The Anatomy of Emerging-Market Business Cycles:

Global Financial Shocks and Supply-Like Transmission[*]

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Abstract

We investigate the business-cycle anatomy of emerging and developing economies (EMDEs) and find that their dominant cyclical shock is global in origin but supply-like in transmission. The shock is closely related to global risk conditions and movements in export and import prices. It generates broad expansions, raises total factor productivity, and does not increase inflation. Yet its footprint is concentrated at business-cycle rather than low frequencies, so the productivity-like behavior of EMDE cycles is not evidence that the dominant shock is a primitive technology or trend shock. We rationalize the evidence through a mechanism that links global financial easing to cross-firm reallocation: lower working-capital costs benefit more productive firms disproportionately, shift resources toward them, generate procyclical total factor productivity, and amplify aggregate activity. The results identify a supply-side channel of global-financial-cycle transmission in EMDEs.

JEL Codes: E32, F41, F44, E44.

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1 Introduction

What drives business cycles in emerging and developing economies? A large literature has emphasized that these cycles differ from those of advanced economies. Output, consumption, and investment are more volatile; trade balances are strongly countercyclical; and cyclical fluctuations appear less clearly separated from movements in trend growth. These facts have motivated influential explanations based on trend productivity shocks, as in Aguiar and Gopinath (2007a), as well as explanations based on external financial conditions, country spreads and global risk premia, as in Uribe and Yue (2006), García-Cicco et al. (2010), and Akıncı (2013). In much of the literature, these views are treated as distinct. Productivity-based explanations emphasize supply-side forces, while financial explanations emphasize borrowing costs and aggregate demand.

This paper shows that these two views are more closely connected than this dichotomy suggests. The dominant business-cycle disturbance in emerging and developing economies has a global-financial signature, but its domestic transmission is supply-like. It is associated with easier global financial conditions, movements in external prices, and a broad expansion in domestic activity. At the same time, it raises total factor productivity (TFP) and does not generate the inflationary response usually associated with a demand expansion. Thus, productivity-like movements in emerging-market business cycles need not be interpreted as primitive technology or trend shocks. They may instead reflect the endogenous supply-side transmission of global financial shocks.

We study this question using the business-cycle anatomy approach of Angeletos et al. (2020). For each country, we estimate a Bayesian VAR that combines domestic macroeconomic variables with external adjustment margins and global financial and price variables. The global information set includes both financial conditions and external prices. We then identify, in each country, the innovation that explains the largest share of GDP fluctuations at the business-cycle frequencies. The identification is deliberately agnostic. We do not impose that the main business-cycle (MBC) shock is financial, productivity-driven, monetary, domestic, or global. The shock is the orthogonal innovation that maximizes the business-cycle variance contribution to GDP. Its economic interpretation is inferred ex post from its impulse responses, variance contributions, time-series realizations, and relation with the variables in the information set. This approach is useful in the present context because the question is not whether a pre-labeled shock matters for emerging markets, but what the dominant cyclical disturbance looks like.

We first focus on Mexico as our benchmark emerging-market small open economy, using Canada as an advanced-economy comparison with similar exposure to the United States and global markets. The

MBC shock generates a broad expansion in both countries: real activity rises, unemployment falls, the trade balance deteriorates, and the real exchange rate appreciates. In both economies the expansion is associated with easier global financial conditions, measured by a decline in Baa spreads, and with sizable movements in export and import prices. The response of the global risk-free rate is modest by comparison. Taken together, these responses point to a shock that is closely tied to the global financial cycle: domestic expansions coincide with easier global risk conditions and movements in external prices, rather than with purely domestic disturbances (Rey, 2015; Miranda-Agrippino and Rey, 2020).

The similarity in the real responses masks a sharp difference in domestic transmission. In Canada, the expansion is accompanied by rising inflation and only a modest response of aggregate TFP. In Mexico, inflation falls and aggregate TFP rises strongly and persistently. Quantitatively, the shock explains a large share of GDP fluctuations in both countries—about 69 percent in Mexico and 65 percent in Canada—but its contribution to aggregate TFP at business-cycle frequencies is much larger in Mexico than in Canada. Thus, the same global disturbance has a demand-like propagation in the advanced small open economy and a supply-like propagation in the emerging one. This supply-like propagation raises a natural question: is the Mexican business cycle simply driven by productivity trend disturbances? Our evidence points against this interpretation. The MBC shock explains a large share of GDP and aggregate TFP fluctuations at business-cycle frequencies, but a much smaller share of long-run movements in GDP. Conversely, the shock that explains the largest share of low-frequency GDP variation explains little of the business-cycle variation in output, investment, and consumption. This evidence is consistent with the broader message of García-Cicco et al. (2010) that nonstationary productivity shocks alone do not provide a satisfactory account of emerging-market business cycles. Yet the large productivity movements are not incidental: they are a distinct feature of how a cyclical shock tied to global financial conditions and external prices propagates in Mexico.

The link with global risk premia is even stronger than the baseline identification requires. Targeting Baa spread fluctuations over the business-cycle band generates the same broad domestic expansion, the same easing in global risk premia, similar movements in external prices, and the same supply-like responses of inflation and aggregate TFP. The result is robust to targeting the joint business-cycle variation of Baa spreads, export prices, and import prices. Thus, the supply-like features of the Mexican response are not an artifact of targeting GDP; they also emerge when the shock is identified directly from global financial conditions and external prices.

The pattern we unveil is not specific to Mexico. We repeat the exercise for seven additional EMDEs: Brazil, Chile, India, Indonesia, the Philippines, South Africa, and Türkiye. The country-level shocks display strong comovement and large swings around major global financial episodes, suggesting that the dominant cyclical disturbances recovered country by country share a common global driver. The average EMDE response closely resembles the Mexican one: expansions are associated with easier global financial conditions, movements in external prices, higher aggregate TFP, and no positive inflation response. Mexico therefore provides a useful country-level illustration of the broader EMDEs anatomy. Across EMDEs, the MBC shock is global in nature and supply-like in transmission.

The final part of the paper develops a simple mechanism that can rationalize this combination of facts. The mechanism combines working-capital finance with heterogeneous firms. Firms must finance part of their variable production costs before revenues are realized, so a global financial tightening raises the effective cost of production and a global financial easing lowers it. If all firms have the same working-capital exposure, the shock acts like an aggregate labor-cost wedge: it moves employment and output, but has little grip on aggregate TFP. The key ingredient is scale-dependent exposure. In the spirit of models of financial frictions and development, such as Buera et al. (2011), we allow larger and more productive firms to have greater effective working-capital needs. When global financial conditions ease, the effective labor cost of these firms falls disproportionately. Labor reallocates toward them, output rises, and aggregate TFP increases. This allocative channel is especially relevant for EMDEs, where resource misallocation is empirically large (Hsieh and Klenow, 2009). In our setting, global financial conditions make this allocative margin cyclical. The rise in TFP following a global financial easing is not a primitive technology shock; it is the endogenous outcome of a reallocation of production toward more productive firms. Global financial shocks can therefore look like supply shocks in EMDEs data.

The paper's main contribution is to identify a supply-side channel of the global financial cycle in EMDEs. Productivity-like cycles need not be driven by primitive trend shocks, and global financial shocks need not transmit only through demand. When financial frictions interact with firm heterogeneity, changes in global financial conditions alter the allocation of resources across producers. The resulting movements in aggregate TFP make the shock look supply-like and amplify its effect on output. For EMDEs, the stabilization problem is therefore broader than cushioning foreign demand disturbances: external financial shocks can also affect effective aggregate supply.

Related Literature. This paper sits at the intersection of two views of emerging-market business cycles. One view interprets the productivity-like behavior of EMDEs fluctuations as evidence that shocks to trend productivity play a central role (Aguiar and Gopinath, 2007a). Another emphasizes external financial conditions, country spreads, and global risk premia as key drivers of small-open-economy fluctuations

(Uribe and Yue, 2006; García-Cicco et al., 2010; Chang and Fernández, 2013; Akıncı, 2013). A related literature emphasizes world prices and commodity-price shocks as important external forces for small open economies (Fernández et al., 2017, 2018; Drechsel and Tenreyro, 2018; Di Pace et al., 2025). Relative to this literature, our approach separates the source of the shock from its propagation. The dominant driver of EMDEs business cycles is global-financial and external-price in nature, but its domestic propagation generates persistent movements in aggregate TFP. The paper therefore changes the interpretation of productivity-like cycles: aggregate TFP is not necessarily the source of the dominant EMDEs cycle, but can be an outcome of the way global shocks are transmitted domestically.

Our results also speak to the global financial cycle literature. A long tradition emphasizes that capital flows to developing countries are shaped by global push factors, including U.S. conditions and world interest rates (Calvo et al., 1996). Existing work documents strong common movements in risky asset prices, capital flows, leverage, credit conditions, and investor risk appetite across countries (Rey, 2015; Miranda-Agrippino and Rey, 2022; Chari et al., 2020; Boyarchenko and Elias, 2026). We use this insight differently. Rather than starting from a pre-labeled global financial shock, we first identify the dominant business-cycle shock country by country, using an information set that includes domestic variables, external adjustment margins, global financial conditions, and external prices. We then ask what this shock looks like. The answer is that, in EMDEs, the main cyclical shock is global in nature but supply-like in transmission. This is the new fact that links the global financial cycle to the productivity-like behavior of emerging-market business cycles. Relatedly, Calvo et al. (2006) document large TFP losses during major financial crises and sudden-stop episodes in EMDEs. Our evidence shows that this supply-side footprint is not confined to crises: global financial shocks can generate productivity-like movements at ordinary business-cycle frequencies.

Methodologically, the paper builds on Angeletos et al. (2020) and Forni et al. (2025).[1] Their business-cycle anatomy approach is useful here because it identifies the shock that accounts for the largest share of business-cycle fluctuations without imposing an a priori view on the drivers of the cycle. We extend this logic to small open economies, where the relevant information set must include both domestic and global variables, and use it to ask whether the dominant cyclical disturbance in EMDEs is domestic or global, financial or real, demand-like or supply-like.

Finally, the economic mechanism we devise to frame the empirical analysis relates to the literature on misallocation and financial frictions. This literature shows that distortions across heterogeneous producers can have large effects on aggregate productivity (Restuccia and Rogerson, 2008; Hsieh and Klenow, 2009),

[1]Related work has used dominant-driver or max-share methods to study other macro-financial objects, including exchange rates and risk premia. See, for example, Miyamoto et al. (2025), Chahrour et al. (2024), and Basu et al. (2024).

and that financial frictions shape the allocation of resources across firms (Buera et al., 2011; Midrigan and Xu, 2014; Moll, 2014; Gopinath et al., 2017).[2] We make this allocative margin cyclical and external. Global financial conditions change effective production costs differentially across firms, reallocating resources toward more productive producers in expansions and away from them in contractions. This provides a supply-side channel of the global financial cycle in EMDEs.

Structure. The rest of the paper is organized as follows. Section 2 describes the data and empirical framework. Section 3 presents the Mexico–Canada comparison and studies the relation between business-cycle and low-frequency shocks. Section 4 examines the global component of the Mexican MBC shock. Section 5 extends the analysis to the broader EMDEs sample. Section 6 develops the mechanism linking global financial shocks to supply-side transmission. Section 7 concludes.

2 Data and Empirical Framework

We assemble a country-by-country dataset covering the period from the mid-1990s to 2023, with country-specific starting dates dictated by data availability. Throughout the paper, Mexico and Canada serve as the main case study: Mexico as the benchmark emerging small open economy and Canada as the benchmark advanced small open economy. We then extend the analysis to a panel of seven emerging market and developing economies: Brazil, Chile, India, Indonesia, the Philippines, South Africa, and Türkiye. For each country, the information set combines domestic, external, and global variables. The domestic block includes real per-capita GDP, real per-capita investment, real per-capita consumption, the unemployment rate, TFP, the labor share, the short-term policy or money-market rate, and inflation. The external block includes the trade-balance-to-output ratio and the real effective exchange rate. The global block includes a global short-term real interest rate, the Baa corporate bond spread, and country-specific export and import price indices. Following evidence that export and import price movements have distinct business-cycle effects, we keep the two price margins separate rather than collapsing them into a single terms-of-trade measure (Fernández et al., 2017; Di Pace et al., 2025).

Real aggregates and the trade balance are taken from the IMF Quarterly National Accounts in constant prices, seasonally adjusted, and expressed in domestic currency. Inflation is computed from the headline consumer price index. The short-term interest rate is the policy or money-market rate of the relevant central bank, and the real effective exchange rate is the IMF broad real effective exchange rate. TFP and the labor

[2] A related literature shows that large TFP losses, partly traced to worsening resource allocation, help account for the severity of output contractions during major financial crises in EMDEs (see, e.g., Pratap and Urrutia, 2012; Sandleris and Wright, 2014).

share are taken from the Penn World Tables (Feenstra et al., 2015) and are available at annual frequency. The global short-term rate is measured as the yield on the one-year U.S. Treasury net of one-year expected inflation, while the Baa spread is Moody's seasoned Baa corporate bond yield relative to the ten-year Treasury. Export and import price indices are the country-specific commodity price indices constructed by Di Pace et al. (2025). A complete list of the underlying series, source identifiers, transformations, and country-specific sample coverage is reported in Appendix A.

Let $\mathbf{y}_t$ denote the $N \times 1$ vector containing the variables in the country-specific information set. We assume that $\mathbf{y}_t$ admits the reduced-form representation

$$\mathbf{A}(L)\,\mathbf{y}_t \;=\; \mathbf{c} \;+\; \boldsymbol{\nu}_t, \qquad \mathbb{E}(\boldsymbol{\nu}_t\boldsymbol{\nu}_t') \;=\; \boldsymbol{\Sigma}, \tag{1}$$

where $\mathbf{A}(L) = \mathbf{I}_N - \mathbf{A}_1 L - \cdots - \mathbf{A}_p L^p$ is a matrix lag polynomial, $\mathbf{c}$ is a vector of intercepts, and $\boldsymbol{\nu}_t$ is the vector of reduced-form innovations with positive-definite covariance matrix $\boldsymbol{\Sigma}$. All variables enter the VAR in levels, consistent with the recommendation of Angeletos et al. (2020)—henceforth ACD—that frequency-domain identification be carried out on level series rather than on growth rates. We set $p = 12$ lags, following De Graeve and Westermark (2025), who show that increasing the lag length of a VAR can simultaneously reduce truncation bias and the variance of impulse-response estimates.

We estimate (1) by Bayesian methods. We adopt a Minnesota prior on the autoregressive coefficients, which shrinks each equation toward an independent AR(1) representation, and a standard inverse-Wishart prior on $\boldsymbol{\Sigma}$. The posterior is simulated via a Gibbs sampler. Because TFP and the labor share are observed at annual frequency only, we extend the standard Gibbs sampler with an additional block that draws the missing latent quarterly values jointly with the model parameters, using the precision-based mixed-frequency sampler of Chan et al. (2023). The annual observations are imposed as linear constraints on the latent quarterly state.[3]

We identify shocks following the frequency-domain max-share approach of Angeletos et al. (2020).[4] The procedure searches over orthogonal rotations of the VAR innovations and selects the innovation that maximizes the contribution to the variance of a target variable over a chosen frequency band. Equivalently, because the total variance of the target variable over the band is fixed, the selected innovation maximizes its

[3] To prevent the extreme observations of the early COVID-19 period from contaminating the estimated propagation mechanism, we treat the first three quarters of 2020 as missing for all domestic real aggregates. This treatment follows the logic of Lenza and Primiceri (2022), who show that the exceptional volatility of macroeconomic data after March 2020 can distort VAR estimates if handled as ordinary observations. Full details on prior hyperparameters and on the implementation of the Gibbs sampler are reported in Appendix A.4.

[4] This identification scheme extends the time-domain max-share approach of Faust (1998) and Uhlig (2004) to the frequency domain, making it possible to target the conventional business-cycle band—periodicities between 6 and 32 quarters—directly, without committing to a specific horizon in the time domain.

share of that band-specific variance.

Inverting the autoregressive representation in (1) yields the Wold representation $\mathbf{y}_t = \mathbf{B}(L)\boldsymbol{\nu}_t$, where $\mathbf{B}(L) = \mathbf{A}(L)^{-1}$. Let $\tilde{\mathbf{S}}$ denote the lower-triangular Cholesky factor of $\boldsymbol{\Sigma}$, so that $\boldsymbol{\Sigma} = \tilde{\mathbf{S}}\tilde{\mathbf{S}}'$, and let $\mathbf{q}$ denote a unit vector in the space of Cholesky-orthogonalized reduced-form innovations. The innovation associated with $\mathbf{q}$ is $\mathbf{q}'\tilde{\mathbf{S}}^{-1}\boldsymbol{\nu}_t$. For target variable k and frequency band $[\underline{\omega}, \overline{\omega}]$, the contribution of this innovation to the variance of variable k over the band can be written as $\mathbf{q}'\,\boldsymbol{\Theta}(k,\,\underline{\omega},\,\overline{\omega})\,\mathbf{q}$, where $\boldsymbol{\Theta}(k, \underline{\omega}, \overline{\omega})$ is a positive semidefinite matrix constructed from the reduced-form moving-average coefficients and the Cholesky factor $\tilde{\mathbf{S}}$.[5] The shock that targets variable k over the band $[\underline{\omega}, \overline{\omega}]$ is then

$$\mathbf{q}^*(k, \underline{\omega}, \overline{\omega}) = \arg \max_{\mathbf{q}'\mathbf{q}=1} \mathbf{q}'\,\boldsymbol{\Theta}(k, \underline{\omega}, \overline{\omega})\,\mathbf{q}. \tag{2}$$

The solution is the eigenvector associated with the largest eigenvalue of $\boldsymbol{\Theta}(k, \underline{\omega}, \overline{\omega})$ and is identified up to sign. We normalize the sign so that the response of the target variable is positive at its peak.

The identification is deliberately agnostic. The MBC shock is not restricted to be a financial, monetary, productivity, or global shock. It is the orthogonal innovation that accounts for the largest share of GDP fluctuations over the business-cycle band. Any economic interpretation is inferred ex post from the shock's impulse responses, variance contributions, time-series realizations, and relation with the variables in the information set. We focus on two frequency bands, expressed in periodicity units. The *business-cycle band* corresponds to periodicities between 6 and 32 quarters and follows a long-standing convention in empirical macroeconomics. The *long-run band* corresponds to periodicities longer than 80 quarters and isolates fluctuations close to the zero frequency. Our baseline analysis focuses on these two bands, which capture the two ends of the spectrum of macroeconomic fluctuations and provide the sharpest contrast between cyclical and trend dynamics.

Unless otherwise stated, the MBC shock for each country is identified as the vector q^* that maximizes the contribution to the spectral density of GDP over the business-cycle band.[6] Below and in the appendix, we verify that the results are robust to alternative targets, including a joint real-activity target based on GDP, consumption, and investment.

[5] Let $\mathbf{C}(L) \equiv \mathbf{B}(L)\tilde{\mathbf{S}}$ and $\mathbf{C}(e^{-i\omega}) = \sum_{\tau=0}^{\infty} \mathbf{C}_\tau e^{-i\omega\tau}$. If $\mathbf{C}^{[k]}(e^{-i\omega})$ denotes the k-th row of $\mathbf{C}(e^{-i\omega})$, then $\boldsymbol{\Theta}(k, \underline{\omega}, \overline{\omega}) \equiv \int_{\underline{\omega}}^{\overline{\omega}} \mathbf{C}^{[k]}(e^{-i\omega})^\star \mathbf{C}^{[k]}(e^{-i\omega})\, d\omega$, where $\star$ denotes the complex conjugate transpose. Up to normalization constants, which do not affect the maximizing eigenvector, this matrix summarizes the band-specific contribution of the Cholesky-orthogonalized innovations to the variance of variable k.

[6] This differs from the baseline implementation in ACD, which emphasizes unemployment, because unemployment is not always a reliable cyclical indicator across EMDEs and is less consistently measured across countries. GDP is available for all countries in the sample and provides a common target for the cross-country analysis.

3 The Main Business-Cycle Shock: Mexico vs. Canada

We begin by applying the empirical framework described in Section 2 to Mexico and Canada. This comparison is useful because both countries are highly exposed to the United States and to global markets, but they differ sharply in their stage of development. Figure 1 reports impulse responses to the MBC shock in each country. The shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies.

The figure shows that the shock generates a broad-based expansion in both countries. Output, investment, and consumption rise, while unemployment falls. The responses of these real aggregates are similar across the two economies, both in shape and magnitude. The shock is also associated with sizable movements in global variables. In both countries, the expansion is accompanied by an easing of global financial conditions, as measured by the decline in Baa spreads, and by movements in export and import prices. By contrast, the response of the global interest rate is comparatively modest. This suggests that the relevant external margin is not primarily the global risk-free rate, but rather global risk premia and global prices. The latter are captured by export and import prices, which for both countries are strongly influenced by commodity prices; in particular, oil plays an important role in export prices for both Mexico and Canada. This pattern is consistent with the global-financial-cycle view, which emphasizes common movements in risky asset prices, spreads, capital flows, and risk appetite across countries (Rey, 2015; Miranda-Agrippino and Rey, 2020).

