	0.0686
Correlation	0.9998		0.9738	

Using the alternative pre-sample window (1998M1–2001M12) yields exposure shares that are very close to the baseline measures. The trade-based shares are nearly identical across windows, with an almost perfect correlation of 0.9998, indicating that countries' relative trade exposure to the U.S. is highly stable over time. Financial shares are also strongly correlated with 0.9738, although with somewhat more variation across windows, consistent with the higher volatility of monthly

cross-border financial transactions. Nonetheless, the close alignment of baseline and alternative shares suggests that the construction of exposure measures is not sensitive to the specific pre-sample window and supports the robustness of the empirical results.

6.1.2 Validity of instruments and stability of results

To ensure the validity of the estimates, Table VI.1.1 presents the Hansen's J-test for the validity of the instruments and the stability of the results. Given the Hansen's J-test, all the different models fail to reject the null hypothesis of valid overidentifying restrictions across all specifications ($p > 0.10$), confirming the validity of the instrument set and the identification strategy. Alternative lag lengths were evaluated; however, these specifications failed to simultaneously satisfy the dynamic stability condition and the Hansen J-test for instrument validity.

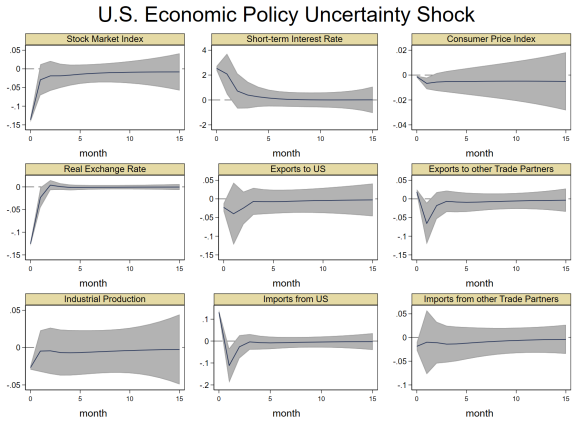
It can be observed that some eigenvalues marginally exceed unity for some specifications. However, this marginal instability is a product of finite-sample estimation bias rather than explosive economic dynamics. This is strongly supported by the impulse response functions (IRFs) presented in Section 4: Results. It demonstrates clear convergence to equilibrium within the horizon. This suggests that the variables are 'near-integrated,' which is highly persistent but eventually means reverting, consistent with the characteristics of inflation and exchange rates in emerging markets. This reflects the difficulty of distinguishing between a unit root and a highly persistent stationary process in a short panel, rather than the failure of the model to capture the true transmission mechanism (Blundell and Bond, 1998).

Table VI.1.1: Overidentification Test and Stability Condition

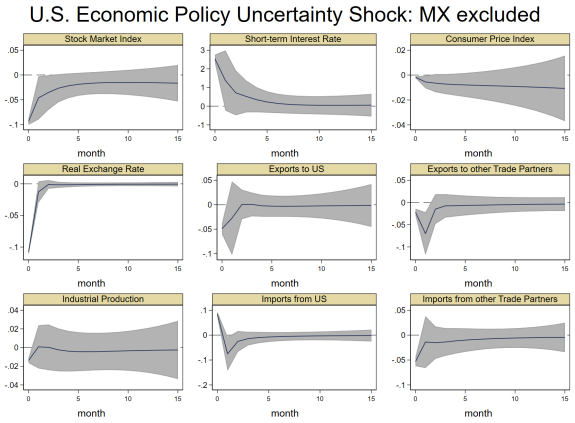
Model / Sample	$e(J\text{-}pval)$	**Stability condition**
EPU: Latin America	0.79	1 value at 1.016
EPU: Asia	0.41	satisfied
EPU: Emerging economies	0.58	1 value at 1.028
UF: Latin America	0.56	satisfied
UF: Asia	0.32	satisfied
UF: Emerging economies	0.28	1 value at 1.028

