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U.S. Monetary Policy Spillovers to Middle East and Central Asia: Shocks, Fundamentals, and Propagations

Giovanni Ugazio and Weining Xin

WP24/14

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WORKING PAPER

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U.S. Monetary Policy Spillovers to Middle East and Central Asia: Shocks, Fundamentals and Propagations

Prepared by Giovanni Ugazio and Weining Xin*

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ABSTRACT: We empirically examine U.S. monetary policy spillovers to the Middle East and Central Asia (ME & CA) region by decomposing U.S. interest rates changes into two orthogonal shocks: the pure monetary policy shock and the information news shock. Using a sample of 16 ME & CA countries, we find that when interest rates increase, the two shocks have opposite spillovers on the region. Tightening driven by contractionary monetary policy shocks hinders growth, while tightening driven by positive information news shocks boosts growth despite higher interest rates. Countries with weaker fundamentals face more negative spillovers from contractionary monetary policy shocks but may sometimes benefit more from positive information news shocks. Moreover, high oil prices mitigate both spillovers for oil exporters while global risk appetite amplifies both spillovers. Finally, we estimate a large degree of heterogeneity in the impact of the 2022 U.S. tightening cycle on ME & CA countries, with oil exporters with stronger fundamentals withstanding well the shock and oil importers with weaker fundamentals being hit the most.

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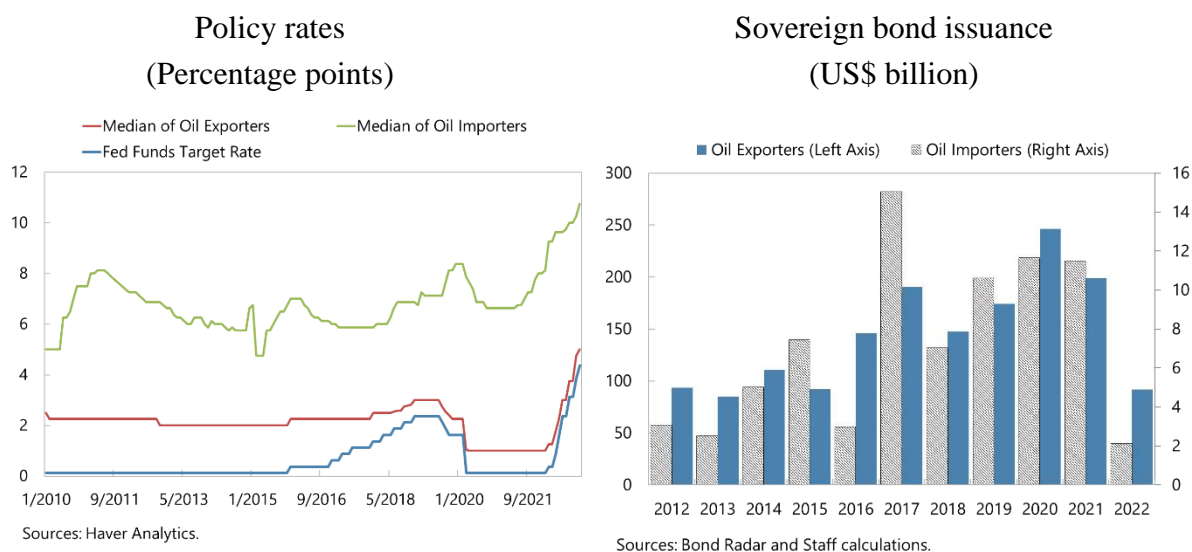
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1. Introduction

Global financial conditions have remained very favorable over most of the past decade, driven by the unprecedented accommodative monetary policy stance in the U.S. and other advanced economies. Monetary support was further extended in 2020 to mitigate the macroeconomic impact of the COVID-19 pandemic on the global economy. The ensuing post-pandemic recovery of the U.S. economy combined with external factors led to rapidly rising inflation, which reached decades highs during 2022. The U.S. Federal Reserve (Fed) responded with an increasingly more aggressive monetary policy tightening and raised interest rates by 425 basis points in seven consecutive moves in 2022, unwinding its accommodative monetary policy and leading to sharply tighter global financial conditions especially in emerging markets (EMs).

Middle East and Central Asia (ME & CA) countries have raised their interest rates against the backdrop of the U.S. monetary tightening—in both oil exporters and importers—leading to tighter domestic financial conditions, while sovereign bond issuances on international capital markets plunged by more than 80 percent in oil importers and 50 percent in oil exporters—which could also be due to the elevated oil prices and thus smaller financing needs—in 2022 compared to 2021, reflecting the heightened financing challenges amid rising interest rates (Figure 1).

Figure 1: Policy rates and debt issuances in Middle East and Central Asia



Notes: Oil exporters include Algeria (no data for bond issuance), Bahrain, Kazakhstan, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates, and oil importers include including Armenia, Egypt, Georgia, Jordan, Lebanon, Morocco, Pakistan, and Tunisia.

U.S. monetary policy announcements made by the Federal Open Market Committee (FOMC) embed information about the FOMC’s assessment and forecast of the U.S. economic conditions. In the literature, this is referred to as the “Fed information effect” (Romer and Romer, 2000; Jarocinski and Karadi, 2018; and Nakamura and Steinsson, 2018). Accordingly, changes to U.S. monetary policy stance are driven by the interplay of two underlying shocks: (1) the *pure monetary policy shock*, which captures *unexpected* monetary policy stance shifts in the U.S. that are orthogonal to the economic outlook and, as such, contains no “Fed information effect”; and (2) the *information news shock*, which embeds the Fed information effect and are driven by changes to the economic outlook.

This shock decomposition is central to identifying spillovers from U.S. monetary tightening, as the underlying interpretation of the *reason* for the tightening has different implications for the world economy. Namely, while a tightening driven by contractionary monetary policy shocks generates adverse spillovers to the rest of the world, a tightening driven by positive information news shocks in some cases generates positive spillovers, because the backdrop of a brighter U.S. outlook may reduce uncertainty and boost sentiment.

In this paper, we analyze the regional impact of past U.S. monetary tightening episodes on the ME & CA region and use the results to estimate the spillovers from the 2022 tightening cycle. Based on a sample of 16 ME & CA countries consisting of both oil exporters and importers, we try to answer four key questions (Figure 2):

- What are the spillovers of a U.S. monetary tightening to the ME & CA region?
- Do the spillovers depend on which type of shock drives the tightening?
- Do countries’ fundamentals and other factors play a role in determining the size and potentially the sign of the spillovers?
- What is the estimated impact of the 2022 U.S. monetary tightening on the ME & CA region? Is there heterogeneity across ME & CA countries?

We find that growth spillovers of a U.S. monetary policy tightening can differ markedly for the ME & CA region depending on which shock drives the tightening decision.

Contractionary monetary policy shocks generally have a negative impact on growth by reducing consumption and exports, although not statistically significant until three years later. However, after accounting for country-specific fundamentals, we find that the size and timing of the negative spillovers varies. Countries with weaker fundamentals—lower foreign exchange reserves, higher external debt, weaker fiscal balances, and higher public debt—generally see a larger and more immediate growth declines in response to the shock compared to countries with stronger fundamentals. Moreover, countries with strong fundamentals and ample buffers exhibit

short-term resilience, as they generally do not experience a growth decline in the same year of the initial shocks.

On the other hand, positive information news shocks have a positive and statistically significant (after one year) impact on growth in the aggregate sample by increasing consumption, exports, and investment, despite leading to tighter financial conditions. However, the strength of *specific* country fundamentals affects the extent of growth boost. We find that countries with higher foreign exchange reserves and lower public debt see larger positive spillovers from positive information news shocks. However, lower external debt and stronger fiscal balances do not lead to a better growth outcome, indicating that countries with weaker fundamentals may actually benefit more from positive information news shocks in some cases. This result might be explained by the so-called “risk-taking channel” argument discussed by Ciminelli et al. (2022), according to which positive information news shocks reduce uncertainty and boost sentiment, so that weaker fundamentals do not hinder capital inflows.

Since the impacts on growth from the two shocks have different signs, one shock may act as a mitigator for the other (if both have the same sign, such as in the case of a positive aggregate demand shock) or amplifier for the other (if they have different signs, such as in the case of an adverse supply shock). This result highlights the importance of correctly identifying the drivers of changes in the U.S. monetary policy stance to examine spillovers.

Turning to the effect of the global environment on our results, we find that global risk appetite¹ can be an amplifier for both monetary policy and information news shocks. Specifically, lower global risk appetite is associated with larger negative spillovers from contractionary monetary policy shocks. On the other hand, higher risk appetite is associated with larger positive spillovers from positive information news shocks, further emphasizing the importance of the “risk-taking channel” in increasing capital flows to the region despite tighter financial conditions.

Given the importance of oil exports in the ME & CA region, we investigate whether oil prices play a role in determining the shocks’ impacts on oil exporters. Unsurprisingly, we find that higher oil prices improve oil exporters’ fundamentals and, as a result, cushion the negative impact of contractionary monetary policy shocks. The effect of higher oil prices is however ambiguous for information news shocks, as the growth boost in oil exporters from this type of shocks is on average higher when oil prices are lower. The result is in line with the more general result discussed earlier, stating that countries with weaker fundamentals—associated with lower oil prices—benefit more from positive information news shocks under certain circumstances.

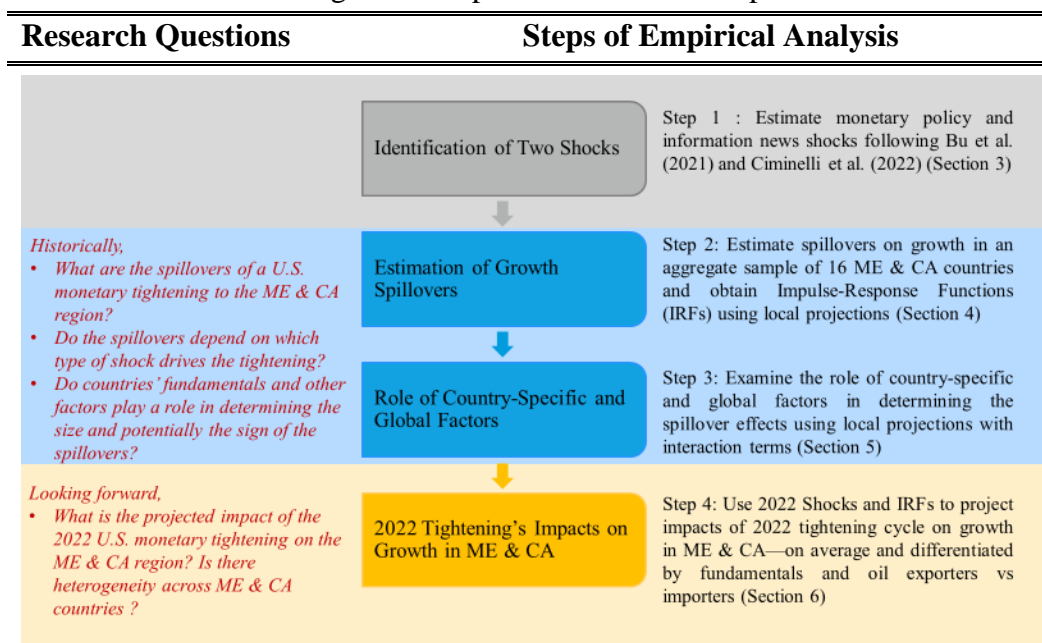
¹ Proxied using the VIX index. Higher VIX reflects higher stock market volatility and lower risk appetite.

