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Why Follow the Fed?

Monetary Policy in Times of U.S. Tightening

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Prepared by Gonzalo Huertas*

ABSTRACT: I conduct interviews with 32 Central Bankers from Emerging Markets and present five unifying themes that explain their behavior when reacting to a U.S. monetary tightening. I then estimate the impulse response functions of their two main monetary tools, the policy rate and foreign exchange interventions, to an increase in the U.S. rate, using the answers from the interviews as a guide for the best econometric specification. I find that most Central Banks react to a U.S. tightening by raising domestic rates, regardless of the exchange rate regime, but their reasons for doing so vary – from controlling inflation to preventing capital outflows.

Why Follow the Fed?

Monetary Policy in Times of U.S. Tightening

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1 Introduction

How do Emerging Market Central Banks react to changes in US monetary policy? And why, for that matter, do they need to react at all?

It is no secret that central bankers around the world pay close attention to the Federal Reserve's actions, but their behavior in response to US monetary policy is often puzzling to external observers. In 2015, for example, the Bank of Mexico rescheduled all its monetary policy meetings to take place exactly one day after those of the Federal Reserve. Why did authorities in Mexico, a country with a floating exchange rate, make interest rate decisions based on those of the United States? In a similar vein, when the chairman of the Federal Reserve hinted at the possibility of tighter US monetary policy in 2013, the Bank of Indonesia responded by raising its own policy rate by 150 basis points. Why exactly does the prospect of higher rates in the US lead to preemptive monetary tightening in an Emerging Market?

In this paper, I arrive at the answer by combining qualitative and quantitative empirical techniques. First, I conduct extensive interviews with Emerging Market Central Bankers, and I ask them how, and why, they adjust their monetary stance in response to a change in policy by the Federal Reserve. Informed by their explanations, I then estimate the impulse response functions of Emerging Markets' policy rates, exchange rates, and foreign exchange interventions, when faced with a change in US monetary conditions.

The results from this joint exercise can be summarized in three takeaways. First, when the US tightens, Emerging Market Central Banks will generally respond by raising rates. Second, this reaction is guided by one of two distinct reasons: either Central Banks are reacting to a rise in inflation caused by currency depreciation, or they are trying to close interest differentials and prevent capital outflows. Floating exchange rate countries are more often associated with the former approach, while countries with managed exchange rates are likelier to be guided by the latter rationale. Finally, there are Central Banks that choose not to adjust their interest rates in response to US monetary policy, and these also fall into two distinct camps: some leave rates unchanged because they experience limited exchange rate pass-through to inflation, others because they prefer to stabilize their currency using foreign exchange reserves.

This paper, then, is an answer to both the 'what' and the 'why' of Emerging Market Cen-

tral Banks' reactions to changes in US monetary conditions. Very rarely are such questions answered by bringing together qualitative and quantitative empirical methods, and yet the behavior of monetary policy is especially suited to such joint methodological approaches: monetary decisions are made by a relatively small number of experts in each country (who often share similar technical backgrounds), a fact that maximizes the returns from interview-based research. Interviews have the advantage of providing in-depth insights into the motivations of the participants involved; their limitation is that samples usually represent a very small fraction of the total population, making results limited in their generalizability. But monetary policy is one of the rare cases where this shortcoming does not apply. The answers provided in the interviews I conduct for this paper, with close to three dozen Central Bankers, describe how policy was conducted in a large share of the total number of Emerging Markets. In addition, many of these insights can be reasonably generalized to the challenges of monetary policy in other countries with similar macroeconomic environments.

These qualitative results become an important input for the quantitative approach used in the second half of the paper. When estimating impulse responses, I rely on the answers provided by Central Bankers both as a guide for the best econometric specification and as an aid to interpret the results. For instance, monetary authorities claim to react to changes in US monetary conditions within a month or two, so I choose to use monthly rather than quarterly data. In addition, the fact that impulse responses show that policy rates increase after a US tightening, for both floating and managed exchange rate countries, is much easier to understand when one has previously asked their monetary authorities why.

This paper fits into a broader set of international macroeconomics literature focused on the spillovers of US monetary policy. It supports the view that floating exchange rates may be insufficient to isolate small open economies from shocks to global rates (Miranda-Agrippino and Ricco, 2021; Rey, 2015), in contrast to the well-established international trilemma (Mundell, 1963). The fact that tighter monetary conditions in the US are contractionary for Emerging Markets raises policy tradeoffs of the type described in Auclert et al. (2021) and Pierre-Olivier Gourinchas (2019), where Emerging Market Central Bankers must decide between increasing domestic rates to stabilize the currency, or remaining passive to preserve domestic credit conditions. These open questions are, in turn, the latest incarnation of decades of discussion on the subtleties of the trilemma, including whether and why Emerging Markets let their currencies float at all (Levy-Yeyati and Sturzenegger, 2005; Shambaugh, 2004; Calvo and Reinhart, 2002).

On the specific question of how other Central Banks react to the Federal Reserve's actions, there has been plenty of research, but the answer has remained hard to pin down. When the US tightens, Emerging Market policy rates have been estimated to go down (Degasperi et al., 2020) just as they have been found to go up (Vicondoa, 2019). Similarly, a rise in US rates has been associated with other countries' currencies appreciating (Ilzetzki and Jin, 2021) and depreciating (Kalemli-Özcan, 2019). An equally challenging task is determining the reasons behind Central Bankers' reactions, and the literature has advanced many possibilities; monetary authorities that mitigate currency volatility, for instance, may be concerned about its impact on inflation, or they may be weighing its effects on dollarized liabilities (Ahmed et al., 2021; Hausmann et al., 2001). Clearly these are difficult questions to answer, and having access to Central Bankers' own explanations can be a useful resource when weighing competing results.

This paper is structured as follows: Section 2 provides context, with an overview of how monetary policy has changed across Emerging Markets (EMs) in recent decades, as well as a brief literature review summarizing the main channels through which the Federal Reserve's actions influence economic conditions in the rest of the world. Section 3 presents the results from the interviews: Central Bankers were asked a list of semi-structured questions during half-hour conversations, inquiring about their policy priorities and the way a US monetary tightening affects their decisions. I summarize their answers and present five common themes underlying their views. Section 4 presents impulse response functions for a number of EM macroeconomic variables when the US tightens monetary policy. I show how results vary depending on exchange rate flexibility, and how insights from the Central Banker interviews can help explain why policy reacts the way it does. Section 5 concludes.

2 Background

2.1 International Spillovers of US Monetary Policy

The actions of the Federal Reserve have a significant impact on global economic conditions, both through their effects on US demand and by steering international capital markets. These spillover effects trigger movements in EM exchange rates, economic activity, and inflation, with which Central Bankers on the receiving end must contend.

Financial spillovers operate through at least three channels: widening interest differentials, raising sovereign risk spreads, and dampening the intermediation of domestic credit. The first of these is straightforward: higher US rates pull capital away from EMs, as investors reallocate their portfolios in search of higher yields; these capital outflows, in turn, depreciate EM currencies against the dollar. For many countries, an abrupt weakening of their currency constitutes an adverse shock to economic activity. While standard open-economy models posit that depreciation boosts exports and is therefore expansionary (Krugman, 2014; Mundell, 1963), many extensions of these models have shown that depreciation can be contractionary for a variety of reasons – from raising non-bond yields to weakening firms with dollarized liabilities (Blanchard et al., 2016; Céspedes et al., 2004; Edwards, 1985).

A second financial spillover is the effect global banks' cross-border activity: by raising funding costs and disincentivizing leverage, higher US rates diminish the supply of loanable funds within EMs. This risk-taking channel is further exacerbated by the currency depreciation described above: when a country's exchange rate weakens, so do the balance sheet positions of its domestic borrowers, narrowing the lending capacity of local banks (Miranda-Agrippino and Ricco, 2021; Bruno and Shin, 2015).

Finally, higher US rates also impact Emerging Markets by increasing sovereign risk premia. Since capital flows are determined by risk-adjusted interest differentials, an increase in sovereign spreads directly translates to further capital flight, placing additional pressure on EM exchange rates (Kalemli-Özcan, 2019).

On the real linkages side, tighter monetary policy in the US will, in general, lead to a reduction in the demand for EM exports, by effecting a contraction in US activity.[1] This adverse shock is especially relevant for countries with a high degree of trade integration with the US, but the Federal Reserve's actions can also reach countries with limited real linkages, by indirectly impacting their terms of trade. An oft-cited case is the effect of a decrease in US activity on the global price of oil and other commodities (Liu et al., 2016; Erceg et al., 2009; Zhang et al., 2008).

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[1]Not every increase in the federal funds rate need constitute an adverse shock to US output. In particular, if the monetary tightening is conveying private information held by the Federal Reserve about the state of the economy, and signaling stronger-than-expected future growth, it may lead to a rallying in financial markets and boost current investment, which in turn might be good news for Emerging Markets (Bauer and Swanson, 2021; Hoek et al., 2020). For now, I focus on the implications of 'pure' rate hikes where this information effect does not play a major role, such that they are inevitably contractionary for the US economy, but I come back to this issue in the Methodology section, where I discuss the identification of US monetary shocks and how to account for the possibility of information effects.

What is the net effect of these various spillovers on EM output? On average, the impact of tighter Fed policy on US imports demand appears to cancel out with the export-promoting channel of EM depreciation, leaving contractionary financial spillovers as the dominant force (Ahmed et al., 2021; Avdjiev et al., 2019; Bernanke, 2017; Ammer et al., 2016). This result is only a general depiction, however, as the influence of US monetary spillovers will vary across countries depending on their specific characteristics, including financial openness, macroeconomic fundamentals, and the stage of their business cycle (Iacoviello and Navarro, 2019; Aizenman et al., 2016; Chen et al., 2016, 2014). A crucial feature that may insulate EMs from the contractionary forces of an increase in US rates is their type of exchange rate regime, a subject that I will turn to momentarily.

The financial spillovers from tighter US monetary policy affect more than just EMs' output – they also may lead to rising inflation, as the ensuing currency depreciation will tend to raise import prices. The magnitude of this exchange rate pass-through depends, again, on country-specific macroeconomic characteristics, including the volatility of the exchange rate and the credibility of monetary policy (Ha et al., 2019). But, in spite of this heterogeneity, the vast majority of countries will experience some increase in inflation, with one-year pass-through estimates ranging from 0.05 all the way to 0.5 (Sopromadze et al., 2021; Giuliano and Luttini, 2019; Goldfajn and Werlang, 2000).

These international spillovers present a challenge for EM Central Bankers: if the contractionary effects of tighter US monetary policy are sizable, and if pass-through to inflation is high, the appropriate policy reaction to maintain price stability (raising the domestic rate) stands in opposition to the monetary stance that would keep output close to potential (lowering the policy rate). In fact, decreasing rates to stimulate economic activity may exacerbate the initial problem, by widening interest differentials and promoting further capital flight. For this reason, monetary authorities may find it optimal to manage exchange rate volatility through the use of foreign-exchange interventions, capital controls, or both. These decisions define their monetary and exchange rate regime, and are the subject of the next subsection.

2.2   EM Monetary Policy vis-à-vis US Monetary Policy

When considering how other Central Banks might react to changes in the Federal Reserve's policies, a good starting point is the "Trilemma" of international macroeconomics, which

holds that countries with an exchange rate that is pegged to the US must follow its policy rate, unless they are willing to impose capital controls.

This principle was easily observable during the 1990s, when various countries in Latin America, Asia and Eastern Europe gave up control over the money supply and fixed their currencies to the dollar in an effort to control inflation. By the end of the decade, however, most countries moved away from *de jure* pegs and took incremental steps towards currency flexibility; at present, the majority of EM regimes exist in a grey area between fixed and floating, ranging from crawling pegs to semi-flexible moving bands. Figure 1, below, shows the evolution of Emerging Market exchange rate arrangements over time, based on the 13 currency flexibility classifications by Ilzetzki et al. (2019). While some countries' regimes still fit the extremes of 'hard peg' or 'fully floating', most have adopted intermediate schemes.

The link between US and EM monetary policy under such currency arrangements is more complex than in the clear-cut options presented by the Trilemma. In principle, countries closer to a hard peg to the dollar should still find their policy rates swayed by the actions of the Federal Reserve, although the fact that authorities are willing to allow some minimal movement in the exchange rate may imply that this process will act with a lag, and not be one-to-one. Meanwhile, EMs on the more flexible end of the spectrum should retain monetary independence unless their currencies experience severe depreciations, in which case they would find it necessary to close, in whole or in part, the interest differential with the US. Empirically, this idea has found support in recent work, which shows that countries with more flexible regimes are better able to manage their domestic rates when the Federal Reserve adjusts its monetary stance (Obstfeld et al., 2019; Klein and Shambaugh, 2015).

Although intermediate regimes with more currency flexibility seem to grant authorities greater control over their policy rates, recent advances in the literature have questioned the idea that complete monetary independence is possible, even with fully floating exchange rates. The reason being that the actions of the Federal Reserve drive a global financial cycle, where tighter US policy lowers asset prices in other countries and places upward pressure on the long end of their yield curves (Miranda-Agrippino and Rey, 2020; Aldasoro et al., 2020; Rey, 2015). Edwards (2015) goes even further, showing that the influence of the Federal Reserve on floating exchange rate countries may extend not just to the long end of their yield curve, but to short rates and the policy rate as well. In these scenarios, exchange rate flexibility does little to insulate EMs from the financial spillovers of the US. In a similar

Figure 1: EM Exchange Rate Regimes since 1990
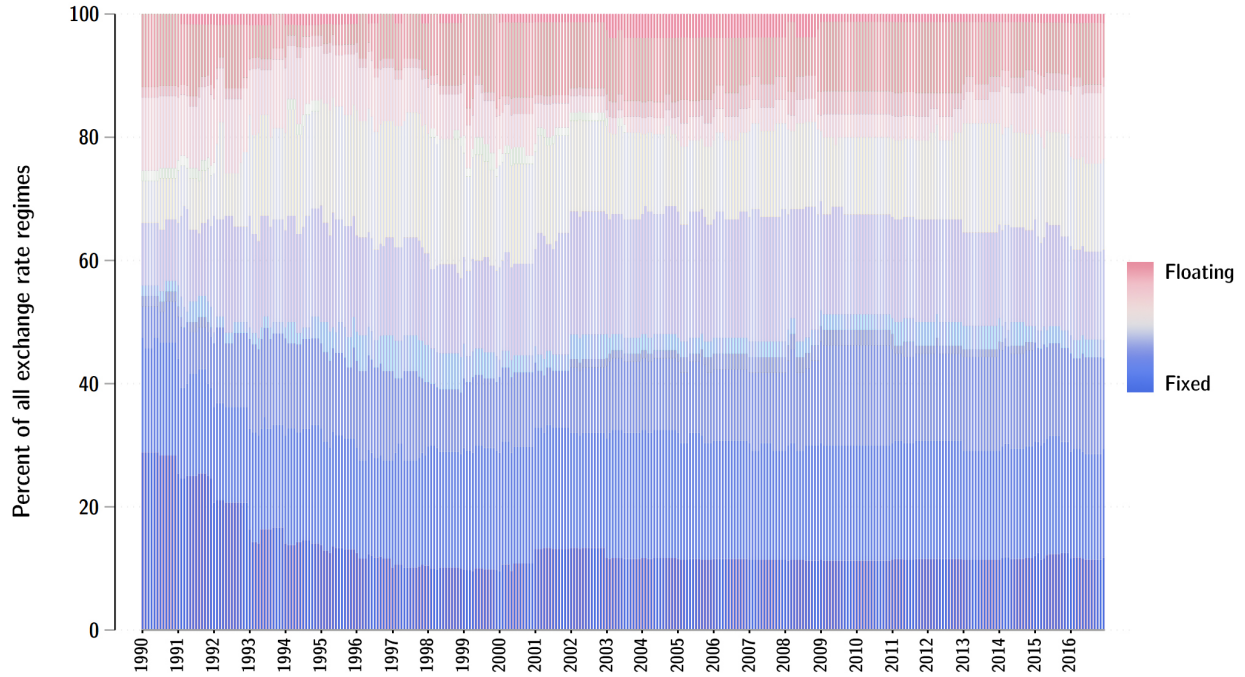
vein, Kearns et al. (2018) contends that countries with flexible regimes may follow the global reference rate for financial stability reasons.

Even under the assumption that monetary independence were feasible, however, EM Central Banks may still follow the Federal Reserve of their own volition. Monetary authorities concerned with stabilizing output during a downturn, for example, could raise rates when the US tightens to prevent any further contractionary effects from currency depreciation (Auclert et al., 2021; Gopinath et al., 2020; Pierre-Olivier Gourinchas, 2019). Alternatively, Central Banks faced with higher US rates may mirror the Federal Reserve simply by pursuing their price stability mandate: in countries with high exchange rate pass-through to inflation, currency depreciation triggers a surge in domestic prices, which may justify tighter monetary policy even at the cost of a reduction in output (Ahmed et al., 2021; Calvo and Reinhart, 2002).

So far, the discussions presented above suggest that, either directly or indirectly, EM Central

Banks are likely to be influenced by US monetary policy. Of course, this does not mean that interest rates in Emerging Markets will follow those of the Federal Reserve immediately and one-to-one, nor that every country will be equally susceptible. To illustrate, consider Figure 2, below, which shows the evolution of the US federal funds rate and EM policy rates over the past three decades. If a relationship exists between them, there is significant variation in the timing and size of such spillovers. This is to be expected, as the reaction of EM Central Banks to changes in US monetary conditions will depend on their individual policy goals, as well as the state of their business cycles.