The responses of the external variables reinforce the small-open-economy nature of the shock. In both countries, the trade balance deteriorates during the expansion. This is consistent with the increase in domestic absorption: consumption and investment rise together, and part of this increase is reflected in a weaker external balance. The real exchange rate appreciates on impact, which is consistent with easier external financial conditions and stronger demand for domestic goods. Finally, the labor share falls in both economies. These additional responses are useful because they show that the shock moves not only domestic quantities, but also external adjustment margins and factor-income shares.

The main difference between the two economies appears in the responses of inflation and TFP. In Canada, the expansion is accompanied by an increase in inflation and only a modest response of aggregate TFP. In Mexico, by contrast, inflation declines while aggregate TFP rises substantially and persistently. The decline in Mexican inflation is especially telling because it occurs despite rising external prices, particularly import prices, which would normally put upward pressure on domestic inflation. These responses suggest that, although the real effects of the shock are similar across the two countries, the domestic propagation mechanism is not. In particular, the Mexican responses display features that are more commonly associated

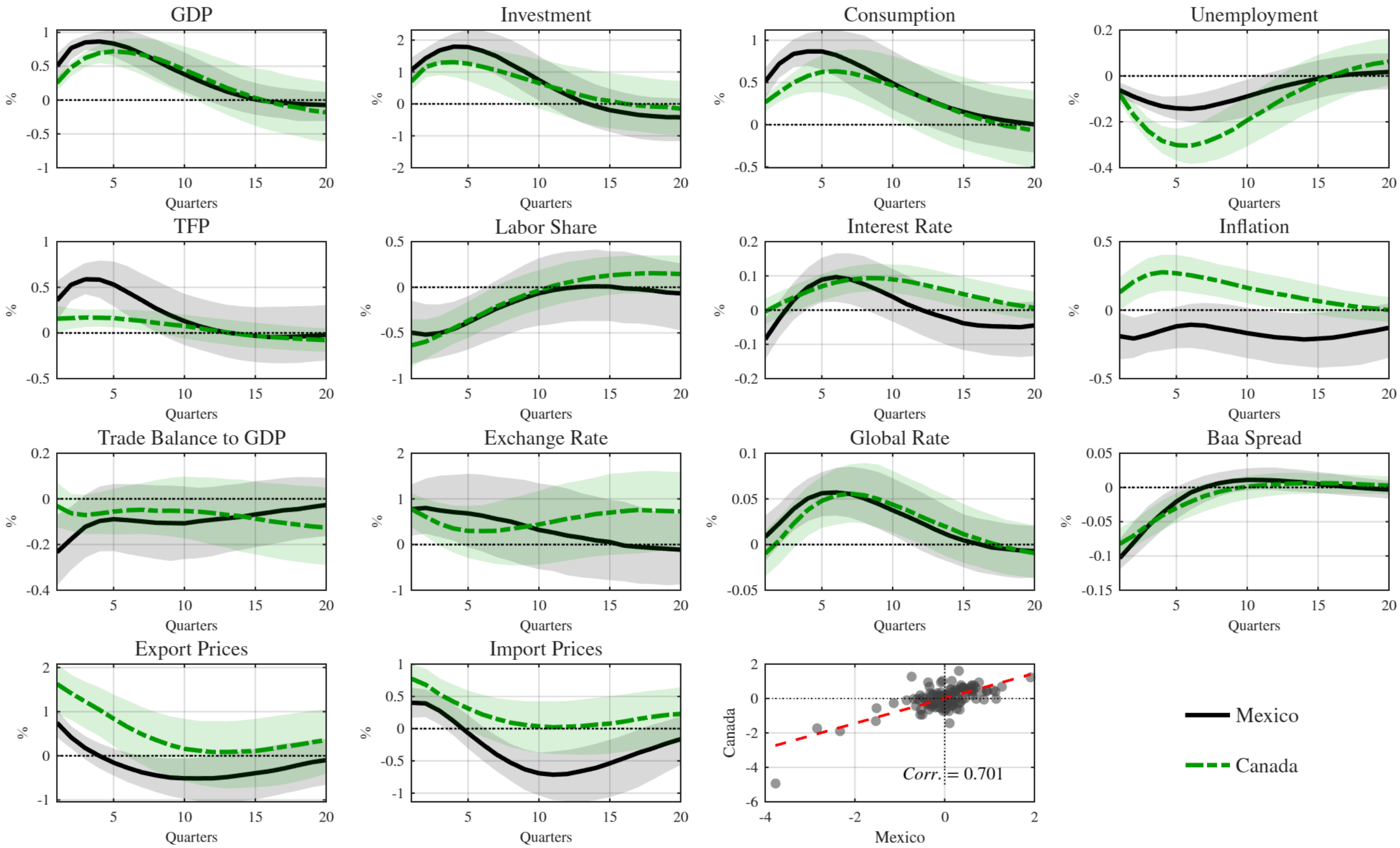

Figure 1: Impulse Responses to the Main Business-Cycle Shock: Mexico and Canada

Notes: The figure reports impulse responses to the main business-cycle shock for Mexico and Canada. The shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. Responses are shown to a one-standard-deviation shock. Solid black lines denote responses for Mexico; dashed green lines denote responses for Canada. Shaded areas report 68 percent posterior bands. The bottom-right panel displays a scatter plot of the identified shocks, along with the fitted linear regression line and the correlation between them.

with supply-side movements, while the Canadian responses are closer to a demand-like expansion. The decline in the labor share strengthens this interpretation for Mexico: the expansion is associated with higher productivity and lower inflation, rather than with rising labor costs. The domestic interest-rate response also points in the same direction. Combining interest rates and inflation, the implied domestic real rate rises in Mexico but falls in Canada. The Mexican expansion therefore occurs alongside lower inflation, higher aggregate TFP, and a tighter domestic real rate, reinforcing its supply-like interpretation. In Canada, the lower implied real rate and higher inflation are instead more consistent with demand-like propagation. We return below to the interpretation of these differences after documenting the quantitative importance of the shock and its relation to lower-frequency movements in output.

The bottom-right panel of Figure 1 adds a useful diagnostic. Although the MBC shocks are identified separately in country-specific VARs and target domestic GDP fluctuations, the estimated shocks for Mexico and Canada have a correlation of about 0.70. This is close to the comovement observed in GDP growth, but contrasts sharply with the weak comovement in aggregate TFP growth.[7] The contrast is informative: the two economies share a common cyclical disturbance, but its domestic transmission differs sharply.

Table 1 complements the impulse responses by reporting the variance contributions of the MBC shock. The first two columns show that the shock accounts for a large share of business-cycle fluctuations in both countries. By construction, it explains the largest share of GDP fluctuations: 69 percent in Mexico and 65 percent in Canada. Its contribution is also large for the other real aggregates, accounting for roughly one half of the business-cycle variation in investment and consumption in both economies. The shock therefore captures a broad cyclical disturbance rather than a narrow movement in GDP.

The table also shows that the shock is tightly connected to global variables. This is especially true for global financial conditions. At business-cycle frequencies, the shock explains 57 percent of the variation in Baa spreads in Mexico and 49 percent in Canada. These shares are substantially larger than the corresponding contributions to the global risk-free rate, which are about 23 percent in both countries. This mirrors the impulse responses in Figure 1: the relevant external financial margin is not primarily the global rate, but global risk premia. This distinction echoes evidence for emerging economies that global financial risk, rather than the risk-free world interest rate, is the more relevant external financial driver of spreads and activity (Akıncı, 2013). The shock also explains a sizable share of export and import price fluctuations, with contributions between 25 and 32 percent across the two countries.The shock also explains a sizable share of export and import price fluctuations, with contributions between 25 and 32 percent across the two countries.[8]

[7] The correlation of Mexico and Canada GDP growth is about 0.75, both for year-over-year growth and for two-year growth. The corresponding correlations for annual aggregate TFP growth are -0.03 and 0.10, respectively. The corresponding inflation correlations are 0.24 and 0.19, although these are less directly informative because the MBC shock explains a smaller share of inflation variation.

[8] This is consistent with evidence that world prices are an important propagation channel for global shocks to small open economies

Table 1: Variance Contributions of the Main Business-Cycle Shock: Canada vs Mexico

	Business Cycle (6–32q)		Long Run (80–∞q)	
Variable	Mexico	Canada	Mexico	Canada
GDP	68.97 [59.51, 77.21]	64.59 [55.38, 72.06]	21.23 [8.55, 42.38]	11.14 [3.77, 35.49]
Investment	51.56 [39.39, 63.06]	41.58 [28.79, 54.08]	13.33 [4.70, 30.77]	12.62 [3.97, 36.19]
Consumption	52.59 [39.51, 63.97]	49.55 [36.87, 61.71]	17.10 [6.30, 37.05]	10.36 [3.05, 35.02]
Unemployment Rate	35.13 [21.98, 51.15]	52.25 [38.85, 62.30]	11.79 [3.75, 30.59]	22.44 [9.79, 44.04]
TFP	35.96 [22.01, 49.50]	17.15 [8.52, 30.72]	8.27 [2.31, 22.87]	12.58 [4.29, 32.08]
Labor Share	23.00 [11.60, 36.66]	31.48 [16.45, 47.35]	9.46 [2.69, 25.46]	13.99 [4.97, 35.11]
Interest Rate	18.80 [8.79, 35.54]	30.22 [18.35, 44.01]	7.18 [2.02, 19.75]	17.22 [5.75, 39.77]
Inflation	9.33 [4.02, 19.15]	19.07 [7.74, 33.33]	11.48 [3.66, 30.33]	23.31 [8.48, 44.36]
Trade Balance to GDP	9.87 [4.07, 21.39]	8.93 [3.29, 20.39]	11.72 [3.08, 29.04]	12.37 [3.34, 35.18]
Exchange Rate	11.03 [4.20, 25.18]	11.48 [5.40, 22.81]	8.31 [2.11, 21.74]	14.02 [3.53, 35.44]
Global Rate	22.54 [11.11, 38.63]	23.32 [11.34, 36.72]	12.73 [4.11, 28.78]	11.73 [3.80, 32.47]
Baa Spread	56.65 [34.03, 73.12]	48.56 [28.87, 63.06]	14.74 [4.23, 35.10]	15.30 [5.36, 37.94]
Export Prices	25.10 [14.07, 39.94]	27.14 [15.26, 39.88]	7.96 [1.96, 22.76]	14.26 [3.91, 35.48]
Import Prices	32.24 [18.91, 48.26]	25.36 [14.31, 37.73]	10.98 [3.13, 27.52]	12.93 [3.45, 35.16]

Notes: The table reports the contribution of the main business-cycle shock to the variance of each variable over two frequency bands. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. The main business-cycle shock is identified separately for Mexico and Canada as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

Thus, the MBC shock is associated not only with domestic comovement, but also with movements in global financial conditions and global prices.

The remaining columns show that this shock has a much smaller footprint at low frequencies. Its contribution to long-run GDP variation falls to 21 percent in Mexico and 11 percent in Canada, and its contribution to long-run movements in investment, consumption, TFP, and external prices is generally modest. The MBC shock is therefore not the main source of long-run movements in output or productivity. One notable difference across countries is the role of aggregate TFP at business-cycle frequencies: the shock

(see, e.g., Fernández et al., 2017), and that commodity prices and global financial conditions jointly shape their transmission (Juvenal and Petrella, 2024).

explains 36 percent of TFP fluctuations in Mexico, compared with 17 percent in Canada. This reinforces the message from the impulse responses. The shock is quantitatively important in both economies and displays a similar association with global financial conditions, but it is more tightly connected to TFP fluctuations in Mexico.

As a check on the choice of target variable, we also identify the shock that maximizes the joint business-cycle variation of output, consumption, and investment. This exercise complements the one-variable-at-a-time approach in Angeletos et al. (2020) and follows the logic of Forni et al. (2025), who target combinations of macroeconomic variables in the frequency domain. If the baseline shock captures the common cyclical component of real activity, targeting the real-activity block should recover essentially the same propagation mechanism.

The resulting impulse responses are nearly identical to those obtained under the baseline GDP target; the full set of responses is reported in Appendix Figure B.1 and the corresponding variance decompositions in Appendix Table B.1. In particular, the shock continues to display the same global signature, with large movements in Baa spreads and external prices, and the same cross-country divergence in domestic propagation: demand-like responses in Canada and more supply-like responses in Mexico, including the stronger procyclical response of aggregate TFP. We therefore keep the GDP-targeted shock as the baseline, which is simpler and more directly comparable across the broader EMDEs sample.

3.1 Is the Cycle the Trend?

The last two columns of Table 1 point to a sharp distinction between business-cycle and low-frequency fluctuations. The MBC shock explains a large share of GDP, investment, and consumption fluctuations at business-cycle frequencies, but its contribution to the long-run variation of these variables is much smaller in both countries. This is true even for Mexico, where the shock has a large effect on aggregate TFP and accounts for a sizable share of TFP variation at business-cycle frequencies. Thus, the productivity-like response documented above does not, by itself, imply that the shock is primarily a low-frequency or trend disturbance. This observation speaks directly to the "cycle is the trend" view of emerging-market fluctuations in Aguiar and Gopinath (2007a). In our setting, the evidence does not support a literal interpretation in which the dominant business-cycle shock is also the dominant low-frequency driver of GDP.

To investigate the connection between cycle and trend more directly, we repeat the anatomy exercise at low frequencies. Specifically, we identify the shock that explains the largest share of GDP variation over the long-run frequency band and then compute its contribution to the variance of the main real aggregates at business-cycle frequencies. Table 2 reports the results for GDP, investment, and consumption.

Table 2: Variance Contributions of the Main Low-Frequency GDP Shock

	Business Cycle $(6–32q)$		Long Run $(80–\infty q)$	
Variable	Mexico	Canada	Mexico	Canada
GDP	17.72	15.04	78.60	87.38
	[5.63, 38.25]	[6.17, 32.69]	[65.62, 89.76]	[74.06, 93.96]
Investment	14.53	10.56	45.57	71.09
	[4.94, 34.22]	[3.90, 24.24]	[17.28, 75.47]	[48.25, 87.07]
Consumption	13.78	15.46	67.85	83.57
	[4.90, 30.80]	[5.98, 42.08]	[45.70, 85.37]	[68.19, 92.43]

Notes: The table reports the contribution of the main low-frequency GDP shock to the variance of selected real aggregates. The shock is identified as the innovation that explains the largest share of GDP fluctuations over the long-run frequency band. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

By construction, this shock accounts for most of the long-run variation in GDP in both countries, and it also explains a large share of long-run movements in consumption and investment. However, its contribution to business-cycle fluctuations is small. The pattern is remarkably similar in Mexico and Canada: the shock that drives GDP at low frequencies explains little of the business-cycle variation in real activity in either economy.

Taken together, Tables 1 and 2 show that the separation between cycle and trend is symmetric. The MBC shock has only a limited long-run footprint, and the main low-frequency GDP shock has only a limited business-cycle footprint. This evidence is consistent with the broader message of García-Cicco et al. (2010), who show that nonstationary productivity shocks alone do not provide a satisfactory account of emerging-market business cycles. Our contribution is different. We reach this conclusion using an agnostic, frequency-domain decomposition rather than a fully specified structural model, and we show that the main cyclical disturbance in Mexico is closely associated with global financial conditions and external prices while generating large movements in aggregate TFP. Thus, the productivity-like component of the Mexican business cycle appears as part of the propagation of the main cyclical shock, not as evidence that the cycle is driven by the same shock that drives the trend.

This distinction also matters for interpretations in which interest-rate movements are tied to country productivity shocks (see, e.g., Aguiar and Gopinath, 2007b). For the dominant cyclical disturbance, the evidence points in the opposite direction: the shocks recovered for Mexico and Canada are strongly correlated. This commonality makes it difficult to view the associated interest-rate movements as responses to country-specific productivity shocks. The productivity response is better understood as part of the domestic propagation of a global shock, not as the primitive force behind it.

4 The Global Component of the Main Business-Cycle Shock

We now turn to the relation between the MBC shock and global financial conditions.[9] The previous section showed that the shock is associated with large movements in Baa spreads and external prices, while the global risk-free rate plays a more limited role. This section examines that global component more directly. We focus on Mexico, our benchmark emerging economy, and ask whether the shock identified from Mexican GDP fluctuations behaves like the domestic counterpart of a broader global financial disturbance.[10]

Figure 2 plots the estimated Mexican MBC shock. This is normalized so that positive realizations correspond to an expansion in GDP. The largest contractionary realizations line up with major global financial stress episodes, including the Russian/LTCM crises, the global financial crisis, and the COVID-19 shock. The series also turns negative around later episodes of global stress, including the post-pandemic supply-chain disruptions, energy repricing, and the inflation shock associated with the Russia–Ukraine war. Conversely, positive realizations occur during periods of easier global financial conditions and risk-on sentiment, such as the mid-2000s credit-and-carry-trade expansion, the rebound after the global financial crisis, and the low-volatility global expansion of the late 2010s. This event pattern is consistent with the interpretation suggested by the impulse responses and variance decompositions: the Mexican MBC shock is closely connected to shifts in global financial conditions.

As an external check, we compare the recovered shock with the risk-on/risk-off (RORO) index of Chari et al. (2023). The RORO index is constructed from high-frequency movements in advanced-economy credit risk, equity-market volatility, funding conditions, and currencies and gold, and is designed to summarize time-varying global investor risk appetite. Since the index is not included in our baseline VAR, its comovement with the recovered shock provides an independent validation of the global-financial interpretation. Aggregating the daily RORO index to quarterly frequency, we find a correlation of -0.42 with Mexico's MBC shock.[11] Thus, shocks recovered from macroeconomic data line up closely with an independently constructed measure of global risk-on/risk-off conditions.

[9] We use the term global financial conditions broadly, to capture movements in global risk premia, risk appetite, credit conditions, and capital-flow pressures. This broad interpretation encompasses shifts often described as risk-on/risk-off episodes, as well as related notions of global financial and credit cycles; see, among others, Forbes and Warnock (2012), Miranda-Agrippino and Rey (2020), Chari et al. (2020), and Boyarchenko and Elias (2026).

[10] The exercises in this section yield similar conclusions for Canada: the shock is closely related to global financial conditions, the Baa-targeted shock delivers impulse responses close to the GDP-targeted shock, and the shock recovered from a domestic-only VAR is strongly correlated with the baseline shock. As shown in the previous section, however, the domestic propagation differs: the global shock has a more demand-like transmission in Canada, while in Mexico it is associated with a stronger procyclical response of aggregate TFP and a decline in inflation.

[11] The MBC shock is normalized so that positive realizations are expansionary, whereas higher values of the RORO index correspond to more risk-off global conditions. The negative correlation is therefore consistent with the interpretation that Mexican expansions coincide with easier global risk conditions. The correlation is -0.54 with the first principal component of the EMDEs country-level MBC shocks (presented in Sec. 5). The correlations are stronger when we focus on the spread component of the RORO index: -0.46 for Mexico and -0.62 for the EMDEs aggregate.

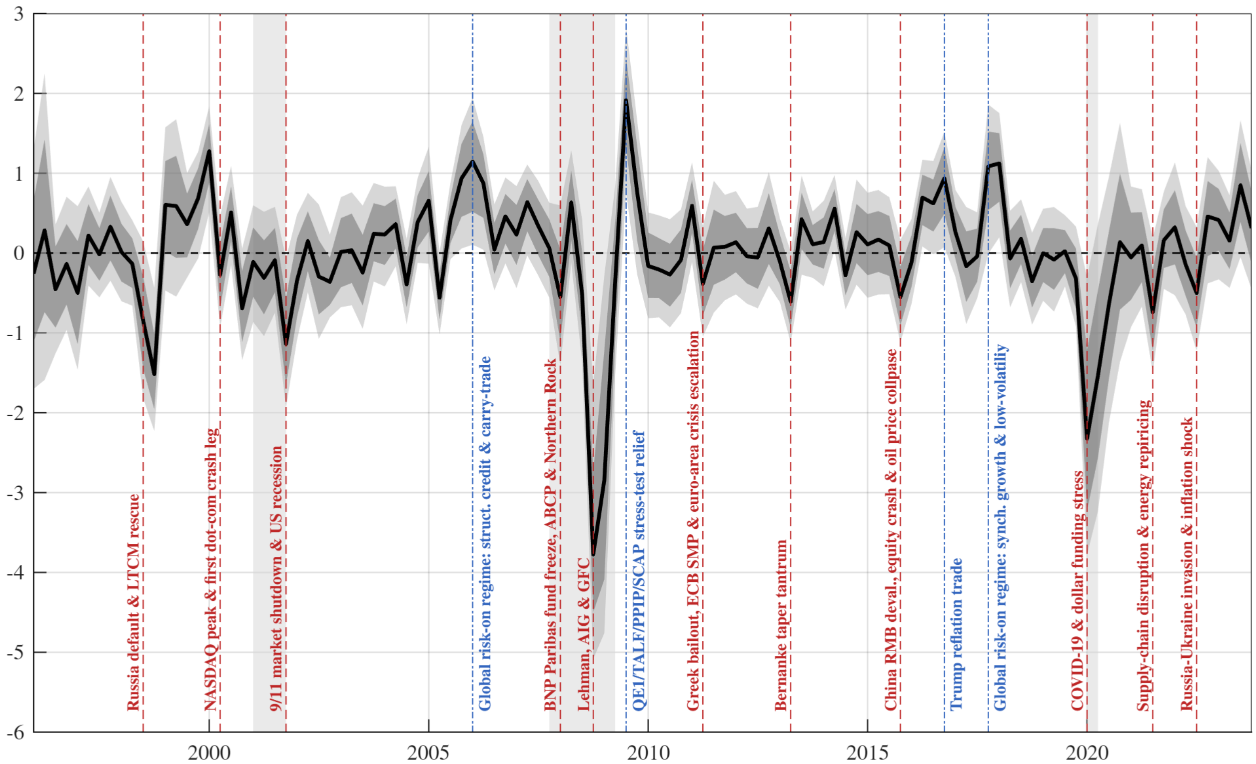

Figure 2: Mexico: Main Business-Cycle Shock and Global Financial Events

Notes: The figure plots the estimated main business-cycle (MBC) shock for Mexico over the period 1996Q1–2023Q4. The shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies (6–32 quarters). The solid black line reports the posterior median; dark and light shaded areas report the 68 and 90 percent posterior credible bands, respectively. The shock is normalized so that positive realizations correspond to an expansion in GDP; negative realizations therefore correspond to contractionary disturbances. Vertical red dashed lines mark major global contractionary episodes; vertical blue dash-dotted lines mark global expansionary regimes. A full description of each episode is provided in Table B.2 in the Appendix. Shaded grey bands mark NBER U.S. recessions.

