U.S. Fiscal Spillovers to Emerging Economies *

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PRELIMINARY

Abstract

This paper identifies fiscal policy volatility shocks in the United States and assesses their international spillovers to emerging market economies (EMEs). First, we estimate U.S. fiscal reaction functions with time-varying volatility. and recover innovations to both the level and the volatility of fiscal policy. We interpret the latter as fiscal policy uncertainty shocks. Second, we estimate a panel VAR for EMEs that includes these shocks and key global financial variables. A U.S. fiscal volatility shock lowers output and investment in EMEs by about 0.4 and 1 percent, respectively, after one year. Fiscal policy volatility shocks account for roughly 6 percent of output fluctuations and are an important driver of investment, comparable in magnitude to U.S. monetary policy shocks. We show that the response of the U.S. BAA corporate spread is a key transmission channel to EMEs and that the importance of fiscal volatility varies systematically with country characteristics such as trade openness, exchange rate regime, inflation-targeting status, and fiscal rules.

Keywords: U.S. policy Uncertainty, Fiscal Policy, Emerging Economies, Spillovers

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1 Introduction

Uncertainty surrounding the formulation and implementation of economic policies has garnered significant attention among policymakers, market participants, and academics in recent years. With the United States retaining a central position in global financial and trade networks, fluctuations in U.S. monetary and fiscal policy can have far-reaching consequences for emerging market economies (EMEs). However, policy decisions are sometimes clouded by debates in Congress, shifts in monetary policy frameworks at the Federal Reserve, or abrupt changes in executive branch directives, all of which can amplify uncertainty for both domestic and foreign actors. As a result, U.S. policy uncertainty has the potential to propagate internationally through trade linkages, financial markets, and investor sentiment.

In this paper, we analyze how U.S. fiscal policy volatility shocks affect the business cycles in EMEs, complementing the extensive literature on monetary policy spillovers by focusing specifically on fiscal uncertainty. Although the transmission of U.S. economic developments to emerging markets has been the subject of extensive research, relatively few studies have disentangled the spillovers of fiscal policy uncertainty shocks on EMEs. To address this gap, we follow a two-step approach. First, we estimate fiscal policy reaction functions with time-varying volatility for the U.S. (i.e., we use a stochastic volatility model). This allows us to capture innovations not only to the level, but also to the volatility of each instrument. Our measures of fiscal policy uncertainty are then the time-varying volatility of the innovation of the fiscal reaction functions.

Second, using a quarterly sample of emerging economies, we estimate a Panel VAR to identify the effects of the previously identified volatility shocks on macroeconomic aggregates of EMEs. The baseline specification includes international variables (the BAA corporate bond spread and the series of U.S. fiscal volatility), and the main macroeconomic variables (GDP, Investment, Trade Balance, the exchange rate appreciation, and the country interest rate). We also study the role of various key country characteristics and economic policies in the macroeconomic response to these shocks.

Our findings reveal three key insights. First, U.S. fiscal volatility shocks generate

substantial real effects in EMEs, reducing output and investment by 0.4 and 1 percent, respectively, one year after the shock. Second, these shocks account for nearly 6 percent of GDP fluctuations in emerging economies, comparable in magnitude to U.S. monetary policy shocks (e.g., Vicondoa, 2019). Third, the U.S. BAA corporate spread emerges as the primary transmission channel, with its response to fiscal volatility significantly amplifying the impact on EME macroeconomic outcomes.

Related literature. This paper relates mainly to several strands of the literature. First, there is a vast literature that examines the role of uncertainty as a determinant of macroeconomic fluctuations. Early theoretical contributions suggest that uncertainty can dampen investment and consumption by increasing the option value of waiting (Bernanke, 1983) and by altering risk perceptions between firms and households (Bloom, 2009). Empirical work on policy uncertainty has gained prominence with the construction of various indices—such as the index of Economic Policy Uncertainty (EPU) by Baker, Bloom, and Davis (2016)—which measure the frequency of newspaper references to policy-related uncertainties. These indices have been used to show that increases in policy uncertainty tend to coincide with economic slowdowns (Caggiano, Castelnuovo, and Groshenny, 2014).

Second, recent studies also delve into the broader macroeconomic effects of uncertainty shocks. Fernández-Villaverde et al. (2011) emphasize the role of volatility in real interest rates, showing that increases in uncertainty about borrowing costs for EMEs result in sharp contractions in output, consumption, and investment. Fernández-Villaverde et al. (2015) document that fiscal volatility shocks induce significant contractions in economic activity in the U.S. through endogenous increases in markups and reductions in aggregate demand. Anzuini, Rossi, and Tommasino (2020) focus on fiscal policy uncertainty in the Italian context, demonstrating that heightened uncertainty exacerbates macroeconomic downturns by discouraging private sector investment and consumption. Saijo (2020) highlight that fiscal uncertainty shocks, especially those related to capital income taxes, can lead to declines in output, consumption, investment, and hours worked, driven by household heterogeneity and ambiguity aversion. Mumtaz and Ruch (2024) examine

stochastic volatility in policy uncertainty shocks across 54 advanced and emerging economies, finding that uncertainty about fiscal and monetary policy acts as a negative supply shock, reducing GDP and raising inflation across different country groups. Carrière-Swallow and Céspedes (2013) examine the effects of global uncertainty shocks on emerging economies, showing that investment and private consumption contract more severely and recover more slowly than in advanced economies.

Third, EMEs' business cycles have long been associated with global shocks, particularly those originating in the United States. Early studies (e.g., Canova, 2005; Uribe and Yue, 2006) document how fluctuations in U.S. interest rates and global risk appetite drive capital flows to EMEs and influence their exchange rates, inflation, and output. More recent work incorporates endogenous linkages and highlights how U.S. monetary policy can shape domestic credit conditions in EMEs through global financial channels (Rey, 2013; Bruno and Shin, 2015). Faccini, Mumtaz, and Surico (2016) analyze international fiscal spillovers using a regime-switching factor model and demonstrate that U.S. government spending shocks significantly influence foreign economic activity, primarily through financial channels. Kumar, Mallick, and Sinha (2024) investigate the spillover of U.S. fiscal policy shocks to EMEs, identifying real exchange rate appreciation and adverse output effects as primary outcomes. They argue that financial channels dominate trade channels in transmitting these shocks. However, the focus has traditionally been on realized shocks—such as an unexpected interest rate hike—rather than policy uncertainty itself.

Finally, there is a recent, yet growing, strand of the literature looking at how both foreign uncertainty propagates globally. Colombo (2013), Caggiano, Castelnuovo, and Figueres (2020) and Ghirelli et al. (2021) provide evidence that rising uncertainty in major advanced economies spills over to trading partners through financial contagion and trade channels. Yildirim (2023) examine the differential effects of various types of U.S. uncertainty, including financial, macroeconomic, and policy uncertainty, on EMEs. Guo, Yang, and He (2024) employ time-frequency domain methods to analyze economic policy uncertainty (EPU) spillovers between the U.S. and BRIC countries. Mumtaz and Ruch (2024) examine stochastic volatility in policy uncertainty shocks across 54 advanced and emerging economies, finding that uncertainty about fiscal and monetary policy acts as a

negative supply shock, reducing GDP and raising inflation across different country groups. Lakdawala, Moreland, and Schaffer (2021) show that increases in U.S. monetary policy uncertainty affect global bond yields through different mechanisms: advanced economies experience changes in term premia via an international portfolio balance channel, while emerging markets see shifts in expected interest rates due to a flight-to-safety effect. Lastauskas and Nguyen (2023) extend this analysis to macroeconomic outcomes, finding that uncertainty shocks lead to synchronized declines in global output, inflation, and interest rates, with spillback effects on the U.S. economy itself. Their global vector autoregression (GVAR) approach underscores the role of uncertainty in amplifying the global financial cycle, particularly since the Global Financial Crisis. Together, these studies suggest that uncertainty about future U.S. monetary policy, not just its expected path, is a key driver of international financial conditions and macroeconomic fluctuations.

These works underscore the importance of bridging real and financial links when analyzing the cross-border implications of policy uncertainty. Although recent literature has analyzed the spillovers from general or monetary policy uncertainty in the U.S., our study adds a nuanced perspective by solely focusing on the impact of U.S. fiscal policy uncertainty shocks on EMEs.

Our contribution is fourfold. First, we construct a new measure of U.S. fiscal policy volatility by estimating a stochastic-volatility fiscal reaction function for the cyclically-adjusted primary balance. Second, we quantify the international spillovers of both fiscal level and volatility shocks to EMEs using a panel VAR, and show that volatility shocks are nearly as important as level shocks in driving output and investment fluctuations. Third, we document that the U.S. BAA corporate spread is a key transmission channel, highlighting the role of global financial conditions. Finally, we show that the importance of U.S. fiscal volatility shocks varies systematically with country characteristics and policy regimes, including trade openness, exchange rate flexibility, inflation targeting, fiscal rules, and external indebtedness.