Figure 2: US Rates and EM Rates
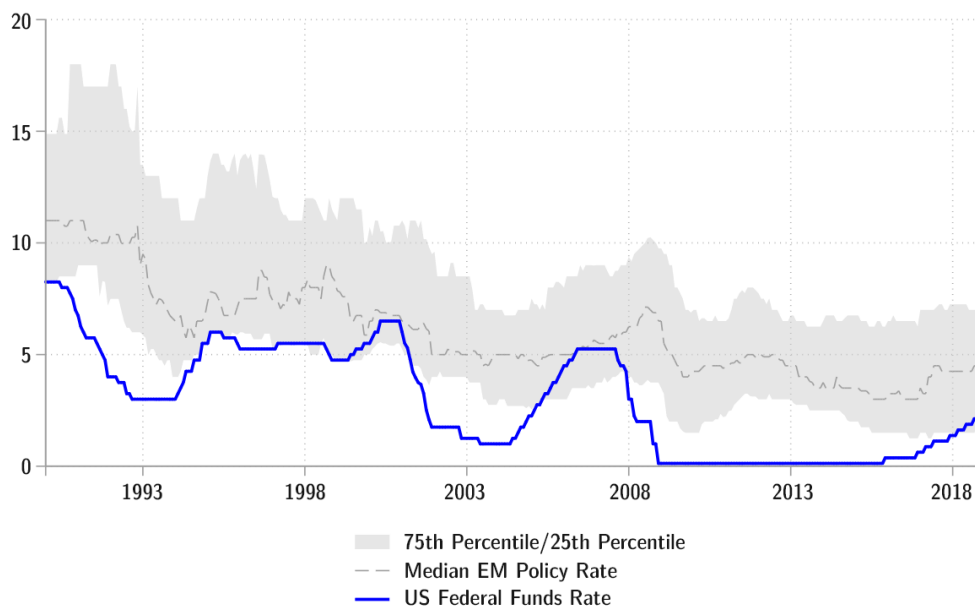
It is worth keeping in mind that different Central Banks have different policy goals (i.e. different Taylor rules), particularly in light of an important institutional development that has taken hold in recent years: the widespread adoption of inflation targeting. Currently, 24 out of 39 Emerging Market Central Banks (EMCBs) either follow an inflation targeting framework or are in the process of adopting one (Ha et al., 2019). The reason this matters within the broader issue of US monetary spillovers is that a strong commitment to price stability can lead EM Central Banks to adjust the policy rate more aggressively in response to capital outflows. Levy-Yeyati and Sturzenegger (2005), for example, suggest that wide movements in interest rates are just as consistent with managed exchange rates as they are with floating currencies whose Central Banks follow an inflation target; especially when exchange rate pass-through is high. Similarly, Ball et al. (1998) provides a simple model where

authorities with a strong commitment to inflation targets are forced to stabilize currency movements, because the transmission of interest rates to aggregate demand operates with a lag, making it hard to manage short-term inflation by operating on the output gap alone.[2]

Where does this brief review of the "state of play" leave us? For one, the issue of whether and how US monetary policy affects other Central Banks' actions is a persistent debate; very much rekindled in recent years, and still an open question. Second, EM Central Banks have experienced significant changes in their institutional frameworks since the 1990s. Currently, most follow some intermediate exchange rate arrangement, somewhere between a float and a peg, and many place inflation as a primary policy goal. Finally, the reactions of Central Banks to changes in US monetary policy are likely to be country-specific: a general answer will depend on whether the net effect of international spillovers are contractionary or expansionary, and whether exchange rate pass-through is a significant concern.

It is against the backdrop of these questions that I explore how EM Central Bankers choose to conduct policy when faced with a US monetary tightening. The most recent, similar work in intent is likely to be Degasperi et al. (2020), which estimates the response of a number of macroeconomic variables in EMs to a US monetary shock within a Bayesian VAR framework. Although the authors provide an insightful approach to recent international monetary developments, my results disagree with theirs, in that I do not find that EMCBs lower their rates in response to a US tightening; neither in my econometric results, nor in the interviews I conduct with Central Bankers to whom I pose this very question.[3]

Another relevant paper is Kalemli-Özcan (2019): it explores the way US monetary shocks drive country-specific changes in sovereign risk, which has a direct impact on interest differ-

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[2]A strong commitment to keeping inflation in check is a common feature of most EMCBs. This commitment may well be even more salient than in Advanced Economies, where inflation expectations have been well anchored for decades. In many of the Central Banker interviews that I present in the next section, a hawkish stance on inflation is a recurring theme, often motivated by the need to reassure the public of authorities' commitment to price stability. In Emerging Markets, this signaling act can be necessary because economic agents' expectations of future inflation are based as much on past changes in prices as they are on the Central Bank's announcements of future policy actions. See Ha et al. (2022); Coibion and Gorodnichenko (2012) for a more extensive discussion.

[3]There are many possible reasons for the discrepancy in our econometric results. For one, we use different measures of the US monetary stance, with this paper focusing on the shadow rate, as discussed in the Methodology section. In addition, the two papers use different instruments for the US rate when estimating the impulse responses. Another difference is the econometric approach to computing impulse response functions: whereas their work relies on a BVAR framework, this paper uses a Local Projections methodology (both econometric techniques produce the same responses with sufficient data, but, in practice, having a limited number of observations leads to differing results).

entials and capital flows. The author's findings complement, rather than overlap with, the results from this paper: the role of country heterogeneity is front and center when discussing susceptibility to changes in US monetary policy, but I do not delve into the implications of country-specific changes in sovereign spreads.

Finally, this paper seeks to contribute to international macroeconomics models, such as the one in Plantin and Shin (2018), where assumptions about the behavior of EM Central Banks play a sizable role in the analysis. The aforementioned work offers a compelling theoretical treatment of why floating exchange rates can help prevent international monetary spillovers, and is built on the idea that small open economies' Central Banks "think like the Federal Reserve" – in that their interest rate rule responds to the increase in inflation triggered by capital outflows and omits any effects on asset prices. In my view, the findings from this empirical paper contribute to such advances in the theory, by shedding light on the thought processes of monetary authorities in small open economies.

To my knowledge, this paper is the first to conduct interviews with Central Bankers, collect their responses into unified themes, and cross-check econometric results against their statements. I hope this approach will inspire other researchers to combine qualitative insights with quantitative techniques as a way to guide empirical work.

3   Interviews with Central Bankers

This section presents the results from the interviews held with 32 Central Bankers from 25 Emerging Markets, discussing their reactions to US monetary policy.

The content is divided in two parts: first, I provide a brief description of the interview design and methodology (with a more extensive explanation included in the Appendix). Then I present the main takeaways from the interviews, collected into a set of five themes that summarize EM Central Bankers' views.

The key message is that EMCBs generally worry about changes in US monetary policy insofar as they trigger capital flows. When this happens, their main priority is to avoid an acceleration of inflation. Depending on the degree of exchange rate pass-through to prices, this may lead them to raise rates or intervene in foreign exchange (FX) markets to prevent excessive depreciation. Countries with low pass-through coefficients are more likely to let

By and large, capital outflows are believed to be contractionary. Most Central Bankers, however, would not lower the policy rate to fend off this recessionary effect, for at least two reasons. First, when faced with rising inflation and declining output, many prefer to prioritize the former. In addition, many Central Bankers explain that if tighter US monetary policy caused a severe downturn in their economies by way of capital outflows, it would be more practical to prevent the depreciation in the first place than to engage in stimulus through expansionary monetary policy.

3.1   Interview Methodology

The participants selected for the interviews were Central Bank authorities who were at the helm of their country's monetary institutions during the 2000-2021 period. Specifically, current and former governors, deputy governors and heads of monetary policy departments, whom I refer to as 'Central Bankers'. I choose to interview participants who've held these roles because they are the ones who directly decide their countries' policy rates.

The sample includes Central Bankers from Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Bolivia, Brazil, Chile, Colombia, Costa Rica, Georgia, India, Indonesia, Malaysia, Mexico, Mongolia, Namibia, Nigeria, Oman, Pakistan, Philippines, Poland, Russia, South Africa and Thailand. For some countries, I interviewed more than one Central Banker, often covering many monetary administrations.

The interview type was semi-structured: five predetermined questions were posed during the conversation, but I allowed Central Bankers to go off-course and discuss other issues too, whenever they wanted to provide additional context or introduce other concerns of their own. The main questions asked were:

1. "Suppose during your time at the Central Bank there had been a sudden, unexpected increase in US rates. If your Central Bank had made no changes to its own policy rate, would you have expected the effect on your country's output to be contractionary or expansionary?".

2. "Suppose instead that your country's Central Bank were able to respond to this US monetary tightening by adjusting its own policy rate. What would have been the most likely response: increase rates, decrease rates or neither?

monetary tightening by adjusting its own policy rate. What would have been the most likely response: increase rates, decrease rates or neither?

[For those who respond 'increase']: Would you raise rates by about as much as the US, or more, or less? Why?".

3. "How long would it have taken for that change in your Central Bank's policy rate to happen?".

4. "On a scale of 1 to 5 (with 1 being "not important at all" and 5 being "very relevant") please rate how important the following transmission channels to your own economy would be, when deciding how to respond to a change in US rates: changes in bank lending, domestic investment, capital flight, domestic inflation, and debt sustainability".

5. "Is a US rate increase equally as relevant as a US rate decrease? In other words, would your monetary policy reactions display symmetry with respect to changes in US rates? Why?".

In designing the semi-structured interviews, I followed the recommendations in Miles and Gilbert (2005): I chose questions that were brief, followed a logical progression, and reflected testable implications from economic theory. For example, Question 1 asks the Central Banker whether a US monetary hike would be contractionary or expansionary for their economy. This sets the stage for them to discuss, in an unstructured manner, their economy's salient features and transmission channels. Only then do I move on to the next question regarding their most likely policy reaction to such a shock.

Each question is designed to guide the choice and assessment of the econometric exercise implemented in the next section of this paper. The answers to Questions 1 and 2 help assess if the impulse response functions are in line with Central Bankers' views. Question 3 provides a sense of the minimum frequency of the data that will be needed to accurately detect Central Banks' reactions. Question 4 identifies the main channels of transmission, and control variables to consider when specifying the EMCB reaction function. Question 5 indicates whether nonlinearity should be a concern.

Of course, these conversations are more than just a guide for the econometric exercise: the answers provided by Central Bankers are an empirical result of their own. In fact, semi-structured interviews are a unique form of research in that they provide two different types

of results. First is the aggregation of the answers. For example, the percentage of Central Bankers answering in the affirmative to: "Is a US hike contractionary for your economy?". These results are presented in the figures below. Second, there are qualitative insights provided by the unstructured answers to the interviews. When asked about their reactions to US monetary policy, Central Bankers didn't stick to 'yes' or 'no': they wanted to explain the economic context that they faced, their motivations when adjusting policy, and the role played by constraints like dollarized private sector liabilities or a recent history of high inflation.

The latter, more qualitative empirical results are harder to aggregate, but are especially important to understanding why Central Bankers behave the way they do. Finding common patterns in respondents' answers, and matching their statements to underlying economic theory, is as much a research challenge as econometric identification. In the rest of this section, I aggregate the insights from Central Bankers' extensive answers by summarizing them into five key takeaways.

Interviews, like any other research method, have a number of shortcomings which have been discussed at length in the literature. For this paper, the main objections of concern are whether the sample is representative, and whether the answers obtained during the conversations truly reflect participants' beliefs.

When it comes to the representativeness of the sample, the research is robust on two separate accounts: first, I have interviewed Central Bankers from enough countries to cover about a third of all Emerging Markets. Second, the research satisfies the 'data saturation' criterion that is commonly applied in qualitative fields: a sample is considered sufficient if no new themes appear after a certain number of interviews (Guest et al., 2006).

The issue of whether participants are answering truthfully is harder to deal with. I have followed the recommendations in the literature to maximize the likelihood of receiving candid responses (Gill et al., 2008): I do not reveal Central Bankers' identities, and avoided direct questions that were likely to put interviewees in a difficult position. For instance, I chose not to ask whether Central Bankers used FX interventions to prop up their currencies.[4]

As far as candid answers go, one surprising feature of the interviews is the degree of transparency with which the Central Bankers discuss politically sensitive issues, such as being

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[4]Many Central Bankers nonetheless raised the issue of FX interventions on their own, in spite of it not featuring in any of the predetermined questions.

pressured by the executive to lower interest rates. Of course, the fact that many of the interviewees were no longer at the helm of their Central Banks also made it easier for them to discuss their policies transparently.

The transcripts of all interviews can be downloaded from the Online Appendix. It is very important, however, to clarify that the statements from these interviews should not be interpreted as the official position of any of the Central Banks from the previously listed countries. Instead, the interview answers should be understood as insights into the general way that monetary policymakers think when balancing their competing goals.

3.2 Results

This section presents the outcomes from the semi-structured interviews with Central Bankers. The figures in the next two pages show the aggregated answers to the questions listed above. The majority of this section, however, is dedicated to describing five common themes that emerge when Central Bankers explain how, and why, they react to a US monetary tightening.[5]

The first theme is that Central Bankers almost unanimously see an increase in US rates as contractionary for their economies, pulling capital away from Emerging Markets and triggering currency depreciation.

Second, the majority of Central Bankers state they would react to a US monetary hike by raising the domestic rate. Even among countries with floating exchange rates, almost half of the interviewed Central Bankers say they would likely tighten monetary policy.[6]

Third, when EMCBs respond by raising rates, they often have different reasons for doing so. Some tighten to reduce the ensuing interest rate differential with the US and prevent capital outflows, while others raise rates in response to an increase in domestic inflation caused by currency depreciation. The latter view features prominently in countries with floating

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[5]When assigning a Central Banker's origin to a geographic region, I place Mexico within Central America and Mongolia within Central Asia. I have made this decision because, otherwise, these countries would be the only members of their geographic regions in the interview sample, which would make it easier to identify them.

[6]When separating interview answers between 'managed' and 'floating' exchange rate regimes, I rely on the country classifications from the Ilzetzki et al. (2019) dataset. The next section provides a more detailed explanation of these definitions.

exchange rates, and makes currency pass-through to inflation an important determinant of EMCBs' reactions to a Fed hike.

Fourth, many EMCBs with a managed exchange rate prefer to use FX interventions (instead of the policy rate) to defend the value of their currency, at least over the short term. Put differently, just because a Central Bank pursues a more rigid exchange rate does not mean it will respond to a US tightening by raising the policy rate in the short term, contrary to what uncovered interest parity and an axiomatic view of the trilemma would dictate.

Finally, a US monetary tightening is more likely to elicit a strong response in EMCBs than a US monetary easing. Most Central Bankers agreed that their response to a change in US rates would be asymmetric, with a reaction being much more likely when the Federal Reserve tightens. A recurrent explanation for this behavior is that capital outflows are more destabilizing to their economies than capital inflows.
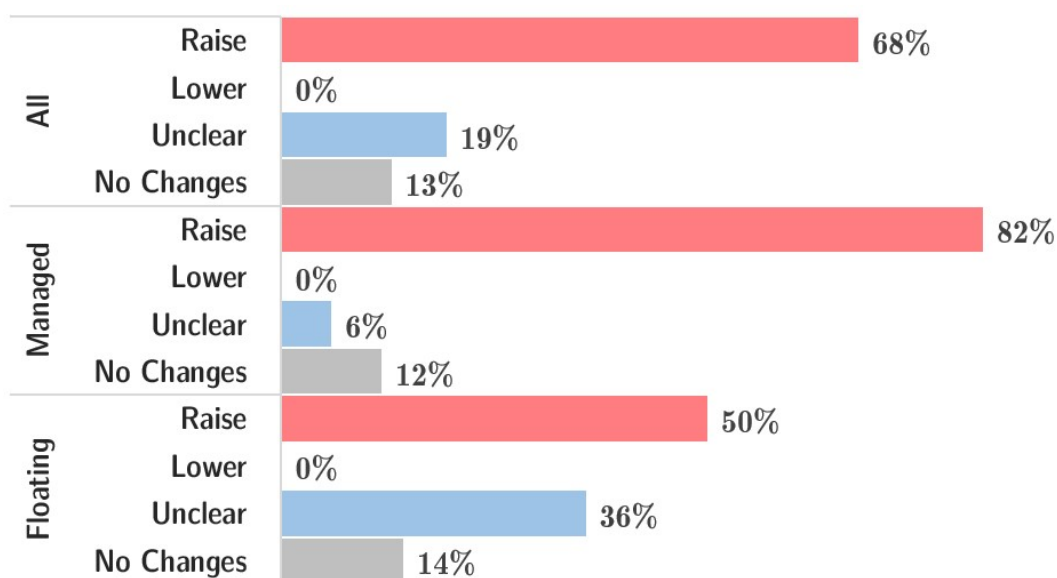
These five key findings are explored in more detail below, providing quotes that highlight why Central Bankers conduct policy the way they do. Taken together, these insights present a renewed way to interpret the trilemma: having a floating exchange rate may not insulate a country from raising rates in response to tighter monetary policy in the US, but this result is mostly an outcome of Central Bankers' own objective function – namely, their focus on inflation. Meanwhile, countries that choose to manage their exchange rates (but not to the extreme of a currency peg to the dollar) may, or may not, raise domestic rates to prevent capital outflows: there are other tools authorities can use to defend their currency, particularly FX interventions, at least in the short run.

