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U.S. Fiscal Volatility Spillovers to Emerging Economies *

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Abstract

This paper quantifies the international spillovers of U.S. fiscal volatility shocks to emerging economies (EMEs). We identify U.S. fiscal volatility shocks by estimating fiscal reaction functions with time-varying volatility. A one standard deviation U.S. fiscal volatility shock, similar to the 2011 debt-ceiling episode, reduces output by 0.4 percent and investment by 0.7 percent in EMEs after one year, lasting around 10 quarters. The shock propagates primarily through global financial conditions and commodity prices, affecting EMEs borrowing costs and accounting for 7 percent of EMEs business cycle fluctuations. The impact is lower in economies with inflation-targeting frameworks and fiscal rules.

Keywords: U.S. Policy Volatility, Fiscal Policy, Volatility Shocks, Emerging Economies, Spillovers. **JEL Codes**: E32, E62, F41.

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1 Introduction

Periods of intense political debate over fiscal policy in the United States—such as the 2011 debt ceiling standoff, the 2012 "fiscal cliff," and the 2013 government shutdown—were characterized not by large fiscal adjustments, but by heightened uncertainty about whether, when, and how U.S. fiscal policy would be resolved. These episodes coincided with sharp increases in global financial volatility, abrupt depreciation of emerging market currencies, and volatile capital flows to developing economies. This pattern suggests that uncertainty about U.S. fiscal policy, rather than fiscal policy itself, may be an important driver of global economic fluctuations. Yet standard models of fiscal spillovers emphasize the level of fiscal policy—government spending, tax rates, and deficits—as drivers of international transmission through trade balances, exchange rates, and global interest rates (see, for example, Faccini, Mumtaz, and Surico, 2016). This raises a fundamental question: does uncertainty about U.S. fiscal policy generate independent spillovers to emerging market economies (EMEs), separate from the effects of fiscal policy itself?

Despite growing evidence that policy uncertainty affects domestic economies (Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez, 2015; Baker, Bloom, and Davis, 2016), we know surprisingly little about how U.S. fiscal policy uncertainty propagates internationally. Existing work on international spillovers has focused primarily on the level of U.S. fiscal policy or on other forms of uncertainty such as monetary policy or general macroeconomic uncertainty. Because the United States sits at the core of global financial markets, uncertainty about its fiscal path is likely to have significant repercussions for EMEs, which rely heavily on access to international capital markets and are highly exposed to global risk-premium movements. This gap is consequential: fiscal uncertainty may operate through distinct channels and have different effects than other types of uncertainty. Understanding these transmission channels is essential for EME policymakers designing resilience strategies.

To fill this gap, we adopt a two-step empirical approach. In the first step, we estimate fiscal policy reaction functions with time-varying volatility for the U.S. using a stochastic volatility model in the spirit of Fernández-Villaverde, Guerrón-Quintana, Kuester, and

Rubio-Ramírez (2015). This approach allows us to capture innovations not only to the level of fiscal policy, but also to its volatility. The resulting innovations to volatility—our fiscal volatility shocks—spike during well-known high-uncertainty episodes such as recessions, the 2011 debt ceiling crisis, the Bipartisan Budget Act of 2013, and the Taper Tantrum. The identified volatility series is positively correlated with broader uncertainty measures such as the VIX and the Economic Policy Uncertainty index, but also contains fiscal-specific variation not captured by these general indices. Importantly, this approach differs from newspaper-based indices (Baker, Bloom, and Davis, 2016) by directly measuring volatility in realized fiscal policy decisions rather than news or discussions about fiscal policy.

In the second step, we estimate the spillover effects of U.S. fiscal volatility shocks using a Panel VAR for a representative sample of EMEs from 1995 to 2019. The identified U.S. fiscal (level and volatility) shocks enter as an exogenous block alongside a key set of domestic macroeconomic variables and global financial indicators: real GDP, investment, trade balance-to-GDP ratio, multilateral nominal exchange rate, country interest rate, commodity prices, U.S. fiscal volatility and U.S. BAA corporate spread. This specification traces the dynamic responses of all EME variables to fiscal level and volatility shocks, while controlling for feedback effects and common global factors. Including country-specific commodity prices allows us to distinguish financial contagion from commodity price-driven adjustment, a distinction that proves important for characterizing the medium-run dynamics of the transmission (see, for example, Juvenal and Petrella, 2024). We also examine how country characteristics and policy frameworks (trade openness, inflation targeting, and fiscal rules) shape the macroeconomic response to fiscal volatility shocks, using an extended sample of 25 EMEs to maximize cross-sectional variation.

Our analysis yields four main findings. First, U.S. fiscal volatility shocks generate economically meaningful and persistent real effects in EMEs. A one-standard-deviation increase in fiscal volatility, roughly the size observed during the 2011 debt ceiling crisis, lowers output by around 0.4 percent and investment by around 0.7 percent after one year. These effects persist for approximately two years, with investment declining nearly three times as much as output. This disproportionate investment response is consistent with theoretical predictions that uncertainty shocks affect irreversible decisions more severely

(Bernanke, 1983; Bloom, 2009): firms facing both higher borrowing costs and increased policy uncertainty have strong incentives to delay capital expenditures.

Second, fiscal volatility shocks are quantitatively important drivers of EME business cycles. This shock accounts for almost 7 percent of the two-year-ahead variance of EME output (larger than the 2.5 percent contribution of U.S. fiscal level shocks), and of similar order of magnitude to U.S. monetary policy shocks documented in the literature (e.g., Vicondoa, 2019). This finding challenges the conventional focus on fiscal stance rather than fiscal predictability in the international spillovers literature: how predictably the U.S. conducts fiscal policy matters nearly as much as which policy it implements. Fiscal volatility also accounts for substantial shares of investment variance (3.5 percent), country interest rate variance (5.1 percent), and export commodity price variance (5.5 percent), the latter consistent with U.S. fiscal uncertainty depressing global commodity demand and transmitting to EME terms of trade. These findings suggest that U.S. fiscal policy, broadly defined to include both what the U.S. does and how predictably it is, is a first-order driver of EME fluctuations.

Third, the transmission of fiscal volatility shocks to EMEs operates through two distinct channels that differ in both mechanism and timing. In the short run, the dominant channel is global financial conditions. Following a fiscal volatility shock, the U.S. BAA corporate spread (a proxy of U.S. corporate credit conditions) widens by approximately 10 basis points, while EME country interest rates rise by roughly 25 basis points, reflecting a risk-off reallocation toward safer dollar assets in which emerging markets bear a disproportionate share of the global financial tightening. Counterfactual analysis reveals that preventing the U.S. BAA corporate spread from responding reduces the EME output effect by approximately half (from -0.4 to -0.2 percent) rendering global credit conditions as the primary short-term transmission channel. In the medium run a second channel emerges: commodity prices remain depressed for several quarters following the shock, even as the U.S. BAA corporate spread reverts, sustaining the output contraction beyond the financial episode itself. When the commodity price response is shut down in the counterfactual, EME economies recover significantly faster than in the baseline, indicating that commodity price dynamics act as a medium-run persistence amplifier rather than an impact amplifier. Shutting down both channels simultaneously produces the largest attenuation of both the initial contraction and the subsequent recovery, confirming that together the U.S. BAA corporate spread and commodity prices account for both the amplitude and the duration of the EME output response. In contrast, muting the exchange rate response leaves real dynamics virtually unchanged, confirming that fiscal volatility spillovers operate through financial contagion rather than through expenditure-switching channels. This implies that EMEs are vulnerable to U.S. fiscal uncertainty even in the absence of direct trade linkages, as elevated global risk premia and commodity price compression affect all emerging markets simultaneously.

Fourth, the magnitude of spillovers varies systematically with country characteristics and policy regimes. We examine heterogeneity across three dimensions (trade openness, inflation targeting, and fiscal rules) using an extended sample of 25 EMEs and by splitting the sample along each dimension. We find that more open economies experience substantially larger output and investment contractions following fiscal volatility shocks than more closed economies. This pattern is consistent with the U.S. BAA corporate spread transmission channel identified in the previous finding: trade openness correlates with deeper financial integration and greater reliance on dollar-denominated external financing, amplifying exposure to global credit tightening. Economies without inflation-targeting (IT) frameworks experience significantly larger investment declines than IT economies. One interpretation is that more credible monetary frameworks partially offset the financial tightening associated with U.S. fiscal volatility shocks, dampening the transmission of elevated global risk premia to domestic borrowing costs. Finally, economies without fiscal rules display larger real effects than those with formal rules, consistent with stronger fiscal frameworks enhancing resilience, potentially by preserving countercyclical fiscal space or by supporting policy credibility that dampen sovereign risk premium increases. Taken together, these heterogeneity patterns suggest meaningful scope for institutional design to reduce EME vulnerability to U.S. fiscal volatility shocks.

Related Literature. This paper contributes to several strands of the literature. First, it connects to the work on uncertainty and macroeconomic fluctuations, which emphasizes the real effects of volatility shocks on consumption and investment decisions (Bernanke, 1983;

Bloom, 2009; Fernández-Villaverde, Guerrón-Quintana, Rubio-Ramírez, and Uribe, 2011). Within this literature, we are closely related to Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015), who study fiscal volatility shocks for the United States, and to work on fiscal policy uncertainty in specific advanced economies (e.g., Anzuini, Rossi, and Tommasino, 2020; Saijo, 2020; Mumtaz and Ruch, 2024). We add to this line of research by quantifying the international effects of U.S. fiscal volatility shocks on a broad set of EMEs.

Second, we complement the literature on external shocks and EMEs business cycles. Existing work has highlighted the role of U.S. interest rates, global risk appetite, and monetary policy as key drivers of EME fluctuations (Canova, 2005; Uribe and Yue, 2006; Rey, 2013; Bruno and Shin, 2015; Vicondoa, 2019; Gornemann, Rojas, and Saffie, 2025). A more recent literature studies international fiscal spillovers from U.S. fiscal level shocks (Faccini, Mumtaz, and Surico, 2016; Kumar, Mallick, and Sinha, 2024). Our results show that fiscal volatility shocks have real effects in EMEs of similar order of magnitude to those of fiscal level shocks, and work largely through global financial channels rather than through trade.

Third, we relate to emerging work on cross-border uncertainty propagation (Colombo, 2013; Carrière-Swallow and Céspedes, 2013; Caggiano, Castelnuovo, and Figueres, 2020; Yildirim, 2023; Guo, Yang, and He, 2024; Lastauskas and Nguyen, 2023; Lakdawala, Moreland, and Schaffer, 2021). These papers document that various forms of U.S. uncertainty—financial, macroeconomic, and monetary—propagate to foreign economies. We contribute to this literature by isolating fiscal volatility spillovers to EMEs specifically, showing that they operate through global financial conditions and commodity prices and respond differently to country characteristics than monetary uncertainty. Our findings highlight the importance of U.S. fiscal volatility shocks as an important driver of EME business cycles.

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 describes our empirical strategy for identifying spillovers to EMEs and presents the main results, including impulse responses, variance decompositions, and counterfactual analysis of transmission channels. Section 4 reports results from robustness exercises using alternative fiscal measures, extended country samples, local projections, and the COVID period. Section 5 examines heterogeneity across country characteristics and policy regimes. Finally, Section 6 concludes.

2 Identification of U.S. Fiscal Volatility Shocks

This section presents the identification of U.S. fiscal volatility shocks, which follows on Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015) and Anzuini, Rossi, and Tommasino (2020). First, we present the fiscal rule used in our baseline analysis. Then we describe the data and the estimation procedure. Finally, we present the series of U.S. fiscal volatility shocks that we use in the paper.

2.1 U.S. Fiscal Framework

To identify U.S. fiscal volatility shocks we need to decompose our fiscal variable into two components: systematic policy (predictable responses to debt and output) and policy shocks. We consider 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 positive value of ϕ_2 implies a counter-cyclical policy. Finally, ε_t denotes the fiscal (level) shock and σ_t represents the volatility of the fiscal shock.

Crucially, this specification of the fiscal rule allows the volatility of policy shocks to vary over time. Periods of high volatility such as debt ceiling crises or budget sequestration represent times when fiscal policy becomes less predictable, even holding expected policy constant. These shifts in volatility constitute our fiscal volatility shocks. 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.

2.2 Data and Estimation

To estimate the fiscal rule, we use quarterly estimates of net Federal Government revenues and outlays without automatic stabilizers (expressed 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.[1] 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, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015).[2]

We estimate the 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 $\bar{\gamma}$ together with the other policy parameters, and report our final estimates using the

[1]The series was downloaded from: https://www.cbo.gov/data/budget-economic-data#8.

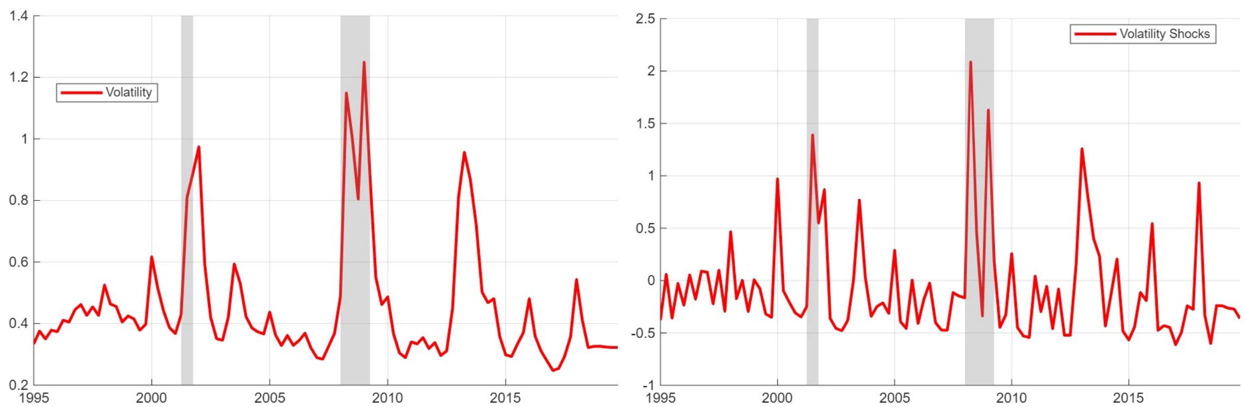
[2]For robustness, we also consider alternative policy instruments as in Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015): government spending (as a share of output) and the tax rates on capital income. Appendix D.1 presents the results using these alternative policy instruments.

smoother in Godsill, Doucet, and West (2004).