The remainder of this paper proceeds as follows. First, Section 2 explains how we estimate our series of fiscal policy uncertainty in the U.S. and discusses how they relate to alternative measures used in the literature. Section 3 characterizes the empirical strategy

used to identify the macroeconomic effects of these shocks on emerging economies and presents the empirical results. Section 4 reports the results of additional robustness exercises and extensions. Finally, Section 6 concludes.

2 Identification of U.S. Fiscal Policy Volatility Shocks

2.1 Methodology

We estimate a fiscal rule with time-varying volatility for the U.S.. This allows us to capture innovations not only to the level, but also to the volatility of the policy instrument. In particular, we follow Anzuini, Rossi, and Tommasino (2020) and estimate the following process:

$$b_t - \bar{b} = \rho_b(b_{t-1} - \bar{b}) + \phi_1 \, d_{t-1} + \phi_2 \, x_{t-1} + exp(\sigma_t) \, \varepsilon_t, \qquad \varepsilon_t \sim N(0,1),$$

where b_t is the cyclically-adjusted (fiscal) balance (CAB) at time t, $\bar{b}$ is the mean of the CAB, d_{t-1} is the debt ratio at time t - 1, and x_{t-1} is the output gap at time t - 1. According to this rule, the CAB depends on the past state of public finances and the business cycle. In particular, a positive value of ϕ_1 suggests a debt stabilization motive, whereas a negative value of ϕ_2 implies a counter-cyclical policy.

We model the stochastic volatility component as an exogenous AR(1) process:

$$\sigma_t = \alpha_0 + \rho_\sigma \sigma_{t-1} + \gamma \upsilon_t, \qquad \upsilon_t \sim N(0,1),$$

where σ_t is the log-volatility of the error term ε_t, ρ_σ is the persistence of the log-volatility, and γ is the volatility of the shocks to the log-volatility. Therefore, the policy instrument is affected by two independent innovations. We refer to ε_t as level shocks and to υ_t as policy volatility shocks.

In order to deal with the nonlinear interaction between innovations, we estimate this fiscal rule using the Liu and West (2001) version of the particle filter. This requires the

following re-parameterization of the AR(1) process:

$$\alpha_0 \equiv (1 - \rho_\sigma)\,\omega_0,$$

$$\rho_\sigma \equiv \frac{exp(\bar{\rho}_\sigma)}{exp(\bar{\rho}_\sigma) + 1},$$

$$\gamma \equiv (1 - \rho_\sigma^2)^{1/2}\, exp(\bar{\gamma}),$$

which implies that the standard deviation of σ_t is equal to $exp(\bar{\gamma})$. Thus, we estimate ω_0, $\bar{\rho}_\sigma$ and $\bar{\gamma}$ along with the other policy parameters, and we report our final estimates using the smoother in Godsill, Doucet, and West (2004).

2.2 Data and Estimation

To estimate the fiscal rule, we use quarterly estimates of net Federal Government revenues and outlays without automatic stabilizers (as a percentage of potential GDP) from 1970:1 to 2019:4. This series comes from the Congressional Budget Office (CBO), whereas the debt series (Federal debt held by the public) comes from the Federal Reserve Bank of St. Louis FRED database. Finally, output comes from the National Income and Product Accounts (NIPA) and is detrended using the Christiano-Fitzgerald band pass filter as in Fernández-Villaverde et al. (2015) [1].

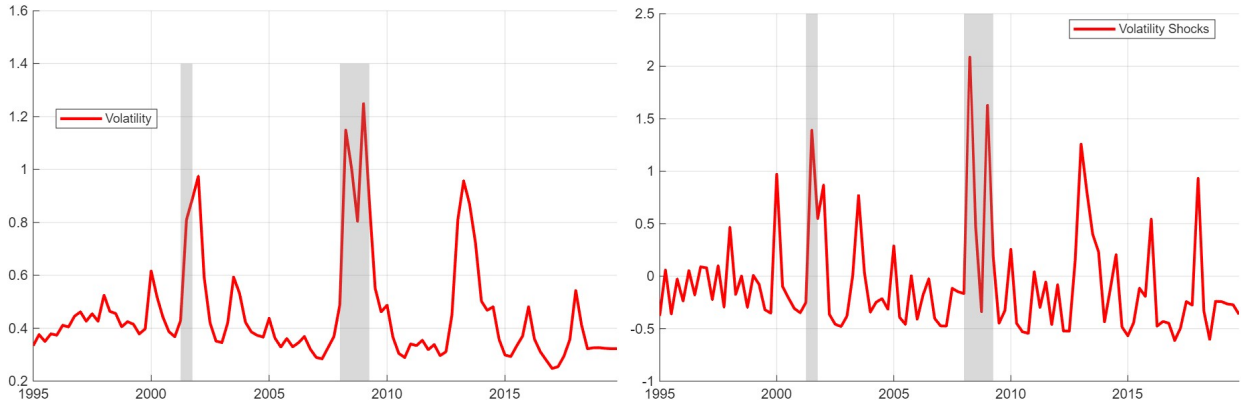
We set uniform priors on the support [0,1] for all the parameters in the policy rule, and for the logit of the persistence parameter of the log-volatility, $\bar{\rho}_\sigma$. We also set a uniform prior on the support [-3,0] for $\bar{\gamma}$, and for ω_0 we choose normal N(-0,55,0.20).

2.3 U.S. Fiscal Volatility and Fiscal Volatility Shocks

The left panel of Figure 1 shows the estimated (smoothed) time-varying volatility series. Not surprisingly, the series spikes around U.S. recession dates, but it also captures high volatility

[1] For robustness, we also consider four alternative policy instruments as in Fernández-Villaverde et al. (2015): government spending (as a share of output) and tax rates on labor income, on capital income and on personal expenditures. The results are available upon request

Figure 1: Smoothed U.S. Fiscal Volatility and Fiscal Volatility Shocks



events such as the Bipartisan Budget Act of 2013 and the Taper Tantrum. Moreover, the series is positively correlated with the VIX and the EPU indexes (Table 1).

Table 1: Contemporaneous Correlation with Other Series of Uncertainty

Correlations: 1995-1 to 2019-4

	U.S. Fiscal Vol.	**VIX**	**EPU**	**EPU Fiscal Pol.**
U.S. Fiscal Vol.	1.00			
VIX	0.40	1.00		
EPU	0.27	0.54	1.00	
EPU Fiscal Pol.	0.18	0.34	0.93	1.00

The right panel of Figure 1 displays the recovered policy volatility shocks. In the next section we study the spillover effects of these shocks to EMEs.

3 Estimating the Spillovers to EMEs

This section presents the estimated spillover effects of fiscal policy volatility shocks to EMEs. First, we specify the empirical model. Second, we describe the data set and the estimator used to assess the effects of both types of shocks on EMEs. Third, we show the Impulse Response Functions (IRFs) and Forecast Error Variance decomposition (FEV) of the main macroeconomic variables of EMEs to both types of shocks. Finally, we analyze the transmission channels of both shocks with counterfactuals.

3.1 Empirical Model

The baseline empirical model is the following VAR system that includes the estimated shocks in an exogenous block:

$$X_{i,t} = B_i + C(L)X_{i,t-1} + D(L)\nu_t + \epsilon_{i,t} \tag{1}$$

where $X_{i,t}$ is a vector of endogenous variables for country i, ν_t denotes the U.S. fiscal and fiscal volatility shock series as identified in Section 2, $D(L)$ captures the contemporaneous and lagged effects of the fiscal shocks (both level and volatility) on the dependent variables, B_i is the matrix of country fixed effects, and $\epsilon_{i,t}$ is a white noise vector of disturbances.

In the baseline specification, $X_{i,t}$ consists of a set of variables necessary to capture both macroeconomic effects and transmission channels (financial and trade channels). In particular, $X_{i,t}$ consists of foreign (exogenous) and domestic variables. The foreign variables are the U.S. corporate bond (BAA) spread relative to 10-Year Treasury constant maturity and the series of U.S. fiscal volatility series. The U.S. corporate bond spread constitutes an indicator of global financial conditions (see, for example, Akinci, 2013), which helps to control for a channel identified in the literature as important for the transmission of world shocks to open economies. The set of domestic macroeconomic variables comprises eight indicators: GDP, investment, trade balance-to-GDP ratio, the multilateral nominal exchange rate, and the country interest rate. The country interest rate is defined as the ten-year U.S. government bond yield plus the country spread, proxied by the JP Morgan EMBI Global Index. Output and investment are expressed in real terms and in percentage deviations from a quadratic trend. Exchange rate, U.S. BAA corporate yield, trade balance-to-GDP ratio, and the country interest rate are expressed in percentage points. Precise definitions of the variables, sample periods for each country, and data sources are included in Data Appendix A.1.

This specification imposes that EMEs do not affect U.S. fiscal volatility. This assumption is in line with the fact that these are small open economies. The estimated effects of these shocks do not rely on the ordering of the variables. In particular, there is no need to impose zero or sign restrictions on the response of domestic variables to changes in U.S.

fiscal volatility, nor to identify the other shocks in the system.