Emerging Markets are, of course, very heterogeneous, and country-specific conditions influence EMCBs' concerns. Some countries feature high levels of dollarization, others are very sensitive to commodity prices, and such characteristics can amplify the effects of a change in US monetary policy. As is shown below, Central Bankers keep these issues very much in mind.

Question 1: *"Would an unexpected increase in US rates be contractionary or expansionary for your economy, assuming your Central Bank made no changes to its own policy rate?"*

Contractionary	84%
Expansionary	10%
Neither / Unclear	6%

Question 2: *"How would you adjust your policy rate in response to an unexpected increase in the US rate of 50 basis points?"*

All	Raise	68%
	Lower	0%
	Unclear	19%
	No Changes	13%
Managed	Raise	82%
	Lower	0%
	Unclear	6%
	No Changes	12%
Floating	Raise	50%
	Lower	0%
	Unclear	36%
	No Changes	14%

Question 3: *"If you were to react and change the monetary stance, how quickly would you expect this to happen?"*

Within the week	20%
Within the month	16%
Within the quarter	44%
Within the year	20%
Longer than a year	0%
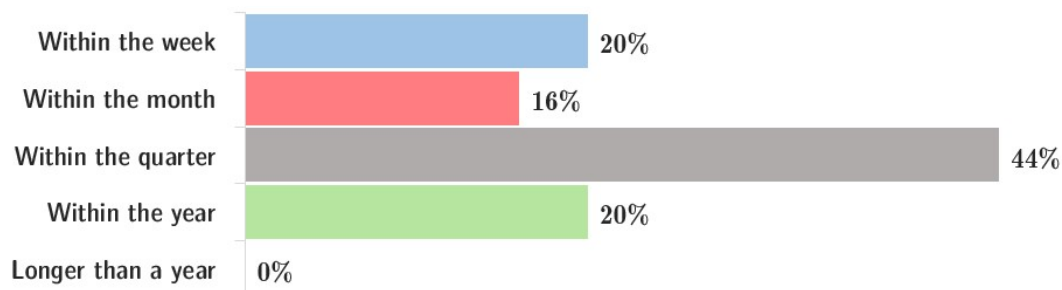
Question 4: *"On a scale of 1 to 5, how much do each of the following variables influence your decision to respond, insofar as they are affected by a change in US rates?"*
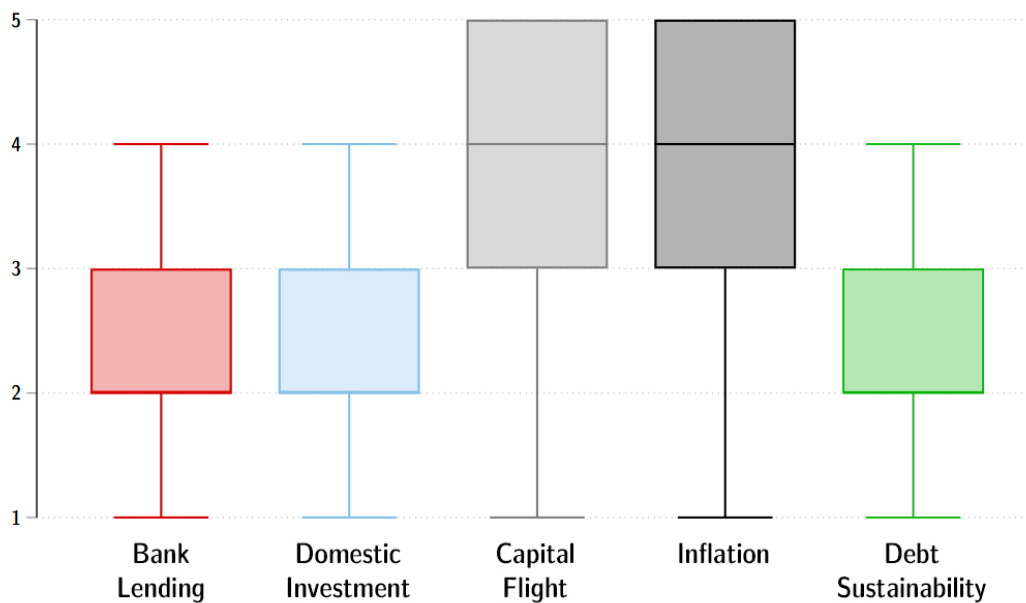
Question 5: *"Is a US rate increase equally as relevant as a US rate decrease? (ie. would your monetary policy reaction be symmetric?)"*
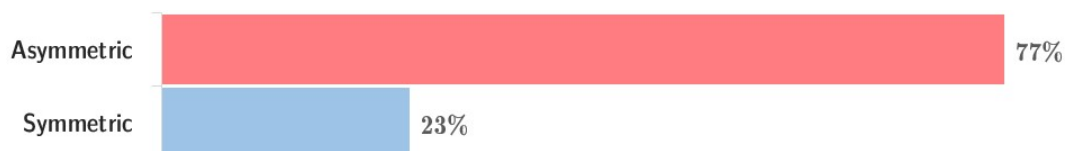
There are other relevant insights to be found in the full interviews beyond the five common themes presented below – for instance, the relationship between a country's recent history of inflation and its Central Bankers' emphasis on the policy rate as a tool used solely for price stability. I leave these as venues for future research.

3.2.1 Theme 1: Fed hikes are contractionary, pulling capital away from EMs.

Most Central Bankers contend that contractionary monetary policy in the US is bad news for the rest of the world. More than four out of five EMCBs in the interviews agreed that a tighter monetary stance in the US would have a negative effect on their economies' output.

The main reason why tighter monetary policy is contractionary for EMs is that it triggers capital outflows. The drying up of dollar liquidity reduces the provision of domestic credit, 'flight to quality' increases the yields on EM bonds, and the depreciation of the currency puts pressure on domestic agents with dollar-denominated liabilities.

> "It is clearly contractionary. It will immediately depreciate [our] currency, almost on the moment it was announced (...), the depreciation will normally carry a widening of the interest rate curve. So ceteris paribus everything will be more contractionary".

(Central Banker 1, Latin America and the Caribbean, Floating)

> "Contractionary. A wide interest differential leads me to think of capital outflows".

(Central Banker 2, South/Southeast Asia, Floating)

> "Usually contractionary. The reason is that, if rates in the US increase, our portfolio investors will want to move their money [away]. (...) There are occasions when this does not happen, but only if our rates were already very high".

(Central Banker 3, Africa, Managed)

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> "The textbook approach is 'let the local currency devalue, so you rebalance and adjust the current account'. But, in reality, for many countries with a dollarized economy that's a big problem. Because it increases the debt burden of households, firms, businesses, heavily. Banks get nervous".

(Central Banker 4, Central Asia, Managed)

The fact that capital flows are Central Bankers' primary worry when facing tighter monetary policy in the US is in line with the findings in Ammer et al. (2016), where the net impact of international spillovers from US monetary shocks is driven by the financial channel of transmission.

Some qualifications are in order, though. First, the reasons behind the US tightening matter. Although the standard assumption is that higher rates in the US will increase interest differentials and pull money away from Emerging Markets, it is possible that they are a signal of good news (as a response to better-than-expected performance of US output). In such cases, tighter US monetary policy may imply stronger future demand for Emerging Market exports, and this trade balance effect may partially offset the financial channel of transmission.

> "The question is, why is the Fed doing that? Is it worried about inflation, or does it raise rates because it sees growth perspectives that are much better than expected? If a booming US economy is coming, that would increase our trade balance".

(Central Banker 6, Latin America and the Caribbean, Managed)

> "The theory is: if the Fed is tightening preemptively because things are going well, it shouldn't be so bad. In my experience, it almost always is [bad]. Talk to any Mexican - the minute they see the Fed raising rates, they say 'this is likely to be bad news' and they run for cover".

(Central Banker 7, Latin America and the Caribbean, Floating)

Second, a small minority of EMCBs posit that an increase in US rates would be expansionary for their economies, thanks to the impact of a depreciation on their external balance.

> "On the one hand, [a US rate increase] might cause contraction in the global economy, accompanied with plummeting commodity prices (...). On the other hand, the capital outflow (...) would trigger exchange rate depreciation, and expansion of the external demand. Historically the latter expansionary channels prevail".

(Central Banker 8, Central Asia, Managed)

3.2.2 Theme 2: The majority of EMCBs would react to a US monetary tightening by raising the domestic rate.

Close to 65% of the interviewed EMCBs state they would increase rates in response to tighter monetary policy in the US. The amount of the adjustment varies, with many favoring an increase greater than one-for-one to compensate for the change in global risk aversion in addition to the widening interest differential with the US.

> "When there is a raising cycle [in US rates], we not only raise synchronously, but we raise a little more, because the dollar becomes more attractive and we need to not only conserve, but make our currency more attractive".

(Central Banker 9, Latin America and the Caribbean, Floating)

> "Any increase in the US rate makes US treasuries more attractive. That means that [investors] will almost immediately pull their funds back to the US, and that pressures our exchange rate. And then you have to do something. Most probably, you raise your own rates higher than what the US has raised".

(Central Banker 10, Africa, Managed)

In contrast, there are many Central Bankers who see no immediate reason to use their monetary instrument to respond to such shocks. When asked whether they would react to an unexpected increase in the US federal funds rate by changing their own domestic rates, 19% of the interviewed Central Bankers answered that it was uncertain. Many of these were

Central Bankers from countries with relatively flexible exchange rates, who contended that the answer would depend on the stage of their business cycle. Of those who said that their policy rates would not necessarily change, some cautioned that they would still likely see an increase in bond yields, in line with the findings in Curcuru et al. (2018) and Rey (2015).

> "We don't follow the Fed these days. Take the Global Financial Crisis, for example. Our Central Bank lowered rates because there was an economic contraction, not because it was following the US. And not only because of that, but because inflation went down".[a]
>
> _____
>
> [a]This quote does not necessarily imply that the participant was at the Central Bank during the Global Financial Crisis.

(Central Banker 11, Latin America and the Caribbean, Floating)

> "We did not follow the Fed rate basis point for basis point. There was a stronger relationship between the US 10-year [bond yield] and our 10-year [bond yield] than there was between the Fed policy rate and our policy rate. The reason is that capital flows come from the bond market, not through deposits".

(Central Banker 12, Africa, Floating)

> "The point is we had to maintain the [yield] differential, (...) not the policy rate differential. (...) If we wanted to increase the yield, it had to come in coordination with the government".

(Central Banker 13, South/Southeast Asia, Floating)

Almost none of the interviewed Central Bankers believe they would react to tighter US monetary policy by lowering their domestic rates. An important reason for this behavior seems to be that, for many EMs, a depreciation lowers output but raises prices, not unlike a supply shock. Faced with an increase in inflation and a decline in economic activity, most Central Bankers choose to stabilize the former.[7]

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[7]If depreciations are contractionary for EMs, then, in principle, their effect on inflation might be unclear:

> "I would not react [to a US hike] by lowering rates. (...) It may have happened that the Fed raised rates and we lowered, but it would be pure coincidence".

(Central Banker 14, Latin America and the Caribbean, Floating)

> "Lowering rates would make sense only if capital outflows generated such a disinflation through their [contractionary] impact on economic activity that they prompted us to lower rates, but I don't see that happening. The pass-through effect [on inflation] weighs more".

(Central Banker 6, Latin America and the Caribbean, Managed)

> "The exchange rate channel is much more important for our inflation than the output channel. What I mean is that the contractionary effect on our economy from the rise in US rates is not enough to offset the inflationary effect of the depreciation".

(Central Banker 15, Latin America and the Caribbean, Managed)

3.2.3 Theme 3: When EMCBs respond by raising rates, it is not always to defend the currency.

Faced with tighter US monetary policy, some EMCBs raise rates to prevent capital outflows and keep their exchange rates stable, while others raise rates because currency depreciation puts upward pressure on their domestic inflation.

The behavior in the first group is representative of the usual prediction of uncovered interest parity: to prevent capital outflows, countries must keep domestic rates close to the global reference rate. For countries with a 'hard' peg to the US dollar, the reaction is, of course, immediate and mechanical – their explicit policy rule is to follow the US federal funds rate.

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while the fall in output exerts downward pressure on prices, a weaker currency tends to raise the price level by way of its effect on imported goods. Those Central Bankers who weighed in on this issue suggested that the latter force dominates in their countries; a position that is supported by the literature more broadly (Carranza et al., 2009).

For countries with a managed currency that is not completely pegged, the decision to follow the Federal Reserve and close the interest differential may happen with a lag, depending on how long it takes for capital outflows to occur.

> "Whatever change in the US rates, [we] will follow and do the same".

(Central Banker 17, Middle East, Managed)

> "Investors are trying to exit on a short term basis to cover their positions. You have less demand on local currency borrowing, so the local currency is depreciating (...) So you have immediate action that you have to take. (...) We [would have responded by] overplaying the policy rate increase".

(Central Banker 4, Central Asia, Managed)

The second group of Central Banks that respond by raising rates corresponds to countries with more flexible exchange rates, where depreciation leads to a significant rise in inflation. This makes exchange rate pass-through, and the stage of the domestic business cycle, important determinants of EMCBs' reactions to a tightening in US monetary conditions.

> "[People] would tell me: 'Look at all these capital outflows, we're going to have a balance of payments crisis!'. And then I'd say: the currency will adjust. If it happens that we get pass-through, and it generates inflation, then I will react".

(Central Banker 1, Latin America and the Caribbean, Floating)

> "We needed to have a view of what we thought the pass-through to inflation was. So the question would be, what does today's inflation rate mean for inflation within 18 months? And we would respond to that. That was very important for us. I think today our pass-through is about 0.15 or 0.20".

(Central Banker 12, Africa, Floating)

> "If there was pressure on the exchange rate and that impacted the inflation forecast, then we would have responded. (...) [But] pass-through has been going down over time. Now it's estimated to be between 0.15 and 0.20".

(Central Banker 6, Latin America and the Caribbean, Managed)

> "The channel would have been through exchange rate and inflation. It may have taken longer, but eventually we may have [reacted]. Depends on where we were on our cycle".

(Central Banker 19, Eastern Europe, Floating)

The fact that EMCBs might choose to let the currency depreciate and raise rates some time later is revealing, as it addresses an open question within the literature introduced in the previous section. If capital outflows, by way of tighter US monetary policy, are contractionary for EM economies, Central Banks face a dilemma: they can either lower rates to stimulate output, but jeopardize their inflation mandates, or they can raise rates to contain the acceleration in prices, at the cost of further recession.

According to the interviews, many Central Bankers would prioritize inflation over the output gap, barring exceptional circumstances. This view is supportive of a long line of research which has contended that countries with a strong commitment to price stability may find it optimal to tighten when global rates increase, regardless of their exchange rate arrangement (Levy-Yeyati and Sturzenegger, 2005; Calvo and Reinhart, 2002). This view seems to be particularly salient among EMCBs in countries that have adopted an inflation targeting framework.[8]

> "The weight I would have put on the output gap, in my Taylor rule, was zero. Because divine coincidence might not always happen, and price stability should always prevail".

(Central Banker 6, Latin America and the Caribbean, Managed)

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[8]In the interest of brevity I only include two quotes related to this point, but it is a remarkably common view among the interviewed Central Bankers. Readers interested in conducting research on this behavior are encouraged to consult all the interview transcripts in the Online Appendix.

> "Our main mandate was inflation, that is what we most cared about, and when we made decisions we looked first at inflation. (...) [But] how much you care about inflation and how much you care about output is not black and white".

(Central Banker 16, Central Asia, Managed)

Some Central Bankers argued that their reaction to a US monetary hike is uncertain, and in this case their answers can be divided into two camps. First, there are those who believe they would not react under most circumstances, usually because they do not believe a rise in US rates would jeopardize their inflation targets. Then there are those who argue they may or may not react, depending on the stage of their business cycle at the time of the shock and whether the ensuing depreciation is especially high.

> "Why would I be concerned about US rates? Because my exchange rate will depreciate and that will lead to higher inflation? Pass-through isn't high".

(Central Banker 20, Latin America and the Caribbean, Floating)

> "Suppose the US adjusts upward. We didn't have to follow immediately, because the recovery in our economy may not have been as strong as the US recovery. (...) If we thought the timing was not good for us to increase our own policy rate, then we didn't have to follow".

(Central Banker 2, South/Southeast Asia, Floating)

3.2.4 Theme 4: EMCBs with managed exchange rates often rely on FX interventions rather than the policy rate to defend their currency.

Central Bankers often have an incentive to prevent strong movements in their currencies – whether to avoid inflation, protect firms with dollar liabilities, or preserve the stability of the banking system.

But, in contrast to what uncovered interest parity would dictate, many EMCBs do not defend their currency by raising the policy rate to match the change in the US. Instead, they use foreign exchange interventions.

> "Other Central banks prioritize the interest rate. In our case, we prioritized our mixed policy, we would not have started by using the interest rate. (...) We intervened in the spot market, in the forward market, and we also intervened in the government bond yield secondary market. The exchange rate policy would be the first policy taken.