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

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



Note: Identified series of U.S. fiscal volatility ($\exp(\sigma_t)$ smoothed - left panel) and U.S. fiscal volatility shocks (ν_t - right panel). Shaded areas correspond to U.S. Recessions as defined by the NBER.

The left and right panels of Figure 1 display the identified (smoothed) time-varying volatility series ($\exp(\sigma_t)$) and the policy volatility shocks (ν_t), respectively. Several features are noteworthy. First, volatility spikes clearly around U.S. recessions (shaded regions), consistent with fiscal policy becoming more uncertain during economic downturns when policymakers face difficult tradeoffs between stimulus and sustainability. The largest spike occurs during 2008-2009, reflecting extraordinary uncertainty about fiscal responses to the financial crisis.

Second, fiscal volatility also rises during non-recessionary political crises: the 2011 debt ceiling standoff, the Bipartisan Budget Act of 2013, and the "Taper Tantrum" period. The latter episode is particularly interesting as it was triggered by Federal Reserve communication about monetary policy tapering, yet generated substantial fiscal volatility —perhaps due to concerns about how reduced Fed accommodation would interact with fiscal policy.

Third, the identified U.S. fiscal volatility series is positively correlated with broader uncertainty measures (Table 1). The correlation with VIX (0.41) and overall Economic Policy Uncertainty (0.27) suggests that our measure captures general uncertainty periods but also contains fiscal-specific variation. Notably, the correlation with EPU associated with the fiscal policy is modest (0.18), reinforcing that newspaper- and model-based approaches capture different aspects of uncertainty.[3] Table A.2 included in the Appendix displays additional statistics of the identified U.S. fiscal volatility shock series.

Table 1: Contemporaneous Correlation with Other Series of Uncertainty

	U.S. FV.	**VIX**	**EPU**	**EPU FP**
U.S. FV	1.00			
VIX	0.41**	1.00		
EPU	0.27**	0.54**	1.00	
EPU FP	0.18*	0.34**	0.93**	1.00

Note: Contemporaneous correlation between U.S. fiscal volatility and other indices of volatility and fiscal policy uncertainty. Sample period: 1995:1-2019:4. U.S. FV denotes the identified series of U.S. fiscal volatility, VIX represents the CBOE Volatility Index (VIXCLS in FRED), EPU is the Economic Policy Uncertainty Index computed by Baker, Bloom, and Davis (2016), and EPU FP is the Economic Policy Uncertainty index related with Fiscal Policy. ** denotes statistical significance at the 5% level ($p < 0.05$), and * denotes significance at the 10% level ($p < 0.10$).

Validation of the Identified Shock. We analyze the identified series of structural U.S. fiscal volatility shocks. One way to validate the identification of these shocks is to build an analytic narrative of fiscal volatility shocks by relating the spikes in the series with particular events. Table A.4 included in the Appendix contains a description. The main spikes in the series of shocks can be explained by debates related with fiscal policy in the U.S. Congress and also by extreme events like the 9/11 Terrorists Attacks in 2001. All of these main events are characterized by an increase in uncertainty about the future path of fiscal policy.

Another source of concern is that our identification of U.S. fiscal volatility shocks may be affected by the lack of some important determinant of fiscal policy. If this is the case, the identified series of U.S. fiscal volatility shocks may be explained by past values of macro-financial factors (see, for example, Forni and Gambetti, 2014). To test that this is not the case, we regress our identified series of shocks on lags of the macro-financial factors computed by McCracken and Ng (2016) (FRED-MD Database). Table A.3 included in the Appendix displays the results of this estimation. Past values of the series of macro-financial factors cannot explain our series of U.S. fiscal volatility shocks.

[3]The fiscal policy EPU is available from FRED https://fred.stlouisfed.org/series/EPUFISCAL#.

To understand the effects of the shocks in the U.S. and to compare with Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015), we estimate the effects of U.S. fiscal volatility shocks on the U.S. economy using a similar sample period as in the original paper.[4] Appendix B.3 presents the estimated effects. A positive U.S. fiscal volatility shock induces a contraction in the U.S. economy, similar to the effects documented by Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015).

This identification strategy for U.S. fiscal volatility shocks improves upon narrative or newspaper-based measures in two ways. First, it directly measures uncertainty in realized fiscal decisions rather than policy discourse. Second, it separately identifies volatility shocks from level shocks, allowing us to estimate their effects separately. 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 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 the Forecast Error Variance Decomposition (FEVD) 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 empirical baseline 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

[4] We prefer to use an extended sample from 1970:Q2-2014:Q2 instead of the one that we use for EMEs to obtain more precise estimates and to enhance the comparison with Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015).

fiscal volatility shock series 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 two blocks. The first block consists of foreign variables that are endogenous to the global system but exogenous to any individual EME: the U.S. corporate bond (BAA) spread relative to 10-year Treasury constant maturity yield, country-specific index of commodity prices (export prices), and the U.S. fiscal volatility series σ_t identified in Section 2. We include σ_t in $X_{i,t}$ to control for the level of fiscal uncertainty prevailing in each period, while the exogenous block ν_t captures innovations to that level. The U.S. corporate bond spread constitutes an indicator of global financial conditions (see, for example, Akinci, 2013), which allows us to control for a channel identified in the literature as important for the transmission of world shocks to open economies. Commodity prices are also important for EMEs, both as a source and amplification of business cycle fluctuations (see, for example, Roch, 2019; Juvenal and Petrella, 2024). Their inclusion allows us to distinguish financial contagion from commodity price-driven adjustment. The second block consists of domestic macroeconomic variables for the country i: real GDP, investment, trade balance-to-GDP ratio, multilateral nominal exchange rate, and country interest rate.

The country interest rate is defined as the 10-year U.S. Treasury yield plus the JP Morgan EMBI Global spread for country i, and therefore reflects both global interest rate conditions and country-specific risk premia. The country-specific commodity price index used in this paper is constructed with both international prices and country-level data on exports for individual commodities, assigning a weight based on the exports ratio to GDP of each commodity. Output and investment are expressed in real terms and in percentage deviations from a quadratic trend. The trade balance-to-GDP ratio, BAA corporate spread, country interest rate, and exchange 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.

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.

The effects of U.S. fiscal volatility spillovers can also be estimated using Local Projections. However, we prefer to estimate a VAR in our baseline specification for two main reasons. First, most of the previous work in this literature use VAR to estimate spillovers of different shocks (see, for example, Uribe and Yue, 2006; Akinci, 2013; Fernández-Villaverde, Guerrón-Quintana, Rubio-Ramírez, and Uribe, 2011). Using the same model and sample enhances the comparison relative to these works. Second, computing the FEVD is more straightforward in VARs than with Local Projections. We nonetheless verify robustness using Local Projections in Section 4.4, finding quantitatively comparable results.

3.2 Data and Estimation Method

Our baseline sample follows the country coverage commonly used in the literature on external shocks and EME business cycles, which facilitates comparison with earlier work (Uribe and Yue, 2006; Akinci, 2013; Vicondoa, 2019). Specifically, we pool quarterly data for Argentina, Brazil, Chile, Mexico, the Philippines, South Africa, and Turkey over 1995:Q1-2019:Q4. Sections 4.2 and 4.3 show that the main conclusions are robust to including the post-2019 period and to using an extended sample of EMEs.

We estimate the VAR presented in 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 $C(L)$ and $D(L)$ 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

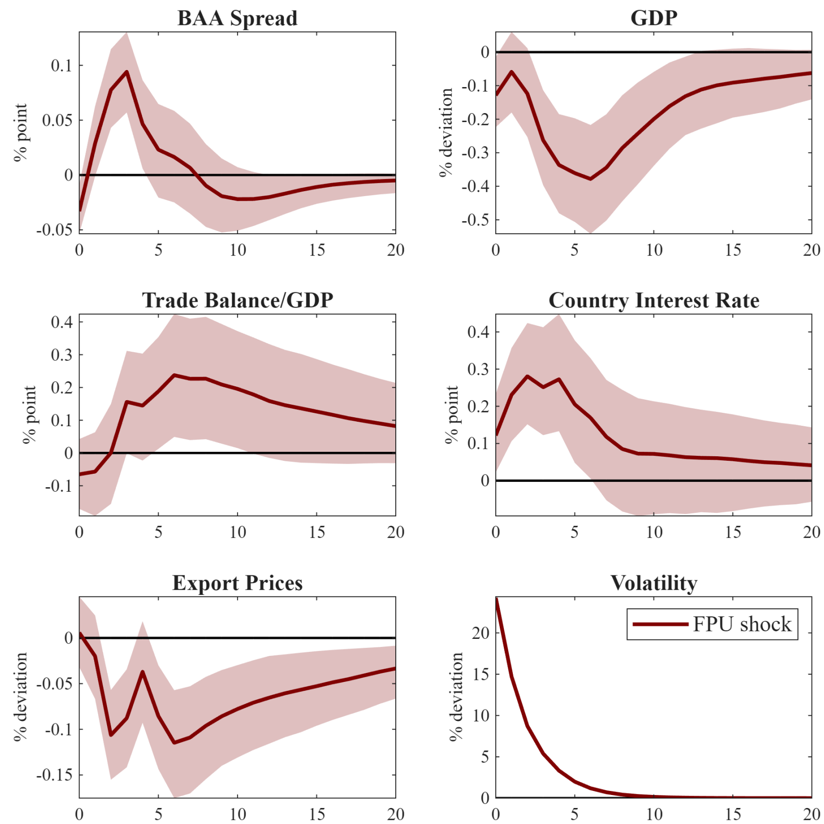
This section contains the results from the VAR. First, we present the Impulse Response Functions (IRFs) to the U.S. fiscal volatility shock. Second, we present the Forecast Error Variance Decomposition (FEVD), which quantifies the importance of U.S. fiscal volatility shocks as a driver of EMEs business cycles. Finally, we present some counterfactuals which allows us to characterize the main transmission mechanisms of U.S. fiscal volatility shocks to EMEs.

3.3.1 Impulse Responses

In this subsection, we present the macroeconomic responses of EMEs to the U.S. fiscal volatility shocks identified in Section 2. Figure 2 displays the IRFs of macroeconomic variables to a one standard deviation U.S. fiscal volatility shock. We organize the discussion around three sets of responses: financial conditions, real activity, and external adjustment.

Financial conditions. The shock triggers an immediate and significant tightening of global financial conditions. The U.S. BAA corporate spread widens by approximately 10 basis points on impact, reflecting heightened perceived risk in U.S. credit markets. EME country interest rates rise by approximately 25 basis points consistent with a risk-off reallocation toward safer dollar-denominated assets. As shown in Appendix C.1, this increase in country interest rates is driven primarily by the EMBI spread component rather than the U.S. Treasury yield, confirming that the shock raises country-specific risk premia rather than merely reflecting a general increase in the risk-free rate. This amplification from U.S. corporate credit conditions to EME sovereign risk premia is consistent with the global financial cycle documented by Rey (2013): a deterioration in U.S. credit conditions propagates disproportionately to emerging markets through financial contagion.

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



Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one-standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, investment and export prices 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 1,000 bootstrap replications. Horizon is in quarters.

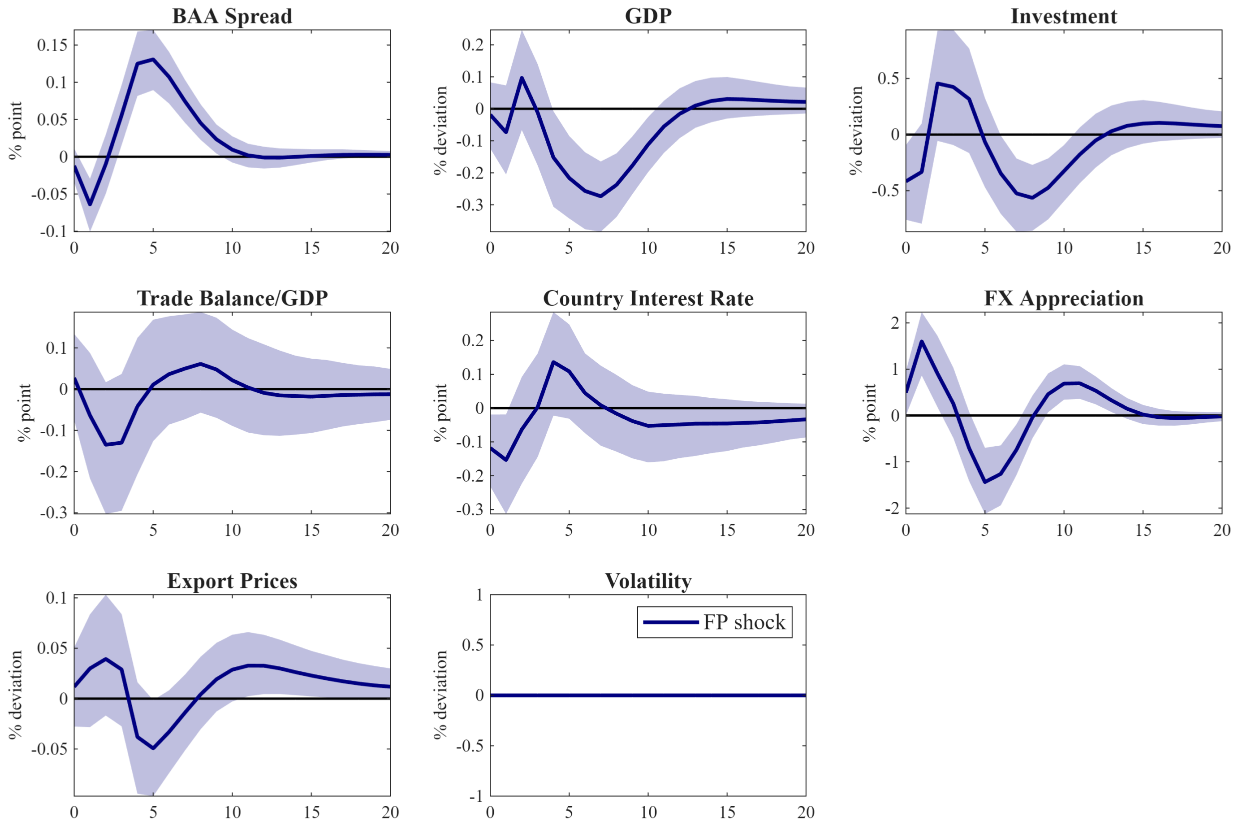
Real activity. The tightening of financial conditions transmits to real activity with a delay consistent with credit channel mechanisms. EME output declines by approximately 0.3 percent at a one-year horizon, reaching the trough of approximately 0.4 percent after five to six quarters before gradually recovering. Investment responds more sharply: it falls by approximately 0.7 percent at a one-year horizon and reaches a trough of approximately 1 percent after five quarters — roughly 2.5 times the magnitude of the output response at peak. This disproportionate investment response is consistent with the real options literature on irreversible investment under uncertainty (Bernanke, 1983; Bloom, 2009): when both borrowing costs and policy uncertainty rise simultaneously, firms face strong incentives to delay capital expenditures rather than commit to irreversible projects. Both output and investment effects persist for approximately ten quarters before dissipating, underscoring that these are not transitory fluctuations but persistent macro-financial propagation dynamics.