3.2 Data and Estimation Method

We estimate the VAR presented in Eq. 1 by pooling quarterly data from Argentina, Brazil, Chile, Mexico, Philippines, South Africa, and Turkey using the least square estimator with country dummies (Least Square Dummy Variable (LSDV)). The sample runs from 1995:Q1 to 2019:Q4. In order to maintain comparability with previous studies, the choice of the representative sample of emerging economies is similar to Uribe and Yue (2006), Akinci (2013) and Vicondoa (2019). However, in Section 4.3 we present the results using an extended sample of 25 emerging economies.

We estimate Eq. 1 using the Least Square Dummy Variable (LSDV) estimator, which has been widely used to estimate Panel VARs with a large time series dimension. We impose that $C(L), D(L)$ and E are the same across countries but we allow for a different intercept for each country (i.e. country fixed effect). The rationale for pooling data is to gain efficiency, considering the relatively short sample size for each country. We estimate a VAR with 4 lags both for $C(L), D(L)$, which yields uncorrelated reduced form residuals. As the time dimension is significantly larger than the cross-sectional one, the LSDV is preferred to GMM as it has better finite sample properties. Nickell (1981) shows that a potential concern with the Panel VAR is the inconsistency of the least squares parameter estimates due to the combination of fixed effects and lagged independent variables. However, because the time series dimension of the data set is large (100 observations), the inconsistency problem is likely not to be a major concern.

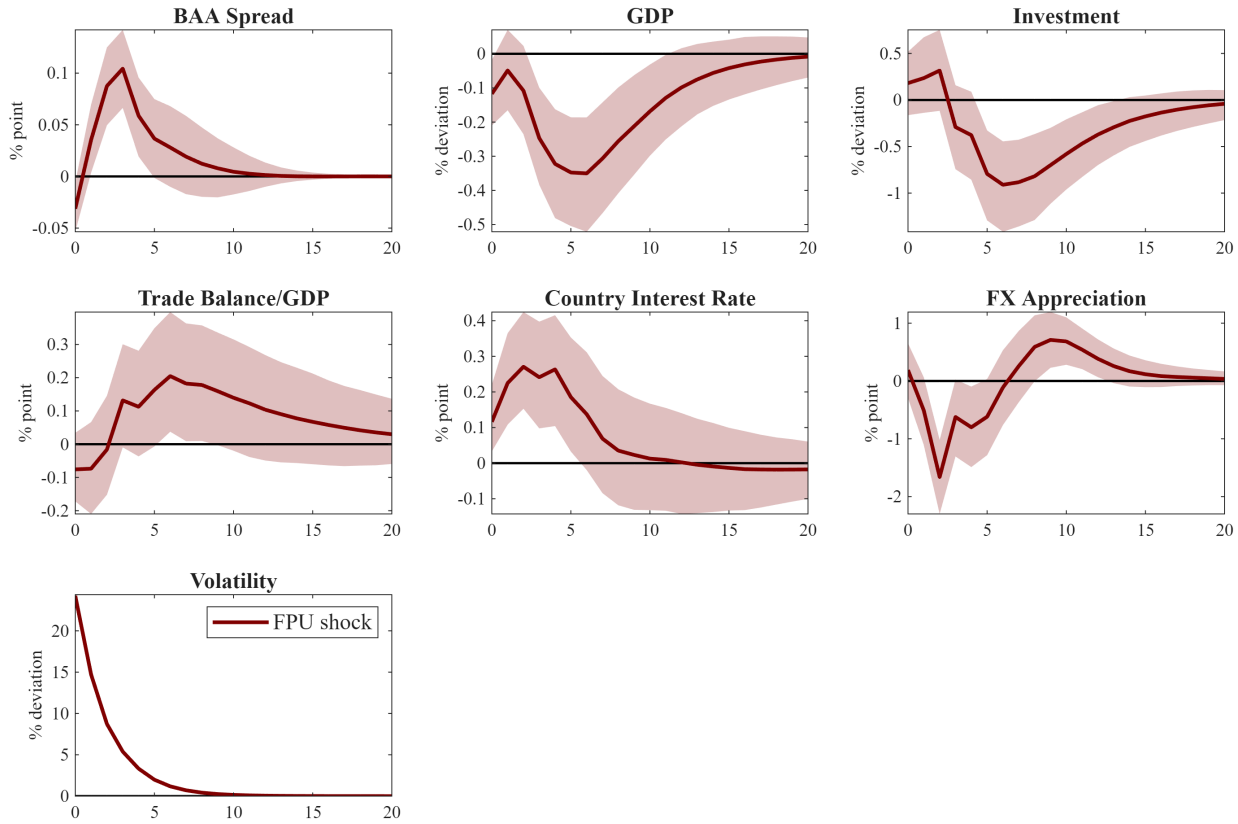
3.3 Empirical Results

3.3.1 Impulse Response Functions

In this subsection, we present the macroeconomic responses of EMEs to the U.S. fiscal policy volatility shocks identified in Section 2. Figure 2 displays the IRFs of macroeconomic variables to a one standard deviation U.S. fiscal policy volatility shock.

An increase in fiscal volatility in the U.S. induces a tightening of financial conditions

Figure 2: IRFs to a U.S. Fiscal Policy Volatility Shock

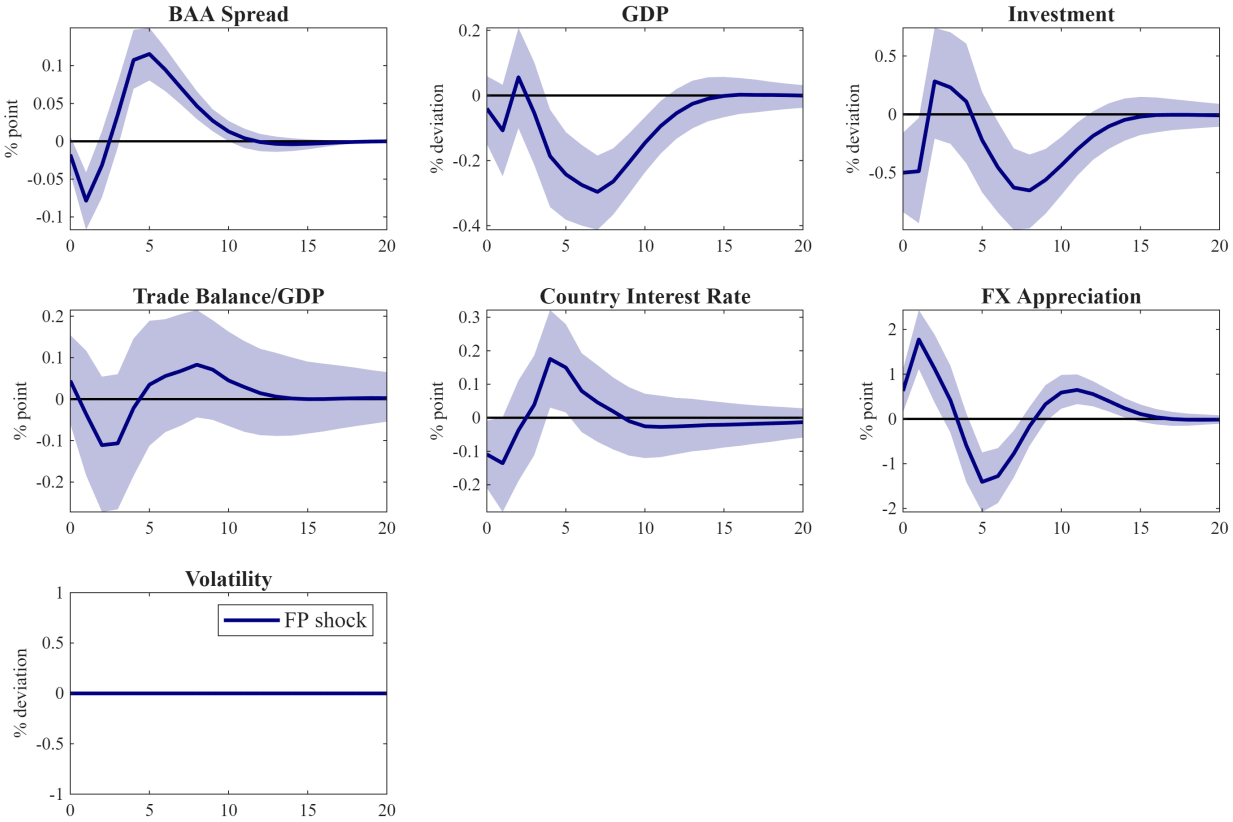


Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The response of fiscal volatility is expressed in % deviations. The responses of U.S. BAA corporate spread, trade balance-to-GDP ratio, country interest rate and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

worldwide, with the U.S. BAA Corporate Spread increasing 10 basis points. This effect is coupled with an increase in the domestic interest rate of around 25 basis points and a fall in economic activity, with GDP falling around 0.35 percent a year after the shock. The trade balance to output increases in response to the shock, this could be partially explained by the fall in economic activity. The effects of the shock last around ten quarters, consistent with the persistence of the effects on fiscal volatility.

