October 2015

EVOLVING MONETARY POLICY FRAMEWORKS IN LOW-INCOME AND OTHER DEVELOPING COUNTRIES

IMF staff regularly produces papers proposing new IMF policies, exploring options for reform, or reviewing existing IMF policies and operations. The following document has been released and is included in this package:

- The **Staff Report** prepared by IMF staff and completed on October 23, 2015.

> The report prepared by IMF staff has benefited from comments and suggestions by Executive Directors following the informal session on November 9, 2015. Such informal sessions are used to brief Executive Directors on policy issues and to receive feedback from them in preparation for a formal consideration at a future date. No decisions are taken at these informal sessions. The views expressed in this paper are those of the IMF staff and do not necessarily represent the views of the IMF's Executive Board.

The documents listed below have been or will be separately released.

Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries—Background Paper—Country Experiences

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October 23, 2015

EXECUTIVE SUMMARY

Over the past two decades, many low- and lower-middle income countries (LLMICs) have improved control over fiscal policy, liberalized and deepened financial markets, and stabilized inflation at moderate levels. Monetary policy frameworks that have helped achieve these ends are being challenged by continued financial development and increased exposure to global capital markets. Many policymakers aspire to move beyond the basics of stability to implement monetary policy frameworks that better anchor inflation and promote macroeconomic stability and growth.

Many of these LLMICs are thus considering and implementing improvements to their monetary policy frameworks. The recent successes of some LLMICs and the experiences of emerging and advanced economies, both early in their policy modernization process and following the global financial crisis, are valuable in identifying desirable features of such frameworks.

This paper draws on those lessons to provide guidance on key elements of effective monetary policy frameworks for LLMICs:

- Countries should develop a coherent and transparent monetary policy framework. The central bank should have a clear mandate that assigns primacy to the goal of price stability, and it should follow a forward-looking strategy that promotes that goal while fostering macroeconomic and financial stability.
- An explicit inflation objective should serve as the cornerstone for monetary policy actions and communications. Such an objective anchors inflation and provides a clear benchmark against which to measure the central bank's performance.
- Tradeoffs may at times arise between price stability and other policy goals, e.g., macroeconomic or financial stability. These are difficult to manage, though credibly establishing the primacy of the price stability objective can give central banks more room to take other objectives into account in their policy decisions.
- The central bank's procedures for implementing monetary policy should be framed in terms of a specific short-term interest rate. Such operating procedures can reduce interest rate volatility, promote financial market development, and enhance the transmission of monetary policy to the broader economy.

Given that prevailing domestic conditions vary markedly, the appropriate sequencing of reforms will differ across countries. Progress in many areas can be self-reinforcing, arguing for efforts to press ahead on as many fronts as possible. The central bank

should play a guiding role in the reform process but needs to work with other stakeholders to build and maintain a consensus for reforms.

The Fund will continue to support LLMICs in their process of strengthening and modernizing their frameworks through policy advice on institutional issues, both in surveillance and program contexts, as well as technical assistance (TA) and training.

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REFERENCES

Acronyms and Abbreviations

AE	Advanced Economies
AFRITAC	African Regional Technical Assistance Center
AFR, APD, EUR, ICD, MCD, MCM, RES, SPR	IMF's African; Asia and Pacific; European; Institute for Capacity Development; Middle East and Central Asia; Monetary and Capital Markets; Research; and Strategy, Policy, and Review Departments respectively
ATI	Africa Training Institute
BNR	National Bank of Rwanda
BoT	Bank of Tanzania
CBK	Central Bank of Kenya
CFA franc zone	Communauté Financière d'Afrique
CFMs	Capital Flow Management Measures
CPI	Consumer Price Index
DSGE	Dynamic Stochastic General Equilibrium
EM	Emerging Market
FPAS	Forecasting and Policy Analysis System
FPP-IT	Financial Programming and Policies-Inflation Targeting
FTEs	Full Time Equivalents
FY	Fiscal Year
GFC	Global Financial Crisis
IT	Inflation Targeting
LICs	Low-income Countries
LIDCs	Low-income Developing Countries
LLMICs	Low- and Lower-middle Income Countries
LMICs	Lower-middle Income Countries
MERP	Monetary and Exchange Rate Policy
MPA	Monetary Policy Analysis
MPC	Monetary Policy Committee
MPCC	Monetary Policy Consultation Clause
OMOs	Open Market Operation
PSI	Policy Support Instrument
QPM	Quarterly Projection Model
RTACs	Regional Technical Assistance Centers
RTCs	Regional Training Centers
SSA	Sub-Saharan Africa
TA	Technical Assistance
TRMT	Traditional Reserve Money Targeting
VAR	Vector Autoregression

BACKGROUND AND PURPOSE

1.   Many low- and lower-middle income countries (LLMICs) have made substantial progress in achieving price and macroeconomic stability.[1] They have succeeded in reducing inflation to single digits, while also deepening financial markets and achieving high growth, due in no small part to better macroeconomic management. Monetary policy has gained traction due to increased central bank independence, reduced fiscal dominance, and greater reliance on market-based procedures. However, with lower inflation policymakers in LLMICs are now called upon to focus more closely on tradeoffs among inflation, growth, and exchange rate stability.

2.   Some LLMICs have and will continue to choose fixed exchange rate regimes. These regimes, which include currency unions, currency boards, and hard pegs in which an explicit exchange rate commitment represents the main nominal anchor, have advantages and represent a viable choice for many countries. Indeed for some of these countries, strengthening their fixed exchange rate regime may be the preferred direction of policy reform.

3.   Most LLMICs, however, have regimes without such an explicit commitment and with some degree of exchange rate flexibility. These countries are the topic of this paper. To make further progress in anchoring inflation and inflation expectations and in promoting macroeconomic and financial stability, many of the LLMICs in this group have moved or are moving toward forward-looking policy frameworks for formulating, implementing, and communicating monetary policy. Financial sector development and innovation, as well as closer integration in global capital markets, have also motivated this transition.

4.   The environment that shapes monetary policy in LLMICs can differ significantly, at least in degree, from those of emerging market (EM) or advanced economies (AE). LLMICs face frequent, large shocks (domestic supply shocks; global food and fuel price shocks) that raise the volatility of inflation and can pose complex tradeoffs. They are also subject to several constraints including relatively low financial depth, and lack of adequate and timely data.

5.   At the same time, LLMIC monetary policy frameworks often suffer from a number of drawbacks. These include opacity regarding policy objectives and decision processes, weak liquidity management and policy analysis capacity, and poor communication strategies. Therefore, a majority of central banks do not have a well-articulated forward-looking framework for assessing how policy should respond to shocks, or a coherent strategy that effectively maps objectives to monetary operations. Moreover, a pursuit of multiple objectives complicates policy formulation and reduces policy effectiveness.

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[1] We use low and lower middle income countries (LLMICs—65 countries) to describe the merged sample of low-income developing countries (LIDCs) based on the IMF classification and LMICs based on the World Bank classification. The term "other developing countries" refers to LMICs. The LLMIC and EM country groups are not mutually exclusive; some LLMICs are EMs. Monetary policy frameworks issues discussed in this paper do not apply to all LLMICs as countries have different structural characteristics.

6.   This paper discusses how LLMICs can enhance policy frameworks in these conditions. It aims to help LLMICs with some scope for independent monetary policy strengthen their monetary frameworks, and provide guidance on how the process can be managed.[2] The paper (i) sets the background by laying out sound principles of monetary policy; (ii) reviews the policy and operational environment and the characteristics of monetary frameworks in LLMICs, whether they are evolving, and if so, why and how; (iii) discusses how LLMICs can adjust their frameworks to incorporate sound monetary policy principles, with attention to the role of monetary aggregates and exchange rate interventions during the process; and (iv) looks at how the Fund can support LLMICs in this process.

PRINCIPLES

7.   The monetary policy framework is composed of a few basic building blocks. These include the institutional structure of the central bank as well as the specification of its goals, instruments, strategy, operating targets and procedures, and communications. The institutional setup encompasses the central bank's statutory mandate, governance structure, and decision-making processes. The legal mandate specifies the goals of monetary policy and a set of supporting policy instruments. The monetary policy strategy guides the setting of the central bank's operating targets, and its operating procedures specify how its policy instruments should be adjusted to implement those targets. Central bank communications aid the public in understanding the policy framework as well as the rationale for specific policy decisions and help shape market expectations.

8.   A general consensus has emerged on the set of principles that characterize effective policy frameworks in countries with scope for independent monetary policy.[3] It should be noted that these principles are *not* intended to provide policy prescriptions in any particular situation. A brief summary of these principles is as follows:

I.   **The central bank should have a clear mandate in terms of its goals, and operational independence to pursue these goals, within the context of public accountability**. The central bank's monetary policy mandate should be set in the law. The central bank should have an effective governance and organizational structure. It should be free from fiscal dominance and political pressures to ensure a clear separation between fiscal and monetary policy, so that monetary policy has the operational space to attain its goals. Given a clear goal, operational

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[2] The Fund has adopted a new framework for monetary policy conditionality for countries with evolving monetary policy regimes (i.e., the monetary policy consultation clause (MPCC)). Eligibility for MPCC is judged against certain standards and on a case by case basis (IMF (2014a)). This paper's guidance could help LLMICs strengthen their monetary policy frameworks, in which case, if they have a Fund-supported program, an MPCC may be an option. This paper does not provide a definition of evolving monetary policy framework countries eligible for MPCC conditionality in their Fund supported program.

[3] Many of these principles also apply to fixed exchange rate regimes (e.g., see the case study on selected Sub-Saharan African currency unions in the Background Paper).

independence, and appropriate transparency arrangements, the central bank should be accountable for fulfilling its objectives.[4]

II. **Price stability should be the primary or overriding objective of monetary policy over the medium term.** The consensus view is that (i) monetary policy is one policy instrument that cannot be expected to deliver on multiple inconsistent objectives, and (ii) monetary policy is ultimately limited in its ability to directly influence real variables in the long-term (such as output growth) and is instead most effective in providing a nominal anchor. Clarifying that price stability is the overriding objective of monetary policy over the medium-term provides a focal point for policy deliberations and helps ensure that policy decisions are consistent with this objective.

III. **Consistent with the primacy of price stability, the central bank should have a medium-term inflation objective that serves as the cornerstone for its monetary policy actions and communications.** Establishing and maintaining an explicit numerical inflation objective operationalizes the price stability mandate. The numerical inflation objective should be distinct from the near-term inflation forecast. The inflation objective should only be modified rarely, and not due to short-term political pressures or conjunctural circumstances, but rather as part of a systematic and transparent review of the entire monetary policy framework. The central bank should clearly explain to the public how the inflation objective facilitates price stability, thereby bolstering the transparency and credibility of this objective. A transparent and credible inflation objective can in turn help anchor inflation expectations and provide a simple and transparent benchmark against which to measure performance. The focus on the medium-term recognizes that inflation in the short-run is beyond the direct control of the central bank. The inflation objective needs to be both achievable and, over time, achieved to be credible. Therefore the medium-term horizon should be soon enough to shape current instrument setting and long enough so that inflation can be reasonably expected to converge to its objective under appropriate monetary policy.[5]

IV. **In determining the magnitude and pace of monetary policy adjustments warranted by the inflation objective, the central bank should carefully take into account the implications for macroeconomic activity and financial stability.** The level and volatility of output, unemployment, and the exchange rate may be important factors that the central bank should consider when determining the course of monetary policy. Consideration may also be given to financial stability issues, including the quantity of credit and asset prices. While it is important to take into account other economic and financial variables, this should not come at the expense of undermining the central role of the medium-term inflation objective for policy formulation (Appendix I). Any significant erosion of the central bank's credibility can unhinge inflationary expectations, with related undesirable effects on real activity and financial stability.

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[4] Laurens and others (2009) and Alesina and Stella (2010) comprehensively review the theoretical and empirical literature on central bank independence, accountability and transparency. See also Dincer and Eichengreen (2014).

[5] Bernanke and others (1999) and Levin (2014) discuss the benefits of a clearly articulated medium-term objective.

V. **The central bank should have a clear and effective operational framework and it should align market conditions with its announced policy stance.** It should choose an operating target, with the policy stance being set and announced in terms of a specific level for this target. The operating target should facilitate the communication of the policy stance, and its setting should be clearly linked to the attainment of the medium-term inflation objective. Central bank operations should align market conditions with this announced policy stance. An effectively implemented operational framework supports the functioning of money markets, allowing banks to predictably place surplus liquidity with, and obtain short-term funding from each other or the central bank at rates that are reasonably stable.

VI. **The central bank should have a transparent forward-looking monetary policy strategy that reflects timely and comprehensive assessments of the monetary transmission mechanism.** Given the dynamic nature of monetary policy and the lags with which it affects the key economic variables (output, inflation, exchange rate), policy should be formulated in terms of a forward-looking strategy that encompasses: (i) a full assessment of the economic outlook; (ii) a path for policy that is consistent with the inflation objective, while allowing for the macro and financial stability considerations noted above; and (iii) evaluation of future risks and contingency plans in the event of large shocks. The central bank should also assess the extent to which intermediate targets may be useful in formulating and communicating the monetary policy strategy. All available information and analytical tools should be used in devising the policy strategy, including an up-to-date evaluation of the transmission mechanism.

VII. **The central bank's communications should be transparent and timely, because clear communication enhances the effectiveness of monetary policy.** The focus of communication should be on explaining past outcomes and actions necessary to align expected inflation outcomes with the policy objective, with emphasis on the variables that matter for private sector behavior. Effective communication helps reduce uncertainty, improves monetary policy transmission, and facilitates accountability, thereby building credibility. Clear communication can also help anchor inflation expectations when "words" are confirmed by actions and outcomes ("say what you do and do what you say"). It is also important to explain deviations from targets, and remedial actions.[6]

9. **These principles encapsulate the key characteristics of any sound forward-looking monetary policy framework, including those that assign prominence to monetary aggregates or the exchange rate.** Frameworks may differ substantially in terms of their exact characteristics, especially with respect to instruments, operating targets, and intermediate targets. What is essential (and should not differ across frameworks) is a clear statement of internally consistent goals of policy, the institutional arrangements that give the central bank the freedom to pursue these goals, and transparency and effective communication with respect to its goals and policy actions.

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[6] Blinder and others (2008) provides a review of the literature on central bank communication.

10.   These principles are consistent with inflation-targeting frameworks (IT) but it is emphasized that IT frameworks are not the only way to implement them. A number of advanced and emerging economies that have adopted IT have been largely successful in anchoring inflationary expectations and stabilizing the real economy.[7] However, the meaning of the term "IT" varies and has evolved over time.[8] For example, some early IT regimes had an excessively narrow and short-term focus on inflation, with little flexibility to consider the broader impact of monetary policy. The principles stated in this paper stress the primacy of a medium-term inflation objective, but do not require an unduly narrow focus on inflation at the expense of considering the impact on the real economy and the financial system.

11.   The global financial crisis (GFC) has reinforced the importance of principles-based monetary policy, while also revealing important gaps in pre-crisis frameworks. The crisis has reinforced the importance of Principles III and IV, with the experience of many countries demonstrating that having an effective monetary policy framework resulted in better macroeconomic outcomes in the face of the financial crisis.[9] The prospect of deflation, and the recognition that inflation misses in both directions can be costly, has highlighted the importance of having a clear medium-term inflation objective. At the same time, recent years have been a stark reminder that financial crises are costly. Policy should aim to decrease the likelihood of crises, not only rely on dealing with their repercussions once they occur. To do so, well-targeted prudential policies (including micro and macroprudential policies, and regulation) should be pursued actively; while interest rate policy (leaning against the wind) should only be used if benefits are greater than costs. In most circumstances this will likely not be the case, though more research is needed. However, central banks should monitor and openly discuss financial stability risks, and continuously evaluate the costs and benefits of potential policy action (see IMF (2015b)).

12.   In considering the implications of these principles for LLMICs, it is essential to take into account the specific conditions and challenges facing each individual country.
The principles provide a guide towards achieving a sound and well-functioning framework; the actions to be taken, and the appropriate sequencing of measures, will depend on country circumstances. Policy-makers will need to proceed at their own pace, taking into account local conditions. They should also realize that the principles are interconnected—that progress towards one can greatly facilitate the achievement of others. Most notably, full operational independence coupled with agreement on the primacy of the medium-term inflation objective can greatly facilitate transparency of the monetary policy strategy and operational implementation. An in-depth discussion of how the principles can be applied to LLMICs and the implications for the policy modernization process in these countries is provided in section IV.

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[7] See Batini and Laxton (2007) and Ball (2010).

[8] As an example, recent changes in monetary policy frameworks in AEs can be interpreted as either a move toward or away from IT, depending on the elements that are emphasized, e.g., greater clarity and guidance on inflation objectives as an example of the former, versus greater focus on financial stability as an example of the latter.

[9] See De Carvalho Filho (2011).

REALITIES

13.   **This section describes the monetary policy frameworks and the policy environment in LLMICs.** It covers the key features of LLMICs' monetary policy frameworks, as well as common challenges to monetary policy, both specifically related to the design and implementation of monetary policy and more generally related to the macro and financial environment in which monetary policy operates.

A.   The Monetary Policy Landscape

14.   **While most LLMIC central banks place price stability as the primary objective of monetary policy, its role in the policy framework varies widely:**[10]

- *LLMIC central banks often follow other objectives in addition to price stability.* More than two-thirds of the survey respondents had two or more objectives (Table 1).[11,12] These range from attempting to support economic growth and, at times, to explicitly targeting financial sector development and credit growth, and exchange rate stability.

- *The primacy of the inflation objective is generally not well established.* A majority of surveyed countries (81 percent) identify price stability as the primary or overriding objective of monetary policy. However, most central banks in non-IT countries do not have an explicit numerical inflation objective. And those that do (38 percent) typically align their objective with the near-term inflation forecast, rather than using a stable inflation objective as a guide for policy.

- *The policy horizon in most LLMICs is often very short.* Many LLMICs insofar as they pay attention to inflation (even some "IT-lite" or new "IT" countries) tend to have excessively short horizons, which makes it difficult to focus on underlying pressures and trends rather than only current or recent developments.

- *A few countries,* however, *are evolving.* Mongolia has an explicit medium-term inflation target (7 percent); Nigeria has a medium-term inflation objective of 6–9 percent. Not surprisingly all IT countries have an explicit inflation objective, with most countries setting targets over the

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[10] Table 1 and Figure 2 draw on a short IMF country desk survey on monetary policy frameworks—covering de jure and de facto frameworks, objectives, targets, instruments, transparency and accountability covering 61 LLMICs (41 LICs, 20 LMICs). The rest of the tables and figures in this section use a sample of 65 LLMICs (44LICs, 21 LMICs). Currency unions are excluded in both samples.

[11] All but one of the respondents with a single objective identified price stability as their sole focus. These countries with a single objective feature an exchange rate anchor (24 percent), monetary aggregate targets (35 percent), or an inflation targeting regime (29 percent) as their de facto framework.

[12] Many AE and EM central banks also often follow multiple objectives.

medium-term (two to five years). A few countries have yet to move away from focusing on the short-term, including a few IT countries.[13]

		Exchange rate anchor	Money aggregate targeting	Inflation targeting	Other
Table 1. Primary Objectives of Monetary Policy					
Single objective	**Price stability**	Burundi Morocco São Tomé and Príncipe	Congo Mozambique Sierra Leone Sri Lanka Sudan Ukraine Uzbekistan	Armenia Georgia Ghana Guatemala Kenya Moldova	Egypt
	XR	Cape Verde			
Dual objective	**Price and XR**	Liberia Tajikistan	Afghanistan Madagascar	Indonesia	Kyrgyz Republic
	Price and growth	Cambodia	Guinea	India Philippines	
	XR and other	Nicaragua			
	Price and other	Bolivia Guyana Honduras Timor Leste	Tanzania	Paraguay Romania Uganda	Vanuatu
3 or more objectives	**Price, growth, XR**	Ethiopia	Bangladesh		
	Price, growth, other	Vietnam	Malawi Myanmar		Mongolia Papua New Guinea
	Price, XR, other		Nigeria Yemen, Rep. of		
	Price, other	Solomon Islands			Pakistan Zambia
	Price, growth, XR, other		Gambia Rwanda		

Source: IMF desk survey.

Note: "Other" refers to one or more of the following objectives: stability of the financial sector, promoting macro-economic development, maintaining external reserves, and supporting government policies. XR refers to exchange rate stability. The regime classification is based on responses by IMF country desks.

15. **Exchange rate management also has an important role in the monetary policy frameworks in LLMICs, including in some IT countries.** No LLMICs conduct pure floats;[14] all use interventions at least from time to time, for various purposes.[15] The survey results show that most LLMICs with independent monetary policy have exchange rate-related issues as one of their

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[13] This short-term focus also applies to IT countries. Moldova, for example, targets an inflation rate of 5 percent +/- 1.5 percentage points over a 12 month period. Until recently, Ghana announced an end-of-current year inflation target, which led to confusion with its inflation forecast, but now has a medium-term inflation target.