6.1.3 EPU results excluding Mexico

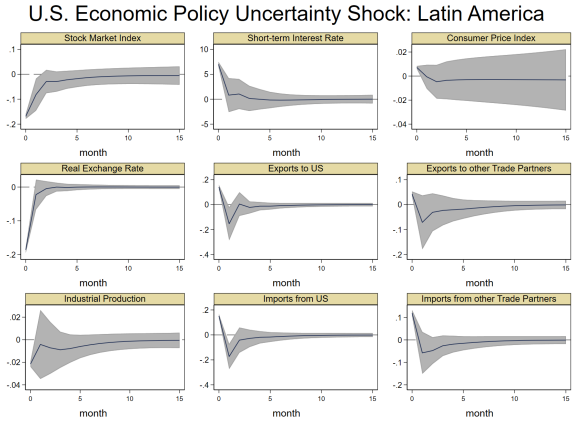
To test the validity of the baseline results, Mexico is excluded from the data. From Table 1, Mexico's trade weight is 0.798, implying a high integration with the U.S. through trade, which can drive the estimates with respect to the EPU shock. Based on the results shown in Figure VI.1.3, excluding Mexico did not significantly change the results. For instance, there is still an increase in short-term interest rates which suggests the "fear of free falling" as well as an initial increase in the imports from the United States which can be a precautionary trading motive wherein firms front-load orders due to uncertainty.



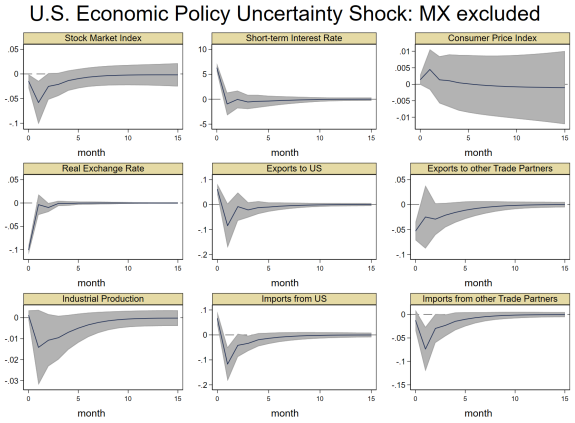
(a) EPU: emerging economies



(b) EPU: emerging economies excluding Mexico



(c) EPU: Latin America



(d) EPU: Latin America excluding Mexico

Figure VI.1.3: Spillover effects of EPU shock: baseline vs no Mexico

Notes: The x-axis represents time (in months), while the y-axis shows the magnitude of the response. Specifically, the units are in percentages for log-transformed variables and percentage points for the short-term interest rate. The solid black line represents the estimated median response, and the shaded area indicates the 90% confidence interval generated via 200 Monte Carlo simulations.

6.1.4 Comparing Financial Uncertainty and VIX shocks

To verify the robustness of the baseline findings, the model is re-estimated using the Chicago Board Options Exchange Volatility Index (VIX). It is widely utilized in the literature as a benchmark proxy for global risk aversion and uncertainty. Figure VI.1.4 presents the comparative impulse response functions of the UF and the VIX shocks. Overall, the qualitative dynamics of the macroeconomic and financial variables are consistent across both specifications, confirming that the primary transmission mechanisms are robust to alternative measures of uncertainty.