In order to better characterize the responses, we estimate the response of emerging economies to a U.S. fiscal policy shock (level instead of volatility). The shock is identified jointly with U.S. fiscal policy volatility shocks using the filter described in Section 2. Figure 3 displays the IRFs to a one standard deviation contractionary U.S. fiscal policy shock.

Figure 3: IRFs to a U.S. Fiscal Policy Level Shock



Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-blue shaded areas. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The response of fiscal volatility is expressed in % deviations. The responses of U.S. BAA corporate spread, trade balance-to-GDP ratio, country interest rate and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

Macroeconomic variables display comparable qualitative dynamics to those of the U.S. fiscal volatility shock except for the exchange rate. All in all, both fiscal policy and fiscal policy volatility shocks induce comparable macroeconomic effects on emerging economies.

3.3.2 Variance Decomposition

In order to understand the contribution of U.S. fiscal policy volatility shocks to explain business cycle fluctuations in emerging economies, we compute the FEV decomposition of the variables included in the baseline VAR. Table 2 displays the 2-year ahead forecast error variance decomposition explained by each shock.

U.S. fiscal policy volatility is slightly more important than U.S. fiscal policy (level) shocks

Table 2: Variance Decomposition

Variable	VOL	GDP	INV	TBY	RATE	FX	BAA
VOL	99.1	5.7	2.7	2.0	4.5	2.9	5.2
LEVEL	0.0	3.0	1.2	0.5	1.3	6.4	9.4

Note. 2Y ahead variance decomposition calculated based on the estimated eq. 1.

as a driver of business cycle fluctuations in emerging economies. Fiscal volatility accounts for almost 6 percent of GDP fluctuations in emerging economies. Fiscal policy volatility shocks are an important driver of the U.S. BAA corporate spread, explaining around 5 percent of its variability. Fiscal shocks account for around 9 percent of GDP fluctuations in emerging economies, comparable with the importance of U.S. monetary policy shocks for emerging economies (see, for example, Vicondoa, 2019).

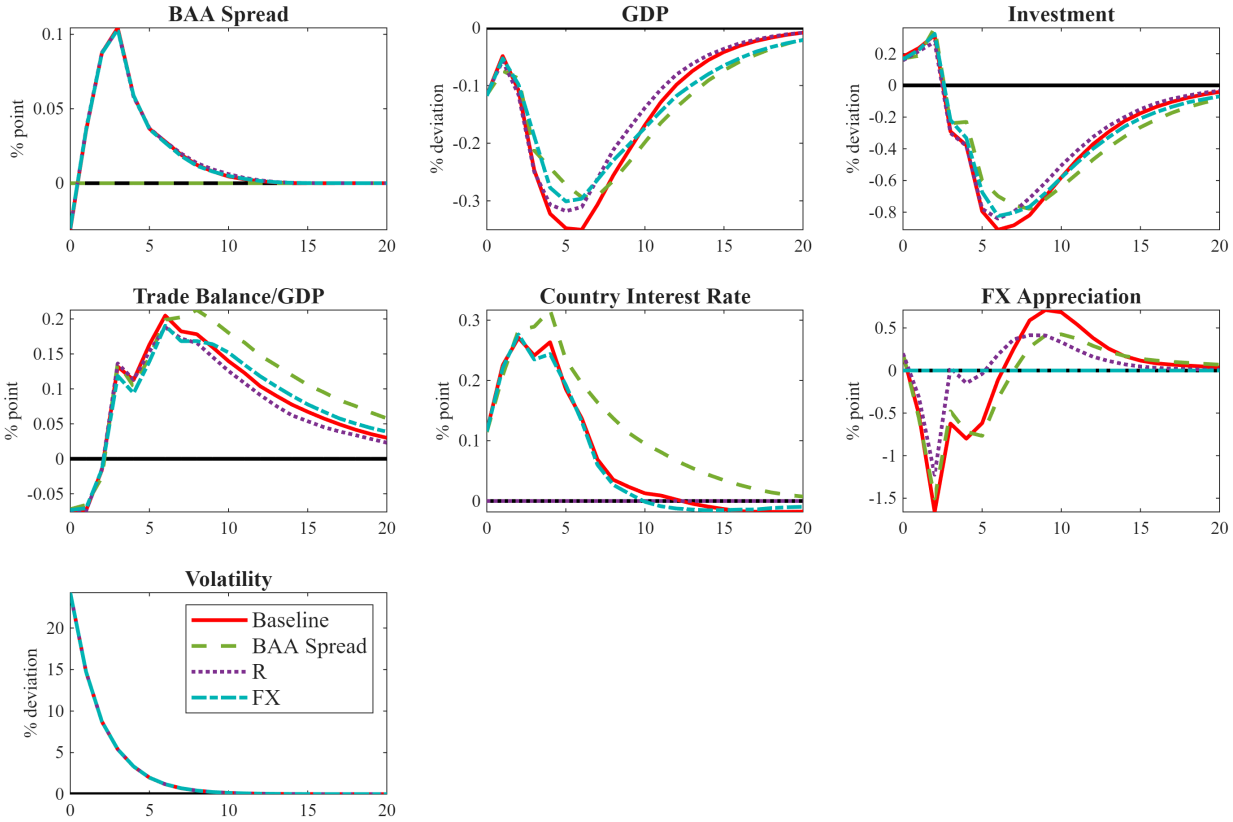
3.4 Understanding the Transmission Channels

U.S. fiscal policy volatility shocks induce a significant effect on business cycle conditions in emerging economies. In this section, we exploit the VAR estimates to quantify the importance of the different channels for the transmission of both shocks. We trace out the dynamics of all the variables in the case some variables do not react to the shock (see, for example, Uribe and Yue, 2006; Akinci, 2013; Vicondoa, 2019). Specifically, we set all the estimated coefficients from the equation that corresponds to the variable of interest that does not react to each shock equal to zero and recompute the IRFs.[2] We focus on three main transmission channels. First, U.S. fiscal policy volatility may affect global financial conditions. which is reflected in the credit spreads in the U.S. (i.e. the U.S. BAA Corporate Spread). Second, the shock affects the interest rate faced by these economies in international credit markets. Third, each shock induces movements in the exchange rate. Figure 4 displays the responses of the variables when each of these variables does not react to the shock.

The response of the U.S. BAA corporate spread is the most important one in explaining

[2]The results from these exercises are subject to the Lucas' critique (Lucas, 1976). A small open economy model that considers fiscal policy volatility shocks from abroad and the different transmission channels would be useful for these exercises.

Figure 4: IRFs to a one standard deviation U.S. fiscal policy volatility shock - Counterfactuals



Note: Solid lines denote point median estimates of impulse responses from the VAR system (1); while dashed green line denotes the IRFs when the U.S. BAA Corporate Spread cannot react to the shock, dotted purple line denotes the responses when the country interest rate cannot react to the shock and dotted-dashed lines denote the responses when the exchange rate does not react to the shock. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The response of fiscal volatility is expressed in % deviations. The responses of U.S. BAA corporate spread, trade balance-to-GDP ratio, country interest rate and exchange rate appreciation are expressed in annualized % points. Horizon is in quarters.

the response of domestic variables. While the amplification through the U.S. BAA corporate spread is important to explain country interest rate dynamics, the effect on output and investment is milder. This can be due to the fact that when the U.S. BAA Corporate Spread does not react to the shock, the response of the country interest rate is amplified, counteracting partially the positive effects of U.S. BAA Corporate Spread on financial variables.

4 Alternative Specifications

In this section we assess whether the results are robust to alternative fiscal instruments, extending the sample of emerging economies and estimating the responses using local projections.

4.1 Alternative Measures

Our baseline analysis considers the cyclically adjusted primary balance as our measure of fiscal policy. Fernández-Villaverde et al. (2015) use other measures of fiscal policy based on capital and labor income taxes, consumption taxes, and government expenditure. We estimated Eq. 1 using these series of shocks instead of our baseline measure of primary balance. Results are presented in Appendix A.3.1. Responses are qualitatively comparable to the baseline ones but the relative importance of fiscal volatility shocks is slightly lower. Thus, among fiscal policy variables, the main volatility shock that drives business cycle fluctuations in emerging economies is related more with the fiscal balance than individual taxes.

4.2 COVID Sample

We extend the sample period to include observations from the pandemic (1995:Q1 to 2024:Q1) using the baseline sample of emerging economies (Argentina, Brazil, Chile, Mexico, Philippines, South Africa and Turkey). As expected, we recover large U.S. fiscal policy volatility shocks around the Covid period. However, the estimated effects are comparable to those of our baseline sample (see Figure A.3.4).

4.3 Extended Sample

The main results are based on a representative sample of 7 emerging economies, similar to the ones used in the literature (e.g., Uribe and Yue, 2006; Akinci, 2013; and Vicondoa (2019). Thus, we use this sample in our baseline to enhance comparability with previous studies that analyze similar drivers of business cycles in emerging economies. In order to

assess the robustness of the main findings, we extend our analysis to a larger set of emerging economies. The extended sample consists of 25 emerging economies included in Table A.1. We choose this set of economies depending on the availability of macroeconomic data and also the availability of the EMBI spread, which is a key indicator of financial conditions for emerging economies. The main conclusions remain unchanged using this extended sample of emerging economies. The results are presented in Appendix A.3.2.