[14] In the IMF classification of foreign exchange regimes, a *floating* regime involves a largely market-determined exchange rate where the authorities may intervene to moderate the rate of change or to prevent undue volatility. This type of arrangement is often referred to as a managed float.

[15] In a number of LLMICs, central bank FX transactions may involve intermediating foreign currency received by the government or government controlled businesses (e.g., Sudan and Nigeria due to oil proceeds, Afghanistan due to donor proceeds). These transactions are not targeted at influencing the price or the volatility of the exchange rate and as such, are not considered as FX intervention.
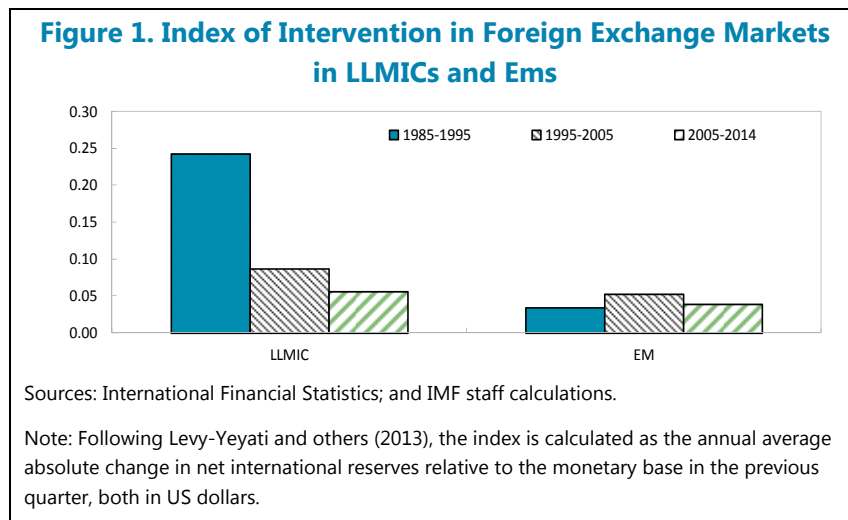
objectives.[16] There is also a divergence between the de jure and de facto floater classification: only about 40 percent of countries that are de jure floaters actually let the exchange rate float freely (Table 2). Intervention measures by Levy-Yeyati and others (2013) indicate that interventions are commonly used in LLMICs, though the average amount has declined by more than half over the last decade (Figure 1).[17]

Table 2. Consensus Table of De Jure and De Facto Monetary Policy Regimes

		De Jure Classification (1995-2004)			De Jure Classification (2005-2014)		
		Hard peg	Intermediate	Floating	Hard peg	Intermediate	Floating
De Facto	Hard peg	271	31	12	301	23	9
	Intermediate	42	210	153	43	253	89
	Floating	0	9	128	0	74	68
	Total	313	250	293	344	350	166
	% Consensus	87%	84%	44%	88%	72%	41%

Source: IMF Annual Report on Exchange Arrangements and Exchange Restrictions.

Note: Each year for each country counts as one observation, i.e., each country could have a maximum of ten observations for the ten year period. Highlighted portions indicate that the country's de jure regime matches its de facto regime.

Figure 1. Index of Intervention in Foreign Exchange Markets in LLMICs and Ems

Sources: International Financial Statistics; and IMF staff calculations.

Note: Following Levy-Yeyati and others (2013), the index is calculated as the annual average absolute change in net international reserves relative to the monetary base in the previous quarter, both in US dollars.

16.   **A majority of LLMICs with floats rely on a de jure traditional reserve money targeting regime (TRMT)**[18]**, with only a few featuring explicit IT frameworks** (Figure 2). The prevalence of TRMT reflects a legacy of money-based stabilization policies and the influence of the IMF's financial programming approach to balance of payment adjustment and macroeconomic policy coordination

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[16] See also IMF (2008) for a monetary policy survey of countries in Sub-Saharan Africa (SSA).

[17] Adam and O'Connell (2005) find that substantial foreign exchange intervention is the norm among SSA countries.

[18] A TRMT is defined here as one in which quarterly or higher-frequency targets on reserve money (end-of-period or averaged) are characterized as the operating target of the central bank. This label excludes regimes such as, for example Germany in the 1970–1990s, in which monetary aggregates served as information variables or intermediate targets (see Clarida, Gertler, and Gali (1999) on this case), though many LICs typically feature both types of targets.

(see the Albania and Armenia case studies).[19] It also reflects concerns with limited financial market development and the monetary transmission mechanism. Yet, a growing number of LLMICs are modernizing.

Figure 2. De Jure Monetary Policy Regimes in LLMICs

Source: IMF country desk survey.
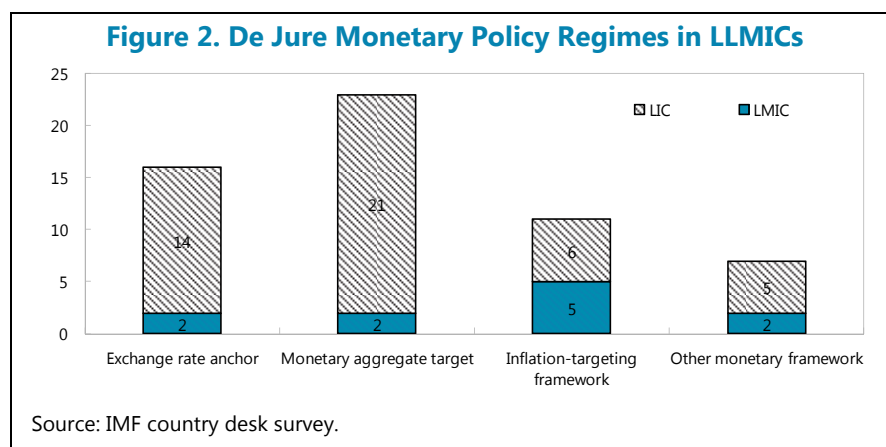
17.   In practice, however, LLMICs display considerable flexibility relative to their de jure frameworks (Figure 3). Traditional reserve money targeting framework (TRMT) is typically implemented in a flexible manner, manifested by frequent deviations from money targets (see Appendix II). IT frameworks also deviate at times in significant ways from the textbook version; most notably central banks often intervene in the foreign exchange market either to smooth exchange rate fluctuations, or to defend the exchange rate. Flexibility vis-à-vis TRMT has been increasing over time, as shown by the de facto classification of policy regimes in LLMICs. Many LLMICs have experienced significant changes in their policy frameworks over the last two decades: some of these countries (e.g., Ghana and Uganda) are frontier economies that have adopted or announced the adoption of a formal IT framework.[20] A number of other countries implement eclectic regimes with some role for monetary aggregates and/or exchange rates. This change was preceded by a shift to more flexible exchange rates (*de facto* managed floating exchange rate in LLMICs increased from under 10 percent in 1990s to 30 percent in 2000s).

18.   The flexibility with which TRMT frameworks are implemented may not necessarily reflect policy errors. At least in LLMICs with reasonably low inflation, deviations from money targets are generally not associated with deviations from projected inflation (see IMF (2014a) and Appendix II). This fact and the way policymakers discuss these deviations, including in the context of Fund-supported programs, is consistent with a view that deviations may reflect (implicit) policy decisions to accommodate unforeseen changes in economic conditions—money demand in particular.[21]

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[19] Throughout the paper the term "case studies" refers to the discussion of country experiences in the accompanying Background Paper.

[20] See Berg and others (2015) for an overview of monetary policy frameworks in SSA.

[21] It is also possible that such deviations reflect unintended inaction on the part of the central bank, e.g., unexpected changes in the autonomous components of their balance sheet, rather than explicit policy decisions. Either way, such deviations do not appear to be costly from an inflation perspective in low inflation countries. Appendix II shows that

(continued)

Figure 3. De Facto Monetary Policy Regimes in LLMICs, 2003–2013

Source: IMF Annual Report on Exchange Arrangements and Exchange Restrictions.

Note: 81 Lower and lower-middle income countries excluding 29 currency boards and hard pegs.
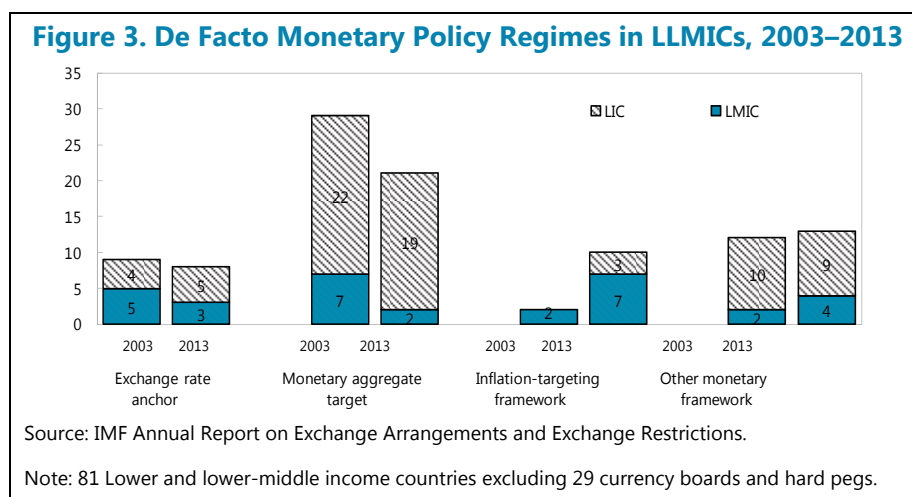
19.   Although the majority of LLMICs follow TRMT, some have introduced policy rates for signaling the stance of monetary policy. However, they often do not have the operational support required to align market rates with the policy rate (Figure 4 and the Kenya case study). The resulting large and persistent deviations of market rates from the policy rate and corresponding large differences between the de facto and de jure policy stance weaken policy transmission.

20.   Many LLMICs have strengthened their legal frameworks through reforms and the adoption of new central bank charters. Many have *de jure* (legislated) independence (Lucotte (2009) and MCM's Central Banking Legislation Database), and have also made significant progress in achieving *de facto* independence (Laurens and others 2009). This evolution of central bank independence has coincided with a move to more coherent and forward looking regimes, often in the form of IT.

B.   Challenges in Policy Design and Implementation

21.   Despite the success in reducing inflation to single digits, most LLMIC central banks do not have an effective framework for formulating and implementing policy. The frameworks lack several critical elements: a clear inflation objective, a coherent strategy that maps objectives to operations. The absence of a clear policy framework is an important factor behind policymakers' dissatisfaction and the motivation for the ongoing modernization efforts.

22.   The pursuit of multiple objectives complicates policy design and is often the source of policy slippages. At times, concerns over the exchange rate or the level of credit take precedence over price stability considerations. As a result, monetary policy in many LLMICs can go through periods of excessive accommodation or tightening and contribute to inflation and output volatility. Although these challenges are present for all central banks, they are more pronounced in some LLMICs, given the absence of clear frameworks.

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periods when money aggregates exceed targets are typically associated with higher-than-usual interest rates, suggesting responses to money demand shocks rather than money supply shocks.

Figure 4. Interest Rate Spreads between Policy Rate and Interbank Rates
(selected countries, January 2002–December 2014)
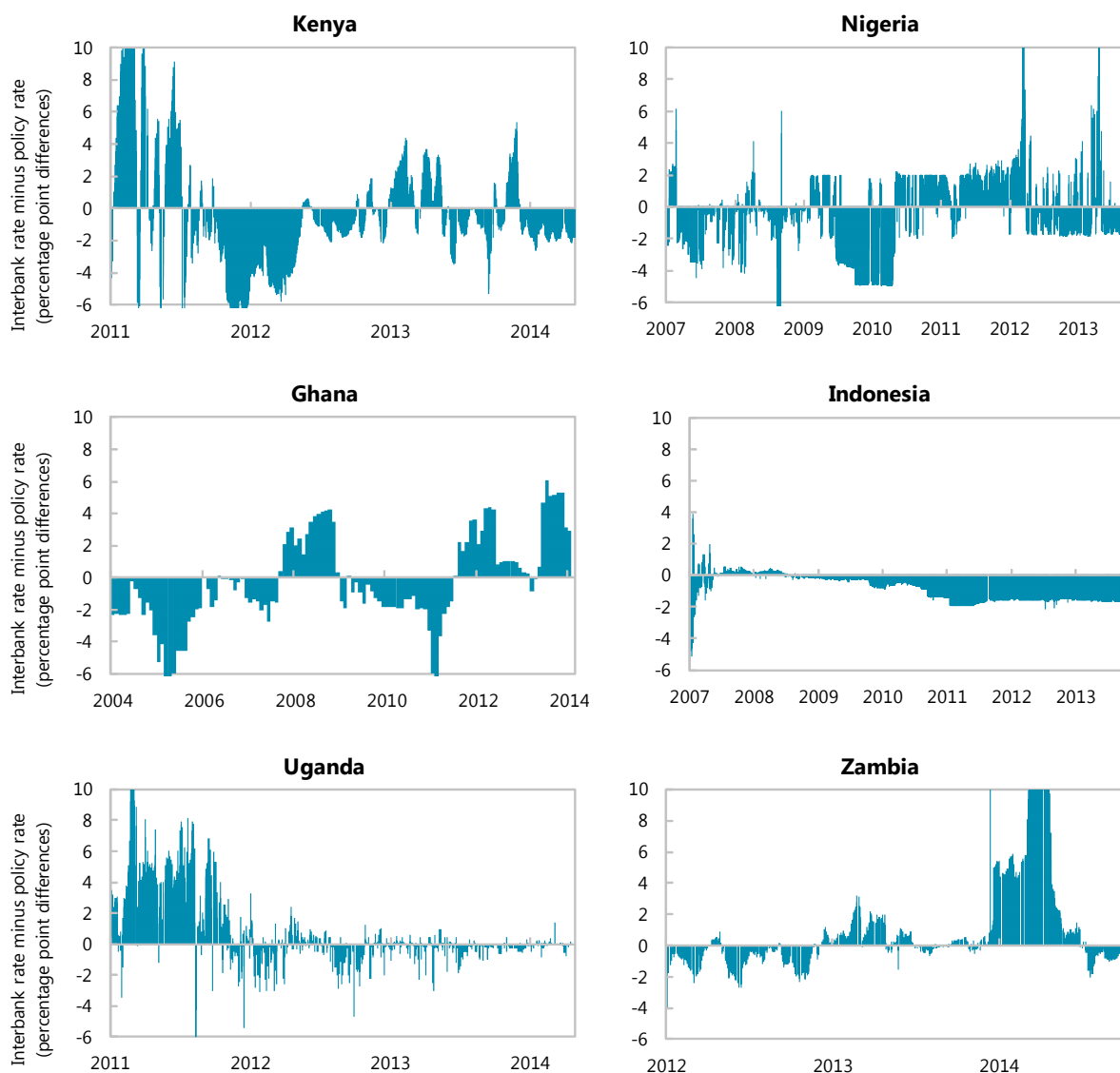
Source: Maehle (forthcoming).

23.   Policy effectiveness in many LLMICs is hampered by the existing operational arrangements. This is perhaps most visible (though not exclusively) in the case of TRMT. This regime reflects important historical realities and has its advantages, but many LLMIC central banks recognize a need to modernize these frameworks. In particular, money demand shocks can create noisy and uninformative interest rate movements. More flexibility with respect to money targets can reduce this volatility but at a cost of increased opacity (see Box 1 on advantages and challenges of TRMT, and the Albania, Armenia, and Kenya case studies).

Box 1. The Role of Traditional Reserve Money Targeting

There are limited circumstances under which TRMT may be justified:

- It could help re-anchor inflation in the face of severe fiscal dominance. When the central bank balance sheet is determined by the need for seigniorage, the only available policy option may be to set quantitative limits on reserve money growth.
- A central bank with limited independence may avoid some political or public pressure under TRMT. Reserve money targeting frameworks are inherently opaque, as the stance of policy is often unrelated to the deviations from the target (see below). In this context, the central bank might be able to tighten policy without taking responsibility for interest rate increases.
- Targets on reserve money may also play a monitoring role in Fund-supported programs, as discussed in IMF (2014a).

TRMT nonetheless raises a number of challenges:

- Liquidity shocks can lead to volatile short-term interest rates, increasing liquidity risks and hampering monetary transmission. Partly for this reason, most central banks do not strictly adhere to the targets and deviations can be frequent and economically significant (Appendix II).
- Flexibility with respect to the targets makes deviations difficult to interpret, thus complicating the assessment and signaling of the policy stance. Deviations from operational targets may be advisable, either due to unexpected changes in the demand for money or because a policy adjustment is in order. It is difficult for observers to sort out whether target misses reflect policy adjustments (advisable or not) or accommodation of money demand shocks. This opacity greatly reduces the effectiveness of policy signaling, as discussed in Appendix III.
- TRMT tends to conflate policy and operations. Target misses may not be the outcome of explicit policy decisions, e.g., by the central bank's monetary policy committee, but instead may result from purely operational choices. The inherent difficulty in disentangling this distinction undermines the role of the policy-making process.

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24.   The limitations of existing LLMICs frameworks reflect a number of challenges:

- *Limited data availability and central bank analytical capacity hamper policy formulation.* Many LLMICs face severe statistical constraints and large uncertainty regarding the state of the economy, e.g., as illustrated by very large revisions to national accounts data in recent years.[22] In addition, many central banks lack the capacity to analyze the drivers of inflation and derive implications for policy, and in most cases, efforts to correct this shortcoming are in their infancy.

- *Some central banks suffer from ineffective governance and inappropriate organizational structures.* Poor internal organization and lack of cohesion between different divisions can hamper the formulation and implementation of policy. Daily operational decisions based on prevalent market conditions can result in changes in the policy stance that are not intended by the monetary policy committee (see Box 1). Making the most effective use of existing analytical capabilities requires close and continuous interactions between the research team and the

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[22]See Levy and Misch (2014) and Grigoli and others (2015).

monetary policy committee so as to focus attention on the most policy relevant issues, a practice that is often missing in LLMIC central banks.

- *Many central banks have limited operational capacity.* Sufficiently accurate liquidity forecasting remains a serious challenge, most notably because of persistent weaknesses in government cash flow management. This makes it difficult for central banks to adequately manage overall liquidity conditions. Together with restrictions on access to central bank standing lending and deposit facilities, excessive spreads between central bank lending and deposit rates, short reserve maintenance periods and insufficient averaging, the result is high liquidity risk and interest rate volatility that in turn weakens policy transmission. In particular, large variances between policy rates and the market rates relevant for commercial bank liquidity management risk rendering the policy rates irrelevant for commercial bank pricing and lending decisions.

- *Some central banks are constrained by a weak balance sheet, potentially posing a challenge to their operational independence.* Where structural excess liquidity persists, central banks can incur high costs of open market operations, weakening their balance sheet. Where losses exceed sustainable seigniorage revenue, or where laws or perception require a minimum central bank net worth, a weak balance sheet can challenge the ability of the central bank to operate independent of fiscal pressures. In the absence of systematic recapitalization, ongoing sterilization costs—and the often-resulting need for fiscal transfers—can eventually undermine central bank independence to the point where the monetary policy objectives are compromised.

- *Limited central bank transparency and accountability.* LLMIC central bank transparency indexes, while improving, remain behind those of EMs and AEs (Figure 5). In particular, a clear communication strategy centered on the inflation outlook is generally missing. Countries with forward looking policy regimes also have higher de jure transparency. The lack of transparency in some LLMICs might also reflect multiple inconsistent objectives.

Figure 5. Degree of Central Bank Transparency

Sources: Dincer and Eichengreen (2014) and IMF (2014d).