(Central Banker 13, South/Southeast Asia, Floating)

> "I would not have touched interest rates in the first place. (...) The first line of defense is FX interventions, selling dollars, to give some comfort to the market. The second line of defense would be macroprudential, and then maybe some capital controls. Domestic interest rates would be the last instrument, because it sends signals beyond the currency market".

(Central Banker 5, South/Southeast Asia, Managed)

> "Our reaction, rather than raise rates, was to sell reserves, and that's something we shared with Southeast Asian countries. In times of volatility, we gave markets exchange rate predictability. [Other countries in Latin America] have a sizable floating capacity, and the reaction for them could be to raise rates".

(Central Banker 15, Latin America and the Caribbean, Managed)

Why do some Central Bankers prefer to use FX interventions as their main tool to defend the currency? The answer is that, in their view, the policy rate may not always be the best instrument to manage capital outflows: some prefer to use the policy rate exclusively to control inflation, others are wary of the effects on economic activity that come with raising domestic rates to close the interest differential.

> "Raising rates to combat capital outflows is not something you can win, because the capital flight knows there is a limit to how much you can raise rates. You can't raise them to 100%. You're not going to kill the economy. If that's your battle, almost surely you will lose it.
>
> So you have to say: 'I don't really care, capital will do what it wants, I'm focused on inflation'. And in the process you hope that capital basically says: 'If they will control inflation, the currency will not move much, and I feel okay sitting here' ".

<div align="right">(Central Banker 21, South/Southeast Asia, Managed)</div>

The fact that some Central Bankers might defend their currency through FX interventions without raising the policy rate is at odds with an axiomatic view of the Trilemma and the interest parity condition: in principle, any effort to prevent depreciation that does not involve closing the interest differential should be doomed to fail, as capital outlflows would continue until expected returns between both countries had been equalized. However, the literature has long recognized that uncovered interest parity tends to hold better in the long-run than the short-run (Engel et al., 2021; Chinn and Meredith, 2004; Fama, 1984). When portfolio adjustments are costly, or financial frictions prevent asset holders from divesting immediately, monetary policymakers can temporarily defend their currencies through foreign exchange interventions alone, as capital slowly trickles out.

> "Let's say the initial foreign exchange interventions didn't work, the pressure was getting worse, and our local currency depreciated excessively. For me, that's the time when we would have increased our policy rate".

<div align="right">(Central Banker 13, South/Southeast Asia, Floating)</div>

3.2.5 Theme 5: a US monetary tightening has stronger effects on EMs than a monetary easing.

The vast majority of Central Bankers agreed that when the US adjusts its monetary policy the effects are nonlinear. Tighter US monetary policy has stronger implications than a rate

cut, and is likelier to lead EMCBs to react. There are at least two reasons raised for this asymmetry: first, global financial markets might be reacting differently when the Federal Reserve raises rates, particularly when it comes to perceptions of sovereign risk; second, capital outflows may be more destabilizing to EMs than capital inflows.

> "The effect is much faster when the Federal Reserve's rate goes up than when it goes down".

(Central Banker 11, Latin America and the Caribbean, Floating)

> "The effect is not symmetric, because we overplay our rate increase, because there's a change in risk. We are more easily tolerant to the lowering of US rates".

(Central Banker 4, Central Asia, Managed)

> "I would say there would be a certain element of asymmetry in the sense that Fed hikes would be more of a concern for us, because of the capital outflows. Fed cuts... we were a little less worried about capital inflows, and had a sense we could handle them. Except in periods of extreme capital inflows".

(Central Banker 21, South/Southeast Asia, Managed)

4   Central Banks' Reactions in the Data

The interviews presented in the previous section portray unifying themes among EM Central Bankers. Almost all see tighter US monetary policy as contractionary, and most would respond by raising the domestic rate. Some do it to prevent capital outflows while others are reacting to a rise in domestic inflation. And when Central Bankers try to stabilize the currency, not all use the policy rate; some prefer to rely on FX interventions.

This section contrasts those themes against the data. I show how a US monetary tightening impacts EMs' policy rate, FX interventions, inflation, and exchange rate. I am especially interested in corroborating the inflation-focused behavior described in the interviews.

The content is divided into three subsections. First, I introduce the methodology: using Local Projections to estimate the impulse response functions (IRFs) of a number of EM macroeconomic variables. Then, I present the results: when the US tightens, most EMs tighten as well, and countries with managed exchange rates also conduct FX interventions to stabilize their currency. I find evidence in support of the idea that Central Bankers in floating exchange rate countries raise rates in response to pass-through to inflation. Finally, I discuss a number of robustness checks.

4.1 Methodology

I estimate the impulse response of EM policy rates and a number of other macroeconomic variables to a US monetary tightening, using a Local Projections with Instrumental Variables (LP-IV) methodology. The baseline framework is described below, and an extension with additional controls and no instrumental variables is presented in the following subsection.

Local Projections are a relatively novel method of estimating impulse response functions, compared to more established approaches in the literature like Vector Autoregression (VAR). A general introduction to LPs can be found in Jordà (2005); for a comprehensive discussion of how this methodology's estimates compare to those produced with a VAR, I encourage the reader to consult Plagborg-Møller and Wolf (2021). In a nutshell, LPs estimate the same impulse responses that VARs do, but the procedure is done separately for each horizon $t+h$, regressing the future realization of the dependent variable on current and past covariates.

I have relied on the insights from the interviews in the previous chapter to guide some of my decisions on the best econometric approach. First, when it comes to frequency, I use monthly data, since most EM Central Bankers agreed that their reaction to a US tightening would happen within a few months or less. Second, since a large number of Central Bankers mentioned that the effect of changes in US rates is asymmetric (in that rate hikes produce much stronger changes than rate cuts), I include an interaction term that captures the would-be nonlinearity inherent to US tightening cycles. Finally, when instrumenting the US rate using identified shocks from the literature, I rely on comments provided by the Central Bankers to corroborate the results from the different econometric approaches; this last point is explained in further detail in the next subsection.

The sample is composed of an unbalanced panel of 27 Emerging Markets covering the years

1990-2019. The sample is unbalanced for primarily two reasons: first, because some countries did not have a reference policy rate during certain periods (in particular, when their Central Banks chose to target monetary aggregates) and, second, because I choose to drop country-specific observations during episodes of severe monetary instability, such as the Latin American hyperinflations of the early 1990s and the Asian Financial Crisis of 1997.

The countries included in the sample are: Argentina, Armenia, Azerbaijan, Brazil, Chile, Colombia, Costa Rica, Georgia, Hungary, India, Indonesia, Israel[9], Jordan, Korea, Malaysia, Mexico, Mongolia, Nigeria, Pakistan, Paraguay, Peru, Philippines, Poland, Russia, South Africa, Thailand and Turkey.

When estimating impulse responses, I will often split the sample between countries with flexible exchange rates and those with more predetermined ones. To determine the exchange rate regime I rely on the dataset from Ilzetzki et al. (2019). I define a country as having a 'managed' exchange rate if its regime is a de facto crawling band that is narrower than 2 percent, or anything more rigid than that (such as a crawling peg or a preannounced horizontal band). The remaining countries, mostly those with moving bands and managed floats, I refer to as 'floating'.[10]

The data sources for the variables included in the regressions are described in the Appendix.

4.1.1 Local Projections

To find the response of a given variable y for country i to a tightening of US monetary policy, I estimate the following equation:

$$y_{i,t+h} = \beta_{0,i} + \beta_{1,h} \cdot i_t^{US} + \beta_{2,h} \cdot (\delta_t \cdot i_t^{US}) + \beta_{3,h} \cdot \delta_t + \sum_{j=1}^{k} \Gamma'_{t-j}\beta_{4,h} + \tau'_t\beta_{5,h} + \epsilon_{t+h} \qquad (1)$$

For $h = 0, 1, 2....$

Where i^{US} is the US rate, δ_t is a dummy variable equal to 1 during periods of US monetary

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[9]Although Israel and Korea are currently considered Advanced Economies, I include them in the sample because they were categorized as EMs for a relevant portion of the period of interest. They share a similar monetary history with other EMs, having contended with very high inflation during much of the 1980s.

[10]In terms of the Ilzetzki et al. (2019) dataset, I define 'floating' as any country with a Coarse Classification Code between 3 and 4.

tightening and 0 otherwise,[11] and Γ is a vector of lagged controls which includes the dependent variable y and the US rate. Finally, τ is a vector of linear and squared time trends; I include these because many emerging markets experienced moderate-to-high inflation during the 1990s, which was only brought under control around the turn of the century, and, as a result, their nominal policy rates exhibit a downward trend. The term $\beta_{0,i}$ indicates country fixed effects (Jordà and Taylor, 2016). The term $\beta_{1,h} + \beta_{2,h}$ captures the effect of a US monetary tightening on the dependent variable of interest.

Note that h is the number of time periods in the IRF horizon, and k is the number of lags for the controls. I set $h = 12$ because my interest is in the short-to-medium run reactions in EM monetary policy. The number of monthly lags is set to $k = 12$, following the literature standard of four quarterly lags (Ramey, 2022) and in keeping with the finding that Local Projections perform best when the number of lags is at least equal to the IRF horizon. Since LP residuals are autocorrelated by construction, I use heteroskedasticity and autocorrelation-robust (HAC) standard errors.[12] Note also that the regressions given by equation (1) are specified in levels; LPs can be conducted either in levels or first-differences, and I choose the former given that interest rates cannot be nonstationary (as they are limited by the zero lower bound).[13]

The key EM dependent variables of interest are the monetary policy rate, inflation, the exchange rate (in logs), and the Central Bank's FX reserves (also in logs). Later I will extend the analysis by also estimating the response of inflation expectations, using a more limited sample.

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[11]I define these periods of monetary tightening as: December 1992 to December 1994 (corresponding to the 'preemptive anti-inflationary action' that marked the beginning of the announcements of a federal funds rate target), January 1999 to November 2000 (the cautious tightening period that began with the reversal of the 75 basis point easing from Fall 1998), January 2004 to August 2007 (corresponding to the period of gradual, protracted increases in rates that ended with the global financial crisis), and April 2014 to July 2019 (when the Federal Reserve embarked on a joint normalization effort involving short-term rates and the unwinding of its large-scale asset purchases program). See Potter (2018); Rudebusch (2007); Goodfriend (2002) for a detailed account.

[12]Recent advances in the literature have shown that HAC standard errors are unnecessary if one uses lag-augmented Local Projections with heteroskedasticity-robust Eicker-Huber-White standard errors. This approach, however, is only valid when the one-step-ahead forecast errors in the VAR representation of the data are conditionally mean-independent of future forecast errors. Since the results in this application do not change much regardless, I err on the side of the more conservative option. See Montiel Olea and Plagborg-Møller (2021).

[13]Although it is impossible for them to be nonstationary, previous research has shown that policy rates are long memory processes that often behave similarly to one with a unit root (Caporale et al., 2017; Shea, 1991; Campbell and Shiller, 1987). This is another reason why I include a large number of lags in the regressions.

There are two main challenges in properly identifying the changes in US monetary policy reflected in equation (1). First is the question of which interest rate better represents the US monetary stance - that is, the term i^{US}. Second is the problem of endogeneity, which may arise, for example, if the Federal Reserve were reacting to economic developments that are in turn affected by changes in US monetary policy.

On the question of which measure of the interest rate to use, there are many possible choices, from the US policy rate (the federal funds rate) to yields on US government bonds. The federal funds rate is especially appealing because it is the explicit reference rate for countries with hard pegs to the dollar, most of which set their own policy following a mechanical rule such as "the federal funds rate plus a risk premium of X percentage points". Unfortunately, the federal funds rate is also an imperfect measure of the monetary stance of the US because of the zero lower bound period. During and after the global financial crisis, the Federal Reserve was unable to lower the policy rate below zero, but still pursued unconventional easing policies, which the federal funds rate does not adequately capture. The yield on 1-year US treasuries features a similar problem.

For this reason, I use the Wu and Xia (2016) "shadow federal funds rate", a model-derived measure of the US monetary stance. The shadow rate is an estimate of what the effective federal funds rate would have been if it could dip below zero, estimated from a term structure model using one-month forward rates. Whenever the shadow rate is above 25 basis points, it is equal to the model-implied one-month rate by construction. Hence, the shadow rate tracks the actual US policy rate during normal times, but adequately reflects its counterfactual foray into negative territory during zero lower bound periods.[14] Figure 8, below, shows the evolution of both monetary measures over time.

The shadow rate also reflects the monetary stance that appears to be most relevant to EM Central Bankers, as explained in their interviews: most of them react to changes induced by US policy on financial conditions, rather than to changes in the headline federal funds rate itself. Since the shadow rate is constructed from observed forward rates, it can better capture the financial sentiment implied by changes in US monetary policy (Christensen and Rudebusch, 2016).

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[14]Using yields on longer-term bonds, such as the US 10-year yield, would avoid the zero lower bound problem, but would confound market expectations of future short-term interest rates with the risk of holding longer-maturity assets. See Christensen and Rudebusch (2012) for further detail on the decomposition of nominal yield curves into short-term rate expectations and term premia.

Figure 8: Federal Funds Rate vs Shadow Rate
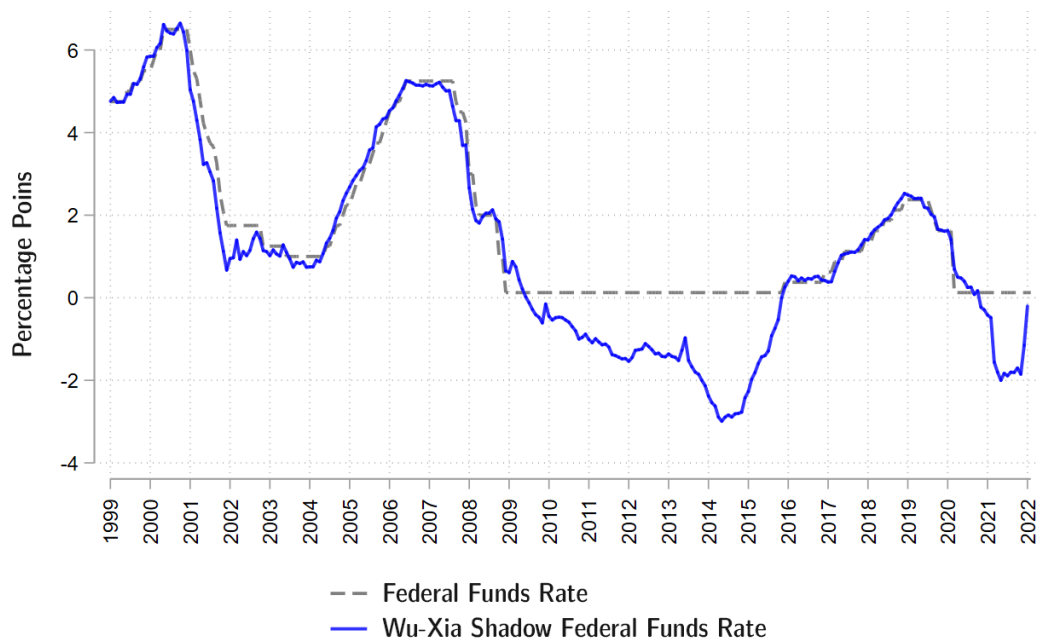
Having decided on a measure for the US rate, there remains the issue of bias in estimating (1) through OLS. One potential problem is simultaneity, if the Federal Reserve's actions affect the dependent variables while these, in turn, influence the policies of the Federal Reserve. Then there is the issue of anticipation: changes in US rates may already have been expected and "priced in" by the market, such that when the actual policy change occurs it no longer triggers any movement in the dependent variables of interest.

Simultaneity is a relevant concern when dealing with the effects of the Federal Reserve's actions on US economic conditions, but much less so when dealing with Emerging Markets. It is hard to argue that the Federal Reserve sets its policy rate in response to a recession in Chile or rising inflation in South Africa. Although this was not always the case, international considerations appear to have played little to no role in the institution's decisions since at least the 1980s (Eichengreen, 2013). Simultaneity is therefore not likely to be a significant source of bias.[15]

The question of anticipated versus unanticipated changes in US monetary policy cannot be as easily dismissed, though. There is an extensive literature showing that market expectations of future federal funds rate changes can and do influence economic activity and asset yields,

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[15]See Blanchard et al. (2015) for an example of the role played by this assumption within a VAR framework to estimate the effect of global capital flows on FX interventions.

and an equally vast amount of research on how monetary authorities have sought to influence such expectations through forward guidance (D'Amico and King, 2015; Papadamou, 2013; Bernanke et al., 1997). For the purposes of this paper, a key confounding factor may stem from EM equity and bond market portfolio reallocation based on expected changes in future US monetary policy; especially given that, in the interviews, many Central Bankers rated capital flight as one of their biggest concerns.[16] The presence of foresight not only implies that the timing of the change in the dependent variables of interest may be hard to pin down, but also that the underlying process may have a nonfundamental moving average representation, which renders standard VAR identification schemes inapplicable (Ramey, 2016).

For these reasons, my preferred approach to estimate equation (1) is to use Local Projections with Instrumental Variables (LP-IV). In the next subsection, I describe the LP-IV specification in detail, then I present an alternative LP approach without instrumenting the shadow rate, and explain why its results may provide useful insights in spite of the potential endogeneity. The IRFs produced by both approaches are then presented in the Results subsection.

