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Caught in the Crosswinds: The Experiences of Selected Economies Responding to External Volatility with Multiple Policy Levers

by Ghada Fayad and Hélène Poirson

***IMF Working Papers* describe research in progress by the author(s) and are published to elicit comments and to encourage debate.** The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

Strategy, Policy, and Review Department

Caught in the Crosswinds: The Experiences of Selected Economies Responding to External Volatility with Multiple Policy Levers

Prepared by Ghada Fayad and H el ene Poirson¹

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Abstract

A case study approach is used to assess the multi-pronged policy response of seven small financially open economies with flexible exchange rate regimes to external shocks following the global financial crisis. FX intervention was frequently used— including during outflow episodes to prevent disorderly depreciation and preserve financial stability. Monetary policy often considered both financial and external stability. Capital flow management measures were sometimes calibrated symmetrically over the cycle while macroprudential measures were mostly deployed during inflow episodes. Assessment of the macroeconomic conditions paints an

¹¹ The views presented in this paper build heavily on the selection by and analysis of the selected economies' external pressure episodes by the corresponding IMF country teams, namely Calixte Ahokossi, Ravi Balakrishnan, Nina Biljanovska, Luis Breuer, Nada Choueiri, Costas Christou, R. Sean Craig, Tarhan Feyzioglu, Giovanni Ganelli, Tidiane Kinda, Lamin Leigh, Xin Li, Pedro Rodriguez, Christian Saborowski, Manrique Saenz, Damiano Sandri, Antonio Spilimbergo, Jose Torres, Frederik Giancarlo Toscani for selecting and analyzing the countries' external pressure episodes, and the commentary from all other participants from several functional and area departments as well as external discussants in an internal IMF discussion series with Management on these issues that took place between June 2018 and June 2019. We would also like to thank Suman Basu, Tam Bayoumi, Nada Choueiri, Ana Lucia Coronel, Rupa Duttagupta, Gaston Gelos, Vladimir Klyuev, Ken Miyajima, Dan Nyberg, Jochen Schmittmann, Alejandro Simone, Vimal Thakoor, as well as the Central Bank of Brazil, Bank of Indonesia, and Korean Ministry of Economy and Finance for valuable comments, and Yuting Shao for outstanding research assistance.

inconclusive picture on the benefits or costs of such policies, suggesting the need for further analysis.

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Keywords: emerging markets; monetary and exchange rate policies; inflation targeting; foreign exchange intervention; capital flows; macroprudential measures.

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GLOSSARY

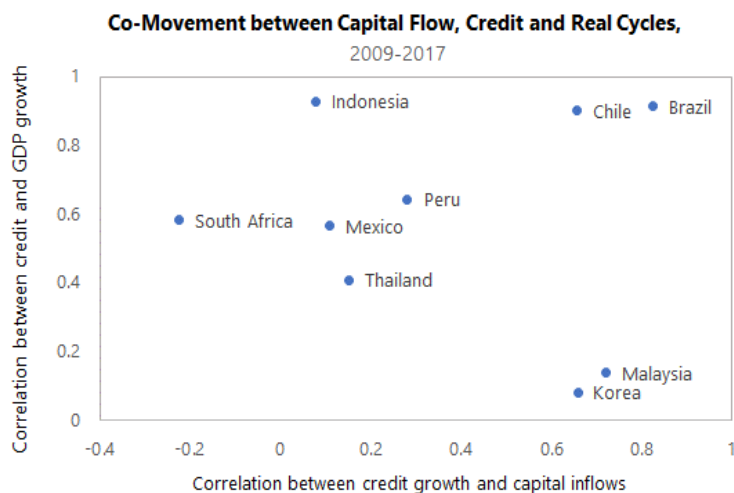
AE	Advanced Economy
CFM	Capital Flow Management Measure
EM	Emerging Market
FIT	Flexible Inflation Targeting
FXI	Foreign Exchange Intervention
GFC	Global Financial Crisis
IT	Inflation Targeting
MPM	Macroprudential Measures

I. INTRODUCTION

With the growing adoption of flexible exchange rate regimes and attendant rise in the adoption of inflation targeting (IT), a narrow interpretation of what constitutes “appropriate monetary policy” has dominated policy making: restricting monetary policy to the use of one instrument, the policy rate, for one key objective, targeting inflation (Figure 1A, IT panel), and allowing the exchange rate to float to ensure monetary policy independence under an open capital account. Related to this, foreign exchange intervention (FXI) is seen as having a limited role (i.e. to address disorderly market conditions). In practice, however, many small

financially globalized economies, particularly emerging markets (EMs) but also AEs, have adopted ‘flexible’ IT (FIT) regimes (Figure 1B). This has involved, under various approaches, pursuing multiple objectives such as price, growth, and financial stability, and managing exchange rate flexibility using multiple instruments, with the aim of isolating the domestic economic and financial cycles from external cycles in the face of rising capital flow volatility and co-movement between capital flows, credit and real cycles (text chart). In describing Iceland’s “inflation-targeting plus” regime, the former central bank Governor Mar Gudmundsson asked and answered in a speech “what are the instruments of monetary policy? It can be said that, apart from reserve requirements and other similar tools, which are seldom changed, the Bank’s interest rate decisions, foreign exchange market intervention, and capital controls are its chief monetary policy instruments.”² This has been the reality for many IT central banks, and under some circumstances, for some of those analyzed in our paper.

This paper takes a detailed look into the experience of seven small open economies – Brazil, Indonesia, Korea, Malaysia, Mexico, Peru, and Thailand, with the aim of better understanding the multiple policy objectives that policymakers intended to target, identifying the instruments deployed to meet those objectives, the effectiveness of those measures, and any unintended adverse consequences.³ In order to do so, the paper analyzes, in light of the countries’ existing policy frameworks (IT regimes in most cases), how monetary authorities engaged multiple policy levers to respond to episodes of sustained inflows and/or external shocks and outflows. We focus on the selected EMs’ policy responses during three common episodes: the post global



Sources: IFS, WEO, IMF Databases, and Authors' Calculations

² For the full speech please see <https://www.cb.is/lisalib/getfile.aspx?itemid=7439>.

