Institute for Capacity Development and
Monetary and Capital Markets Department

Monetary Issues in the Middle East and North Africa Region

A Policy Implementation Handbook for Central Bankers

Simon Gray, Philippe Karam, Vilada Meeyam, and Michel Stubbe

INTERNATIONAL MONETARY FUND

Institute for Capacity Development and
Monetary and Capital Markets Department

Monetary Issues in the Middle East and North Africa Region

A Policy Implementation Handbook for Central Bankers

Simon Gray, Philippe Karam, Vilada Meeyam, and Michel Stubbe

INTERNATIONAL MONETARY FUND

Cataloging-in-Publication Data

Joint Bank-Fund Library

Monetary Issues in the Middle East and North Africa: A Policy Implementation Handbook for Central Bankers / Simon Gray … [et al.]. – Washington, D.C. : International Monetary Fund, c2013.

p. : col. ill. ; cm. – (Departmental paper (International Monetary Fund. Monetary and Capital Markets Dept.))

Includes bibliographical references.

1. Monetary policy – Middle East. 2. Monetary policy – North Africa. 3. Banks and banking, Central – Middle East. 4. Banks and banking, Central – North Africa. I. Gray, Simon (Simon Thorburn), 1957– . II. International Monetary Fund.

HG1206.M66
ISBN: 978-1-47559-056-2

Publication orders may be placed online, by fax, or through the mail:
International Monetary Fund, Publication Services
P.O. Box 92780, Washington, DC 20090, U.S.A.
Tel. (202) 623-7430 Fax: (202) 623-7201
E-mail: publications@imf.org
www.imfbookstore.org
www.elibrary.imf.org

Departmental Paper

Institute for Capacity Development and Monetary and Capital Markets Department

Monetary Issues in the Middle East and North Africa Region: A policy implementation handbook for central bankers

Prepared by Simon Gray, Philippe Karam, Vilada Meeyam, and Michel Stubbe[1]
Authorized for distribution by Ghiath Shabsigh and Abdelhadi Yousef
April 2013

[1] The authors wish to thank Andreas Bauer, Alberto Behar, Karsten Junius, May Khamis, Padamja Khandelwal, Amine Mati, and the Egypt and Lebanon country teams from MCD; Salim Darbar and Darryl King from MCM; and the Executive Director's office (Mr. Jafar Mojarrad) for their useful comments. Fatima Keaik (CEF) provided excellent editorial support. Remaining errors are the authors' responsibility.

Abstract

This paper documents the main themes covered in two seminars (December 2011 and September 2012) on monetary policy and implementation at the *IMF—Middle East Center for Economics and Finance*, and includes country case studies. Against the backdrop of the global financial crisis and swings in cross-border capital flows, operational frameworks have become more flexible, and liquidity management has impacted the relationship between the policy rate corridor and market rates. The balance sheet structure of MENA central banks shows differences between oil exporters and others, while a few countries have exhibited notable changes since early 2011. Collateral now has a significant financial stability function. Although only one MENA country is part of the G20, implementation of the Basel III bank capital adequacy and liquidity rules will most likely impact banks' way of doing business in MENA countries, even if indirectly.

JEL Classification Numbers: E43, E44, E52, E58, G1

Keywords: Monetary policy, monetary operations, liquidity management, central bank

Authors' e-mail address: sgray@imf.org; pkaram@imf.org; vmeeyam@imf.org; Michel.stubbe@ecb.int

Contents

Tables

Figures

Boxes

Appendices

Glossary

AE	Advanced Economy
ALG	Algeria
AREAER	*Annual Report on Exchange Arrangements and Exchange Restrictions*
BAM	Bank Al-Maghrib
BCBS	Basel Committee on Banking Supervision
BDL	The Banque du Liban
BHR	Bahrain
BIS	Bank for International Settlement
BOK	Bank of Korea
BOT	Bank of Thailand
CAEMC	Central African Economic and Monetary Community
CB	Central Bank
CBC	Central Bank of Comoros
CBD	Central Bank of Djibouti
CBE	Central Bank of Egypt
CBI	Central Bank of Iraq
CBJ	Central Bank of Jordan
CBM	Central Bank of Mauritania
CBR	Central Bank of Russia
CBT	Central Bank of Tunisia
CBY	Central Bank of Yemen
CCP	Central Counterparty
CD	Certificate of Deposit
CDS	Credit Default Swap
CE	Credit Easing
CEF	IMF Middle East Center for Economics and Finance
CIC	Currency in Circulation
COM	Comoros
CPSS	Committee for Payment and Settlement Systems
DIJ	Djibouti
ECB	European Central Bank
EGY	Egypt
ELA	Emergency Lending Assistance
EM	Emerging Market