Domestic sovereign-risk premia provide an additional window into the transmission of the shock. Augmenting the Mexican VAR with the EMBI spread, which measures the spread on Mexico's U.S.-dollar-denominated sovereign bonds over comparable U.S. Treasuries, leaves the baseline anatomy essentially unchanged: the MBC shock still generates a broad expansion, easier global financial conditions, movements in export and import prices, higher aggregate TFP, and no increase in inflation.[12] At the same time, the EMBI spread falls sharply, and the shock accounts for about one third of its business-cycle variation. The domestic premium therefore moves endogenously with the global shock, consistent with the view that country spreads amplify the transmission of global disturbances in EMDEs: global financial easing lowers domestic risk premia, reinforcing the expansion in domestic activity (Juvenal and Petrella, 2024). The link with aggregate productivity is also stronger in this specification: the shock explains about 51 percent of TFP fluctuations at business-cycle frequencies, compared with about 36 percent in the baseline.

[12]Full results are reported in Appendix Table B.3 and Appendix Figure B.2.

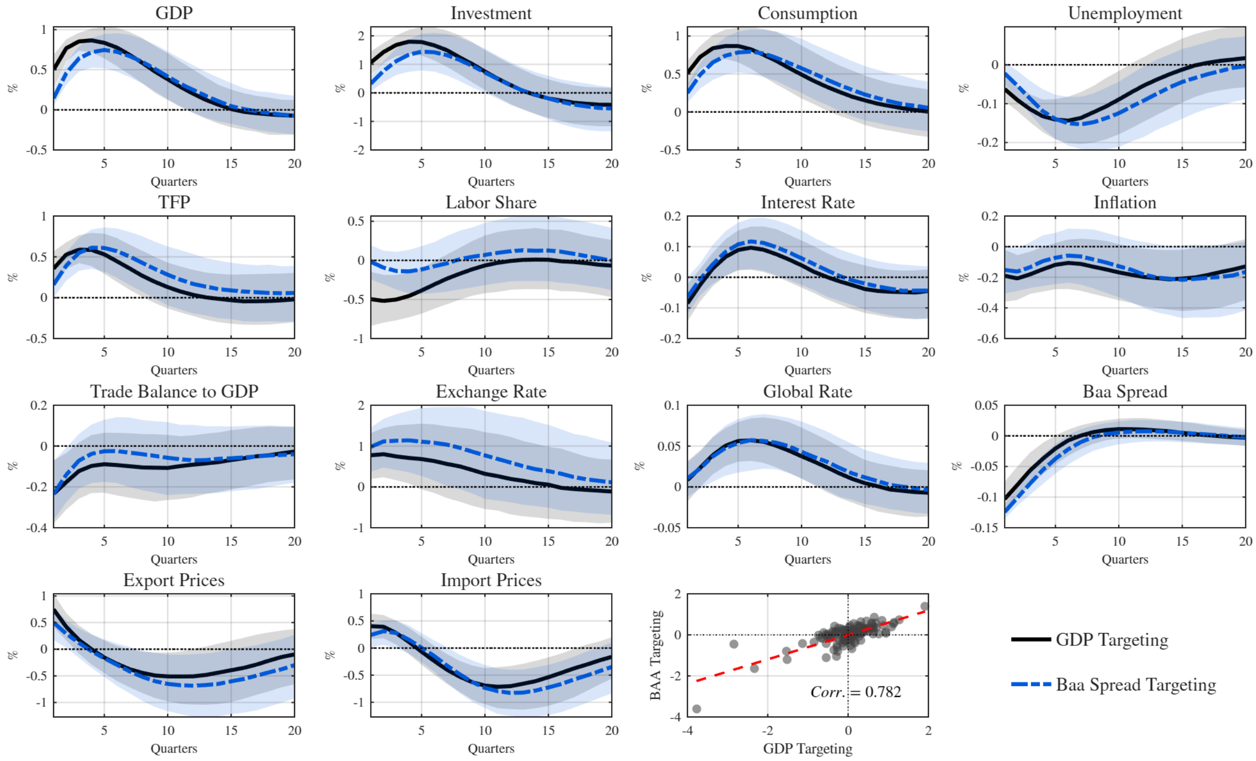

Figure 3: Mexico: Output-Targeted and BAA-Targeted Shocks

Notes: The figure compares impulse responses for Mexico under two identification schemes. The solid black line reports responses to the baseline main business-cycle shock, identified as the shock that explains the largest share of GDP fluctuations at business-cycle frequencies. The dashed blue line reports responses to the shock that explains the largest share of BAA spread fluctuations over the same frequency band. Shaded areas report 68 percent posterior bands. Both shocks are normalized so that they generate an expansion in GDP. Responses are shown for the variables included in the baseline VAR. The bottom-right panel displays a scatter plot of the identified shocks, along with the fitted linear regression line and the correlation between them.

The next exercises make the global-financial interpretation more direct by targeting Baa spreads and by showing that a closely related shock can be recovered even from a domestic-only VAR.

4.1 Targeting Global Risk Premia

The event-time evidence is suggestive of a close connection between the Mexican MBC shock and global financial conditions. We now examine this connection more directly. Instead of identifying the shock that explains the largest share of GDP fluctuations at business-cycle frequencies, we identify the shock that explains the largest share of Baa spread fluctuations over the same frequency band.[13] The exercise asks whether a shock extracted from a standard measure of global risk premia generates the same propagation mechanism as the baseline GDP-targeted shock.

Figure 3 compares the impulse responses from the Baa-targeted shock with those from the baseline

[13]Results are similar when we instead target the joint business-cycle variation of Baa spreads, export prices, and import prices. The corresponding impulse responses are reported in Appendix Figure C.1.

output-targeted shock. The two sets of responses are very similar. The Baa-targeted shock generates the same broad expansion in domestic activity: output, investment, and consumption rise, while unemployment falls. It also produces nearly the same movements in global variables: Baa spreads decline, the global rate rises temporarily, and export and import prices display the same hump-shaped dynamics. The similarities extend to the variables that distinguish Mexico's transmission from Canada's in the previous section. Inflation declines, and aggregate TFP rises strongly and persistently. Thus, the supply-like features of the Mexican response are not specific to the GDP-targeted identification.

This exercise strengthens the interpretation of the Mexican MBC shock as closely related to global financial conditions. The shock that accounts for business-cycle fluctuations in Mexican GDP is almost indistinguishable from the shock that accounts for business-cycle fluctuations in global risk premia. The same conclusion obtains from the variance decompositions: the Baa-targeted shock accounts for similar shares of business-cycle variation across domestic aggregates, global financial variables, and external prices as the baseline shock; see Appendix Table B.4. The result does not require taking a stand on the precise source of the global disturbance—risk appetite, credit conditions, intermediary balance sheets, or other components of global financial conditions. Rather, it shows that the dominant Mexican business-cycle shock has the same empirical footprint as a global-financial shock identified from Baa spreads.

4.2 Excluding global variables

One concern with the previous evidence is that the connection with global financial conditions may be mechanical, since the baseline VAR includes global variables. To address this concern, we re-estimate the system using only domestic Mexican variables and again identify the shock that explains the largest share of GDP fluctuations at business-cycle frequencies. We then compare the resulting shock and impulse responses with those obtained from the baseline medium-scale VAR. The shock series recovered from the two systems are strongly correlated, with a correlation close to 80%, and the large realizations of the two shocks align around the same global financial episodes highlighted in Figure 2. Thus, even when global variables are omitted from the information set, the domestic macroeconomic data recover a shock that is closely related to the baseline MBC shock.

Figure 4 compares the impulse responses for the variables common to the two specifications. The responses are similar across the two systems. The domestic-only VAR generates the same broad expansion in output, investment, and consumption, the same decline in unemployment, and a similar response of aggregate TFP. These similarities are important because they show that the supply-like features emphasized above are not induced by including Baa spreads or external prices in the VAR. The main difference is that

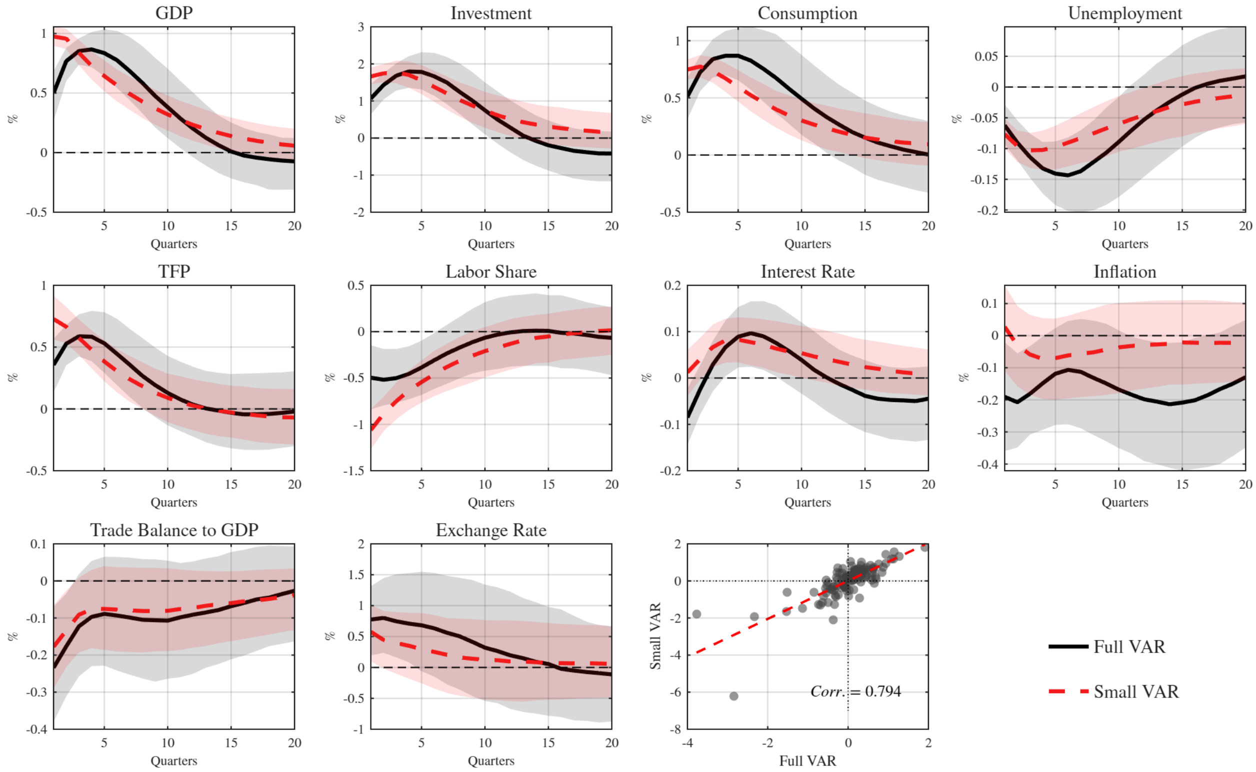

Figure 4: Mexico: Baseline VAR and Domestic-Only VAR

Notes: The figure compares impulse responses to the main business-cycle shock in Mexico under two information sets. The solid black line reports responses from the baseline medium-scale VAR, which includes domestic variables, global financial variables, and external prices. The dashed red line reports responses from a smaller VAR that includes only domestic variables. In both specifications, the shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies and is normalized to generate an expansion in GDP. Shaded areas report 68 percent posterior bands. The figure reports responses for the variables common to the two VAR specifications. The bottom-right panel displays a scatter plot of the identified shocks, along with the fitted linear regression line and the correlation between them.

the small VAR produces somewhat less pronounced hump-shaped dynamics and wider bands for inflation. This is consistent with the idea that omitting relevant information can affect the shape and precision of VAR impulse responses. The evidence therefore suggests that global financial shocks are embedded in Mexican domestic macroeconomic dynamics, rather than being mechanically imposed by the global variables in the baseline system.

To further assess the information content of the domestic-only specification, we test whether the shock recovered from the small VAR is predictable from lagged global variables (Forni and Gambetti, 2014).[14] Table 3 reports predictive regressions using either lagged Baa spreads or the full set of lagged global variables. The entries report adjusted R^2's and the p-values of an F-test of joint predictability. Lagged global variables have substantial predictive power for the shock identified in the domestic-only VAR. With four lags, Baa spread alone explains about 37% of its variation, while the full global block explains about 44%; in both cases,

[14]Specifically, if the VAR information set is sufficient for recovering the shock, the estimated innovation should not be predictable from variables outside the system. Predictability from omitted variables therefore points to informational deficiency.

Table 3: Predictability of Domestic-Only MBC Shocks from Lagged Global Variables

		$u^{MCB}_{t,Small}$		$u^{MCB}_{t,Full} - u^{MCB}_{t,Small}$	
		Lag 1	Lags 1–4	Lag 1	Lags 1–4
Baa Spread	$\bar{R}^2$	0.1985	0.3692	0.2297	0.3113
	p-value	0.0083	0.0000	0.0003	0.0000
All jointly	$\bar{R}^2$	0.2419	0.4419	0.3173	0.4298
	p-value	0.0115	0.0000	0.0000	0.0000

Notes: Each cell reports the adjusted $\bar{R}^2$ and the p-value of the F-test of joint predictability, computed with Newey–West heteroskedasticity- and autocorrelation-consistent standard errors. The dependent variable is either $u^{MBC}_{t,\text{Small}}$, the main business-cycle shock for Mexico identified from the domestic-only VAR, or $u^{MBC}_{t,\text{Full}} - u^{MBC}_{t,\text{Small}}$, the difference between the shock identified from the baseline VAR and the shock identified from the domestic-only VAR. The baseline VAR includes domestic variables, global financial variables, and external prices, while the domestic-only VAR excludes the global block. Predictors are lagged Baa spreads or the full set of lagged global variables, as indicated in the rows.

the null of no predictability is strongly rejected. The last two columns show that omitted global information also predicts the difference between the full-VAR shock and the domestic-only shock. The adjusted R^2 ranges from about 31 percent for Baa spread to 43 percent for the full global block. Thus, the part of the Mexican business-cycle shock that is missed or distorted by the domestic-only system is systematically related to lagged global financial and price information.

These results help interpret the remaining differences in Figure 4. The domestic variables reveal the presence of the global shock, but the domestic-only VAR is not informationally sufficient for recovering its full propagation. If agents respond to global financial information that is omitted from the econometrician's information set, the moving-average representation recovered from the smaller system need not reproduce the dynamic effects of the underlying shock. This logic is closely related to the non-fundamentalness problem emphasized by Lippi and Reichlin (1994) and Leeper et al. (2013). In this sense, the richer information set is not needed to create the global interpretation of the shock; rather, it delivers a sharper estimate of its propagation, including the more pronounced hump-shaped responses in the baseline VAR.

4.3 Robustness

We conduct a number robustness exercises included in Appendix C. First, we identify an alternative external shock by targeting the joint business-cycle variation of Baa spreads, export prices, and import prices (Figure C.1). This exercise is designed to capture the global financial and external-price component of the information set, including the commodity-price variation embedded in export and import prices. The impulse responses associated with this shock are nearly indistinguishable from those generated by the baseline MBC shock, and the two estimated shock series have a correlation of about 0.75. Second, we replace Baa spreads with alternative indicators of global financial conditions: the VIX (Table C.1 and Figure C.2), the global financial cycle factor of Miranda-Agrippino and Rey (2020) (Table C.2 and Figure C.3), and the global credit cycle factor of Boyarchenko and Elias (2026) (Table C.3 and Figure C.4). In all these cases, the impulse responses for Mexico's MBC shock are virtually unchanged relative to the baseline, and the correlation between the identified shocks and the baseline MBC shock is above 90%. These results show that the empirical findings are not driven by the specific choice of Baa spreads as the measure of global financial conditions.

Finally, motivated by recent evidence on the importance of lag length for VAR-based impulse responses (Antolín-Díaz and Surico, 2025; De Graeve and Westermark, 2025), we re-estimate the baseline specification using longer lag structures. In particular, we consider VARs with 16 and 20 lags. The latter specification sets the number of lags equal to the projection horizon, bringing the VAR impulse responses close to their local-projection counterpart as highlighted by Plagborg-Møller and Wolf (2021). The results (in Table C.4 and Figure C.5) are very similar to the baseline across all specifications: the impulse responses, variance decompositions, and estimated shock series remain essentially unchanged. Taken together, these exercises confirm that the main results are not an artifact of the choice of global financial indicator, the targeted external block, or the baseline lag length.

5 The Main Business-Cycle Shock in EMDEs

We now ask whether the anatomy documented for Mexico is representative of a broader set of emerging and developing economies. We repeat the baseline exercise for Mexico, Chile, Brazil, India, South Africa, Türkiye, Indonesia, and Philippines[15]. For each country, we estimate the same medium-scale VAR and identify the shock that explains the largest share of GDP fluctuations at business-cycle frequencies. We then aggregate the country-level responses using inverse-variance weights, so that more precisely estimated responses receive greater weight (see, e.g., Canova and Pappa, 2007).[16] Mexico is reported alongside the EMDEs aggregate to assess whether the benchmark case studied above is representative of the broader sample.

Figure 5 reports the inverse-variance-weighted EMDEs response together with the Mexican response. The aggregate EMDEs anatomy is close to the Mexican one. The shock generates a broad-based expansion: output, investment, and consumption rise, while unemployment falls. It is also associated with an easing of global financial conditions, captured by a decline in Baa spreads, and with sizable movements in external prices. Most importantly, the supply-side features documented for Mexico are present in the broader

[15]For India and South Africa, the sign normalization is extended to four consecutive quarters, so that the shock generates a persistent positive response of GDP.

[16]Appendix Figure B.3 shows that the results are similar when responses are aggregated using unweighted averages or medians.