³ Except for Korea, all countries in the sample are EMs. For the remainder of the paper, we refer to this group as EMs for ease of exposition.

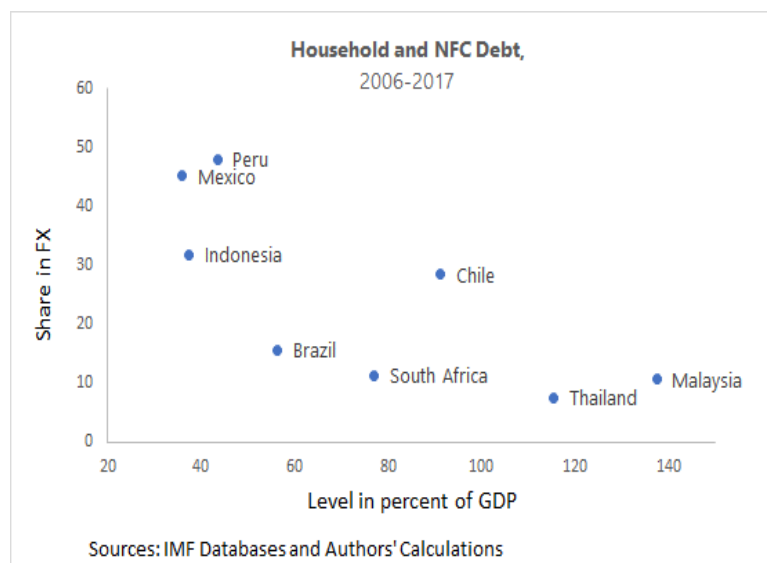
financial crisis (GFC) inflows in 2010, the Taper Tantrum in 2013, and the dollar appreciation-induced EM stress in 2018, while also highlighting where relevant policy responses during country-specific episodes. Chile and South Africa are also analyzed as comparators given their relatively more conventional inflation targeting regimes. In this paper, conventional policy responses or policy making under “pure IT” refers to the use of one instrument for one target (Figure 1A). A multi-pronged approach or “flexible IT” refers to the use of multiple levers to achieve multiple policy objectives (Figure 1B). As revealed by the case studies, countries also use diverse policy combinations responding to similar shocks revealing different policy objectives at different times.

While the picture that emerges from the exercise is panoramic in nature—allowing closer comparisons of and clarifying basic rationales guiding policy decisions across countries as well as episodes, the case studies approach we are taking in this paper also allows more in-depth consideration of the country-specific context including any past and pre-existing vulnerabilities. Our approach aims at distilling some key tentative lessons from the experiences of these seven economies –including setting out the trade-offs involved and posing important questions that policy makers have been facing, and for which more rigorous analysis is needed.⁴ As such it complements academic and policy work that explores a range of issues related to the effectiveness of policy combinations, the triggers for activating various policy tools, and their unintended side effects in the long-run.

We find that policy approaches by the seven economies to the capital flow episodes were diverse: reactions deviated from conventional policy responses under pure IT and differed amongst each other, and occasionally across different episodes for the same country. In some cases, the policy response took the form of deploying multiple instruments simultaneously (Brazil, Indonesia, Peru), while in other cases the authorities substituted one instrument for another based on its perceived effectiveness (monetary policy used for financial stability in Thailand during the 2016-2018Q1 and 2018Q2 episodes of exchange market pressures, and to guard against uncertainty and disorderly depreciation in Mexico during the 2014-16 oil price shock episode and the 2016-18 policy uncertainty episode related to U.S. elections and the tensions that followed).

⁴ The sample considered in this paper gives suggestive evidence and further analysis is needed to ensure their robustness to sample size. Some of the findings highlighted in this paper rely on simple bivariate correlations, which do not imply causality. More empirical analysis is needed to establish such causality.

The case studies reveal that the differences in countries' long-term strategies also reflect the legacy of past crises or underlying structural challenges. This includes the Asian crisis (1997-98) for Korea, Indonesia and Thailand, the Tequila crisis for Mexico (1994-95), and the history of hyperinflation for Peru (1988-1990). Other underlying concerns were structural in nature (e.g., pervasive dollarization in Peru or fragile private balance sheets in Malaysia and Thailand, see text chart). The central bank may also



face some public concerns: of currency depreciation in Brazil, where the public perception of the central bank is more negative when the exchange rate depreciates than when inflation overshoots, following a series of past free-falling episodes since the establishment of IT in 1999⁵; of disorderly depreciation in Mexico that would trigger investor flight from local currency bond markets (see for example Góes et al., 2017); of high short-term currency volatility and the related variability of inflation in Korea (see for example, Clinton et al., 2019).

The macroeconomic outcomes in countries with a multi-pronged approach, for instance in terms of output and inflation levels and volatility, paint an inconclusive picture. There are beneficial effects from use of multiple instruments but also several costs associated with such policies, not all of which can be measured ex post. The potential benefits include allowing central banks to seek a balance between multiple objectives (e.g. monetary vs. financial system stability) and reinforcing the effectiveness of monetary transmission channels to better withstand the spillover impacts of global monetary factors. The potential costs include the resulting potential weakening effect of relatively high policy rates on domestic demand or potential challenges to central bank policy credibility (Thailand), possible tradeoffs at times between financial or external stability with inflation stabilization that may be difficult to manage and communicate (Brazil, Indonesia), and limited financial development (Indonesia, Peru). These potential costs uncovered by the analysis of previous episodes can also help in assessing the appropriateness of policies deployed in response to the current episode of COVID-19 and related challenges facing EMs hit by multiple and severe shocks including to trade, tourism, commodity prices, and financing conditions (see Mühleisen et al., 2020).