External adjustment. The trade balance-to-GDP ratio improves on impact as import compression from weaker domestic demand dominates any export effects. Commodity prices (export prices) decline by approximately 0.1 percent, a modest but statistically significant response that reflects the depressing effect of U.S. fiscal uncertainty on global commodity demand. The exchange rate depreciates by approximately 1 percent, though as we show in Section 3.4, this exchange rate movement plays a limited role in the real adjustment — the primary transmission operates through financial and commodity demand rather than expenditure-switching channels. The quantitative importance of these respective channels is examined formally through counterfactual analysis in Section 3.4.

To benchmark the importance of volatility shocks, Figure 3 reports the responses of EMEs to a one-standard-deviation U.S. fiscal policy (level) shock (ε_t) identified jointly with the volatility shock in Section 2. The qualitative dynamics are broadly similar: the BAA spread widens, country interest rates rise, output and investment contract, and the trade balance improves. Quantitatively, the level shock generates an output decline of approximately 0.3 percent and an investment decline of approximately 0.5 percent at a two-year horizon, somewhat smaller than the volatility shock effects but of the same order of magnitude. The most notable qualitative difference is in the exchange rate response. The level shock generates a statistically significant exchange rate appreciation on impact in EMEs. This effect can be explained by the depreciation of the USD in response to the contraction in aggregate demand. The delayed exchange rate depreciation can be linked with the decline in economic activity.

While previous work has focused on U.S. fiscal policy shocks, fiscal volatility shocks induce comparable macroeconomic effects on emerging economies. The similarity between level and volatility shock effects is striking and merits emphasis. It suggests that how fiscal policy is conducted—with high or low uncertainty—matters nearly as much as what policy is implemented. From an EME perspective, predictable U.S. fiscal consolidation may be preferable to uncertain fiscal outcomes, even if the expected policy path is identical.

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) to a one-standard deviation U.S. fiscal (level) shock; 90% confidence bands are depicted with light-blue shaded areas. The responses of GDP, investment and export prices 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 1,000 bootstrap replications. Horizon is in quarters.

3.3.2 Variance Decomposition

Table 2 displays the two-year ahead forecast error variance decomposition (FEVD) for all variables included in the baseline VAR, attributing shares to the fiscal volatility shock (ν_t) and the fiscal level shock (ε_t) respectively.

Table 2: Variance Decomposition

Variable	VOL	GDP	INV	TBY	RATE	FX	EXP	BAA
VOL	99.1	6.7	3.5	2.5	5.1	3.0	5.5	4.0
LEVEL	0.0	2.5	1.2	0.6	1.1	5.4	0.9	11.5

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

U.S. fiscal volatility is more important than U.S. fiscal policy (level) shocks as a driver of business cycle fluctuations in emerging economies. Fiscal volatility accounts for 6.7 percent of GDP fluctuations in emerging economies—more than double the contribution of level shocks (2.5 percent). For investment, fiscal volatility explains 3.5 percent of variance—a sizeable share given investment's high intrinsic volatility. Combined with the large impulse response magnitudes, this suggests fiscal uncertainty is a persistent drag on capital accumulation in EMEs, potentially affecting long-run growth beyond short-run stabilization concerns.

The pattern of variance shares across financial and real variables is informative about transmission mechanisms. Fiscal volatility shocks explain broadly similar shares of the BAA spread (4.0 percent) and country interest rates (5.1 percent), consistent with the IRF evidence that these shocks trigger a synchronized tightening of global credit conditions. Fiscal volatility also explains 5.5 percent of export price variance, consistent with the IRF evidence that U.S. fiscal uncertainty depresses global commodity demand and transmits to EME terms of trade. By contrast, trade balance and exchange rate variances attributable to fiscal volatility (2.5 and 3.0 percent respectively) are substantially smaller.

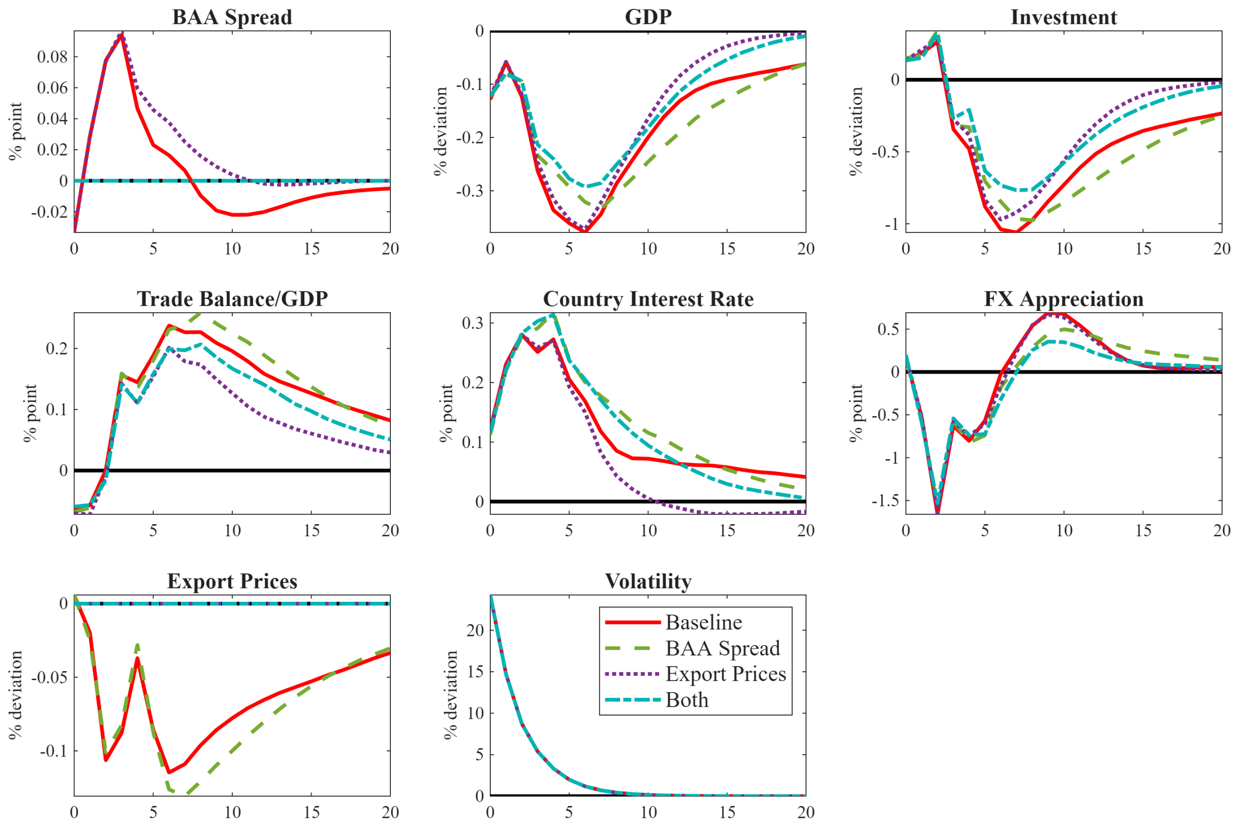
3.4 Understanding the Transmission Channels

U.S. fiscal volatility shocks induce significant changes in business cycle conditions in emerging economies. In this subsection, we exploit the VAR estimates to quantify the relative importance of different transmission channels. We do so by computing counterfactual impulse responses in which selected variables are not allowed to react to the shock (see, for example, Uribe and Yue, 2006; Akinci, 2013; Vicondoa, 2019). Concretely, for each variable of interest we shut down its response to the shock by setting to zero all the coefficients in the corresponding equation of the VAR that multiply the identified shock, and then recompute the IRFs.[5] In other words, we trace out how the dynamics of the system change when one potential transmission channel is "turned off", while all other channels operate as in the baseline. We focus on two distinct channels in Figure 4: (i) the U.S. BAA corporate spread, which proxies global financial conditions; and (ii) export

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

commodity prices, capturing terms-of-trade adjustment. The country interest rate and the multilateral nominal exchange rate counterfactuals are reported in Figure A.5 included in the Appendix.

Figure 4: IRFs to a U.S. Fiscal Volatility Shock - Counterfactuals



Note: Solid red lines denote point median estimates of impulse responses from the VAR system (1) to a one-standard deviation U.S. fiscal volatility shock; 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 export commodity prices cannot react to the shock and dotted-dashed lines denote the responses when both the U.S. BAA Corporate Spread and export commodity prices cannot react to the shock. The responses of GDP, investment and export prices 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 comparison of baseline and counterfactual responses points to the U.S. BAA corporate spread and export prices (commodity prices) as the most important channels for the transmission of fiscal volatility shocks to EMEs. When the U.S. BAA corporate spread is not allowed to react, the tightening of domestic financial conditions is markedly altered, and the dynamics of the country interest rate change substantially relative to the baseline. By contrast, the effects on real activity—GDP and investment—are dampened only moderately. One interpretation is that shutting down the U.S. BAA corporate spread response shifts part of the adjustment to the country interest rate itself: in the counterfactual without U.S. BAA corporate spread movements, the country rate reacts more strongly to the fiscal volatility shock, partially offsetting the attenuation of the global credit-spread channel and thereby limiting the reduction in output and investment.

The export price counterfactual reveals a transmission pattern that operates primarily at medium-run rather than impact frequencies. At the one-year horizon, preventing export prices from responding has negligible effect on the output or investment decline — the counterfactual and baseline paths are nearly identical through the first four to five quarters, confirming that export prices do not amplify the initial financial shock. However, from approximately the sixth quarter onward, a clear divergence emerges: the export price counterfactual generates a notably stronger recovery than the baseline — output and investment return toward trend more quickly when export prices are not permitted to respond to the fiscal volatility shock. This pattern indicates that export prices act as a medium-run drag on EME recovery rather than an impact amplifier. Unlike the U.S. BAA corporate spread — which spikes sharply and then reverts — export prices remain depressed for several quarters as global demand recovers only gradually. This sustained deterioration of commodity prices adds a persistent second layer of drag on EME output beyond the initial financial tightening, prolonging the contraction into the medium run. When this channel is shut down, EMEs recover more quickly because they are no longer subject to the compounding effect of deteriorating export revenues on top of tighter financial conditions.

The combined counterfactual (shutting down both the U.S. BAA corporate spread and commodity price responses simultaneously) produces an output path that reflects the distinct timing of the two channels. On impact, the combined counterfactual shows substantial attenuation of the initial contraction, driven primarily by the U.S. BAA corporate spread channel which dominates at short horizons. In the medium run, however, the combined counterfactual generates the strongest and fastest recovery of all scenarios — output returns toward trend more quickly than in either the baseline or the U.S. BAA corporate spread-only counterfactual, because both the initial financial tightening and the subsequent export price drag have been removed. Together, these two external channels account for both the magnitude of the initial contraction and the persistence of the subsequent recovery, operating at different frequencies: the U.S. BAA corporate spread governs the short-run amplitude, while export prices govern the medium-run duration of the output decline.

The extended set of counterfactuals is reported in Appendix Figure A.5. The country interest rate channel is milder; its non-reaction dampens the shock, but output and investment effects remain. Muting the nominal exchange rate response has negligible effect on real activity at all horizons, suggesting financial channels dominate trade ones. These findings imply that U.S. fiscal uncertainty propagates primarily via global risk premia, consistent with Rey (2013) global financial cycle. Trade channels play a secondary role, as exchange rate muting does not alter real effects much.

4 Alternative Specifications

This section assesses the robustness of the baseline results along four dimensions. First, we examine whether the findings depend on the fiscal instrument used to identify U.S. fiscal level and volatility shocks. Second, we extend the sample period to include the pandemic and post-pandemic years. Third, we evaluate whether the results generalize beyond the benchmark seven-country sample to a broader set of emerging market economies. Fourth, we re-estimate the dynamic responses using local projections rather than a Panel VAR.

4.1 Alternative Measures

Our baseline analysis identifies U.S. fiscal level and volatility shocks using the cyclically adjusted balance. A natural concern is whether the spillover results depend on this specific fiscal measure. To address this issue, we re-estimate the U.S. fiscal shock series using alternative fiscal-policy measures commonly used in the literature, including tax-based and expenditure-based instruments. Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015) also use other measures of fiscal policy based on capital and labor income taxes, consumption taxes, and government expenditure. We estimate Eq. (1) using shocks based on capital income and government expenditure instead of our baseline measure of primary balance. Results are presented in Appendix D.1. Responses are qualitatively comparable to the baseline ones but the relative importance of U.S. 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. This pattern suggests that the baseline findings are not driven by the particular choice of fiscal instrument, while also indicating that the cyclically adjusted balance provides the most informative summary measure of the fiscal-policy volatility relevant for EME spillovers.