Note: The de jure transparency index was developed by Dincer and Eichengreen (2014). It ranges from 0–15, and is the sum of scores to questions ranging from political, economic, procedural, policy and operational transparency.
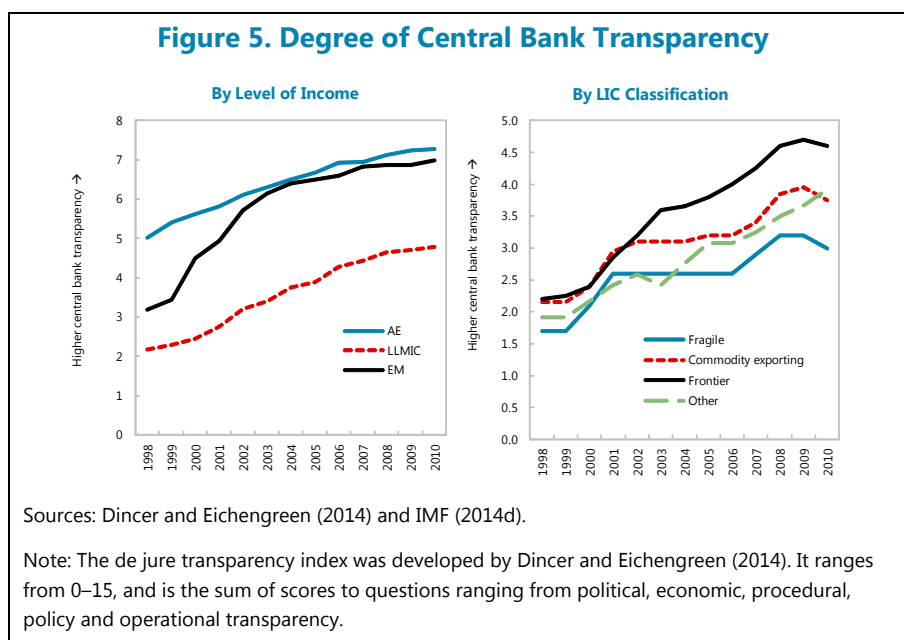
C. The Macro and Financial Environment for Monetary Policy

25.   The macro and financial environment that LLMICs operate in imposes another set of constraints on the conduct of monetary policy. This section reviews these LLMIC specific characteristics and discusses how they influence the way in which monetary policy is carried out.

26.   While there are reasons to think that the transmission mechanism in LLMICs may be more uncertain than in other countries, the evidence is mixed (Appendix III). Weak credit culture and financial development may impair policy transmission.[23] Characteristics of the policy regime itself—including operations, objectives, policy formulation, and communication—decisively shape the nature of transmission. For example, when interest rate movements mainly reflect money demand shocks (as in an operational framework that emphasizes base money), it cannot be expected that these rates would affect the economy as strongly as they would in a regime that communicates policy intentions through a policy rate.[24] Where exchange rates are heavily managed or the capital account closed, transmission through exchange rates is also likely to be attenuated. Some empirical evidence supports the view that monetary policy actions have limited impact on inflation and output in LLMICs.[25] Other studies, however, have found evidence of a functioning transmission mechanism in LLMICs, especially where the stance of monetary policy was communicated clearly.[26]

27.   Uncertain monetary policy transmission does not justify inaction. The modernization process inevitably involves an element of "tatonnement": assess the state of the economy and the outlook; adjust policy if it seems too tight or too loose; and repeat. Some confidence about the *sign* of the effect of monetary policy is critical, and one of the best ways to improve understanding is to learn by doing. Yet, uncertainty about the transmission mechanism may have implications for some aspects of the policy regime, such as the width of any confidence bands around—and perhaps the level of—the inflation objective, and how it is communicated.

28.   The complex interaction between monetary and fiscal policy means that pressures arising from the fiscal authority can substantially complicate the task of monetary policy. The extent of fiscal pressures and its impact on monetary policy can vary depending on the stance of fiscal policy and the institutional setup of the country. Two broad types can be identified:

- **The presence of fiscal dominance undermines the central bank's control of inflation.** Fiscal dominance refers to a situation where monetary policy is used to ensure fiscal solvency, with the

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[23] Asymmetric information and limited contract enforceability are often found in LLMICs. As a consequence banks tend to rely predominantly on customer relationships and are less likely to pass on small changes in the policy rate. High credit risk premiums have a similar effect. The effect of financial system structure on the monetary transmission mechanism is discussed in IMF (2012b).

[24] Appendix III and Box 5 discuss the relationship between monetary frameworks and the strength of transmission.

[25] See Mishra and others (2012), Mishra and Montiel (2013), and Appendix III for a formal analysis of this argument.

[26] See Berg and others' (2013) study of four members of the East African Community (EAC) (Kenya, Rwanda, Tanzania, and Uganda), and Abuka and others' (forthcoming) analysis based on loan-level data for Uganda.

central bank typically required to finance the fiscal deficit by directly or indirectly lending to the government. The monetization of the government deficit results in large increases in money supply, too low interest rates, and increased inflation. Although quite prevalent a couple of decades ago, fiscal dominance in LLMICs has decreased in recent years, as attested by: (i) efforts to separate monetary from fiscal policy (a decline by more than half in central bank credit to the government), and (ii) better fiscal discipline (reflected in considerable decline in fiscal balances and government debt-to-GDP ratios); see Figure 6.

Figure 6. Fiscal Performance and Debt in LLMICs
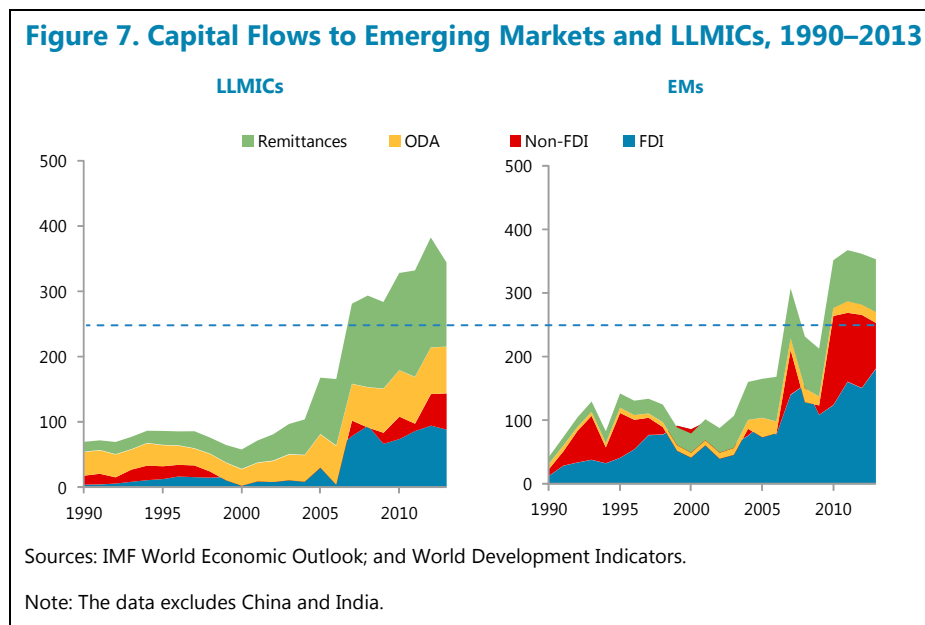
Source: IMF World Economic Outlook.
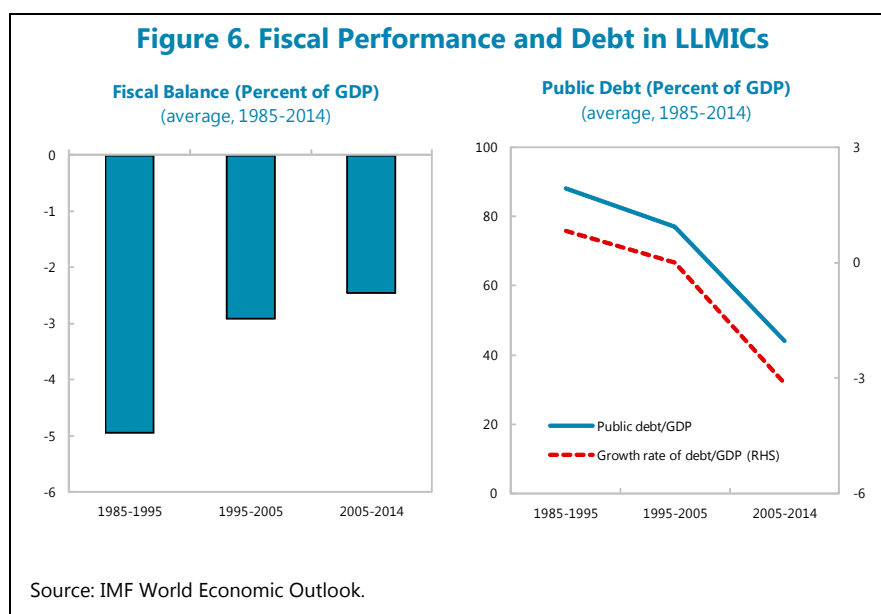
- **Even in the absence of fiscal dominance (strictly defined), other fiscal considerations affect the conduct of monetary policy.** Loose fiscal policy creates aggregate demand pressures that require a monetary policy response. In addition, higher interest rates resulting from tighter monetary policy can increase the government's debt service burden, and the fiscal authority might try to put pressure on the central bank to undertake less tightening than optimal.

29.   **Policies aimed at forcing reductions in lending rates and facilitating credit growth are making a comeback in several countries, further adding to pressures on monetary policy.** This can involve direct regulation or guidelines linking banks' base lending rates to the central banks' policy rate. Political pressures to lower lending rates can then result in the central bank keeping policy interest rates lower than warranted given economic conditions. In countries that pay attention to monetary aggregates, credit growth objectives can also be reflected in high broad money growth targets, which are then justified by optimistic assumptions about velocity.

30.   **Headline inflation is much more volatile in LLMICs given high CPI food shares and more volatile relative food prices, due in large part to shocks to agricultural production.** As a result, output and inflation tend to be more negatively correlated in LLMICs than in AMs where the opposite is true. The negative correlation makes the tradeoff between inflation and output stability potentially

more severe. The prevalence of supply-side shocks reduces the ability of monetary policy to influence inflation in the short run, though it also underscores the value of a clear medium-term inflation objective, as discussed in Appendix IV.

31.   The rise and size of capital flows complicates monetary policy and macroeconomic stabilization more generally (Figure 7).[27] The impossible trinity has become a stark reality in LLMICs with greater capital account openness. Even in the absence of an exchange rate objective, monetary autonomy has to contend with the co-movement in capital flows, asset prices, and interest rates across countries (Rey, 2013). Capital flows can have substantial benefits but also complicate the conduct of policy. For instance, raising interest rates to contain inflationary pressures risks attracting inflows, which in turn push up asset prices and credit growth. Also, in partially dollarized economies, credit growth, and to some extent consumption, can be driven by foreign interest rates independently of the domestic monetary policy stance. Inflows can also create currency mismatches with firms and banks borrowing in foreign currency. This can increase financial fragility as a sudden reversal of inflows can lead to a large and disorderly depreciation of the local currency. Central banks may need to increasingly pay attention to financial stability issues stemming from these risks and develop the appropriate macro-prudential tools.[28]

Figure 7. Capital Flows to Emerging Markets and LLMICs, 1990–2013

Sources: IMF World Economic Outlook; and World Development Indicators.

Note: The data excludes China and India.

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[27] In recent years the top quartile of LLMICs has been receiving the same level of inflows as EMs.

[28] To safeguard the sustainability of financial sector growth, several LLMICs have employed macroprudential tools, including loan to value ratio in Nepal and Mongolia, capital surcharges in Mongolia, liquidity ratio in Nigeria, limits on FX loans in Uganda and Mongolia, and limits on FX positions in Bangladesh and Honduras. However, the adoption and implementation of macroprudential policy should acknowledge weak supervisory capacity, limited data availability, volatile economic conditions, and the need for financial development (IMF, 2014b). LLMICs may need to give priority to strengthening the supervisory framework and statistical and analytical capacity, and adopt simple, rules-based approaches that increase the resilience of the system rather than active management of the credit cycle.
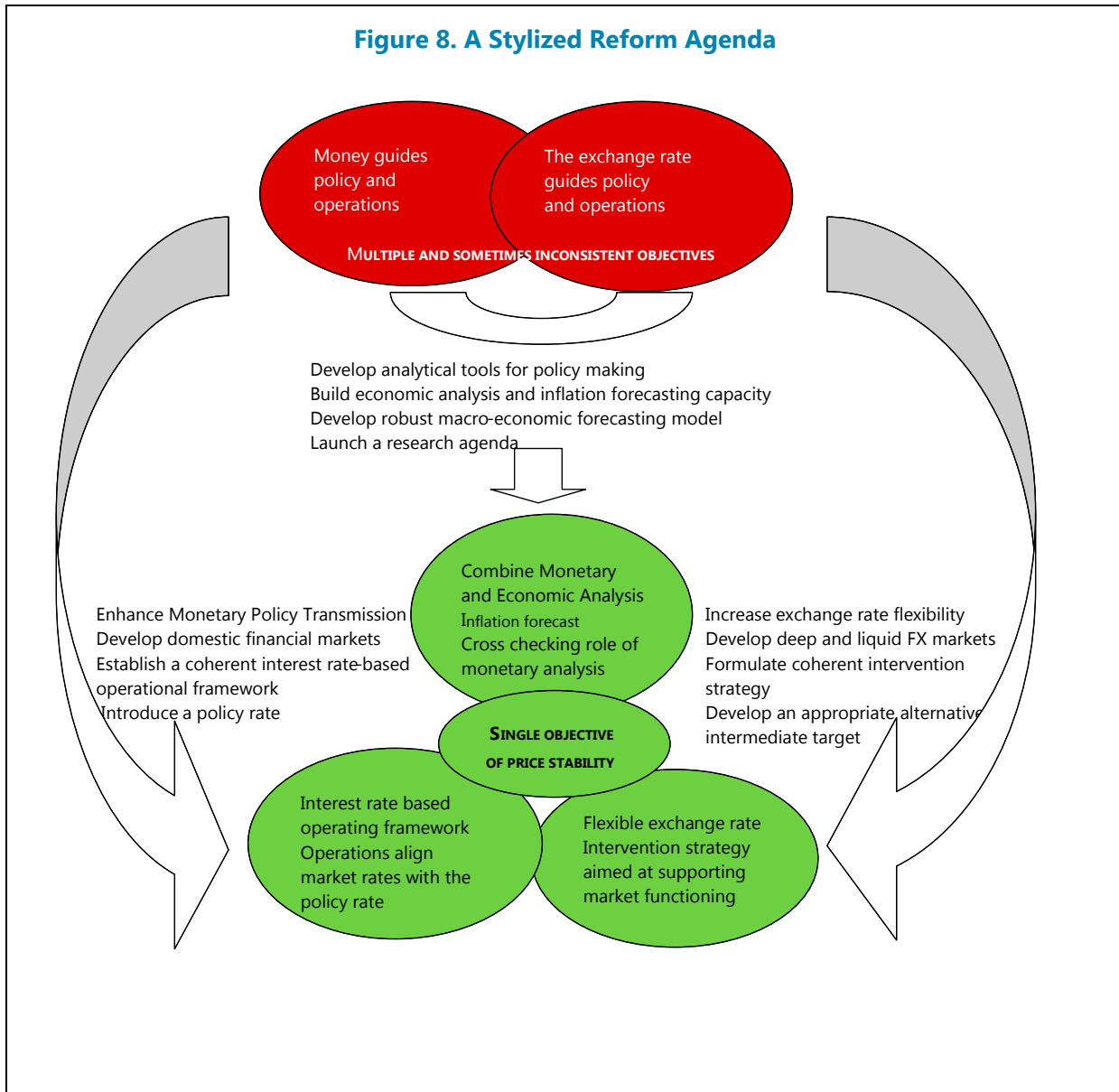
32.   Resource rich and highly dollarized economies face unique challenges that add another layer of complication for monetary policy, and for the coordination of monetary and fiscal policy.

- *For resource rich countries with managed floats*, exposure to large external shocks leads to large changes in equilibrium real exchange rates as a result of shocks to their terms of trade. Central banks face potentially-difficult tradeoffs between price and exchange rate stability, as movements in either the nominal exchange rate or inflation are required to bring about such equilibrium movements. In addition, attempts to offset real exchange movements and simultaneously achieve both objectives (via sterilized reserve accumulation) put strain on central bank balance sheets and monetary policy operations. Navigating through these challenges is particularly difficult in frameworks that do not have a clear hierarchy of objectives. Finally, as governments are typically the direct recipients of commodity revenues, the fiscal policy response has a direct bearing on these challenges; therefore good fiscal-monetary coordination is critical.

- *In countries with a high degree of financial dollarization* the effectiveness of monetary policy may be partly limited because a sizeable part of the domestic financial system may not be sensitive to domestic monetary policy, although the exchange rate channel may be stronger. At the same time, vulnerability of corporate and household balance sheets to large changes in the exchange rate and potentially high pass-through (of exchange rates to domestic prices and foreign interest rates to domestic interest rates) can make exchange rate flexibility very costly. Country cases suggest that pervasive financial dollarization, however, does not appear to be an impediment to price stability, although it can have important implications for the choice of policy instruments (see the Peru, Albania and Armenia case studies).

MAKING PROGRESS[29]

33.   Driven partly by growing dissatisfaction with existing regimes, many LLMICs have been striving to reform their monetary policy regimes. This section draws on their experience, and that of many advanced and emerging countries that went through a similar process, to provide guidance. The modernization process involves adopting a primary objective—price stability—while moving to an interest rate-based operating framework and greater exchange rate flexibility. The development of analytical tools for policy making and techniques for effective communication is also critical (Figure 8).

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[29] Throughout the paper "EM/AE transitions study" refers to the study of the experience of selected EMs and AEs during the modernization process of monetary policy regimes, included in the accompanying Background Paper. This section draws on case studies and the EM/AE transitions study.

Figure 8. A Stylized Reform Agenda

Money guides policy and operations

The exchange rate guides policy and operations

MULTIPLE AND SOMETIMES INCONSISTENT OBJECTIVES

Develop analytical tools for policy making
Build economic analysis and inflation forecasting capacity
Develop robust macro-economic forecasting model
Launch a research agenda

Combine Monetary and Economic Analysis
Inflation forecast
Cross checking role of monetary analysis

Enhance Monetary Policy Transmission
Develop domestic financial markets
Establish a coherent interest rate-based operational framework
Introduce a policy rate

Increase exchange rate flexibility
Develop deep and liquid FX markets
Formulate coherent intervention strategy
Develop an appropriate alternative intermediate target

SINGLE OBJECTIVE OF PRICE STABILITY

Interest rate based operating framework
Operations align market rates with the policy rate

Flexible exchange rate
Intervention strategy aimed at supporting market functioning

34. **Although there is substantial heterogeneity in how countries have proceeded (see the case studies), four key lessons relevant for LLMICs can be drawn from these experiences:**

- There are no set of preconditions that countries need to meet. However, critical first steps include a commitment to (i) the primacy of price stability, and (ii) the operational independence of the central bank to pursue that goal. Even these commitments are generally only nascent in early stages of transition, with ambiguities on both points (see the Uganda case study). Only sustained performance consistent with both commitments over time can fully establish the effectiveness of the policy regime.

- Many of the challenges come from the coexistence of multiple inconsistent targets and objectives (see the Rwanda case study). Eventually countries were forced to prioritize inflation and demote secondary targets, typically the exchange rate (e.g., Poland and Israel in EM/AE transitions study). This brought greater clarity to the new regimes.

- The well established consensus on many of the features of effective monetary policy frameworks means that LLMICs do not have to "reinvent the wheel." Learning from early reformers should help them speed up their modernization process.

- From the start of the policy modernization process, the central bank should work towards ensuring that all stakeholders share a common view on the way forward.

35.   LLMICs can make progress on the principles from any starting point, though initial conditions—and policymakers' preferences—influence where, how, and how fast to proceed. The implications of initial conditions for making progress on the principles, as well as synergies across principles are summarized in Table 3.

36.   The remainder of this section discusses how central banks can align their monetary policy frameworks with the principles. As legal and governance issues may take time to address, progress is considered in two separate areas: (i) institutional, and (ii) operations, strategy and communication. A final sub-section discusses priorities and synergies in the modernization agenda.