Policy and analytical work on these issues has progressed at a rapid clip in recent years, including under the IMF's Integrated Policy Framework umbrella. Basu et al. (2020) provide a comprehensive model that jointly analyzes monetary, exchange rate, macroprudential and capital

⁵ These negative perceptions have persisted notwithstanding the fact that during the period reviewed (2005-18), the public sector (and at one point, the country as a whole) became net creditor in FX, de-activating the fiscal accelerator of an exchange rate shock.

flow management policies and analytically solves for their optimal combination, including how these policies interact with different frictions and with each other. Adrian et al. (2020) use a fully-fledged empirically oriented model which enables them to quantify the policy tradeoffs countries face and how different policy tools can be used to mitigate them. Poirson et al. (2020) (forthcoming) find that in some circumstances managing external shocks with combinations of instruments—such as FXI or MPMs in tandem with monetary policy—can increase the effectiveness of policies in dampening volatility in growth and inflation. The paper also sheds light on the importance of the exchange rate and credit channels in monetary policy transmission, finding that use of other policy tools targeted specifically at these objectives seems to reduce the need for monetary policy to be focused on external and financial stability risks, allowing it to focus on its key objective of price stability. Mano and Sgherri (2020) have similar findings for episodes with extreme capital flow movements.⁶ For emerging markets in Asia, Finger and Lopez Murphy (2019) find that monetary policy responds, in addition to inflation and output gaps, to an array of external and domestic influences, including the US policy rate, capital flows, the exchange rate, and credit growth. Gelos et al. (2019) empirically show for EMs in general that monetary policy may not always be effective in addressing external shocks.⁷

The paper is structured as follows. Section II elaborates on the selected cases in terms of their existing policy frameworks, initial conditions, and episodes. Section III analyzes the policy combinations used when responding to external shocks. Section IV analyzes the outcomes, trade-offs and unintended consequences of such policy combinations. Section V concludes.

II. FRAMEWORKS AND EPISODES

Our selected EMs have adopted inflation targeting regimes since the late 1990s early 2000s, with the exception of Malaysia, where the central bank does not communicate any explicit numerical targets for inflation.⁸ That trend, however, did not coincide with the use of one instrument (the policy rate) and one target (inflation). Instead the authorities deployed, to varying degrees, other policy instruments to respond to external shocks, namely foreign exchange intervention (FXI), capital flow management measures (CFMs), and macroprudential measures (MPMs).⁹

All selected EMs were analyzed in the light of three major external pressure episodes: the post GFC period from 2010, Q1 until 2010, Q4, when capital inflows to EMs rebounded strongly, the

⁶ Effectiveness, however, does not always imply appropriateness, which rests on an evaluation of potential trade-offs and unintended consequences.

⁷ For other older related studies please see Benigno et al. (2016), Calvo (2006), Domac and Mendoza (2004), Farhi and Waring (2014), IMF (2016), IMF (2018), Katagiri et al. (2017) Katagiri and Takahashi (2017), Klein (2012), Korinek and Sandri (2015), and Ostry et al. (2012).

⁸ While price stability is the primary objective of the IT framework of the Bank of Indonesia, ensuring financial stability, limiting excessive volatility of the exchange rate, and maintaining attractiveness to capital inflows have also been part of the framework.

⁹ For existing Fund guidance on macroprudential policies, see IMF (2014a), IMF (2014b), IMF (2017a), and IMF (2017b).

2013 Taper Tantrum episode from 2013, Q2 until 2013, Q4,¹⁰ and the 2018, Q2-Q3 EM stress period, starting with a sharp appreciation of the US dollar. The first episode characterized a normalization and, subsequently, resurgence of capital inflows after a crisis. Relatedly, the second episode was characterized by a repricing of EM risks and decline in inflows after years of strong inflows in the post-GFC period. Similar to the second episode, the last episode studied in the paper was characterized by a tightening of external financial conditions in EMs after several years of strong inflows, amid ongoing US monetary policy normalization and a multitude of global shocks, including from trade protectionism, geopolitical risks, and rising oil prices. Figure 2 presents, for each of the three common episodes, the initial conditions at the time including inflation and output gaps, and reserve levels, as well as policy combinations: FXI vs. exchange rate change in the left panel and the change in monetary policy rate in the right panel.

In this paper, the measure of FXI we use is a proxy that is calculated as the change in monthly reserves. It is then stripped out of valuation and income effects, and aggregated for each year and expressed in percent of beginning of period stock of reserves. Negative (positive) values indicates sale (purchase) of FX. We also use a measure we refer to as FXI intensity, which sums the absolute value of monthly interventions for each year and scales them by beginning of period stock of reserves. This measure is intended to capture interventions regardless of whether they are sales or purchases of FX.¹¹ It thus shows non-zero intervention intensity even for countries like South Africa that has not intervened in the FX market to sell dollars, but occasionally accumulated reserves opportunistically.

Beyond these three episodes of common capital flow shocks, we also look at other country-specific episodes that entailed difficult policy trade-offs for some. This includes the oil price shock that started in 2014 and the post-US elections 2016 episode are considered for both Mexico and Malaysia, the latter episode because of the policy uncertainty it entailed for both countries and more generally for trade-dependent countries in Asia. For Malaysia, the oil price shock was compounded by RMB depreciation and a domestic scandal in 2014-15, and the 2018 EM stress coincided with uncertainty in domestic elections.