EUR	Euro
EWS	Early Warning System
FDI	Foreign Direct Investment
FX	Foreign Exchange
GCC	Gulf Cooperation Council
HKMA	Hong Kong Monetary Authority
HQLA	High Quality Liquid Asset
IFBR	Inflation Forecast Targeting Based-Rule
IOSCO	International Organization of Securities Commissions
IRQ	Iraq
ISIMP	Information System for Instruments of Monetary Policy
IT	Inflation Targeting
JOR	Jordan
KWT	Kuwait
LBN	Lebanon
LBY	Libya
LCR	Liquidity Coverage Ratio
LOLR	Lender of Last Resort
LTD	Loan-to-Deposit Ratio
LTV	Loan-to-Value
MAR	Morocco
MCD	Middle East and Central Asia Department
MCM	Monetary and Capital Markets Department
MENA	Middle East and North Africa Countries
MIACR	Moscow Interbank Average Credit Rate
MPC	Monetary Policy Committee
MRT	Mauritania
MTM	Monetary policy transmission mechanism
NPL	Non-Performing Loans
NSFR	Net Stable Funding Ratio
OM	Oil-importing Country
OMO	Open Market Operations
OMN	Oman
OX	Oil-Exporting Country
PCF	Primary Credit Facility
PMA	Palestine Monetary Authority

QAT	Qatar
QCB	Qatar Central Bank
QE	Quantitative Easing
REO	*Regional Economic Outlook*
RMP	Reserve maintenance period
RR	Reserve requirements
SAMA	Saudi Arabian Monetary Agency
SAU	Saudi Arabia
SCF	Standing Credit Facility
SDF	Standing Deposit Facility
SDN	Sudan
SF	Standing Facility
SIFI	Systemically Important Financial Institutions
SLR	Statutory Liquidity Requirements
SME	Small and Medium-Sized Enterprises
SYR	Syria
TUN	Tunisia
UAE	United Arab Emirates
UAECB	United Arab Emirates Central Bank
YMN	Yemen

CHAPTER

1 Introduction

This paper represents a collection of topics on monetary policy and its implementation, including liquidity management, discussed at two seminars, held jointly between the IMF Middle East Center for Economics and Finance (CEF) and the IMF Monetary and Capital Markets Department (MCM) in Kuwait during the fall of 2011 and 2012. It embodies the seminar proceedings in its main, but the structure which draws on numerous practical applications in the Middle East and North Africa (MENA) countries will make for a useful handbook guiding policymakers in the implementation of monetary policy through an operational framework and the use of the latter in support of liquidity management and market development. The need for CBs to adapt their operational frameworks, in the face of the global financial crisis, and introduce ways to handle pressures from newly rising risks and challenges is also emphasized, including in support of financial stability and the relevant design incentive structures in the financial system. The handbook concludes with three country case studies (contributions by seminar participants) that underline the concepts and methodologies presented during the seminar, while focusing on the more recent and challenging operational issues facing their own country.

The paper starts with a detailed review of the region's monetary regimes, which serves as a precursor to a focus on the monetary operational framework in the remainder of the paper, including: the monetary transmission mechanisms and the underlying channels in conducting monetary policy (assessing their strength and relevance); expansion of the monetary policy framework in promoting financial stability (alongside the primary price stability objective); the stance of monetary policy in the years 2009–12 following the fallout from the global financial crisis (split into oil-exporter (OX) and oil-importer (OM) countries for a more adept analysis) with an emphasis on challenges and solutions sought while working toward a broader medium-term objective which highlights the need for a consistent interaction of macro policies.

The section on monetary policy implementation focuses in particular on the factors determining the width for policy interest rate corridors. Even CBs operating a fully-credible fixed exchange rate regime need to consider how best to manage liquidity (reserve money balances at the CB) within the financial system and, ideally, promote market development with appropriate incentives. This section discusses operational differences between corridor systems which target market rates around the middle of the corridor, and those which leave rates to trade near the floor, with different consequences for monetary transmission and market development. In view of the structural excess liquidity in most of the countries represented, this section also discusses the causes of surplus liquidity and whether banks can, or should, use this to increase lending to their customers.

Focusing on the balance sheet structure of MENA CBs, as the comprehensive tool to guide the implementation of monetary policy and the support of financial stability, pertinent characteristics of country groupings are evident: large foreign exchange (FX) assets and high government deposits are dominant in oil-exporting countries over the years, whereas some countries (Egypt, Morocco, and Tunisia) have exhibited notable changes since early 2011. Pre-crisis comparison of advanced economies (AE) vis-à-vis MENA as well as AE pre-crisis and now, demonstrate some striking changes. As some MENA countries have moved from a situation of structural excess liquidity towards balance or even a structural shortage (facilitating a mid-corridor interest rate approach), many AE countries have moved in the opposite direction. Notably, Quantitative Easing (QE) means that some AE CB balance sheets are now asset-driven, and in this respect similar to some oil-exporting country CB balance sheets (asset driven, but the assets in the latter case being FX reserves).