Finally, we conclude the empirical analysis with the application of a local projection model to estimate the spillovers on the ME & CA country sample of the 2022 tightening. First, the decomposition of the 2022 tightening shows that the pure monetary policy component of the shock is slightly negative, implying that monetary tightening has been just below expectations. However, information news shocks are estimated to also be negative and dominate the overall decomposition, indicating a pessimistic view on the U.S. economy outlook. We estimate the average growth spillover to the ME & CA region to be -0.2 percent in 2022 and -0.6 percent in 2023. However, within the sample, we find large heterogeneity of the spillovers driven by differences in country fundamentals and economic structures.

Accordingly, ME & CA oil importers with weak fundamentals would see the largest negative growth impact at -2.0 percent for 2023, while strong fundamentals would mitigate the negative spillovers and would see a smaller growth deterioration of 0.3 percent. Favorable oil prices would mitigate negative spillovers for oil exporters, which would see a growth deterioration of 1.7 percent and 0.1 percent for those with weak and strong fundamentals, respectively.

The rest of the paper is organized as follows. Section 2 presents a literature review and highlights the contributions of the paper, including the analysis applied to the ME & CA region. Section 3 describes the sample, data and empirical framework including the estimation of monetary policy and information news shocks and their spillovers. Section 4 presents the baseline results for spillovers to growth for the aggregate ME & CA countries sample based on historical data. Section 5 adds country-specific and global factors to the discussion of results to investigate heterogeneity in the spillovers. Section 6 uses the local projection approach to estimate the 2022 U.S. tightening cycle impact on ME & CA countries, both on aggregate and for country groupings. Section 7 concludes.

Figure 2. Empirical Flow of the Paper



2. Literature review

This paper relates to three strands of literature. First, the literature on the impacts of U.S. monetary policy on the rest of the world, which found that the U.S. tightening is associated with lower growth or recessions, currency depreciation, and tighter financial conditions in emerging markets, for example, Eichenbaum and Evans (1995) and Uribe and Yue (2006), Giovanni and Shambaugh (2008), Chen et al. (2014), Dedola et al. (2017), Adedeji et al. (2019), Viccondoa (2019), and more recently Saxegaard et al. (2022), as well as IMF (2022)—the latter studies the spillovers from an increase in the nominal U.S. interest rates to the Middle East and Central Asia. Our paper contributes to this literature by decomposing the increases in the U.S. interest rates into the pure monetary policy shocks and information news shocks and thus identifying and contrasting the spillovers from these two orthogonal shocks.

Second, the literature on the Fed information effects. As noted above, the Fed information effect refers to that FOMC announcements not only reveal pure monetary policy changes but also that the Fed's assessment and forecast of the U.S. economic conditions, either based on private information the Fed possesses or on common information. This results in the predictability of changes in the monetary policy (see Romer & Romer, 2000; Campbell et al., 2012; Miranda-Agrippino, 2016; Nakamura & Steinsson, 2018; Cieslak and Schrimpf, 2019; Hansen et al., 2019; Paul, 2019; Jarociński and Karadi, 2020; Acosta, 2021; Bauer and Swanson, 2021; Camara, 2021; Ciminelli et al., 2022). Nakamura and Steinsson (2018) show the Fed information effect on the

U.S. variables while Hoek et al. (2020), Camara (2021), and Ciminelli et al. (2022) study the Fed information effect and compare it with effects of monetary policy shocks on the rest of the world in an international setting. Our paper contributes to this literature by: first, extending the sample of Ciminelli et al. (2022) to 2022 and projecting the spillovers of the 2022 U.S. tightening cycle, and second, empirically examining the spillovers to a set of macro-financial variables including real GDP growth, sovereign spreads, stock price indexes, exchange rates, and portfolio flows at different frequencies (annual or monthly) focusing on the ME & CA region.

The paper also contributes to the literature on the role of country characteristics in influencing the impacts of the U.S. monetary policy. Many find evidence that spillovers from U.S. monetary policy are less severe for countries with stronger fundamentals (see Chen, et al., 2014; Mishra et al., 2014; Bowman et al., 2015 and Takáts and Vela, 2014; Ahmed et al., 2017; Ahmed et al., 2021), while some find better fundamentals did not help shield countries from the adverse impacts during the taper tantrum (Eichengreen and Gupta, 2015 and Aizenman et al., 2016). Our paper contributes to this literature by investigating not only the role of country-specific fundamentals, but also the role of global risk appetite, the role of high oil prices in affecting spillovers to oil exporters, as well as the role of monetary policy and foreign exchange rate regimes in determining the magnitude of spillovers.

3. Data and Methodology

3.1 Monetary policy shocks and information news shocks

FOMC announcements of changes in the U.S. monetary policy—including both conventional and unconventional monetary policy tools—reveal not only the pure monetary policy shocks which are defined to be largely exogenous, unpredictable and contain no significant Fed information effect, but also the information news shocks which contain the Fed information effect. To identify these two different shocks, we follow the framework developed by Bu et al. (2021) and Ciminelli et al. (2022) and re-estimate the decomposition of daily changes in the U.S. benchmark interest rates into pure monetary policy shocks and information news shocks. This allows us to extend the sample to the 2022 tightening events and then to apply the results to the regional impact analysis.

The framework employs a heteroskedasticity-based, partial least squares (PLS) approach to (i) identify pure monetary shocks by exploiting the sensitivity of U.S. zero-coupon yields (the outcome variables that embed investors' expectations and reactions) at different maturities to announcements following scheduled FOMC meetings—which is able to capture periods of conventional and unconventional policymaking, and (ii) identify information news shocks by

taking the residuals from projecting the U.S. benchmark interest rates into the monetary policy shocks, such that information news shocks are orthogonal to monetary policy shocks and driven by observable economic conditions and the Fed's assessment and forecast.² In the first step, sensitivity of the U.S. zero-coupon yields with maturities of 1 to 30 years to monetary policy shocks are estimated by normalizing the unobserved monetary policy shocks to having a one-to-one relationship with the benchmark Treasury yield—2-year Treasury yield in our exercise,³ according to equation (1):

$$\Delta R_{i,t} = \theta_i + \beta_i \Delta R_{2,t} + \xi_{i,t}, \quad \text{for } i = 1, \dots, 30 \quad (1)$$

where $\Delta R_{i,t}$ denotes the daily change in the yield of zero-coupon Treasury bond with maturity of i -year at time t and β_i are proportional to the true sensitivity of the U.S. zero-coupon yields to the unobserved monetary policy shocks, as shown in Bu et al. (2021).

In the second step, the monetary policy shocks are recovered from cross-sectional regressions of daily change in the zero-coupon yields $\Delta R_{i,t}$ on the estimated sensitivity β_i at each time t , according to equation (2):

$$\Delta R_{i,t} = \alpha_i + e_t \hat{\beta}_i + v_{i,t}, \quad \text{for } t = 1, \dots, T \quad (2)$$

where the estimated coefficient $\hat{\beta}_t$ is defined as monetary policy shocks at time t . The last step is to backout the information news shocks $\hat{\lambda}_t$ as the residuals from regressing the benchmark Treasury yields on the estimated $\hat{\beta}_t$, which by construction are orthogonal to the monetary policy shocks. The estimation of information news shocks from taking the residuals assumes the outcome variables (U.S. zero-coupon yields) are affected only by these two types of shocks and not by other shocks which can be justified because of the use of daily change in the outcome variables on the day of the monetary policy announcements. Therefore, chances are low that there are other shocks that affect the outcome variables systemically during that day. By construction, contractionary (expansionary) monetary policy shocks take positive (negative) values, and positive (negative) information news shocks take positive (negative) values. Estimated series of monetary policy shocks $\hat{\beta}_t$ and information news shocks $\hat{\lambda}_t$ are at monthly frequency based on the FOMC

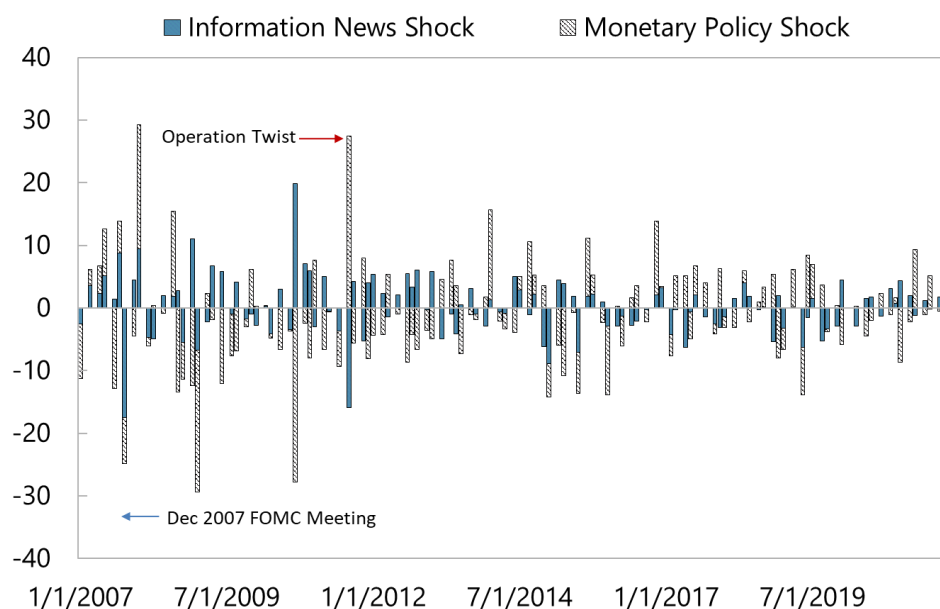
² For more details, refer to Bu et al. (2021) and Ciminelli et al. (2022).

³ Ciminelli et al. (2022) show that results normalizing to 5-year and 10-year Treasury yields are effectively identical.

announcements since January 1994, with values equal to zero in months when there are no FOMC announcements.

The identification of the two shocks from decomposing changes in monetary policy stance allows us to capture nuances in shifts of the U.S. monetary policy and distinguish the underlying sources (Figure 3). For example, monetary policy shocks during Operation Twist are contractionary and take the largest positive value in the sample, while information news shocks are negative and take the largest negative value at the end of 2007 reflecting the Fed's pessimistic view on the economic outlook during the Global Financial Crisis.⁴

Figure 3: Monetary Policy and Information News Shocks over Time (basis points)



Notes: Monetary policy shocks and information news shocks are estimated following the econometrics framework laid out in Bu et al. (2021) and Ciminelli et al. (2022). Y-axis is in basis points.