Table 3. Key Principles and Impact on Economic Structures

Principle	LLMIC characteristic and Impact	Steps for Making Progress/Sequencing	Benefits of Modernizing/Synergies across principles
I & II: Independence and Price Stability Mandate			
	• Universally applicable	• Build consensus among stakeholders—essential for establishing/maintaining independence • Take legislative actions—establish de jure operational and financial independence, and price stability mandate	• Cornerstone of modern monetary policy • Insulates against political pressures
III: Inflation Objective			
	• Frequency and volatility of shocks, limited analytical capacity, limited understanding of transmission—inflation band may need to be wide, may delay *announcement* of inflation objective • Initially high inflation might require specifying a disinflation path	• Choose inflation index—usually headline CPI • Specify level of target and bands around it • Specify policy horizon	• Anchors expectations and create policy space • Acts as focal point for formulating policy and for communications
IV: Multiple Objectives			
	• Fear of floating—fx objective • Development goals— credit growth targets, interest rate targets, etc	• Establish clear hierarchy—inflation objective primary • Pace of transition—gradual or cold turkey	• By clarifying framework, can anchor expectations and provide more space to stabilize output • Aids communication
V: Operational Framework			
	• Severe fiscal dominance or very underdeveloped financial markets (no information content in interest rates)— may consider TRMT	• Move from TRMT to interest rate based system • Fast transition possible—can skip intermediate steps	• Stable interest rates promote financial development and strengthens transmission • Improves transparency—separates policy formulation from implementation
VI: Role of Intermediate or Informational Variables			
	• Limited data availability, analytical capacity, and very underdeveloped financial markets—may consider some role for broad money • High dollarization and/or very high pass-through—important role for exchange rate	• Role likely to diminish with financial deepening, opening of capital account, and development of analytical capacity • Inflation objective should guide role of money and exchange rate	• Clarify framework—hard to explain monetary aggregates to public • Enhance credibility—frequent fx intervention to meet exchange rate targets can hamper credibility • Strengthen monetary policy transmission
VI: Analytical Capacity			
	• Limited data availability—hampers assessment, forecasting, and modeling efforts	• Invest in data collection • Even in initial stages, use a variety of indicators to assess the need for policy adjustment. • Develop forecasting capacity,	• Allows for forward-looking and well-informed policy • Aids communication by providing assessment of economic conditions
VII: Communication			
	• Communication challenging because of (i) incoherent frameworks, (ii) limited analytical capacity (iii) financial illiteracy	• Use press conferences, monetary policy reports • Tailor communication to differed target audiences	• Clarifies framework • Clarifies strategy—can make policy more effective • Maintain credibility in the face of large shocks and in the presence of subsidiary objectives

A. Institutional Considerations and Operationalizing the Price Stability Mandate (Principles I-III)

Central Bank Mandate, Operational Independence, and Accountability (Principle I)

37.   Establishing operational independence of the central bank is a catalytic step in the modernization process (see the case studies on Albania, Armenia, and Kenya).[30] This typically requires legislative changes, though de facto progress often comes first. Legislation should codify the institutional and organizational setup to guarantee the central bank's operational independence. This will help assure the public of the government's commitment to the principles. Central bank senior officials should have reasonably long terms of office that are not linked to the political cycle, and with clear rules covering the circumstances for removal from office.

38.   Operational independence needs to be underpinned by financial independence and a fiscal environment that supports monetary autonomy.

- If necessary, changes to the legal framework should ensure that the central bank is not only insulated from the government's fiscal activities (i.e., restrictions on direct lending), but also that it always has adequate financial strength to carry out its mandate. Therefore, legal provisions should cover the calculation of distributable profits and the circumstances where the government is required to recapitalize the central bank.

- Monetary policy autonomy and price stability require that fiscal policy be sustainable without reliance on seigniorage (see the case studies on Albania and Uganda). There is evidence, however, that improvements in fiscal positions in some countries either followed the implementation of enhanced monetary policy regimes or took place simultaneously (Tapsoba, 2010), suggesting that the process of framework modernization can have a positive feedback effect on fiscal discipline.

39.   In addition to legal changes, building and maintaining political commitment is critical to ensure de facto independence over the long term. Experience suggests that political resolve is crucial for successful modernization, while other supporting conditions can develop during the transition. To foster credibility and durable modernization, policymakers should strive to reach consensus among stakeholders, including the general public. Such consensus can ensure that central bank independence is maintained even in the face of adverse shocks. Gaining support from the government is not easy—some have moved gradually to build public consensus (e.g., Poland in EM/AE transitions study), while others managed to achieve their objectives despite government restrictions (e.g., Israel in EM/AE transitions study).

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[30] While there is a consensus that central banks should be operationally independent in conducting monetary policy, there is little agreement about the appropriate institutional arrangements for financial system oversight. In some countries the central bank is responsible for the regulation and supervision of financial markets and institutions, while in others separate agencies play this role. When the central bank has such responsibility, there is a consensus that it should be given a high degree of operational independence with respect to its supervisory functions, whereas the appropriate degree of operational independence for its regulatory functions is still an open question.

40.   The broader institutional arrangement should not undermine the central bank's ability to fulfill its mandate. This can be the case when other government institutions (deposit insurance funds, regulators) have undue influence on monetary conditions, e.g., certain interest rates.

41.   Operational independence must take place within a context of clear accountability to the government and the public. The balance between operational independence and accountability is particularly important in designing the institutional structure of the central bank, including the regulations that govern the appointment and removal of central bank officials. Moreover, transparency is an essential element of strengthening both operational independence and accountability. Central bank officials should explain the rationale for their decisions with specific reference to the inflation outlook and the implications for macroeconomic activity and financial stability. In particular, in circumstances where inflation has been deviating persistently from the central banks' objective, policy makers should explain the extent to which adjustments to its policy strategy are warranted.

Operationalizing the Price Stability Mandate (Principles II and III)

42.   Establishing and announcing a medium-term inflation objective should not be delayed. The (medium-term) objective needs to be clearly distinct from the near-term forecast, which is likely to deviate from the objective. However, the impact of *announcing* the inflation objective should not be overstated as the announcement itself does not seem to yield up-front benefits in terms of price stability and well-anchored inflation expectations. Rather, the benefits accrue over time, as credibility is established and as the other principles are adhered to (see paragraphs 144–148 of the Background Paper).

43.   The approach to specifying the numerical value of the inflation objective should depend on a country's institutional setting, but there are advantages to making this determination through joint consultations between the government and the central bank. According to a recent survey of 27 countries that have explicit inflation objectives, the numerical value of the objective was determined jointly in more than half of the cases.[31] Such an approach may help ensure that the setting of the inflation goal is insulated from short-term political pressures, thereby bolstering its credibility and durability.

44.   The inflation objective should be revised rarely and only for sound economic reasons, and not due to short-term political pressures. Frequent revisions of the objective undermine its credibility as an anchor for inflation expectations (e.g., Turkey and Brazil in EM/AE transitions study). The revision of the target should be a part of a systematic, transparent, regular but infrequent (once every five or more years) review of the entire monetary policy framework.

45.   The exact value of the inflation objective, say 4 or 6 percent, is not as important as clearly communicating its meaning and significance. The point target should be positive and high enough (given inflation volatility) to reasonably rule out the possibility of reaching a zero-lower bound on

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[31] See Hammond (2012). Out of the 27 countries, the objective was set jointly by 15 countries, by the central bank alone in 9 countries, and by the government alone in 3 countries.

nominal interest rates and facilitate relative price adjustments, which can be large in LLMICs undergoing structural changes. On the other hand, the inflation objective should be low enough to avoid excessive costs from rising uncertainty, discourage indexation of wages and prices, and to allow economic agents to be able to disregard inflation in their daily life.[32]

46. **Central banks should carefully consider the horizon over which inflation would converge to the medium-term objective.** This "policy" horizon depends on a number of factors, including the size and duration of shocks driving inflation, the transmission of monetary policy, and the sensitivity of inflation to movements in the nominal exchange rate. In countries that have stabilized inflation, the horizon may be shorter, typically one to two years, as the anchoring of expectations allows inflation to reach its objective over that period without excessive output costs.[33]

> **Establishing a Clear Inflation Objective: The Case of India**
>
> In 1998, India adopted a "multiple indicator approach" where a number of quantity and rate variables served as anchor but there was no explicit nominal anchor or clear primacy of price stability over other objectives. While initially successful, persistently high inflation in recent years led to increased dissatisfaction with the approach. Flexible inflation targeting was put forward in early 2014, and was officially adopted by the Reserve Bank of India in February 2015, with CPI inflation as the nominal anchor and a medium term inflation objective of 4 percent with a band of +/- 2 percent. A two-year "glide path" for reducing inflation toward this target was also laid out (also see IMF 2014c, 2015a). Although disinflation is ongoing and challenges remain, India's experience thus far suggests that a clear inflation objective can strengthen policy communications and help anchor expectations.

47. **Countries starting with high and persistent inflation typically face a different and more difficult problem.** These countries need to build credibility and anchor expectations, which has several implications. First, it extends the horizon over which the central bank can reasonably expect to achieve its medium-term inflation objective, as the lack of policy credibility typically increases inflation inertia. Second, central banks tend to emphasize disinflation paths in their communications, to provide better guidance about their intentions. Sometimes central banks go one step further and treat this path as a sequence of targets. This can be counterproductive because short-term deviations are inevitable and may impair credibility. It may also unnecessarily constrain the room for opportunistic behavior, e.g., faster disinflations if there are favorable supply shocks. A better strategy is to distinguish the

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[32] These considerations are generally taken to argue for higher inflation objectives in LLMICs than in advanced economies. IMF has often recommended inflation objectives in the "single digits," on the basis of these considerations, including cross-country evidence on threshold effects in the long-run inflation/growth relationship.

[33] A related issue is whether central banks should treat deviations above and below the inflation objective differently. Many advanced and emerging economies have symmetric bands around the target, though whether this implies a symmetric response to inflation deviations is unclear. The ECB is one important exception: its target of "below but close to 2 percent" suggests an asymmetric approach. In the case of LLMICs, the limited credibility mentioned above suggests that above target deviations are likely to be the main challenge. This is supported by the model-based analysis in Alichi and others (2010), which shows that inflation deviations above target should elicit a stronger policy response when credibility is low. More research is needed on these issues however.

disinflation forecast from the medium-term objective, and to acknowledge that the disinflation path may change as economic conditions change.

48.   **Despite the prevalence of frequent supply shocks in LLMICs, specifying the inflation objective in terms of the 12-month headline CPI inflation would seem appropriate.** Headline inflation is more transparent and easier to communicate to the general public. Inflation measures that exclude volatile components and/or regulated prices tend to eliminate a significant share of the consumer's basket (e.g., food and energy) in LLMICs, thus rendering the restricted inflation measure less relevant for determining the real well-being of economic agents (see Background Paper for an overview of the policy response to supply shocks, and the India case study).[34]

B.   Monetary Policy Operations, Strategy, and Communications (Principles IV–VII)

49.   **Determining, signaling and implementing the appropriate stance of monetary policy are particularly challenging during the modernization process.** This section provides guidance on how central banks can improve capacity to better formulate and implement policy. Appendix V lists some "dos" and "do nots" for the transition process.

Dealing With Multiple Objectives (Principle IV)

50.   **While price stability should be the primary objective of monetary policy, central banks should carefully consider the effects of policy on macroeconomic activity and financial stability.** Situations will inevitably arise in which these goals will come into conflict with price stability. These situations can pose difficult challenges in determining the appropriate course of monetary policy. Nonetheless, as discussed in Appendix I, a key lesson of country experiences is that credibly establishing the primacy of the price stability objective, and the related anchoring of inflation expectations, gives the central bank more room to take its other objectives into account in determining the magnitude and the pace of monetary policy adjustments.[35]

51.   **The experience of AEs and EMs provide some useful lessons for LLMICs on how to think about the inherently difficult tradeoffs that inevitably arise when other policy goals conflict with price stability:**[36, 37]

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[34] Another reason for specifying the objective in terms of headline CPI inflation, rather than a narrower index, is that in LLMICs there are often persistent trends in relative prices between, say, food and the rest of the CPI basket. In such circumstances, focusing on a narrower index would bias the overall level of inflation and inflation expectations.

[35] The India and Rwanda case studies illustrate the need for a clear inflation objective that takes precedence over other objectives/indicators.

[36] See among others Bernanke and others (1999).

[37] See Appendix I for further discussion, and paragraphs 66-72 on the role of the exchange rate.

- *Supply shocks provide the most visible example of the tradeoff between price and macroeconomic (output) stability.* As discussed in Appendix IV, these shocks typically result in higher inflation, yet efforts to offset these pressures by tightening monetary policy will negatively affect output. The experience over the last thirty years has helped clarify how central banks should respond to these shocks. First, a temporary increase in inflation—first-round effects—is inevitable and need not elicit a policy response. However, further or more persistent increases—second-round effects—are undesirable and must be counteracted with some degree of policy tightening. Second, the degree of tightening should provide a reasonable balance between the goal of price and output stability, with the understanding that greater weight on output stability implies all else equal a more moderate policy tightening and a more gradual return of inflation to the target. Third, central banks with limited credibility should give greater prominence to price stability to assuage concerns over the commitment to the inflation objective. Navigating through these various considerations requires a coherent framework, clear communication, and underscores the need for strong analytical capacity.

- *Tradeoffs could also arise between price and financial stability.* More often, risks to financial stability will surface during periods of economic expansion, in which case there is no such tradeoff. However, in some cases, financial stability risks may not coincide with higher inflationary pressures. As argued earlier, such risks should primarily be addressed by prudential policies (regulation, supervision and macroprudential policy). Where capacity is weak, central banks may instead be tempted to fall back on monetary policy, by increasing interest rates more than warranted by price stability. However, the costs of doing so are likely to be greater than the benefits (IMF, 2015b), perhaps even more so for LLMIC central banks in the process of building and maintaining policy credibility. Moreover, limited analytical and operational capacity in LLMICs need not invalidate the use of macroprudential policy tools, though it may call for simpler, rules-based approaches that increase the resilience of the system rather than active management of the credit cycle. The relatively less sophisticated nature of the financial system in many of these countries also suggests that financial risks may be relatively easier to identify and address with specific micro-prudential tools, rather than with monetary policy.[38] However, supervisory capacity and data availability in LLMICs need to be strengthened to lay the foundations for effective macroprudential policy.

Modernizing the Operational Framework (Principle V)

General considerations

52.   The modernization process typically involves moving away from quantity-based operating targets (in particular TRMT) to interest-rate based frameworks. Examples of such a transition are presented in the case studies on Albania, Armenia, and Uganda. Moving toward interest-rate frameworks improves financial market functioning and development as well as policy signaling and transmission:

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[38] At the same time, LLMICs are striving to deepen their domestic financial system and increase financial inclusion, which complicates the assessment of financial stability.

- Monetary operations that stabilize and align short-term market rates with the policy rate reduce liquidity risks, assisting banks with their liquidity management and pricing policies.[39] When short-term rates are stable, discrete changes in the policy rate will have a greater impact on banks' pricing behavior as they will have more confidence that changes in the structure of interest rates will be sustained. Banks then are more likely to quickly reflect changes in the policy rate in their own deposit and lending rates thereby aiding monetary transmission.[40]

- More stable and predictable short-term interest rates, combined with effective policy communication, facilitate the development of the longer-term securities markets (notably the government securities market), strengthening policy transmission along the yield curve. Longer-term rates that incorporate actual and expected changes in the policy rate will further strengthen transmission to longer-term bank lending and deposit rates, and to private sector securities markets.

53.   Increasing the efficacy of the operational framework with reduced interest rate volatility should therefore be a central focus of the modernization process. From a starting point where operations are focused on quantities, the challenge is to increase control over short term market interest rates while not announcing interest rate targets before being ready to shift the operational focus from quantities to market interest rates. One pitfall is to force superficial consistency by letting market rates (dictated by quantity interventions) deviate from announced "policy" rates, which introduces market distortions and serves no useful monetary policy purpose. In such cases, actual market rates often better represent the true stance of monetary policy than the level of the "announced" policy rate. This makes communicating the policy stance and linking it to policy objectives almost impossible.

Improving the Operational Framework: The Case of Uganda

Short-term interest rates in Uganda were very volatile under the money targeting framework, especially before October 2009. A move to more flexible money targeting in 2009, the introduction of the policy rate at the time of the transition to inflation targeting, and a move to fixed price full allotment in 2012 have resulted in the interbank rate being more closely aligned with the central bank rate (see Figure 4) and have set the stage for changes in the central bank rate to have a larger impact on the economy.

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[39] The Kenya case study discusses challenges associated with large deviations of the interbank rate from the policy rate.

[40] Other factors vital for transmission to bank rates include a well regulated, stable, and competitive banking system, and good contract enforceability and credit culture.

Moving from quantities to prices

54.   When moving from an operating framework focused on quantities to one with reliance on interest rates, a country might consider the steps described below, though the pace at which they are traced, and indeed whether some can be skipped, may vary: [41]

Step 1. Reduce undue interest rate volatility

55.   In countries that use reserve money operating targets, short-term interest rates often exhibit high volatility arising from four sources: (i) operations are often focused on achieving period-end quantitative targets with little regard to managing liquidity on a day-to-day basis or to how these targets relate to the day-to-day liquidity management—in this case period-end interest rate volatility can be high; (ii) Operations are sometimes focused on keeping reserve money on a pre-determined path on a daily basis—in this case daily swings in currency demand generate corresponding fluctuations in excess reserves and short-term interest rates; (iii) weak central bank capacity to offset autonomous changes in liquidity conditions can also generate fluctuations in excess reserves and interest rates, in particular if; and (iv) banks are also required to meet their reserve requirement on a daily basis. Addressing these constraints increases certainty about liquidity conditions, reduces intermediation costs and interest rate spreads, improves policy transmission and paves the way for increased emphasis on interest rates. Attention to the following points will help:

- Effective operations that seek to stabilize excess reserves and keep total reserves on the path implied by the reserve money target could be the first step to reduce short term volatility. Important in this process is for operational staff to continuously monitor and assess the level of total and excess reserves—the only component of reserve money that the central bank can influence in the short-term—while keeping reserve money as the operating target.

- Instrument design and liquidity management should aim at increasing certainty about liquidity conditions. For example, allowing banks to meet their reserve requirement on average over a sufficiently long period reduces liquidity risks and therefore volatility in overnight interbank rates. Improving central banks' capacity to better anticipate liquidity conditions can also help, although difficulties in this area arise largely because of poor coordination with government, in particular when the government is allowed to receive direct credit from the central bank.

56.   These measures should reduce high-frequency volatility caused by day-to-day liquidity management, but they do not address lower-frequency volatility caused by shifts in the money demand schedule. Without further reforms, it is difficult to fully resolve the tensions involved in attempting to smooth interest rates while steering towards reserve money targets at monthly or quarterly frequencies.

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[41] See Maehle (forthcoming). Uganda has managed to stabilize short-term interest rates and use a policy rate to signal its policy stance, despite low levels of financial development (see Uganda case study).

Step 2. Set up a corridor without specifying a point target for interest rates, while retaining reserve money as the operating target

57. **The central bank can introduce an interest rate corridor for interbank rates to further limit volatility.** A corridor is implemented by the combination of an unlimited access standing lending facility (which all countries have to support the functioning of the payment system that puts a ceiling on rates) and a standing deposit facility that puts a floor under rates.[42] The corridor at the outset could be relatively wide (circa 500 basis points) as there will likely be uncertainty about the relationship between reserve money and interest rates, but over time the corridor should be narrowed as the focus shifts from money aggregates to interest rates.

58. **A corridor system should reduce interest rate volatility and uncertainty, thereby strengthening signaling and transmission.** It also allows the central bank to be flexible within the corridor; at the same time, it sets a limit on how much the interest rate can move before requiring an explicit policy decision. Where interbank rates are at either edge of the corridor for a period, then there is an inconsistency between interest rates and the reserve money target. This conflict must be resolved through either a revision of the reserve money target and/or repositioning of the interest rate corridor, the latter of which may be used to signal a change in the policy stance. The decision about whether to move the interest rate corridor or the reserve money target (or both) would require judgment and will depend on the central bank's assessment of the state of the economy (are interest rates changes caused by money demand shocks for example).

59. **However, combining quantity targets with meaningful attention to interest rates is challenging.** The judgments and associated actions required to resolve potential inconsistencies will be difficult to establish and communicate. For this reason, countries should either skip this step or move on to Step 3 as soon as is possible. However, this step may be a suitable interim framework for countries that want to only gradually transition towards fully interest-rate based operations.[43]

Step 3. Move to fully-fledged interest rate-based framework with an announced point policy rate as the operating target

60. **Quantities are no longer the operational focus and policy is signaled with a "policy rate" aimed at anchoring short-term interest rates.** There are several ways in which the interest rate based operational framework can be implemented, with the choice influenced by (i) the functioning of the money market, and (ii) weaknesses in the central bank liquidity forecasting framework. These options are discussed in Box 2.[44]

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[42] Access to the standing lending facility should be automatic at the initiation of banks on the basis of clear ex-ante collateral requirements and clearly separated from banking supervision requirements.

[43] The coexistence of quantity and interest rate targets has occasionally led to inconsistent signaling of the policy stance (see Rwanda case study).

[44] Countries may wish to retain indicative quantitative ceilings as `tripwires' in the early stages of Step 3.

Supporting measures

61.   The development of a robust short-term liquidity forecasting capacity at the central bank is critical for a good coordination of liquidity with government cash management and improving the operating framework.[45] It allows the central bank to decide on how much liquidity to provide or withdraw from the market with the objective of smoothing undesirable interest rate fluctuations. Floor and full allotment systems do not require the central bank to determine the amount of its short-term monetary interventions, although the floor system requires that the central bank keep the market structurally long and the full allotment system requires that the central bank keeps the market either persistently structurally long or structurally short.