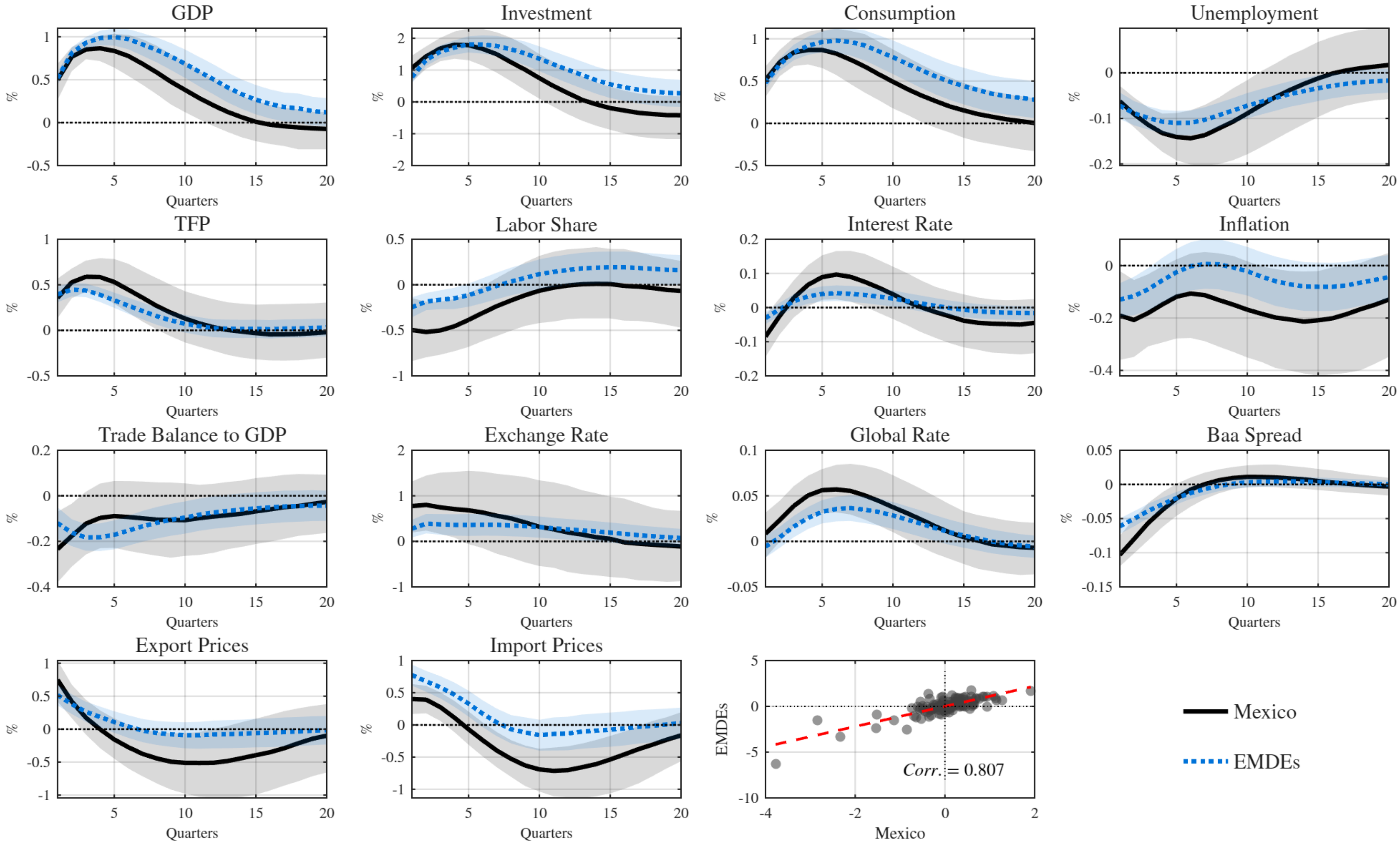

Figure 5: Impulse Responses to the Main Business-Cycle Shock: Mexico and EMDEs Aggregate

Notes: The figure compares impulse responses to the main business-cycle shock in Mexico and in the EMDEs aggregate. For each country, the shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. The solid black line reports the Mexican response. The dotted blue line reports the inverse-variance-weighted average response across the EMDEs sample. Shaded areas report 68 percent posterior bands. Responses are normalized so that the shock generates an expansion in GDP. The bottom-right panel displays a scatter plot of the MBC shock for Mexico and the first principal component of the MBC shocks of the EMDEs sample, along with the fitted linear regression line and the correlation between them. The EMDEs sample includes Mexico, Chile, Brazil, India, South Africa, Turkey, Indonesia, and Philippines.

sample. Aggregate TFP rises after the shock, while inflation does not display the positive response typical of a demand-driven expansion. Thus, the Mexican response is not an isolated case; it provides a useful benchmark for the average EMDEs transmission of the MBC shock.[17]

Table 4 confirms the quantitative importance of the EMDEs MBC shock. This explains about two thirds of GDP fluctuations at business-cycle frequencies. Its contribution is also sizable for consumption and investment, and it explains a meaningful share of aggregate TFP fluctuations. The shock is again more closely associated with global risk premia than with the global risk-free rate: it accounts for a larger share of Baa spread variation than of the global rate. It also explains nontrivial variation in export and import prices. At low frequencies, the same shock has a more limited footprint, including for GDP. The EMDEs evidence therefore mirrors the Mexico results: the main cyclical shock is quantitatively important, connected to global financial conditions and external prices, and distinct from the main low-frequency driver of the data.

The commonality is also visible in the shock realizations. The shocks comove strongly across countries, with pairwise correlations above 80%, and the first component captures the major episodes common to the sample.[18] Large contractionary realizations occur around the same global financial episodes highlighted for Mexico (see Figure 2). This evidence shows that the similarity across EMDEs is not limited to average impulse responses. The estimated shocks themselves contain a strong common component, consistent with a global driver of EMDEs business cycles.

The EMDEs evidence reinforces the message from Mexico. The MBC shock is quantitatively important, has a strong common component across countries, and is associated with global financial conditions and external prices. At the same time, its transmission is supply-like: aggregate TFP rises and inflation fails to increase. The next section develops a model designed to account for this combination of a global financial signature and supply-side domestic propagation.

[17] Appendix Figure B.4 reports the same exercise for the Latin American subsample. The responses are, if anything, even closer to the Mexican benchmark. Appendix Table B.5 shows a similar pattern for the variance decompositions.

[18] Figure B.5 plots the country-level MBC shocks together with their first principal component.

Table 4: EMDEs: Variance Contributions of the Main Business-Cycle Shock

	Business Cycle (6–32q)	Long Run (80–∞q)
Variable	EMDEs Aggregate	EMDEs Aggregate
GDP	67.17	24.97
	[63.52, 70.82]	[12.50, 37.43]
Investment	39.16	21.04
	[31.30, 47.01]	[10.12, 31.95]
Consumption	47.73	22.69
	[37.08, 58.37]	[10.05, 35.33]
Unemployment Rate	20.44	18.80
	[4.12, 36.75]	[7.88, 29.73]
TFP	24.59	14.96
	[11.82, 37.35]	[5.95, 23.97]
Labor Share	14.86	14.11
	[4.90, 24.82]	[10.04, 18.17]
Interest Rate	15.56	12.49
	[10.66, 20.45]	[7.41, 17.57]
Inflation	10.62	13.73
	[4.62, 16.62]	[9.77, 17.69]
Trade Balance to GDP	14.30	17.19
	[9.45, 19.16]	[12.45, 21.92]
Exchange Rate	10.89	13.66
	[6.50, 15.28]	[5.46, 21.87]
Global Rate	13.37	13.85
	[8.95, 17.78]	[8.29, 19.41]
Baa Spread	20.91	14.81
	[6.53, 35.28]	[10.86, 18.77]
Export Prices	17.23	13.79
	[7.94, 26.52]	[9.20, 18.37]
Import Prices	19.99	16.02
	[9.14, 30.84]	[12.48, 19.56]

Notes: The table reports the variance contribution of the main business-cycle shock for the EMDEs aggregate. For each country, the shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. Country-level variance contributions are aggregated using inverse-variance weights. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. Entries are posterior medians, expressed in percent. The EMDEs sample includes Mexico, Chile, Brazil, India, South Africa, Turkey, Indonesia, and Philippines.

6 Global Financial Shocks and Supply-Side Transmission

The empirical evidence points to a distinctive form of transmission in EMDEs. The main cyclical disturbance is global in origin, but its domestic effects are supply-like: expansions are associated with higher real activity, procyclical aggregate TFP, and no increase in inflation. This section illustrates a mechanism that can generate this pattern without primitive technology shocks. The key idea is that global financial conditions affect not only aggregate spending, but also the allocation of production across heterogeneous firms.

We model this channel through a working-capital friction, as in canonical models of financial frictions in EMDE business cycles (Neumeyer and Perri, 2005; Uribe and Yue, 2006). Firms must finance part of their wage bill before revenues are realized, so changes in global financial conditions that pass through to domestic borrowing costs affect their effective marginal costs. If all firms have the same working-capital exposure, a global financial easing acts like an aggregate labor-cost wedge: it raises employment and output, but leaves aggregate TFP unchanged. The key ingredient is scale-dependent exposure. Larger and more productive firms have greater effective working-capital needs. As a result, a global financial easing lowers their effective labor cost disproportionately, reallocating labor toward them and raising aggregate TFP.

This mechanism connects the global financial shock to the misallocation literature. Financial frictions distort the allocation of resources across heterogeneous producers (Buera et al., 2011; Midrigan and Xu, 2014; Moll, 2014; Gopinath et al., 2017). Because domestic financial conditions are tied to global financial conditions, the allocative margin becomes both cyclical and external: global financial easing reallocates production toward more productive firms, while tightening reallocates production away from them. This generates endogenous cyclical movements in aggregate TFP and amplifies the output response.

6.1 A Model of Working Capital and Scale-Dependent Exposure

We present a deliberately simple environment designed to isolate the cross-sectional supply channel through which global financial conditions affect aggregate productivity. Time is discrete and indexed by $t = 0, 1, 2, \ldots$. In each period, households choose labor supply and firms choose employment, taking the working-capital rate as given. This stripped-down structure allows us to focus on the allocative effects of financial conditions across heterogeneous firms, rather than on additional intertemporal margins.[19] A representative household has Greenwood–Hercowitz–Huffman preferences (Greenwood et al., 1988, hereafter GHH),

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t u\left(C_t - G(N_t)\right), \qquad G(N_t) = \frac{\chi}{1+\varphi} N_t^{1+\varphi}, \tag{3}$$

with $0 < \beta < 1$, $\chi > 0$, and $\varphi > 0$. The function $u(\cdot)$ is strictly increasing and strictly concave, with $u'(X) > 0$ and $u''(X) < 0$. We use GHH preferences because they eliminate wealth effects from labor supply. This keeps the general-equilibrium response of employment tied directly to the wage induced by firms' labor demand, rather than to income effects operating through consumption.[20]

The household owns firms. In each period, it receives labor income, firm profits, and lump-sum transfers. Its budget constraint is

$$C_t = w_t N_t + \Pi_t + T_t, \tag{4}$$

[19]The model abstracts from other channels of the global financial and credit cycle, including movements in export and import prices and the real exchange rate. These margins may affect domestic activity directly, and may also reinforce reallocation by changing relative profitability, cash flows, and financing needs across firms.

[20]The assumption is useful here because the model is meant to isolate the supply-side allocation channel: global financial shocks affect output by changing firms' effective labor costs and the cross-sectional allocation of labor, not by generating independent wealth effects on household labor supply.

where w_t is the wage, Π_t denotes aggregate firm profits, and T_t denotes transfers of intermediary profits. The household takes w_t, Π_t, and T_t as given when choosing C_t and N_t. The resulting intratemporal optimality condition takes the simple form $w_t = \chi N_t^{\varphi}$.

There is a continuum of firms indexed by $i \in [0, 1]$. Firm i produces

$$y_{it} = a_i n_{it}^{\alpha}, \qquad 0 < \alpha < 1, \tag{5}$$

where a_i is time-invariant idiosyncratic productivity. The cross-sectional distribution of a_i is fixed. The production process is subject to a working-capital constraint that requires firms to hold non-interest-bearing assets to finance a fraction $q_i \in [0, 1]$ of the wage bill each period:

$$m_{it} \geq q_i w_t n_{it}, \tag{6}$$

where m_{it} denotes the amount of working capital held by the representative firm in period t. We restrict attention to equilibria in which the interest rate is positive in all periods. Under this assumption, the working-capital constraint binds at all times: otherwise, firms would borrow more than necessary and suboptimally incur additional financial costs. Let R_t denote the gross domestic cost of working-capital finance.[21] In a small emerging economy, this cost is tightly linked to global financial conditions through movements in global risk premia, external borrowing costs, and country spreads (Uribe and Yue, 2006; Akıncı, 2013). Easier global financial conditions therefore lower R_t, easing firms' cost of financing variable production costs; conversely, an increase in R_t corresponds to a financial tightening.

We assume that firms differ in the extent to which they must finance variable production costs before revenues are realized, parameterizing exposure as

$$q_i = q_0 + q_1 \kappa(\bar{n}_i), \qquad \kappa'(\bar{n}_i) > 0, \tag{7}$$

with $q_0 \geq 0$, $q_1 \geq 0$. The term q_0 captures a common working-capital requirement faced by all firms. The term $q_1 \kappa(\bar{n}_i)$ captures scale-dependent exposure. We tie this exposure to the scale at which firms operate in the frictionless deterministic benchmark, denoted by $\bar{n}_i$. Specifically, $\bar{n}_i$ is the employment level that firm i would choose when working-capital wedges are absent: $\bar{n}_i = \left(\frac{\alpha a_i}{\bar{w}}\right)^{1/1-\alpha}$, where $\bar{w}$ is the corresponding frictionless steady-state wage. Since $0 < \alpha < 1$, $\bar{n}_i$ is strictly increasing in a_i. Larger and more productive

[21] We do not model the intermediary sector explicitly. The term T_t in the household budget should be interpreted as the lump-sum rebate of any net income generated by the reduced-form working-capital arrangement. Since T_t is taken as given by the household and preferences are GHH, it plays no role in the labor-supply condition or in the allocative mechanism emphasized below.

firms therefore have greater working-capital exposure when $q_1 > 0$. The interpretation is that firms operating at larger scale have larger payrolls, larger input purchases, longer cash-conversion cycles, and greater short-term financing needs. The parameter q_1 indexes the strength of this scale-exposure channel. When $q_1 = 0$, all firms have the same working-capital exposure and changes in R_t affect only the aggregate cost of labor. When $q_1 > 0$, changes in global financial conditions also change relative labor costs across firms.

Given q_i, the firm-specific working-capital wedge is

$$\omega_i(R_t) = 1 + q_i(R_t - 1). \tag{8}$$

A decline in R_t lowers the effective wage faced by all firms, but it lowers it more for firms with larger q_i. Thus, when exposure is scale dependent, an improvement in global financial conditions disproportionately reduces the marginal cost of larger, more productive firms.

Firm i chooses labor to solve

$$\max_{n_{it} \geq 0} \left\{ a_i n_{it}^{\alpha} - w_t \omega_i(R_t) n_{it} \right\}. \tag{9}$$

The firm's labor demand is $n_{it} = (\alpha a_i / w_t \omega_i(R_t))^{\frac{1}{1-\alpha}}$.

6.2 Aggregation, Misallocation, and Aggregate TFP

Aggregating labor demand and supply, equilibrium aggregate labor is[22]

$$N_t = \left[\frac{\alpha}{\chi} \left(\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}} \, di \right)^{1-\alpha} \right]^{\frac{1}{1-\alpha+\varphi}}. \tag{10}$$

Aggregate output is $Y_t = \int_0^1 a_i n_{it}^{\alpha} \, di$. Therefore, the economy admits the aggregate representation $Y_t = A(R_t) N_t^{\alpha}$, where aggregate TFP is

$$A(R_t) = \frac{\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{\alpha}{1-\alpha}} \, di}{\left[\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}} \, di \right]^{\alpha}}. \tag{11}$$

Aggregate TFP is therefore endogenous. It depends on the allocation of labor across heterogeneous firms, not only on primitive productivities. If q_i is common across firms, a change in R_t changes the aggregate cost of labor but not relative labor costs. In that case, aggregate TFP is independent of R_t: $A = \left(\int_0^1 a_i^{\frac{1}{1-\alpha}} \, di \right)^{1-\alpha}$. A global financial easing then raises output by increasing aggregate employment, but it does not generate

[22] See Appendix D for additional algebraic details.

any endogenous increase in aggregate TFP.

By contrast, when q_i is increasing in frictionless operating scale, global financial conditions affect not only aggregate labor demand but also the allocation of labor across firms. A decline in R_t reduces the effective labor cost of high-productivity firms disproportionately, reallocates labor toward them, and raises aggregate TFP.

The following proposition formalizes the two channels: a common working-capital wedge moves employment and output, while scale-dependent exposure also moves aggregate TFP.

Proposition 1. *Suppose $R_t > 1$ and $q_i = q_0 + q_1\kappa(\bar{n}_i)$, with $\kappa'(\bar{n}_i) > 0$. Since frictionless operating scale $\bar{n}_i$ is increasing in productivity a_i, more productive firms have larger working-capital exposure whenever $q_1 > 0$. Then:*

(i) A global financial tightening lowers aggregate labor and GDP:

$$\frac{\partial N_t}{\partial R_t} < 0, \qquad \frac{\partial Y_t}{\partial R_t} < 0. \tag{12}$$

Equivalently, a global financial easing raises both employment and GDP.

(ii) A global financial tightening lowers aggregate TFP:

$$\frac{\partial A(R_t)}{\partial R_t} \leq 0. \tag{13}$$

The inequality is strict whenever $q_1 > 0$. If $q_1 = 0$, working-capital exposure is common across firms and $\frac{\partial A(R_t)}{\partial R_t} = 0$. Hence the same global financial shock has no allocative-efficiency component and produces no endogenous TFP response.

Proof: see Appendix D.

An improvement in global financial conditions lowers the cost of working-capital finance and raises aggregate activity. If exposure is common across firms, this effect operates only through an aggregate labor wedge. Employment and output rise, but aggregate TFP does not. If exposure is scale dependent, instead, the same easing relaxes the effective labor cost of high-productivity firms more strongly. Labor is reallocated toward these firms, aggregate TFP rises, and the expansion in output is amplified. Conversely, a financial tightening reallocates labor away from high-productivity firms and depresses both output and aggregate productivity. Hence global financial shocks can generate procyclical movements in aggregate TFP without any movement in primitive technology.

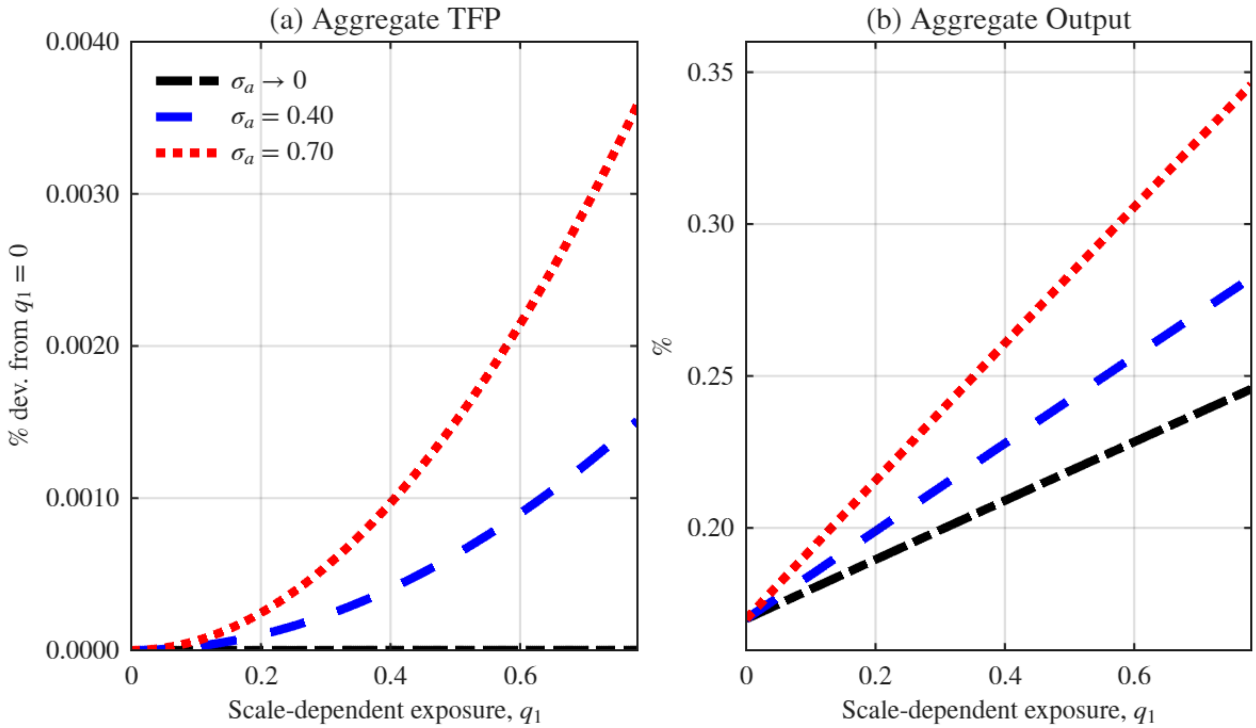

Figure 6: Heterogeneity and the Effects of a Financial Easing

Notes: The figure reports the simulated response to a reduction in the cost of working-capital finance for different values of scale-dependent exposure, q_1, and firm-productivity dispersion, σ_a. Panel A reports the response of aggregate TFP net of the common-exposure benchmark, $q_1 = 0$. Panel B reports the total response of aggregate output.

Figure 6 illustrates the mechanism. The exercise considers a reduction in the working-capital rate while varying the strength of scale-dependent exposure, q_1, and the dispersion of firm productivity.[23] Panel A reports the change in aggregate TFP relative to the common-exposure case, $q_1 = 0$. When exposure is common, the financial easing lowers the aggregate cost of labor but does not change the allocation of labor across firms, so aggregate TFP is unchanged. As q_1 increases, the easing becomes increasingly tilted toward larger and more productive firms, and aggregate TFP rises. The effect is stronger when productivity dispersion is higher, because reallocating labor toward the upper tail of the productivity distribution has larger aggregate consequences. Panel B shows the corresponding response of output. Output rises even when exposure is common, reflecting the aggregate labor-cost channel. Scale-dependent exposure adds an allocative margin: by raising aggregate TFP, it increases the output response relative to the common-exposure benchmark. In the illustrative calibration, the output response at the upper end of the q_1 range is about 50%

[23]The baseline economy has an annual gross working-capital rate of $R = 1.10$; the shocked economy lowers this rate by 300 basis points. Firm productivity satisfies $\log a_i = \sigma_a z_i$, where z_i is drawn from a standard normal distribution. Working-capital exposure is $q_i = q_0 + q_1 \kappa_i$, with $q_0 = 0.30$. The parameter q_1 ranges from zero to the value that sets the maximum exposure to approximately 0.75, and $\kappa_i = [1 + \exp\{-(\log a_i - \text{median}(\log a_i))\}]^{-\eta}$, with $\eta = 2.5$. The remaining parameters are $\alpha = 0.65$ and $\varphi = 3$. Each economy contains $M = 20{,}000$ firms, and χ is calibrated so that benchmark aggregate labor equals $N = 0.33$. The value $\sigma_a = 0.7$ is in the range of the TFP dispersion documented by Hsieh and Klenow (2009) for emerging economies, whereas $\sigma_a = 0.4$ is close to the value used by Gopinath et al. (2017) for Spain.

larger when moving from no productivity dispersion to $\sigma_a = 0.7$. Therefore, the endogenous reallocation can materially reinforce the working-capital channel.