4.1.2   Local Projections with Instrumental Variables

The use of instrumental variables methods to estimate the dynamic causal effects of a monetary shock is well documented in the literature. When using Local Projections, the procedure is straightforward: one substitutes OLS for the usual 2SLS approach, applied to each h-step in the horizon of interest. The choice of an external instrument must satisfy three conditions: the first two, relevance and contemporaneous exogeneity, are the standard conditions to minimize bias in any general IV context. The third, lead-lad exogeneity, is due to the dynamic nature of the data, and can be summarized as the requirement that the instrument be uncorrelated with past structural shocks (Stock and Watson, 2018).

Many external instruments have been developed in the literature as an identification tool for changes in US monetary policy. The methodologies used to construct them vary, from harnessing narrative sources (Romer and Romer, 2004), to exploiting variation in the Federal

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[16]A separate, but similar econometric issue would arise if EM Central Banks themselves make policy choices based on expectations of future US rates for additional reasons unrelated to financial markets. The econometric approach proposed in this paper would deal equally well with this other scenario.

Reserve's information set (Bachmann et al., 2021), to the use of high-frequency data (Bauer and Swanson, 2022; Miranda-Agrippino and Ricco, 2021; Gertler and Karadi, 2015; Kuttner, 2001). As a result, each instrument has its own advantages; some are able to account for informational rigidities, others incorporate announcements made by the Federal Reserve Chair (Bauer and Swanson, 2022). High-frequency methods, which rely on the movement of federal fund futures around a narrow window of time to identify unexpected changes in US monetary policy, are especially likely to meet the lead-lad exogeneity condition in LP-IV: their movement reflects, by construction, a measure of the change in US monetary policy that was unforeseen by financial markets in spite of previously realized structural shocks.

Of the many options available, I choose the high-frequency instrument from Jarociński and Karadi (2020) for two reasons. First, because it is among those with longer coverage, spanning the entire 1990-2019 period. Second, because it distinguishes between pure US monetary shocks (a monetary tightening expected to have contractionary effects on the economy) and information shocks (a monetary tightening interpreted as conveying stronger-than-expected future growth). Recent research has shown that, when assessing the effect of US monetary policy on Emerging Markets, failing to disentangle these two types of monetary surprises may lead to inaccurate results (Camara, 2021).

Since equation (1) includes an interaction term, $(i_t^{US} \cdot \delta_t)$, the LP-IV regression requires two instruments. The first, Z^1, is simply the Jarociński and Karadi monetary series. I construct the second as: $Z_t^2 = Z_t^1 \cdot \delta_t$.

4.1.3 An Alternative Approach: Local Projections without Instrumental Variables

Although LP-IV is my preferred approach for estimating equation (1), the exogeneity obtained from high-frequency identification shocks comes at a price. By relying only on surprise changes in Federal Reserve policy, these identified shocks ignore any episodes of monetary tightening that were predicted by markets.[17] The reason this is a problem is that fully anticipated exogenous shocks can still lead to changes in a small open economy's monetary policy. A temporary and fully expected change in money demand, for instance, should lead coun-

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[17]For instance, if the Federal Reserve were to increase rates by 100bp on a given day, and Fed Funds futures prices did not change, it would be assumed that the adjustment was entirely foreseen by financial markets, and so the monetary shock for that day would be zero.

tries with predetermined exchange rates to experience a sudden drop in reserves, whereas authorities in countries with floating currencies should experience a downward shift in nominal rates (Vegh, 2013).[18] Precisely because anticipated changes in US monetary conditions matter, the use of monetary shocks identified through surprises in federal funds futures risks throwing out a large amount of useful information.

For this reason, I also estimate (1) through LP without instrumenting the shadow rate, i^{US}, in a similar vein to Jordà et al. (2020), using the following equation:

$$y_{i,t+h} = \beta_{0,i} + \beta_{1,h} \cdot i_t^{US} + \beta_{2,h} \cdot (\delta_t \cdot i_t^{US}) + \beta_{3,h} \cdot \delta_t + \sum_{j=1}^{k} \Gamma'_{t-j}\beta_{4,h} + \sum_{j=1}^{k} X'_{t-j}\beta_{5,h} + \tau'_t\beta_{6,h} + \epsilon_{t+h}$$

(2)

For $h = 0, 1, 2....$

Since I am no longer estimating the equation through the use of an external instrument, the issue of endogeneity reappears. To account for the possibility of omitted variable bias, I include an additional vector of controls, X, which comprises inflation and economic activity, the two main inputs in most Central Banks' Taylor rules, as well as the exchange rate, to account for countries where monetary policy involves managing the local currency.[19] Controlling for domestic economic activity is particularly important because, if the Federal Reserve's actions are prompted by changes in global conditions that also affect EMs' output, the orthogonality assumption of the error term would no longer hold. I use national monthly economic activity indices whenever they are available, and monthly industrial production otherwise, obtained from national sources and from IMF (2022) respectively. Since some countries have neither, and for many that do the data begins well into the 21st century, the sample for this alternative approach is smaller. For details on the data sources, and the country and time composition of this reduced sample, see the Appendix.

The IRFs for domestic policy rates, produced with this alternative approach, are presented in the next section alongside those obtained using LP-IV. In principle, one would expect the

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[18]This is also the case for countries where the capital account is not fully open. I explore this in more detail when discussing robustness checks in the Results subsection.

[19]Note that I am choosing to use realized inflation rather than inflation expectations. In contrast to Advanced Economies, where inflation expectations have been well-anchored for decades, in Emerging Markets they are markedly backward-looking. This makes recent inflation data very relevant for Central Bankers' policy decisions (de Mendonça, 2018). In addition, using actual inflation allows me to rely on a larger sample, as data on inflation expectations is limited.

estimated effect of a US monetary tightening for EMs with managed exchange rates to look similar with either the LP or LP-IV methodologies; if not in magnitude, then at least in the direction of the change. If exogeneity of the shadow rate is not a sizable problem, then the two approaches should also lead to similar results for countries with floating exchange rates.

4.2   Results

This section presents the IRFs of EM macroeconomic variables when the US tightens monetary conditions, estimated using the LP-IV and LP methodologies described above. Since the central question of interest is how EM Central Banks respond to tighter US monetary policy, estimation will focus primarily on the two main tools highlighted by authorities: the policy rate and FX interventions.

The empirical results introduced in this section should inform our thinking of the evidence presented in the qualitative interviews section, and viceversa. If the estimated IRFs show a pattern consistent with most of the views expressed in conversation with Central Bankers, it reinforces the validity of the five main themes presented earlier. In addition, the Central Banker interviews provide an opportunity to understand why the IRFs behave the way they do: rather than just use data to show that policy rates across EMs rise when the US tightens, we can refer to Central Bankers' explanations for their reasoning behind such decisions. In particular, authorities from countries with rigid exchange rates tend to either focus on closing the interest rate differential, provide FX to cushion currency depreciation, or both; meanwhile, authorities in countries with flexible exchange rates tend to raise policy rates only when inflation rises. I will show that, indeed, the qualitative and quantitative evidence appear to match.

4.2.1   US monetary policy and global financial conditions.

I begin by corroborating the effect of a US monetary tightening on global financial conditions: according to both EM Central Bankers and varied findings in the literature, higher US rates imply a more challenging financial environment, triggering capital outflows and higher investor risk-aversion (Miranda-Agrippino and Rey, 2020; Kalemli-Özcan, 2019).

Figure 9, below, shows the impulse responses of global risk aversion and capital flows to a

100bp increase in the US shadow rate, estimated using LP-IV as in equation (1). Changes in risk aversion are measured in terms of points in the VIX index, and capital flows to Emerging Markets are measured in standard deviations, using data on equity and debt flows sourced from IIF (2022). When the US tightens, outflows are immediate and sizable: starting in the first month of the policy change, there are retractions in the order of 1 to 2 standard deviations across equity and debt asset classes. Large outflows persist over the course of the year, although there is evidence of some capital flowing back in equities. Global risk aversion also increases, and remains elevated over the rest of the year.

**Figure 9:** VIX and Capital Flows IRFs
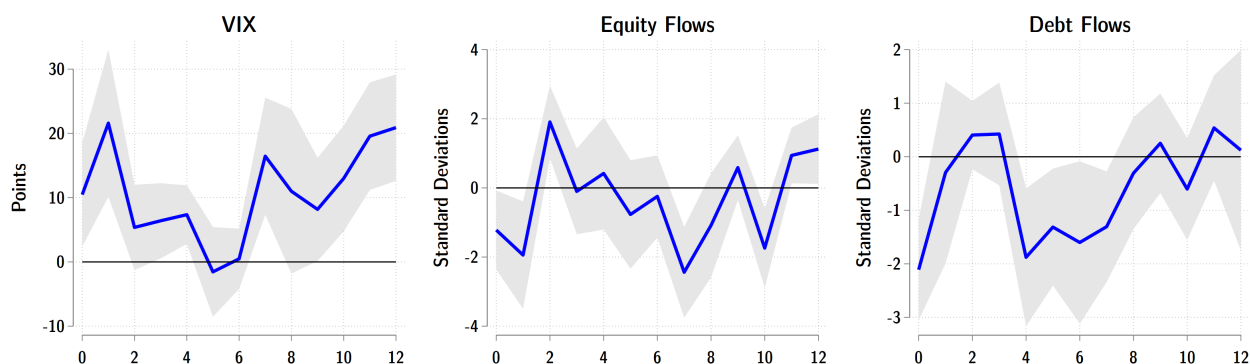
4.2.2 EMs' response to tighter US monetary policy.

I now turn to the response in EMs' monetary policy when faced with a US tightening. Using LP-IV, as reflected in equation (1), I estimate the impulse response function of EM policy rates to a 100bp increase in US rates. I begin by conducting the exercise using all countries in the panel, then I split the sample between floating and managed exchange rate countries and estimate the impulse responses for both subsets. Distinguishing between exchange rate regimes is important for two reasons: first, because countries with managed currencies are more likely to take actions to resist capital outflows that would depreciate their currency. Second, because, as explained in the previous section, policy rates in countries with predetermined exchange rates should react to US monetary shocks even when such changes are fully anticipated, and it is for this set of countries that estimation through LP rather than LP-IV can be especially useful.

Figure 10, below, shows the results. When the US tightens, EMs tighten as well, regardless of their exchange rate regime. The magnitude of the reaction appears broadly in line with the explanations provided by Central Bankers: over the course of a year, EM rates rise between 1 and 1.5 percentage points.

Figure 10: Reaction of EM Policy Rates to a 100bp US tightening (LP-IV)
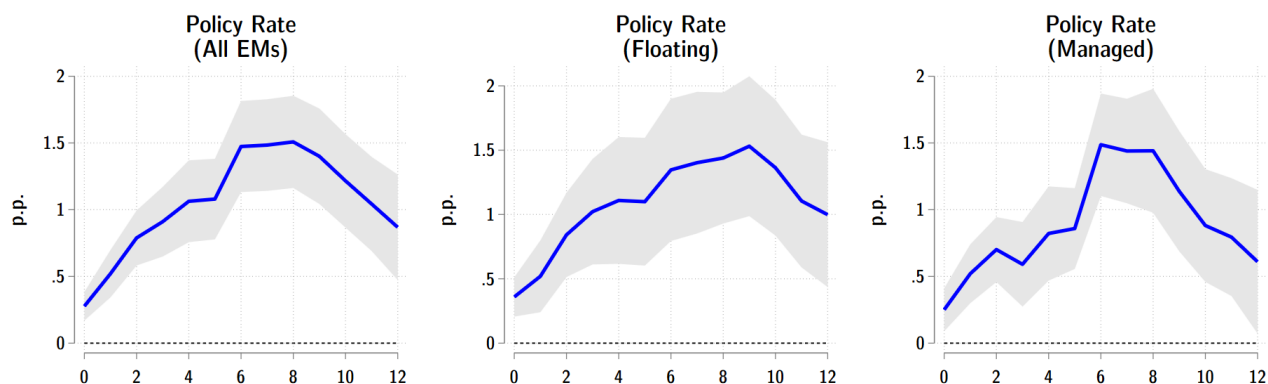
Although LP-IV estimation is my preferred approach, it is also helpful to estimate the change in policy rates using Local Projections with OLS, for the reasons explained in the previous section. One would expect that the direction of the change in EM policy rates, if not the magnitude, should coincide with LP-IV, particularly for countries with heavily managed exchange rates. Figure 11, below, shows the IRFs estimated using equation (2): here, again, EMs appear to tighten monetary policy in response to higher US rates, irrespective of the exchange rate regime.

Figure 11: Reaction of EM Policy Rates to a 100bp US tightening (LP)
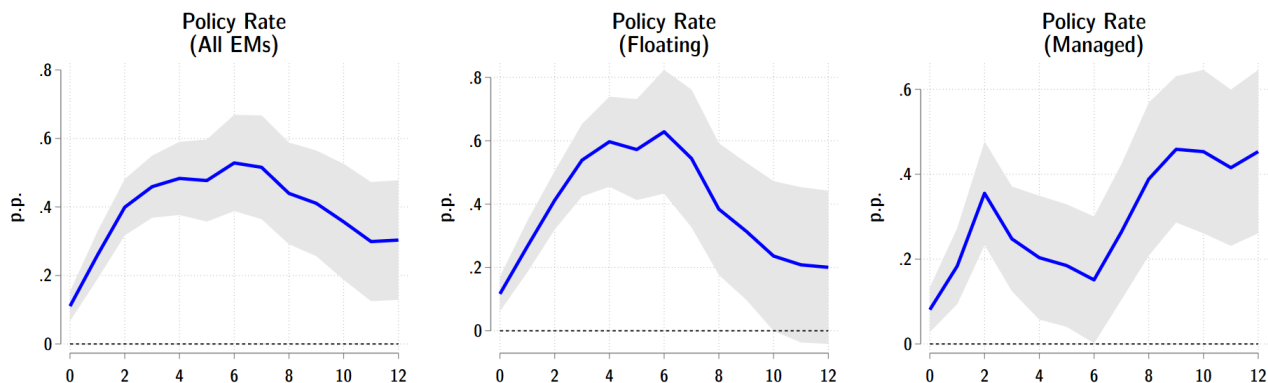
Since these results are obtained from panel regressions, it is worth considering whether they might be somehow driven by the way countries have been aggregated, or the behavior of specific outliers. Another way to phrase this question is to inquire if the LP-IV and LP specifications would accurately capture Central Bankers' responses on a country-by-country basis. To corroborate, I conduct these same regressions in time series form (that is, one country at a time) for a specific set of countries whose Central Banker interviews have contributed empirically verifiable statements about their policy rate reaction, and compare the econometric results with the behavior described by the Central Bankers themselves.

Table 1 shows the outcome from this exercise. Whenever a country's specific IRF matches the statement provided by its Central Banker, in terms of the direction of the policy rate's response, I mark that case with a checkmark (✓). If the estimated response directly contradicts the statement, I mark that event with a cross (×). If standard errors are too large to tell, or if data is insufficient for that specific country –for example, if there is no monthly economic activity data that would allow me to estimate equation (2) using LP– I leave a blank space in that cell. In general, both Local Projections approaches appear to perform fairly well.

**Table 1:** IRF Results compared to Central Banker Statements

Central Banker Statement	LP-IV	LP
"When the US raises rates, we raise by about as much, or a little bit more" (LAC)	✓	✓
"If rates in the US go up, we raise to avoid the capital outflow" (Middle East and North Africa)		
"I would not react to a positive Fed shock by lowering rates" (LAC)	✓	✓
"If inflation remains stable, with no impact on the exchange rate, that may not make an upward adjustment necessary" (South/Southeast Asia)	✓	✓
"Unless there is a strong pressure on the exchange rate, we wouldn't be reacting" (Central Asia)	×	
"I don't see [us lowering rates]. The pass-through effect weighs more" (LAC)	✓	×
"To my knowledge, the Fed rate didn't affect us" (Europe)	×	✓
"Depends on where inflation is. We don't follow the Fed these days" (LAC)	✓	✓
"We are pegged to the US, we need to change the rate along with the US dollar" (Middle East and North Africa)	✓	
"If there were portfolio outflows, we would have to increase our rates" (South/Southeast Asia)		
"The most expected policy reaction would be to increase the rates at around the same or somewhat lower magnitudes." (Central Asia)	✓	
"We will allow the currency to float. If it happens that we get pass through and inflation, then I will react" (LAC)	×	✓

(✓): IRF matches Central Banker's statement. (×): IRF does not match Central Banker's statement. A blank space indicates that the IRF's standard errors were too large to tell, or that data was unavailable for that country.