The function of *collateral* underwent the same change of scope in MENA countries as in AE: pre-crisis, it mattered to ensure the financial protection of the CB in granting credit. Currently, collateral has in addition a significant financial stability function—providing CB funding for those assets with broken markets, thereby avoiding fire sales—and this has significant implications for the collateral strategy and management in terms of the range of eligible instruments, the risk management framework, and level playing field among counterparties, among others.

Another important aspect relates to the *Basel III bank capital adequacy and liquidity rules*. Although only one MENA country (Saudi Arabia) is part of the G20, implementation of the rules in the G20 will likely impact the banking business in the MENA countries, even if indirectly. In anticipation, the latter may want to align their supervisory frameworks with these rules, for reasons having to do for example with protecting the interest of their own financial stability or promoting own attractiveness for international market participants.

All of this will have consequences for the implementation of monetary policy in the MENA region, since CB instruments and, to a certain extent, collateral all count towards the fulfillment of the bank capital adequacy and liquidity rules. This may change the pattern of the recourse of the banks to these instruments and collateral and ultimately the transmission mechanism.

Two sections focus on specific areas of CB instruments: the maturity of instruments—in particular CB securities—used to drain structural surplus liquidity from the market; and the impact of collateral choices, and how approaches to the CB's choice of collateral have been impacted by the global financial crisis. Common threads in the operational frameworks of MENA CBs are illustrated, using information from the IMF's biennial survey of CB frameworks. This is followed by country case studies on Egypt, Jordan, and Tunisia.

CHAPTER

II Monetary Regimes, Transmission Mechanisms, and Monetary Objectives in the MENA Region

This section serves as a precursor to a focus on the monetary operational framework in later sections. Monetary regimes under specific exchange rate arrangements, the sophistication of the monetary system, reliance on market-based instruments, the level of financial market development, and the relevance and strength of the various channels entering the monetary policy transmission mechanism (MTM) all interact to affect the appropriate structure for the operational framework of CBs. Elements of the MTM (operational instruments, targets and final objectives) are discussed within a regional context while highlighting the expanded operations of CBs during the global financial crisis which may have impacted the traditional operational targets and liquidity management role of CBs.

Part A sheds light on the monetary policy frameworks and exchange rate arrangements in Arab Countries.[2] In comparing domestically framed (independent) and externally framed (constrained) monetary policy, the exchange rate target remains the monetary anchor of choice in the majority of countries—with less autonomous monetary policy under rigid exchange rate regimes. Enabling elements to a transition from simple rules-based to more sophisticated monetary frameworks over the medium term are discussed. Depending on country-specific circumstances, the monetary policy toolkit could be expanded by gradually moving away from the use of exchange rates as a nominal anchor. Such a movement would give monetary policy more room to maintain price stability, with exchange rates that can adjust in response to real shocks and help maintain competitiveness. Further, developments in exchange rate arrangements and monetary policy frameworks in the aftermath of the crisis as well as concerns raised about the stability of

[2] Countries of the Middle East and North Africa (acronyms are included in parentheses) covered in this paper comprise: Algeria (ALG), Bahrain (BHR), Comoros (COM), Djibouti (DJI), Egypt (EGY), Iraq (IRQ), Jordan (JOR), Kuwait (KWT), Lebanon (LBN), Libya (LBY), Mauritania (MRT), Morocco (MAR), Oman (OMN), Qatar (QAT), Saudi Arabia (SAU), Sudan (SDN), Syria (SYR), Tunisia (TUN), the United Arab Emirates (UAE), and Yemen (YMN).

financial systems are highlighted. These concerns have led to thinking about a marked tightening of the financial sector regulatory framework.

Part B provides a theoretical description of the MTM and the major channels through which it propagates. The process begins with the transmission via the operational framework[3] to market interest rates predominantly, and from there, transmission may proceed through any of several channels, alongside a monetarist channel and a form of a credit channel, to affect the economy. Between one end of the MTM spectrum (the ultimate target of policy) and the other (instrument/operational lever by which policy is implemented) long lags and very indirect connections exist, propelling CBs to use *operational targets* and *intermediate targets* to manage uncertainty. Understanding MTM is crucial to the successful conduct of policy and is a prerequisite to the implementation of monetary strategies; it forces a judgment to be formed regarding the timing and the extent of policy decisions which are called for to keep the ultimate objective (future inflation) in check.

Focusing on the MENA region, Part C analyzes the working mechanisms through which monetary policy shocks tend to propagate; it identifies the strength and operative relevance of the main MTM channels which will enable CBs to better understand the policy implications of their actions, under different exchange rate arrangements. The use of market-oriented and indirect policy instruments has also improved the CB's ability to achieve monetary stability in a large host of Arab countries.