3.2 Econometric framework

We examine the macro-financial spillovers of changes to U.S. monetary policy on the ME & CA country sample by estimating a set of impulse response functions that measure the growth impact

⁴ Figure A1 in Appendix I plots the shock series estimated in this paper and in Ciminelli et al. (2022) with the Pearson correlation coefficient at 0.9999.

of the two identified shocks. The estimation is based on the local projections framework proposed in Jordá (2005). Our sample includes 16 ME & CA emerging markets, eight oil exporters including Algeria, Bahrain, Kazakhstan, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates; and eight oil importers including Armenia, Egypt, Georgia, Jordan, Lebanon, Morocco, Pakistan, and Tunisia. The econometric specification involves the estimation of the following process:

$$y_{i,t+j} - y_{i,t-1} = \alpha_i + \beta_j e_t + \gamma_j i_t + \sum_1^l \delta_{l,j} \Delta y_{i,t-l} + \sum_0^l \zeta_{l,j} X_{i,t-l} + \varepsilon_{i,t}, \quad j = 1, \dots, T \quad (3)$$

where subscripts i and t denote country and time respectively; $y_{i,t}$ denotes the vector of macro-financial variables of interest (log-real GDP and its expenditure components, sovereign spreads, log of stock indexes and exchange rates against US dollar, and portfolio flows as percentage of beginning allocation in the period); e_t denotes the U.S. monetary policy shocks and i_t denotes the U.S. information news shocks; $\Delta y_{i,t-l}$ denotes the lagged dependent variables accounting for the dynamics of the dependent variables with two lags included, i.e., $l = 2$; $X_{i,t-l}$ denotes a set of current and lagged global or country-specific variables such percentage change in oil prices, inflation, exchange rate regime (a dummy for hard peg), and capital account openness; and α_i denotes country fixed effect. The coefficient β_j captures the impact of the U.S. monetary policy shocks and the coefficient γ_j captures the impact of the U.S. information news shocks, at horizon j . The equations are estimated with annual data for real GDP from 1994 to 2021 and its components for $T = 3$, i.e., examining impacts through three years after the shocks, and with monthly data for all other macro-financial dependent variables for $T = 6$, i.e., examining impacts through six months after the shocks.

Furthermore, we examine the role of fundamentals, global environment, and policy regime—motivated by the literature where global and country-specific factors would affect the spillovers from the U.S. monetary policies—by estimating the following specification with interactions between shocks and conditioning variables of interest following Auerbach and Gorodnichenko (2013) and Ramey and Zubairy (2018)

$$y_{i,t+j} - y_{i,t-1} = \alpha_i + \beta_j^H (1 - F(z_{i,t})) e_t + \beta_j^L F(z_{i,t}) e_t + \gamma_j^H (1 - F(z_{i,t})) i_t + \gamma_j^L F(z_{i,t}) i_t + \sum_1^l \delta_{l,j}^H (1 - F(z_{i,t})) \Delta y_{i,t-l} + \sum_1^l \delta_{l,j}^L F(z_{i,t}) \Delta y_{i,t-l} + \sum_0^l \zeta_{l,j}^H (1 - F(z_{i,t})) X_{i,t-l} + \sum_0^l \zeta_{l,j}^L F(z_{i,t}) X_{i,t-l} + \varepsilon_{i,t}, \quad j = 1, \dots, T \quad (4)$$

with $F(z_{i,t}) = e^{-\eta z_{i,t}} / (1 + e^{-\eta z_{i,t}})$, $\eta > 0$

where z is the conditioning variable of interest normalized to have zero mean and a unit variance in the sample; and superscripts H and L denote the group where the conditioning variable is very

high and very low. One can interpret $F(z_{i,t})$ as the probability of a country i at time t being in a low-value group where the conditioning variable takes value smaller than the average, and thus $1 - F(z_{i,t})$ as the probability of a country i at time t being in a high-value group where the conditioning variable takes value larger than the average. The coefficients β_j^H and β_j^L (γ_j^H and γ_j^L) capture the impact of monetary policy shocks (information news shocks) at each horizon j in cases of very high levels of $z_{i,t}$ ($1 - F(z_{i,t}) \approx 1$ when $z_{i,t}$ goes to positive infinity) and very low levels of $z_{i,t}$ ($F(z_{i,t}) \approx 1$ when $z_{i,t}$ goes to negative infinity), respectively. η is calibrated at 10 to smooth impulse response function.⁵ Conditioning variables in our analysis are selected based on the literature including country-specific fundamental indicators including reserves (as percentage of broad money), economy-wide external debt (as percentage of GDP), fiscal balance (as percentage of GDP), and public debt (as percentage of GDP), global environment indicators including oil prices (US\$ per barrel) and the VIX index.⁶ Appendix I reports the summary statistics table of variables used in the estimations.

4. Baseline Results for the Aggregate Sample

The analysis finds that contractionary monetary policy shocks have a persistently negative impact on growth of ME & CA countries, although not statistically significant until three years later, while positive information news shocks have a persistently positive impact on growth which is statistically significant after one year (Figure 5 and Table 1).^{7,8}

The results highlight how the two shocks can either mitigate each other (if both have the same sign, such as in the case of a positive aggregate demand shock) or amplify each other (if they have different signs, such as in the case of an adverse supply shock).

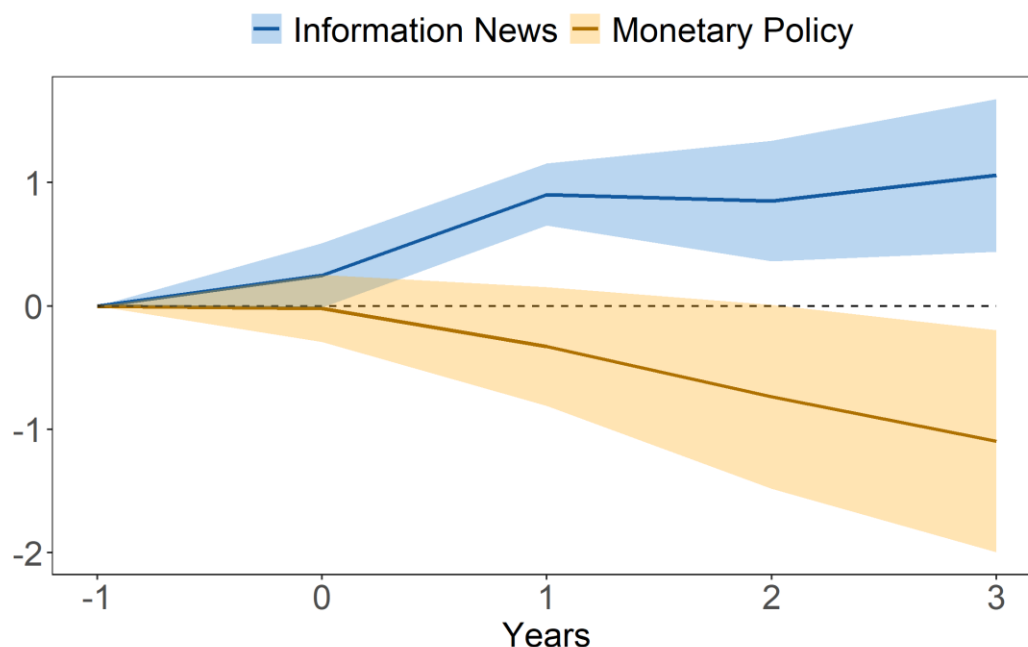
⁵ The results are robust to choices of η .

⁶ For example, Eichengreen and Gupta (2014) studied fiscal deficit, public debt, and FX reserves; Mishra et al. (2014) studied fiscal deficit and FX reserves; Aizenman et al. (2014) studied FX reserves and external debt; Bowman et al. (2014) studied public debt, financial openness and exchange rate regime; Ahmed et al. (2015) studied FX reserves, public debt, external debt, and exchange rate regime; Adedeji, et al. (2019) studied oil prices; Ahmed et al. (2021) studied balance sheet vulnerabilities; and IMF (2022) studied public debt, FX reserves, VIX, and oil prices.

⁷ Appendix II reports the effects on GDP expenditure components. This aims to identify the expenditure components through which the shocks affect growth.

⁸ Beyond the impact on growth, we also assess the impact of the two types of monetary shocks on financial variables (sovereign spreads, stock markets, exchange rates and financial flows). We find that contractionary monetary policy shocks result in higher sovereign spreads, lower stock prices, and some currency depreciation pressures and capital outflows. On the other hand, positive information news shocks result in lower sovereign spreads, higher stock price indexes, currency appreciation and capital inflows (see Appendix III for more details).

Figure 5: Effects of a standard deviation of shocks on real GDP (percentage points)



Notes: Solid lines report point estimates, and shaded areas represent 90 percent confidence bands. X-axes denote the response horizon (in years), with 0 being the year of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the β_j and γ_j coefficients from Equation (3). Estimates are normalized to show responses to a standard deviation of the shocks. A standard deviation of monetary policy shocks is about 17.5 basis points, and a standard deviation of information news shocks is about 12.2 basis points.

Table 1. Cumulative effects of a standard deviation of shocks on real GDP growth (percentage points)

	Contraction Monetary Policy Shocks	Positive Information New Shocks
Year t	-0.02	0.25
Year $t + 1$	-0.33	0.90***
Year $t + 2$	-0.74	0.85***
Year $t + 3$	-1.09**	1.06***

Notes: Responses are obtained by estimating the β_j and γ_j coefficients from Equation (3). Estimates are normalized to show responses to a standard deviation of the shocks. *, **, *** correspond to 10%, 5% and 1% significance, respectively, based on HAC robust standard errors, clustered by country and time fixed effects.