The same logic is can be grasped in a two-type version of the model. Suppose that a measure λ of firms has high productivity a_H, while a measure $1-\lambda$ has low productivity a_L, with $a_H > a_L$. Since high-productivity firms are larger in the deterministic benchmark, scale-dependent working-capital exposure implies $q_H > q_L$. The corresponding wedges are $\omega_i(R_t) = 1 + q_i(R_t - 1)$ for $i = \{L, H\}$. Relative employment is

$$\frac{n_{Ht}}{n_{Lt}} = \left[\frac{a_H}{a_L}\frac{\omega_L(R_t)}{\omega_H(R_t)}\right]^{\frac{1}{1-\alpha}}. \tag{14}$$

Because $q_H > q_L$, a financial easing lowers $\omega_H(R_t)$ more than $\omega_L(R_t)$, increasing n_{Ht}/n_{Lt} and aggregate TFP. Thus the expansion is not neutral across producers: labor moves toward high-productivity firms. If $q_H = q_L$, the wedge is common and aggregate TFP is independent of R_t.

This channel can rationalize the supply-like empirical footprint of the shock in EMDEs. By disproportionately relaxing the effective working-capital wedge faced by large, high-productivity firms, a financial easing raises aggregate TFP alongside output. The rise in aggregate productivity is not the result of an exogenous technology shock; it is the endogenous outcome of a reallocation of production toward more efficient firms. In this sense, improvements in global financial conditions provide a direct boost to aggregate activity and an additional boost through allocative efficiency. In a standard sticky-price extension, this reallocation would lower real marginal cost relative to the demand expansion. Inflation therefore need not rise, and may fall, even though output expands. The model therefore provides a simple rationale for why, in EMDEs, global financial shocks can look like supply shocks: by changing the allocation of resources across heterogeneous firms, they generate procyclical movements in aggregate TFP alongside the expansion in real activity.

7 Concluding remarks

This paper applies the business-cycle anatomy approach to identify the dominant cyclical disturbance in small open economies. We find that the MBC shock is closely tied to the global financial cycle. Expansions coincide with easier global risk conditions and movements in external prices, while the global risk-free rate plays a more limited role. In EMDEs, the dominant global disturbance looks like a supply shock once it is transmitted domestically. It raises output and aggregate TFP without raising inflation. Yet it is not a trend shock: its footprint is concentrated at business-cycle frequencies and much weaker at low frequencies. The productivity-like behavior of EMDEs cycles therefore reflects the propagation of a global cyclical shock, not the dominance of primitive trend disturbances.

We interpret these findings through a simple mechanism in which global financial conditions affect working-capital costs across heterogeneous firms. When exposure to working-capital finance is stronger among larger and more productive firms, global financial easing reallocates production toward those firms, raising aggregate TFP and amplifying the output response. Global financial shocks can therefore look like supply shocks in EMDEs data.

The results also sharpen the policy problem faced by EMDEs. External financial shocks do not operate only through demand or capital flows; by changing the allocation of resources across firms, they can also affect aggregate productivity and amplify downturns. This underscores the value of policy frameworks that build resilience to global financial conditions—including macroprudential, foreign-exchange, capital-flow, and targeted liquidity tools—while recognizing that such policies may shape not only aggregate demand but also the supply-side transmission of external shocks.

The results connect two interpretations of emerging-market fluctuations. One views productivity-like cycles as evidence that the cycle is tied to the trend. The other views EMDEs cycles as the outcome of financial frictions and shifts in external borrowing conditions. Our evidence suggests that these views are connected: global financial shocks are central to EMDEs business cycles, but their transmission can endogenously generate the productivity-like behavior that has often been attributed to trend shocks.

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A Data and Estimation Details

A.1 Sample coverage

Table A.1 reports the country-by-country sample period at quarterly frequency.

Table A.1: Sample coverage by country

Country	Sample (quarterly)	Annual variables
Mexico	1993Q1 – 2023Q4	TFP, labor share
Canada	1986Q1 – 2023Q4	TFP, labor share
Brazil	1996Q1 – 2023Q4	TFP, labor share, unemployment (1996-2012)
Chile	1996Q1 – 2023Q4	TFP
India	1997Q1 – 2023Q4	TFP, labor share, unemployment
Indonesia	1996Q1 – 2023Q4	TFP, unemployment
Philippines	2000Q1 – 2023Q4	TFP, labor share
South Africa	1993Q1 – 2023Q4	TFP, labor share, unemployment (1993-2007)
Türkiye	1998Q1 – 2023Q4	TFP, labor share, unemployment (1998-2004)

A.2 Variable transformations

Table A.2: Variable transformations

Variable	Transformation
GDP	$100 \cdot \log(\text{GDP})$
Investment	$100 \cdot \log(\text{Investment})$
Consumption	$100 \cdot \log(\text{Consumption})$
Unemployment Rate	-
TFP	$100 \cdot \log(TFP)$
Labor Share	$100 \cdot \log(\text{Labor Share})$
Interest Rate	Interest Rate / 4
Inflation	-
Trade Balance to GDP	Trade Balance to GDP $\times$ 100
Exchange Rate	$100 \cdot \log(\text{Exchange Rate})$
Global Rate	$(\text{DGS1} - \text{EXPINF1YR})/4$
Baa spread	Baa10Y/ 4
Export Prices	$100 \cdot \log(\text{Export Prices})$
Import Prices	$100 \cdot \log(\text{Import Prices})$
VIX Index	-
GFCy	-
Global Credit Factor	-
EMBI Spread	EMBI Spread/ 4

A.3 Data sources

Table A.3 reports the series identifiers and sources for the global variables included in the baseline and robustness specifications. Table A.4 reports the country-specific sources for all domestic variables: real aggregates, unemployment, TFP, labor share, interest rate, inflation, trade balance, and real effective exchange rate. IMF series are accessed through the IMF Data portal; FRED series through the Federal Reserve Bank of St. Louis. Penn World Tables (PWT) series (Feenstra et al., 2015) follow the FRED naming convention `RTFPNA*A632NRUG` for TFP and `LABSHP*A156NRUG` for the labor share, where $\star$ denotes the ISO country code. Country-specific export and import price indices are constructed by Di Pace et al. (2025).

Table A.3: Global Variables: Definitions and Sources

Variable	Source	Series identifier / notes
Global Rate	FRED	`DGS1` − `EXPINF1YR`: 1-year Treasury yield minus 1-year expected inflation.
Baa Spread	FRED	`BAA10Y`: Moody's Seasoned Baa Corporate Bond Yield − 10-Year Treasury Constant Maturity.
Export Prices	Di Pace et al. (2025)	Country-specific commodity price indices.
Import Prices	Di Pace et al. (2025)	Country-specific commodity price indices.
VIX Index	FRED	`VIXCLS`.
Global Financial Cycle Factor	Miranda-Agrippino and Rey (2020)	
Global Credit Cycle Factor	Boyarchenko and Elias (2026)	
EMBI Spread	BAnco Central de Reserva del Perù	Series for Mexico (1998Q1-2023Q4)

Notes: FRED series are retrieved from the Federal Reserve Bank of St. Louis. The Global Rate is measured as the yield on the one-year U.S. Treasury net of one-year expected inflation. The Baa Spread is Moody's seasoned Baa corporate bond yield relative to the ten-year Treasury constant maturity. Export and import price indices are country-specific commodity price indices constructed by Di Pace et al. (2025). The VIX, the Global Financial Cycle Factor, and the Global Credit Cycle Factor are used only in robustness exercises reported in Appendix C. EMBI Spread is used to extend the baseline VAR specification in Appendix B.

Table A.4: Domestic Variables: Definitions and Sources

Country	GDP	Investment	Consumption	Unemployment	TFP
Mexico	IMF NEA	IMF NEA	IMF NEA	FRED LRUNTTTTMXQ156S	PWT RTFPNAMXA632NRUG
Canada	IMF NEA	IMF NEA	IMF NEA	FRED LRUNTTTTCAM156S	PWT RTFPNACAA632NRUG
Brazil	IMF NEA	IMF NEA	IMF NEA	IMF Labor Stat. (Q from 2013Q1); IMF WEO (A, 1996–2012)	PWT RTFPNABRA632NRUG
Chile	IMF NEA	IMF NEA	IMF NEA	IMF Labor Statistics	PWT RTFPNACLA632NRUG
India	IMF NEA	IMF NEA	IMF NEA	World Bank, annual	PWT RTFPNAINA632NRUG
Indonesia	IMF NEA	IMF NEA	IMF NEA	IMF WEO (A)	PWT RTFPNAIDA632NRUG
Philippines	IMF NEA	IMF NEA	IMF NEA	IMF Labor Force Survey (2002Q4 lin. interp.)	PWT RTFPNAPHA632NRUG
South Africa	IMF NEA	IMF NEA	IMF NEA	IMF Labor Stat. (Q from 2008Q1); IMF WEO (A, 1993–2007)	PWT RTFPNAZAA632NRUG
Turkey	IMF NEA	IMF NEA	IMF NEA	IMF Labor Stat. (Q from 2005Q1); IMF WEO (A, 1998–2004)	PWT RTFPNATRA632NRUG

Country	Labor Share	Interest Rate	Inflation	Trade Bal./GDP	Exchange Rate
Mexico	PWT LABSHPMXA156NRUG	IMF MFS, money market rate	IMF CPI, yoy change	IMF NEA	IMF EER, broad REER
Canada	PWT LABSHPCAA156NRUG	FRED IRSTCB01CAM156N, central bank rate	IMF CPI, yoy change	IMF NEA	IMF EER, broad REER
Brazil	PWT LABSHPBRA156NRUG	IMF MFS, money market rate	IMF CPI, yoy change	IMF NEA	IMF EER, broad REER
Chile	Absent	IMF MFS, monetary policy rate	IMF CPI, yoy change	IMF NEA	IMF EER, broad REER
India	PWT LABSHPINA156NRUG	FRED IRSTCB01INQ156N, central bank rate	FRED, yoy change, INDCPIALLMINMEI	IMF NEA	FRED RBINBIS, broad REER
Indonesia	Absent	FRED IRSTCB01IDM156N, central bank rate	IMF CPI, yoy change	IMF NEA	FRED RBIDBIS, broad REER
Philippines	PWT LABSHPPHA156NRUG	IMF MFS, money market rate	IMF CPI, yoy change	IMF NEA	FRED RBPHBIS, broad REER
South Africa	PWT LABSHPZAA156NRUG	IMF MFS, money market rate	IMF CPI, yoy change	IMF NEA	IMF EER, broad REER
Turkey	PWT LABSHPTRA156NRUG	IMF MFS, monetary policy rate	FRED, yoy change, TURCPIALLMINMEI	IMF NEA	FRED RBTRBIS, broad REER

Notes: "IMF NEA" refers to the IMF National Economic Accounts. The specific series used are: *Gross domestic product (GDP)* for GDP; *Final consumption expenditure, Private sector* for Consumption; and *Gross fixed capital formation* for Investment. All three series are in constant prices, seasonally adjusted, and expressed in domestic currency. The Trade Balance is constructed as *External balance of goods and services*, also from IMF QNA. "IMF MFS" refers to the IMF Monetary and Financial Statistics database; "IMF EER" to the IMF Effective Exchange Rate dataset; "IMF CPI" to the IMF Consumer Price Index dataset, yoy stands for year-on-year change; "PWT" to the Penn World Tables (Feenstra et al., 2015). In the Unemployment column, "Q" and "A" denote quarterly and annual frequency, respectively. TFP and Labor Share are available at annual frequency only. Labor Share is omitted from the VAR specification for Chile and Indonesia, since available series are not reliable.

A.4 Prior specification and Gibbs sampler

Let $\boldsymbol{\beta}$ denote the vectorized matrix of autoregressive coefficients in (1). We adopt a standard Minnesota prior (Litterman, 1986; Kadiyala and Karlsson, 1997), $\boldsymbol{\beta} \sim \mathcal{N}(\boldsymbol{\beta}_0, \mathbf{V})$, where the prior mean $\boldsymbol{\beta}_0$ is centered around an AR(1), with series-specific persistence parameter ρ_i, and all remaining coefficients shrunk toward zero. We set $\rho_i = 1$ for variables that exhibit a unit root in the data—real aggregates, the real effective exchange rate, the price indices, TFP—and $\rho_i = 0.9$ for the remaining variables. The prior covariance $\mathbf{V}$ is diagonal and follows the standard Minnesota parameterization, with overall tightness $\lambda_1 = 0.2$, cross-equation tightness $\lambda_2 = 0.5$, lag decay $\lambda_3 = 2$, and a diffuse prior on the constants ($\lambda_4 = 10^5$). The own-lag prior variance for variable i at lag ℓ is $\left(\frac{\lambda_1}{\ell^{\lambda_3}}\right)^2$, and the cross-lag prior variance from variable j to variable i at lag ℓ is $\left(\frac{\sigma_i}{\sigma_j}\frac{\lambda_1 \lambda_2}{\ell^{\lambda_3}}\right)^2$, where the residual standard deviations σ_i are estimated from univariate AR(1) regressions on the observed quarterly series.

The residual covariance matrix $\boldsymbol{\Sigma}$ is given an inverse-Wishart prior with scale matrix equal to the identity matrix $\mathbf{I}_N$ and $N+1$ degrees of freedom. Posterior inference proceeds via a Gibbs sampler that cycles through three blocks. The conditional posterior of $\boldsymbol{\beta}$ given $\boldsymbol{\Sigma}$ and the latent quarterly observations is multivariate Gaussian; the conditional posterior of $\boldsymbol{\Sigma}$ given $\boldsymbol{\beta}$ and the latent observations is inverse-Wishart; and the conditional posterior of the missing latent quarterly values, given $\boldsymbol{\beta}$, $\boldsymbol{\Sigma}$, and the observed annual data, is jointly Gaussian with a banded precision matrix and is sampled in a single step using the precision-based sampler of Chan et al. (2023). At each iteration, candidate draws of $\boldsymbol{\beta}$ that violate the stationarity of the VAR companion matrix are rejected and a new draw is taken from its conditional posterior.

A practical implementation detail concerns the treatment of the early COVID-19 period. The observations for 2020Q1–Q3 of the domestic real aggregates are set to missing prior to estimation and treated as additional latent quarterly values to be sampled within the precision-based block. Because the pandemic shock hit different economies with different intensity and at different points in time, treating these observations as latent prevents the sharp 2020 swings from anchoring the estimated dynamics around a single, idiosyncratic episode while still allowing the model to use the information contained in the surrounding observations.

The Gibbs sampler is run for $5{,}000$ iterations, discarding the first $4{,}000$ as burn-in and retaining the remaining $1{,}000$ draws for posterior inference.

B Additional Results

Table B.1: Variance Contributions of the MBC Shock for Mexico – GDP, Investment and Consumption Targeting

	Business Cycle $(6–32q)$	Long Run $(80–\infty q)$
GDP	64.14	19.71
	[54.32, 72.76]	[7.39, 39.91]
Investment	61.22	17.41
	[50.94, 70.29]	[6.27, 37.76]
Consumption	60.49	16.87
	[48.69, 70.31]	[6.50, 36.52]
Unemployment	33.26	10.01
	[20.91, 49.64]	[3.25, 26.69]
TFP	38.34	8.94
	[23.84, 51.11]	[2.50, 23.89]
Labor Share	21.71	11.09
	[10.41, 35.75]	[2.91, 28.53]
Interest Rate	17.98	7.65
	[8.34, 34.32]	[2.30, 22.28]
Inflation	9.87	13.44
	[4.23, 20.46]	[4.38, 32.88]
Trade Balance	17.38	15.32
	[8.59, 29.90]	[4.61, 33.82]
Exchange Rate	17.66	9.16
	[8.24, 33.66]	[2.57, 24.19]
Global Rate	24.14	10.48
	[11.87, 39.75]	[3.28, 26.05]
BAA	53.08	11.64
	[31.50, 70.25]	[3.34, 30.68]
Export Prices	24.68	7.51
	[13.76, 40.47]	[1.71, 23.46]
Import Prices	35.61	9.28
	[22.49, 50.85]	[2.74, 26.61]

Notes: The table reports the contribution of the main business-cycle shock to the variance of each variable over two frequency bands. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. The shock is identified as the innovation that jointly explains the largest share of GDP, Investment, and Consumption fluctuations at business-cycle frequencies. Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

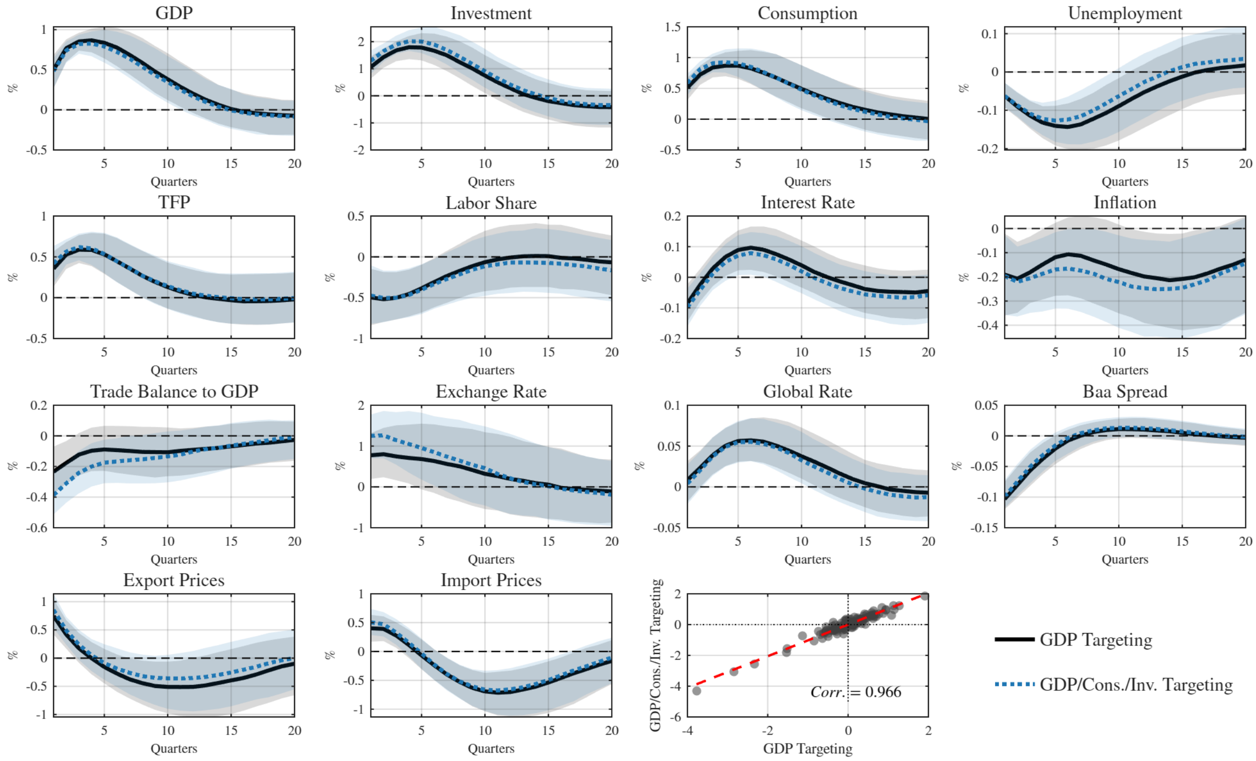

Figure B.1: Impulse Responses to the Main Business-Cycle Shock for Mexico: Alternative Targets

Notes: The figure reports impulse responses to the main business-cycle shock for Mexico. The shock is identified as the innovation that explains the largest share of GDP fluctuations or, in alternative, the share of GDP, consumption and investment combined, at business-cycle frequencies. Responses are shown to a one-standard-deviation shock. The bottom-right panel displays a scatter plot of the identified shocks, along with the fitted linear regression line and the correlation between them.