4.4 Local Projections

The main analysis of the paper is based on a VAR where the shocks are included in an exogenous block (see Eq. 1). We use a VAR for two main reasons. First, the VAR allows us to perform some counterfactual analysis to better understand the transmission mechanism. Second, previous works in this literature use VAR methods, so this helps us to enhance comparability. However, we do not rely on the VAR to identify the structural shocks of interest. Thus, we estimate the spillover of U.S. fiscal policy volatility using local projections, and we find that the main conclusions remain unchanged. The results are presented in Appendix A.3.3.

5 The Role of Country Characteristics

In this Section we study the relevance of key country characteristics and institutional frameworks that govern macroeconomic policy in shaping the responses of the variables in the SVAR to U.S. fiscal policy volatility shocks. In particular, we sort countries based on their degree of exchange rate flexibility, openness to trade, level of outstanding debt, and whether fiscal rules and inflation targeting frameworks were in place. Table A.2 reports how we pooled the data for each category. For each group of countries, we use the panel SVAR approach to gauge the importance of U.S. fiscal policy volatility shocks. The strategy is to split the full sample into two subsamples according to the country characteristic of interest. Note that different observations from the same country can appear in both subsamples (e.g. a country may have adopted an IT framework in the middle of the sample).

First, we divide the sample of 25 countries into episodes of fixed exchange rates and those with more flexible exchange rate regimes. The exchange rate regime is based on de facto classification of Ilzetzki, Reinhart, and Rogoff (2010). Second, we divide the sample based on their ratio of trade to GDP, where trade is measured as imports plus exports. We consider a country to be "open" if this ratio exceeds 40 percent. Third, we study two different criteria with respect to the fiscal policies. On one hand, we divide the sample based on the total debt to GDP of the central government. Country episodes with debt higher than 60 percent are included in the "high-debt" group. On the other hand, we divide the sample based on whether a fiscal rule was in place or not. Finally, we divide the sample based on whether an inflation targeting framework was in place or not.

Table 3 reports the 2-year ahead forecast error variance decomposition explained by U.S. fiscal policy volatility shocks for each country group.

Table 3: Variance Decomposition by Country Characteristics.

FEVD	VOL	GDP	INV	TBY	R	FX	BAA
Extended	99.3	3.8	1.0	0.9	5.1	2.3	5.5
Trade Openess							
Open	99.6	4.1	1.0	0.9	4.0	2.8	6.1
Closed	97.0	2.2	1.1	1.2	10.7	2.9	3.8
Exchange Rate Regime							
Fixed	94.4	0.8	4.7	1.9	3.7	6.6	5.2
Flexible	99.0	3.2	0.8	1.6	3.2	2.2	7.1
Monetary Policy Regime							
IT	98.4	3.5	0.8	1.8	10.1	3.3	7.9
Non-IT	94.4	9.5	4.0	3.2	3.4	1.5	6.9
Fiscal Policy Regime							
Rule	99.0	6.3	1.6	2.3	9.7	5.3	6.7
No-Rule	99.5	4.5	2.9	0.9	1.4	1.4	5.6
External Debt							
High	96.8	1.4	0.5	0.4	4.6	3.3	7.3
Low	97.7	6.1	1.3	0.5	6.5	3.9	5.0

Note: 2-Year ahead forecast error variance decomposition of each variable explained by U.S. fiscal volatility shocks. Table A.2 displays the country and sample periods include in each subsample.

U.S. fiscal volatility shocks are a more important driver of output fluctuations in economies that do not follow a strict inflation targeting regime, display higher trade openness, have lower external debt, and flexible exchange rate regime.

6 Conclusion

In this paper, we examine the international spillovers of U.S. fiscal policy volatility shocks on EMEs. By estimating time-varying volatility in U.S. fiscal policy reaction functions and employing a Panel VAR model, we show that U.S. fiscal policy volatility significantly impacts business cycle dynamics in EMEs. Our findings indicate that fiscal policy volatility shocks from the U.S. play a prominent role in driving output and investment fluctuations, mainly through affecting financial conditions of these economies.

Our analysis yields three main findings. First, U.S. fiscal volatility shocks generate economically significant effects on EMEs, with GDP declining 0.4 percent and investment contracting 1 percent within one year. Second, these shocks account for approximately 6 percent of output fluctuations—rivaling the importance of U.S. monetary policy shocks. Third, the U.S. BAA corporate spread emerges as the primary transmission channel, with global financial tightening amplifying domestic contractions beyond direct bilateral linkages.

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A Appendix

A.1 Data Appendix

These are the baseline and extended samples used in our analysis.

Table A.1: Extended Sample of Emerging Economies

Country	**Period**
Argentina	1995Q1-2001Q4
Brazil	1995Q1-2019Q4
Bulgaria	1999Q1-2013Q4
Chile	1999Q2-2019Q4
Colombia	2005Q1-2019Q4
Croatia	2009Q4-2019Q4
Hungary	1999Q1-2019Q4
India	2012Q4-2019Q4
Indonesia	2004Q2-2019Q4
Korea, Rep. of	1995Q1-2004Q2
Latvia	2012Q3-2018Q4
Lithuania	2009Q4-2019Q4
Malaysia	1996Q4-2019Q4
Mexico	1995Q1-2019Q4
Morocco	2014Q1-2019Q4
Peru	1997Q1-2019Q4
Philippines	1995Q1-2019Q4
Poland	1995Q1-2019Q4
Romania	2012Q1-2019Q4
Russia	1997Q4-2019Q4
Serbia	2005Q2-2019Q4
Slovakia	2013Q3-2019Q4
South Africa	1995Q1-2019Q4
Thailand	1997Q4-2006Q1
Turkey	1998Q1-2019Q4

Macroeconomic series were obtained from the IMF International Financial Statistics (IFS) database. Quarterly series of GDP and gross fixed capital formation (proxy for investment) expressed in local currency units and current prices are deflated using the GDP deflator. Trade balance is expressed as share of GDP at current prices. For exchange rate, we use the nominal exchange rate index computed by the Bank of International Settlements (BIS). These indexes are calculated as a geometric weighted average of

bilateral exchange rates. For the analysis, we use the quarterly average. The appreciation of the exchange rate corresponds to the change in this index with respect to the same quarter of the previous year. All these variables, except for the nominal exchange rate, are seasonally adjusted using the X13-ARIMA-SEATS before any transformation.

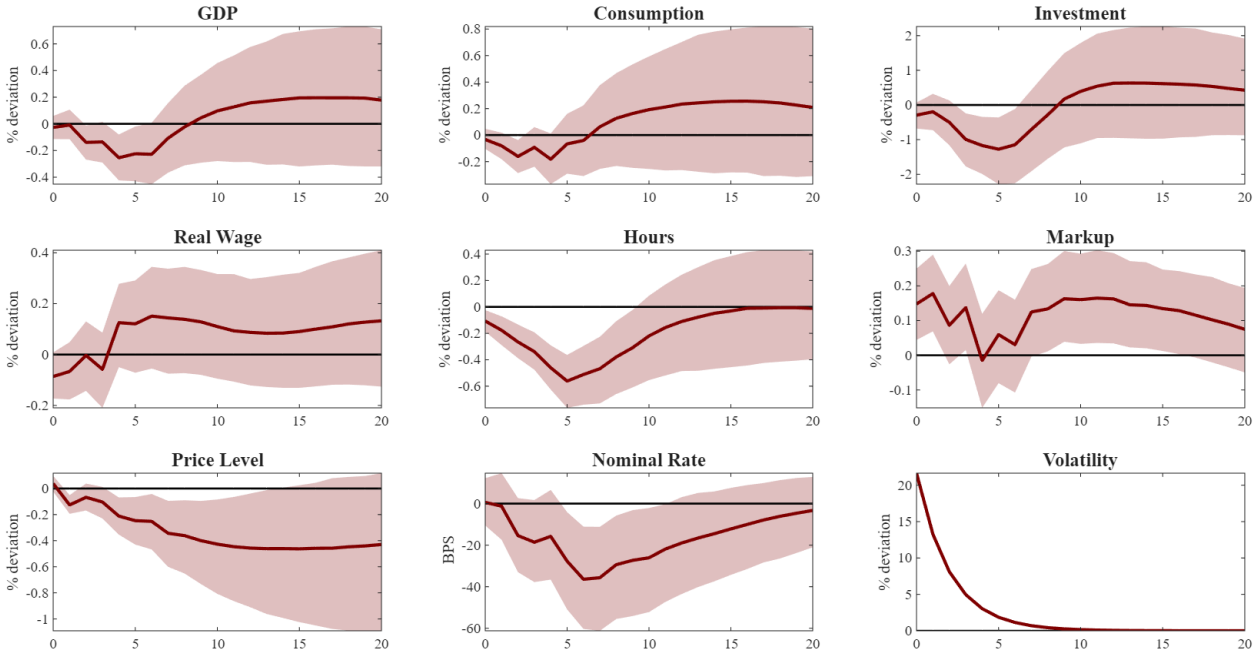
The country interest rate is defined as the U.S. interest rate for 10 years plus the country spread. For emerging economies, the spread is measured using the J.P. Morgan Emerging Markets Bond Index Global (EMBI Global). The spread is computed as an arithmetic, market-capitalization-weighted average of US-dollar denominated bond spreads issued by sovereign and quasi-sovereign entities over U.S. Treasury bonds of similar duration. Instead of selecting countries according to a sovereign credit-rating level, as is done with the EMBI+, the EMBI Global defines emerging markets countries with a combination of World Bank-defined per capita income brackets and each country's debt-restructuring history.