For both Brazil and Peru, we also looked at extended periods of inflows and outflows that highlight the long periods of boom-bust cycles these countries faced in the past and illustrate asymmetry in policy responses during each cycle. Brazil's case was considered during the 2005-2012 period of high inflows, buoyant credit growth and currency appreciation and the 2013-2018 period of lower flows, credit contraction, and depreciation. For Peru, external conditions changed significantly during 2010-2016, with the 2010Q1-2013Q1 subperiod seeing an improvement in the terms of trade and increasing capital inflows and the 2013Q2-2016Q1 subperiod seeing a decline in terms of trade and subsiding capital inflows that lasted well beyond the taper tantrum period. Finally, for Thailand, we analyze the significant appreciation pressures faced during 2016-2018:Q1, right before the depreciation pressures of the (common) 2018 EM shock.

¹⁰ See Sahay et al. (2014) for more on the Taper Tantrum episode.

¹¹ When calculated for a time period, we take the median value of yearly FX intensities over the relevant time period.

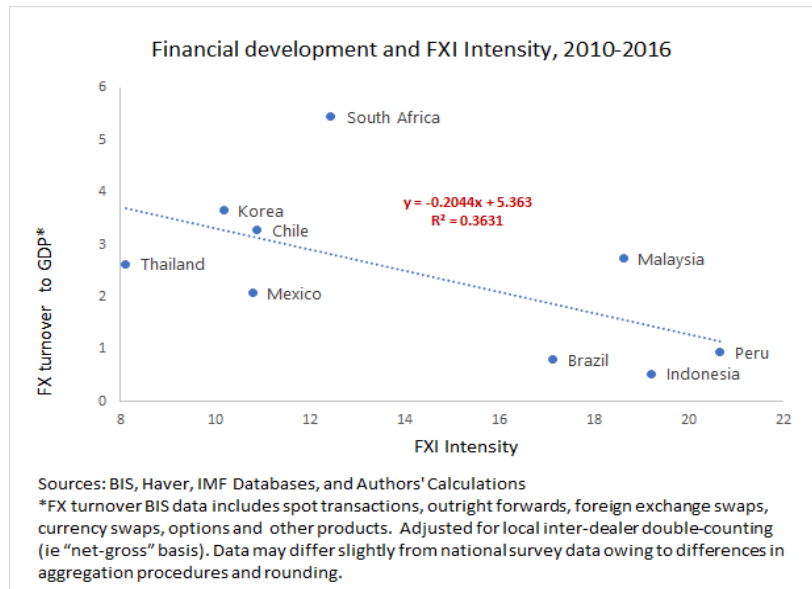
III. POLICY COMBINATIONS IN THE FACE OF EXTERNAL SHOCKS

For the purpose of distilling common threads in policy actions, we compare and contrast across approaches towards deploying different policy instruments:

A. Foreign exchange intervention

The EMs in our sample accumulated reserves during inflow periods and most of them used them during external pressure episodes. In both situations, however, use of FXI (for purchase or sales) coincided with exchange rate adjustments. In fact, most episodes were characterized by a combination of FXI and exchange rate appreciation/depreciation, the level of which depended on intensity as well as effectiveness of intervention (Figure 3).

Regardless of initial reserves, the selected EMs intervened significantly to accumulate reserves, most notably following the GFC, and/or lean against appreciation during inflows, while a few intervened during outflow episodes including to counter disorderly market conditions (Figures 2, 3). Overall, Brazil, Indonesia, Malaysia, and Peru intervened relatively more based on the intensity of interventions over 2010-2016, regardless of FX sales or purchases.



Some central banks that faced large inflow pressures after the GFC intervened asymmetrically more during such episodes to influence the pace of exchange rate appreciation (Korea and Thailand), which could hamper competitiveness and growth in the short-term, and build up precautionary FX buffers (Korea). Those that intervened heavily during depreciation episodes (Brazil, Indonesia, and to a lesser extent Peru) tended to be countries where balance sheet concerns prevailed, particularly where financial markets were not deep enough, as measured by FX turnover, possibly implying limited hedging opportunities. In Mexico—with limited balance sheets concerns and liquid financial markets—the large-scale intervention in 2015 aimed at ensuring an orderly path for the necessary exchange rate depreciation following the oil price shock, although the nominal exchange rate still depreciated by some 40 percent over the two-year period. However, the very depth of financial markets made the intervention less effective (just like in South Africa, where authorities have not intervened since 2012).¹² In Malaysia, since the GFC, two-sided FXI was a regular feature of the policy response. During outflow episodes,

¹² A more rigorous analysis including an estimation of counterfactual levels of volatility of the exchange rate or FX basis spreads would be needed to draw more definitive conclusions on effectiveness.

the central bank intervened to prevent disruptive short-term movements in the exchange rate. For instance, during the 2018 EM sell-off episode, the authorities were concerned about the exchange rate becoming a shock amplifier. The initial trigger during this episode was a spike in uncertainty following the surprising outcome of the general elections in May.

Pass-through concerns also mattered. For instance, in Mexico, while pass-through was perceived as low, the central bank still worried that a large enough depreciation could de-anchor the price-setting mechanism.

B. Monetary policy

For some of the countries and episodes under consideration, monetary policy decisions were not based on inflation developments alone, but also reflected external considerations and financial stability concerns.¹³ Indonesia and Mexico kept policy rates unchanged despite positive inflation gaps during the 2010 inflow episode, possibly in response to negative output gaps. Indonesia tightened monetary policy in 2018 in the absence of inflation gaps to prevent capital outflows during external pressure episodes, in line with Bank of Indonesia's overarching objective to maintain the stability of the rupiah (encompassing the two sub-objectives of inflation and exchange rate). External considerations determined Mexico's monetary policy decisions during the oil shock and the domestic policy uncertainty shock. Driven by the authorities' decision to follow Fed tightening, monetary policy was tightened toward the end of the episode in December 2015 despite inflation being within the target band, and well-anchored inflation expectations. The response was much more aggressive during the policy uncertainty shock, where the central bank reverted to aggressive, seemingly 'pre-emptive,' monetary policy tightening amid an only moderately positive output gap, citing external considerations.