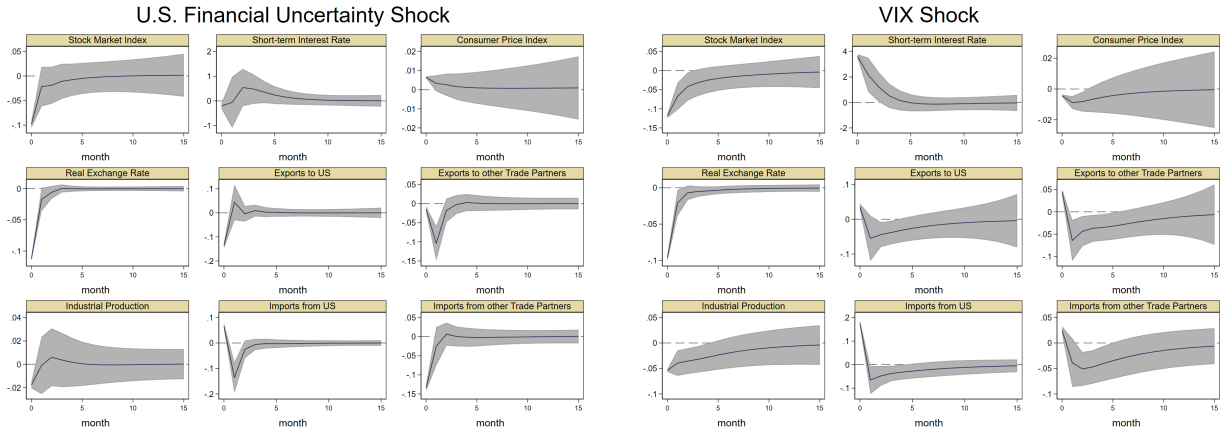


Figure VI.1.4: Spillover effects of the U.S. financial uncertainty and VIX shocks on emerging economies

Notes: The x-axis represents time (in months), while the y-axis shows the magnitude of the response. Specifically, the units are in percentages for log-transformed variables and percentage points for the short-term interest rate. The solid black line represents the estimated median response, and the shaded area indicates the 90% confidence interval generated via 200 Monte Carlo simulations.

Under both shocks, the financial block exhibits an immediate and severe deterioration. Because the VIX captures a broader, more generalized global financial panic, it exerts intense, immediate pressure on emerging market currencies, forcing central banks into a pronounced "fear of floating" response to prevent capital flight. In contrast, the UF shock isolates specifically U.S.-originated financial distress. While it produces a slightly more muted immediate policy rate reaction, it captures a fundamental disruption to the U.S. financial system that translates into a more profound and lasting contraction in real cross-border economic activity. Ultimately, the stability of the directional responses across both models strongly validates the baseline empirical framework, while highlighting the distinct transmission intensities of global versus U.S.-specific uncertainty.

6.2 Data summary

6.2.1 The U.S.

The data used to estimate the U.S. uncertainty shocks is primarily sourced from the St. Louis Federal Reserve's FRED database. It is also in monthly frequency spanning from 1989M1 to 2023M12.

Table VI.2.1.1: U.S. uncertainty variables

Name	**Description**	**Source**	**Code**
uf	Financial uncertainty index including 148 measures of financial indicators	Ludvigson's website	
um	Macroeconomic uncertainty index based on 134 macroeconomic indicators	Ludvigson's website	
EPU	Economic policy uncertainty index based on daily news coverage	FRED	USEPUINDXD
ip	Industrial Production: Total Index, Index 2017=100, Seasonally Adjusted	FRED	INDPRO
fedfunds	Federal Funds Effective Rate, Percent, Not Seasonally Adjusted	FRED	FEDFUNDS
crsp	CRSP value-weighted stock market index return	WRDS	
vix	CBOE Volatility Index: VIX, Not Seasonally Adjusted	FRED	VIXCLS
sp500	S&P500 closing prices	Stooq	
employment	All Employees, Manufacturing, Thousands of Persons, Seasonally Adjusted	FRED	MANEMP
oil	Global price of Energy index, Index 2016 = 100, Not Seasonally Adjusted	FRED	PNRGINDEXM

This paper also uses the following variables to construct the exposure weights of each emerging economy to the United States. The data provided is seasonally adjusted using the X-13 ARIMA-SEATS.