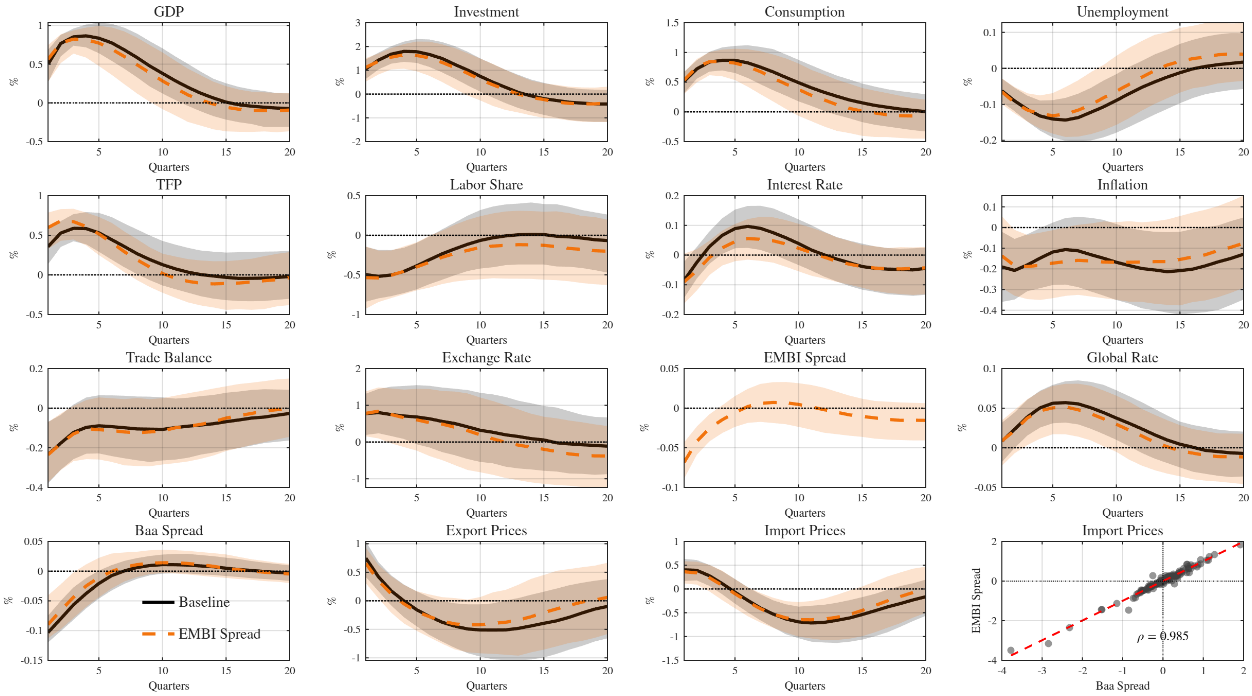

Figure B.2: Impulse Responses to the MBC Shock for Mexico: Adding EMBI Spread

Notes: The figure reports impulse responses to the main business-cycle shock for Mexico for two different VAR specifications. The first specification is the baseline, while in the second specification, we also include the EMBI sovereign spread for Mexico .The shock is identified as the innovation that explains the largest share of GDP fluctuations. Responses are shown to a one-standard-deviation shock. The impulse response of the EMBI spread is scaled by a factor of $1/100$ to convert basis points into percentage points.

Table B.2: Largest spikes Mexico's MBC shock and associated global financial events

Approx. Date	Value (med.)	Event	Explanation
1998Q3–Q4	−1.517	Russia default and LTCM rescue	Russia's August 1998 devaluation/default triggered a global liquidity shock and repricing of emerging-market and leveraged positions. LTCM's September near-failure amplified the unwind of relative-value and arbitrage trades.
2000Q1–Q2	−0.274	NASDAQ peak and first dot-com crash leg	The NASDAQ peaked in March 2000 and then fell sharply in March–April, producing the first major dot-com risk-off move and a broad repricing of technology and growth equities.[a]
2001Q3–Q4	−1.414	9/11 market shutdown and US recession shock	The September 11 attacks produced a discrete uncertainty and liquidity shock: US equity markets closed temporarily, airline and insurance exposures were repriced, and the shock hit during the US recession.
2006Q1–2007Q2	+1.148	Global risk-on regime: structured-credit and carry-trade boom	A well-defined risk-on regime: low implied volatility, compressed credit spreads, rapid structured-credit issuance, leveraged loans, carry trades, and expanding global-bank balance sheets before the subprime shock.[b]
2007Q3	−0.552	BNP Paribas fund freeze, ABCP shock, and Northern Rock	Subprime losses spilled into money markets: BNP Paribas froze three funds in August, ABCP markets came under pressure, interbank spreads widened, and Northern Rock required Bank of England liquidity support in September.
2008Q3–Q4	−3.774	Lehman, AIG, and Reserve Primary Fund	The September 2008 sequence—Lehman bankruptcy, AIG rescue, Reserve Primary Fund breaking the buck, dollar funding seizure, and emergency liquidity/swap-line support—marks the largest risk-off event.
2009Q2–Q3	+1.916	QE1/TALF/PPIP/SCAP stress-test relief rally	The rebound is linked to named backstops: the Fed's QE1 expansion, TALF, PPIP, and US SCAP bank stress-test results, which reduced tail risk and restored confidence in bank and credit markets.[c]
2010Q2–2011Q3	−0.386	Greek bailout, ECB SMP, and euro-area crisis escalation	Greece lost market access and received its first EU/IMF program, the ECB launched the SMP, and by 2011 stress had spread to Italy and Spain, widening sovereign and bank spreads.
2013Q2–Q3	−0.609	Bernanke taper tantrum	May–June 2013 Fed taper communication triggered a sharp rise in US Treasury yields, losses in duration assets, emerging-market outflows, currency depreciation, and wider spreads.
2015Q3–2016Q1	−0.551	China RMB devaluation, equity crash, and oil-price collapse	The August 2015 RMB devaluation and Chinese equity stress raised hard-landing fears. The late-2015/early-2016 oil collapse added pressure on commodity exporters, EM assets, and credit spreads.
2016Q4	+0.939	Trump reflation trade	Post-election markets repriced US tax cuts, deregulation, and fiscal expansion: equities, banks, and cyclicals rallied; Treasury yields rose; and yield curves steepened.[d]
2017Q2–Q4	+1.086	Global risk-on regime: synchronized growth and low-volatility carry compression	Global growth, investment, manufacturing, and trade improved together; markets were buoyant, volatility unusually low, credit spreads tight, and search-for-yield behavior compressed risk compensation.[e]
2020Q1	−2.326	COVID-19 dash-for-cash and dollar funding stress	March 2020 saw global liquidation: risky assets sold off, investors rushed into cash and dollars, Treasury-market liquidity deteriorated, dollar funding stress rose, and the Fed expanded swap lines and emergency facilities.
2021Q3–Q4	−0.744	Supply-chain disruption and energy/inflation repricing	Semiconductor shortages, shipping bottlenecks, Delta disruptions, European gas-price stress, and commodity-price pressures led investors to reprice inflation, rates, and margins.[f]
2022Q1–Q3	−0.501	Russia-Ukraine invasion, inflation shock, and Fed tightening repricing	Russia's invasion generated food and energy shocks, sanctions uncertainty, and stagflation fears, while persistent inflation forced a sharp repricing of the Fed tightening path.

[a] Sources: BIS, *71st Annual Report*, June 2001; Federal Reserve Board, *Monetary Policy Report to Congress*, February 2001.
[b] Sources: IMF, *Global Financial Stability Report*, April 2007; BIS, *77th Annual Report*, June 2007.
[c] Sources: Federal Reserve Board, *Monetary Policy Report to Congress*, July 2009; IMF, *Global Financial Stability Report*, October 2009.
[d] Source : BIS, *Quarterly Review*, December 2016, press release.
[e] Sources: IMF, *World Economic Outlook*, April 2017; IMF, *Global Financial Stability Report*, October 2017.
[f] Sources: IMF, *World Economic Outlook*, October 2021; BIS Bulletin No. 48, November 2021.

Table B.3: Variance Contributions of the Main Business-Cycle Shock for Mexico: Adding EMBI Spread

	Business Cycle $(6–32q)$	Long Run $(80–\infty q)$
GDP	65.57	20.68
	[55.68, 74.90]	[7.66, 42.42]
Investment	46.87	12.95
	[35.37, 59.75]	[4.18, 31.23]
Consumption	53.26	15.95
	[41.57, 62.94]	[5.40, 38.81]
Unemployment	38.01	11.22
	[25.59, 51.99]	[3.22, 31.76]
TFP	50.99	9.17
	[37.73, 61.70]	[2.20, 29.44]
Labor Share	22.38	11.74
	[11.04, 37.67]	[3.34, 31.79]
Interest Rate	18.13	7.45
	[7.64, 39.28]	[2.06, 23.58]
Inflation	10.29	12.41
	[4.31, 20.79]	[3.38, 30.52]
Trade Balance to GDP	11.21	11.11
	[4.73, 24.77]	[3.27, 29.14]
Exchange Rate	13.58	9.44
	[4.93, 29.54]	[2.43, 25.45]
EMBI Spread	30.71	9.49
	[16.46, 47.48]	[2.43, 26.53]
Global Rate	23.71	12.06
	[11.05, 40.49]	[3.43, 30.89]
Baa Spread	46.90	12.64
	[24.49, 69.05]	[3.59, 35.51]
Export Prices	24.30	8.23
	[12.62, 40.52]	[1.99, 25.71]
Import Prices	31.70	11.07
	[18.46, 49.62]	[2.83, 29.67]

Notes: The table reports the contribution of the main business-cycle shock to the variance of each variable over two frequency bands. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. The VAR includes the EMBI sovereign spread in addition to the baseline specification. Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

Table B.4: Variance Contributions of the Baa Spread targeted Shock

	Business Cycle $(6–32q)$	Long Run $(80–\infty q)$
GDP	50.04	18.81
	[36.78, 61.57]	[7.91, 36.99]
Investment	38.27	11.62
	[22.35, 53.53]	[3.95, 26.99]
Consumption	38.66	18.39
	[22.79, 53.88]	[7.95, 37.30]
Unemployment Rate	33.85	15.67
	[18.94, 50.76]	[5.37, 35.34]
TFP	34.29	12.04
	[19.05, 48.92]	[3.15, 31.65]
Labor Share	11.02	9.20
	[4.32, 24.68]	[2.58, 25.08]
Interest Rate	23.34	8.68
	[11.39, 39.68]	[2.48, 24.17]
Inflation	9.93	13.02
	[4.44, 21.08]	[3.68, 31.89]
Trade Balance to GDP	10.62	11.61
	[4.81, 21.33]	[3.59, 28.69]
Exchange Rate	16.82	12.75
	[7.23, 31.83]	[3.94, 30.85]
Global Rate	22.55	16.51
	[9.78, 38.70]	[5.51, 35.65]
Baa Spread	83.32	26.60
	[75.12, 89.84]	[10.25, 50.99]
Export Prices	24.28	11.46
	[12.61, 38.83]	[3.06, 29.13]
Import Prices	33.39	16.25
	[19.47, 48.42]	[5.06, 37.36]

Notes: The table reports the contribution of the innovation that explains the largest share of Baa spread fluctuations at business-cycle frequencies. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

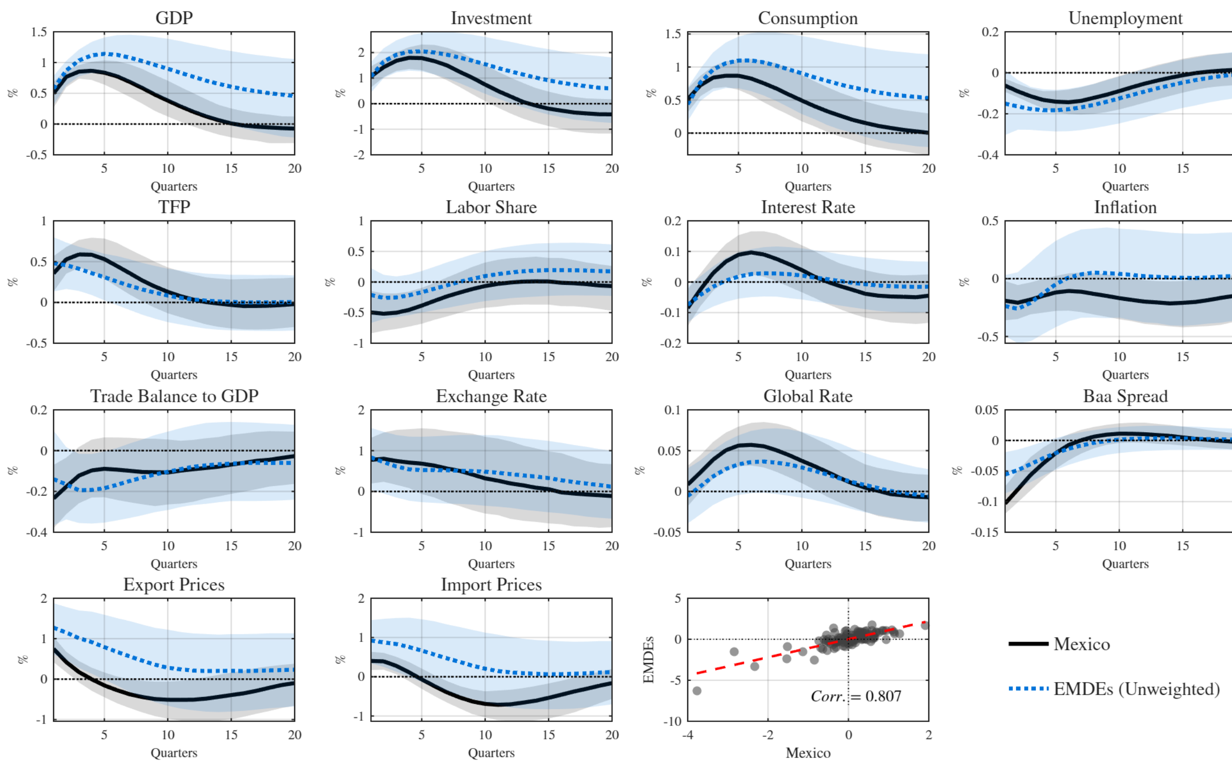

Figure B.3: Impulse Responses to the Main Business-Cycle Shock: Mexico and EMDEs Aggregate

Notes: The figure compares impulse responses to the main business-cycle shock in Mexico and in the EMDEs aggregate. For each country, the shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. The solid black line reports the Mexican response. The dotted blue line reports the unweighted average response across the EMDEs sample. Shaded areas report 68 percent posterior bands. Responses are normalized so that the shock generates an expansion in GDP. The bottom-right panel displays a scatter plot of the MBC shock for Mexico and the first principal component of the MBC shocks of the EMDEs sample, along with the fitted linear regression line and the correlation between them. The EMDEs sample includes Mexico, Chile, Brazil, India, South Africa, Turkey, Indonesia, and Philippines.

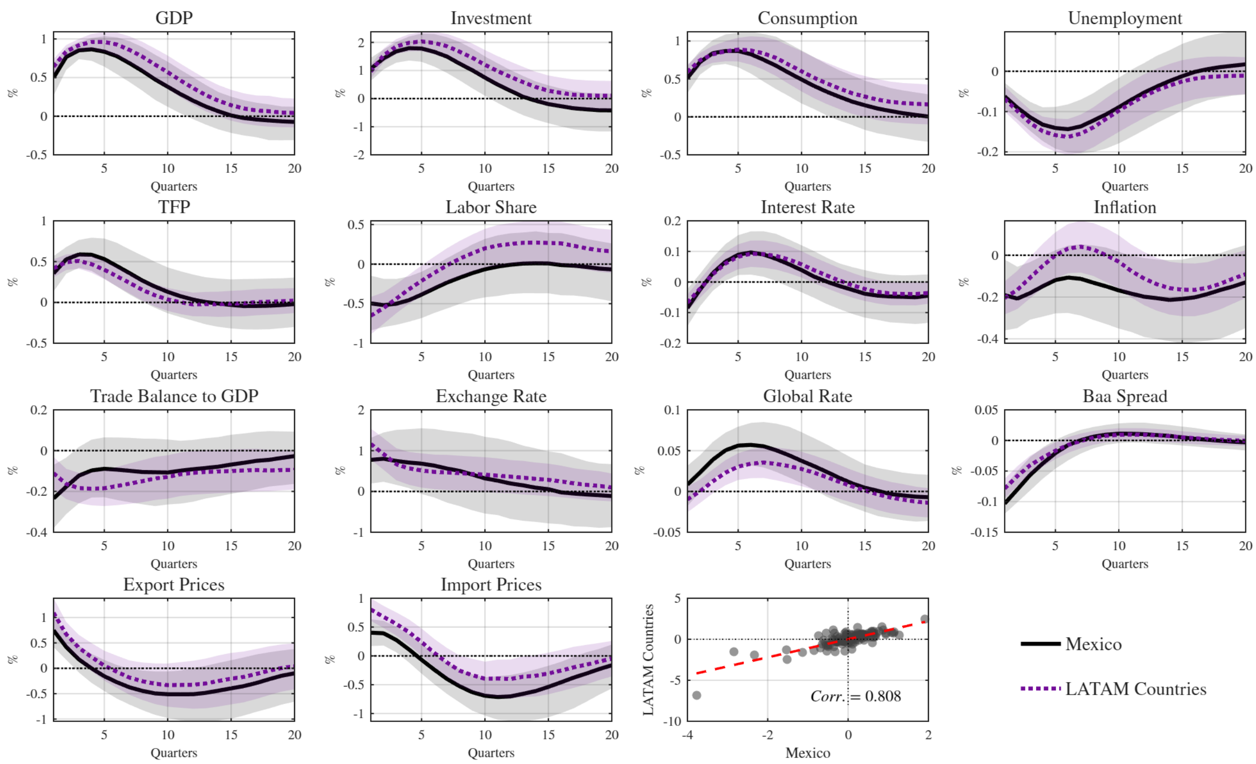

Figure B.4: Impulse Responses to the Main Business-Cycle Shock: Mexico and LATAM Aggregate

Notes: The figure compares impulse responses to the main business-cycle shock in Mexico and in the LATAM aggregate. For each country, the shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. The solid black line reports the Mexican response. The dotted blue line reports the inverse-variance-weighted average response across the LATAM sample. Shaded areas report 68 percent posterior bands. Responses are normalized so that the shock generates an expansion in GDP. The bottom-right panel displays a scatter plot of the MBC shock for Mexico and the first principal component of the MBC shocks of the LATAM sample, along with the fitted linear regression line and the correlation between them. The LATAM sample includes Mexico, Chile, and Brazil.

Table B.5: LATAM Countries: Variance Contributions of the Main Business-Cycle Shock

	Business Cycle (6–$32q$)	Long Run (80–∞q)
Variable	LATAM Countries	LATAM Countries
GDP	67.42	22.63
	[65.91, 68.94]	[20.89, 24.36]
Investment	43.55	18.12
	[35.84, 51.26]	[9.88, 26.36]
Consumption	45.32	18.93
	[35.53, 55.10]	[16.54, 21.31]
Unemployment Rate	28.50	15.93
	[15.13, 41.87]	[0.35, 31.51]
TFP	32.73	12.25
	[26.03, 39.43]	[5.16, 19.35]
Labor Share	27.87	12.36
	[18.97, 36.77]	[3.77, 20.95]
Interest Rate	17.89	9.71
	[11.60, 24.17]	[5.17, 14.24]
Inflation	10.87	11.62
	[0.60, 21.14]	[10.44, 12.79]
Trade Balance to GDP	12.69	16.09
	[4.86, 20.53]	[9.09, 23.08]
Exchange Rate	12.07	10.71
	[7.13, 17.00]	[0.11, 21.32]
Global Rate	14.88	11.57
	[8.58, 21.17]	[6.71, 16.42]
Baa Spread	29.08	12.53
	[7.30, 50.86]	[9.97, 15.09]
Export Prices	27.67	11.63
	[20.02, 35.32]	[5.42, 17.84]
Import Prices	33.97	14.51
	[28.19, 39.74]	[9.10, 19.92]

Notes: The table reports the variance contribution of the main business-cycle shock for the LATAM countries aggregate. For each country, the shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. Country-level variance contributions are aggregated using inverse-variance weights. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. Entries are posterior medians, expressed in percent. The LATAM countries sample includes Mexico, Chile, and Brazil.

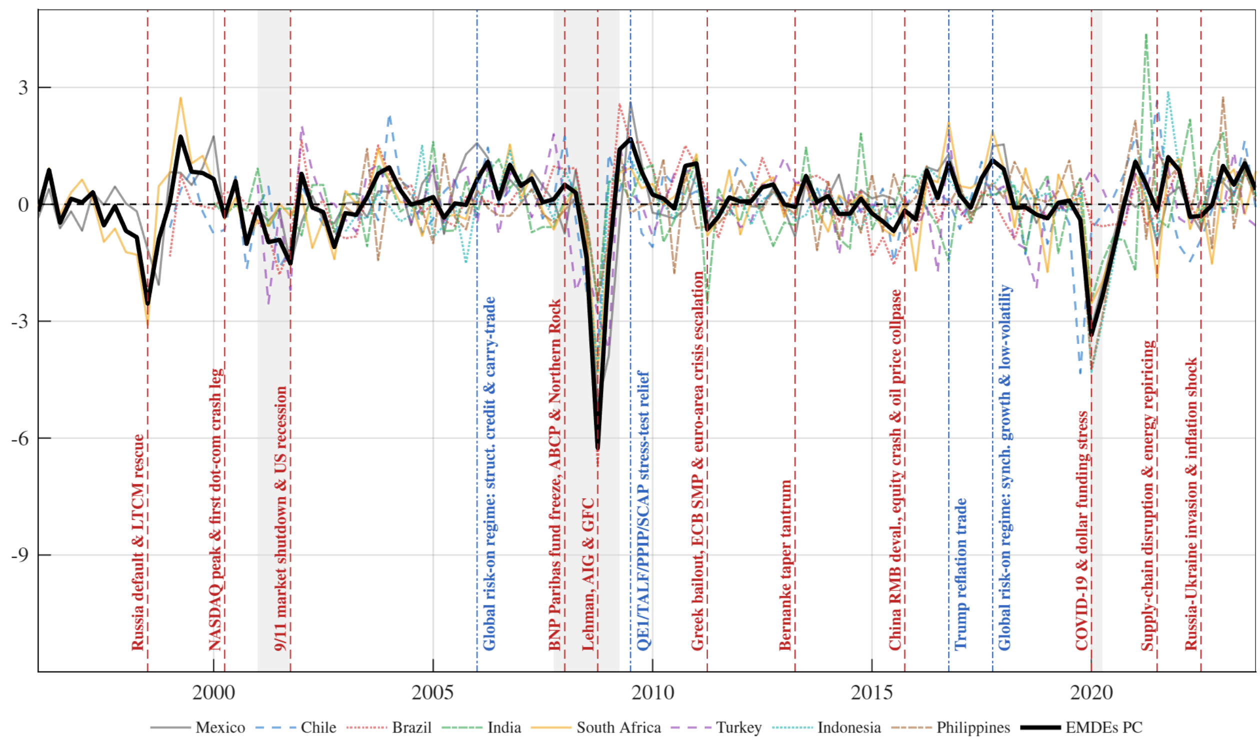

Figure B.5: Country Level MBC shocks and Principal Component

Notes: The figure plots the standardized country-specific business-cycle shocks (colored lines) together with their first principal component (solid black line). Each country-specific shock is identified as the innovation explaining the largest share of GDP fluctuations at business-cycle frequencies and is standardized to zero mean and unit variance over its available sample. The first principal component is extracted via expectation-maximization PCA to accommodate the unbalanced panel, standardized to unit variance, and signed so as to be positively correlated with the Mexican shock. Vertical lines and arrows mark major global financial episodes over the sample. Shaded vertical bands mark NBER U.S. recessions.