Part D assesses the role that monetary policy can play in the new macroprudential framework, by means of including financial system developments and vulnerabilities in an extant monetary policy framework—one which promotes *financial stability* without jeopardizing the primary objective of *price stability*. In this regard, financial and price stability are recognized as imperfectly aligned objectives that need to be addressed separately utilizing different policy instruments. Achieving financial stability through retaining price stability as the primary objective of monetary policy, macroprudential policies, and introducing changes to liquidity and crisis management arrangements to make them more flexible all feature as important policy discussions in this section.

Assessing more closely the monetary policy stance and actions in Arab countries, Part E provides an analysis of the monetary policy in the years 2009–12 following the fallout from the global financial crisis (split into OX and OM countries for a more adept analysis). It highlights the monetary policy challenges which had faced the region between 2009 and early 2012,

[3] The operational framework consists of Open Market Operations (OMOs), Standing Facilities (SF), and Reserve Requirements (RR).

including the balance between restoring credit back to "normal" levels and controlling for potentially surging inflation (as a result of rising commodity prices); the role of the macroprudential toolkit in conducting countercyclical policy and preventing excessive buildup of risks in the banking sector; and the impact of exchange rate movements on competitiveness. The need to focus on a broader medium-term objective, highlighting the need for a consistent interaction of monetary, fiscal, and financial policies in achieving stability and longer-term inclusive growth is emphasized.

A. Exchange Rate Arrangements and Monetary Policy Frameworks: A MENA Focus

Exchange rate arrangements are classified against alternative monetary policy frameworks for Arab countries (Table 1), highlighting the role of the exchange rate in broad economic policy. Despite the important role such a classification system plays, it cannot capture all nuances in a country's exchange rate arrangement and, at best, can only reflect basic features. The most important of these is the extent to which the exchange rate is determined by markets rather than official action, with the market-determined rates being on the whole more flexible than others. As such, the classification system is complemented by a more detailed description of exchange rate and monetary policies, shown in Appendix I, which compiles the relevant information in Arab countries based on the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER) 2011 (April).[4]

Two types of *exchange rate arrangements* are presented in the AREAER: *de jure* and *de facto*. Table 1 adopts a *de facto* classification as analyzed by the IMF staff and may differ from the *de jure* classification as described officially and announced by authorities. *Intervention policies* are a key element of exchange rate policies (Box 1) and have been an important factor in the classification of countries' de facto arrangements in 10 categories (in four subgroups):

- *hard pegs* (exchange arrangements with no separate legal tender and currency board arrangements);

[4] The AREAER provides a comprehensive description of the FX arrangements, exchange and trade systems, and capital controls, going beyond exchange restrictions or exchange controls, of all IMF member countries. It provides information on the operation of FX markets and controls on international trade and also describes controls on capital transactions and measures implemented in the financial sector, including prudential measures. It also aims to provide timely information; in general, the 2011 Report includes a description of exchange and trade systems as of December 31, 2010. However, changes in member countries' exchange rate arrangements are reflected as of April 30, 2011, and in some cases, reference is made to other significant developments through August 31, 2011. The de facto classification represents, therefore, a *backward-looking* description of the exchange rate policies of a member during a determined period of time.

- *soft pegs* (conventional pegged, pegged within horizontal bands, crawling pegs, stabilized, and crawl-like arrangements);
- *floating regimes* (floating and free floating); and
- a *residual* category, other managed arrangements.[5]

Table 1. Exchange Rate Arrangements, Anchors of Monetary Policy in Arab Countries

	Monetary Policy Framework						
Exchange Rate Arrangement (Number of Countries)	**Exchange Rate Anchor**				**Monetary Aggregate Target**	**Inflation-Targeting Framework**	**Other[1]**
	U.S. dollar (10)	Euro (1)	Composite (6)	Other 0	(1)	0	(3)
No Separate Legal Tender (0)							
Currency Board (1)	Djibouti						
Conventional Peg (10)	Bahrain Jordan Qatar Oman Saudi Arabia United Arab Emirates	Comoros	Kuwait Libya Morocco				
Stabilized Arrangement (4)	Iraq Lebanon		Syrian Arab Rep. Tunisia				
Crawling Peg (0)							
Crawl-like arrangement (1)							Egypt[2] (03/09)
Pegged Exchange Rate Within Horizontal Bands (0)							
Other Managed Arrangement (4)	Sudan[2] (12/09)		Algeria		Yemen, Rep. of		Mauritania
Floating (0)							
Free floating (1)							Somalia

Source: *Annual Report on Exchange Arrangements and Exchange Restriction* (AREAER, April 2011); and IMF staff. If the member country's de facto exchange rate arrangement has been reclassified during the reporting period, the date of change is indicated in parentheses.

[1] Includes countries that have no explicitly stated nominal anchor, but rather monitor various indicators in conducting monetary policy.

[2] The exchange rate arrangement was reclassified retroactively, overriding a previously published classification.

[5] *Other managed arrangements* would capture countries in which the *de facto* and the *de jure* arrangements differ, exchange rates are managed but are not floating, and exhibit frequent or irregular changes in policies.