Malaysia and Thailand's central banks have financial stability as part of their mandates. During the 2016-2018Q1 episode of appreciation pressures, Thailand kept policy rates higher than warranted by inflation developments as households and corporates struggled with high debt, thus balancing the objectives of financial stability and building up buffers against those of stimulating domestic demand and supporting external rebalancing. In Malaysia, the interest rate hike in 2014 was partly for financial stability concerns amid high household debt, as market participants became complacent about the low level of interest rates. And in Thailand, the central bank did not revert to raising rates like other countries in the region during the 2018 EM stress and instead used the reserves it had accumulated earlier and allowed the exchange rate to depreciate.

In Brazil and Peru, monetary policy was relatively more responsive to inflation developments. The central banks in both countries simultaneously activated several other tools such as CFMs and MPMs to help achieve macro and financial stability and use of these complementary tools may have "freed their hands" to focus on their primary mandates. Notwithstanding the relatively high overall responsiveness of monetary policy to cyclical conditions in Brazil, more recently, Brazil—along with Chile and Thailand—kept rates on hold, when external conditions worsened

¹³ For a thorough discussion of the importance of the exchange rate in the conduct of monetary policy by EME central banks and the challenge of designing the monetary policy framework in a way that incorporates in a rigorous way the precise role of the exchange rate for domestic outcomes, see <https://www.bis.org/speeches/sp190502.htm>.

in 2018, with inflation and output gap both negative. In Brazil, the decision to keep rates on hold was consistent with inflation expectations suggesting that the policy stance was ex ante not overly tight. It also reflected the central bank's monitoring of different measures of exchange rate pass-through to both inflation and underlying inflation and factors affecting pass-through, such as the level of slack in the economy and the degree of anchoring of inflation expectations.¹⁴

C. CFMs and MPMs

When used, CFMs were in some cases calibrated symmetrically over the cycle while MPMs were mostly used in inflow episodes: CFMs on inflows were introduced during the inflow episode (Brazil, Peru) and loosened in outflow episodes (Brazil, Indonesia). MPMs were actively used during the inflow episode in Brazil and Indonesia where credit growth was in double digits, and in Peru where credit growth was on the rise. On top of relaxing some MPMs, during the bust, Brazil also relied on the expansion of public banks to stimulate credit growth. In Thailand, despite active use, MPMs were seen as only partially effective in guarding financial stability since they failed to get into all the cracks of the financial system, and only provided limited coverage of the non-banking system (where the authorities perceived risks from low rates). In some instances, policy levers worked in tandem: during the Taper Tantrum, Indonesia tightened both monetary and macroprudential policies in response to a large inflation gap and double-digit credit growth, and loosened inflow CFMs in view of large exchange rate depreciation and limited reserves. In other cases, they pushed in different directions: in Indonesia during the 2018 pressure episode, monetary policy was tightened (in the absence of an inflation gap), and MPMs were loosened to avoid the potential negative impact of tighter rates on healthy credit growth.¹⁵

In Malaysia, outflow CFMs were perceived as an essential part of the toolkit when other policy tools are difficult to manage. They also aimed at developing onshore financial markets and bolster resilience to external shocks. More specifically, in late 2016, in response to a perceived disconnect between the on- and offshore FX markets, the authorities strengthened the enforcement of an existing outflow CFM.¹⁶

IV. MACROECONOMIC CONDITIONS

Macroeconomic conditions following multi-pronged policies have been positive in general—reflecting central banks' ability to anchor inflation expectations one year ahead in many countries in spite of high inflation, output, and exchange rate volatility—but such policies

¹⁴ For more detail on monetary policy drivers in the Brazil case, see for example May 16, 2018 Copom statement: “The Copom judges that it should base its decisions on the evolution of inflation projections and expectations, of the balance of risks, and of economic activity. External shocks should only lead to responses to second-round effects they might produce on prospective inflation (that is, in the propagation to prices in the economy that are not directly affected by the shock). These shocks, however, may change the balance of risks by reducing the chances that inflation will remain below target over the relevant horizon for monetary policy, through its possible second-round effects.” (<https://www.bcb.gov.br/en/monetarypolicy/copomstatements/2246>)

¹⁵ For more detail on MPMs used, please see the IMF's Macroprudential Policy [Survey](#) and [iMaPP](#) database, as well as IMF's [AREAER](#) database

¹⁶ For more detail on Malaysia's experience, see [Capital Account Safeguard Measures in the ASEAN Context](#).

entailed costs and trade-offs (Figure 4). Growth outcomes remained relatively strong in some (Indonesia, Peru). In Thailand, the policy of leaning against the wind by keeping the policy rate higher than warranted by cyclical conditions reinforced already weak domestic demand and low inflation. But the authorities believed their approach served them well, relative to the alternative of growing balance sheet imbalances, and the resulting high current account surplus combined with large FXI created additional reserve buffers which insulated the country during significant depreciation pressures in 2018. Growth and inflation volatility were generally higher in the countries relying on multi-pronged policies (except for Indonesia and Malaysia for growth and for Peru and Malaysia for inflation), compared to more traditional inflation targeters such as Chile and South Africa. That said, average growth and inflation outcomes provided a more mixed picture. In Indonesia, the legacy of the Asian crisis probably resulted in a higher weight on low growth volatility in the authorities' objective function. While these macro outcomes could have been the result of the multiple instrument approaches, they might have also triggered their use in the first place. In other words, the correlations we are presenting here do not imply causation, and for that to be established more empirical work is needed.