4.2 Covid Sample

The pandemic period provides a demanding robustness test for our study because it combines exceptionally large fiscal interventions with unusually high macroeconomic volatility. To assess whether the baseline results are driven by excluding this episode, we extend the sample through 2024:Q1 while maintaining the benchmark seven-country EME sample.

As expected, the identification procedure recovers large U.S. fiscal volatility shocks during the pandemic and immediate post-pandemic period. Reassuringly, however, the estimated spillover effects on EMEs remain qualitatively similar to those in the baseline sample. In particular, U.S. fiscal volatility shocks continue to be associated with tighter financial conditions and weaker real activity in EMEs (see Figure D.2). Although the precise magnitudes differ somewhat, the inclusion of the pandemic does not overturn the central conclusions of the paper.

4.3 Extended Sample

The main results are based on a representative sample of seven emerging economies, similar to the ones used in the literature (see, for example, 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 results are presented in Appendix D.3. The main conclusions remain unchanged using this extended sample of emerging economies.

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 volatility using local projections. Because local projections impose less structure on the dynamics, they provide a useful check on whether the baseline impulse responses are driven by the VAR specification.

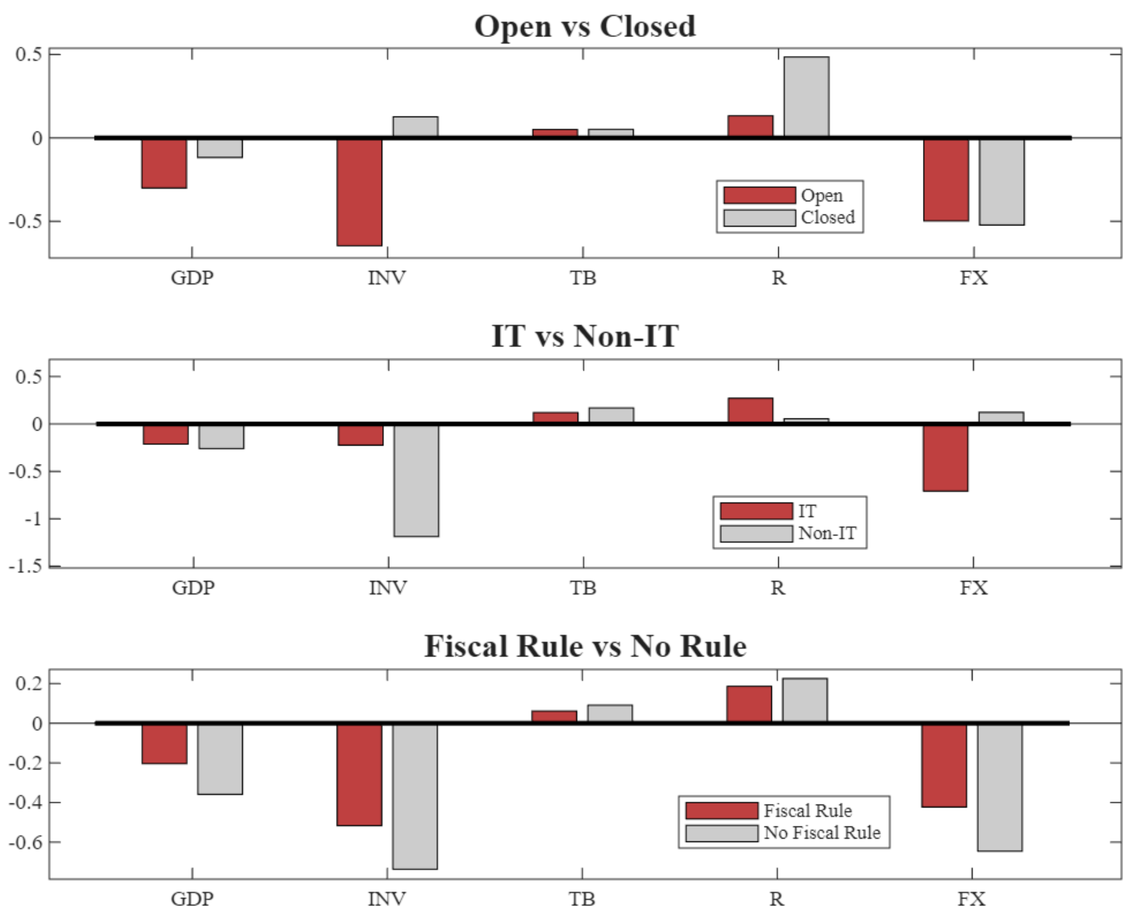
The results presented in Appendix D.4 are broadly consistent with the baseline VAR results. U.S. fiscal volatility shocks continue to be associated with weaker output and investment and with tighter financial conditions in emerging market economies.

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 VAR to U.S. fiscal volatility shocks. This analysis complements the role of the different transmission channels presented in Section 3.4 to characterize the effects of U.S. fiscal volatility shocks to emerging economies. To increase the number of observations, we use the extended sample of EMEs described in Section 4.3. Countries are grouped along three dimensions: trade openness, inflation-targeting status, and the presence of fiscal rules. We classify economies following Roch (2019). Table A.5 reports the full classification. First, we divide the sample of 25 countries 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. Second, we divide the sample based on whether an inflation targeting regime was in place and if the country follows a fiscal rule.

For each group of countries, we estimate the baseline Panel VAR to estimate the effects of U.S. fiscal volatility shocks. The strategy is to split the full sample into two subsamples according to the country characteristic of interest. Different observations from the same country can appear in both subsamples (e.g. a country may have adopted an IT regime in the middle of the sample). For ease of exposition, we present only the estimated effect on each variable one year after the shock, which corresponds to the maximum effect. Figure 5 displays the IRFs for each group of countries to the U.S. fiscal volatility shock.[6] Appendix C.3 displays the full IRFs for each set of countries.

Figure 5: IRFs to a U.S. Fiscal Volatility Shock for Different Groups



Note: Bar plots denote point estimated impulse responses one-year after a one-standard deviation U.S. fiscal volatility shock. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The responses of trade balance-to-GDP ratio, country interest rate and exchange rate appreciation are expressed in annualized % points.

Country characteristics matter for understanding the effects of U.S. fiscal volatility

[6]We report the one year IRFs to a one standard deviation U.S. fiscal volatility shock using the Panel VAR for each set of countries.

shocks. Three facts to highlight from this analysis. First, the contractionary effects of U.S. fiscal volatility shocks are larger, on average, in more open economies than in closed economies. The stronger response is visible in both output and investment, and is consistent with the idea that more open economies are also more exposed to international financial conditions and global demand fluctuations (see Figure A.3 included in the Appendix). Second, economies without inflation-targeting regimes display a larger decline in investment than inflation-targeting economies. The fact that some of these economies have a fixed exchange rate regime explains why the exchange rate is less affected relative to IT economies. One possible interpretation is that more credible monetary frameworks help absorb external financial shocks, either by anchoring expectations or by allowing a more stabilizing policy response. Finally, economies without fiscal rules experience larger real effects than economies with fiscal rules. This pattern is consistent with the idea that stronger fiscal frameworks may enhance resilience to external shocks, for example by supporting policy credibility or by preserving room for countercyclical responses. All in all, the macroeconomic policy framework matters for understanding the effects of U.S. Fiscal Volatility shocks. Economies with IT-regimes and fiscal rules display milder effects.

6 Conclusions

This paper shows that U.S. fiscal volatility generates substantial international spillovers to emerging market economies. Using a stochastic volatility framework applied to U.S. fiscal reaction functions, we separately identify shocks to the level and to the volatility of fiscal policy, then trace their effects on EMEs through a Panel VAR. Our central finding is that U.S. fiscal volatility shocks generate persistent contractions in EME output and investment (slightly larger than those caused by fiscal policy level shocks), operating through two distinct external channels: global financial conditions in the short run and commodity price dynamics in the medium run.

The magnitude of spillovers varies systematically with country characteristics and policy regimes, in ways that are consistent with the two transmission channels identified above. More open economies experience substantially larger output and investment contractions than more closed economies, consistent with the U.S. BAA corporate spread channel, since trade openness correlates with deeper financial integration and greater reliance on dollar-denominated external financing. Economies without inflation-targeting frameworks experience significantly larger investment declines than IT economies, consistent with more credible monetary frameworks allowing countercyclical interest rate responses that partially offset the financial tightening associated with the U.S. BAA corporate spread channel. Finally, economies without fiscal rules display larger real effects than those with formal rules, consistent with stronger fiscal frameworks preserving countercyclical space to offset the persistent output drag.

Ultimately, this paper contributes to a growing recognition that different types of policy uncertainty operate through distinct channels and require separate analysis. Just as monetary uncertainty has received substantial attention in recent years, our results indicate that fiscal uncertainty deserves equal scrutiny in discussions of international spillovers and global financial stability. The fact that volatility matters nearly as much as policy itself suggests a rethinking of how we model and monitor fiscal policy in an interconnected world.

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Online Appendix

A Data Appendix

These are the baseline and extended samples used in our analysis. The sample period for each country is determined by data availability, primarily by the EMBI Global series for that economy.

Table A.1: Extended Sample of Emerging Economies

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

Note: Economies included in the baseline and extended sample of EMEs included in the paper. The extended sample consists of the cases labeled as baseline plus the ones labeled as extended.

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 indices are calculated as a geometric weighted average of bilateral exchange rates.[7] 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 U.S.-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.

Export prices are the series Commodity Export Price Index, Individual Commodities Weighted by Ratio of Exports to GDP, Recent, Rolling Weights, Index computed by the IMF. We compute the quarterly average of the monthly series for each economy.

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).

B U.S. Fiscal Volatility Shock

This section provides additional information on the series of U.S. fiscal volatility shocks.

[7] More information on this series can be found at `https://data.bis.org/topics/EER`.

B.1 Descriptive Statistics

Table A.2 displays the summary statistics of the U.S. fiscal volatility shock series. The series has zero mean and a low serial autocorrelation. We account for this in the empirical specification by controlling for past values of the shock series.

Table A.2: Descriptive Statistics: Fiscal Volatility Shocks

Statistic	Value	p-value
Mean	-0.04	[0.23]
Variance	0.20	—
Skewness	1.87	—
Autocorrelation:		
First Order	0.17	[0.01]
Second Order	0.05	[0.53]
Third Order	0.01	[0.94]
Fourth Order	-0.06	[0.40]

B.2 Validation of the U.S. Fiscal Volatility Shock

In this section we present additional analysis to validate the series of identified U.S. fiscal volatility shocks. First, we regress the shock series on lags of the seven macro-financial factors computed by McCracken and Ng (2016). To be considered a structural shock, the U.S. fiscal volatility shock cannot be explained by past values of the macro-financial variables (see, for example, Forni and Gambetti, 2014). Table A.3 reports the main statistics from this regression. The $R2$ is not statistically different from 0, which means that past values of macro-financial factors do not explain the identified series of U.S. fiscal volatility shocks. Thus, the shock cannot be explained by past information. We do not report all the estimated coefficients to keep the focus of the analysis. Only two coefficients are weakly statistically different from 0.[8]

Additionally, we analyze in detail the identified series of U.S. fiscal volatility shocks to relate the spikes of the series with specific events that happened during that quarter. Figure A.1 displays the U.S. fiscal volatility shock series including the dates of the main events in

[8]Results from this analysis are available from the authors upon request.

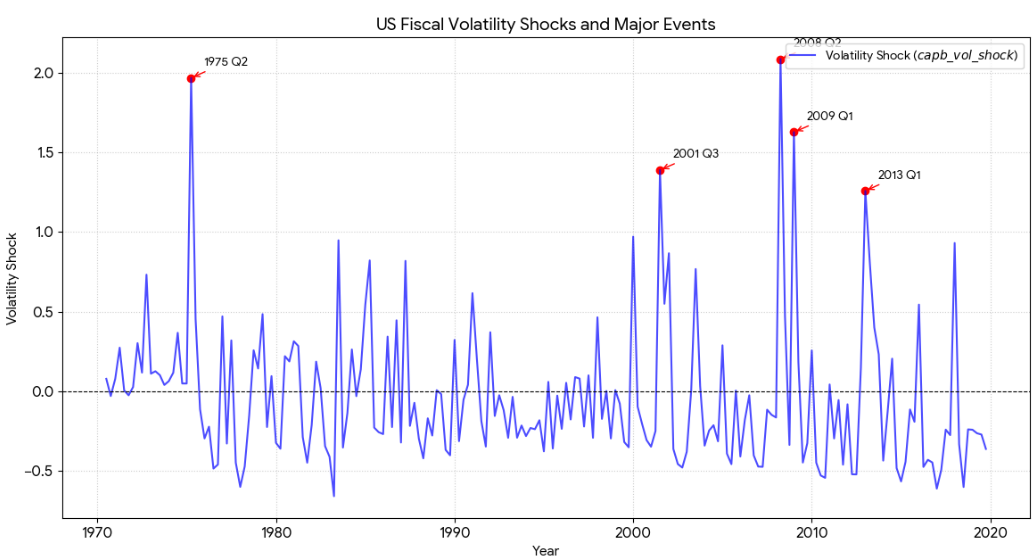
Table A.3: Predictability of U.S. Fiscal Volatility Shocks

R^2	0.157
Adjusted R^2	0.015
F-statistic	1.11

Note: Estimates of the regression of the U.S. fiscal volatility shocks on up to four lags of the macro-financial factors computed by McCracken and Ng (2016).

the sample. Table A.4 displays the main events in our sample. The events are associated with debates regarding the future path of U.S. fiscal policy during crisis periods, terrorist attacks and periods of fiscal consolidation.

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



Note: Identified series of U.S. fiscal volatility shocks (υ_t). The red points denote the dates of the main events in the series.

B.3 Effects of Fiscal Volatility Shocks on the U.S.