C Robustness

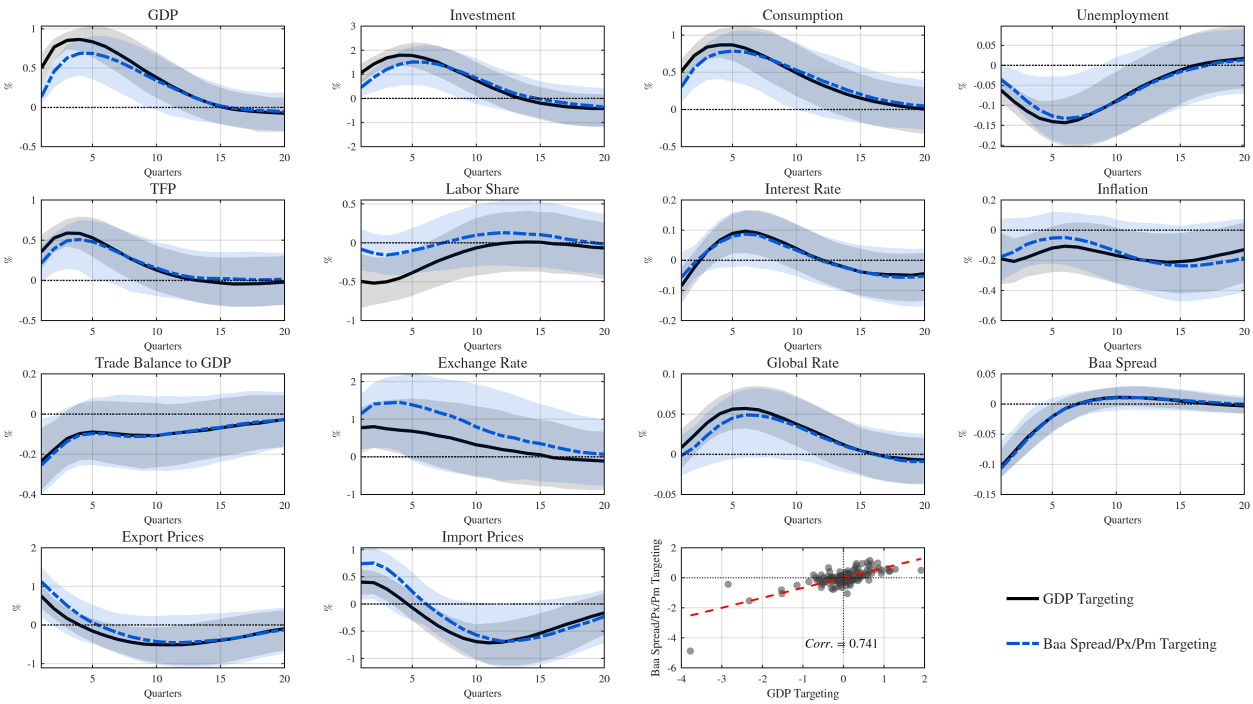

Figure C.1: Mexico Output-Targeted and Baa Spread/Px/Pm-Targeted Shocks

Notes: The figure compares impulse responses for Mexico under two identification schemes. The solid black line reports responses to the baseline main business-cycle shock, identified as the shock that explains the largest share of GDP fluctuations at business-cycle frequencies. The dashed blue line reports responses to the shock that jointly explains the largest share of Baa spread, export prices and import prices fluctuations over the same frequency band. Shaded areas report 68 percent posterior bands. Both shocks are normalized so that they generate an expansion in GDP. Responses are shown for the variables included in the baseline VAR. The bottom-right panel displays a scatter plot of the identified shocks, along with the fitted linear regression line and the correlation between them.

Table C.1: Variance Contributions of the MBC Shock for Mexico – VIX Index Specification

	Business Cycle $(6–32q)$	Long Run $(80–\infty q)$
GDP	76.25	19.24
	[67.59, 83.19]	[7.80, 36.27]
Investment	49.43	13.09
	[38.81, 59.68]	[4.90, 29.67]
Consumption	55.10	14.30
	[44.25, 65.07]	[5.39, 30.19]
Unemployment Rate	31.86	8.65
	[20.26, 43.76]	[3.05, 22.08]
TFP	32.85	7.71
	[20.77, 45.01]	[1.96, 18.95]
Labor Share	17.66	9.93
	[8.78, 29.19]	[2.30, 25.37]
Interest Rate	9.74	5.78
	[4.62, 17.88]	[1.62, 15.27]
Inflation	5.94	10.70
	[2.58, 11.49]	[3.15, 27.50]
Trade Balance to GDP	10.46	10.88
	[3.68, 20.64]	[3.30, 28.25]
Exchange Rate	12.09	7.31
	[5.01, 23.45]	[1.96, 19.35]
Global Rate	17.01	9.63
	[8.64, 28.26]	[2.93, 22.43]
VIX Index	32.73	11.59
	[21.41, 44.17]	[3.43, 26.42]
Export Prices	23.76	5.25
	[14.39, 34.22]	[1.40, 14.97]
Import Prices	28.98	7.89
	[18.82, 41.32]	[2.25, 19.73]

Notes: The table reports the contribution of the main business-cycle shock to the variance of each variable over two frequency bands. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. In this specification, we replace Baa spread with the VIX index as a proxy for global financial conditions. Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

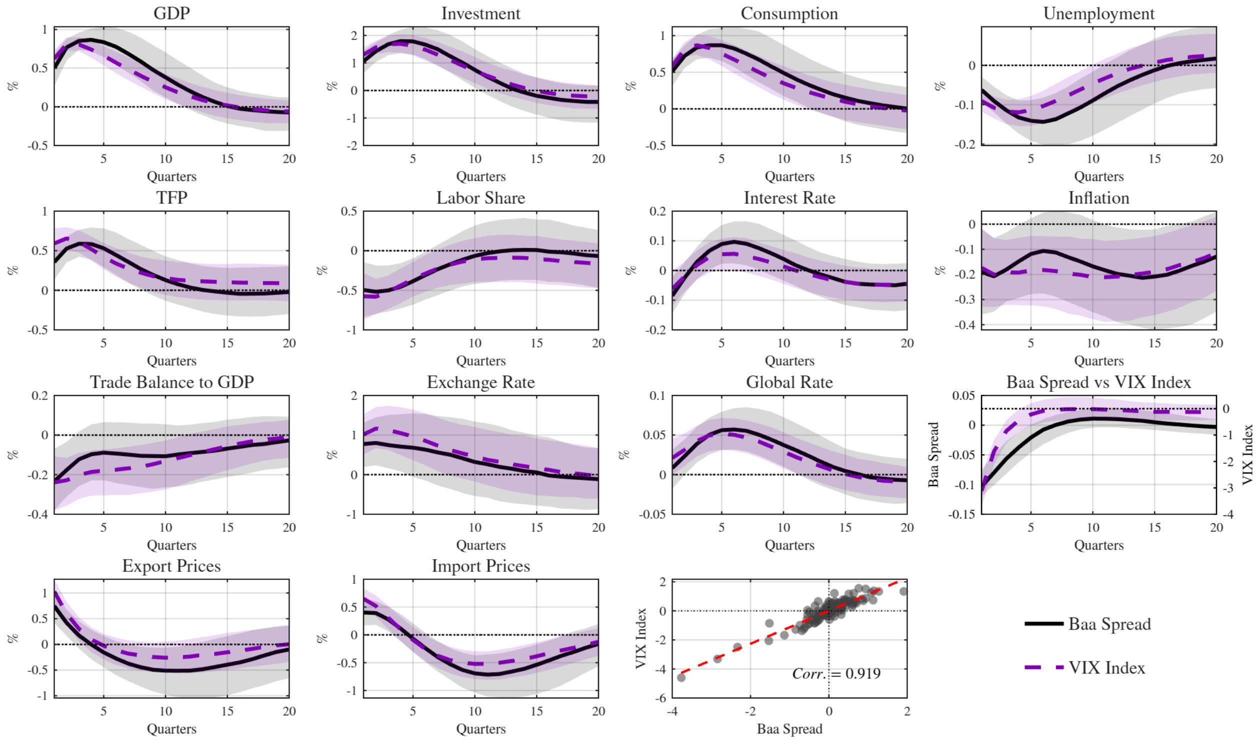

Figure C.2: Impulse Responses to the MBC Shock for Mexico – Baa Spread and VIX Index Specification

Notes: The figure reports impulse responses to the main business-cycle shock for Mexico for two different VAR specifications. The first specification is the baseline, while in the second specification, we substitute Baa spread with the VIX index. The shock is identified as the innovation that explains the largest share of GDP fluctuations. Responses are shown to a one-standard-deviation shock.

Table C.2: Variance Contributions of the MBC Shock for Mexico – GFCy Specification

	Business Cycle $(6–32q)$	Long Run $(80–\infty q)$
GDP	73.23	17.81
	[63.46, 81.41]	[6.86, 37.24]
Investment	48.61	13.30
	[38.84, 57.65]	[4.61, 31.60]
Consumption	55.65	13.18
	[45.83, 65.34]	[4.90, 29.19]
Unemployment Rate	29.98	7.76
	[19.25, 42.78]	[2.52, 19.71]
TFP	31.70	6.37
	[19.65, 43.69]	[1.58, 17.56]
Labor Share	23.93	11.12
	[14.13, 35.53]	[3.24, 27.67]
Interest Rate	9.23	5.95
	[3.60, 18.10]	[1.63, 16.77]
Inflation	6.01	9.01
	[2.70, 12.85]	[3.01, 23.51]
Trade Balance to GDP	9.27	10.50
	[3.35, 20.05]	[3.03, 26.66]
Exchange Rate	9.26	6.37
	[3.60, 19.99]	[2.05, 17.16]
Global Rate	16.20	8.07
	[7.56, 27.35]	[2.54, 21.07]
GFCy	28.10	8.32
	[17.33, 42.32]	[2.51, 21.67]
Export Prices	16.42	5.87
	[8.86, 27.76]	[1.47, 17.16]
Import Prices	23.62	7.44
	[13.94, 36.37]	[2.14, 18.95]

Notes: The table reports the contribution of the main business-cycle shock to the variance of each variable over two frequency bands. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. In this specification, we substitute Baa spread with the global financial cycle factor of Miranda-Agrippino and Rey (2020). Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

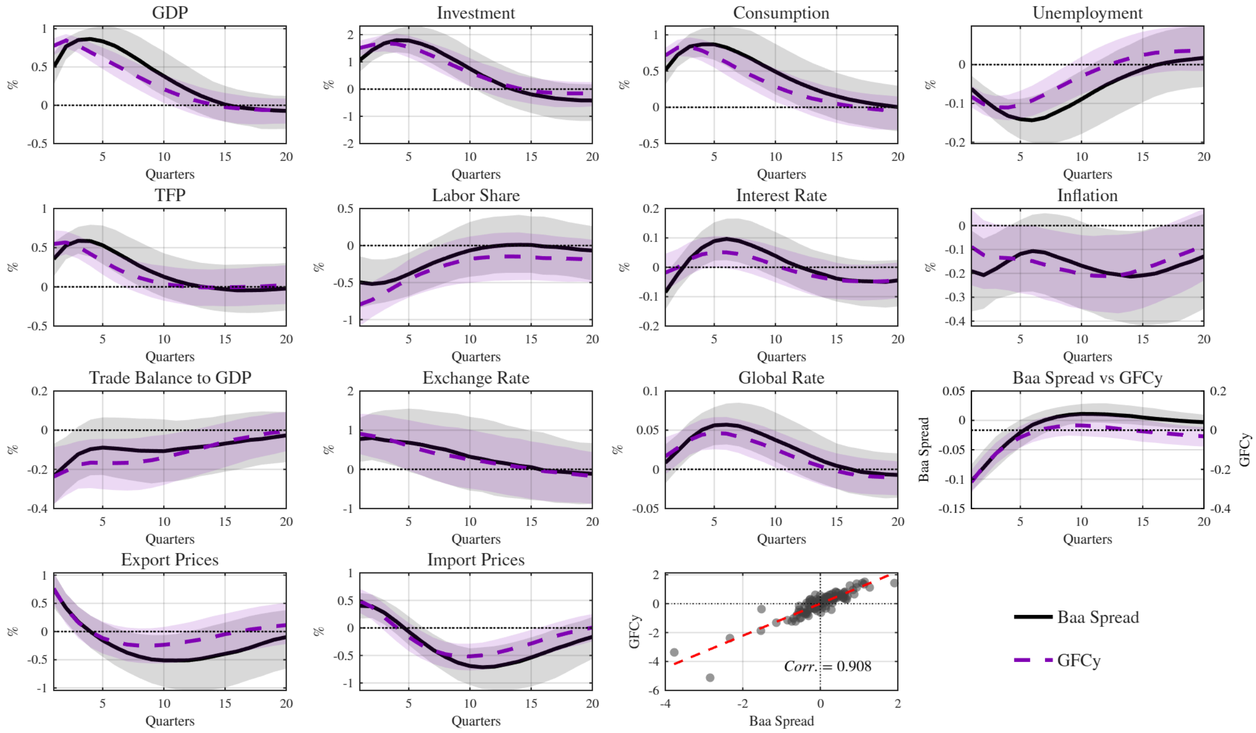

Figure C.3: Impulse Responses to the MBC Shock for Mexico – Baa Spread and GFCy Factor Specification

Notes: The figure reports impulse responses to the main business-cycle shock for Mexico for two different VAR specifications. The first specification is the baseline, while in the second specification, we substitute Baa spread with the global financial cycle (GFCy) factor of Miranda-Agrippino and Rey (2020).The shock is identified as the innovation that explains the largest share of GDP fluctuations. Responses are shown to a one-standard-deviation shock.

Table C.3: Variance Contributions of the MBC Shock for Mexico – GCC Specification

	Business Cycle (6–32q)	Long Run (80–∞q)
GDP	77.96	16.65
	[69.10, 84.25]	[6.78, 35.47]
Investment	53.71	15.16
	[41.74, 62.91]	[5.46, 32.36]
Consumption	57.70	12.50
	[46.85, 67.44]	[5.23, 26.88]
Unemployment	31.98	7.28
	[21.03, 44.02]	[2.31, 17.59]
TFP	31.58	7.28
	[19.52, 45.12]	[2.18, 17.42]
Labor Share	20.72	10.44
	[11.14, 31.43]	[2.84, 25.32]
Interest Rate	10.39	5.42
	[4.32, 18.53]	[1.44, 15.08]
Inflation	5.93	9.98
	[2.69, 12.08]	[2.86, 22.16]
Trade Balance to GDP	11.37	11.63
	[5.00, 22.81]	[3.49, 26.26]
Exchange Rate	10.85	6.66
	[4.68, 21.76]	[1.84, 17.51]
Global Rate	19.36	8.70
	[10.76, 30.04]	[2.90, 20.78]
Global Credit Factor	44.68	7.16
	[33.31, 55.64]	[2.39, 18.56]
Export Prices	23.94	5.42
	[14.35, 34.65]	[1.32, 15.41]
Import Prices	28.11	6.16
	[18.85, 40.12]	[1.61, 16.35]

Notes: The table reports the contribution of the main business-cycle shock to the variance of each variable over two frequency bands. The business-cycle band corresponds to periodicities between 6 and 32 quarters. The long-run band corresponds to periodicities between 80 quarters and infinity. In this specification, we substitute Baa spread with the global credit cycle (GCC) factor of Boyarchenko and Elias (2026). Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

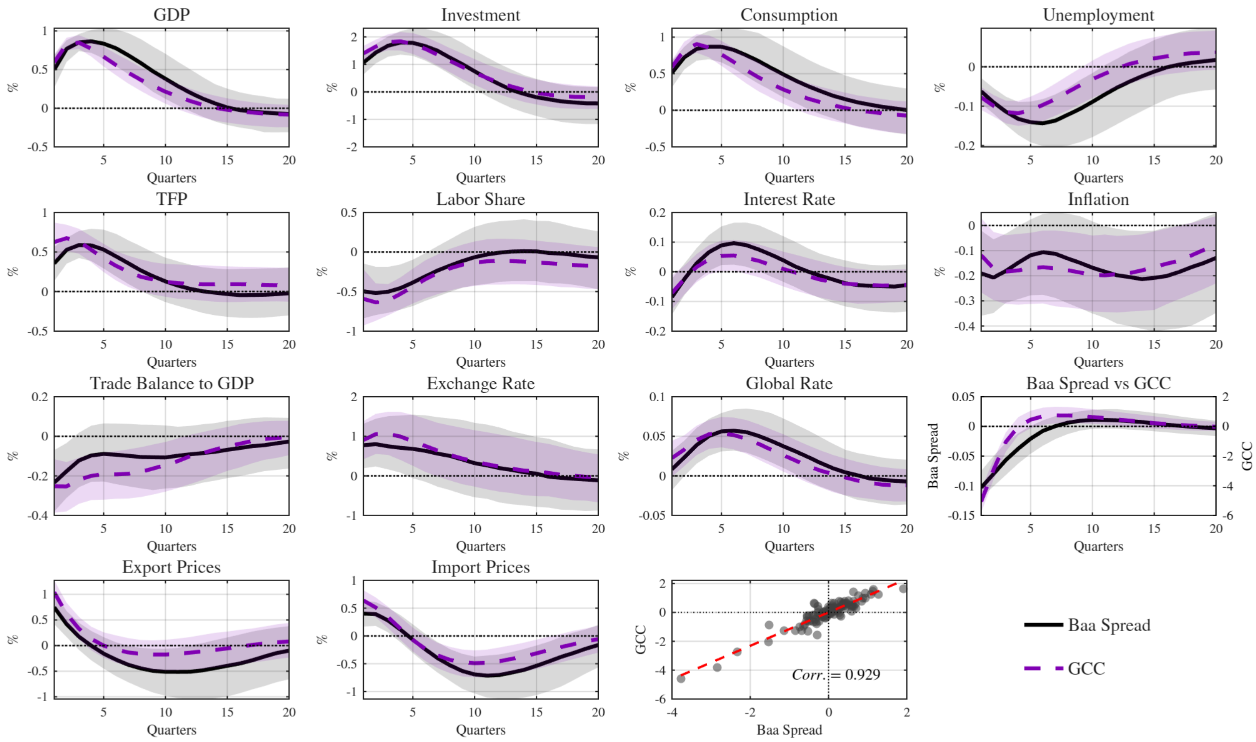

Figure C.4: Impulse Responses to the MBC Shock for Mexico – Baa Spread and GCC Factor Specification

Notes: The figure reports impulse responses to the main business-cycle shock for Mexico for two different VAR specifications. The first specification is the baseline, while in the second specification, we substitute Baa spread with the global credit cycle (GCC) factor of Boyarchenko and Elias (2026).The shock is identified as the innovation that explains the largest share of GDP fluctuations. Responses are shown to a one-standard-deviation shock.