Exchange rate volatility was appreciably lower in only some of the heavy interveners. Among the interveners, Peru and Thailand's exchange rates both exhibited low volatility notwithstanding Thailand's much lighter intensity of FXI compared to Peru's. Despite similarly high FXI intensity, Brazil's exchange rate volatility and to a lesser extent Indonesia's, was higher compared to Malaysia and Peru and comparable to that of Korea's (a much lighter intervener).¹⁷ In many emerging markets, central banks might take into account their currencies' depreciation relative to that of other EM currencies, as markets often single out countries with largest depreciation as vulnerable, which may trigger intervention to influence the pace of depreciation. The Mexican peso exhibited relatively high volatility, despite periodic bouts of interventions (Figure 4). These findings represent factual observation regarding exchange rate variability in this group of EMs with various degrees of intervention, and any assessment of the link between intervention (size, frequency, and effectiveness) and ER variability would require further analysis, e.g., counter-factual FX volatility simulations if the intervention did not occur, and careful consideration of idiosyncratic factors of each country.

The costs associated with multiple-instrument approaches that were suggested in the discussions included the resulting potential weakening of central bank policy credibility and its effect on (de-)anchoring inflation expectations (Thailand), possible tradeoffs at times between financial or external stability with inflation stabilization that may be difficult to manage and communicate (Brazil, Indonesia), limited financial development (Indonesia, Peru). A closer look at the data suggests that FXI intensity is not correlated with worse IT outcomes in terms of inflation and inflation expectations breaching the target band over the period 2010-2018, although other longer-term costs cannot be ruled out. For instance, FXI intensity is found to be negatively correlated in this group with turnover in the FX market, one measure of financial development.

¹⁷ Chile and South Africa are also included as benchmarks for comparison. Higher exchange rate volatility in South Africa compared to Chile probably reflects the higher vulnerability of the former to shocks, including those induced by vulnerable domestic economic conditions during the period under observation, the globally large trading volumes of the rand, sometimes as a currency that proxies EM risks, and the large share of non-resident investors in local assets (International Monetary Fund, 2020).

Low financial development and lack of hedging capabilities could induce more FXI to contain financial instability implications, through balance sheet effects of currency depreciation. Indeed, further empirical analysis is needed to investigate the interaction of policies with financial depth, and to establish causality between policies and outcomes.

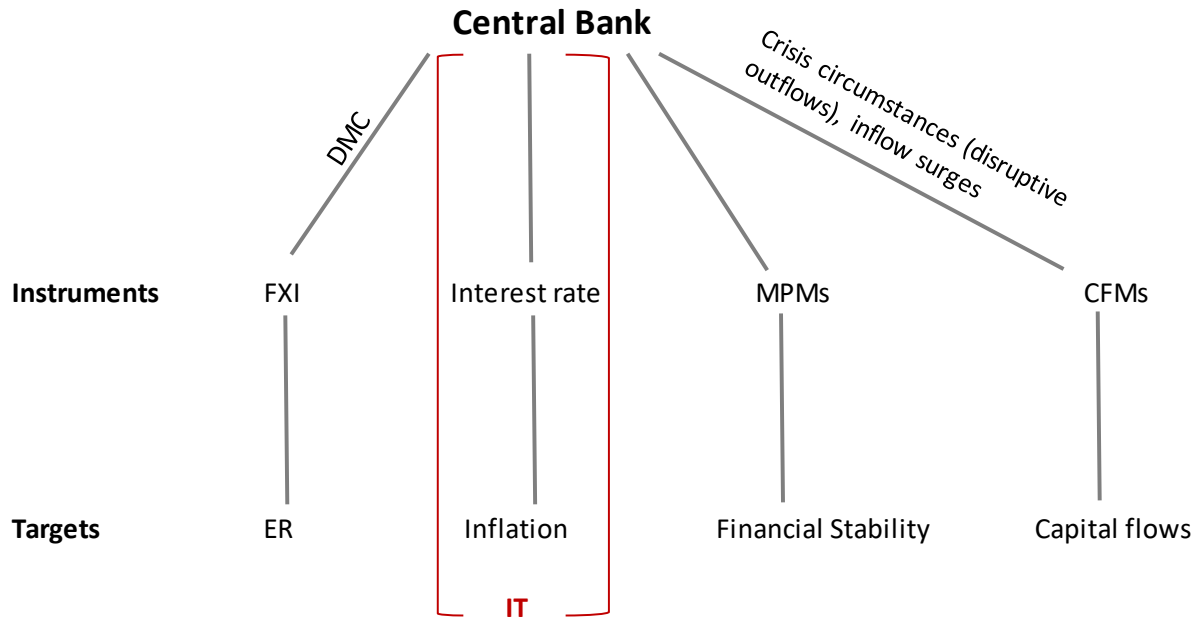
V. CONCLUSION

This paper carries some important lessons based on the findings of the case studies for how EMs have managed previous external pressure episodes through the deployment of multiple policy levers. The selected EMs have used their accumulated buffers when needed to prevent disorderly depreciation that could lead to the exchange rate becoming a shock amplifier and alleviate financial stability risks. For some, monetary policy took into account financial stability considerations, while in others maintaining attractiveness to capital inflows was an important consideration. Some have relaxed CFMs on inflows and deployed MPMs as complementary measures to FXI and policy rate changes. While such instruments may have helped some regain monetary policy independence and allow the central bank to focus on price stability, they may have also carried potential longer-term unintended effects, including on financial market development, central bank credibility and accountability.