Box 2. Implementing an Interest Rate Operating Target

There are several ways to implement an interest-rate based operational framework, depending on money market functioning and the quality of the central bank liquidity forecasting framework:

a.   Announcing a target for a market rate (e.g., overnight interbank rate). This approach usually entails fixed-quantity variable-rate open market operations (OMOs) to align that market rate with the policy rate. The target rate is typically positioned in the middle of the corridor formed by the standing facilities and the facility rates are moved in tandem with the policy rate. To make well informed decisions on the amount of OMOs, the central bank must have a robust short-term liquidity forecasting framework. This framework also requires a well functioning interbank market.

b.   Attaching the "policy rate" to a central bank instrument. There are two main approaches

- A floor system, whereby the central bank's standing deposit facility rate serves as policy rate. This system is simple to operate and robust to market imperfections and liquidity forecasting weaknesses typically found in LLMICs. It primarily requires maintaining a structural liquidity surplus, and allows for interest rate based operations even when the interbank market is shallow. However, this system reduces banks incentives for overnight interbank trading. Yet, by anchoring the short end of the yield curve it helps develop the markets for longer term securities and thereby transmission along the yield curve.

- A fixed-rate full-allotment, mid-corridor system, whereby the central bank conduct (weekly or bi-weekly) OMOs at the policy rate set in the middle of the corridor. The full amount demanded by banks is supplied by the central bank and therefore similar benefits accrue as with floor systems. However, because the central bank's operations are not conducted on a daily basis there is more liquidity risk and therefore increased incentives for interbank trading. This approach requires and stimulates a better functioning overnight interbank market than in the case of a floor system.

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[45] Liquidity forecasting involves the centralization of a wide range of information on financial transactions which affect the main items of the central bank's balance sheet. In particular, the capability of the central bank to project currency demand and of the government to prepare accurate cash-flow projections and share them with the central bank on a timely basis are vital for overall liquidity projections, since variations in currency and the net position of the government often account for the most significant changes in liquidity conditions. See Schaechter (2000).

Enhancing the Formulation of Monetary Policy (Principle VI)

62.   As part of the transition process, LLMICs need to develop a forward-looking monetary policy strategy. This section focuses on the need to build analytical capacity. It discusses the role of broad money and the exchange rate.

Building Analytical Capacity

63.   Enhancing central bank analytical capacities should be an ongoing part of the entire modernization process (see the case studies on Albania, Armenia, Kenya, and Uganda). Building the analytical capacity to support a forward-looking approach to monetary policy is likely to be a never-ending effort; it should be a continuous part of—and not a prerequisite for—modernization.[46] IMF technical assistance and training for central banks have helped close capacity gaps. Particular recommendations include:

- Improve central bank capacity to interpret data, produce coherent medium-term forecasts, analyze foreign exchange (FX) and money market rates, and provide policy recommendations consistent with the state of the economy and policy objectives.

- Building capacity should include developing a coherent quantitative framework for monetary policy analysis and forecasting. The quantitative framework can comprise a suite of models and approaches but should be centered on a core medium-term forecasting model (see Box 3). Central banks should also adopt suitable organizational structures and processes to make their analytical capacity sufficient, sustainable, and relevant for policy making.

- Countries also need to invest in data compilation, management, and dissemination. Central banks and national statistical offices should work on improving quality and timeliness of already available data (national accounts, price indexes and balance of payment data in particular), and produce additional high-frequency data (e.g., on economic activity). The institutions compiling the data should adopt procedures to allow for seamless access to the data.

Investing in Central Bank Analytical Capacity: The Case of Kenya

Since 2012, the Central Bank of Kenya (CBK) has invested considerable resources in a suitable forecasting and policy analysis system (FPAS). CBK staff have developed a set of tools for forward looking analysis, including systematic use of inflation surveys, near-term forecasting approaches that rely on high frequency data and a quarterly model for medium-term projections. Forecasts based on these tools are now presented every two months to the Monetary Policy Committee as a key input into its policy deliberations. Moreover, the creation earlier this year of an Inflation Modeling and Forecasting Unit in the reorganized Economics Department should help ensure that the FPAS is well integrated in the internal processes of the CBK and appropriately staffed.

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[46] Evidence suggests that better analytical capacities can make the transition smoother and helps to overcome some of the credibility challenges. However, a number of successful transitions began with very limited analytical capacity (e.g., Brazil, Colombia, and Czech Rep., also see Box 2 in the Background Paper and the Uganda case study).

Moving Away from Broad Money

64.   As monetary policy-making is refined during the modernization process, the role of money as intermediate targets will likely diminish. Broad monetary aggregates have traditionally played a role in monetary policy frameworks in many LLMICs and there may be cases in which broad money growth could serve as a guide for policy going forward (Box 4). However, analysis of monetary aggregates is no substitute for articulating a clear view on the channels through which various shocks affect the economy, and the mechanisms through which policy decisions help steer inflation. As reforms proceed, monetary aggregates will likely play more of an indicator role, and perhaps provide a cross-check for monetary policy analysis.[47]

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Box 3. Developing FPAS Frameworks [1/]

Despite limited availability and reliability of the macroeconomic data, and regardless of monetary policy framework in place, there is significant room for improvement in macroeconomic analysis in LLMICs. With the help of IMF technical assistance and training, several central banks are developing or upgrading their forecasting and policy analysis systems (FPAS). An FPAS equips central banks with the tools and procedures necessary for providing policymakers with a coherent assessment of current state of the economy, a recommended policy path to achieve the policy objective, and a forecast consistent with such a path. IMF TA assists central banks in developing a core medium-term forecasting model and other satellite models, training their staff in conducting model-based policy analysis and communicating its outcomes to policy makers, reorganizing forecasting and policy analysis processes and the policy formulation cycle, and improving internal data collection and data management procedures (see the case studies on Kenya and Uganda).

Existing forecasting systems at many central banks in LLMICs exhibit weaknesses that prevent staff from providing policy makers with well-articulated policy recommendations. These weaknesses include lack of suitable tools and capacity for medium-term policy analysis, resulting in an emphasis on simple data reporting. In addition, uncoordinated forecasting processes lead to insufficient interactions between staff and policy makers. The main challenge in adopting coherent quantitative frameworks has been the lack of a dedicated forecasting team that coordinates the forecasting process, operates the core forecasting model, and communicates with the policy makers. Getting policymakers to internalize their staff's analyses and policy judgments (based on the FPAS) in their policy decisions is also a challenge. Central banks must overcome these challenges to reap the full benefits of their capacity building efforts.

More broadly, gaining more experience with the use of modern analytical tools (including core medium-term forecasting models) in LLMICs is also needed. Although these tools have proven useful in AMs and EMs, LLMIC's practical experience with using them is limited so far. There are growing efforts to adapt these tools to characteristics of LLMICs (see Andrle and others (2013b), Berg and others (2010)) and their applications to answer policy relevant questions (see Andrle and others (2013a), Clinton and others (2010)). However, practical experience gained from the systematic use of these tools to support policy decision-making will only build over time.

[1/] See Laxton and others (2009) for a description of a generic FPAS development.

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[47] The Albania, Armenia, and Kenya case studies illustrate the problems with policy formulation and implementation that arise in money targeting regimes, especially when target misses are common.

65. **Intermediate targets are tools to assist in achieving policy objectives, and not policy objectives in themselves.** Focus on the Principles can help countries that retain a role for monetary aggregates assign their proper weight in the framework. In particular, the primacy of the medium-term inflation objective can help provide the right perspective (and flexibility) on intermediate targets on money.

Box 4. The Role of Broad Money

The following factors are relevant to decide on reliance on broad monetary aggregates to guide policy as an intermediate target or information variable.

- Monetary aggregates can provide time*ly* information about the state of the economy and inflation pressures. This informational role may be important in countries with incomplete high-frequency data and where concepts such as the output gap are fraught with uncertainty. It may also be more important in high inflation countries as changes in monetary aggregates are more likely to reflect inflationary pressures.[1]

- Monetary aggregates can provide a gauge of financial conditions. This is likely to be the case in LICs, as many of these countries have very limited financial markets or little experience with interest rates serving a market-clearing role. Quantities, in this case the size of nominal liabilities in the domestic banking system, may provide an indicator of the overall tightness or looseness of financial conditions. Note that other financial variables could conceivably serve this role, e.g., credit. Of course, the role of price signals in the financial system is not invariant to the policy regime, as discussed in the context of reserve money targeting, and may change as countries modernize their frameworks.

The potential benefits of broad money aggregates need to be weighed against possible drawbacks:

- Implicit in an informational role for money is the idea that shocks to velocity are either small or easy to forecast. In practice most central banks targeting broad money have found it difficult to forecast velocity accurately, at the frequency that is relevant for monetary policy decisions, which makes target misses difficult to interpret and communicate, and ultimately uninformative for policy. This is one reason why most if not all advanced and emerging economies no longer feature intermediate targets on broad money in their policy frameworks.

- An informational role for broad money does not necessarily imply a central role for broad money targets. As emphasized by Mishkin (2010), modern monetary policy formulation draws on all available sources of information, including monetary aggregates but also many other variables. Although central banks in LLMICs face important informational challenges, they do have access to considerable data or could collect such data if necessary.

- Focusing on a single variable may increase the risk of policy mistakes. Kenya provides a case in point in 2010-2011, as optimistic assessments about financial deepening and credit growth, based on pre-global financial crisis trends, resulted (in hindsight) in large broad money growth targets. Efforts to meet such targets led to overly accommodative policies, inflation overruns and subsequent large policy corrections.[2] Of course, all central banks are subject to such mistakes, but the above example stresses that excessive focus on one variable can be counterproductive.

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[1] See among others the findings in Thornton (2008) of a strong relation between money and inflation for high-inflation countries, but only a weak long-run relation when inflation was low, and in IMF (2014a) showing that the relationship between money growth and inflation has weakened over time. This could be due to financial innovations and market developments, as well as the relatively higher importance of exogenous shocks when inflation is low.

[2] See Andrle and others (2013a).

Shifting Focus from the Exchange Rate

66.   The role of the exchange rate differs depending on the exchange rate regime and monetary policy framework of the country, though heavy intervention in the foreign exchange market is common. In many LLMICs with de jure exchange rate flexibility, the exchange rate is the *de facto* anchor, with clear primacy over any inflation objective, if one is even articulated.[48] Many others heavily manage the exchange rate in the context of an opaque regime with multiple objectives. Often, the distinction between the exchange rate as operating or intermediate target and objective is unclear, as is the relative primacy of the exchange rate and price stability.

67.   The central role assigned to the exchange rate in the frameworks of many LLMICs with *de jure* flexibility is problematic. Some attention to the exchange rate is inevitable given its impact on inflation dynamics and expectations formation. However, countries that manage the exchange rate outside of a formal exchange rate peg, without a policy framework with a clear hierarchy of objectives, often run into problems.[49] In the case of opaque regimes, there is often no coherent framework to guide interventions or coordinate them with monetary policy operations. As a result, interventions can have unintended consequences for monetary conditions (e.g., high interest rate volatility is not uncommon in countries that intervene heavily), which undermines credibility, transparency, and effectiveness of policy.

68.   Most LLIMCs transitions will involve a move towards more flexibility with respect to the exchange rate. Financial account liberalization and capital flow movements complicate the conduct of monetary policy in achieving both inflation and exchange rate objectives. As modernizing central banks have adopted price stability as the primary mandate for monetary policy, the role of the nominal exchange rate as an anchor has diminished and increased exchange rate flexibility has ensued. In a number of countries, the transition involved the exchange rate moving away from being an intermediate target to becoming an important part of the transmission mechanism, and an information variable among others.

69.   Nonetheless, the recent experience of some emerging and advanced economies suggests that varying degrees of exchange rate management may endure. Some central banks use sterilized interventions in an attempt to influence the real exchange rate, while maintaining their inflation targets.[50] Others try to avoid significant exchange rate volatility because (i) short-term exchange rate movements can become shock amplifiers, triggering adverse financial market dynamics and/or adverse effects on balance sheets, and more generally because exchange rate volatility may induce undesirable inflation, output, and interest rate volatility, and (ii) exchange rate misalignments may have large real costs. Sterilized interventions may affect the real exchange rate

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[48] As mentioned in the introduction, regimes with an explicit nominal exchange rate anchor are outside the scope of this paper, except insofar as they are transitioning to some sort of floating regime.

[49] On this point see Epstein and Portillo (2014) for the case of Kazakhstan.

[50] See Ostry and others (2012) and Benes and others (2013) for further discussion.

through different channels than monetary policy, perhaps through portfolio balance effects, or where the capital account is closed by regulation.[51]

> **Transiting from Exchange Rate Targeting to Inflation Objectives:**
> **The Case of Poland and Israel**
>
> Both Israel and Poland chose a gradual approach to exchange rate flexibility, moving from exchange rate targeting to full-fledged IT over a prolonged period (twenty and ten years respectively). Initially, it involved a tight horizontal peg with step adjustments and a small trading band, followed by a crawling band with fixed as well as widening limits (also asymmetric in the case of Israel). Eventually, the inherent conflicts between the exchange rate and IT in an environment of increasing capital flows made the move to a floating regime necessary. Supporting steps, such as the development of the FX market, improved operations focused on interest rates, a supportive FX intervention strategy, good communication practices, risk management and prudential regulation, and a sequencing with capital account liberalization played important roles in managing the transition.

70.   There are nonetheless potentially important drawbacks and risks associated with exchange rate management. The authorities need to be able to identify situations in which the real exchange rate deviates substantially from equilibrium, which is challenging.[52] In addition, heavy exchange rate management can reduce the exchange rate's shock-absorbing role (particularly where persistent real shocks require real exchange rate adjustment). Importantly, central banks can easily stray from a strategy to mitigate disorderly conditions or volatility to one of managing the exchange rate away from fundamentals. In these cases, protracted, large-scale, one-sided intervention may be difficult to abandon without serious disruptions. Frequent use of intervention could undermine the clarity and credibility of the framework, especially if transparency is poor. When intervention is a substitute for macroeconomic adjustment policies or the various objectives of the central bank turn out to be internally inconsistent, credibility and the effectiveness of intervention can also be impaired. Therefore, finding the right role for the exchange rate is likely to be an unsettled, evolving, and ultimately country-specific challenge.

71.   While the experience of countries that have transitioned to greater flexibility has varied greatly, some lessons emerge—the most important of which emphasizes the need for a consistent framework.[53] Some countries have moved gradually, for example by widening exchange rate bands (see Chile and Israel in EM/AE transitions study). Other countries have moved rapidly, often under pressure, to flexible regimes (for instance, Brazil, Czech Republic and Uruguay). More recent transitions have been faster still.[54] The most important is to liberalize the exchange rate within the context of a well-structured and clearly communicated strategy that emphasizes the primacy of the medium-term inflation objective. In addition, central banks need to have a clear and unified

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[51] There is some evidence to this effect. See, for example, Blanchard and others (2015), Adler and others (2014), and Daude and others (2014) for recent studies on the impact of FX intervention on exchange rates.

[52] It is hard to identify in practice the source of exchange rate volatility and whether the associated shocks are in fact temporary.

[53] See Otker-Robe and Vavra (2007), and Duttagupta and others (2004)—which advanced a framework for transition subsequently endorsed by the IMF Executive Board in 2004.

[54] See Otker-Robe and Vavra (2007).

framework within which to evaluate monetary policy and exchange rate interventions decisions. This adds to the demands for greater analytical and operational capacity.

72. Additional lessons arise:

- **Good policies pay off.** A strong financial sector will diminish risks of a bumpy transition. Responsible fiscal policies will alleviate pressure on the transition. And coordinating the exit strategy with capital account liberalization may reduce the pressure on macroeconomic policies and help avoid disorderly exits.

- **Deep and liquid foreign exchange markets facilitate exchange rate flexibility.** A well-functioning market allows the exchange rate to respond to market forces, helps minimize disruptive day-to-day fluctuations and facilitates risk management, but it requires promoting the necessary technical infrastructure for the development of FX spot and derivative markets.

- **Capacity of market participants to manage exchange rate risks and of the supervisory authorities to regulate such risks.** Market participants need to develop analytical and information systems to measure and manage risks, which will likely arise in response to the exchange rate flexibility itself. And the authorities need to develop adequate prudential and supervisory capacity to monitor and limit banks' direct and indirect exposures.

- **Rules-based interventions can promote coherency of the regime and consistency with monetary policy.** They can be devised for accumulating reserves, intermediating government-related foreign exchange revenues and donor flows or managing the exchange rate level and its volatility. Making interventions predictable facilitates clear central bank communication about their objectives and their alignment with the primary objective of the central bank. Properly designed rules can also help ensure that the central bank does not succumb to old reflexes to intervene heavily, if a strategic decision has been taken to intervene only to limit volatility. Rules-based tools also limit the potential for real or perceived preferential treatment on the part of the central bank towards certain market participants. This does not mean, however, that the central bank must not undertake unannounced interventions.[55]

- **Discretionary interventions can also be undertaken in the context of a clear operating policy framework.** There is a trade-off between transparency (under rules-based intervention) and flexibility to respond to changing market conditions (under discretionary intervention). To maintain credibility, central banks should clearly communicate the reason for interventions, including their temporary nature.[56] Otherwise they may undermine the coherence and credibility

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[55] In a number of LLMICs, central bank interventions may run against pre-commitments by the government to regularly provide the market with foreign exchange received by the government or government controlled businesses. In sufficiently illiquid markets, interventions may be undermined by countervailing sales of foreign currency. In these cases, the central bank could interrupt or attenuate such sales.

[56] A common feature among EMs is that the true motivation behind FX intervention is not communicated or is deliberately obfuscated. For instance, many central banks would routinely refer to 'market volatility' or 'FX reserve accumulation', even if the true reason is to support the monetary policy objective or protect dollarized balance

(continued)

of the monetary policy regime, partly because they can lead to greater confusion about the objectives of the central bank.

- **In the face of surges in capital inflows LLMICs may need to take additional measures to support macroeconomic adjustment and safeguard financial stability.** Capital Flow Management Measures (CFMs) and similar macroprudential measures, while not a substitute for warranted macroeconomic adjustments, can in some circumstances be appropriate to counter inflow surges, such as when the room for adjusting macroeconomic policies is limited, the surge raises risks of financial system instability, where there are rapidly changing underlying conditions that make the macroeconomic stance difficult to assess quickly, or when the needed policy measures require time to be effective. CFMs should be transparent, targeted at the instability as directly as possible, temporary and preferably non-discriminatory (between residents and non-residents). With respect to capital outflows, CFMs may play a temporary role in crisis-type circumstances, while fundamental policy adjustment is being implemented.[57]

Enhancing Communications (Principle VII)

73.   **The central bank should have a holistic communication strategy covering various areas**. These should include: (i) the inflation objective and its rationale; (ii) the monetary policy strategy—how the central bank links its actions to inflation outcomes; and (iii) the expected future trajectory of the key policy rate and how it is consistent with the inflation objective.

74.   **There are a number of tools that central banks can use to effectively communicate to the wide range of stakeholders**, These include (i) holding regular meetings with financial market analysts; (ii) strengthening the role of the monetary policy report as the main communication vehicle and making it more forward-looking; and (iii) establishing a firm cycle of communication events following each policy decision making meeting according to a pre-announced calendar (such as, decision press release, press-conference, minutes, monetary policy report, events with specific audiences and journal articles).[58, 59] Furthermore, the communication strategy should aim at reaching a wide range of target groups (including labor unions, financial market participants, politicians and opinion-makers), with the message being tailored to each audience to help improve financial literacy and understanding of the monetary policy framework (see the Background Paper for a detailed discussion on benefits of effective communications).

75.   **While always critical, communication is especially important during regime transitions.** Initial communication efforts during the transition would need to focus on explaining the changes in the framework and the rationale. Tailoring the communication strategy to country specific

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sheets. Sometimes a practical compromise, such practices nonetheless reduce the credibility of the primacy of the inflation objective and threaten to jeopardize the central bank' credibility.

[57] See IMF (2012a) and IMF (2013a).

[58] Central banks focused on policy transparency have learned that admitting to own mistakes can foster accountability and improve credibility. What matters most is for markets to understand well how the central bank will behave under particular circumstances, including when mistakes were made.

[59] Case studies on Armenia, India, Kenya and Uganda provide examples of how to improve communication.

circumstances is also vital, including taking account of the central bank's technical capacity. For example, the central bank may initially provide rather broad guidance on the inflation outlook, and only when it become comfortable with its forecasting capacity may it decide to provide detailed inflation forecasts in order to further strengthen forward guidance and policy transparency.

C.   Priorities and Synergies in the Policy Modernization Agenda

Overall modernization process

76.   While there is no single or standard sequencing of reforms that could be followed by all LLMICs, some guideposts can be identified:

- **Each country should evaluate its own monetary policy framework in light of the principles.** This assessment should lead to a comprehensive set of actions (e.g., covering all stakeholders). Periodic stocktaking is useful if the roadmap for reforms includes a large number of items, and the expected timeframe for implementation is likely to be long. They can also facilitate a public announcement of a shift in the monetary regime when a critical mass of reforms has been implemented.