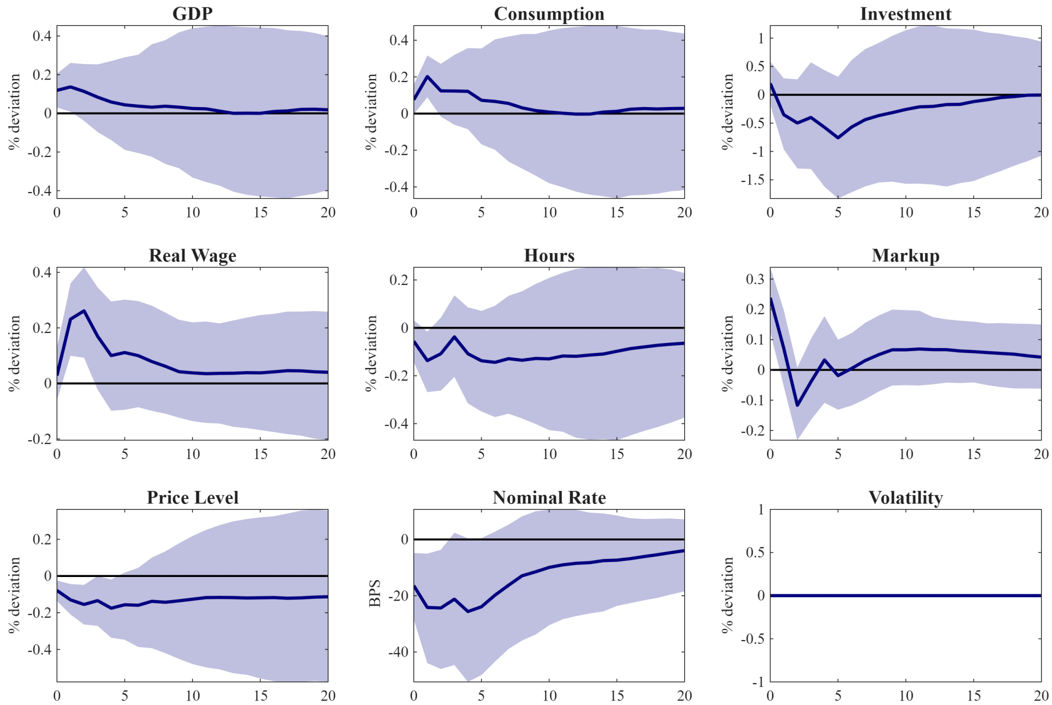
To fully characterize the transmission of U.S. fiscal volatility shocks, we estimate the responses of the U.S. economy. We estimate the VAR specified in Eq. 1 but with U.S. data. We use a set of variables similar to Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015) over the sample 1970:Q2 to 2014:Q2. Figures A.2 and A.3 display the responses of the U.S. economy to a fiscal policy (level) shock and to a fiscal

Table A.4: Narrative Description of the Major U.S. Fiscal Volatility Shocks

Date	**Event Description**
1975:Q2	**Tax Reduction Act of 1975**: Large-scale tax rebates and credits introduced to combat the mid-1970s recession and stagflation.
1983:Q3	**Reaganomics Implementation**: Third phase of the Economic Recovery Tax Act (ERTA) and major Social Security reforms.
1985:Q2	**Gramm-Rudman-Hollings Act**: Intense legislative debate and passage of the first binding spending constraints to control the federal deficit.
2000:Q1	**Dot-com Peak**: Unexpectedly high fiscal surpluses and intense political debate regarding debt retirement vs. tax cuts.
2001:Q3	**9/11 Terrorist Attacks**: Immediate shift toward defense and homeland security spending, coinciding with the phase-in of the Bush tax cuts.
2008:Q2	**Economic Stimulus Act of 2008**: Rapid distribution of tax rebates to households to mitigate the onset of the Great Recession.
2009:Q1	**ARRA**: Passage of the American Recovery and Reinvestment Act, the largest countercyclical stimulus package in modern US history.
2013:Q1	**The "Fiscal Cliff"**: Resolution of the 2012 fiscal cliff through the American Taxpayer Relief Act and the onset of budget sequestration.
2018:Q1	**Tax Cuts and Jobs Act (TCJA)**: Implementation of the most significant overhaul of the US tax code since 1986.

volatility shock, respectively.

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



Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one-standard deviation U.S. fiscal (level) shock; 90% confidence bands are depicted with light-blue shaded areas. Confidence bands are computed through 1,000 bootstrap replications. Horizon is in quarters.

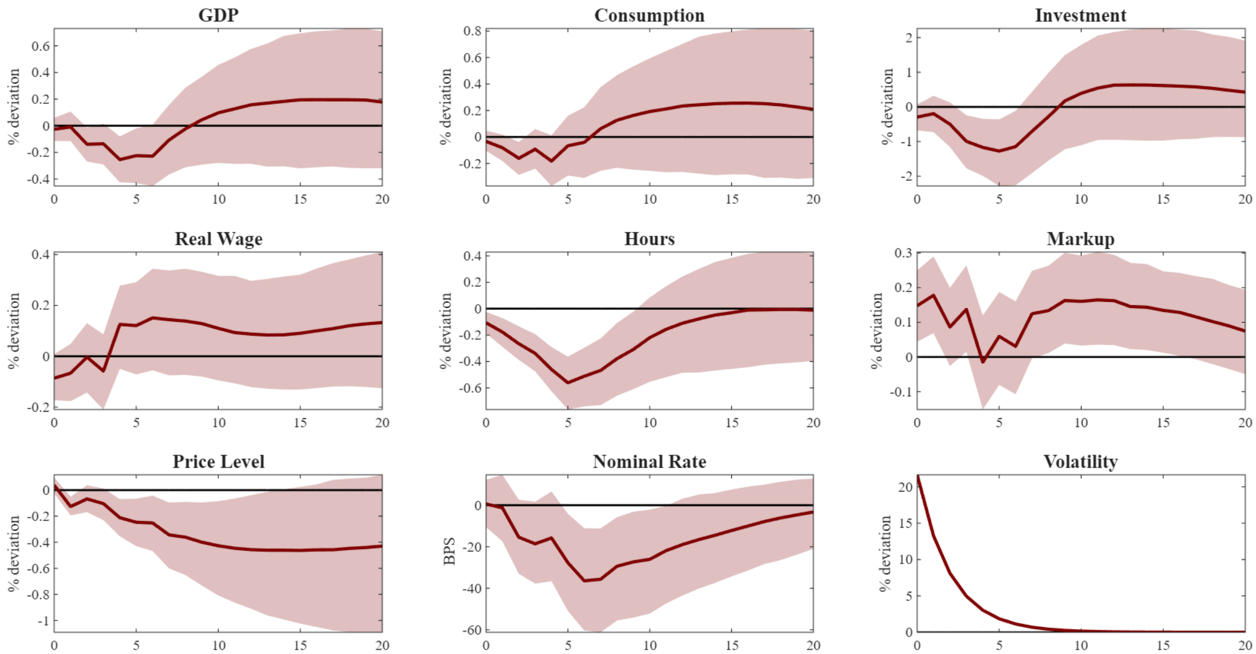
A positive U.S. Fiscal (level) shock induces a mild and transitory increase in GDP and consumption, without affecting Investment. This shock also induces an increase in real wages.

A positive U.S. fiscal volatility shock induces a fall in GDP of similar size relative to the level shock. The effects are also more delayed relative to the fiscal (level) shock presented in the previous figure. These effects are consistent with those presented by Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015).

C Effects of U.S. Fiscal Volatility Shocks on EMEs

This section presents additional analysis on the effects of U.S. fiscal volatility shocks on emerging economies. These results complement the baseline ones presented in the paper.

Figure A.3: IRFs to a U.S. Fiscal Volatility Shock in the U.S.



Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one-standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. Confidence bands are computed through 1,000 bootstrap replications. Horizon is in quarters.

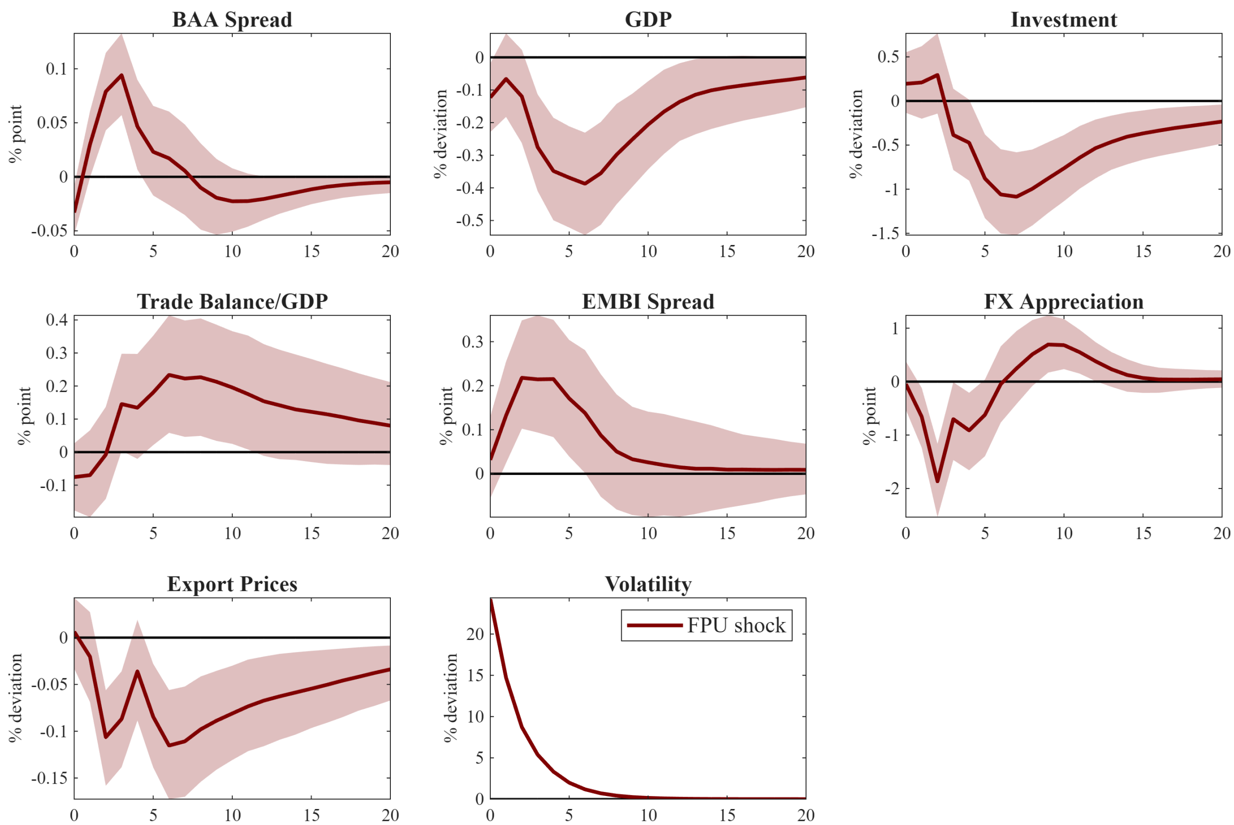
C.1 Effects on the Country Interest Rate

An increase in U.S. fiscal volatility induces an increase in the country interest rate in EMEs. To better understand this effect, we estimate the baseline VAR (Eq. 1) replacing the country interest rate by the EMBI. Figure A.4 displays the IRFs for this alternative specification. The responses are consistent with the baseline ones. This confirms that country risk premia explain most of the adjustment of the country interest rate.

C.2 Transmission Channels

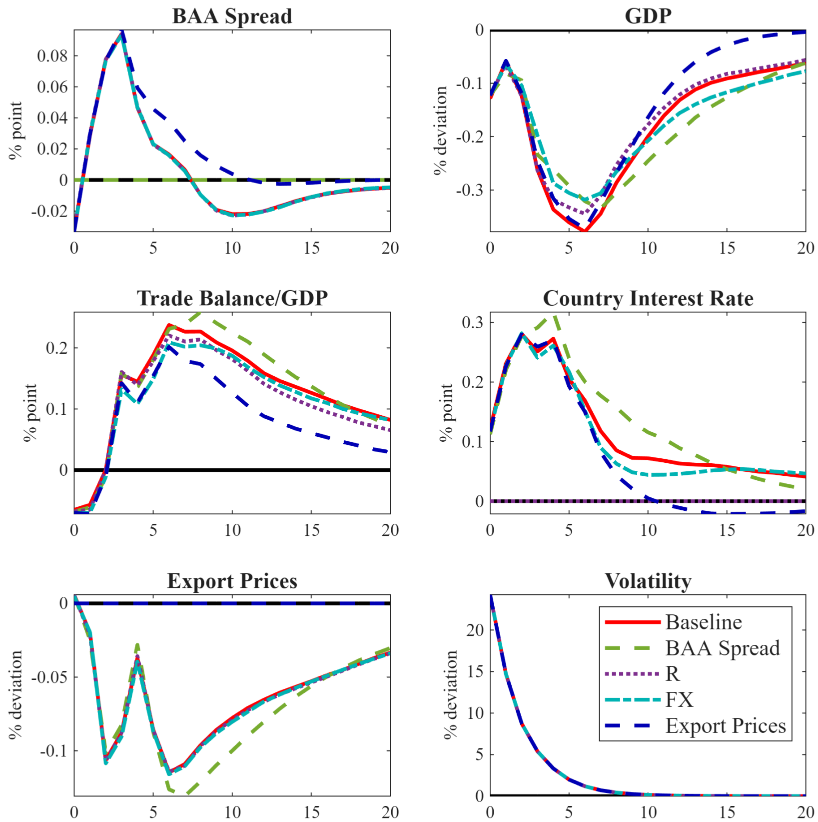
Figure A.5 displays the IRFs to a U.S. fiscal volatility shock considering additional transmission channels relative to those analyzed in Section 3.4. We shut down one channel at a time and compute the IRFs, using the same procedure described in Section 3.4. The country interest rate and the exchange are less important for the transmission of the shock than commodity prices and the U.S. BAA corporate spread.

Figure A.4: IRFs to a U.S. Fiscal Volatility Shock - EMBI



Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one-standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, investment and export prices 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 1,000 bootstrap replications. Horizon is in quarters.