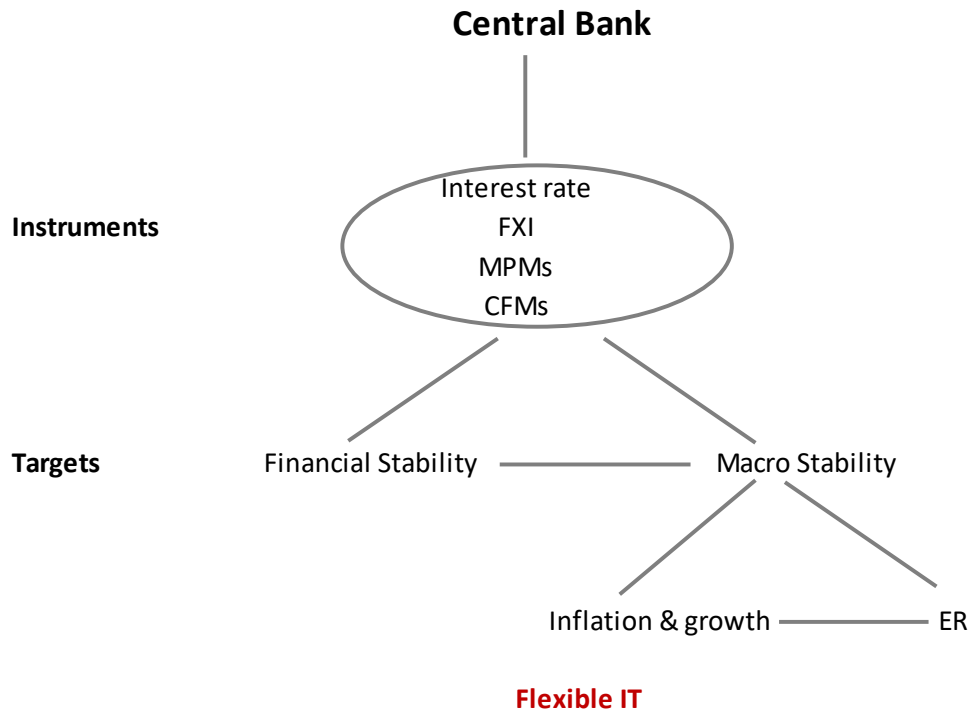
More generally, further research is needed to fully consider the intentions behind and the costs and benefits of multi-instrument approaches. These case studies uncover some initial patterns and lessons from the experiences of the seven EMs but also raise several interesting questions that cannot be answered without a framework to identify and further investigate tradeoffs and policy alternatives. A theoretical framework identifying the welfare benefits and costs of policy combinations would allow to answer questions such as: what is the output cost in terms of depressed investment because of higher-than-needed interest rates when monetary policy responds to financial stability concerns in Thailand? Where would the real exchange rate and the current account in Peru have been with an alternative set of policies to respond to the permanent real terms of trade shock (only monetary and fiscal policy without FXI)? Where would the exchange rate be without the large scale FXI following the oil shock in 2015 Mexico and without the large interest rate hike during the policy uncertainty in 2016-2018? What are the long-run costs and benefits from these heterodox policies if any? Such a conceptual framework would help better understand the conditions, policy framework, policy responses, and macroeconomic outcomes in individual countries to avoid “one size fits all” policy and guide the empirical assessment of policy responses (FXI, CFMs/MPMs, monetary policy). The growing literature has already started to fill the gaps and will hopefully continue to do so as EMs continue to face the risks posed by volatile capital flows to macroeconomic and financial stability.

Figure 1: Inflation Targeting Regime: IT vs. flexible IT

A) de-jure



B) de-facto



Sources: Authors' Calculations

Figure 2: Select Episodes, Initial Cyclical Conditions, and Policy Responses



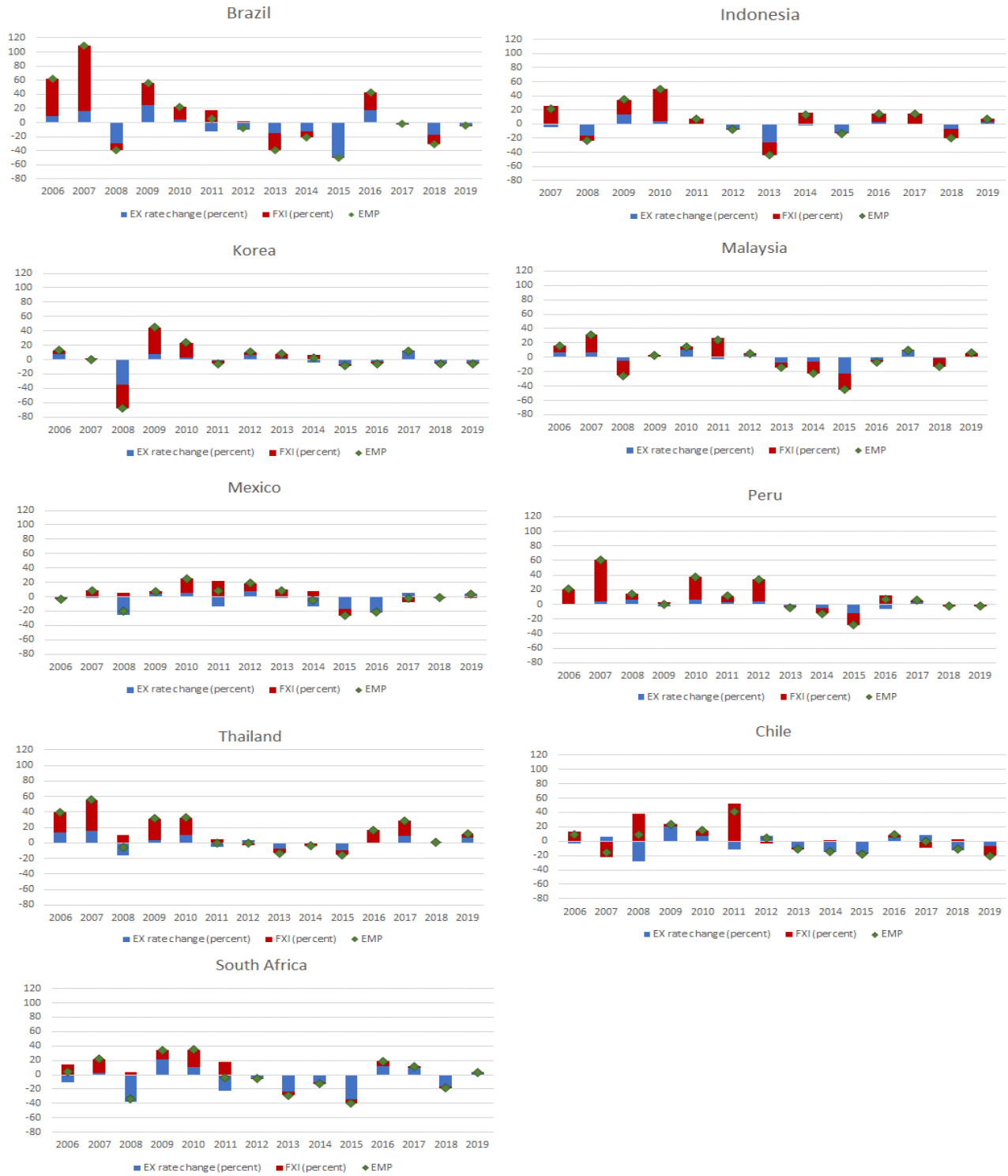
Sources: BIS, Haver, WEO, IMF Databases, and Authors' Calculations