Finally, the U.S. BAA corporate spread is defined as the difference between Moody's BAA corporate yield and the yield on 10-year Treasury constant maturity (series: BAA10Y from FRED).

A.2 Effects of Fiscal Policy Volatility Shocks on the U.S.

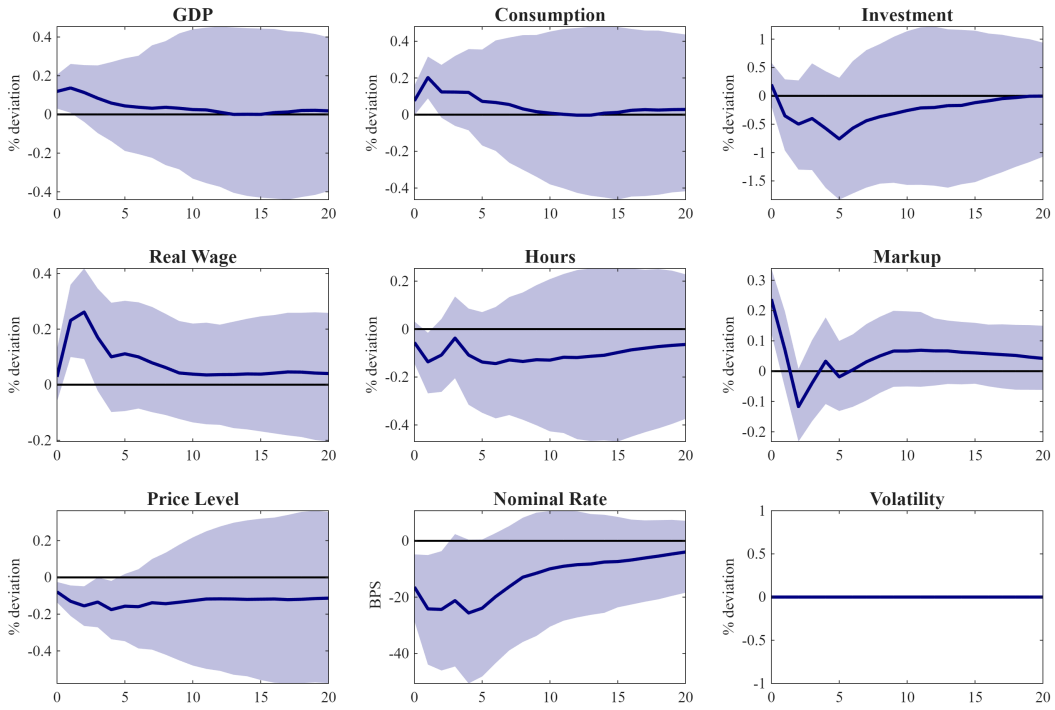
To fully characterize the transmission of U.S. fiscal policy volatility shocks, we estimate the responses of the U.S. economy. We estimate the VAR specified in Eq. 1 but with U.S. data. We use a set of variables similar to Fernández-Villaverde et al. (2015) over the sample 1970:Q2 to 2014:Q2. Figures A.1 and A.2 display the responses of the U.S. economy to a fiscal policy volatility shock, respectively. Fiscal policy volatility shocks induce a recession in the U.S., inducing a fall in GDP of similar size. This contraction in economic activity and consumption, together with the response of financial variables, may contribute to explain the decline in economic activity observed in EMEs.

Figure A.1: IRFs to a U.S. Fiscal Policy Volatility Shock in the U.S.



Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-red shaded areas. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

Figure A.2: IRFs to a U.S. Fiscal Policy Level Shock in the U.S.



Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-blue shaded areas. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

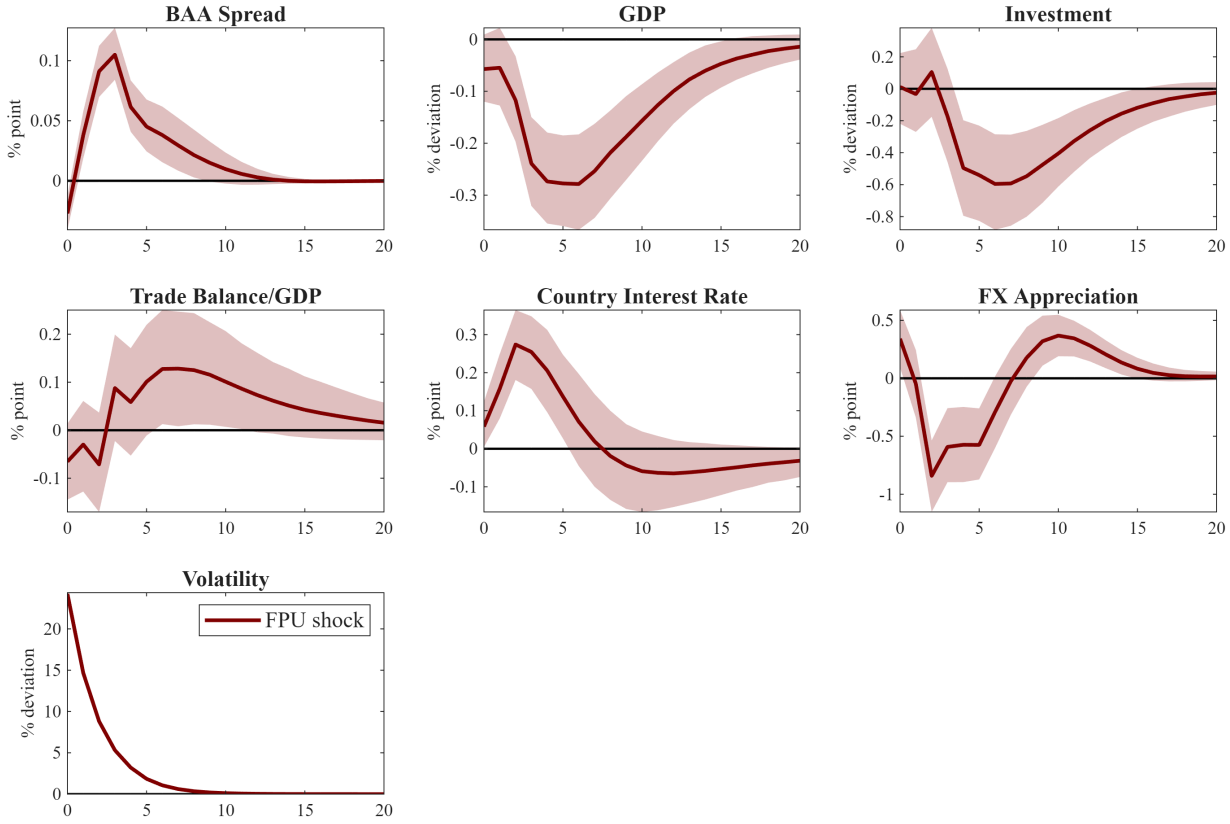
A.3 Additional Empirical Results for Emerging Economies