Table VI.2.1.2: Trade and Financial Variables

Name	Description	Source
exus	Exports to the US in USD	IMTS/IMF
imus	Imports from the US in USD	IMTS/IMF
totexports	Exports to all trading partners, free on board (FOB) price in USD	IMTS/IMF
totimports	Imports from all trading partners, free on board (FOB) price in USD	IMTS/IMF
treasury	Gross purchases and sales by foreigners of U.S. securities, in millions of dollars	U.S. Department of the Treasury
reserve	Total reserves excluding gold, in millions of dollars	IL/IMF

6.2.2 Latin America

The data for Mexico, Colombia, Brazil, Argentina, and Chile are carefully sourced from CEIC, Direction of Trade Statistic (DOTS) from IMF, and CEPALSTAT with a monthly frequency ranging from 2002M1 to 2023M12. To account appropriately for the real exchange rate, the data was sourced from Darvas (2021), which is based on 120 trading partners, given that countries with hyperinflation are excluded. Furthermore, data that are not seasonally adjusted from their source are properly seasonally adjusted using the X-13 ARIMA-SEATS.

Table VI.2.2.1: Macroeconomic, Trade, and Financial Variables in Latin America

Name	Description	Source
Mexico		
ip	Industrial production index (Manufacturing), 2018=100	CEIC
cpi	General price level of a representative goods and services basket	CEPALSTAT: Bank of Mexico
reer	Real effective exchange rate	Darvas (2021)
stir	Money market rate	CEIC
exus	Exports to the US in USD	DOTS/IMF
imus	Imports from the US in USD	DOTS/IMF
exports	Exports to other trading partners, USD	DOTS/IMF
imports	Imports from other trading partners, USD	DOTS/IMF
smi	Mexican Stock Exchange: BMV index	CEIC
Colombia:		
ip	Industrial production index (Manufacturing), Dec 2018=100	CEIC
cpi	General price level of a representative goods and services basket	CEPALSTAT: Central Bank of Colombia
reer	Real effective exchange rate	Darvas (2021)
stir	Money market rate	CEIC
exus	Exports to the US in USD	DOTS/IMF
imus	Imports from the US in USD	DOTS/IMF
exports	Exports to other trading partners, USD	DOTS/IMF
imports	Imports from other trading partners, USD	DOTS/IMF
smi	Colombian Stock Exchange: IGBC and COLCAP	CEIC

Table VI.2.2.2.: Macroeconomic, Trade, and Financial Variables in Latin America (Cont.)

Name	Description	Source
Brazil		
ip	Industrial production index (Manufacturing), 2022=100	CEIC
cpi	General price level of a representative goods and services basket	CEPALSTAT: Brazilian Institute of Geography and Statistics
reer	Real effective exchange rate	Darvas (2021)
stir	Money market rate	CEIC
exus	Exports to the US in USD	DOTS/IMF
imus	Imports from the US in USD	DOTS/IMF
exports	Exports to other trading partners, USD	DOTS/IMF
imports	Imports from other trading partners, USD	DOTS/IMF
smi	Sao Paulo Stock Exchange: BOVESPA index	CEIC
Argentina		
ip	Industrial production index (Manufacturing), 1993=100	FIEL: Latin American Economic Research Foundation
cpi	General price level of a representative goods and services basket	FIEL: Latin American Economic Research Foundation
reer	Real effective exchange rate	Darvas (2021)
stir	Call rate	CEIC
exus	Exports to the US in USD	DOTS/IMF
imus	Imports from the US in USD	DOTS/IMF
exports	Exports to other trading partners, USD	DOTS/IMF
imports	Imports from other trading partners, USD	DOTS/IMF
smi	Buenos Aires Stock Exchange: S&P Merval	CEIC

Table VI.2.2.3.: Macroeconomic, Trade, and Financial Variables in Latin America (Cont.)