Next, I consider Central Banks' policy reactions through FX interventions. Although domestic rates tend to be the main instrument with which authorities conduct monetary policy, many Central Bankers also highlighted the sale of foreign exchange as an important go-to resource when dealing with exchange rate volatility (some have even described these interventions as their "first line of defense"). I use only LP-IV estimation from now on, given that reactions in these variables are much more likely to occur as a result of capital outflows triggered by unanticipated US monetary shocks.[20]

Figures 12 and 13 show the impulse response functions for FX interventions as a percentage of total Central Bank FX reserves, as well as the change in the overall level of FX reserves. Data on direct FX interventions is sourced from Adler et al. (2021), but is only available for years 2000-2019, which is why I also include the reaction in total FX reserves levels, sourced from IMF (2022) and covering the entire 1990-2019 period, as a complementary measure of intervention. To provide a complete picture of developments in foreign exchange markets, I also estimate the IRF for the nominal exchange rate (sourced from the latter dataset).
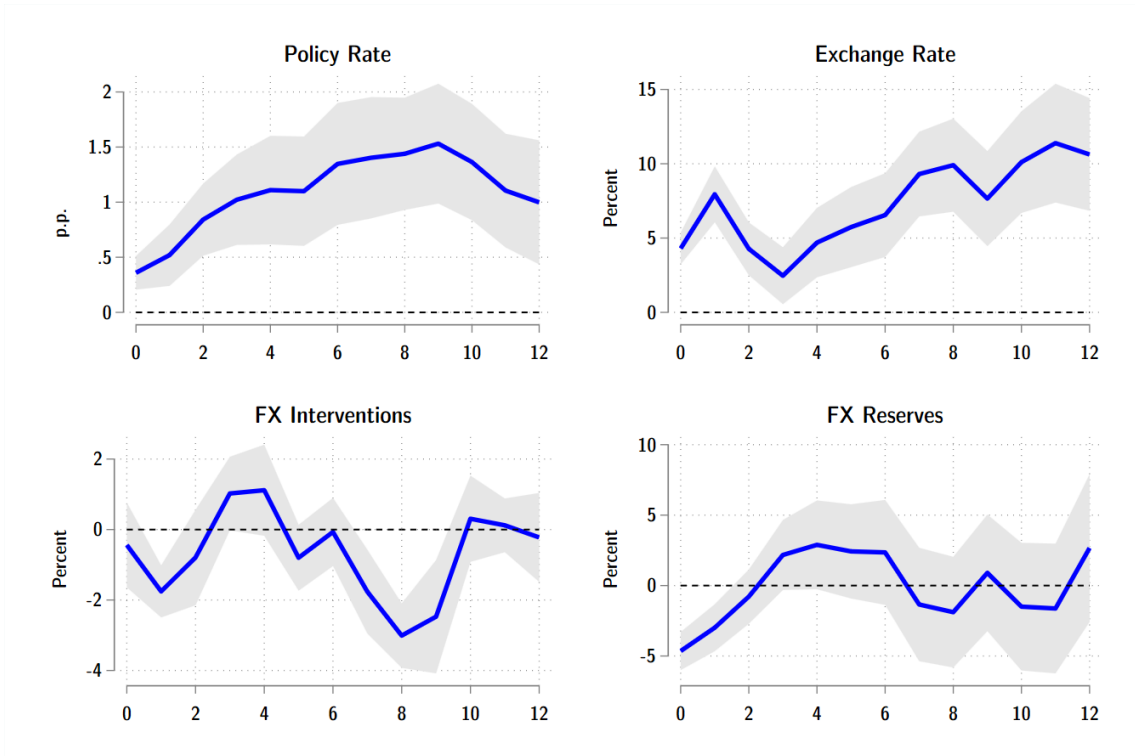
Figure 12: Managed Exchange Rate Country IRFs
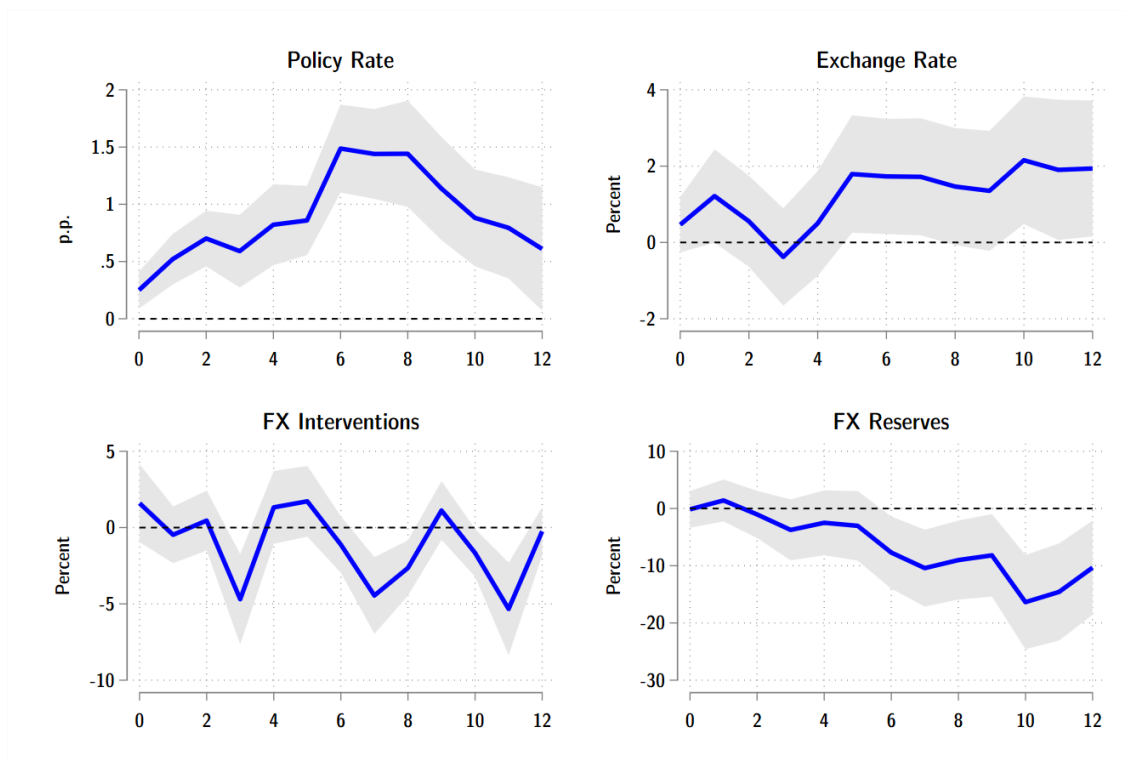
Results can be summarized as follows: when the US tightens, capital outflows cause EM

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[20]IRFs estimated through LP are available upon request.

Figure 13: Floating Exchange Rate Country IRFs

currencies to depreciate against the dollar. FX interventions are much stronger and persistent for countries with managed exchange rates, often reaching monthly totals close to 5% of total reserves. In contrast, FX interventions in countries with floating exchange rates are smaller and less frequent, closer to 2% of available reserves when they do occur.

While many of the results presented above appear intuitive, the fact that tighter US monetary policy leads to higher interest rates in EMs with floating exchange rates is less so. After all, the Trilemma states that countries with currency flexibility should not be forced to follow the Federal Reserve.[21] Central Bankers from floating exchange rate countries provide an explanation for this phenomenon in the interviews section: it is not that they raise rates because they need to follow the Federal Reserve, but rather because tighter US policy depreciates their currencies, which raises domestic inflation and calls for tighter monetary policy at home.

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[21] One possible explanation could be that the allegedly floating countries are actually managing their exchange rates, but there are two reasons to believe this is not the case. First, the Ilzetzki et al. 2019 exchange rate regime categories that I use for this analysis are based on de facto measurements, not countries' officially declared regimes. Second, the above figures show that EMs with floating exchange rates conduct much less sizable FX interventions when US rates rise than those with managed regimes, which suggests that defending the currency is not their main goal.

Does the data support this idea? I estimate the IRFs of inflation and inflation expectations for the subset of countries with floating exchange rates, and find that it does. Figure 14 shows both measures of inflation increasing between half a percentage point and one percentage point, in tandem with a currency depreciation of around 10%. The domestic rate, as shown in previous figures, increases around 1 to 1.5 percentage points, with policy remaining tight over the rest of the year. After the first quarter, the change in inflation expectations reverts and trends down; the increase in realized inflation is longer lasting. These magnitudes appear consistent with available estimates of exchange rate pass-through to inflation in Emerging Markets (Ha et al., 2019; Forbes et al., 2017; Goldfajn and Werlang, 2000).

Data on realized inflation, defined as the 12-month change in the consumer price index, is sourced from IMF (2022). Inflation expectations are obtained from Consensus Economics (2022). Data on the latter, however, is only available for the 2000-2019 period, and covers a smaller number of countries than that in the full panel, as explained in the Appendix.

The reaction in the price level for countries with managed exchange rates is less immediately relevant for the purposes of understanding the motivation behind their reactions (since interest parity accounts for higher rates in response to a US monetary tightening under such regimes, and many of the interviews with Central Bankers from said countries corroborate that idea). I nonetheless conduct the estimation, and the resulting figures are included in the Appendix. I find that inflation also rises for this subsample as well, with expectations rising only mildly and then decreasing quickly after the first quarter.

4.3   Robustness Checks

To corroborate the results presented above, I conduct two separate robustness tests. First, I re-estimate the LP-IV IRFs using additional controls, chosen from those variables that appeared prominently in the Central Banker interviews of key concerns: inflation, economic activity and the exchange rate. I also include sovereign spreads, to capture the international risk spillovers highlighted by the literature (Kalemli-Özcan, 2019), and which some Central Bankers also mentioned as important.

Next, I turn to the issue of capital mobility. The monetary policy choice presented by the Trilemma (following the Federal Reserve or letting the exchange rate float) is only binding when international investors are allowed to arbitrage financial returns between small open

Figure 14: Depreciation and Inflation in Floating Exchange Rate Countries
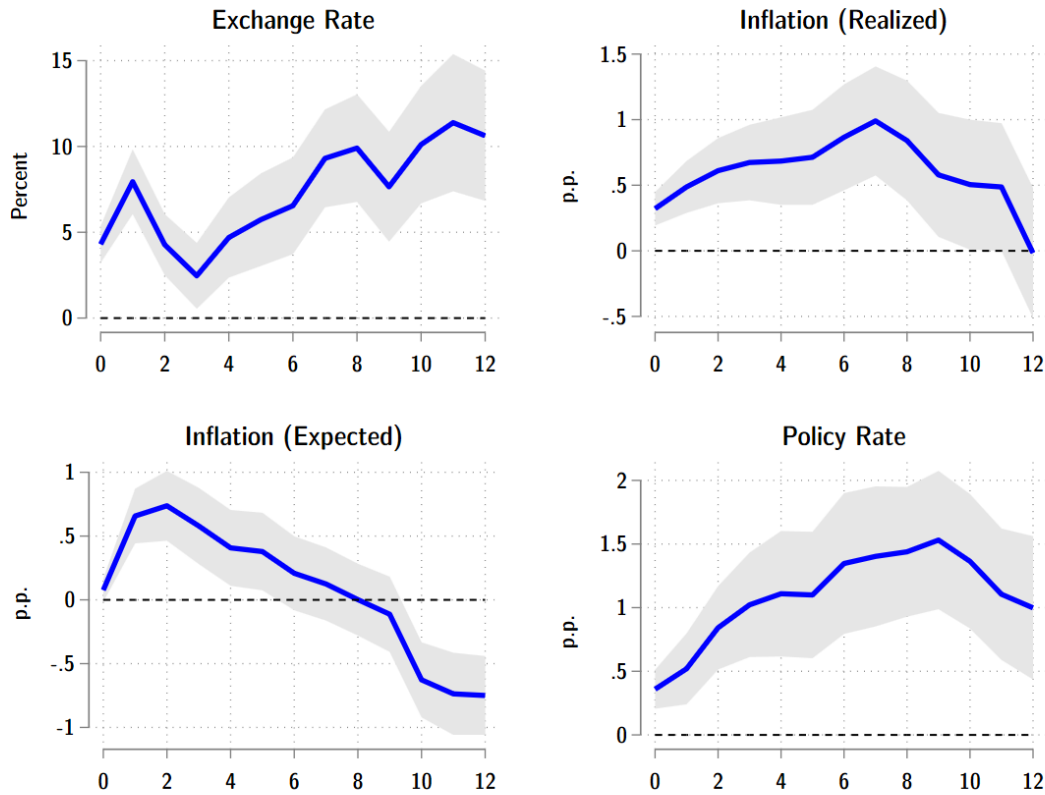
Note: "Inflation (Realized)" refers to the percentage change in the consumer price index, compared to the same month in the previous year. "Inflation (Expected)" refers to one-year-ahead inflation expectations.

economies and the US. If capital controls are sufficiently stringent, this condition will no longer hold. To account for this possibility, I re-estimate the regressions using a smaller sample, dropping countries with a measure of capital controls above the 80th percentile, based on the index from Fernández et al. (2015) updated to 2021. While this leads to larger standard errors for some variables, the same overall picture persists.

In addition to these robustness tests, it would also be possible to use a different measure of the US monetary stance; two obvious candidates would be the federal funds rate and the market yield on 1-year US treasuries. For the reasons discussed in the Methodology section, I do not believe either of these measures would be correct, but regressions results that rely on these variables are available upon request. Qualitatively, results remain the same, but the magnitude of the reaction in EM policy rates and FX interventions is larger.

5 Conclusion

When the Federal Reserve tightens, it influences global financial conditions and pulls capital away from the rest of the world. Emerging Market Central Banks tend to respond by raising the policy rate, but the reasons for doing so vary, depending on the exchange rate regime.

In countries with managed currencies, monetary authorities are more likely to raise rates in an attempt to close the interest differential and prevent capital outflows. For countries with floating exchange rates, the monetary response is more likely to be guided by exchange rate pass-through to inflation, which leads them to tighten monetary conditions at home in order to fulfil their price stability mandate. In addition to adjusting rates, Central Banks often rely on foreign exchange interventions, but these are more prominent among countries with managed currencies, and are often motivated by a concern that raising rates would prove too disruptive for domestic economic conditions.

To arrive at these results, I have made use of both quantitative and qualitative empirical methods. The former provide impulse response functions for a number of EM macroeconomic variables, such as policy rates and exchange rates, that are common in the literature dealing with international monetary spillovers. The qualitative interviews, in turn, provide in-depth explanations for the reasons behind the reactions we see in the data, and inform the econometric analysis by hinting at the more likely variables that would constitute Central Bankers' objective functions.

The general picture emerging from these findings is that of a world where US monetary policy has irresistible effects on the rest of the world, and where the choice of exchange rate regime does not completely isolate countries from the actions of the Federal Reserve. These results contribute to a growing literature on international monetary spillovers, global financial cycles, and the dominant role of the US in financial networks.

There are other relevant issues highlighted by Central Bankers in the interviews, which go beyond the topic of US monetary spillovers and have been left unexplored. The fully transcribed interviews, available upon request, may provide an additional resource for future research.

References

William C. Adams. Conducting Semi-Structured Interviews. In *Handbook of Practical Program Evaluation*, pages 492–505. John Wiley & Sons, Ltd, 2015. ISBN 978-1-119-17138-6. doi: 10.1002/9781119171386.ch19. URL https://onlinelibrary.wiley.com/doi/abs/10.1002/9781119171386.ch19. Section: 19 _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1002/9781119171386.ch19.

Gustavo Adler, Kyun Suk Chang, Mano Rui, and Shao Yuting. Foreign Exchange Intervention: A Dataset of Public Data and Proxies. *IMF*, February 2021. URL https://www.imf.org/en/Publications/WP/Issues/2021/02/19/Foreign-Exchange-Intervention-A-Dataset-of-Public-Data-and-Proxies-50017.

Shaghil Ahmed, Ozge Akinci, and Albert Queralto. U.S. Monetary Policy Spillovers to Emerging Markets: Both Shocks and Vulnerabilities Matter. SSRN Scholarly Paper ID 3888876, Social Science Research Network, Rochester, NY, July 2021. URL https://papers.ssrn.com/abstract=3888876.

Joshua Aizenman, Menzie D. Chinn, and Hiro Ito. Monetary policy spillovers and the trilemma in the new normal: Periphery country sensitivity to core country conditions. *Journal of International Money and Finance*, 68:298–330, November 2016. ISSN 0261-5606. doi: 10.1016/j.jimonfin.2016.02.008. URL https://www.sciencedirect.com/science/article/pii/S0261560616000322.

Iñaki Aldasoro, Stefan Avdjiev, Claudio E. V. Borio, and Piti Disyatat. Global and Domestic Financial Cycles: Variations on a Theme, May 2020. URL https://papers.ssrn.com/abstract=3599271.

John Ammer, Michiel D. De Pooter, Christopher J. Erceg, and Steven Kamin. International Spillovers of Monetary Policy. *IFDP Notes*, 2016(15), February 2016. ISSN 2573-2129. doi: 10.17016/2573-2129.15. URL https://www.federalreserve.gov/econresdata/notes/ifdp-notes/2016/international-spillovers-of-monetary-policy-20160208.html.

Adrien Auclert, Matthew Rognlie, Martin Souchier, and Ludwig Straub. Exchange Rates and Monetary Policy with Heterogeneous Agents: Sizing up the Real Income Channel. Working Paper 28872, National Bureau of Economic Research, May 2021. URL https://www.nber.org/papers/w28872. Series: Working Paper Series.

Stefan Avdjiev, Valentina Bruno, Catherine Koch, and Hyun Song Shin. The Dollar Exchange Rate as a Global Risk Factor: Evidence from Investment. *IMF Economic Review*, 67(1):151–173, March 2019. ISSN 2041-417X. doi: 10.1057/s41308-019-00074-4. URL https://doi.org/10.1057/s41308-019-00074-4.

Ruediger Bachmann, Isabel Gödl-Hanisch, and Eric R. Sims. Identifying Monetary Policy Shocks Using the Central Bank's Information Set, December 2021. URL https://www.nber.org/papers/w29572.