Notes:

*FX intervention is calculated as the change in reserves, adjusted for valuation changes and for income earned on reserve assets, expressed in percent of beginning of period stock of reserves.

*Malaysia's inflation gap is the initial inflation level.

Figure 3: FXI and ER Flexibility over a Longer Horizon

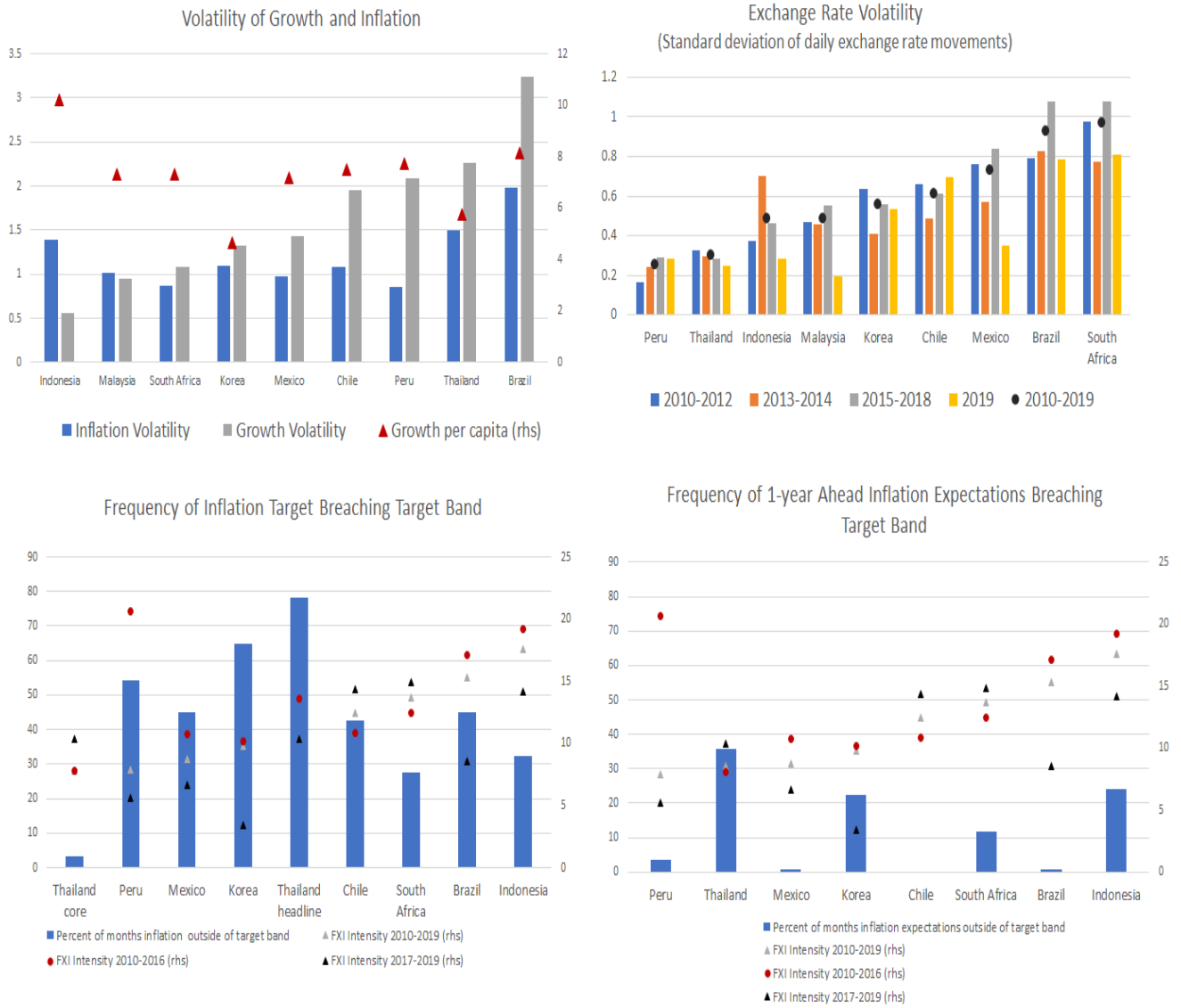


Sources: Haver, IMF Databases, and Authors' Calculations

Notes:

Exchange market pressure (EMP) is the sum of ER change and FXI.

Figure 4: Macroeconomic Conditions, 2010-2019



Sources: Haver, WEO, and Authors' Calculations

Notes:

*The higher FX intensities for Chile and South Africa during 2017-2019 reflect large FX sales in Chile following social unrest and largest Eurobond issuance in South Africa, both in the second half of 2019.

**The Central Bank of Thailand started targeting headline inflation instead of core inflation in 2015.

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