Figure A.5: IRFs to a U.S. Fiscal Volatility Shock - Additional Counterfactuals



Note: Solid red lines denote point median estimates of impulse responses from the VAR system (1) to a one standard deviation U.S. fiscal volatility shock; 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 domestic interest rates cannot react to the shock, dotted-dashed light-blue line represents the case when the exchange rate response is muted, and finally, dashed blue line corresponds to a nil export price response to the shock. The responses of GDP, investment and export prices 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.

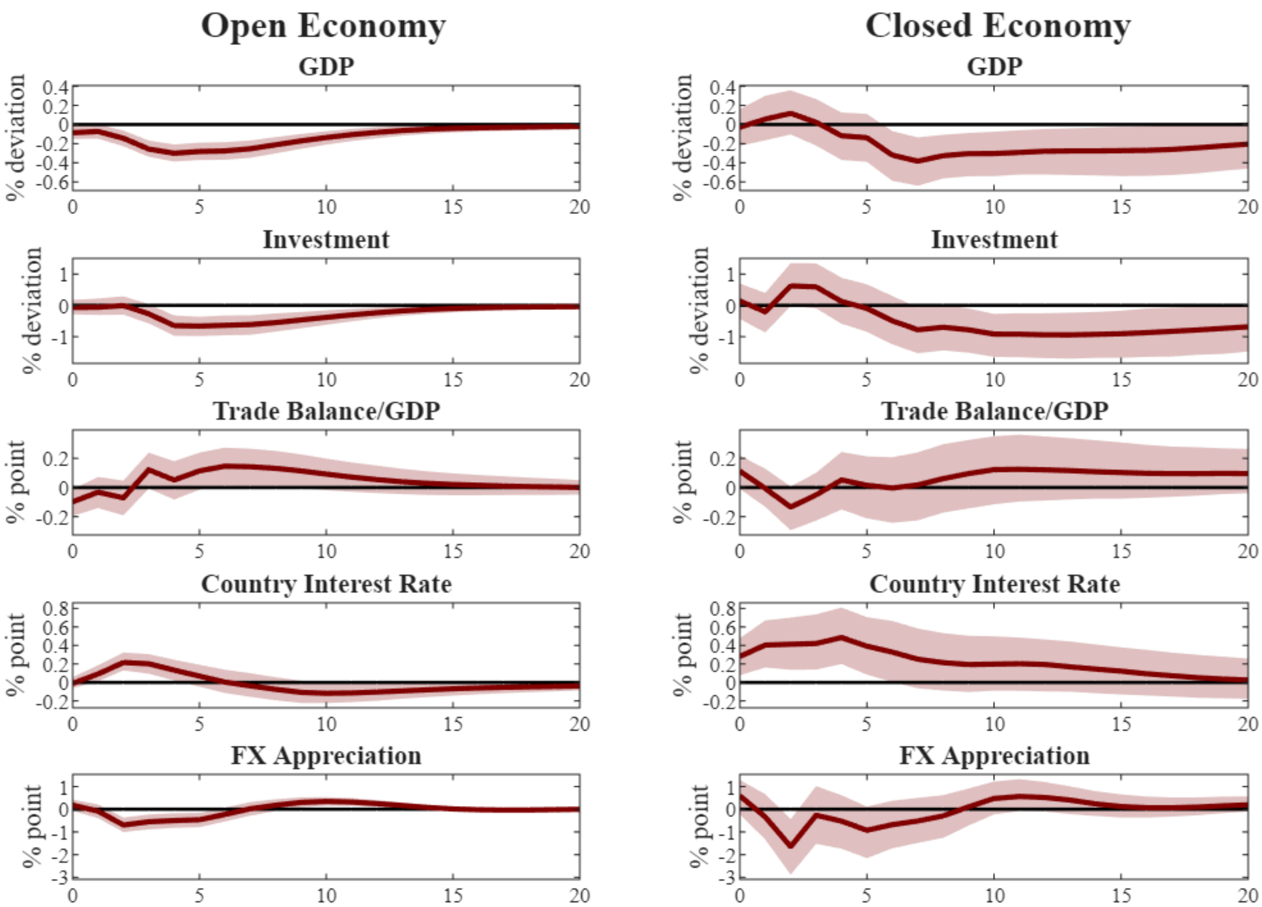
C.3 Country Characteristics

Table A.5 displays the economies included in this extended sample. Figure A.13 displays the estimated effects of U.S. fiscal volatility shocks using this extended sample of EMEs. The effects are not statistically different from the baseline ones. To assess the importance of country characteristics in explaining these results, we estimate our baseline VAR for groups of economies of this extended sample. The groups are presented in Table A.5. Figures A.6, A.7, and A.8 display the estimated IRFs for open and closed economies, economies with and without inflation targeting, and economies with and without fiscal rules. These results are summarized in Figure 5. Figures A.13 displays the IRF to a one standard deviation U.S. fiscal volatility shock using the whole sample, without classifying countries.

Table A.5: Country Characteristics

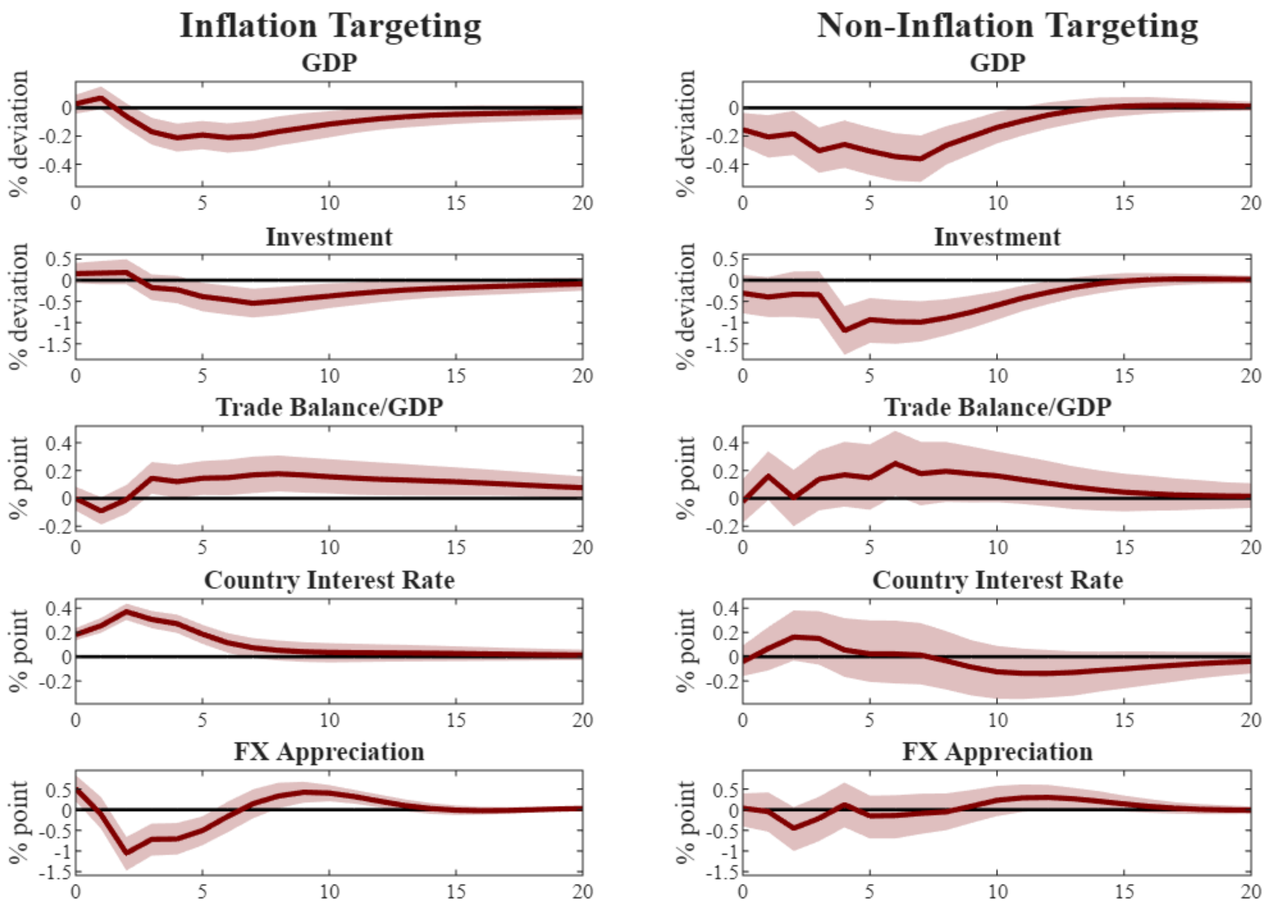
Country	Openness	Inflation Targeting	Fiscal Rule
Argentina	Closed (95Q1-01Q4)	No (95Q1-01Q4)	No (95Q1-01Q4)
Brazil	Closed (95Q1-19Q4)	No (95Q1-98Q4) Yes (99Q1-19Q4)	No (95Q1-19Q4)
Bulgaria	Open (99Q1-13Q4)	No (99Q1-13Q4)	No (99Q1-02Q4) Yes (03Q1-13Q4)
Chile	Open (99Q2-19Q4)	Yes (99Q2-19Q4)	No (99Q2-19Q4)
Colombia	Closed (05Q1-19Q4)	Yes (05Q1-19Q4)	No (05Q1-19Q4)
Croatia	Open (09Q4-19Q4)	No (09Q4-19Q4)	No (09Q4-13Q4) Yes (14Q1-19Q4)
Hungary	Open (99Q1-19Q4)	No (99Q1-07Q4) Yes (08Q1-19Q4)	No (99Q1-03Q4) Yes (04Q1-19Q4)
India	Open (12Q4-19Q4)	No (12Q4-13Q4) Yes (14Q1-19Q4)	No (12Q4-18Q1) Yes (18Q2-19Q4)
Indonesia	Open (04Q2-15Q3) Closed (15Q4-17Q2) Open (17Q3-18Q4) Closed (19Q1-19Q4)	No (04Q2-04Q4) Yes (05Q1-19Q4)	Yes (04Q2-19Q4)
Korea	Open (95Q1-04Q2)	No (95Q1-00Q4) Yes (01Q1-04Q2)	No (95Q1-04Q2)
Latvia	Open (12Q3-18Q4)	No (12Q3-18Q4)	Yes (12Q3-18Q4)
Lithuania	Open (09Q4-19Q4)	No (09Q4-19Q4)	Yes (09Q4-19Q4)
Malaysia	Open (96Q4-19Q4)	No (96Q4-19Q4)	Yes (96Q4-19Q4)
Mexico	Open (95Q1-19Q4)	No (95Q1-99Q4) Yes (00Q1-19Q4)	No (95Q1-19Q4)
Morocco	Open (14Q1-19Q4)	No (14Q1-19Q4)	No (14Q1-19Q4)
Peru	Closed (97Q1-03Q4) Open (04Q1-19Q4)	No (97Q1-01Q4) Yes (02Q1-19Q4)	No (97Q1-16Q3) Yes (16Q4-19Q4)
Philippines	Open (95Q1-19Q4)	No (95Q1-99Q4) Yes (00Q1-19Q4)	No (95Q1-19Q4)
Poland	Open (95Q1-19Q4)	No (95Q1-99Q4) Yes (00Q1-19Q4)	No (95Q1-97Q3) Yes (97Q4-19Q4)
Romania	Open (12Q1-19Q4)	Yes (12Q1-19Q4)	Yes (12Q1-19Q4)
Russia	Open (97Q4-19Q4)	No (97Q4-14Q2) Yes (14Q3-19Q4)	No (97Q4-19Q4)
Serbia	Open (05Q2-19Q4)	No (05Q2-07Q4) Yes (08Q1-19Q4)	No (05Q2-10Q4) Yes (11Q1-19Q4)
Slovakia	Open (13Q3-19Q4)	No (13Q3-19Q4)	Yes (13Q3-19Q4)
South Africa	Closed (95Q1-96Q1) Open (96Q2-19Q4)	No (95Q1-99Q4) Yes (00Q1-19Q4)	No (95Q1-19Q4)
Thailand	Open (97Q4-06Q1)	No (97Q4-99Q4) Yes (00Q1-06Q1)	No (97Q4-06Q1)
Turkey	Closed (98Q1-99Q4) Open (00Q1-19Q4)	No (98Q1-01Q4) Yes (02Q1-19Q4)	No (98Q1-19Q4)