Table C.4: Variance Contributions: Robustness to Number of Lags – Mexico

	Business Cycle (6–32q)			Long Run (80–∞q)		
	12 Lags	16 Lags	20 Lags	12 Lags	16 Lags	20 Lags
GDP	68.97 [59.51, 77.21]	71.11 [61.40, 79.07]	69.26 [59.53, 77.46]	21.23 [8.55, 42.38]	22.09 [8.32, 46.26]	21.58 [8.24, 43.77]
Investment	51.56 [39.39, 63.06]	50.89 [38.83, 61.21]	48.34 [33.68, 59.45]	13.33 [4.70, 30.77]	13.46 [4.40, 30.74]	12.59 [4.04, 29.41]
Consumption	52.59 [39.51, 63.97]	56.06 [45.25, 65.80]	60.08 [48.52, 69.58]	17.10 [6.30, 37.05]	15.35 [5.67, 33.45]	15.72 [5.88, 34.34]
Unemployment	35.13 [21.98, 51.15]	34.40 [21.22, 47.52]	39.81 [27.10, 53.51]	11.79 [3.75, 30.59]	9.27 [3.04, 26.57]	9.97 [2.88, 28.29]
TFP	35.96 [22.01, 49.50]	36.25 [23.58, 49.07]	45.51 [31.78, 58.52]	8.27 [2.31, 22.87]	7.92 [2.08, 21.80]	7.70 [1.77, 24.30]
Labor Share	23.00 [11.60, 36.66]	25.69 [13.92, 38.30]	23.32 [12.65, 38.62]	9.46 [2.69, 25.46]	11.70 [2.95, 28.62]	14.56 [4.45, 33.10]
Interest Rate	18.80 [8.79, 35.54]	17.33 [8.30, 31.79]	17.30 [8.11, 32.58]	7.18 [2.02, 19.75]	6.64 [1.82, 18.11]	7.56 [2.19, 21.03]
Inflation	9.33 [4.02, 19.15]	10.61 [5.02, 21.25]	13.25 [5.92, 28.28]	11.48 [3.66, 30.33]	8.88 [2.76, 22.33]	10.18 [3.04, 24.39]
Trade Balance to GDP	9.87 [4.07, 21.39]	9.84 [3.87, 20.95]	10.34 [4.31, 23.13]	11.72 [3.08, 29.04]	8.14 [2.36, 22.60]	9.39 [2.93, 23.85]
Exchange Rate	11.03 [4.20, 25.18]	11.66 [4.51, 23.70]	13.24 [4.96, 27.56]	8.31 [2.11, 21.74]	6.89 [1.99, 20.10]	8.60 [2.38, 22.47]
Global Rate	22.54 [11.11, 38.63]	19.72 [9.48, 34.20]	23.18 [11.12, 38.06]	12.73 [4.11, 28.78]	10.78 [3.14, 25.54]	11.87 [3.20, 28.61]
Baa Spread	56.65 [34.03, 73.12]	49.18 [31.57, 66.43]	49.16 [31.25, 65.47]	14.74 [4.23, 35.10]	12.08 [3.69, 30.13]	12.44 [3.43, 32.49]
Export Prices	25.10 [14.07, 39.94]	22.92 [12.43, 38.26]	23.20 [12.77, 38.26]	7.96 [1.96, 22.76]	6.10 [1.62, 19.39]	7.62 [1.79, 23.03]
Import Prices	32.24 [18.91, 48.26]	31.35 [19.28, 46.42]	33.30 [21.25, 48.49]	10.98 [3.13, 27.52]	8.49 [2.51, 22.42]	8.84 [2.36, 24.68]

Notes: The table reports the contribution of the main business-cycle shock to the variance of each variable over two frequency bands, estimated with 12, 16, and 20 lags respectively. The baseline specification uses 12 lags, highlighted in gray. Entries are posterior medians, expressed in percent. Brackets report 68 percent posterior credible intervals.

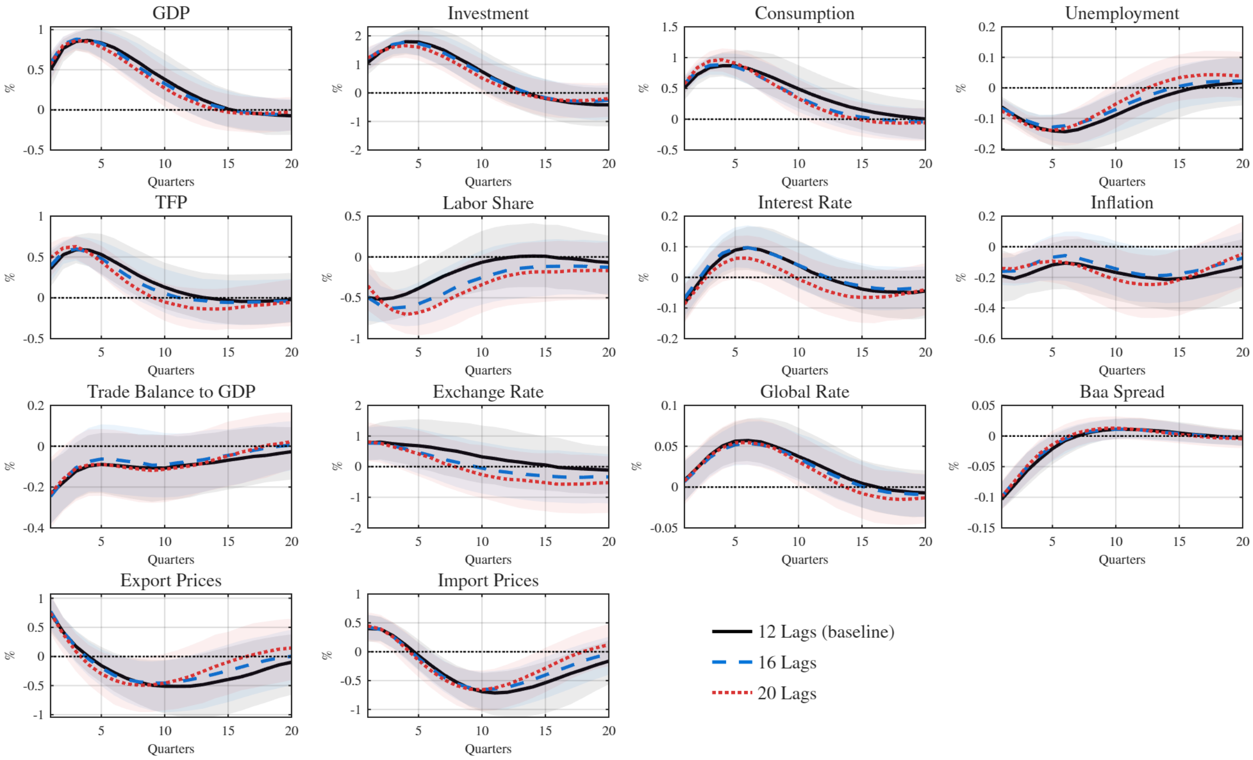

Figure C.5: Impulse Responses of the Main Business-Cycle Shock: Robustness to Lag Length – Mexico

Notes: The figure plots the impulse responses of the main business-cycle shock estimated under alternative lag specifications: 4, 8, 12, and 16 lags. The baseline specification uses 12 lags. For each specification, the shock is identified as the innovation that explains the largest share of GDP fluctuations at business-cycle frequencies. The solid black line reports the posterior median under the baseline specification. Shaded areas and alternative lines report posterior medians under the remaining lag specifications. The shock is normalized so that positive realizations correspond to an expansion in GDP.

D Derivations and Proof for Section 6

This appendix derives the main equations in Section 6 and proves Proposition 1.

Household optimality

The representative household chooses C_t and N_t taking w_t, Π_t, and T_t as given. Preferences are given by (3),

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t u\left(C_t - G(N_t)\right), \qquad G(N_t) = \frac{\chi}{1+\varphi} N_t^{1+\varphi}.$$

Since the household budget constraint is static within the period,

$$C_t = w_t N_t + \Pi_t + T_t,$$

the household's problem in period t can be written as choosing N_t to maximize

$$u\left(w_t N_t + \Pi_t + T_t - G(N_t)\right).$$

The first-order condition is

$$u'\left(C_t - G(N_t)\right)\left[w_t - G'(N_t)\right] = 0.$$

Using $u' > 0$ and $G'(N_t) = \chi N_t^{\varphi}$, the intratemporal condition is

$$w_t = \chi N_t^{\varphi}.$$

This is the labor-supply condition used in the main text.

Firm labor demand and the working-capital wedge

Firm i produces according to (5),

$$y_{it} = a_i n_{it}^{\alpha}, \qquad 0 < \alpha < 1.$$

The firm must finance a fraction q_i of its wage bill in advance. Given the gross working-capital rate R_t, the firm-specific wedge is given by (8),

$$\omega_i(R_t) = 1 + q_i(R_t - 1).$$

Thus the effective unit cost of labor for firm i is $w_t\omega_i(R_t)$. The firm's static problem is

$$\max_{n_{it}\geq 0}\left\{a_i n_{it}^{\alpha} - w_t\omega_i(R_t)n_{it}\right\}.$$

For an interior solution, the first-order condition is

$$\alpha a_i n_{it}^{\alpha-1} = w_t\omega_i(R_t).$$

Solving for labor demand gives

$$n_{it} = \left(\frac{\alpha a_i}{w_t\omega_i(R_t)}\right)^{\frac{1}{1-\alpha}}.$$

This is the firm-level labor-demand equation stated in the main text.

The frictionless deterministic benchmark employment level $\bar{n}_i$ is obtained by setting the working-capital wedge equal to one. Hence

$$\alpha a_i \bar{n}_i^{\alpha-1} = \bar{w},$$

so that

$$\bar{n}_i = \left(\frac{\alpha a_i}{\bar{w}}\right)^{\frac{1}{1-\alpha}}.$$

Since $0<\alpha<1$, $\bar{n}_i$ is strictly increasing in a_i. Therefore, under the exposure function (7),

$$q_i = q_0 + q_1\kappa(\bar{n}_i), \qquad \kappa'(\bar{n}_i) > 0,$$

more productive firms have greater working-capital exposure whenever $q_1 > 0$.

Derivation of aggregate labor, equation (10)

Aggregate labor is

$$N_t = \int_0^1 n_{it}\, di.$$

Using firm labor demand,

$$N_t = \int_0^1 \left(\frac{\alpha a_i}{w_t\omega_i(R_t)}\right)^{\frac{1}{1-\alpha}} di.$$

Rearranging,

$$N_t = \left(\frac{\alpha}{w_t}\right)^{\frac{1}{1-\alpha}} \int_0^1 a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{1}{1-\alpha}}\, di.$$

Using labor supply, $w_t = \chi N_t^{\varphi}$, gives

$$N_t = \left(\frac{\alpha}{\chi N_t^{\varphi}}\right)^{\frac{1}{1-\alpha}} \int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}}\, di.$$

Therefore,

$$N_t^{1+\frac{\varphi}{1-\alpha}} = \left(\frac{\alpha}{\chi}\right)^{\frac{1}{1-\alpha}} \int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}}\, di.$$

Raising both sides to the power $(1-\alpha)/(1-\alpha+\varphi)$ yields

$$N_t = \left[\frac{\alpha}{\chi}\left(\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}}\, di\right)^{1-\alpha}\right]^{\frac{1}{1-\alpha+\varphi}},$$

which is equation (10).

Derivation of aggregate TFP, equation (11)

Aggregate output is

$$Y_t = \int_0^1 a_i n_{it}^{\alpha}\, di.$$

Substituting firm labor demand,

$$Y_t = \int_0^1 a_i \left(\frac{\alpha a_i}{w_t \omega_i(R_t)}\right)^{\frac{\alpha}{1-\alpha}} di.$$

Thus

$$Y_t = \left(\frac{\alpha}{w_t}\right)^{\frac{\alpha}{1-\alpha}} \int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{\alpha}{1-\alpha}}\, di.$$

From the expression for aggregate labor,

$$N_t = \left(\frac{\alpha}{w_t}\right)^{\frac{1}{1-\alpha}} \int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}}\, di.$$

Therefore,

$$N_t^{\alpha} = \left(\frac{\alpha}{w_t}\right)^{\frac{\alpha}{1-\alpha}} \left[\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}}\, di\right]^{\alpha}.$$

Since aggregate TFP is defined by the aggregate representation

$$Y_t = A(R_t) N_t^{\alpha},$$

we obtain

$$A(R_t) = \frac{\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{\alpha}{1-\alpha}}\, di}{\left[\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}}\, di\right]^{\alpha}},$$

which is equation (11).

If exposure is common across firms, so that $q_i = q$ for all i, then

$$\omega_i(R_t) = \omega(R_t)$$

for all i. In this case,

$$A(R_t) = \frac{\omega(R_t)^{-\frac{\alpha}{1-\alpha}} \int_0^1 a_i^{\frac{1}{1-\alpha}}\, di}{\left[\omega(R_t)^{-\frac{1}{1-\alpha}} \int_0^1 a_i^{\frac{1}{1-\alpha}}\, di\right]^{\alpha}}.$$

The powers of $\omega(R_t)$ cancel, leaving

$$A = \left(\int_0^1 a_i^{\frac{1}{1-\alpha}}\, di\right)^{1-\alpha}.$$

Thus, when the working-capital wedge is common across firms, aggregate TFP is independent of global financial conditions.

Two-type relative employment, equation (14)

Consider the two-type version in the main text, with productivities $a_H > a_L$ and wedges

$$\omega_j(R_t) = 1 + q_j(R_t - 1), \qquad j \in \{L, H\}.$$

Firm-level labor demand implies

$$n_{jt} = \left(\frac{\alpha a_j}{w_t \omega_j(R_t)}\right)^{\frac{1}{1-\alpha}}.$$

Therefore,

$$\frac{n_{Ht}}{n_{Lt}} = \left[\frac{a_H}{a_L}\frac{\omega_L(R_t)}{\omega_H(R_t)}\right]^{\frac{1}{1-\alpha}}.$$

This is the expression corresponding to equation (14). If the main text avoids defining a separate exponent p, the exponent in (14) should be written as $\frac{1}{1-\alpha}$.

When $q_H > q_L$, an increase in R_t raises $\omega_H(R_t)$ more than $\omega_L(R_t)$. Indeed,

$$\frac{\partial}{\partial R_t} \log\left(\frac{\omega_L(R_t)}{\omega_H(R_t)}\right) = \frac{q_L}{\omega_L(R_t)} - \frac{q_H}{\omega_H(R_t)}.$$

Since

$$\frac{q}{1+q(R_t-1)}$$

is increasing in q for $R_t > 1$, the derivative is negative whenever $q_H > q_L$. Thus a financial tightening lowers n_{Ht}/n_{Lt}, while a financial easing raises it.

Proof of Proposition 1

We prove each part of the proposition.

Part (i): aggregate labor and GDP. From equation (10),

$$N_t = \left[\frac{\alpha}{\chi}\left(\int_0^1 a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{1}{1-\alpha}}\,di\right)^{1-\alpha}\right]^{\frac{1}{1-\alpha+\varphi}}.$$

Define

$$S(R_t) = \int_0^1 a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{1}{1-\alpha}}\,di.$$

Then

$$N_t = \left[\frac{\alpha}{\chi}S(R_t)^{1-\alpha}\right]^{\frac{1}{1-\alpha+\varphi}}.$$

Because

$$\omega_i(R_t) = 1 + q_i(R_t-1),$$

we have

$$\frac{\partial\omega_i(R_t)}{\partial R_t} = q_i.$$

Therefore,

$$S'(R_t) = -\frac{1}{1-\alpha}\int_0^1 a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{1}{1-\alpha}-1}q_i\,di.$$

Since $a_i > 0$, $\omega_i(R_t) > 0$, and $q_i \geq 0$, it follows that

$$S'(R_t) \leq 0.$$

The inequality is strict whenever $q_i > 0$ for a set of firms of positive measure. Hence,

$$\frac{\partial N_t}{\partial R_t} < 0$$

under a nondegenerate working-capital friction. A global financial tightening therefore lowers aggregate labor; equivalently, a global financial easing raises aggregate labor.

Aggregate output satisfies

$$Y_t = A(R_t) N_t^{\alpha}.$$

Part (ii) below establishes that

$$\frac{\partial A(R_t)}{\partial R_t} \leq 0.$$

Since $\alpha > 0$ and $\partial N_t / \partial R_t < 0$, it follows that

$$\frac{\partial Y_t}{\partial R_t} < 0.$$

Thus a global financial tightening lowers GDP, while a global financial easing raises GDP.

Part (ii): aggregate TFP. aggregate TFP is given by equation (11),

$$A(R_t) = \frac{\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{\alpha}{1-\alpha}} \, di}{\left[\int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}} \, di\right]^{\alpha}}.$$

Let

$$B(R_t) = \int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{\alpha}{1-\alpha}} \, di$$

and

$$S(R_t) = \int_0^1 a_i^{\frac{1}{1-\alpha}} \omega_i(R_t)^{-\frac{1}{1-\alpha}} \, di.$$

Then

$$A(R_t) = \frac{B(R_t)}{S(R_t)^{\alpha}}.$$

Taking logs,

$$\log A(R_t) = \log B(R_t) - \alpha \log S(R_t).$$

Differentiating with respect to R_t,

$$\frac{\partial \log A(R_t)}{\partial R_t} = \frac{B'(R_t)}{B(R_t)} - \alpha \frac{S'(R_t)}{S(R_t)}.$$

Now,

$$B'(R_t) = -\frac{\alpha}{1-\alpha}\int_0^1 a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{\alpha}{1-\alpha}}\frac{q_i}{\omega_i(R_t)}\,di,$$

and

$$S'(R_t) = -\frac{1}{1-\alpha}\int_0^1 a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{1}{1-\alpha}}\frac{q_i}{\omega_i(R_t)}\,di.$$

Hence

$$\frac{\partial \log A(R_t)}{\partial R_t} = \frac{\alpha}{1-\alpha}\left[\mathbb{E}_S\left(\frac{q_i}{\omega_i(R_t)}\right) - \mathbb{E}_B\left(\frac{q_i}{\omega_i(R_t)}\right)\right],$$

where $\mathbb{E}_S$ denotes the average using weights proportional to

$$a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{1}{1-\alpha}},$$

and $\mathbb{E}_B$ denotes the average using weights proportional to

$$a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{\alpha}{1-\alpha}}.$$

More explicitly, define the normalized weights

$$w_i^S(R_t) = \frac{a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{1}{1-\alpha}}}{S(R_t)}, \qquad w_i^B(R_t) = \frac{a_i^{\frac{1}{1-\alpha}}\omega_i(R_t)^{-\frac{\alpha}{1-\alpha}}}{B(R_t)}.$$

Then the two expectations are

$$\mathbb{E}_S\left(\frac{q_i}{\omega_i(R_t)}\right) = \int_0^1 w_i^S(R_t)\frac{q_i}{\omega_i(R_t)}\,di, \qquad \mathbb{E}_B\left(\frac{q_i}{\omega_i(R_t)}\right) = \int_0^1 w_i^B(R_t)\frac{q_i}{\omega_i(R_t)}\,di.$$

The two weighting schemes share the same productivity term $a_i^{1/(1-\alpha)}$, but they differ in how strongly they penalize firms with high working-capital wedges. The S-weights use the exponent $-1/(1-\alpha)$, while the B-weights use the smaller-in-absolute-value exponent $-\alpha/(1-\alpha)$. Equivalently,

$$w_i^S(R_t) \propto w_i^B(R_t)\omega_i(R_t)^{-1}.$$

Thus, relative to the B-weights, the S-weights attach an additional factor $\omega_i(R_t)^{-1}$ to each firm. To determine the sign, note first that for $R_t > 1$,

$$\frac{q_i}{\omega_i(R_t)} = \frac{q_i}{1 + q_i(R_t - 1)}$$

is increasing in q_i:

$$\frac{\partial}{\partial q_i}\left[\frac{q_i}{1+q_i(R_t-1)}\right]=\frac{1}{[1+q_i(R_t-1)]^2}>0.$$

Second, the wedge $\omega_i(R_t)$ is increasing in q_i when $R_t>1$. Therefore the additional factor

$$\omega_i(R_t)^{-1}$$

places relatively more weight on firms with lower q_i.

In other words, the S-weighted distribution is tilted toward low-exposure firms relative to the B-weighted distribution. Since $q_i/\omega_i(R_t)$ is increasing in exposure q_i, this tilt lowers its weighted average under S relative to B.

Therefore,

$$\mathbb{E}_S\left(\frac{q_i}{\omega_i(R_t)}\right)\le\mathbb{E}_B\left(\frac{q_i}{\omega_i(R_t)}\right).$$

Consequently,

$$\frac{\partial\log A(R_t)}{\partial R_t}\le 0.$$

Since $A(R_t)>0$, this implies

$$\frac{\partial A(R_t)}{\partial R_t}\le 0,$$

which is equation (13).

If $q_1=0$, then $q_i=q_0$ for all firms and the wedge is common across firms. As shown above, the common wedge cancels out of aggregate TFP, so

$$\frac{\partial A(R_t)}{\partial R_t}=0.$$

If $q_1>0$, then q_i is strictly increasing in $\bar{n}_i$. In turn, as $\bar{n}_i$ is strictly increasing in a_i, more productive firms have higher working-capital exposure. In a nondegenerate productivity distribution, this means that q_i is not constant across firms. The S-weights then strictly tilt away from high-q_i firms relative to the B-weights, while $q_i/\omega_i(R_t)$ is strictly increasing in q_i. Therefore,

$$\mathbb{E}_S\left(\frac{q_i}{\omega_i(R_t)}\right)<\mathbb{E}_B\left(\frac{q_i}{\omega_i(R_t)}\right),$$

and hence

$$\frac{\partial A(R_t)}{\partial R_t}<0.$$

Thus a global financial tightening lowers aggregate TFP whenever exposure is scale dependent, while a global financial easing raises aggregate TFP.

This completes the proof of Proposition 1.