- **Countries should try to move forward on as many fronts as possible, as progress can be self-reinforcing.** Synergies, with one principle helping another, and the environment itself changing as the policy framework modernizes, supports a reform agenda covering a broad range of issues.

- **Those reforms that can have a catalytic role should be conducted early on in the modernization process.** Most notably, having a clear inflation objective can help clarify the monetary policy strategy, and focus communication. Improving the operating and policy framework will strengthen transmission, making policy more effective.

77.   The variety of country experience provides little unambiguous overall guidance on the appropriate pace of modernization. Once minimal central bank operational independence and the primacy of the price objective are established, reform can proceed on a variety of fronts in many cases quickly. Many countries have made rapid progress after existing regimes broke down, often in the context of crises. However, there are clearly advantages to modernizing beforehand, in part to avoid or mitigate future crises (see the experiences of AEs and EMs in the Background Paper). Yet, modernization is not easy and presents risks, and some countries—perhaps those with regimes that currently provide a reasonably successful degree of nominal stability or where (political) scope for more comprehensive reform may be limited at first—may wish to introduce elements of reform while preserving much of their existing framework. In particular, care is needed to avoid the loss of effective monetary control by, for example, exiting from a de facto peg when an alternative anchor is still missing.

Building a broad-based consensus

78.   From the start of the policy modernization process, the central bank should work towards ensuring that all stakeholders share a common view on the way forward. While the

central bank should lead, several issues lie outside its direct responsibility. Therefore, the central bank should play a catalytic role, and the process should build a long-term commitment from all relevant authorities. That will facilitate the understanding and acceptance of the principles, as well as their broader impact on the country's economic structures (Table 4).

Guideposts for the sequencing and pace of reforms

79.   Making progress hinges crucially on the extent to which the government provides the central bank with sufficient operational independence, and with a sufficiently clear mandate assigning primacy to price stability in the conduct of monetary policy (Principles I-II). Achieving an optimal balance between operational independence and accountability is a task never completed, and the balance between price stability and other goals may need to be reassessed as conditions evolve. Nonetheless, the country case studies demonstrate that severe fiscal pressures, frequent political interference, and murky objectives are significant obstacles to the modernization process. Therefore, ensuring an adequate degree of consistency with Principles I and II is essential to serve as catalyst for making substantial progress in fostering Principles III through VII.[60]

Table 4. Key Principles and Key Stakeholders	
Principles	**Stakeholders**
The CB has a clear mandate in terms of its goals, and operational independence to pursue its goals.	Requires consensus in society. Government/Ministry of Finance
Price stability is the primary overriding objective of monetary policy.	Government. Requires consensus in society.
CB has a medium-term inflation objective.	Central bank and Government
Policy actions take into account implications for macroeconomic activity and financial stability.	Central bank, statistics office
The CB has a clear and effective operational framework.	Central bank, financial regulator,
The CB has a transparent forward-looking strategy.	Central bank, statistics office
CB communication is transparent and timely.	Central bank

80.   There is also a high degree of mutual complementarity between the first two principles and others. For example, improving the transparency of the policy framework can be helpful in preventing political interference or fiscal pressures from impinging on monetary policy decisions. Clarity about how to manage the other objectives of the central bank can also help make clear the primacy of the price stability mandate.

81.   Establishing a medium term inflation objective (Principle III) is essential, though the formal role that the objective may play along the modernization process may vary (Table 3).

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[60] Unfortunately the meaning of "adequate" here is difficult to pin down. Many countries have made important progress with only uncertain achievement of principles I and II, for example a degree of de facto but not de jure operational independence, or substantial questions about whether fiscal dominance has been eliminated (e.g., Brazil in 1999). However, countries that are clearly relying on high levels of segniorage to finance spending or that do not even claim to have and prioritize the inflation objective will have great difficulties making further progress.

Two approaches may be considered, mainly related to the role of the inflation objective in policy communications:

- **Some central banks may feel that an explicit commitment early on may help.** Centering the communication strategy on the inflation objective would provide guidance both internally and to financial markets about the central bank's approach to policy, and would help identify the most pressing areas for improvement. The framework would have to reflect the fact that stabilizing inflation over the short run is both costly and (especially in LLMICs) unfeasible, while confidence bands around the inflation objective may have to be relatively wide.

- **Other central banks may wish to further strengthen their overall capacity before focusing their public communications on the numerical inflation objective.** A central bank might start using a medium-term inflation objective for its internal deliberations but refrain from emphasizing it publicly until other elements of the framework are in place. Some of these countries may still wish to introduce the explicit inflation objective in their existing regimes, even if communication remains focused on intermediate targets such as monetary aggregates. This could help provide coherence during the transition.

82.   There are advantages and challenges to each of these approaches. Earlier adoption of a visible commitment to the inflation objective would add much clarity to the framework and would serve as the organizing principle underpinning the reform agenda. It would also force central banks to clarify their thinking about how to deal with multiple objectives. This may coincide with the way some central banks think about policy de facto, and by speeding the transition to more modern regimes, it may better prepare the authorities for eventual crises. For other central banks, however, it implies a significant change in their approach to policy and communication that they may not be ready to adopt. Therefore, a more gradual approach may be preferred in the context of the existing de jure framework. The risk is that the framework remains opaque and that the reform agenda may stall in the absence of an explicit commitment.

83.   Retaining a prominent role for intermediate targets on other nominal variables is consistent with a more gradual approach, especially if these intermediate targets are part of the existing framework. There may be benefits in announcing an explicit intermediate or transitional framework that emphasizes intermediate targets in order to bring clarity to the conduct of monetary policy.[61] If well understood, this could help ensure a smooth transition. The risk is that the coexistence of targets on various nominal variables may create confusion about policy and complicate communication. Experience with intermediate targets is that these are eventually de-emphasized.

84.   Ultimately, the pace of transition will likely be determined by countries' initial conditions, as well as the policymakers' own preferences and public perceptions. If faced with high and rising inflation, the central bank might want to announce the inflation objective immediately. However, cautious central bankers not facing a crisis situation may prefer a more gradual approach, in particular if there is no broad political and public support for reforms. In all

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[61] See Laurens and others (2015).

cases, communication strategies can be designed to educate the public about the powers and limits of monetary policy, and thus contribute towards building support for the modernization process.

85.   Although central banks will always have other objectives in addition to price stability, the experience of many EMs underscores the importance of moving away from frameworks featuring multiple and inconsistent targets, or where the primacy of inflation is not well established (Principle IV). These frameworks may work for some time, but they typically lead to conflicts between objectives and can result in inconsistent policy actions and ultimately the de-anchoring of inflation. It may be preferable not to wait until the tensions become more evident, as the latter could affect credibility and make progress more difficult.

86.   Central banks can make (rapid) progress on Principles V-VII independently, but comprehensive reform will benefit from the synergies between the principles. While improving operations supports financial development, effective interest rate policy needs to be guided by clear objectives and a proper assessment of the state of the economy, which in turn require improvements in analytical capacity. Better communication can make policy more effective but it requires good analysis of the inflation prospects, and consistency between words and actions. Similarly, improvements in analytical capacity will have a larger impact on policy if they are consist with the way policy is designed and implemented.

THE ROLE OF THE FUND

87.   Enhanced central bank capacity for monetary policymaking is needed in evolving monetary regime countries. Building institutional capacity for forward-looking monetary policy analysis and implementation requires in-depth training and TA. The Fund's strategy to strengthen monetary policy frameworks in LLMICs includes (i) a new review-based conditionality for Fund-supported programs with such countries, which may include LLMICs; (ii) building capacity through TA/training; and (iii) fostering interdepartmental collaboration within the Fund to exploit synergies between TA and training.

88.   The Fund's review-based conditionality toolkit was adapted to support countries' efforts in strengthening their monetary policy frameworks. In 2014, the IMF's Executive Board approved a new policy review-based conditionality for Fund-supported programs in countries with evolving monetary policy frameworks that have a good track record of policy implementation, or are committed to a substantial strengthening of their policy framework, through the introduction of a monetary policy consultation clause or MPCC (IMF, 2014a). This aim is to help align conditionality in Fund-supported programs to the policy reality in some LLMICs.

89.   The new review-based conditionality option is being integrated in Fund-supported programs, building on countries' progress in modernizing frameworks. Notably, Kenya's 2015 SBA arrangement was the first to adopt a MPCC, and the country team has been incorporating forward looking monetary policy analysis since 2013. The Ghana 2009 ECF included an inflation consultation clause and supported the implementation of policies to strengthen the monetary policy framework and exchange rate regime, and reforms to increase the efficiency of the IT framework. Uganda's policy support instrument (PSI) incorporates an inflation consultation clause, with

increased focused on forward-looking monetary policy analysis. Reviews under Rwanda's PSI have drawn on model-based tools to discuss inflation developments and determine the appropriate policy stance, as well as reforms to improve the monetary transmission mechanism.

90. **The Fund will continue to support LLMICs in the process of strengthening their monetary policy frameworks through reforms and a tailored program of TA/training activities in the context of both surveillance and Fund-supported programs.** Further, the Fund will provide support to ministries of finance and debt offices to help address weaknesses in governments' cash flow forecasting and management, while continuing work with central banks and market regulators to deepen the money, debt and foreign exchange markets; covering where needed, both the cash and derivative segments (e.g., forward foreign exchange) of relevant markets. This includes policy advice on institutional issues as well as TA and training on macroeconomic analysis and forecasting, and on operating procedures and policy implementation (Appendix VI). The Fund's engagement has been interdepartmental in nature, featuring the collaborative work of AFR, RES, MCM, ICD, STA, LEG and the Regional Technical Assistance Centers (RTACs)/Regional Training Centers (RTCs). Support has been delivered through a variety of means, including sustained TA and training, appointment of long term experts, high-level conferences and seminars, workshops for practitioners, and online collaborative sites. RTACs and training centers, catering to regional needs, are fostering greater integration of TA and training. Exploiting the synergies between MCM, RES and ICD has allowed the Fund to provide wide-ranging capacity development support, and will remain the key mode of assistance going forward.

91. **Several efforts are underway to increase interdepartmental coordination and exploit synergies between TA and training.** Establishment of an Interdepartmental Collaborative Group on Monetary Policy Analysis Frameworks is helping foster a closer and more systematic coordination of TA and training activities, including MCM-RES TA missions to India, Thailand, Kazakhstan, Georgia, and Armenia. Similarly, Regional Strategy Notes, designed to help training plans, reflect regional and area department priorities and are well coordinated with TA.

92. **The Fund is also helping LLMICs to improve macroeconomic statistics.** STA and RTACS have developed a technical assistance program to assist countries in producing high-frequency indicators and quarterly national accounts. STA has provided training on high frequency indicators in a number of SSA countries and will extend these efforts to other regions.

93. **Relevant training for country officials and Fund staff could do more to support policy modernization efforts.** Aligning training for country officials, drawing from cross-country experiences and best practices, and organizing high-level seminars for policymakers, will help to ensure institutional buy-in from the top. Complementary training for Fund staff could also do more to support the absorption of training and TA by member countries. ICD is collaborating with other departments to strengthen the Fund's learning environment to enhance the existing internal training program. Moreover, ICD's external training curriculum is being revamped to adapt to members' needs.

Appendix I. Primacy of Price Stability and Multiple Objectives

Most central banks have multiple high-level objectives, but there are very strong reasons to keep price stability as the focal point of monetary policy. In addition to price stability, central banks may care about growth, financial stability, the exchange rate, and/or and financial sector development. These objectives can be complementary; however they can also come into conflict. A key lesson from the international experience is that keeping the price stability objective as the focal point of monetary policy, and the resulting anchoring of inflation expectations, can provide the central bank with more room to manage the difficult trade-offs involved and to decide on the preferred magnitude and pace of policy adjustment and horizon for bringing inflation back to target. [62]

There are many compelling reasons for establishing a monetary policy framework in which the central bank has a clear legal mandate that assigns primacy to the goal of price stability. In the absence of such a mandate, the monetary regime may exhibit greater susceptibility to short-term political pressures, e.g., boosting the money supply in order to finance government deficits or stimulating the economy in advance of a major election. In addition, the transparency and accountability of monetary policy can be significantly enhanced by the adoption of a medium-term inflation objective as the CPI and other aggregate price indices can be easily monitored. For example, when an exogenous disturbance causes a substantial swing in inflation, the central bank can explain its strategy for ensuring that the inflation rate converges back to its objective over the medium-term, thereby ensuring that the private sector's inflation expectations remain anchored. Finally, an opaque and erratic regime with no clear mandate is not conducive to sustained economic growth, because an elevated degree of uncertainty about the future level of prices dampens the willingness of households and firms to engage in productive investments.

Of course, the central bank's mandate often encompasses other important goals, including macroeconomic and financial stability, and financial market development; indeed, all of these goals are generally complementary to the goal of price stability. For instance, a focus on the inflation objective with a credibly flexible exchange rate and improved operations helps the development of financial markets by making the short term interest rate trajectory more predictable and therefore useful for pricing of longer-term financial instruments in the domestic currency. It also reduces incentives for saving and pricing in a foreign currency, thus reducing the dollarization of the economy and currency mismatches on private and corporate balance sheets. Especially in the EM context, the focus on price stability increases the resilience of the financial sector to swings in the exchange rate and capital flows.

However, conflicts involving short-run trade-offs between price stability and other goals can arise and pose significant challenges to the conduct of monetary policy. The central bank

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[62] Discussing the lessons from the financial crisis, Fischer (2013) concludes that focusing on inflation targets in a flexible manner (allowing for output and financial stability concerns in the short-term) is still the best way of conducting monetary policy.

should have sufficient flexibility to adjust the pace and horizon for bringing inflation back to target when hit by a shock in order to support its other objectives. Developing analytical capacity is crucial for assessing tradeoffs between different objectives and determining the appropriate adjustments to the path of monetary policy. In particular, the central bank needs to identify the various types of disturbances affecting the economy, gauge their relative magnitude and duration, and analyze the implications for the economic outlook.

When price stability comes into conflict with macroeconomic stability, policymakers can balance these goals by adjusting the horizon over which inflation is allowed to deviate from its target, subject to the proviso that monetary policy actions and communications must be sufficient to ensure that inflation expectations remain firmly anchored. For example, in the face of temporary negative supply shocks (perhaps due to weather or other transitory factors), it is generally inadvisable for the central bank to aim at fully offsetting the inflationary impact by sharply tightening the stance of monetary policy, because such a policy reaction induces strong pressure on the exchange rate as well as severe effects on economic activity and financial stability (see Appendix IV).[63] Thus, in responding to supply shocks, policy maker can consider allowing inflation to stay above the target for a longer period of time than in other circumstances (such as demand shocks, for instance).

Deploying additional policy instruments can also be helpful when price stability comes in conflict with exchange rate stability—but the use of multiple instruments can be fraught with difficult challenges for decision-making and communication. In the context of LLMICs, the preference for exchange rate stability is likely to reflect concerns about competitiveness as well as financial stability in a potentially dollarized environment.[64] For instance, rising domestically generated inflation may require a tight policy stance, but a declining world economy may compel easing the conditions for the exporting industry. In this situation the central bank may be raising interest rates, while attempting to keep the exchange rate weak, as Israel did in 2009. However, when multiple instruments are pulling in different directions, it may be very difficult to determine the appropriate policy stance and to explain it clearly to the public. Simple policy rules can be helpful under such circumstances. For instance, rules-based FX interventions aimed at building FX reserves or smoothing exchange rate volatility are more likely to be understood as consistent with price stability than opaque over-the-counter interventions.[65]

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[63] For instance, the initial inflation targeting strategy in New Zealand involved large fluctuations in the exchange rate, so the market participants did not trust the framework could survive, putting a large expectations premium on long-term interest rates and thus threatening the success of the strategy. However, in many EMs, raising interest rates aggressively is circumscribed by the fears of budgetary implications. In such circumstances, long-term inflation expectations are likely to be above the central bank's objective.

[64] Paragraphs 66 to 72 discuss the role of exchange rate interventions and that of the exchange rate more generally.

[65] In a similar fashion, the central bank should also be predictable in its role as the market maker of the last resort (a part of the financial stability mandate) in both domestic and FX liquidity and create a set of rules and processes of dealing with market participants, which will help to distinguish such operations from those setting its policy stance.

Conflict might also arise between price and financial stability, as financial risks need not always reflect in higher inflation in the short term. In most circumstances and based on current knowledge, the costs of using monetary policy to support financial stability are greater than the benefits (IMF, 2015b) perhaps even more so for LLMIC central banks in the process of building and maintaining policy credibility. As financial markets are relatively less sophisticated in LLMICs, it may be easier to identify risks and address them with direct measures, rather than using the blunt tool of monetary policy. Prudential policies should continue being used as the first line of defense against financial risks (IMF, 2013b). Limited analytical and operational capacity need not invalidate the use of macroprudential policies, though it may call for simpler, rules-based approaches that increase the resilience of the system rather than active management of the credit cycle.

While the central bank should take into account other objectives in determining the appropriate pace of policy adjustment, there are compelling reasons why price stability should be maintained as the overarching goal of the monetary policy framework. The central bank has the ability to determine the inflation rate over the medium run, whereas the sustainable path of the real economy—including the growth of employment and the longer-run level of the real exchange rate—is largely determined by nonmonetary factors that cannot be directly observed or measured.

Furthermore, resolving conflicts in favor of other objectives also carries substantial risks to the ability of the central bank to meet any of its objectives, most notably because of a loss of credibility. Sustained deviations from the inflation objective can result in a loss of credibility and with it the ability of the central bank to fulfill its price stability mandate. Once the public and financial markets lose trust in the central bank to deliver stable inflation, achieving this objective becomes near-impossible, because credibility is central in the conduct of monetary policy and a successful transmission of its instruments. Experience shows that prioritizing the price stability objective is a necessity, especially when the credibility of the central bank to deliver price stability is low.[66] Allowing inflation expectations to become unanchored in such cases can pose severe risks to the stability of the real economy and the financial system, thus impairing the capacity of the central bank to fulfill any of these objectives, and undermining the economy's long-run growth and the welfare of its population. Therefore, in considering the appropriate policy response, the central bank should also internalize the credibility effects of being off-target.

Experience shows that central banks with sufficient credibility have more room to manage the policy trade-offs arising from conflicting objectives. When inflation expectations remain firmly anchored, the central bank has enhanced flexibility to take actions to promote macroeconomic and financial stability.[67] Such central banks may more easily afford to ignore sharp increases in inflation,

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[66] For instance, the Czech Republic (in the late 1990s) and Turkey (in the early 2000s) each kept the stance of monetary policy relatively tight despite a crisis-stricken economy in order to foster a sustainable disinflation process; indeed, in both cases the inflation rate actually fell below its target.

[67] De Carvalho Filho (2011) shows that during the financial crisis countries that had well-established IT regimes lowered nominal and real interest rates more sharply than other countries, better avoided deflationary scares, and had sharp real depreciations without adverse risk assessment by markets. This study cannot fully disentangle cause

(continued)

which they consider temporary. For example, in mid-2008 (prior to the intensification of the global financial crisis) the Czech National Bank cut interest rates despite the fact that inflation was almost twice as high as the inflation target—reaping the benefits of anchored medium-term inflation expectations. The oil price shocks of the 1970's caused a large spike in inflation, but similar shocks since the late 1990's have had much smaller effects in developed countries. Blanchard and Gali (2007) find that the stronger proven commitment to maintaining low inflation and enhanced credibility of central banks was an important factor in improving the trade-offs associated with oil shocks. On the other hand, for a less credible regime prioritizing price stability may mean responding more aggressively to inflationary shocks than would have seemed appropriate from the perspective of other objectives. For instance, the initial response of many economies to the global food and oil price shock of 2007/8 was muted, expecting that the shock would be temporary and given the already difficult situation of the real economy. Unfortunately, in many cases, the persistence of the shock and unanchored inflation expectations led to soaring inflation, causing unnecessary macroeconomic volatility and requiring sharp policy responses later on.

Consistently prioritizing the price stability objectives may be needed over an extensive period of time before sufficient credibility is established and other objectives can be given more weight. For example:

- Both the Czech Republic and Israel have used FX interventions since the financial crisis without jeopardizing their credibility, but only after many years of a pure float, during which the low inflation environment and inflation expectations were successfully entrenched. In other economies, which had not yet gained enough price stability credentials, the more frequent use of FX interventions may have at times challenged the price stability objective by providing implicit exchange rate guarantees, and derailing the efforts to develop local financial markets (see experiences of Armenia and Serbia in EM/AE transitions study).
- Historically, external crises in many Latin American countries were usually accompanied by muted and ambivalent monetary policy reactions and often by policy tightening for the fear of currency depreciation. The rigidities in the exchange rate regimes provided implicit guarantees to building up FX mismatched positions in the private sector, in turn aggravating the fear of float. Refocusing policy on an inflation objective accompanied by intensive capacity building during 1990s and 2000s have made many of the Latin American economies and central banks more resilient to external shocks. During the latest financial crisis, Latin American central banks were able to cut interest rates to historic lows for extended periods and large exchange rate depreciation helped fight the external shock without engineering bouts of exchange rate speculation as in the past (De Gregorio, 2014). This was a product of strengthening the pillars of effective monetary policy in the recent decades, in particular the focus on price stability, flexible exchange rates and building more resilient financial markets with a capacity to hedge FX exposures. These policies, backed up by strong FX reserve buffers, became credible tools by the time the crisis struck.