These categories are based on the flexibility of the arrangement and the way it operates in practice—that is, the de facto regime is described, rather than the de jure or official description of the arrangement.[6]

The de facto arrangements not identified as floating will usually be some type of a soft peg. A distinction is made in the revised classification system (February 2009 onward) between those pegs that are confirmed de jure arrangements and those for which the de facto and the de jure arrangements differ. The latter will be called *stabilized (peg-like) arrangements or crawl-like arrangements*, to emphasize that they do not necessarily entail a policy commitment. This terminology is intended to provide an accurate description of the outcome of exchange rate policies looking backward (the exchange rate is not largely market-determined and meets certain verifiable statistical criteria), while obviating the need for subjective interpretation of the authorities' policy intentions.

As for monetary policy frameworks (or monetary anchors), they are grouped in four categories, namely: (i) exchange rate anchor; (ii) monetary aggregate target; (iii) inflation targeting framework; and (iv) other.

Table 1 categorizes MENA countries according to the relevant combination of exchange rate arrangements and monetary policy frameworks.

Box 1. Exchange Rate Policies and Intervention

Exchange rate policies. The actions or inactions of members in the operation of their exchange arrangements include intervention policies, other external policies as long as they are pursued for balance of payments purposes, and 'monetary and other domestic financial policies that provide abnormal encouragement or discouragement to capital flows' when these are pursued for balance of payments purposes.[1] Exchange rate policies can either cause the exchange rate to move or prevent the exchange rate from moving.

Intervention policies are a key element of exchange rate policies, and have been an important factor in the classification of countries' de facto exchange rate arrangements. This is particularly so in drawing the distinction between floating and non-floating arrangements, and between different types of floating. Intervention involves *outright* purchases/sales of FX or FX derivatives by the CB, the ministry of finance, or others working on behalf of these or other governmental or public sector authorities

[1] Ostry and others (2010, 2011) discuss the effect of large capital inflows on macroeconomic and financial stability; macro-cum-exchange rate policy and macroprudential regulations should be used first to tackle macro and financial stability concerns before capital controls are suggested.

[6] The methodology and the characteristics of the categories are described in the AREAER Compilation Guide.

Box 1. (*concluded*)

or agencies. Though distinct from intervention, other policies (whether foreign or domestic) that have an equivalent effect on the exchange rate and that are conducted for this purpose, for example the use of FX regulations and monetary policy (exchange-rate-related use of interest rate policy)[2] to influence the exchange rate, are sometimes referred to as *indirect intervention* and are considered as tantamount to intervention for the purpose of classifying exchange rate arrangements.

[2] For example, the CBJ has changed interest rates to prop up official reserves in line with the monetary policy's objective of keeping a stable exchange rate.

Monetary regimes: new IMF classification

Stone and Bundhia (2004) introduced a classification of monetary regimes defined by the choice and clarity of the nominal anchor (Table 2) which expands previous classifications (i.e., Mishkin, 1999). The right mix of commitment and discretion in a regime, congruent with the structural and historical circumstances of a country, can help monetary policy bring the economy toward price stability and stable long-run economic growth.[7] While output and financial stability objectives are not used to define monetary regimes—traditionally CBs have not been held explicitly accountable for them, important as they may be—they are nevertheless crucial to the choice of monetary regime.[8] As for the main policy implications, tradeoffs posed by regime switches or refinement of country monetary regimes are highlighted. To draw an example, a switch from an inflation targeting (IT) lite regime to a full-fledged IT calls for increased clarity in monetary policy.

The *clarity* in a monetary regime targeting inflation refers to *transparency* and *accountability*[9] with the latter gaining importance in an increasing number of countries, particularly the inflation targeters where the usual lag between changes in the stance of monetary policy and its impact on inflation complicates monitoring of the commitment, requiring a high degree of

[7] Monetary policy regimes "… encompass the constraints or limits imposed by custom, institutions and nature on the ability of the monetary authorities to influence the evolution of macroeconomic aggregates …" (Bordo and Schwartz, 1995).

[8] Part II.D discusses the potential role of central banks toward achieving financial stability.

[9] *Transparency* allows the public to monitor the adherence of the central bank to the inflation objective and is delivered by press releases and a detailed inflation report. *Accountability* ensures that the central bank is held responsible for its commitment to the inflation target. Formal elements of accountability include: (i) explicit involvement of the government in the setting of the inflation targets, (ii) a requirement for a central bank to publicly explain a failure to meet an inflation target, or (iii) override provisions of the government in the event of a drastic miss of the target.

Table 2. Overview of Monetary Regimes

Monetary Nonautonomy	Currency of Another	Country High
Weak Anchor	None	Not Applicable
Money Anchor	Money Aggregate	Medium
Exchange Rate Peg	Exchange Rate	High
Full-Fledged Inflation Targeting	Inflation Target	High
Implicit Price Stability Anchor	Price Stability	Low to Medium
Inflation Targeting Lite	Broad Inflation Objective	Low

Source: Stone and Bundhia (2004).

transparency and accountability. In addition where CBs have become more independent in more recent years (some Arab countries included), accountability has helped insulate CBs from political pressures.