Laurence Ball, Douglas W. Elmendorf, and N. Gregory Mankiw. The Deficit Gamble. *Journal of Money, Credit and Banking*, 30(4):699–720, 1998. ISSN 0022-2879. doi: 10.2307/2601125. URL http://www.jstor.org/stable/2601125. Publisher: [Wiley, Ohio State University Press].

Michael D. Bauer and Eric T. Swanson. An Alternative Explanation for the "Fed Information Effect". Technical Report 2020-06, Federal Reserve Bank of San Francisco, September 2021. URL https://www.frbsf.org/economic-research/publications/working-papers/2020/06/.

Michael D. Bauer and Eric T. Swanson. A Reassessment of Monetary Policy Surprises and High-Frequency Identification, April 2022. URL https://www.nber.org/papers/w29939.

Ben S Bernanke. Federal Reserve Policy in an International Context. *IMF Economic Review*, 65(1):1–32, April 2017. ISSN 2041-4161, 2041-417X. doi: 10.1057/imfer.2016.8. URL http://link.springer.com/10.1057/imfer.2016.8.

Ben S. Bernanke, Mark Gertler, Mark Watson, Christopher A. Sims, and Benjamin M. Friedman. Systematic Monetary Policy and the Effects of Oil Price Shocks. *Brookings Papers on Economic Activity*, 1997(1):91–157, 1997. ISSN 0007-2303. doi: 10.2307/2534702. URL https://www.jstor.org/stable/2534702. Publisher: Brookings Institution Press.

Olivier Blanchard, Jonathan D. Ostry, Atish R. Ghosh, and Marcos Chamon. Capital Flows: Expansionary or Contractionary? *The American Economic Review*, 106(5):565–569, 2016. ISSN 0002-8282. URL http://www.jstor.org/stable/43861083. Publisher: American Economic Association.

Olivier J. Blanchard, Gustavo Adler, and Irineu de Carvalho Filho. Can Foreign Exchange Intervention Stem Exchange Rate Pressures from Global Capital Flow Shocks?, July 2015. URL https://papers.ssrn.com/abstract=2653612.

Valentina Bruno and Hyun Song Shin. Capital flows and the risk-taking channel of monetary policy. *Journal of Monetary Economics*, 71:119–132, April 2015. ISSN 0304-3932. doi: 10.1016/j.jmoneco.2014.11.011. URL https://www.sciencedirect.com/science/article/pii/S0304393214001688.

Guillermo A. Calvo and Carmen M. Reinhart. Fear of Floating*. *The Quarterly Journal of Economics*, 117(2):379–408, May 2002. ISSN 0033-5533. doi: 10.1162/003355302753650274. URL https://doi.org/10.1162/003355302753650274.

Santiago Camara. Spillovers of US Interest Rates: Monetary Policy & Information Effects, November 2021. URL http://arxiv.org/abs/2111.08631. arXiv:2111.08631 [econ, q-fin].

John Campbell and Robert Shiller. Cointegration and Tests of Present Value Models. *Journal of Political Economy*, 1987. ISSN 0022-3808. doi: 10.1086/261502. URL https://dash.harvard.edu/handle/1/3122490. Accepted: 2009-06-26T13:20:16Z Publisher: University of Chicago Press.

Guglielmo Maria Caporale, Hector Carcel, and Luis Gil-Alana. Central bank policy rates: Are they cointegrated? *International Economics*, 152:116–123, December 2017. ISSN 2110-7017. doi: 10.1016/j.inteco.2017.06.001. URL https://www.sciencedirect.com/science/article/pii/S211070171730015X.

Luis Carranza, Jose E. Galdon-Sanchez, and Javier Gomez-Biscarri. Exchange rate and inflation dynamics in dollarized economies. *Journal of Development Economics*, 89(1):98–108, May 2009. ISSN 0304-3878. doi: 10.1016/j.jdeveco.2008.06.007. URL https://www.sciencedirect.com/science/article/pii/S0304387808000692.

Jiaqian Chen, Tommaso Mancini Griffoli, and Ratna Sahay. Spillovers from United States Monetary Policy on Emerging Markets: Different this Time? SSRN Scholarly Paper ID 2561285, Social Science Research Network, Rochester, NY, December 2014. URL https://papers.ssrn.com/abstract=2561285.

Qianying Chen, Andrew Filardo, Dong He, and Feng Zhu. Financial crisis, US unconventional monetary policy and international spillovers. *Journal of International Money and Finance*, 67:62–81, October 2016. ISSN 0261-5606. doi: 10.1016/j.jimonfin.2015.06.011. URL https://www.sciencedirect.com/science/article/pii/S0261560615001114.

Menzie D. Chinn and Guy Meredith. Monetary Policy and Long-Horizon Uncovered Interest Parity. *IMF Staff Papers*, 51(3):409–430, 2004. ISSN 1020-7635. URL https://www.jstor.org/stable/30035956. Publisher: Palgrave Macmillan Journals.

Jens H. E. Christensen and Glenn D. Rudebusch. The Response of Interest Rates to US and UK Quantitative Easing. *The Economic Journal*, 122(564):F385–F414, 2012. ISSN 0013-0133. URL http://www.jstor.org/stable/23324228. Publisher: Wiley.

Jens H. E. Christensen and Glenn D. Rudebusch. Modeling Yields at the Zero Lower Bound: Are Shadow Rates the Solution? In *Dynamic Factor Models*, volume 35 of *Advances in Econometrics*, pages 75–125. Emerald Group Publishing Limited, January 2016. ISBN 978-1-78560-353-2 978-1-78560-352-5. doi: 10.1108/S0731-905320150000035003. URL https://doi.org/10.1108/S0731-905320150000035003.

Olivier Coibion and Yuriy Gorodnichenko. What Can Survey Forecasts Tell Us about Information Rigidities? *Journal of Political Economy*, 120(1):116–159, 2012. ISSN 0022-3808. doi: 10.1086/665662. URL https://www.jstor.org/stable/10.1086/665662. Publisher: The University of Chicago Press.

. Consensus Economics. Economic Forecast Publications, 2022. URL https://www.consensuseconomics.com/economic-forecast-publications/.

Stephanie E. Curcuru, Steven B. Kamin, Canlin Li, and Marius Rodriguez. International Spillovers of Monetary Policy: Conventional Policy vs. Quantitative Easing. SSRN Scholarly Paper ID 3237295, Social Science Research Network, Rochester, NY, August 2018. URL https://papers.ssrn.com/abstract=3237295.

Luis Felipe Céspedes, Roberto Chang, and Andrés Velasco. Balance Sheets and Exchange Rate Policy. *The American Economic Review*, 94(4):1183–1193, 2004. ISSN 0002-8282. URL http://www.jstor.org/stable/3592812. Publisher: American Economic Association.

Stefania D'Amico and Thomas B. King. What Does Anticipated Monetary Policy Do?, November 2015. URL https://papers.ssrn.com/abstract=2702259.

Helder Ferreira de Mendonça. Credibility and Inflation Expectations: What we can tell from seven emerging economies? *Journal of Policy Modeling*, 40(6):1165–1181, November 2018. ISSN 0161-8938. doi: 10.1016/j.jpolmod.2018.06.001. URL https://www.sciencedirect.com/science/article/pii/S0161893818301005.

Riccardo Degasperi, Seokki Hong, and Giovanni Ricco. The Global Transmission of U.S. Monetary Policy. SSRN Scholarly Paper ID 3594154, Social Science Research Network, Rochester, NY, March 2020. URL https://papers.ssrn.com/abstract=3594154.

Sebastian Edwards. Are Devaluations Contractionary?, August 1985. URL https://www.nber.org/papers/w1676.

Sebastian Edwards. Monetary Policy Independence under Flexible Exchange Rates: An Illusion? *The World Economy*, 38(5):773–787, 2015. ISSN 1467-9701. doi: 10.1111/twec.12262. URL https://onlinelibrary.wiley.com/doi/abs/10.1111/twec.12262. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/twec.12262.

Barry Eichengreen. Does the Federal Reserve Care about the Rest of the World? *Journal of Economic Perspectives*, 27(4):87–104, November 2013. ISSN 0895-3309. doi: 10.1257/jep.27.4.87. URL https://www.aeaweb.org/articles?id=10.1257/jep.27.4.87.

Charles Engel, Ekaterina Kazakova, Mengqi Wang, and Nan Xiang. A Reconsideration of the Failure of Uncovered Interest Parity for the U.S. Dollar. Working Paper 28420, National Bureau of Economic Research, January 2021. URL https://www.nber.org/papers/w28420. Series: Working Paper Series.

Christopher Erceg, Luca Guerrieri, and Steven B. Kamin. Did Easy Money in the Dollar Bloc Fuel the Global Commodity Boom? August 2009. URL https://www.federalreserve.gov/econres/ifdp/did-easy-money-in-the-dollar-bloc-fuel-the-global-commodity-boom.htm.

Eugene F. Fama. Forward and spot exchange rates. *Journal of Monetary Economics*, 14 (3):319–338, November 1984. ISSN 0304-3932. doi: 10.1016/0304-3932(84)90046-1. URL https://www.sciencedirect.com/science/article/pii/0304393284900461.

Andrés Fernández, Michael W. Klein, Alessandro Rebucci, Martin Schindler, and Martín Uribe. Capital Control Measures: A New Dataset, February 2015. URL https://www.nber.org/papers/w20970.

Kristin J. Forbes, Ida Hjortsoe, and Tsvetelina Nenova. Shocks versus Structure: Explaining Differences in Exchange Rate Pass-Through across Countries and Time, June 2017. URL https://papers.ssrn.com/abstract=2999637.

Mark Gertler and Peter Karadi. Monetary Policy Surprises, Credit Costs, and Economic Activity. *American Economic Journal: Macroeconomics*, 7(1):44–76, January 2015. ISSN 1945-7707. doi: 10.1257/mac.20130329. URL https://www.aeaweb.org/articles?id=10.1257/mac.20130329.

P. Gill, K. Stewart, E. Treasure, and B. Chadwick. Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal*, 204(6):291–295, March 2008. ISSN 1476-5373. doi: 10.1038/bdj.2008.192. URL https://www.nature.com/articles/bdj.2008.192. Number: 6 Publisher: Nature Publishing Group.

Fernando Giuliano and Emiliano Luttini. Import prices and invoice currency: evidence from Chile. June 2019. URL https://www.bis.org/publ/work784.htm.

Ilan Goldfajn and Sergio R. da C. Werlang. The Pass-Through from Depreciation to Inflation: A Panel Study. *SSRN Electronic Journal*, April 2000. ISSN 1556-5068. doi: 10.2139/ssrn.224277. URL http://www.ssrn.com/abstract=224277.

Marvin Goodfriend. The Phases of U.S. Monetary Policy : 1987 to 2001. *Economic Quarterly, Federal Reserve Bank of Richmond, Issue Fall*, pages 1–17, 2002.

Gita Gopinath, Francisco Roch, Filiz Unsal, Emine Boz, and Suman Basu. A Conceptual Model for the Integrated Policy Framework, 2020. URL https://www.imf.org/en/Publications/WP/Issues/2020/07/07/A-Conceptual-Model-for-the-Integrated-Policy-Framework-49558.

Greg Guest, Arwen Bunce, and Laura Johnson. How Many Interviews Are Enough?: An Experiment with Data Saturation and Variability. *Field Methods*, 18(1):59–82, February 2006. ISSN 1525-822X, 1552-3969. doi: 10.1177/1525822X05279903. URL http://journals.sagepub.com/doi/10.1177/1525822X05279903.

Jongrim Ha, M. Ayhan Kose, and Franziska Ohnsorge. *Inflation in Emerging and Developing Economies: Evolution, Drivers and Policies*. World Bank, Washington, DC, 2019. ISBN 978-1-4648-1375-7. doi: 10.1596/978-1-4648-1375-7. URL https://openknowledge.worldbank.org/handle/10986/30657. Accepted: 2018-11-02T16:03:42Z.

Jongrim Ha, M. Ayhan Kose, Hideaki Matsuoka, Ugo Panizza, and Dana Vorisek. Anchoring inflation expectations in emerging and developing economies, February 2022. URL https://voxeu.org/article/anchoring-inflation-expectations-emerging-and-developing-economies.

Ricardo Hausmann, Ugo Panizza, and Ernesto Stein. Why do countries float the way they float? *Journal of Development Economics*, 66(2):387–414, December 2001. ISSN 0304-3878. doi: 10.1016/S0304-3878(01)00168-7. URL https://www.sciencedirect.com/science/article/pii/S0304387801001687.

Jasper Hoek, Steven B. Kamin, and Emre Yoldas. When is Bad News Good News? U.S. Monetary Policy, Macroeconomic News, and Financial Conditions in Emerging Markets, January 2020. URL https://papers.ssrn.com/abstract=3625088.

Matteo Iacoviello and Gaston Navarro. Foreign effects of higher U.S. interest rates. *Journal of International Money and Finance*, 95:232–250, July 2019. ISSN 0261-5606. doi: 10.1016/j.jimonfin.2018.06.012. URL https://www.sciencedirect.com/science/article/pii/S0261560618303942.

. IIF. Capital Flows Tracker, November 2022. URL https://www.iif.com/Products/Capital-Flows-Tracker.

Ethan Ilzetzki and Keyu Jin. The puzzling change in the international transmission of U.S. macroeconomic policy shocks. *Journal of International Economics*, 130:103444, May 2021. ISSN 0022-1996. doi: 10.1016/j.jinteco.2021.103444. URL https://www.sciencedirect.com/science/article/pii/S0022199621000210.

Ethan Ilzetzki, Carmen M Reinhart, and Kenneth S Rogoff. Exchange Arrangements Entering the Twenty-First Century: Which Anchor will Hold?*. *The Quarterly Journal of Economics*, 134(2):599–646, May 2019. ISSN 0033-5533. doi: 10.1093/qje/qjy033. URL https://doi.org/10.1093/qje/qjy033.

IMF. International Financial Statistics, 2022. URL https://data.imf.org/.

Marek Jarociński and Peter Karadi. Deconstructing Monetary Policy Surprises—The Role of Information Shocks. *American Economic Journal: Macroeconomics*, 12(2):1–43, April 2020. ISSN 1945-7707. doi: 10.1257/mac.20180090. URL https://www.aeaweb.org/articles?id=10.1257/mac.20180090.

Òscar Jordà. Estimation and Inference of Impulse Responses by Local Projections. *American Economic Review*, 95(1):161–182, March 2005. ISSN 0002-8282. doi: 10.1257/0002828053828518. URL https://www.aeaweb.org/articles?id=10.1257/0002828053828518.

Òscar Jordà and Alan M. Taylor. The Time for Austerity: Estimating the Average Treatment Effect of Fiscal Policy. *The Economic Journal*, 126(590):219–255, 2016. ISSN 1468-0297. doi: 10.1111/ecoj.12332. URL https://onlinelibrary.wiley.com/doi/abs/10.1111/ecoj.12332. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/ecoj.12332.

Òscar Jordà, Sanjay R. Singh, and Alan M. Taylor. The Long-Run Effects of Monetary Policy. Technical Report 2020-01, Federal Reserve Bank of San Francisco, January 2020. URL https://www.frbsf.org/economic-research/publications/working-papers/2020/01/.

Sebnem Kalemli-Özcan. U.S. Monetary Policy and International Risk Spillovers. Working Paper 26297, National Bureau of Economic Research, September 2019. URL https://www.nber.org/papers/w26297. Series: Working Paper Series.

Jonathan Kearns, Andreas Schrimpf, and Dora Xia. Explaining Monetary Spillovers: The Matrix Reloaded. November 2018. URL https://www.bis.org/publ/work757.htm.

Michael W. Klein and Jay C. Shambaugh. Rounding the Corners of the Policy Trilemma: Sources of Monetary Policy Autonomy. *American Economic Journal: Macroeconomics*, 7(4):33–66, October 2015. ISSN 1945-7707. doi: 10.1257/mac.20130237. URL https://www.aeaweb.org/articles?id=10.1257/mac.20130237.

Paul Krugman. Currency Regimes, Capital Flows, and Crises. *IMF Economic Review*, 62(4):470–493, 2014. ISSN 2041-4161. URL http://www.jstor.org/stable/43297889. Publisher: [Palgrave Macmillan Journals, International Monetary Fund].

Kenneth N Kuttner. Monetary policy surprises and interest rates: Evidence from the Fed funds futures market. *Journal of Monetary Economics*, 47(3):523–544, June 2001. ISSN 0304-3932. doi: 10.1016/S0304-3932(01)00055-1. URL https://www.sciencedirect.com/science/article/pii/S0304393201000551.

Eduardo Levy-Yeyati and Federico Sturzenegger. Classifying exchange rate regimes: Deeds vs. words. *European Economic Review*, 49(6):1603–1635, August 2005. ISSN 0014-2921. doi: 10.1016/j.euroecorev.2004.01.001. URL https://www.sciencedirect.com/science/article/pii/S0014292104000030.

Li Liu, Yudong Wang, Chongfeng Wu, and Wenfeng Wu. Disentangling the determinants of real oil prices. *Energy Economics*, 56:363–373, May 2016. ISSN 0140-9883.

doi: 10.1016/j.eneco.2016.04.003. URL https://www.sciencedirect.com/science/article/pii/S0140988316300809.

Jeremy Miles and Paul Gilbert. *A Handbook of Research Methods for Clinical and Health Psychology*. Oxford University Press, 2005. ISBN 978-0-19-852756-5. Google-Books-ID: kmZ3Yt5pY0YC.