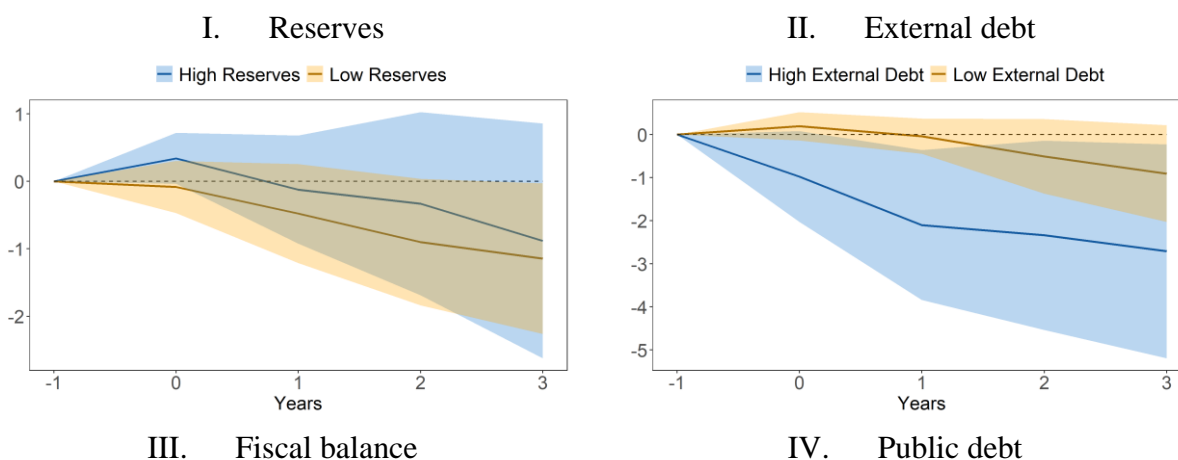
5. The Role of Country-Specific and Global Factors

5.1. The role of country-specific fundamentals

Country-specific fundamentals can amplify or mitigate the spillovers of the two shocks on growth. We examine the difference in growth spillovers to countries with strong and weak fundamentals in terms of foreign exchange reserves, economy-wide external debt, fiscal balance, and public debt.^{9,10}

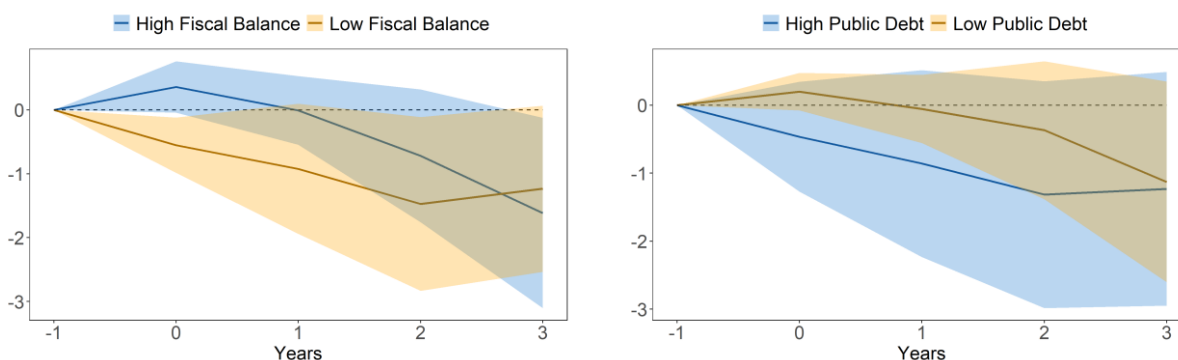
Starting with monetary policy shocks, results show that countries with weak fundamentals—lower foreign exchange reserves, higher external debt, weaker fiscal balance, and higher public debt—would see larger negative impacts of contractionary monetary policy shocks; whereas countries with strong fundamentals exhibit resilience in terms of both overall shock size as well as graduality of impact, that is, they exhibit short-term resilience, as they generally do not experience a growth decline in the same year of the initial shocks (Figure 6).

Figure 6: Effects of a standard deviation of monetary policy shocks to growth with heterogeneity in country-specific fundamentals (percentage points)



⁹ We also examine the differentiated impact (based on country fundamentals) of the monetary policy and information news shocks on sovereign spreads. Appendix IV summarizes these results.

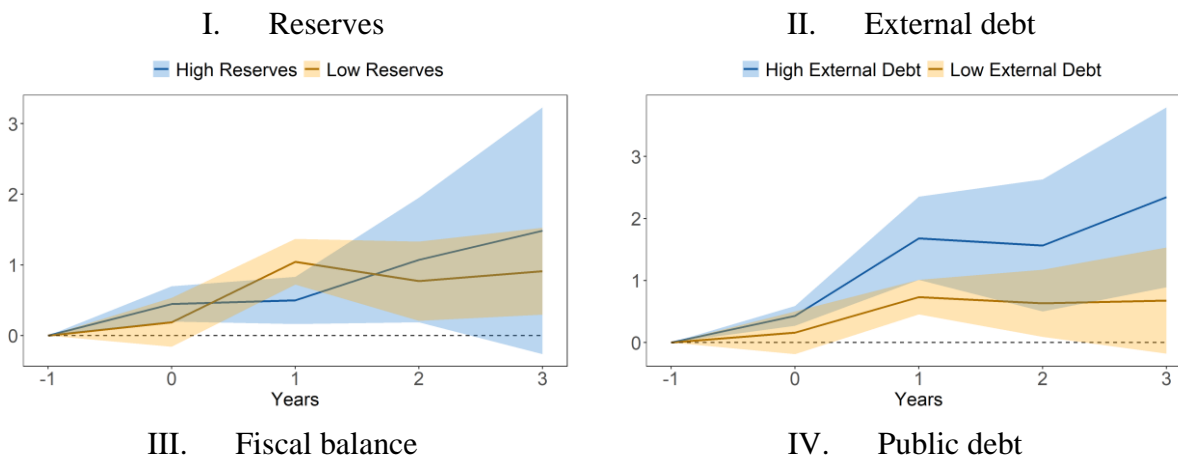
¹⁰ Appendix V reports the results on the role of capital account openness and exchange rate regime where conditioning variables are capital account openness index from Chinn and Ito (2006) and the exchange rate peg (as a dummy indicating whether it is a pegged exchange rate regime).

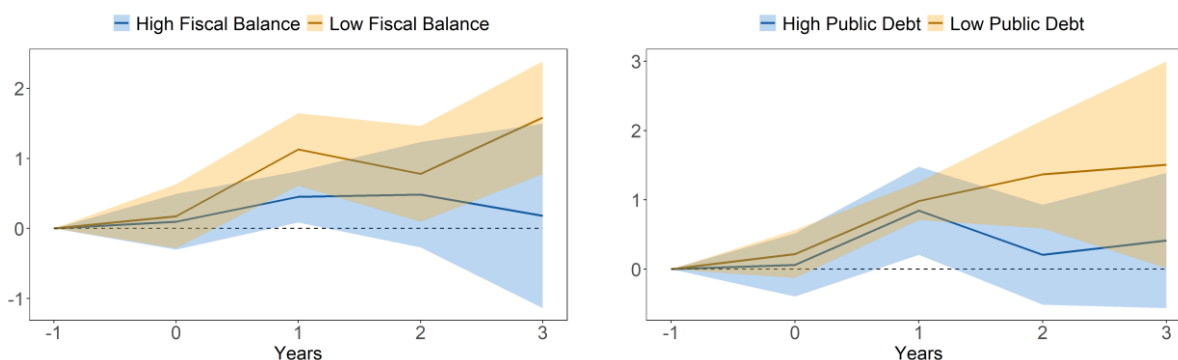


Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the coefficients $\beta_j^H, \beta_j^L, \gamma_j^H, \gamma_j^L$ from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.

Turning to information news shocks, we find that the strength of *specific* country fundamentals affects the growth boost. Specifically, we find that countries with higher foreign exchange reserves and lower public debt see comparatively larger positive spillovers from positive information news shocks. However, lower external debt and stronger fiscal balances do not lead to a better growth outcome, indicating that countries with weaker fundamentals may actually benefit more from positive information news shocks in some cases (Figure 7). This result might be explained by the so-called “risk-taking channel” argument discussed by Ciminelli et al. (2022), according to which positive information news shocks reduce uncertainty and boost sentiment, so that weaker fundamentals do not hinder capital inflows.

Figure 7: Effects of a standard deviation of information news shocks to growth with heterogeneity in country-specific fundamentals (percentage points)





Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the coefficients β_j^H , β_j^L , γ_j^H , γ_j^L from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.

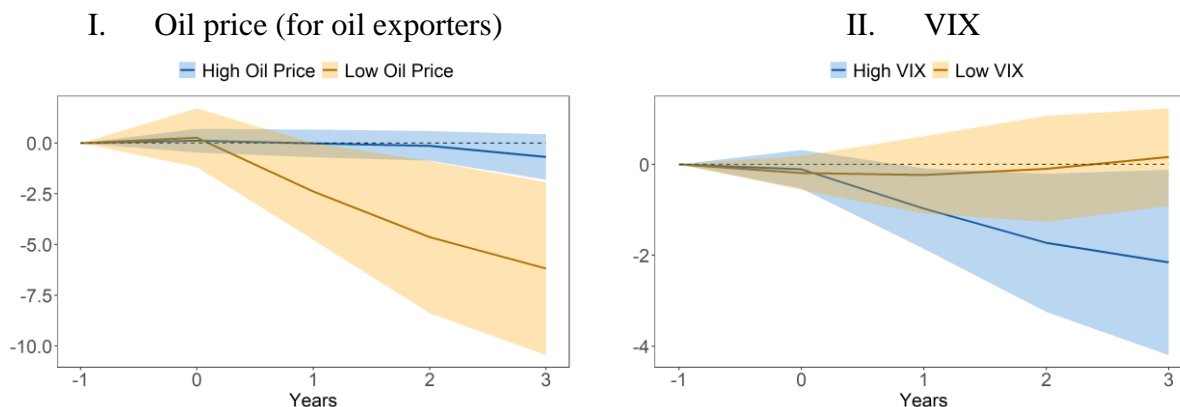
5.2. The role of global environment

Next, we examine the role played by global risk appetite and oil prices in determining the magnitude of spillovers from the two shocks to ME & CA countries.

Starting with monetary policy shocks (Figure 8), the analysis shows that spillovers to oil exporters are closely linked to oil prices. Specifically, oil exporters would see much larger negative impacts of contractionary monetary policy shocks when oil prices are lower, while they see much smaller and insignificant negative impacts when oil prices are higher, indicating higher oil prices improve oil exporters' fundamentals and, as a result, cushion the negative impact of contractionary monetary policy shocks.

Turning to global risk appetite, the estimation highlights that low (high) global risk appetite amplifies (dampens) the adverse impacts of monetary policy shocks. More specifically, the growth impact is statistically insignificant when risk appetite is high, while the negative impact is larger and statistically significant when risk appetite is low. This implies that contractionary monetary policy shocks tend to reduce risk appetite more when it's already low and fragile and therefore lead to larger negative spillovers, also known as the "sentiment channel" of shocks propagation.

Figure 8: Effects of a standard deviation of monetary policy shocks to growth with heterogeneity in global environment (percentage points)



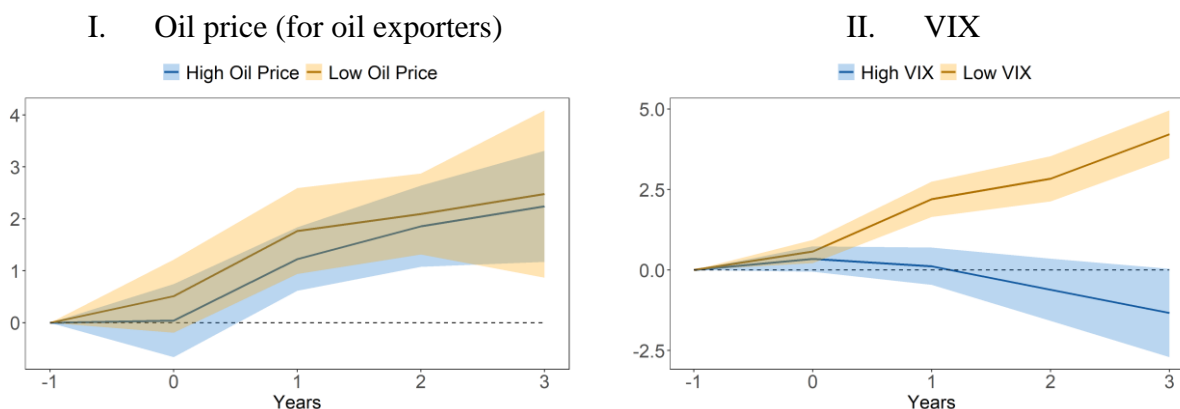
Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the coefficients β_j^H , β_j^L , γ_j^H , γ_j^L from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.