Name	Description	Source
ip	Industrial production index (Manufacturing), 2018=100	CEIC
cpi	General price level of a representative goods and services basket	CEPALSTAT: National Institute of Statistics of Chile
reer	Real effective exchange rate	Darvas (2021)
stir	Call Money/Interbank Rate	CEIC
exus	Exports to the US in USD	DOTS/IMF
imus	Imports from the US in USD	DOTS/IMF
exports	Exports to other trading partners, USD	DOTS/IMF
imports	Imports from other trading partners, USD	DOTS/IMF
smi	Santiago Stock Exchange: IPGA index	CEIC

6.2.3 Asia

Similar to the data for Latin America, the data for Asian countries, namely, India, Indonesia, Malaysia, Philippines, and Thailand are carefully sourced from CEIC and the International Trade in Goods, formerly the Direction of Trade Statistic (DOTS), from IMF with a monthly frequency ranging from 1994M1 to 2023M12. To account appropriately for the real exchange rate, the data was sourced from Darvas (2021), which is based on 120 trading partners, given that countries with hyperinflation are excluded. The data are not seasonally adjusted from its primary source but are seasonally adjusted using the X-13 ARIMA-SEATS prior to applying the empirical methodologies.

Table VI.2.3.1: Macroeconomic, Trade, and Financial Variables in Emerging Asia

Name	Description	Source
India		
ip	Industrial production index (Manufacturing), 2012=100	CEIC
cpi	General price level of a representative goods and services basket	CEIC
reer	Real effective exchange rate	Darvas (2021)
stir	Government Bond Yield: 1 Year	CEIC
exus	Exports to the US in USD	IMTS/IMF
imus	Imports from the US in USD	IMTS/IMF
exports	Exports to other trading partners, USD	IMTS/IMF
imports	Imports from other trading partners, USD	IMTS/IMF
smi	Bombay Stock Exchange Index: SENSEX	CEIC
Indonesia		
ip	Industrial production index (Manufacturing), 2010=100	CEIC
cpi	General price level of a representative goods and services basket	CEIC
reer	Real effective exchange rate	Darvas (2021)
stir	3 months Interbank rate	CEIC
exus	Exports to the US in USD	IMTS/IMF
imus	Imports from the US in USD	IMTS/IMF
exports	Exports to other trading partners, USD	IMTS/IMF
imports	Imports from other trading partners, USD	IMTS/IMF
smi	Indonesia (Jakarta) Stock Exchange Index	CEIC

Table VI.2.3.2: Macroeconomic, Trade, and Financial Variables in Emerging Asia (Cont.)

Name	Description	Source
Malaysia		
ip	Industrial production index (Manufacturing), 2015=100	CEIC
cpi	General price level of a representative goods and services basket	CEIC
reer	Real effective exchange rate	Darvas (2021)
stir	3 months Interbank rate	CEIC
exus	Exports to the US in USD	IMTS/IMF
imus	Imports from the US in USD	IMTS/IMF
exports	Exports to other trading partners, USD	IMTS/IMF
imports	Imports from other trading partners, USD	IMTS/IMF
smi	Bursa Malaysia Stock Exchange Index	CEIC
Philippines		
ip	Industrial production index (Manufacturing), 2018=100	CEIC
cpi	General price level of a representative goods and services basket	CEIC
reer	Real effective exchange rate	Darvas (2021)
stir	Interbank Call Rate	Bangko Sentral ng Pilipinas (BSP)
exus	Exports to the US in USD	IMTS/IMF
imus	Imports from the US in USD	IMTS/IMF
exports	Exports to other trading partners, USD	IMTS/IMF
imports	Imports from other trading partners, USD	IMTS/IMF
smi	Philippine Stock Exchange Index	CEIC

Table VI.2.3.3: Macroeconomic, Trade, and Financial Variables in Emerging Asia (Cont.)

Name	Description	Source
Thailand		
ip	Industrial production index (Manufacturing), 2021=100	CEIC
cpi	General price level of a representative goods and services basket	CEIC
reer	Real effective exchange rate	Darvas (2021)
stir	Government Bond Yield: 1 Year	CEIC
exus	Exports to the US in USD	IMTS/IMF
imus	Imports from the US in USD	IMTS/IMF
exports	Exports to other trading partners, USD	IMTS/IMF
imports	Imports from other trading partners, USD	IMTS/IMF
smi	SET Stock Exchange Index	CEIC

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