Figure A.6: IRFs to a U.S. Fiscal Volatility Shock by Openness to Trade



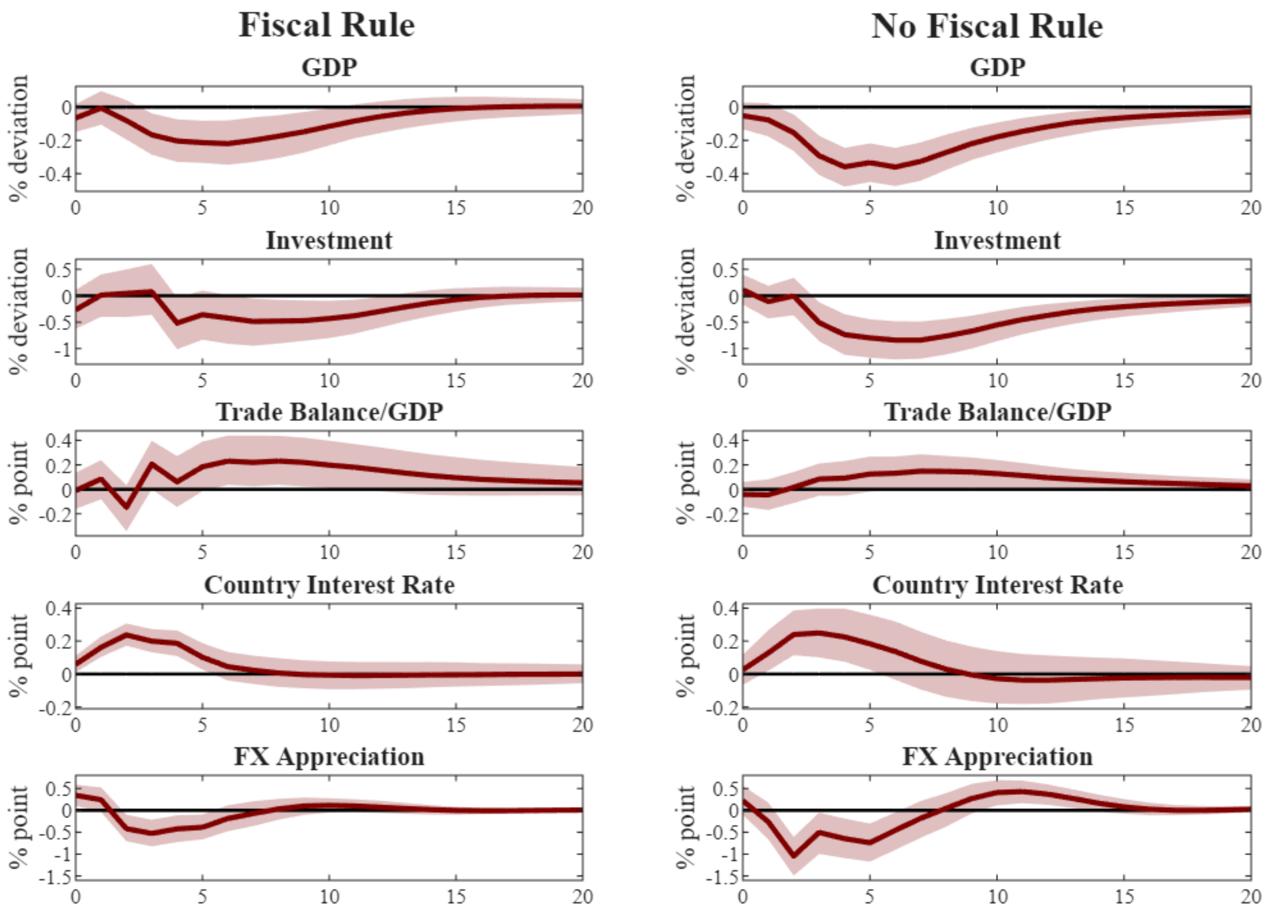
Note: Solid lines denote point estimates of impulse responses to a one standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, and investment are expressed in % deviations from their respective quadratic trend. The responses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

Figure A.7: IRFs to a U.S. Fiscal Volatility Shock by Monetary Policy Regime



Note: Solid lines denote point estimates of impulse responses to a one standard deviation U.S. fiscal volatility shock; 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 responses of trade balance-to-GDP ratio, country interest rate, and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 1,000 bootstrap replications. Horizon is in quarters.

Figure A.8: IRFs to a U.S. Fiscal Volatility Shock by Fiscal Policy Regime



Note: Solid lines denote point estimates of impulse responses to a one standard deviation U.S. fiscal volatility shock; 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 responses of trade balance-to-GDP ratio, country interest rate, and exchange rate appreciation are expressed in annualized % points. Confidence bands are computed through 1,000 bootstrap replications. Horizon is in quarters.

D Alternative Empirical Specifications

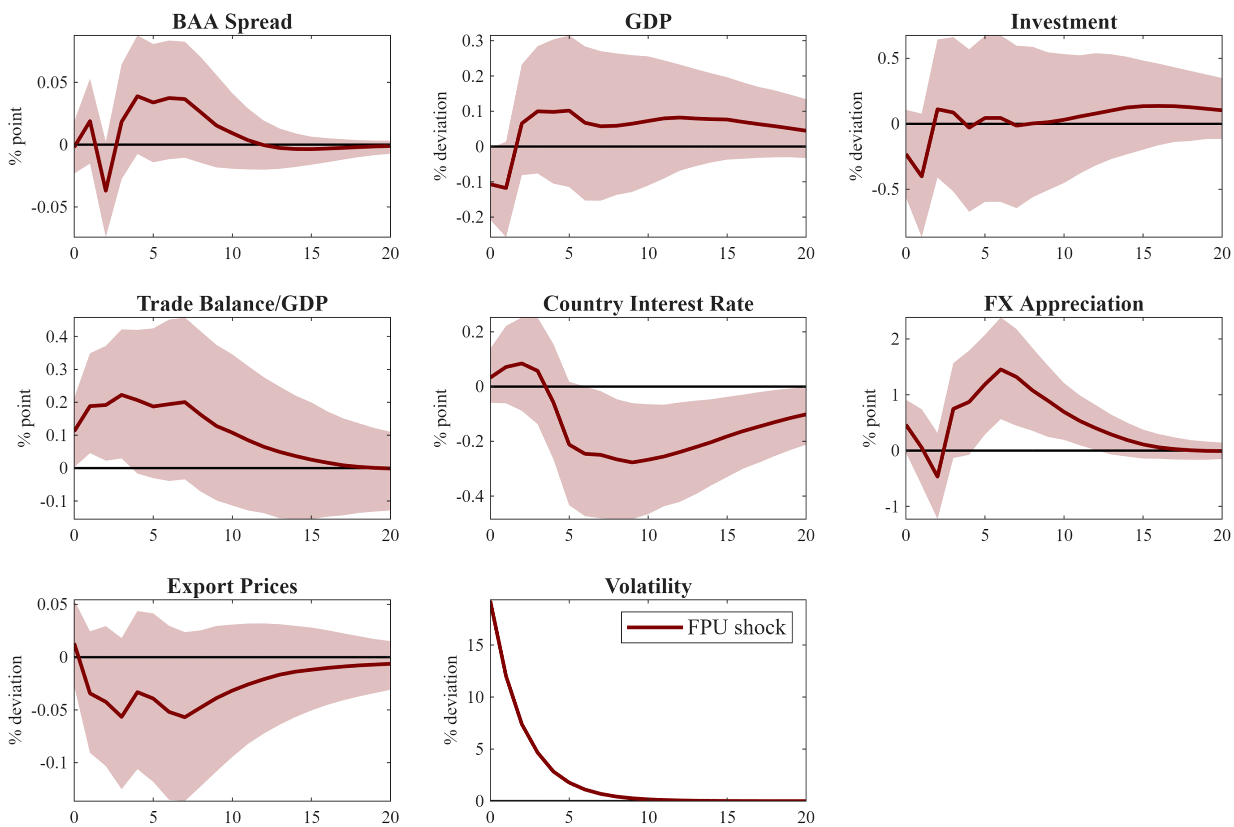
In this section, we present the empirical results described in Section 4.

D.1 Alternative Measures of Policy Volatility

Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015) estimate U.S. fiscal volatility shocks using different fiscal instruments. In this Section, we use the same proxies and identify the U.S. fiscal volatility shocks for each of them at the time. Then we replace our baseline series of U.S. fiscal volatility shocks, which are based on the net Federal Government revenues and outlays without automatic stabilizers (expressed as a percentage of potential GDP). In particular, following Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2015), we identify U.S. fiscal volatility shocks from Capital Income Tax and Government Expenditure. Figures A.9-A.10 display the effects of these shocks on the same baseline sample of EMEs used in Section 3. In all the cases, the IRFs are normalized to a one-standard deviation U.S. fiscal volatility shock.

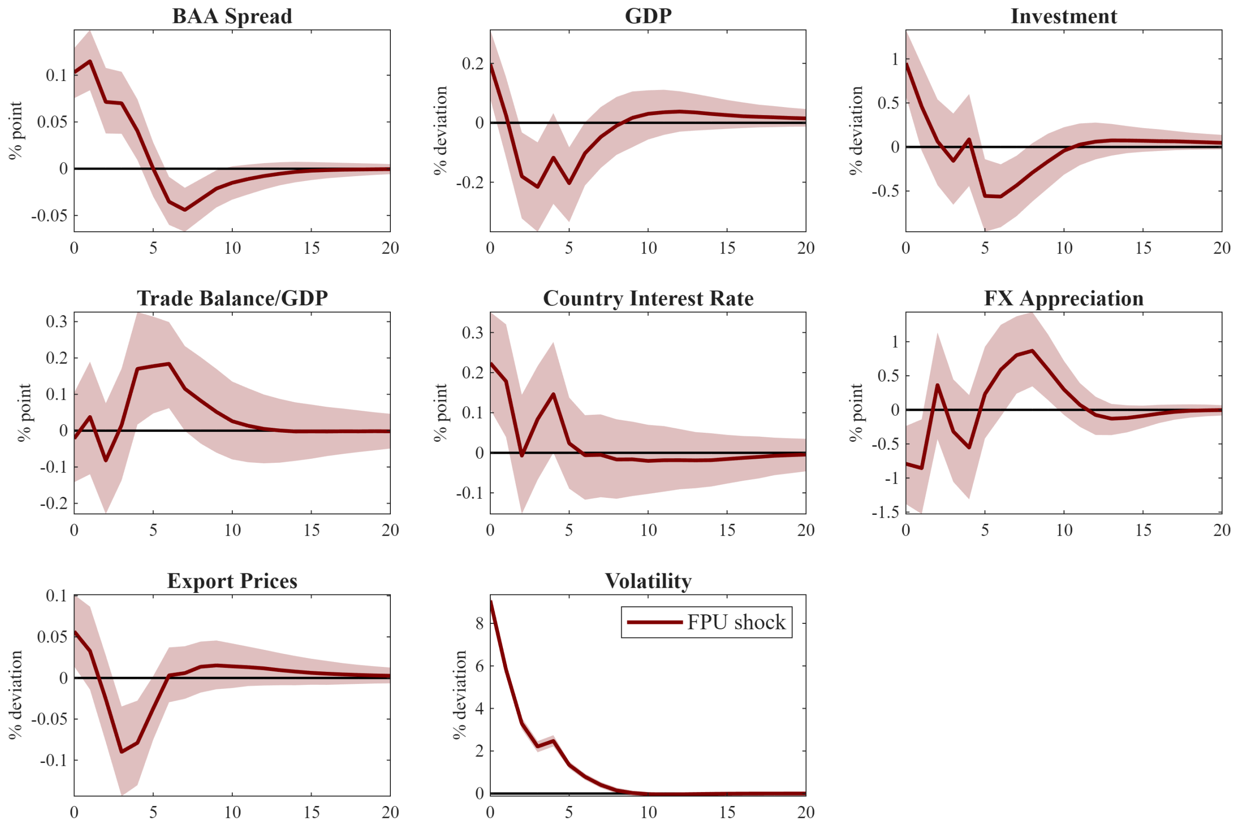
The responses of EMEs to U.S. fiscal volatility shocks using different fiscal instruments are broadly robust to the baseline ones. In some cases, the estimated effects are less precisely estimated. The baseline fiscal instrument is the one that induces the strongest effects from all the proxies considered.

Figure A.9: IRFs to a U.S. Fiscal Volatility Shock - Capital Income Tax



Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, investment and export prices 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 1,000 bootstrap replications. Horizon is in quarters.

Figure A.10: IRFs to a U.S. Fiscal Volatility Shock - Government Expenditure



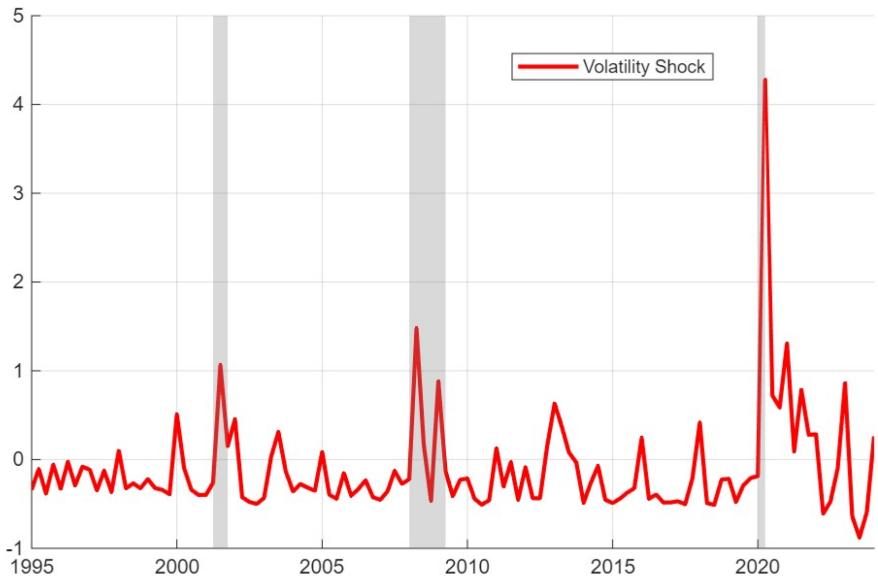
Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, investment and export prices are expressed in % deviations from their respective 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 1,000 bootstrap replications. Horizon is in quarters.

D.2 Including Covid Period

The baseline sample ends in 2019:Q4, right before the Covid-19 period. The sample that starts in 2020 was marked by an increase in U.S. fiscal policy uncertainty. Thus, it is interesting to exploit this additional variation in U.S. fiscal volatility series to assess if the main conclusions change in this case. Figure A.11 displays the identified series of U.S. fiscal volatility shocks.

We observe a big spike in the series of U.S. fiscal volatility shocks in 2020:Q1, at the onset of the pandemic. Then we also observe an increase in the variance of the shock series after that period. Figure A.12 displays the estimated response of EMEs to U.S. fiscal volatility shocks using the same set of economies as in the baseline sample.