The estimations for information shocks spillovers show somewhat unexpected results that require additional interpretation (Figure 9).

First, oil exporters in the sample are estimated to see larger positive spillover effects when oil prices are lower. Potential reasons behind this could be that a brighter U.S. economy outlook would drive oil prices higher in the future and boost nonoil exports through higher external U.S. demand. Moreover, this result may also indicate that oil exporters growth may not be as sensitive to oil prices when the U.S. outlook is brighter. It is also in line with the more general result discussed earlier, stating that countries with weaker fundamentals—associated with lower oil prices—benefit more from positive information news shocks under certain circumstances.

Results for risk appetite are more straightforward and show that positive spillover effects of information news shocks are smaller (higher) when risk appetite is low (high), implying that the U.S. market sentiment plays an important role in transmitting and amplifying the spillover effects of information news shocks to growth of ME & CA countries.

Figure 9: Effects of a standard deviation of information news shocks to growth with heterogeneity in global environment (percentage points)



Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the coefficients β_j^H , β_j^L , γ_j^H , γ_j^L from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.

6. The 2022 Tightening Effects

In this section, we estimate the impact of the 2022 U.S. monetary tightening on ME & CA countries. We first calculate the sum of the estimated monetary policy shocks and information news shocks in 2022 from the seven FOMC announcements during March to December. These add up to -0.07 percentage points for monetary policy shocks and -0.10 percentage points for information news shocks, respectively. It is important to note that the shocks calculation reflects the impact of the Fed *announcements* of interest rate hikes and monetary tightening, rather than the total increase in the U.S. interest rates which is also affected by market movements outside the FOMC announcement windows.

We estimate that the sum of estimated monetary policy shocks is so far negative in 2022, implying that, after considering forward guidance, monetary policy has so far been less tight than expected by the market. In other words, given the forward guidance provided by the Fed, the tightening cycle has largely not surprised the markets to the upside by deviating from what it has signaled and tightening more than expected. However, the sum of the estimated information news shocks is also negative and takes a larger absolute value, implying a pessimistic outlook of the U.S. as perceived by the market, and this would dominate the spillovers to the rest of the world.

Combining these estimates with the estimation results of the spillover effects, the spillover effects of the 2022 tightening cycle would comprise positive spillover effects from slightly accommodative—relative to what has been expected by the markets—monetary policy shocks and negative spillover effects from negative information news shocks. Plugging the estimates into the

estimated Equation (1) shows that, all else equal, the 2022 tightening cycle so far would lower growth in ME & CA countries by 0.2 percentage points in 2022, and 0.6 percentage points in 2023, on average.

We then explore whether there may be any heterogeneity within the sample of the spillover effects based on country-specific fundamentals and between oil exporters and importers under current oil prices. We augment Equation (1) by including fundamental variables including reserves (as percent of broad money), external debt (as percent of GDP), fiscal balance (as percent of GDP), and public debt (as percent of GDP), and oil prices (US\$ per barrel), as well as interaction terms with the monetary policy and information news shocks.¹¹

We calculate the estimated spillover effects for four groups of countries: (i) oil exporters with weak fundamentals defined as reserves at the 25th percentile, external debt at the 75th percentile, fiscal balance at the 25th percentile, and public debt at the 75th percentile of the entire sample; (ii) oil exporters with strong fundamentals defined as reserves at the 75th percentile, external debt at the 25th percentile, fiscal balance at the 75th percentile, and public debt at the 25th percentile of the entire sample; (iii) oil importers with weak fundamentals; and (iv) oil importers with strong fundamentals (Table 2).

In line with earlier results, countries with weak fundamentals would see more severe adverse impacts on their growth than those with strong fundamentals, and oil exporters would fare better than oil importers thanks to the favorable oil prices. Oil importers with weak fundamentals would suffer the most, with an estimated growth decline of 2.0 percentage points in 2023, while strong fundamentals would help mitigate the adverse impacts, reducing the negative spillover effects to -0.3 percentage points in 2023. Favorable oil prices act as an additional mitigator for oil exports: oil exporters with weak fundamentals would see an estimated growth decline of 1.7 percentage points; and oil exporters with strong fundamentals would barely suffer, seeing a small negative impact on their growth of -0.1 percentage points in 2023.

Table 2. The impact of the 2022 tightening cycles on 2023 growth (percentage points)

	Oil exporters	Oil importers
Weak fundamentals	-1.7	-2.0
Strong fundamentals	-0.1	-0.3

¹¹ For oil prices, we also include a triple interaction term of shocks, oil prices, and a dummy for oil exporters to differentiate the impacts on oil exporters and importers.

7. Conclusion

The strong post-COVID recovery and decades-high inflation during 2022 caused the U.S. to embark on the most aggressive monetary policy tightening cycle since 1994, increasing interest rates by 425 bps in seven consecutive times since March 2022 through the end of the year, among which there are four jumbo hikes of 75 basis points. Given the crucial role of the U.S. monetary policy in driving global financial cycles and determining global financial conditions, the 2022 tightening cycle is expected to generate significant spillovers to the rest of the world, particularly emerging markets.

However, underlying drivers of the U.S. tightening matter for quantifying spillovers. In this paper, we estimate that past spillovers on ME & CA countries had opposite signs depending on whether the tightening was driven by pure contractionary monetary policy or positive information news shocks. Contractionary monetary policy shocks hinder growth through reducing consumption and exports while positive information news shocks boost growth through increasing consumption, exports, and investment.

Our analysis also shows that country-specific and global factors play an important role in determining spillovers. In response to contractionary monetary policy shocks, countries with weaker fundamentals—lower foreign exchange reserves, higher external debt, weaker fiscal balance, and higher public debt—would see larger growth declines than countries with stronger fundamentals, while they may benefit more in some cases when facing positive information news shocks. We also find that oil prices act as a mitigator for oil exporters in response to both shocks and global risk appetite act as amplifier for both spillovers.

Finally, we estimate the growth impacts of the 2022 U.S. tightening on the ME & CA region and find that the average growth spillovers are small, as the tightening cycle was within expectations. Nonetheless, we find a large degree of heterogeneity among countries with weak versus strong fundamentals, and between oil exporters versus importers. Oil exporters with strong fundamentals would withstand well the adverse shocks helped by the elevated oil prices, while oil importers with weak fundamentals would suffer the largest adverse impacts. The empirical results for ME & CA countries continue to highlight the importance of building buffers and resilience to avoid the larger impact of financial tightening associated with weak fundamentals.

Finally, looking ahead, our results suggest that a faster or more aggressive than anticipated tightening in the U.S. could yet lead to sharply tighter global financial conditions and have a significantly larger impact on the ME & CA region. In such adverse scenario, more severe spillovers to ME & CA countries could materialize due to spikes in risk premia, declines in risk appetite, disruptive capital outflows, asset market selloffs, and currency depreciation pressures.

References

- Acosta, M. (2022). The perceived causes of monetary policy surprises. Technical report, Columbia University.
- Adedeji, M. O. S., Roos, M. E., Shahid, M. S., & Zhu, L. (2019). US monetary policy spillovers to GCC countries: do oil prices matter?. International Monetary Fund.
- Ahmed, S., Akinici, O., & Queralto, A. (2021). US Monetary Policy Spillovers to Emerging Markets: Both Shocks and Vulnerabilities Matter. FRB of New York Staff Report, (972).
- Ahmed, S., Coulibaly, B., & Zlate, A. (2017). International financial spillovers to emerging market economies: How important are economic fundamentals?. *Journal of International Money and Finance*, 76, 133-152.
- Aizenman, J., Binici, M., & Hutchison, M. M. (2014). The transmission of Federal Reserve tapering news to emerging financial markets (No. w19980). National Bureau of Economic Research.
- Bauer, M., & Swanson, E. T. (2021). An alternative explanation for the ‘Fed information effect’. Available at SSRN 3551950.
- Bowman, D., Londono, J. M., & Sapriza, H. (2015). US unconventional monetary policy and transmission to emerging market economies. *Journal of International Money and Finance*, 55, 27-59.
- Bu, C., Rogers, J., & Wu, W. (2021). A unified measure of Fed monetary policy shocks. *Journal of Monetary Economics*, 118, 331-349.
- Camara, S. (2021). Spillovers of US Interest Rates: Monetary Policy & Information Effects. arXiv preprint arXiv:2111.08631.
- Campbell, J. R., Evans, C. L., Fisher, J. D., Justiniano, A., Calomiris, C. W., & Woodford, M. (2012). Macroeconomic effects of federal reserve forward guidance [with comments and discussion]. *Brookings papers on economic activity*, 1-80.
- Chen, M. J., Griffoli, M. T. M., & Sahay, M. R. (2014). Spillovers from United States monetary policy on emerging markets: different this time?. International Monetary Fund.