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and effect, but the results suggest that regimes with a clear primacy of the price objective were able to better manage external shocks during the global financial crisis.

Appendix II. Traditional Reserve Money Targeting in Practice: Selected LLMICs

A majority of LLMICs with flexible exchange rates feature a traditional de jure reserve money targeting regime (TRMT), which is defined as a regime in which quarterly or higher-frequency targets on reserve money serve as the de jure operating target of the central bank. This Appendix makes two points about how these TRMT regimes work in practice:

- They often exhibit substantial de facto flexibility: deviations from reserve money targets are frequent, significant in an economic sense, and generally accommodated by adjustments to subsequent targets.

- There is little evidence that these deviations are indicative of loose monetary conditions. On the contrary, on average positive deviations from money targets are if anything associated with higher-than-average interest rates and generally exhibit a weak and ambiguous relationship with subsequent inflation. This is consistent with the view that they may often reflect accommodation of money demand shocks.

These features point to the flexibility with which these frameworks operate in practice. This flexibility permits a degree of responsiveness to macroeconomic conditions and to various shocks, including to money demand. The cost, however, is the complexity and tendency to opacity, including a lack of separation between policy and operations that often characterize such regimes. Deviations from targets may sometimes reflect money demand shocks or operational considerations, but at other times they may reflect shifts in policy (appropriate or not). And it is very difficult to tell which is which in practice.

The focus is on a sample of four SSA LLMICs with reserve money target (as in some cases one of) the CBs operational targets: Kenya, Mozambique, Rwanda, and Tanzania. This sample ranges from countries with CBs following relatively strictly their money targets (Tanzania and Rwanda) to a country in an advanced stage of adopting an interest rate-based policy framework (Kenya).

Flexibility with respect to targets in practice

Deviations of actual money stocks from their target values are frequent. Deviations of at least a 1 percent range occur about 40 percent of the time in Rwanda and most of the time in the other three countries, and they are often large (Table 1, column 1).[68] For example, the 12.5th and 87.5th percentile of the distribution of deviations (i.e., deviations that might be expected to happen about

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[68] The fact that the targets often operate as ceilings rather than point targets complicates the analysis. To adjust for this, the deviations from target have been demeaned. This fact, however, ultimately underscores the flexibility of the regime and the opacity of the mapping from the level of the targets, and of actual money, to the stance of monetary policy itself.

once per year given that the targets are quarterly) range from -1.7 and 1.1 percent of the target in Rwanda to -7.6 and 5.9 percent of the target in Mozambique (Table 1, columns 2 and 3).

These deviations are economically significant. It is useful to consider the counterfactual of how much interest rates would have had to move had the monetary authorities chosen to push the money stock so as to eliminate the deviations, all else held equal. For this back-of-the-envelope calculation, it is enough to have an estimate of the interest elasticity of money demand, that is, of how much money demand shifts for a given change in the interest rate.[69] A reasonable estimate for that number is 0.2, implying that a 1 percentage point increase in interest rates reduces money demand by 0.2 percent.[70] With this assumption, eliminating even the very common 1 percent deviations of money from target reported in column 1 of Table 1 would have caused interest rate movements on the order of 5 percentage points. The roughly annual deviations observed in columns 2 and 3 would have required interest rate adjustments ranging from 5.5 percentage points in Rwanda to 30 percentage points in Mozambique.[71]

A second manifestation of flexibility is the way money targets and the evolution of the money stock tends to react to these deviations. In a "textbook" form of money targeting, for example, or where a constant growth rate of the money stock serves as the "nominal anchor", deviations of money targeting would be fully undone in subsequent quarters as the actual would be brought back to the predetermined target path. In general, though, this is not what happens. Rather, the new targets tend to accommodate, at least partly, deviations from the previous targets. To show this, Table 1 shows the results of estimating a simple VECM

$$\begin{bmatrix} \Delta M_t \\ \Delta \bar{M}_t \end{bmatrix} = \beta_0 + \beta_1 \begin{bmatrix} \Delta M_{t-1} \\ \Delta \bar{M}_{t-1} \end{bmatrix} + \beta_2 (M_{t-1} - \bar{M}_{t-1}) + \varepsilon_t,$$

where ΔM_t is a growth of reserve money, and $\Delta \bar{M}_t$ is a growth of reserve money target. For all four countries, the effect of the error correction term $(M_{t-1} - \bar{M}_{t-1})$ on the growth of money target—$\Delta \bar{M}_t$—is positive and statistically significant (see the third column of Table 1). This means that overshooting/undershooting of the money target is in general followed by faster/slower growth of the target, thus accommodating the previous deviation.

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[69] This is "back-of-the-envelope" in part because the calculation take as given real output and inflation, asking only about how a different money stock would call for a different interest rate to equilibrate money demand. In general equilibrium, the different interest rate would presumably move output and inflation and thereby change money demand through this channel as well. However, these effects are likely to emerge with a lag. And of course their explicit consideration would only underscore that the deviation is significant economically.

[70] Andrle and others (2013a) estimate/calibrate the elasticity of 0.56 in case of Kenya. However, most estimates for developing countries in the literature actually seem to be much smaller (see Kumar and Rao (2012), Sriram (2001), and Sichei and Kamau (2012)), though this is hard to establish because estimated coefficients are often imprecisely estimated, and most of the attention is on broader money aggregates and often on long-term elasticities. It is plausible that short-term elasticities and those on base money are lower than for these broader aggregates. In this case, the interest rate movements associated with a given change in money would be larger.

[71] Note that this calculation does not assume that the only reason for the money deviations from target is to account for money demand shocks. Whatever the reason for the deviation, the idea is that to move money stocks back to target would have required an adjustment in money demand, and (holding output and other factors constant) would have required interest rate movements that can be backed out from the money demand equation.

In contrast, actual money growth does *not* tend to move so as to reduce earlier deviations from the targets. The effect of the error correction term on the growth of reserve money—ΔM_t—is statistically and economically insignificant (Kenya and Mozambique) or large enough to be economically significant but positive (Rwanda and Tanzania; see the fourth column of Table 1). This suggests that overshooting/undershooting of money target has no effect on subsequent money growth in Kenya and Mozambique, and is likely to be followed by higher/lower reserve money growth in Rwanda and Tanzania. The latter case is additional evidence that money deviations are being accommodated rather than corrected in subsequent periods.

Loose conditions or reactions to money demand shocks?

The deviations from money targets surely reflect a wide range of considerations in individual circumstances. Some light can be shed, though, by looking at some simple stylized facts. First, Table 2 reports correlations between money deviations from targets and deviation of interest rates from trend.[72] If on average the money deviations were due to money supply shocks, one would expect these correlations to be negative. If they tend to represent at least partial accommodation of money demand shocks, the correlation would tend to be positive. In fact, they are either negligible or positive. This is at least consistent with an interpretation according to which the money deviations on average partly accommodate shocks to money demand, smoothing interest rates to some extent.

A second piece of evidence comes from looking at what happens to inflation in countries that observe deviations of money stocks from target. As shown in IMF (2014a), in LLMICs with reasonably low inflation, deviations from money targets are not systematically associated with deviations from inflation objectives. Here, this analysis is complemented by a look at the dynamics: are deviations from money targets systematically associated with subsequent movements in inflation. Estimated VAR models for Kenya, Mozambique, and Tanzania suggest no strong relationship between money deviations and subsequent inflation.[73] In Kenya and Tanzania the reaction of inflation to the money deviation shock is ambiguous, while in Mozambique, inflation declines in reaction to a positive shock to money deviations. For illustrative purposes, Figure 1 also reports the dynamic effects of shocks to the interest rate deviation from trend. These have the expected values.

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[72] Interest rates used in the computations are overnight interbank rates. Trend interest rates are obtained by simple smoothing using a Hodrick-Prescott filter with parameter λ = 1, 10, and 100.

[73] The VAR for each country includes GDP growth, inflation, foreign exchange depreciation, overnight interbank interest rate, money deviation, and money growth. The impulse response functions are computed using a Cholesky decomposition with ordering as listed above. The money deviation and money growth are listed last as is common for policy variables. The money deviation is listed before money growth so as to capture with the money growth shock a growth in money consistent with the money target (because it does not create a money deviation in the first period). The autoregressive order of these quarterly VARs was set to 2.

Table 1. Characteristics of Deviations from Reserve Money Targets for Selected SSA LLMICs

Country	Share of observations with absolute deviations bigger than 1% (in percent)	12.5th percentile (in percent of the target)	87.5th percentile (in percent of the target)	Error correction term for growth of reserve money target	Error correction term for growth of reserve money
Kenya	94.9	-6.8	5.7	0.575***	-0.07
Tanzania	71.7	-4.9	4.1	0.924***	0.346*
Mozambique	94.1	-7.6	5.9	0.345**	-0.054
Rwanda	40.0	-1.7	1.1	5.841**	5.016*

Source: IMF staff calculations.

Table 2. Contemporaneous Correlations Between Nominal Interest Rate Deviations (from HP Filter Trends with Different Smoothness Parameters λ) and Money Deviations

	λ=1	λ=10	λ=100
Kenya	0.2547	0.2005	0.0605
Mozambique	0.0398	0.1073	0.1184
Tanzania	0.1124	0.0636	-0.0582

Source: IMF staff calculations.

Figure 1. VAR-Based Reaction Functions of Quarter-on-Quarter Inflation on Unit Shocks to Money Deviations from Target to Interest Rates
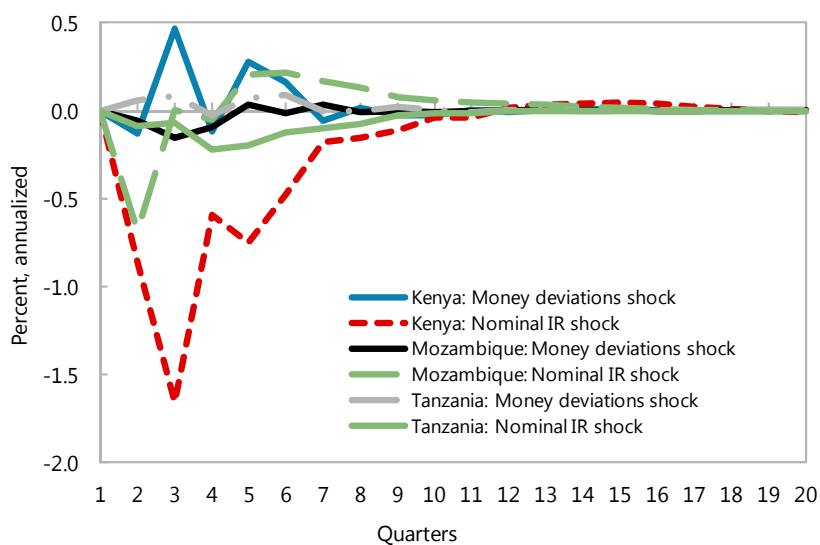
Source: IMF staff calculations.

Appendix III. Monetary Policy Transmission in LLMICs

There are many reasons to think that the transmission mechanism in LLMICs may be different and, in particular, relatively weak. Thin interbank, debt, and money markets may impair the transmission of policy instruments to the rest of the financial market, while small financial systems are likely to weaken the impact of policy on the wider economy.[74] Characteristics of the policy regime itself—including operations, objectives, policy formulation, and communication—decisively shape the nature of transmission. For example, when interest rates are volatile, mainly reflecting money demand shocks (as in an operational framework that emphasizes base money) or incoherent operations, it cannot be expected that these rates would affect the economy as strongly as they would in a regime that effectively communicates policy intentions through a policy rate.[75] Where exchange rates are heavily managed or the capital account closed, transmission through exchange rates is also likely to be attenuated.

Some empirical evidence is consistent with the view of relatively weak transmission in LLMICs. Mishra and others (2012) show that the correlation between money market rates and lending rates are lower in LLMICs compared to advanced economies. Mishra and Montiel (2013) survey the VAR literature on LLMICs, which uses identification strategies developed for AEs to try and ascertain the impact of monetary shocks on inflation and output. They conclude that most LLMIC studies find weak and statistically insignificant effects of monetary shocks on inflation and output.

However, this evidence may result from difficulties in applying standard empirical approaches to LLMICs rather than a lack of underlying transmission. A number of LLMIC-specific features of regimes and the economies themselves are likely to make transmission hard to detect even when it is there.[76]

- Regimes with multiple targets and objectives make identification of monetary policy shocks especially challenging. This is because no single variable (or linear combination of variables) can properly capture the intended stance of policy. For example, interest rate movements may signal money demand shocks in a money targeting regime but policy shocks when the interest rate is the operating target, and particularly in incoherent regimes it may be hard to know which is which in a given episode. The erratic nature of policy in these regimes can make it difficult to

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[74] For example, Mukherjee and Bhattacharya (2015) find that interest elasticity of private consumption and investment increases with financial development, suggesting that the transmission mechanism strengthens as countries' financial systems develop.

[75] Box 5 discusses the relationship between monetary policy framework and the strength of transmission.

[76] Li and others (forthcoming) show that typical features of LLMIC data are enough to make transmission very hard to find with standard regression approaches, even when in fact it is there in the underlying data generating process. They use a model that assumes a well-functioning transmission mechanism to generate synthetic data and then apply VAR techniques on the simulated data. They find that the short sample lengths, measurement error, and high frequency of supply shocks and policy regime changes that are characteristic of LLMICs can greatly reduce the power of VARs to uncover the monetary transmission mechanism.

empirically identify policy shocks and can result in weak estimates of the transmission mechanism.

- Changes in regime, e.g., shifting from reserve money to interest-rate operating targets, will change the strength of transmission and the empirical specifications required to identify it. This implies that effective sample sizes—over which parameters can be expected to be stable and a given empirical specification correct—are likely to be very short.

- Other factors that make it hard to discern transmission include short time series, measurement errors, and frequent supply shocks.

More granular analyses have found evidence for a well-functioning transmission mechanism in LLMICs. One insight is the importance of focusing on large monetary policy shocks in the context of regimes that are reasonably coherent and in which both market participants and the econometrician can identify the policy shocks. Techniques that accommodate short data samples and that pay careful attention to country-specific features are also warranted.[77]

- Berg and others (2013) use the narrative approach to identify the effects of monetary tightening in selected LLMICs. The focus is on the large and arguably unexpected tightening of monetary policy by four members of the East African Community (Kenya, Rwanda, Tanzania, and Uganda) in 2011. They find a well-functioning transmission mechanism; especially in countries where the stance of monetary policy was communicated clearly (see Box 6 for a formal analysis of this argument). The depth of financial markets is a less clear indicator of the strength of transmission than the clarity of the regime: transmission was clearest in Kenya and Uganda, and while Kenya was a standout in terms of financial depth Uganda was not.

- Abuka and others (forthcoming) use Ugandan supervisory data on loan-applications and loan-grants to study the bank lending channel of monetary policy. The micro-data facilities better control for changes in credit demand and therefore isolates the impact of monetary shocks on credit supply. They find that monetary tightening leads to a reduction in credit supply by banks, both in terms of number of loans given and the size of granted loans. There is also evidence for a bank capital channel—the supply of credit by banks with weak capital positions is impacted more.

It remains plausible that transmission in LLMICs is generally weaker and more uncertain than in other countries, but this is not a reason for inaction. Weak transmission is sure to produce

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[77] It may be helpful to recognize a further difference between LLMICs and more advanced countries: the vastly greater amount of research effort that has gone producing empirical work that yields the "right" signs. Arguably, the strongest evidence that monetary policy "works" in developed countries comes not from VARs but from the history of the Volcker disinflation and the Great Depression. Even in the U.S., with its uniquely long, stable data series and policy regimes, economists experimented for many years before arriving at acceptable results, e.g., solving the "price puzzle" that inflation seemed to rise after a monetary policy shock and the "liquidity puzzle" that interest rates tended to rise in response to an increase in the money supply. On these points see Summers (1991), Sims (1992) and Leeper and Gordon (1992).

uncertainty among policymakers, which in turn can suggest caution in trying to fine-tune monetary policy. However, this point can easily be overemphasized, and should be viewed in the context of two qualifications. First, deep uncertainty about the transmission mechanism is not unique to LLMICs but rather is a general characteristic, particularly of countries implementing new policy frameworks, often in the face of rapid structural change or financial crises.[78] And second, this uncertainty does not in general justify inaction.[79] The idea that policy action requires a precise and reliable quantitative understanding of transmission represents an excessively idealized view of the monetary policy-making process. There is a critical element of "tatonnement" for all countries, including LLMICs: assess the state of the economy and the outlook; adjust policy if it seems too tight or too loose; and repeat. For this process only some confidence about the sign of the effect of monetary policy is critical.

More broadly, uncertainty about transmission should not deter central banks from improving their policy frameworks. First, one of the best ways to improve understanding is to learn by doing. Forward-looking policy implementation combined with continuously updated assessments of the economic outlook and the policy stance promotes better understanding of transmission over time. Second, countries that adopt a coherent and clear monetary policy framework—such as modernizing the operational framework, clarifying the objectives of policy, and improving transparency and communication—are likely to reap the benefit of a stronger and more stable transmission mechanism. Although weakness and uncertainty about transmission should not prevent central banks from modernizing, it may have implications for some aspects of the policy regime, such as the width of any confidence bands around—and perhaps the level of—the inflation objective.

[78] See Battini and Laxton (2007) for the case of inflation targeting.

[79] The recent experience with quantitative easing in advanced countries is a (distant) case in point. Furthermore, uncertainty about the transmission mechanism is one of the main reasons that central banks in advanced economies use simple policy rules (like the Taylor rule) as benchmarks in determining the course of monetary policy (see Levin (2014)).

Box 1. Operating Frameworks and Signaling of the Monetary Policy Stance

It has long been recognized in advanced countries that the "expectation" channel—based on the private sector's expectation of future policy decisions, which allows changes in very short-term interest rates to transmit to longer rates, real economic activity and inflation—is the key element of the monetary transmission mechanism. Yet the relevance of the expectation channel and how it may interact with the operational framework in shaping policy effectiveness in LLMICs has not received much attention.

As documented in this paper, many LLMICs have traditional reserve money targeting (TRMT) frameworks in which reserve money serves as the operational target of the central bank yet target misses are common. While such flexibility is both inevitable and welcome, the opacity of the framework makes it difficult for financial market participants to understand policymaker's true intentions, especially when combined with incipient or insufficient communication efforts. Regimes that implement policy by controlling interest rates do not suffer from this weakness.

Output Gap and Inflation Responses to 1 Percent Monetary Policy Shock Under Flexible Money Targeting vs. Interest-rate Based Policy
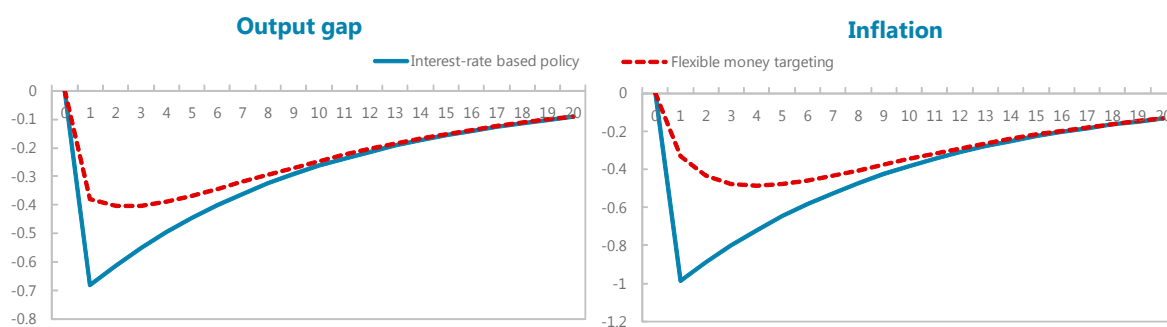
Source: O'Connell and others (2015).

With the help of a simple new-Keynesian model with incomplete information, O'Connell and others (2015) show that, through such opacity, TRMT reduces the expectations channel and the overall effectiveness of monetary policy in these countries. Model-based simulations serve to illustrate this point. Monetary policy decisions have a smaller impact on inflation and output (and long term rates) under TRMT, compared to interest rate based operational frameworks, even when policy intentions are the same.