Figure A.11: Fiscal Volatility Shocks Including COVID



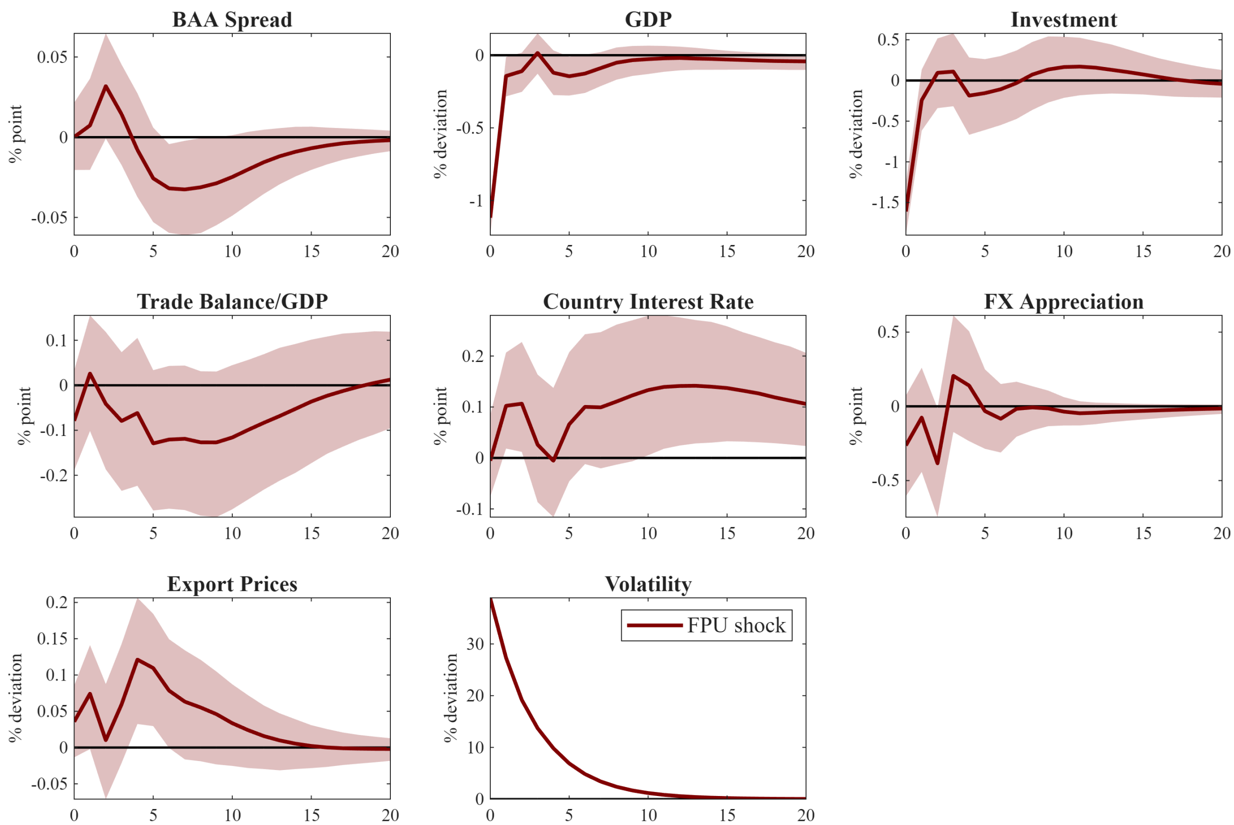
Note: Identified series of U.S. Fiscal Volatility Shocks (ν_t). Shaded areas correspond to U.S. Recessions as defined by the NBER.

The estimated effects to both types of shocks are significantly stronger and more immediate once we extend our sample to include post 2019:Q4 data. Interestingly, the response of the exchange rate is muted in this case.

D.3 Extended Sample of EMEs

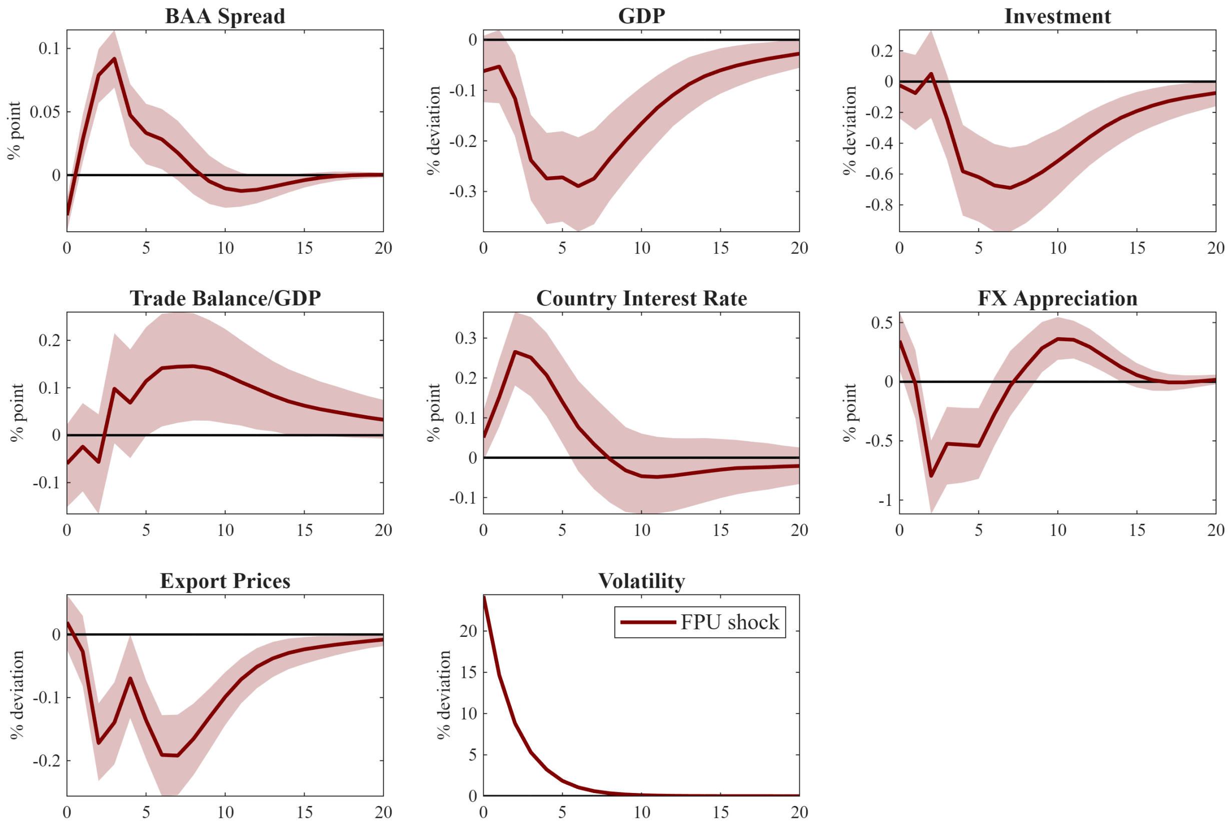
Figure A.13 displays the IRF to a one-standard deviation U.S. fiscal volatility shock, using an extended sample of EMEs. Table A.5 displays the economies included in this sample.

Figure A.12: IRFs to a U.S. Fiscal Volatility Shock Including COVID



Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, investment and export prices 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 1,000 bootstrap replications. Horizon is in quarters.

Figure A.13: IRFs to a U.S. Fiscal Volatility Shock - Extended Sample



Note: Solid lines denote point estimates of impulse responses from the VAR system (1) to a one standard deviation U.S. fiscal volatility shock; 90% confidence bands are depicted with light-red shaded areas. The responses of GDP, investment and export prices 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 1,000 bootstrap replications. Horizon is in quarters.

Table A.6: Variance Decomposition: Extended Sample

Variable	VOL	GDP	INV	TBY	RATE	FX	EXP	BAA
VOL	98.3	4.4	1.7	0.6	2.3	1.8	4.0	4.4
LEVEL	0.0	0.9	0.2	0.7	1.3	3.5	2.2	10.1

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

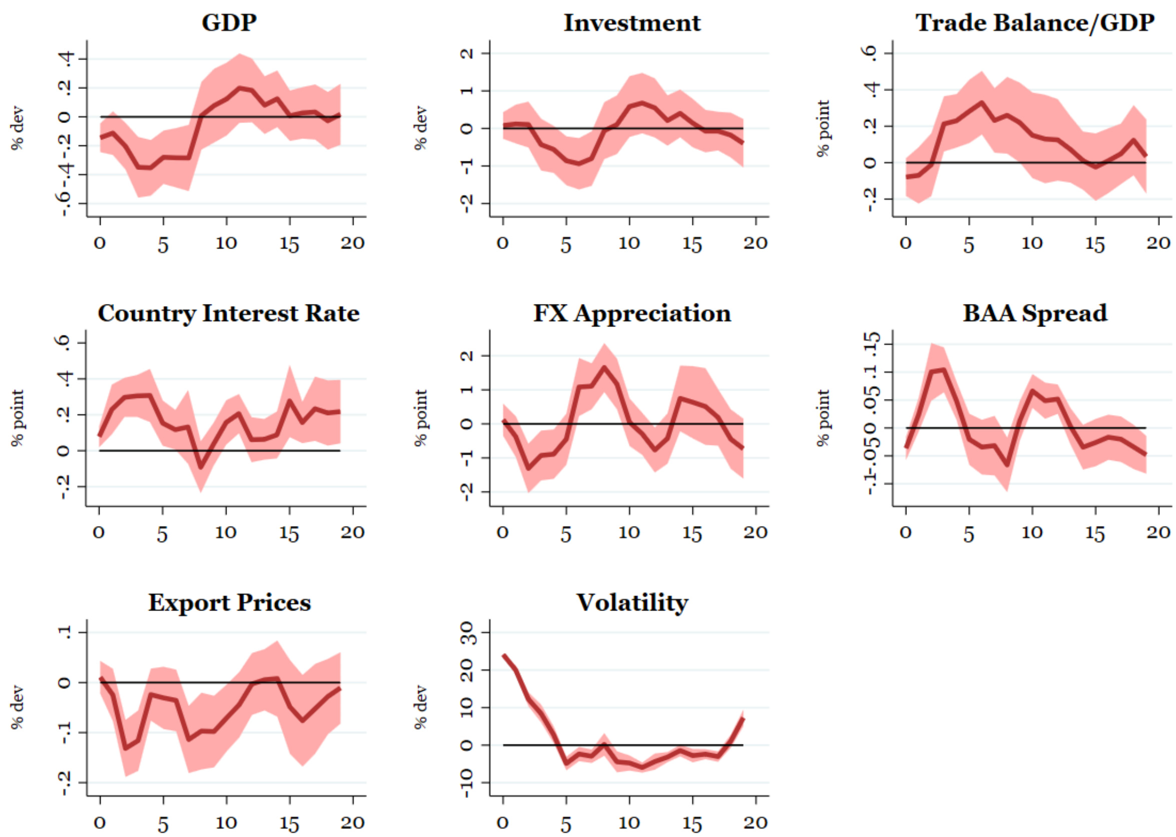
D.4 Estimation with Local Projections

We estimate the effects of both U.S. fiscal volatility shocks on EMEs using local projections (Jordà, 2005). In particular, we estimate the following specification.

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

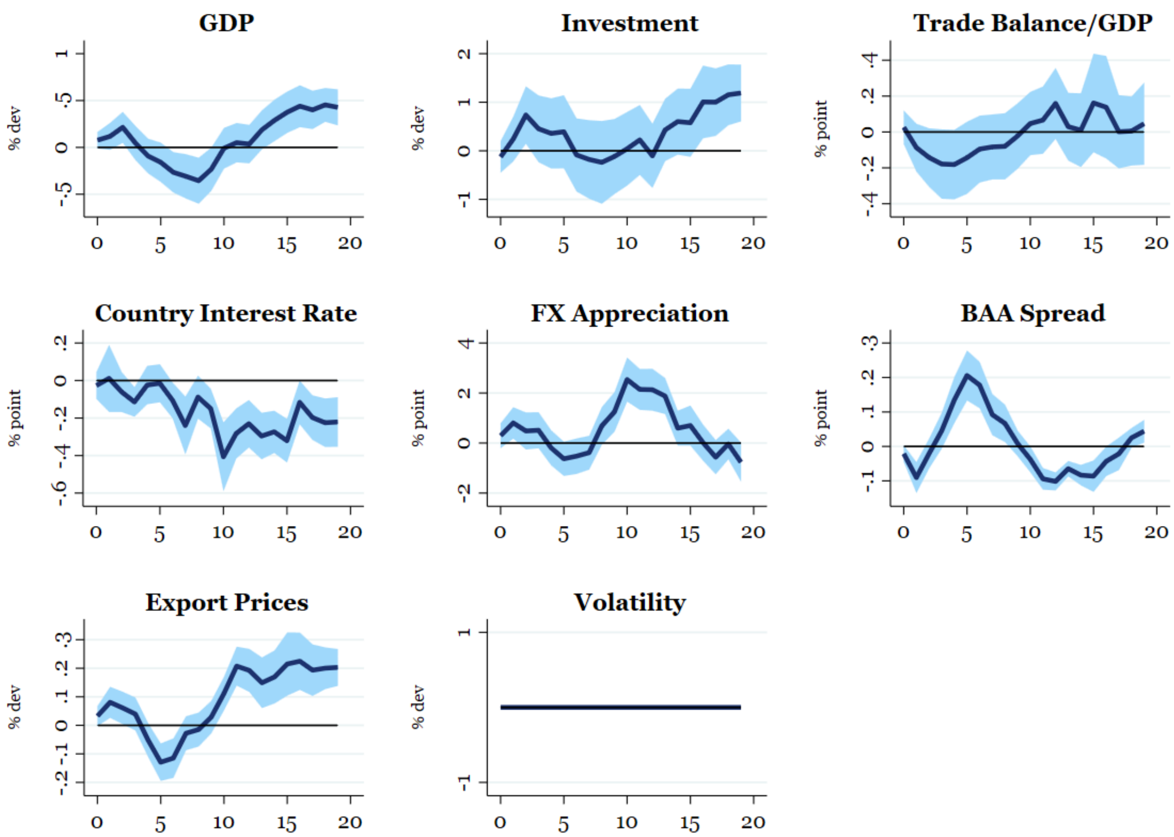
where y_{t+h} denotes the variable of interest (GDP, investment, etc), ν_t is the series of U.S. fiscal volatility shock, X_{t-1} is the set of controls. Figures A.14 and A.15 display the responses to U.S. fiscal policy shocks, respectively. The main conclusions are robust to this alternative specification.

Figure A.14: IRFs to a U.S. Fiscal Volatility Shock in EMEs - Local Projections



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

Figure A.15: 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 computed based on Driscoll-Kray standard errors are depicted with light-blue shaded areas. Horizon is in quarters.