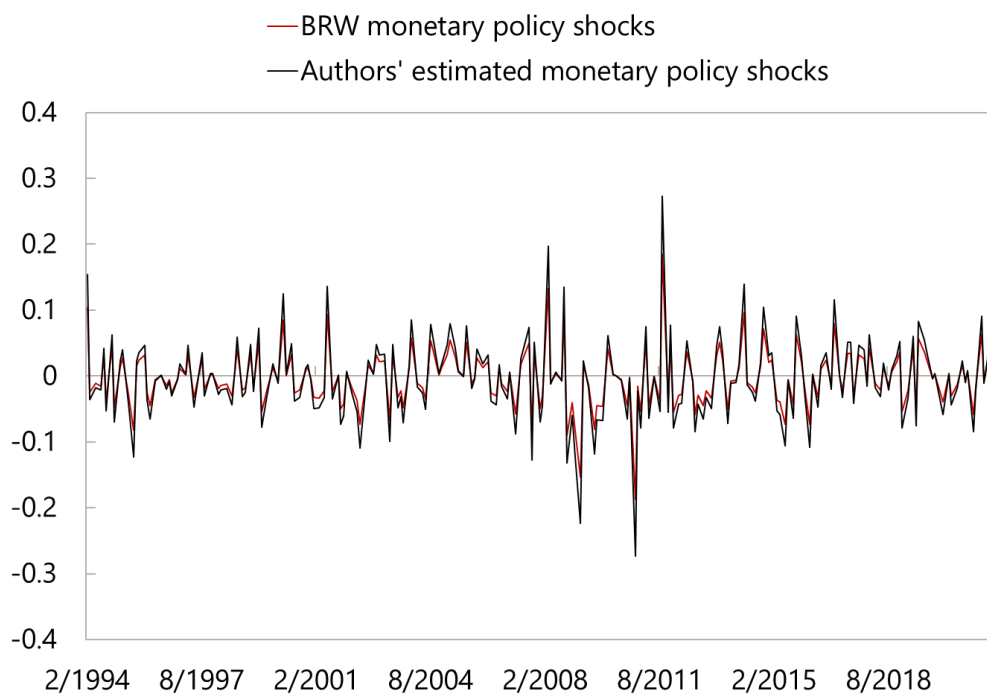
- Chinn, Menzie D. and Hiro Ito (2006). "What Matters for Financial Development? Capital Controls, Institutions, and Interactions," *Journal of Development Economics*, Volume 81, Issue 1, Pages 163-192 (October).
- Cieslak, A., & Schrimpf, A. (2019). Non-monetary news in central bank communication. *Journal of International Economics*, 118, 293-315.
- Ciminelli, G., Rogers, J., & Wu, W. (2022). The effects of US monetary policy on international mutual fund investment. *Journal of International Money and Finance*, 102676.
- Dedola, L., Rivolta, G., & Stracca, L. (2017). If the Fed sneezes, who catches a cold?. *Journal of International Economics*, 108, S23-S41.
- Di Giovanni, J., & Shambaugh, J. C. (2008). The impact of foreign interest rates on the economy: The role of the exchange rate regime. *Journal of International economics*, 74(2), 341-361.
- Eichenbaum, M., & Evans, C. L. (1995). Some empirical evidence on the effects of shocks to monetary policy on exchange rates. *The Quarterly Journal of Economics*, 110(4), 975-1009.
- Eichengreen, B., & Gupta, P. (2015). Tapering talk: The impact of expectations of reduced Federal Reserve security purchases on emerging markets. *Emerging Markets Review*, 25, 1-15.
- Hansen, S., McMahon, M., & Tong, M. (2019). The long-run information effect of central bank communication. *Journal of Monetary Economics*, 108, 185-202.
- Hoek, J., Kamin, S. B., & Yoldas, E. (2020). When is bad news good news? US monetary policy, macroeconomic news, and financial conditions in emerging markets. *International Finance Discussion Paper*, (1269).
- International Monetary Fund (2022), *Regional economic outlook: Divergent recoveries in turbulent times*.
- Jarociński, M., & Karadi, P. (2020). Deconstructing monetary policy surprises—the role of information shocks. *American Economic Journal: Macroeconomics*, 12(2), 1-43.
- Miranda-Agrippino, Silvia. "Unsurprising shocks: information, premia, and the monetary transmission." (2016).

- Mishra, M. P., Moriyama, M. K., N'Diaye, P. M. B., & Nguyen, L. (2014). Impact of fed tapering announcements on emerging markets. *International Monetary Fund*.
- Nakamura, E., & Steinsson, J. (2018). High-frequency identification of monetary non-neutrality: the information effect. *The Quarterly Journal of Economics*, 133(3), 1283-1330.
- Paul, P. (2020). The time-varying effect of monetary policy on asset prices. *Review of Economics and Statistics*, 102(4), 690-704.
- Romer, C. D., & Romer, D. H. (2000). Federal Reserve information and the behavior of interest rates. *American economic review*, 90(3), 429-457.
- Saxegaard, E. C. A., Firat, M., Furceri, D., & Verrier, J. (2022). US Monetary Policy Shock Spillovers: Evidence from Firm-Level Data. *IMF Working Papers*, 2022(191).
- Takáts, E., & Vela, A. (2014). International monetary policy transmission. *BIS paper*, (78b).
- Uribe, M., & Yue, V. Z. (2006). Country spreads and emerging countries: Who drives whom?. *Journal of international Economics*, 69(1), 6-36.
- Vicondoa, A. (2019). Monetary news in the United States and business cycles in emerging economies. *Journal of International Economics*, 117, 79-90.

Appendix I. Shocks Series Plot and Summary Statistics Table

Figure A1 shows the monetary policy shocks estimated in this paper and in Ciminelli et al. (2022), which have a correlation coefficient of 0.9999, and Table A1 presents the summary statistics of variables in the analysis, including the estimated monetary policy and information news shocks, the dependent variable which is real GDP growth, and the independent variables as well as conditioning variables.

Figure A1: Monetary Policy Shocks estimated in this paper and in Ciminelli et al. (2022)



Sources: Ciminelli et al. (2022) and Staff estimations.

Table A1: Summary Statistics Table

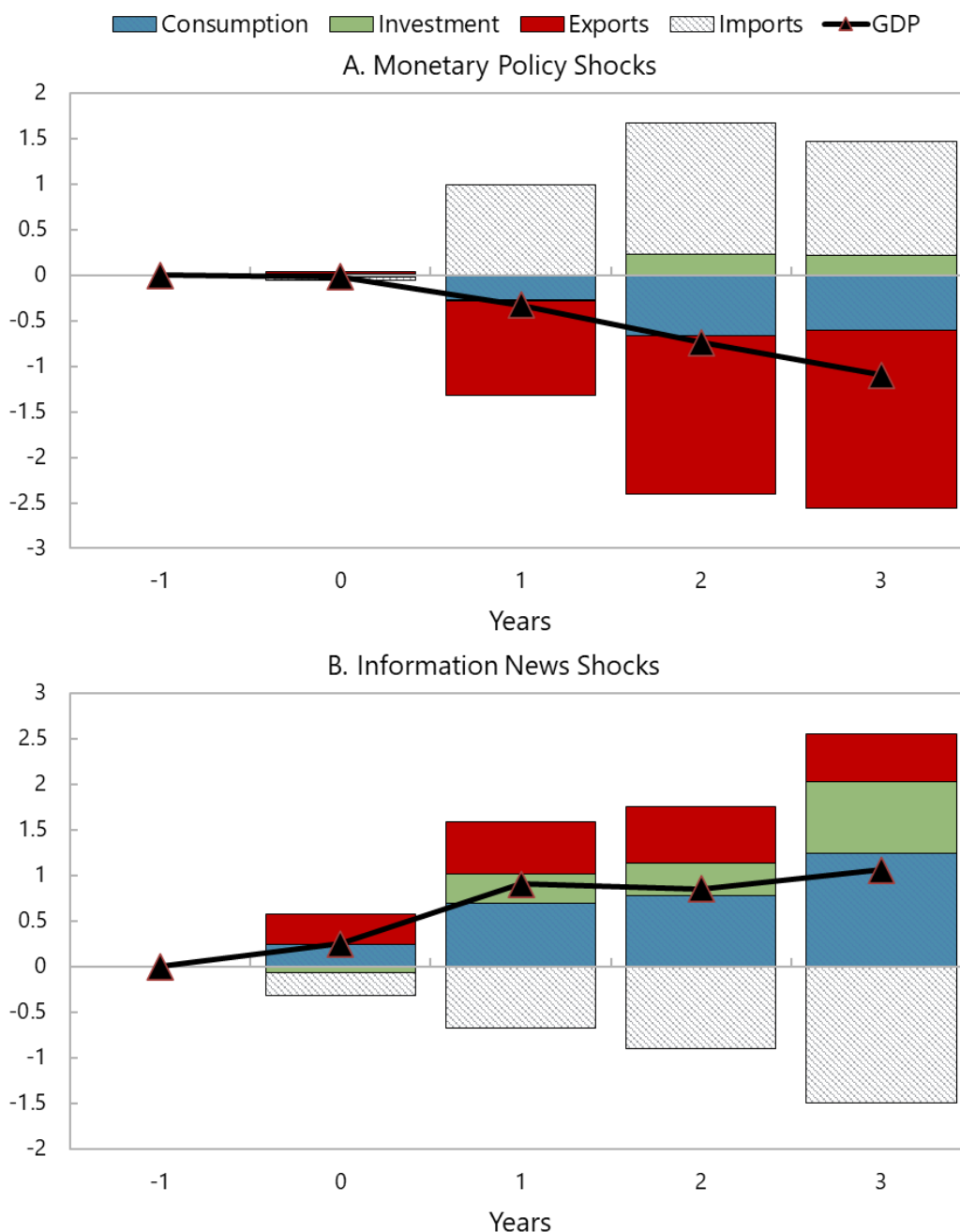
<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Pctl. 25</i>	<i>Pctl. 75</i>	<i>Max</i>
<i>Monetary Policy Shocks</i>	462	-0.04	0.17	-0.61	-0.12	0.08	0.24
<i>Information News Shocks</i>	462	0.00	0.12	-0.26	-0.10	0.06	0.27
<i>Real GDP Growth (%)</i>	462	3.84	4.44	-24.85	2.15	5.78	24.75
<i>Inflation</i>	375	4.10	5.98	-4.87	1.36	4.98	84.88
<i>Oil Prices Change (%)</i>	446	0.06	0.28	-0.62	-0.10	0.29	0.47
<i>Reserves (% of Broad Money)</i>	460	38.48	32.45	1.96	19.98	43.38	178.49
<i>External Debt (% of GDP)</i>	456	91.08	162.05	1.82	27.85	84.24	1165.94
<i>Public Debt (% of GDP)</i>	424	52.43	37.05	1.56	21.35	72.89	183.07
<i>Fiscal Balance (% of GDP)</i>	433	-1.35	9.49	-29.13	-6.54	2.14	43.30
<i>Capital Account Openness Index</i>	426	0.64	0.36	0.00	0.16	1.00	1.00
<i>VIX</i>	462	19.26	5.86	11.98	14.15	23.36	32.65

Appendix II. Transmission Channels through Expenditure Components of GDP

To explore the channels through which U.S. monetary policy changes affect aggregate demand, Equation (3) is estimated with dependent variables as real GDP expenditure components—consumption, investment, exports, and imports.¹² Figure A2 shows the composition of output responses based on expenditure components following a standard deviation of the shocks. Contractionary monetary policy shocks are mainly transmitted through lower exports and consumption, while lower imports mitigate the overall negative impact. Investment declines in the two years following the shocks but contributes positively to growth afterwards. One possible explanation is that public investment, which plays an important role in driving growth in many ME & CA countries, is relative inelastic and accelerates to stimulate the economy. Positive information news shocks are mainly transmitted through boosting consumption, exports, and investment, despite tighter financial conditions, though higher imports partially offset the overall impact.

¹² The sum of coefficients from estimations on real GDP expenditure components is not exactly equal to the coefficients from estimates on real GDP because of the volatile component of change in inventories, which is first calculated as the difference and then added to fixed investment to measure the overall effects on investment, in line with GDP expenditure decomposition.