These results cast some doubt on the pessimistic view of monetary policy in LLMICs, as well as on the validity of the empirical evidence for drawing policy conclusions.[1] It also emphasizes the importance of the operational framework for shaping the effects of monetary policy.

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1/ This is a version of the Lucas critique.

Appendix IV. Monetary Policy and Food and Fuel Price Shocks

Supply shocks, such as shocks to food and fuel prices, confront policymakers with difficult choices. These shocks typically result in inflation, yet efforts by the central bank to offset these pressures will also affect output, thus creating a tradeoff between inflation and output stabilization. Although all central banks face these challenges, LLMICs are particularly vulnerable, given: (i) the large share of food in consumption; (ii) the exposure of their agricultural sector to weather-related shocks; and (iii) their exposure to international food and fuel price shocks, given their net importer status (in many cases). Developing a coherent monetary policy response to these shocks is therefore of first order importance.

The experience with monetary policy over the last thirty years has helped clarify how central banks should respond to supply shocks. The recommended policy response is captured by the adage "allow for first-round effects but respond to second-round effects," which acknowledges that some increase in inflation is inevitable (and necessary from a macro perspective) but that further (or persistent) increases are undesirable. Implicit in the initial increase in inflation (first round) is the idea that the supply shock is a real shock to the economy, and relative prices, including relative food or fuel prices and real wages and exchange rates, need to adjust in response. The effect on inflation should be short-lived: it should cease once relative prices have adjusted. However, further and persistent increases in inflation may arise if there are economy-wide efforts to preserve real income levels, or if the original surge in prices is perceived as a de facto change in the inflation objective of the central bank. These persistent increases in inflation or generalized price pressures pose a threat to price stability and must be counteracted with some degree of policy tightening.

Whether supply shocks lead to generalized price pressures depends on various features of the economy, some of which are under the influence of monetary policy. Countries with widespread wage indexation are more likely to display second-round effects. Although these practices are beyond the influence of (current) monetary policy, they typically reflect a history of high and volatile inflation. On the other hand, recurrent supply shocks, e.g., stemming from seasonal weather patterns, and their temporary nature may be well understood and accepted by the general public, in which case second round effects need not occur. This may be of particular importance in LLMICs. Finally, countries with opaque policy frameworks, in which the primacy of price stability and the inflation objective is not made clear, are more likely to experience inflationary spillovers from supply shocks. Under these opaque frameworks it may be difficult for the public at large to ascertain whether increases in inflation mainly reflect supply shocks or changes in monetary policy.

If confronted with second round effects, central banks need to consider various factors in their policy response. Policymakers need to develop a view of the desired degree of policy tightening by taking into account: (i) the effect of policy on inflation and output, and (ii) their own preferences over the pace at which inflation should return to its medium term objective. The latter should reflect the central bank's preferences over output stability in the short-to-medium term. In LLMICs with incipient policy credibility or at early stages of a disinflation process, it makes sense to

give greater prominence to price stability, which all else equal would imply a tighter policy response, in order to assuage concerns over the central bank's commitment to its inflation objective. As inflation is stabilized and credibility is earned, the central bank can be more flexible in its policy response.

Adopting frameworks that are consistent with the principles can help central banks respond to supply shocks appropriately:

- A focus on the medium-term inflation objective can help central banks find the right balance between allowing for first round effects while guaranteeing price stability. A focus on the medium-term acknowledges that there are limits in monetary policy's ability to influence inflation over the short-term, including with regard to supply shocks. At the same time, it makes the central bank responsible for delivering stable inflation (on average). Achieving this balance is of particular importance in LLMICs given the prevalence of supply shocks. The latter may also require enlarging the bands around the inflation objective, relative to advanced countries or EMs, to signal what the range of inflation outcomes in a LLMIC is likely to be.

- A coherent framework can help central banks assess the nature of inflationary pressures and tailor the monetary policy response accordingly. The distinction between first and second round effects is a useful construct but fraught with uncertainty and requires an understanding of the structural features of the economy, and a thorough assessment of available data and the state of the economy. In addition, the mapping from achieving the medium-term inflation objective (and concerns with output stability) to the implications for policy instruments requires a suitable analytical and quantitative framework. This further justifies the importance of investing in LLMIC central banks' data and analytical capacity.

- An effective communication strategy can educate the public about the nature of the supply shock, its effect on the economy, and the central bank strategy for bringing inflation back to its desired level over the medium term. By reducing the uncertainty in the economy, such a strategy can limit the inflationary spillovers from the shocks and help build credibility in the central bank's commitment to price stability.

Appendix V. Key Transition Steps in Modernizing Monetary Policy Frameworks—Lessons from Experiences

How to build and maintain credibility during the transition (and well after that)

Dos	Do nots
Declare medium-term inflation objectives early on	Do not change inflation objectives too often
Define inflation objectives as continuous point targets	Do not increase inflation targets, even when inflation seems 'persistently' above target
Make the decision makers terms independent of political cycle; give them strong irrevocable mandates independent of the governor's	Do not have multiple numeric objectives
Invest early in external communication, emphasizing the medium-term inflation objective and central bank independence and accountability	Avoid using complicated 'escape clauses' in explaining inflation performance relative to target
Invest in analytical capacities early on	Do not wait for the perfect model or regression
Address institutional arrangements to enshrine operational independence, including phasing out direct credit to government	Do not expect to be able to declare "mission accomplished" on operational independence and fiscal pressures
Communicate forward, but also explain current situations. Explain policy decisions in terms of policy objectives and economic outlook. Admit and explain the target misses and plans to address it	Do not exclude from the definition of the inflation objective items important for large parts of the society, such as foods in most LLMICs; do not focus on narrow 'core' inflation indices too much
Try to extend policy horizons, as forecasting capacities improve. The minimum is one year	Do not use past inflation in indexing exchange rate movements
Make policy decisions at pre-announced dates	Do not start the transition process without at least basic political consensus
Encourage staff participation in the policy decision making process	Do not finance the government and do not make profit transfers to the budget (if at all possible)
Integrate all decision making using various instruments (e.g., key policy rate, exchange rate, reserve requirements, net open position limits) into a single process	Do not overly rely on FX interventions, and do not use FX intervention to defend certain exchange rate level
Focus on *de facto* regimes when conducting internal analysis, not the *de jure* one or the regime you would like it to be	Do not get 'behind the curve' when responding to inflation outbursts, at least in the early years before inflation expectations are anchored. Credibility is quickly lost, but hard to gain
Take active measures (even administrative) to reduce and or prevent dollarization	Do not let sterilization costs impede on the resolve to change monetary policy stance deemed consistent with the objectives

Show a strong resolve to make policy more effective even in difficult times (rather than waiting for 'better moments'). Unless absolutely necessary, do not wait for legal changes, but start applying the principles in practice, as soon as there is a sufficient political consensus	Avoid having two nominal anchors. If they already exist, resolve conflicts consistently in favor of the inflation anchor
Split monetary policy formulation from implementation and supervision	
When using several instruments with a primary impact on the monetary policy stance, use them consistently; avoid using these instruments for different objectives	Do not be pre-occupied with complicated financial stability concepts. Financial stability in LLMICs mostly means solvent banks and functioning FX markets thanks to the simplicity of the LLMIC financial systems

How to move away from exchange rates as intermediate targets during the modernization process

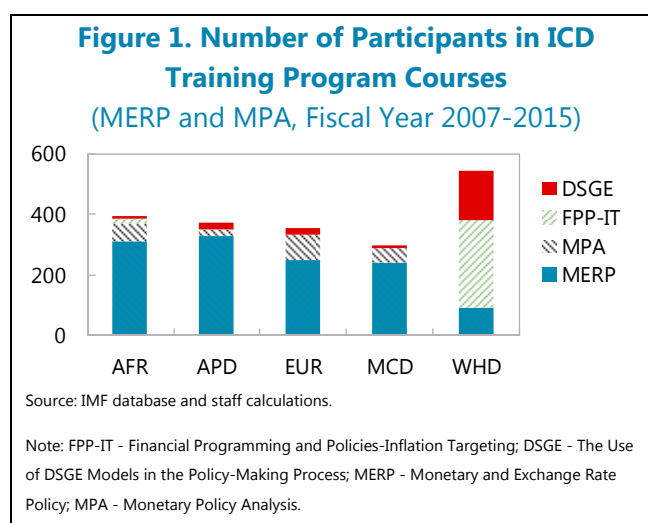| Do	Do not
Set up a high-level coordination task force with enough authority	Do not over-prepare, but move steadily seizing every opportunity (in particular increase the flexibility under appreciation pressure)
Invest into a functional spot and derivative FX market, including by supporting market making activity by banks, encouraging the functioning of trade organizations (such as the forex club, ACI etc.)	Do not liberalize the capital account too fast (before sufficient exchange rate flexibility is put in place). Liberalization should follow (rather than precipitate) greater exchange rate flexibility
Keep the exchange rate flexible in both directions, even if in a narrow corridor (minimum +/- 3%) to help the market develop	Do not provide implicit exchange rate guarantees: (a) always conduct interventions/construct bands so that there is a two-way risk for market participants, (b) refrain from referring to the exchange rate in policy communication, (c) the interest rate should react to inflation, not the exchange rate per se.
Make efforts to channel the FX proceeds from the transactions with the government back to the market	Don't blame rapid exchange rate movements on the speculative behavior of banks. They rarely are the culprits (especially when tight net open position and trading limits are in place)
Encourage the government to issue domestic currency debt at benchmark maturities in sufficient quantities to form a yield curve and help integration of the money and FX markets	Avoid pulling in different directions with FX interventions and the key policy rate
Actively promote money market development, e.g., by instituting master repo agreements, promoting the establishing of the reference	Do not use FX intervention to defend exchange rate levels. Communicate FX interventions as a consistent part of the policy framework working

rates and market infrastructure in general, etc.	aiming at price stability
Allow foreigners to take part in the domestic markets, contributing volumes as well as practices and standards of conduct	
Hasten the resolve to implement an alternative anchor and a more effective monetary policy, especially after an exchange rate/balance of payments crisis	
Make interest rates the operating target	
Resolve the conflicts between the exchange rate and inflation anchors consistently in favor of inflation. Gradually move the exchange rate from being a target to being a monitoring transmission variable	
Take a leading role in promoting good standards in hedging FX risks by the banks and the corporate sector	

Appendix VI. Capacity Development to Support Modernization of Monetary Policy Frameworks

ICD Monetary Policy Training Programs

ICD has developed a number of intermediate to advanced-level training courses in model-based monetary policy. These courses are aimed at central bank staff that use models for policy analysis and forecasting. By end-2016, three new courses on Monetary, Exchange Rate, and Capital Account policies will be added to the external curriculum. The advanced courses target model operators, analysts writing monetary policy reports, as well as policymakers (MPA, DSGE), while the intermediate courses target a broader audience (FPP-IT, MERP). To date, around 2,000 participants from LICs and EMs have participated in these model-based courses, and around 450 in the MPA and DSGE courses (Figure 1).


Figure 1. Number of Participants in ICD Training Program Courses
(MERP and MPA, Fiscal Year 2007-2015)

Source: IMF database and staff calculations.

Note: FPP-IT - Financial Programming and Policies-Inflation Targeting; DSGE - The Use of DSGE Models in the Policy-Making Process; MERP - Monetary and Exchange Rate Policy; MPA - Monetary Policy Analysis.

MCM Technical Assistance in Monetary Policy

MCM is providing extensive support to central banks around the world in their efforts to strengthen conformity with the principles for effective monetary policy (Figure 2). Over the last 5 fiscal years (FYs) MCM TA on monetary policy related issues has totaled an annual average of about 19 full time equivalents (FTEs). Through headquarters-led missions and together with work undertaken by RTACs, MCM is providing tailored advice to countries to help them modify their central banking mandates and improve governance in support of their independence in the conduct of monetary policy. TA is provided to countries with different monetary policy regimes, as well as levels of institutional and market development. Responding to specific requests from the country authorities, MCM TA recommendations are tailored to suit each country's specific conditions. More than half of MCM TA was devoted to strengthening of central bank's operational capacity to conduct monetary and foreign exchange policy and operations. TA activities in central bank governance (i.e., accounting, internal controls, and organization) have expanded over the last five years, absorbing close to 30 percent of the envelope, with TA activities in financial market infrastructure and reserves management accounting for the rest.

Figure 2. Technical Assistance Central Banking by MCM
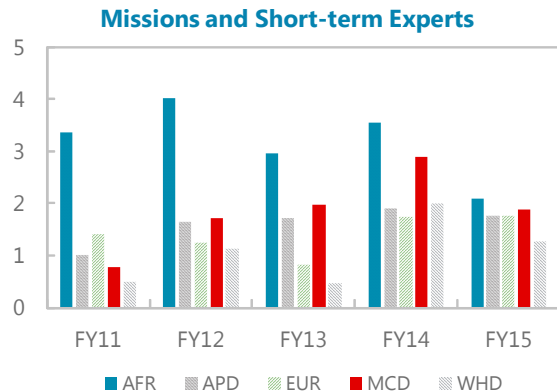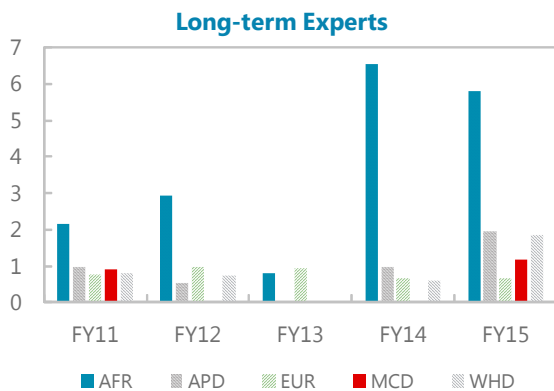(FY 2011-2015, FTEs)

SSA has received close to half of MCM TA in central banking.
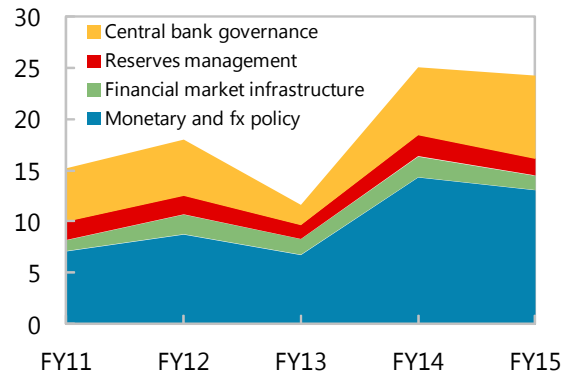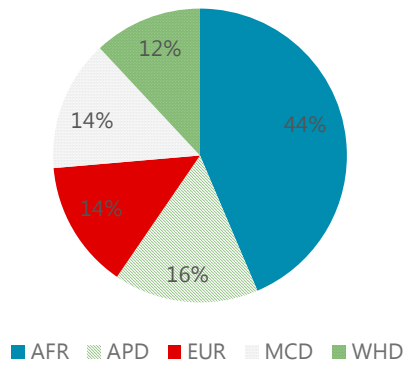
Monetary and FX policies and operations absorbed more than half of the TA. The share of TA in central bank governance has expanded over the years.
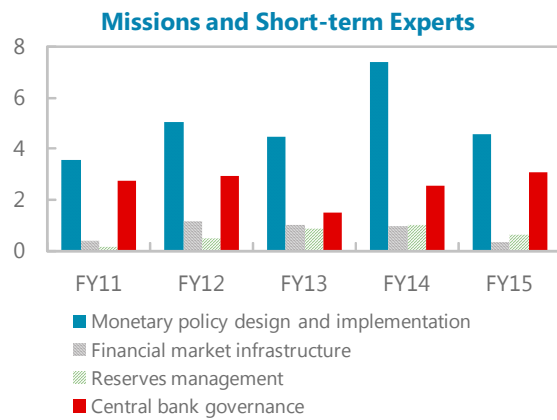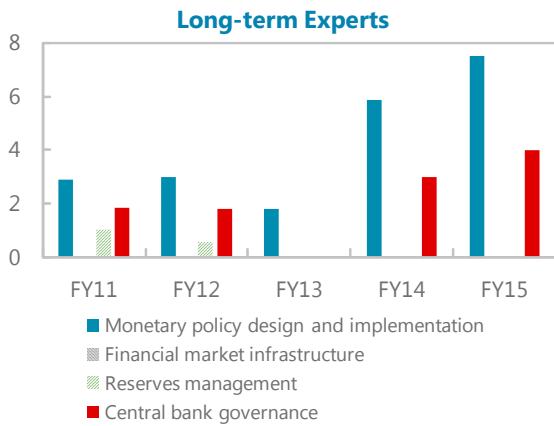
The growing share of TA via long-term experts reflects to a large extent the creation of new RTACs.

Source: IMF staff calculations.

Capacity Development Initiatives by RES

RES has assisted central banks in Kenya, Uganda, Rwanda, Tanzania, Ghana, and Mozambique in developing a modern FPAS to support monetary policy analysis. With TA support from RES, the CBK developed, in 2012, a forward-looking policy recommendation process to support the Monetary Policy Committee (MPC), underpinned by model based forecasts. The CBK has also made changes to its organizational structure to institutionalize the forecasting team and has also reorganized the policy formulation process by instituting a series of meetings between the forecasting team and the MPC. Progress in Uganda has also been positive. The FPAS project has facilitated the development of a Quarterly Projection Model (QPM), which is now being used to inform the MPC process. The FPAS development project at the National Bank of Rwanda (BNR) is at an earlier stage. TA experts have assisted the BNR staff in developing a QPM, and core BNR experts are being trained in using the model to support the MPC process.

The FPAS project in Tanzania and Mozambique has focused on developing a modeling capacity to complement the TRMT framework in place. Banco de Mocambique staff uses the QPM to prepare regular shadow forecasts in addition to their official forecasts to support the monetary policy decision process. A similar core forecasting model has also been developed at the Bank of Tanzania (BoT).

RES continues to support several staff working on SSA countries with their monetary policy discussions with authorities. RES has contributed to the preparation of medium-term inflation projections and broad analyses of economic conditions to assess the appropriateness of policy stance for the Uganda, Ghana, and Rwanda country teams. RES is looking forward to institutionalize this initiative across the Fund.

LEG TA and Training of Central Banks

LEG has been helping LLMICs in modernizing their central bank laws. The overall focus of LEG's TA effort is on assisting the authorities in establishing a sound (including a well-drafted) legal basis for the monetary institutional framework in line with international best practice. In collaboration with FIN on safeguards assessments of central banks, LEG helps identify weaknesses in central bank laws (mostly governance-related) that often evolve into conditionality in countries with Fund-supported programs, (such as in the Democratic Republic of Congo, Jordan, and Tunisia) and follow up with TA on implementing such conditionality. In addition, LEG is supporting central bank law reforms in new states (e.g., Kosovo, South Sudan, East Timor), states in transition (Iraq, Afghanistan, Myanmar), and states moving toward regional monetary union (East African Community).This law reform effort is backed up by a specific training program for central bank counsels in several regional training institutes (Joint Vienna Institute, Singapore Regional Training Institute, Middle East Center for Economics and Finance), to build human capacity in the legal departments of central banks to interpret and implement central bank law reforms. Other TA on legal frameworks—such as, payment system soundness, banking supervision and regulation, and bank resolution and crisis management –are helping improve the effectiveness of monetary policy.

Increasing interdepartmental coordination and synergies between TA and training

RTACs and training centers are catering to regional needs and fostering greater integration of TA and training. Synergies between TA and training delivered by TA departments and RTACs occur by design. The experience of TA delivered jointly by MCM and African Regional Technical Assistance Center (AFRITAC) South is a good example of such synergy. Training tends to focus on cross-country experiences, international best practices, and practical, hands-on workshops. MCM training is geared to supporting the implementation of TA advice on topics such as financial stability, stress testing, and risk-based supervision. TA missions often include a training component in the form of hands-on workshops. Africa Training Institute (ATI) staff delivered customized training on modernizing monetary policy frameworks to Mauritius, South Africa, and Tanzania in support of TA delivered by AFRITAC East and RES. In addition, ATI organized a peer-to-peer learning conference on monetary policy frameworks with RES and three AFRITACs. ATI also provided training to the senior management of the BoT in support of AFRITAC East/RES TA. Central American Technical Assistance Center experts and ICD staff delivered a course (in Spanish) and related TA on banking supervision and regulation in Central America.

While AFR, in collaboration with RES and ICD, has started an initiative to train selected country economists, further advances could be made.[80] Two customized internal workshops have been held as a supplement to ICD's MERP and MPA courses, focusing on the use of model-based forecasts for policy analysis. However, the Matlab-based model forecasts imply that the sunk-costs of learning how to operate the models may be large. Country teams in AFR would also find integration of aspects of the model-based forecasts within the Financial Programming exercise very useful.

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[80] About 10 country economists have been trained so far.

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