A.3.1 Alternative Measures of Policy Volatility

A.3.2 Extended Sample of EMEs

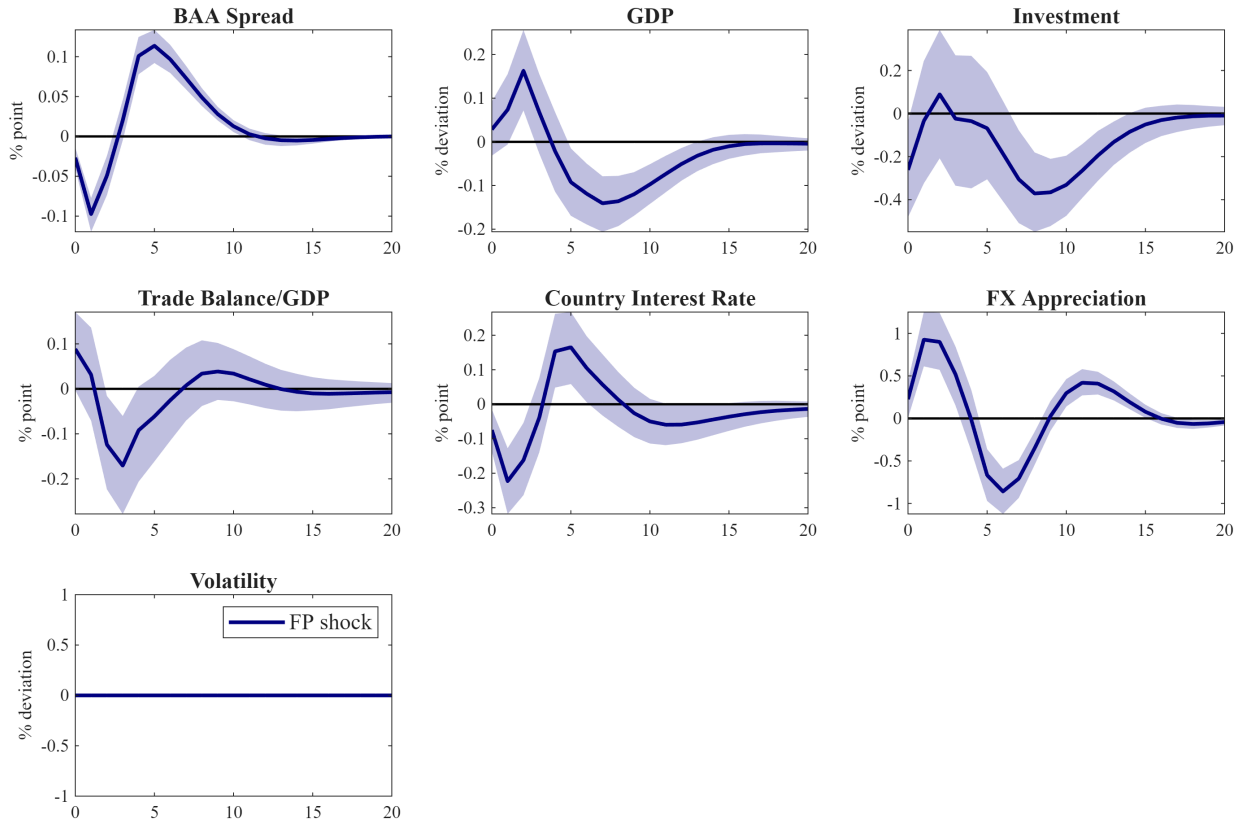
Figures A.3 and A.4 display the IRF to a one standard deviation U.S. fiscal policy volatility shock, using an extended sample of EMEs.

Figure A.3: IRFs to a U.S. Fiscal Volatility Shock - Extended Sample



Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The response of fiscal volatility is expressed in % deviations. The responses of U.S. BAA corporate spread, trade balance-to-GDP ratio, country interest rate, and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

Figure A.4: IRFs to a U.S. Fiscal Policy Level Shock - Extended Sample



Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The response of fiscal volatility is expressed in % deviations. The responses of U.S. BAA corporate spread, trade balance-to-GDP ratio, country interest rate, and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

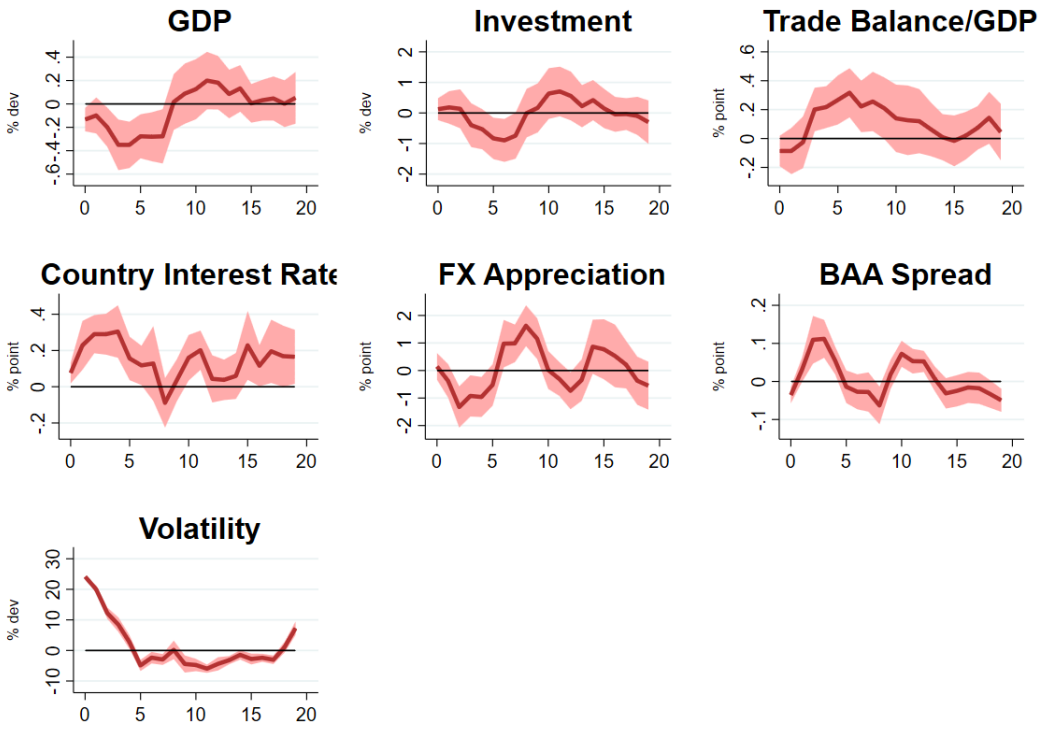
A.3.3 Estimation with Local Projections

We estimate the effects of both U.S. fiscal policy volatility shocks on EMEs using local projections. In particular, we estimate the following specification.

$$y_{t+h} - y_{t-1} = \alpha_{0,h} + \alpha_{1,h}\nu_t + \alpha_{2,h}X_{t-1} + \epsilon_{t+h} \tag{2}$$

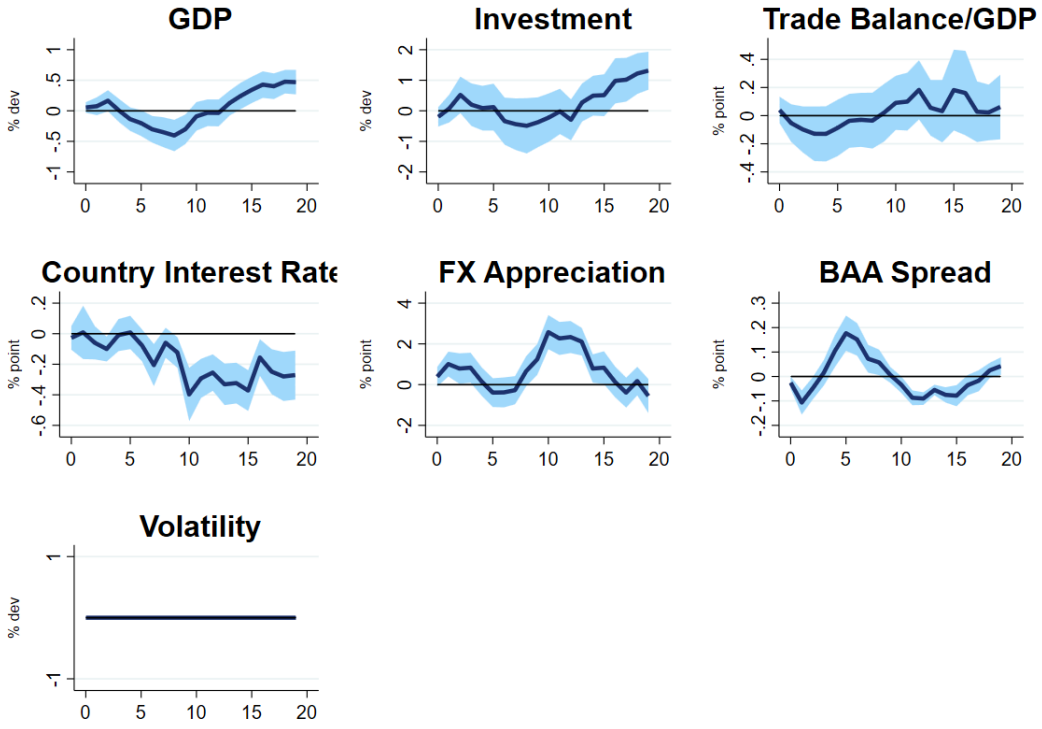
where y_{t+h} denotes the variable of interest (GDP, investment, etc), ν_t is the series of U.S. fiscal policy volatility shock, X_{t-1} is the set of controls. Figures A.5 and A.6 display the responses to U.S. fiscal policy shocks, respectively. The main conclusions are robust to this alternative specification.

Figure A.5: IRFs to a U.S. Fiscal Policy Volatility Shock in EMEs - Local Projections



Note: Solid lines denote point estimates of impulse responses using Local Projections (Eq. 2); 90% confidence bands are depicted with light-red shaded areas. Horizon is in quarters.