Figure A2: Decomposition of effects of a standard deviation of shocks on real GDP into expenditure components (percentage points)

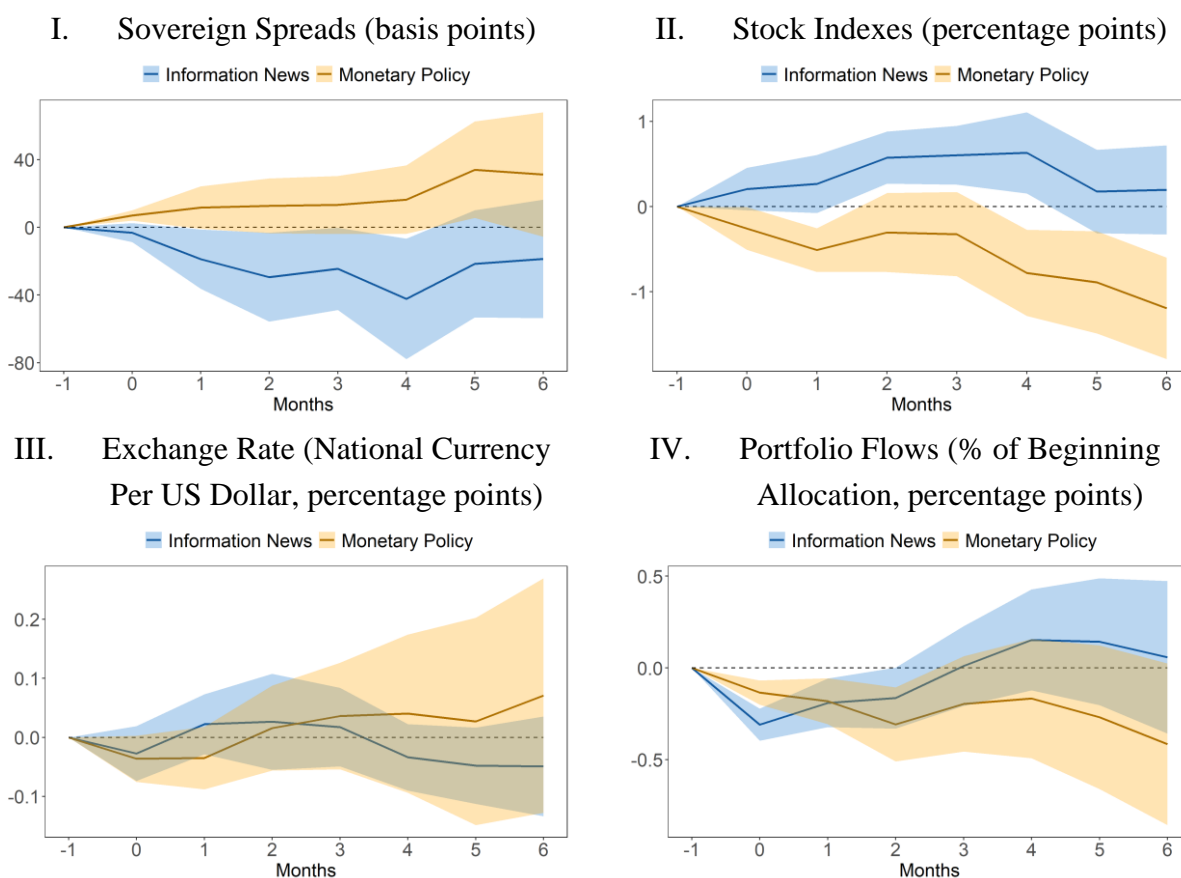


Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in years), with 0 being the year of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the β_j and γ_j coefficients from Equation (3). Estimates are normalized to show responses to a standard deviation of the shocks.

Appendix III. Other Macro-Financial Impacts of U.S. Monetary Policy and Information News Shocks

We estimate the impact of monetary policy and information news shocks on financial variables (sovereign spreads, stock market, exchange rates and capital flows), and find that contractionary monetary policy shocks result in higher sovereign spreads, lower stock prices, and some currency depreciation pressures and capital outflows.¹³ On the other hand, positive information news shocks result in lower sovereign spreads, higher stock price indexes, currency appreciation and capital inflows (Figure A3 and Table A2).

Figure A3: Effects of a standard deviation of shocks to other macro-financial variables



Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the β_j and γ_j coefficients from Equation (3). Estimates are normalized to show responses to a standard deviation of the shocks.

¹³ The results on exchange rate and capital flows are not statistically significant though.

Table A2. Cumulative effects of a standard deviation of shocks on macro-financial variables

A. Contrationary Monetary Policy Shocks

Months	Spreads (Basis Points)	Stock Price Indexes (Percentage Points)	Exchange Rate Per US Dollar (Percentage Points)	Portfolio Flow % Beginning Allocation (Percentage Points)
0	7***	-0.25*	0.01	-0.13***
1	12	-0.49***	0.06**	-0.18**
2	13	-0.29	0.07*	-0.31**
3	13	-0.31	0.08	-0.20
4	16	-0.75**	0.06	-0.17
5	34**	-0.86**	0.10	-0.27
6	31	-1.15***	0.14	-0.42

B. Positive Information News Shocks

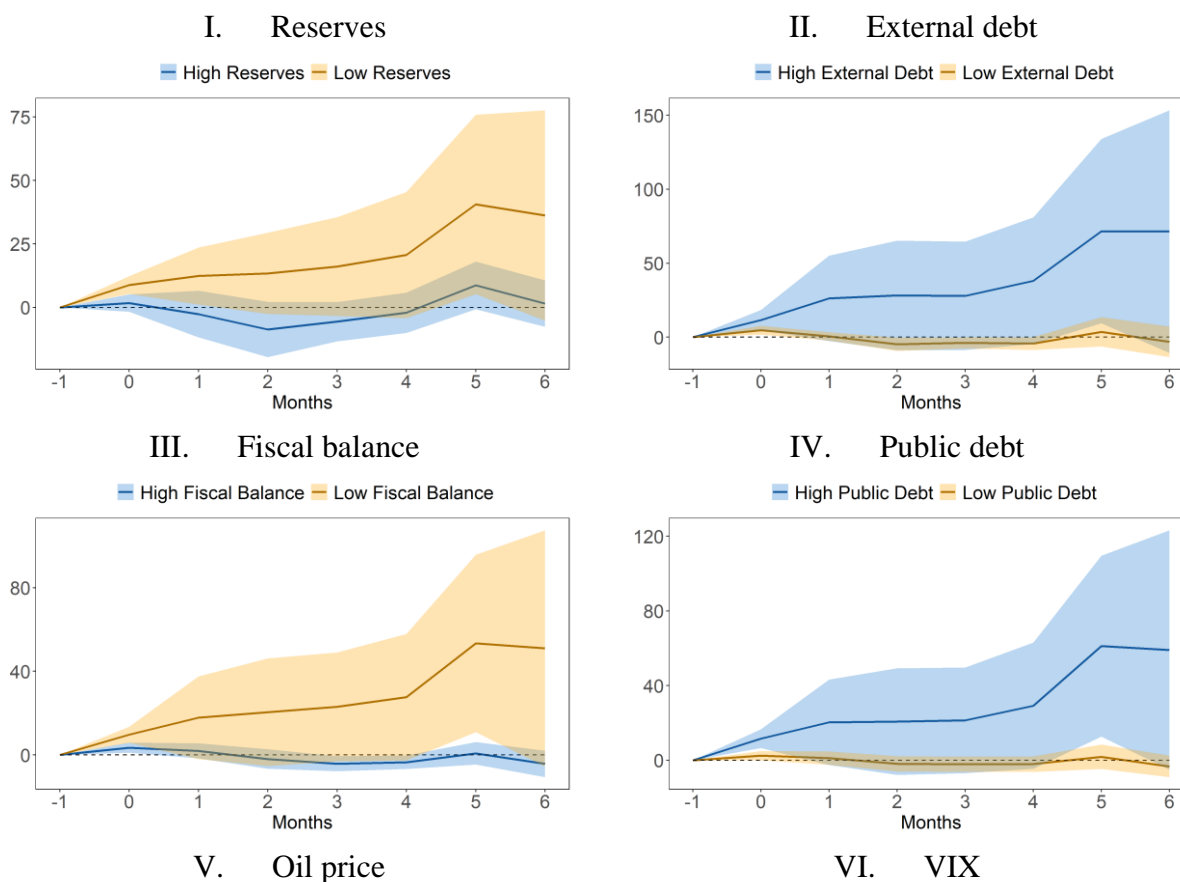
Months	Spreads (Basis Points)	Stock Price Indexes (Percentage Points)	Exchange Rate Per US Dollar (Percentage Points)	Portfolio Flow % Beginning Allocation (Percentage Points)
0	-3	0.20	0.06**	-0.31***
1	-19*	0.26	0.06**	-0.19**
2	-29*	0.57***	0.05**	-0.16
3	-25*	0.60***	-0.01	0.01
4	-42*	0.63**	-0.02	0.15
5	-22	0.18	-0.02	0.14
6	-19	0.19	0.00	0.06

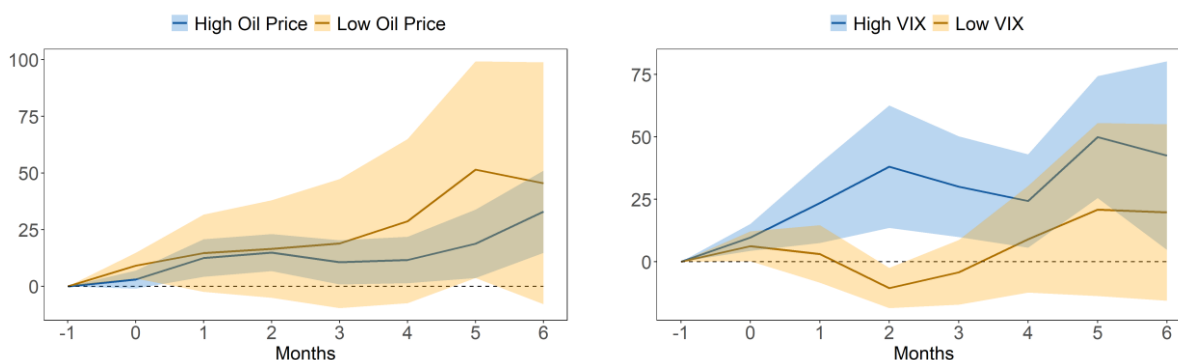
Notes: Responses are obtained by estimating the β_j and γ_j coefficients from Equation (3). Estimates are normalized to show responses to a standard deviation of the shocks. *, **, *** correspond to 10%, 5% and 1% significance, respectively, based on HAC robust standard errors, clustered by country and time fixed effects.

Appendix IV: Role of Country-Specific and Global Factors in Determining Spillovers to Sovereign Spreads

We examine the differentiated impact (based on country fundamentals and global environments) of the monetary policy and information news shocks on sovereign spreads, and find similar results to those on growth. As Figure A6 shows, in response to monetary policy shocks, sovereign spreads widen more in countries with weaker fundamentals—lower reserves, higher external debt, weaker fiscal balance, and higher public debt—when oil prices are lower (for oil exporters) and VIX is higher.