To put the nominal anchors in the context of *intermediate targets*, the exchange rate serves as the nominal anchor or intermediate target of monetary policy under an exchange rate peg, and the inflation forecast acts (implicitly or explicitly) as the intermediate target of monetary policy under the various inflation targeting regimes.

Section II.B lays out the spectrum of the Monetary Transmission Mechanism in terms of instruments and targets highlighting the *ultimate target of policy* (a path to price stability) and the *instrument* (by which policy is implemented) at each end of the spectrum and the use of *operational targets* (influenced by CB) and *intermediate targets* (variables that are closely linked to the ultimate target of policy) in between.

Developments in monetary policy frameworks after the crisis

The global crisis raised concern about the stability of financial systems, inciting a marked tightening of the financial sector regulatory framework.[10] Furthermore, developments in the global financial system may have influenced changes in countries' exchange arrangements—though to a much lesser extent in Arab countries. Given the banks' and financial institutions' conservative funding practices in the region, they were shielded from troubled international banks, structured products, and wholesale financial markets.[11]

[10] In Arab countries, the GCC for example has had an initial success with the application of macroprudential tools, which along with a developed '*Early Warning System*' is expected to strengthen financial sector stability.

[11] Exceptions exist including the exposure of Dubai Bank to the downturn in Dubai's real estate market and its eventual bailout by the government of Dubai; defaults by the International Banking Corporation and Awal Bank in Bahrain which triggered the largest corporate financial scandal in the region; and the bailout of Gulf Bank by the central bank of Kuwait for unprofitable trade in currency derivatives.

For Arab countries, one reclassification to a *crawl-like* arrangement was a result of an increased need to fend off pressures from large exchange rate changes and one *other managed* regime reclassification was related to heightened financial market tensions during the crisis. But in all, most countries maintained the exchange rate as the monetary anchor (to the U.S. dollar, another currency, or a basket of currencies) during the years following the crisis. Reliance on discretionary rather than rule-based interventions in auction settings continued following a trend which began in the wake of the financial crisis.

Domestically and externally framed monetary policy

An exchange rate target constitutes the monetary anchor of choice in the majority of Arab countries. Many smaller open economies policy may in practice attempt to straddle both a domestic and an external target; particularly those facing rapid pass-through from exchange rate movements to domestic inflation or building credibility inside their CBs. Underpinning and complicating this choice is the *impossible trinity theorem* (Box 2) which states that in a fully liberalized system, including full convertibility on the external current and capital accounts, the CB cannot guarantee maintaining both a domestically-framed (independent) and an externally-framed (exchange rate target) monetary policy.

Market imperfections or administrative controls may enable the CB *temporarily* to set domestic monetary policy and the exchange rate independently. This could be achieved, for example, through introduction of *controls* to put a wedge between the domestic and foreign financial markets, such as controls on purchases of domestic financial assets by foreigners' or

Box 2. Impossible Trinity Theorem

The theory of the "impossible trinity"—a combination of free capital movement, a fixed exchange rate, and independent domestic monetary policy—implies that as financial markets become more integrated (and exchange controls therefore harder to implement), the choice comes down to monetary independence versus exchange rate stability. Monetary authorities face a tradeoff between the degree of exchange rate stability and the extent to which they can act to stabilize economic activity and the domestic price level, with international capital mobility exacerbating the tradeoff.[1]

[1] In a revisited version of the impossibility theorem, countries can choose intermediate degrees of exchange rate fixity and monetary policy autonomy: (i) soft pegs provide more monetary policy autonomy than hard pegs; (ii) bands provide more monetary policy autonomy than pegs; and (iii) floating rates provide more monetary policy autonomy than bands.

Box 2. (*continued*)

Theoretical derivation

The formal model for this hypothesis is the Mundell-Fleming model developed in the 1960s by Mundell and Fleming. The idea of the impossible trinity went from theoretical curiosity to becoming the foundation of open economy macroeconomics in the 1980s, by which time capital controls had broken down in many countries, and conflicts were visible between pegged exchange rates and monetary policy autonomy. While one version of the impossible trinity is focused on the extreme case—where there is a perfectly fixed exchange rate and a perfectly open capital account, a country has absolutely no autonomous monetary policy—the real world has thrown up repeated examples where the capital controls are loosened (but not altogether removed), resulting in a trade-off between greater exchange rate rigidity and less monetary policy autonomy, or exchange rate flexibility and an independent domestic monetary policy.