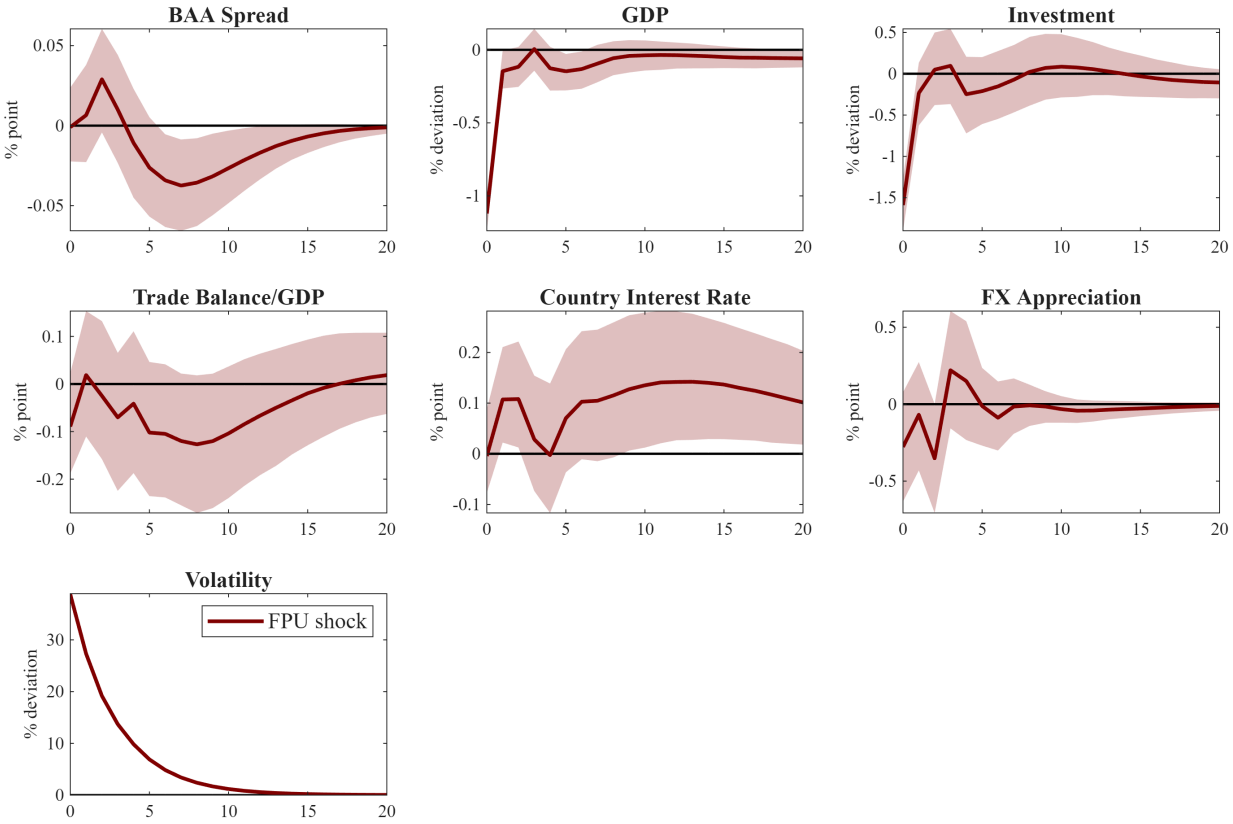
Figure A.6: IRFs to a U.S. Fiscal Policy Level Shock in EMEs - Local Projections



Note: Solid lines denote point estimates of impulse responses using Local Projections (Eq. 2); 90% confidence bands are depicted with light-blue shaded areas. Horizon is in quarters.

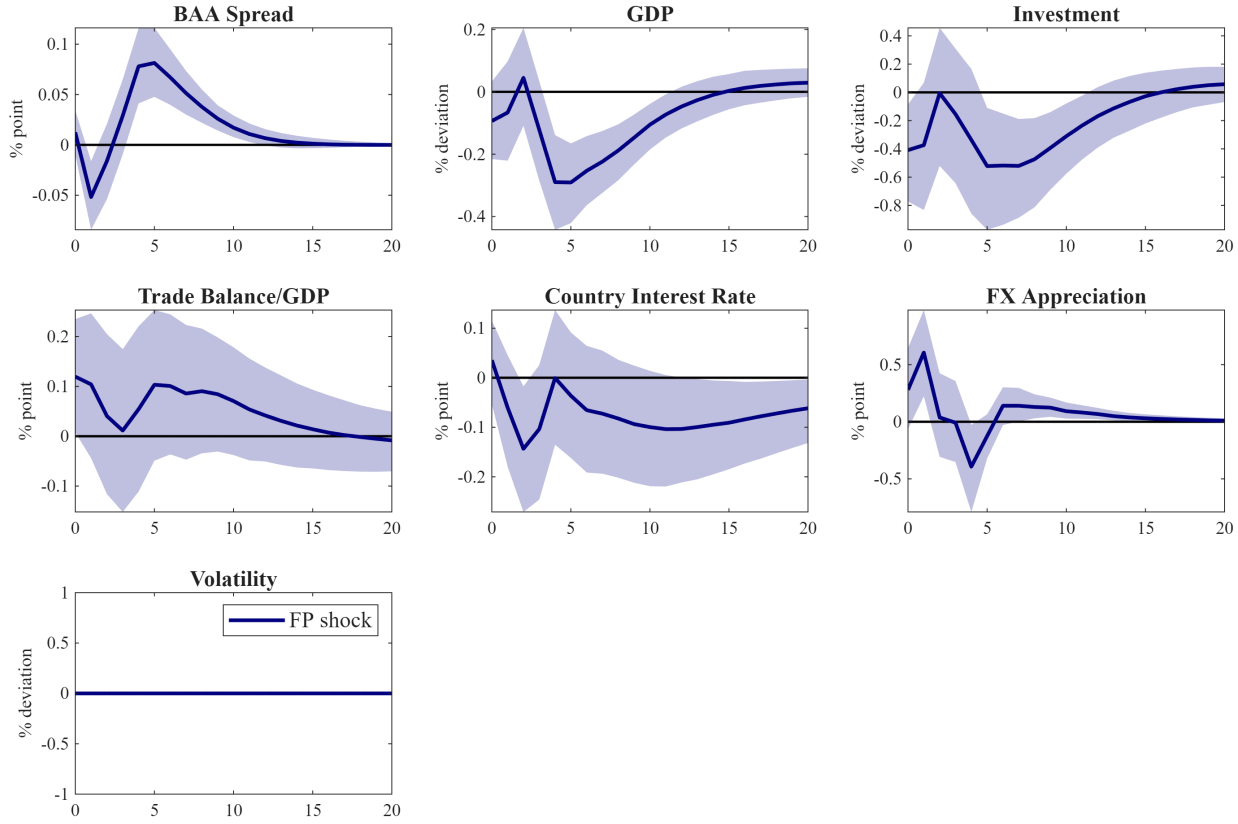
A.3.4 IRFs Including Covid Period

Figure A.7: IRFs to a U.S. Fiscal Policy Volatility Shock with COVID observations



Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The response of fiscal volatility is expressed in % deviations. The responses of U.S. BAA corporate spread, trade balance-to-GDP ratio, country interest rate and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

Figure A.8: IRFs to a U.S. Fiscal Policy Level Shock with COVID observations



Note: Solid lines denote point estimates of impulse responses from the VAR system (1); 90% confidence bands are depicted with light-blue shaded areas. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The response of fiscal volatility is expressed in % deviations. The responses of U.S. BAA corporate spread, trade balance-to-GDP ratio, country interest rate and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 10,000 bootstrap replications. Horizon is in quarters.

A.3.5 Country Characteristics

Table A.2: Country characteristics.

Group	Countries (Number of obs)	Total obs
Open	Chile (83), Hungary (84), Korea (38), Malaysia (93), Mexico (100), Peru (64), Philippines (100), South Africa (95) and Turkey (82)	739
Closed	Argentina (28), Brazil (100), Colombia (60), Peru (28), South Africa (5) and Turkey (6)	227
Fixed	Argentina (28), Brazil (16), Hungary (43), Korea (11), Malaysia (30), Peru (54), Philippines (88) and Turkey (2)	272
Flexible	Brazil (84), Chile (83), Colombia (60), Hungary (41), Korea (27), Malaysia (63), Mexico (100), Peru (38), Philippines (12), South Africa (100) and Turkey (86)	694
Infl. Targeting	Brazil (84), Chile (82), Colombia (60), Hungary (75), Korea (14), Mexico (76), Peru (72), Philippines (72) South Africa (80) and Turkey (56)	671
No Infl. Targeting	Argentina (28), Brazil (16), Chile (1), Hungary (9), Korea (24), Malaysia (93), Mexico (24), Peru (20), Philippines (28), South Africa (20) and Turkey (32)	295
Fiscal Rule	Argentina (8), Brazil (88), Chile (76), Colombia (60), Hungary (64), Malaysia (93), Mexico (56) and Peru (80)	525
No Fiscal Rule	Argentina (20), Brazil (12), Chile (7), Hungary (20), Korea (38), Mexico (44), Peru (12), Philippines (100), South Africa (100) and Turkey (88)	441
High Debt	Argentina (8), Brazil (80), Colombia (24), Hungary (84), Malaysia (56), Mexico (80), Peru (24), Philippines (80), South Africa (28) and Turkey (32)	496
Low Debt	Argentina (20), Chile (83), Colombia (36), Korea (38), Malaysia (37), Mexico (16), Peru (56), Philippines (20), South Africa (52) and Turkey (48)	406