Figure A6: Effects of a standard deviation of monetary policy shocks to sovereign spreads with heterogeneity in country-specific fundamentals, global environment, and policy regimes (basis points)

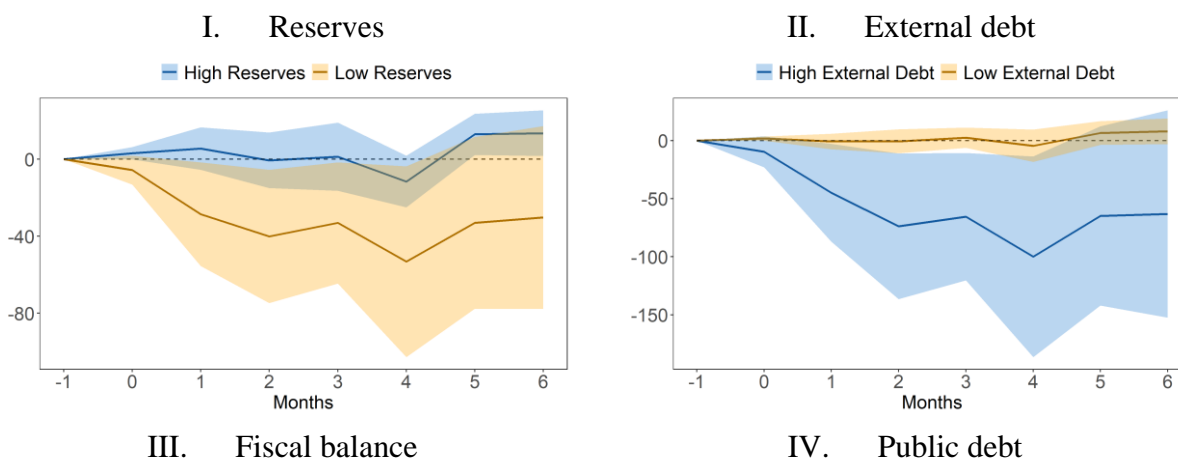


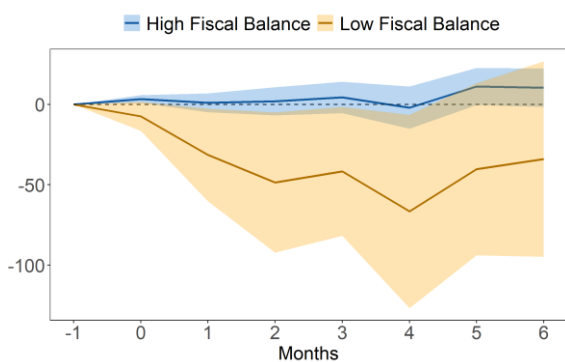


Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in basis points). Responses are obtained by estimating the coefficients $\beta_j^H, \beta_j^L, \gamma_j^H, \gamma_j^L$ from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.

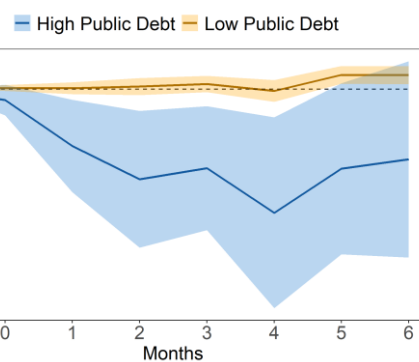
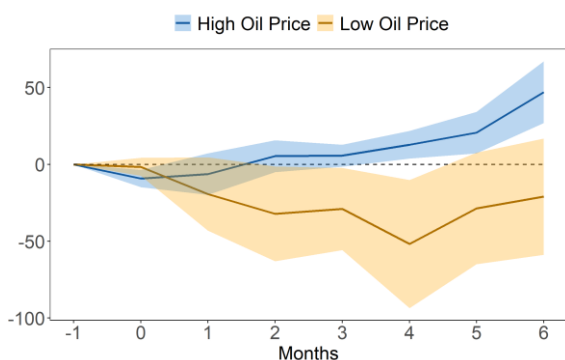
Results with respect to information news shocks are mixed, similar to those on growth. Figure A7 shows that sovereign spreads narrow more in countries with weaker fundamentals in response to positive information news shocks, possibly because of the “risk-taking” channel as mentioned in the main text. Oil exporters see their spreads narrow following positive information news shocks when oil prices are lower which to some extent indicates weaker fundamentals—potentially because the positive information news on the U.S. economy are seen as mitigating factors for low oil prices—while countries see their sovereign spreads narrow more when VIX is lower, potentially as sentiment channel is amplified when existing sentiment is strong.

Figure A7: Effects of a standard deviation of information news shocks to sovereign spreads with heterogeneity in country-specific fundamentals, global environment, and policy regimes (basis points)

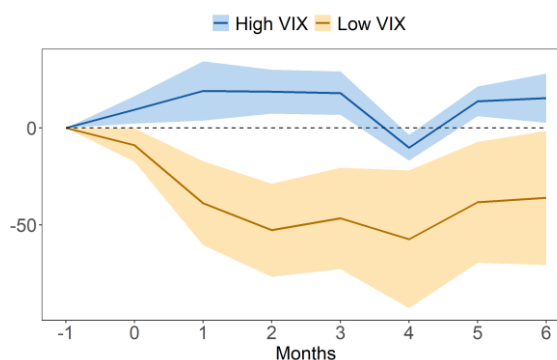




V. Oil price



VI. VIX



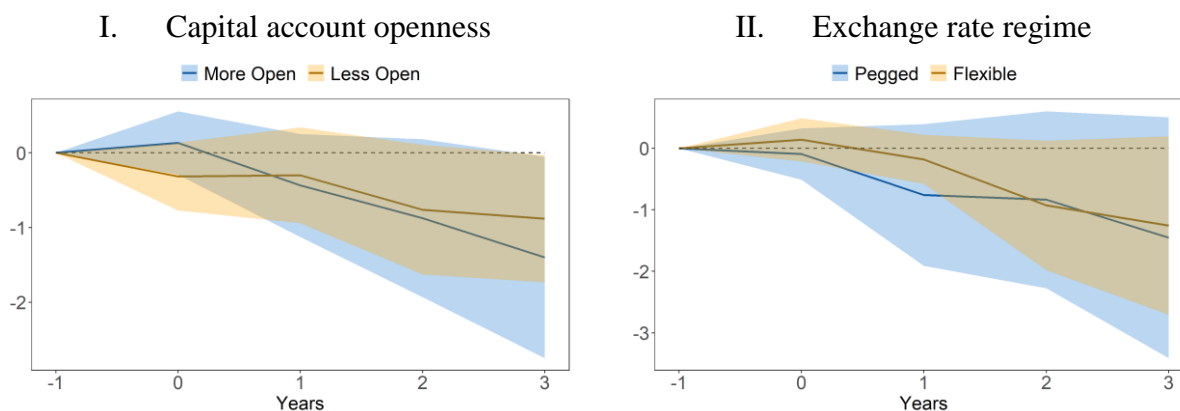
Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in basis points). Responses are obtained by estimating the coefficients β_j^H , β_j^L , γ_j^H , γ_j^L from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.

Appendix V: Role of Capital Account Openness and Exchange Rate Regime

We examine the role played by capital account openness and exchange rate regime in determining spillovers of the two shocks on growth of ME & CA countries.

Starting with contractionary monetary policy shocks, we show that differences in capital account openness and exchange rate regimes only matter in the near term, with shock propagation in the medium-term broadly independent of these two variables (Figure A4). Specifically, we find that a more open capital account or a flexible exchange rate initially help partially offset the shock, with a more open capital account associated to developed financial markets and better financing options to offset shocks and a flexible exchange rate helping to absorb shocks through depreciation.

Figure A4: Effects of a standard deviation of monetary policy shocks to growth with heterogeneity in capital account openness and exchange rate regime (percentage points)

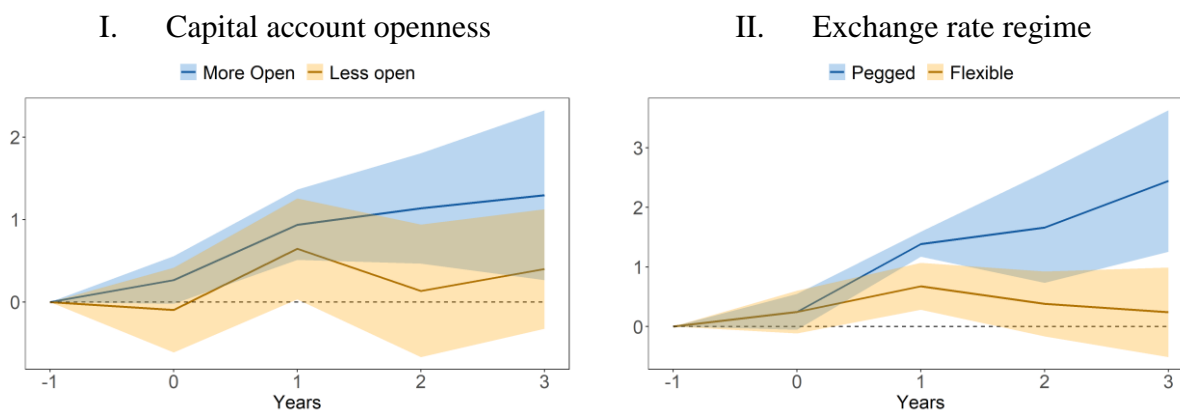


Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the coefficients β_j^H , β_j^L , γ_j^H , γ_j^L from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.

However, differences in policy regimes play a more significant role in determining spillovers from positive information news shocks (Figure A5). Countries with a more open capital account would see larger positive and statistically significant spillover effects on their growth. Combined with results on monetary policy shocks, it implies the benefits of adopting a more open capital account which could shield countries from adverse shocks as well as amplifying positive spillovers from favorable shocks. In terms of exchange rate regimes, countries with pegged exchange rate would see larger and statistically significant positive growth spillovers, possibly through pegged exchange rate serving as a credible anchor and boosting investors' confidence.

Combined with results on monetary policy shocks, it points to the trade-offs of adopting a floating exchange rate which may help absorb external adverse shocks and therefore mitigate adverse impacts but at the cost of limiting the potential positive spillovers in the case of favorable shocks.

Figure A5: Effects of a standard deviation of information news shocks to growth with heterogeneity in capital account openness and exchange rate regime (percentage points)



Notes: Solid lines report point estimates, and shallow areas are 90 percent confidence bands. X-axes denote the response horizon (in months), with 0 being the month of the shocks. Y-axes denote the magnitude of the responses (in percentage points). Responses are obtained by estimating the coefficients β_j^H , β_j^L , γ_j^H , γ_j^L from Equation (4). Estimates are normalized to show responses to a standard deviation of the shocks.



PUBLICATIONS

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