Real world examples

In the modern world, given the growth of trade in goods and services and especially the fast pace of financial innovation, capital controls are often easily evaded. In addition, capital controls introduce numerous distortions. Hence, there are few major countries with an effective system of capital controls.[2] Lacking effective control on the free movement of capital, the impossible trinity asserts that a country has to choose between reducing currency volatility and running a stabilizing monetary policy: it cannot do both. As stated by Krugman:

"The point is that you can't have it all: A country must pick two out of three. It can fix its exchange rate without emasculating its CB, but only by maintaining controls on capital flows (like China today); it can leave capital movement free and retain monetary autonomy, but only by letting the exchange rate fluctuate (like Britain—or Canada); or it can choose to leave capital free and stabilize the currency, but only by abandoning any ability to adjust interest rates to fight inflation or recession (like Argentina today, or for that matter most of Europe)." Economists Burda and Wyplosz provide an illustration of what can happen if a nation tries to pursue all three goals at once. To start with, they posit a nation with a fixed exchange rate at equilibrium with respect to capital flows as its monetary policy is aligned with the international market. However the nation then adopts an expansionary monetary policy to try to stimulate its domestic economy. This involves an increase of the money supply, and a fall of domestic interest rates. Because the internationally available interest rate has not changed, market participants are able to make a profit by borrowing in the country's currency and then lending abroad—a form of 'carry trade.'

[2] Though from early 2010 there has been a movement among economists, policy makers, and the IMF back in favor of limited use of exchange controls (Ostry and others, 2010, 2011).

Box 2. (*concluded*)

With no capital control market players will do this en masse. The trade will involve selling the borrowed funds on the FX market to acquire foreign currency and lend it abroad. This tends to cause the price of the nations' currency to drop due to the extra supply. Because the nation has a fixed exchange rate, it must defend its exchange rate, and the CB will therefore drain the additional supply by selling its reserves. But unless the monetary policy is reversed, the international markets will invariably continue the carry trade until the CB's FX reserves are exhausted. At this point, the currency will devalue, thus breaking one of the three goals and also enriching market players at the expense of the government that tried to break the impossible trinity.

controls on cross-border capital transfers by residents.[12] Controls, however, tend to break down or become less effective over time if heavy reliance is placed on them. Relatedly, *sterilized* intervention[13] can keep the exchange rate from appreciating for a period of time, even in the face of strong capital inflows. However the resulting increase in interest rates could attract further capital inflows and put further upwards pressure on the nominal exchange rate, while if policy rates are kept too low, an increase in inflation may lead to a real exchange rate appreciation. Over any longer period, the CB will need to choose whether to set its own independent monetary policy, or to target the exchange rate and accept the monetary policy of the country to which the exchange rate is pegged even if this means real exchange rate appreciation via higher inflation.

For countries that choose to have a domestic (independent) monetary policy—and by implication accept a floating exchange rate—there is little choice in day-to-day operations but to target a short-term interest rate and support interest rate stabilization, and indeed this what most CBs choose to do.[14] This (policy) interest rate is normally used in OMOs.

[12] A lack of financial assets for foreigners to buy may limit capital movements. Controls on foreigners owning financial assets (as long as there is also a scarcity of other assets) can be effective in a small environment over a prolonged period—Botswana is an example.

[13] *Sterilized* intervention is where the central bank offsets the monetary impact of its foreign exchange operations; i.e., it may sell domestic currency and buy foreign exchange to prevent the domestic currency from appreciating, but then *sterilize* the consequent increase in reserve money through, OMO (for instance, selling central bank bills) or increasing reserve requirements, though these may increase interest rates and so could put further upwards pressure on the exchange rate.

[14] Even central banks with a *monetary aggregate target* tend to supply or absorb liquidity as necessary on a day-by-day basis. They target short-term interest rate stability in the short run as uncertainty caused by short-term interest rate volatility is regarded as more harmful than short-term volatility in the quantity of reserve money.

There may be clear structural reasons for using *interest rate* (operational) levers in countries where there is a high level of home ownership funded with variable-rate loans and where firms respond to interest rate changes (cost-of-capital) in their investment decisions. As such, changing short-term interest rates will have a very immediate impact on the cash flow of a large part of the population. There will also be more general effects such as the impact on investment borrowing: in some economies, entrepreneurs may borrow informally from friends and family and this will tend to weaken the interest-rate transmission channel. Furthermore, an 'interest-rate channel' is more reliable. The relationship between monetary aggregates and inflation tends to be unstable in cases where the financial sector might be undergoing a substantial structural change (de-dollarization or technical improvements to non-cash payment systems), for instance, and this clearly affects the stability of (domestic currency) money demand in the short- to medium-term.

To achieve its *exchange rate target,* a CB conducts domestic operations in order to keep (short-term) interest rates at the level necessary to maintain a desired exchange rate; alternatively, it can deal in FX with the market, provided sufficient reserves are available for the credibility of this strategy to be upheld.

Quantity-based versus price-based operational targets

Laurens and others (2005) and Gray and Talbot (2006) discuss the suitability of quantity- and price-based monetary policy operational targets in conducting monetary policy implemented through money market operations and based on the CB's monopoly power to create money. CBs either set the *price* for base money or target the *quantity* of money provided to the system.