Silvia Miranda-Agrippino and Hélène Rey. U.S. Monetary Policy and the Global Financial Cycle. *The Review of Economic Studies*, 87(6):2754–2776, November 2020. ISSN 0034-6527. doi: 10.1093/restud/rdaa019. URL https://doi.org/10.1093/restud/rdaa019.

Silvia Miranda-Agrippino and Giovanni Ricco. The Transmission of Monetary Policy Shocks. *American Economic Journal: Macroeconomics*, 13(3):74–107, July 2021. ISSN 1945-7707. doi: 10.1257/mac.20180124. URL https://www.aeaweb.org/articles?id=10.1257/mac.20180124.

José Luis Montiel Olea and Mikkel Plagborg-Møller. Local Projection Inference Is Simpler and More Robust Than You Think. *Econometrica*, 89(4):1789–1823, 2021. ISSN 1468-0262. doi: 10.3982/ECTA18756. URL https://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA18756. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.3982/ECTA18756.

R. A. Mundell. Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates. *The Canadian Journal of Economics and Political Science / Revue canadienne d'Economique et de Science politique*, 29(4):475–485, 1963. ISSN 0315-4890. doi: 10.2307/139336. URL https://www.jstor.org/stable/139336. Publisher: [Canadian Economics Association, Wiley].

Maurice Obstfeld, Jonathan D. Ostry, and Mahvash S. Qureshi. A Tie That Binds: Revisiting the Trilemma in Emerging Market Economies. *The Review of Economics and Statistics*, 101(2):279–293, May 2019. ISSN 0034-6535. doi: 10.1162/rest_a_00740. URL https://doi.org/10.1162/rest_a_00740.

Stephanos Papadamou. Market anticipation of monetary policy actions and interest rate transmission to US Treasury market rates. *Economic Modelling*, 33:545–551, July 2013. ISSN 0264-9993. doi: 10.1016/j.econmod.2013.04.050. URL https://www.sciencedirect.com/science/article/pii/S0264999313001922.

Pierre-Olivier Gourinchas. Some Factors Shaping the International Financial Landscape of the Future. In Lawrence H. Summers Olivier Blanchard, editor, *Evolution or Revolution? Rethinking Macroeconomic Policy after the Great Recession*. MIT Press, April 2019. ISBN 978-0-262-03936-9. URL https://mitpress.mit.edu/books/evolution-or-revolution.

Mikkel Plagborg-Møller and Christian K. Wolf. Local Projections and VARs Estimate the Same Impulse Responses. *Econometrica*, 89(2):955–980, 2021. ISSN 1468-0262. doi: 10.3982/ECTA17813. URL http://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA17813. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.3982/ECTA17813.

Guillaume Plantin and Hyun Song Shin. Exchange rates and monetary spillovers. *Theoretical Economics*, 13(2):637–666, 2018. ISSN 1555-7561. doi: 10.3982/TE2669. URL https://onlinelibrary.wiley.com/doi/abs/10.3982/TE2669. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.3982/TE2669.

Simon Potter. U.S. Monetary Policy Normalization is Proceeding Smoothly. Paris, France, October 2018. URL https://www.newyorkfed.org/newsevents/speeches/2018/pot181026.

Valerie A. Ramey. Macroeconomic Shocks and Their Propagation. Working Paper 21978, National Bureau of Economic Research, February 2016. URL https://www.nber.org/papers/w21978. Series: Working Paper Series.

Valerie A. Ramey. Postscript to 'Macroeconomic Shocks and their Propagation', January 2022. URL https://econweb.ucsd.edu/~vramey/research/HOM_Ramey_Postscript.pdf.

Hélène Rey. Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence. Working Paper 21162, National Bureau of Economic Research, May 2015. URL https://www.nber.org/papers/w21162. Series: Working Paper Series.

Christina D. Romer and David H. Romer. A New Measure of Monetary Shocks: Derivation and Implications. *American Economic Review*, 94(4):1055–1084, September 2004. ISSN 0002-8282. doi: 10.1257/0002828042002651. URL https://www.aeaweb.org/articles?id=10.1257/0002828042002651.

Glenn D. Rudebusch. Monetary Policy Inertia and Recent Fed Actions. January 2007. URL https://www.frbsf.org/economic-research/publications/economic-letter/2007/january/monetary-policy-inertia-fed/.

Jay C. Shambaugh. The Effect of Fixed Exchange Rates on Monetary Policy*. *The Quarterly Journal of Economics*, 119(1):301–352, February 2004. ISSN 0033-5533. doi: 10.1162/003355304772839605. URL https://doi.org/10.1162/003355304772839605.

Gary S. Shea. Uncertainty and Implied Variance Bounds in Long-Memory Models of the Interest Rate Term Structure. *Empirical Economics*, 16(3), 1991.

Tamta Sopromadze, Giorgi Barbakadze, and Shalva Mkhatrishvili. Dominant Currency Paradigm:. *National Bank of Georgia Working Papers*, page 38, January 2021.

James H. Stock and Mark W. Watson. Identification and Estimation of Dynamic Causal Effects in Macroeconomics Using External Instruments. *The Economic Journal*, 128(610):917–948, 2018. ISSN 1468-0297. doi: 10.1111/ecoj.12593. URL http://onlinelibrary.wiley.com/doi/abs/10.1111/ecoj.12593. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/ecoj.12593.

Carlos A. Vegh. *Open Economy Macroeconomics in Developing Countries | The MIT Press*. MIT Press, 2013. ISBN 978-0-262-01890-6. URL https://mitpress.mit.edu/books/open-economy-macroeconomics-developing-countries.

Alejandro Vicondoa. Monetary news in the United States and business cycles in emerging economies. *Journal of International Economics*, 117:79–90, March 2019. ISSN 0022-1996. doi: 10.1016/j.jinteco.2018.12.002. URL https://www.sciencedirect.com/science/article/pii/S0022199618304483.

Jing Cynthia Wu and Fan Dora Xia. Measuring the Macroeconomic Impact of Monetary Policy at the Zero Lower Bound. *Journal of Money, Credit and Banking*, 48(2-3):253–291, 2016. ISSN 1538-4616. doi: 10.1111/jmcb.12300. URL https://onlinelibrary.wiley.com/doi/abs/10.1111/jmcb.12300. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/jmcb.12300.

Yue-Jun Zhang, Ying Fan, Hsien-Tang Tsai, and Yi-Ming Wei. Spillover effect of US dollar exchange rate on oil prices. *Journal of Policy Modeling*, 30(6):973–991, November 2008. ISSN 0161-8938. doi: 10.1016/j.jpolmod.2008.02.002. URL https://www.sciencedirect.com/science/article/pii/S0161893808000197.

Appendix A Interview Design and Methodology

The interviews conducted with Central Bankers were of the semi-structured type: there was a list of predetermined questions, to be posed in order, but depending on the participants' answers I would also raise additional questions that had not been planned in advance. For instance, if a Central Banker said that the effect of a US rate increase on their economy would be unclear, because it depended on the stage of their business cycle, I might follow up and ask what reasons might lead him or her to respond differently during an economic downturn.

I chose to use semi-structured interviews because the subject matter is complex, which calls for the type of nuance obtained from an unstructured interview approach, but, at the same time, the objective comparison of interview candidates was important given that the conclusions would be contrasted with regression results, and such a characteristic is more typical of a structured interview methodology. The length of the conversations varied, typically averaging 30 minutes, in line with recommendations in Adams (2015) that semi-structured interviews be kept under an hour to minimize respondent fatigue.

The semi-structured methodology offers many advantages over alternative approaches, but is labor and time-intensive, and must be conducted with close attention to research guidelines in order to obtain candid and comparable answers. I followed the recommendations in recent literature Miles and Gilbert (2005): I chose questions that were brief, slowly built up in complexity, and reflected testable implications from economic theory.

The full list of questions is provided below. Depending on the interview, some may have been skipped if previous answers rendered them irrelevant, or if time was insufficient to cover the entire set.

- Question 1: Suppose during your time at the Central Bank there had been a sudden, unexpected increase in U.S. rates. If your Central Bank had made no changes to its own policy rate, would you have expected the effect of your country's output to be contractionary or expansionary?

- Question 2: Suppose instead that your country's Central Bank was able to respond to this U.S. monetary tightening by adjusting its own policy rate. What would have been the most likely response: increase rates, decrease rates or neither?

- Question 3: How long would it have taken for that change in your Central Bank's policy rate to happen? (Within the month, within a quarter, within the year, longer than a year).

- Question 4: On a scale of 1 to 5 (with 1 being "not important at all" and 5 being "very important") please rate how important the following transmission channels to your own economy would be, when deciding how to respond to a change in U.S. rates: changes in bank lending, domestic investment, capital flight, domestic inflation, and debt sustainability".

- Question 5: Is a U.S. rate increase equally as relevant as a U.S. rate decrease? In other words, would your monetary policy reactions display symmetry with respect to changes in U.S. rates? Why?.

- Question 6: Would you say that financial transmission mechanisms, from the US to EMs, have changed since the Global Financial Crisis of 2008?

Appendix B Country Sample

Table 2: Countries in Full Panel

Country	First Obs.	Dropped periods	Notes on period selection
Armenia	2004m1	1990m1 to 2003m12	First stable interest rate path after post-Soviet transition.
Azerbaijan	1996m3	2016m1 to 2017m1.	Currency crisis.
Brazil	1999m1		Stabilization of post-hyperinflation monetary policy.
Chile	1998m1		Stabilization of post-hyperinflation monetary policy.
Colombia	1999m1		Stabilization of post-hyperinflation monetary policy.
Costa Rica	2006m3		
Georgia	2008m1		Post-Soviet transition, Russo-Georgian War.
Hungary	2001m1		
India	1990m1		
Indonesia	2001m1		Asian financial crisis.
Israel	1995m1		High inflation stabilization.
Jordan	1998m3		First stable interest rate path.
Kazakhstan	2005m5	1992m12 to 1996m6, 2015m11 to 2017m1.	Currency crises.
Korea	1999m5		Asian financial crisis.
Malaysia	1999m1		Asian financial crisis.
Mexico	1999m1		Post-high inflation stabilization, Peso Crisis.
Mongolia	2007m7		End of semi-hyperinflationary period.

Nigeria	2006m12	1991m6 to 1996m3, 2015m3 to 2016m5	Currency crises.
Oman	2004m2		
Pakistan	1990m1		
Paraguay	2011m1		
Peru	2001m1		
Philippines	1999m1		Asian financial crisis.
Poland	1999m1		Post-hyperinflation and post-Soviet transition.
Russia	2001m1		Post-ruble crisis.
South Africa	1990m1		
Thailand	2000m5		Asian Financial Crisis.
Turkey	2004m1		Post-high inflation period (70%) of the early 2000s.
Vietnam	1996m1		

Appendix C Regression results under alternative specifications

This appendix presents LP-IV impulse response functions under a number of different specifications and samples.

The first set of results estimates equation (1) with the addition of extra controls. I include lags for the main variables that would be expected to appear in an EM Central Bank's taylor rule: inflation, output and the exchange rate. In addition, I also control for sovereign spreads, to account for the effects of US monetary policy on global risk aversion, which has been found to be an important source of international spillovers (Kalemli-Özcan, 2019).

The measure of sovereign spreads is the EMBIG. The variable for output is composed of monthly economic activity indices (which vary methodologically across countries), or, if unavailable, industrial production sourced from IMF (2022).

The results from this alternative specification, shown in Figure 15, are qualitatively and quantitatively similar to those in the main body of the paper, with the exception of the policy rate for countries with managed exchanges rates: here, the rise in the policy rate appears to wane after three quarters. One possible explanation for this difference may be that the rate hike shown in the original results was bundling together the response to the rise in US rates as well as the rise in country-specific sovereign risk (as in a standard interest parity condition). Alternatively, the difference in results may be purely driven by the fact that some countries are excluded from the sample in the regression with additional controls, because economic activity data is less widely available.

Next, I turn to the issue of capital controls. The monetary policy choice presented by the Trilemma between following the Federal Reserve or letting the exchange rate float is only binding when a country has sufficient capital mobility. To corroborate that the regression results are not being influenced by countries that are not subject to financial arbitrage, I re-estimate the regressions using a smaller sample, dropping countries with a measure of capital controls above the 80th percentile, based on the index from Fernández et al. (2015) updated to 2021. Figure 16 presents the new results.

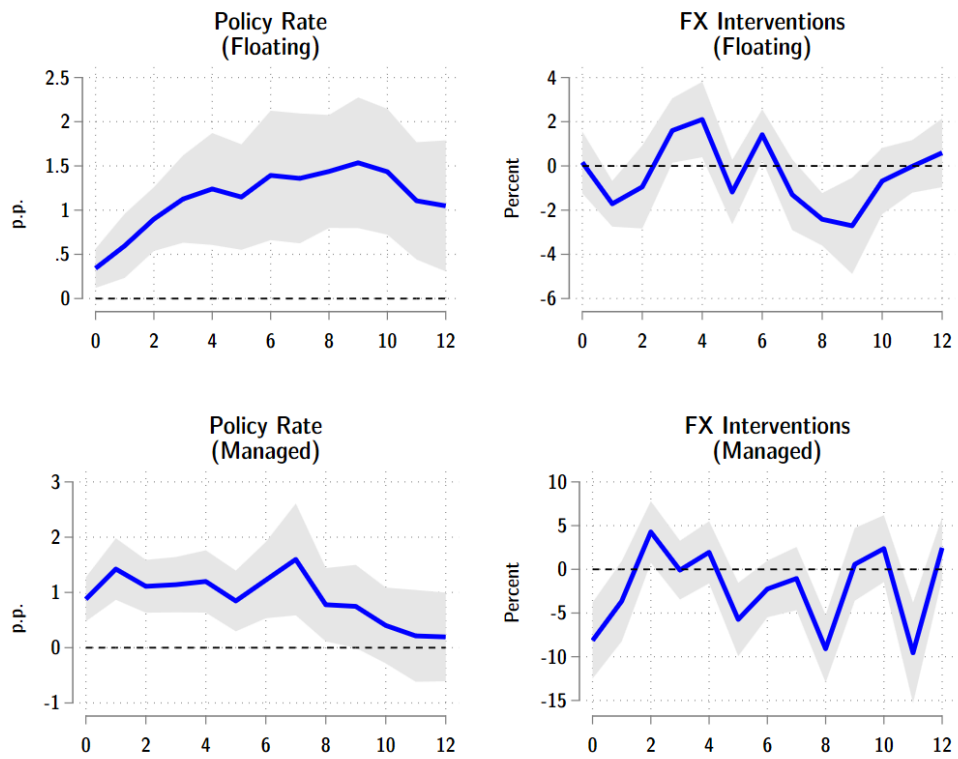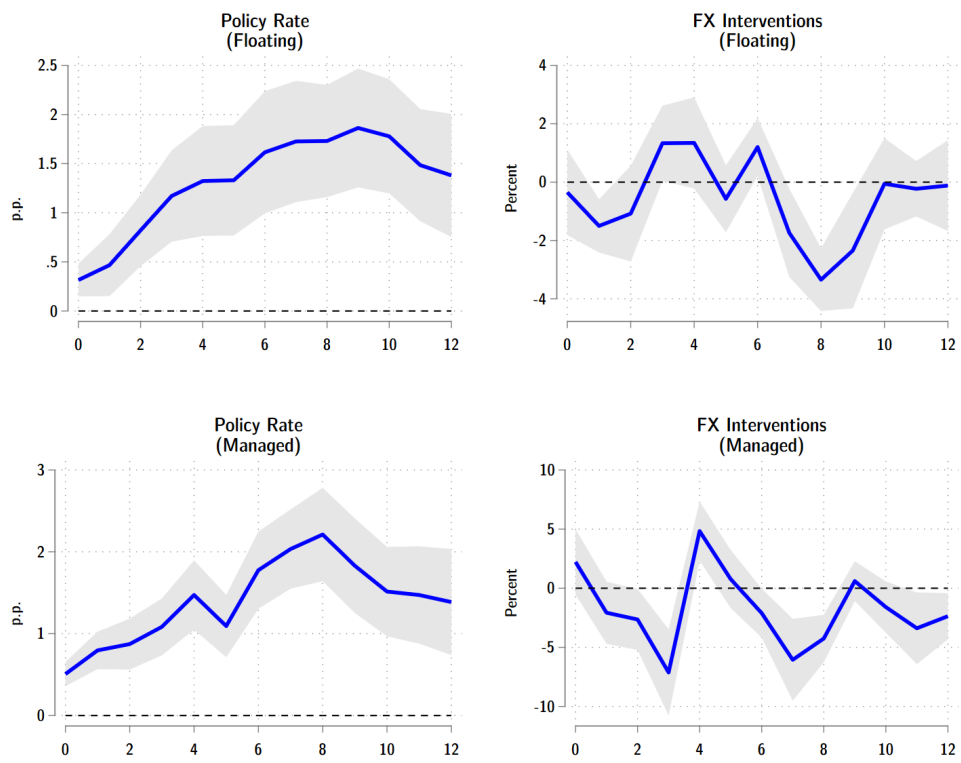**Figure 15:** Impulse Response Functions (LP-IV with additional controls)

Figure 16: Impulse Response Functions (LP-IV with additional controls)

Why Follow the Fed? Monetary Policy in Times of U.S. Tightening