A lack of developed markets, and the corresponding lack of reliable price information, may force CBs to rely on *quantities* (monetary aggregates, credit, or components of the CB's balance sheet) as indicators or intermediate targets for monetary policy, to the extent they are considered more reliably measured and monitored than financial prices. Furthermore, targeting interest rates in shallow markets and where market-determined interest rates were absent historically, complicates the linkage between short-term rates, monetary aggregates and inflation. At the same time, if decisions to modify official interest rates remain politically charged, even if the law gives the CB full authority to adjust its policy rates, this can cause rigidity in the upward movement of rates. In the context of such markets, quantities (for example, of base money) rather than prices (interest rates) may be used as an operating target for monetary policy. In addition, when the technical capacity of the CB is limited, the balance is likely to be tipped further away from anchors that rely on fine, well-informed judgments by policymakers and toward relatively simple, rules-based frameworks. Therefore, simple money rules (such as relatively mechanical money/credit growth targets) or simple exchange rate

rules (such as a fixed exchange rate regime) may be the preferred option for anchoring monetary policy.

From simple, rules-based to more sophisticated monetary frameworks: possible challenges

There is an option to start migrating away from simple rules-based monetary frameworks and toward monetary frameworks which are based on monitoring a set of indicators and inflation targeting (IT) which take into account the CB's informed judgments, ideally under circumstances of mature financial markets and a technically skilled CB staff (Box 3 outlines the main elements of an IT regime, successes attained and remaining challenges). Indeed, although an explicit inflation target can help stabilize inflation expectations (providing greater flexibility and allowing greater focus on a broad range of economic developments and relevant information), a framework centered on inflation itself may prove difficult to implement unless some initial conditions are met, including an inflation forecasting capacity and structural reforms to strengthen the financial sector.

Box 3. Inflation Targeting Monetary Framework—Elements, Success, and Challenges[1]

From the outset, IT frameworks have included the four main elements (Mishkin, 2004; Heenan, Peter, and Roger, 2006):

(1) An explicit CB mandate to pursue price stability as the primary objective of monetary policy and a high degree of operational autonomy;

(2) Explicit quantitative targets for inflation;

(3) CB accountability for performance in achieving the inflation objective, mainly through high-transparency requirements for policy strategy and implementation; and

(4) A policy approach based on a forward-looking assessment of inflation pressures, taking into account a wide array of information.

With experience, and as the IT framework has been adopted by emerging market economies, it has tended to evolve in two particularly important respects. First, there has been a progressive increase in policy transparency and communication as the key means of providing public accountability which underpins the operational independence of CB. The main ways CBs communicate their targets include inflation or monetary policy reports two to four times a year, public statements following policy

[1] This section draws on R. Scott (2010).

Box 3. (*concluded*)

meetings, and, sometimes, publication of the minutes of policymaking meetings. Senior CB officials also testify before legislatures, and have become increasingly active in a much broader range of public communication activities than in the past. Second, CBs have generally pursued a flexible form of IT. Rather than focusing on achieving the target at all times, the approach has emphasized achieving it over the medium term—typically over a two- to three-year horizon. This allows policy to address other objectives—notably, smoothing output—over the short term. The CB's ability to be flexible, however, depends on keeping medium-term inflation expectations well anchored. And this depends, at least in part, on its track record in keeping inflation under control. The evidence indicates that IT has worked well in a broad range of countries and circumstances. The framework is bound to evolve as lessons are drawn from experience with IT, particularly as it is adapted to the needs of developing countries. Two issues stand out in particular:

- For many open economies that have adopted or are considering adopting IT, there is debate over the appropriate *role of the exchange rate in an IT framework*.

- For all CBs, including inflation targeters, there is the question of how to reconcile their monetary policy responsibilities and objectives with their responsibility to promote and maintain the *stability of the financial system*.

The following key factors, if uncorrected, can make IT *unsuitable*:

- *Weak feasibility.* In some countries, the CB's operational capacity may be too weak, or the financial system too underdeveloped, for any independent monetary policy.

- *External determination of wages and prices.* Wages and prices may be almost fully determined by foreign prices and the exchange rate (dollarized economies' case), in which case IT would not do better in reducing output or inflation volatility compared with an exchange rate peg.

- *High initial inflation.* There is little experience with starting IT in a high-inflation environment, and this may reflect the perception that the risks of missing targets for disinflation would not enhance the credibility of the IT framework.

- *Inadequate political support.* Without a clear political commitment—to CB independence and the adoption of fiscal and wage policies consistent with the inflation targets—the credibility of the inflation targets may be severely undermined.

- *Inability to follow through.* IT should be adopted only if CBs are prepared to follow through with decisions and actions; in particular, the inflation objective must consistently be their top priority.

Focusing on Arab countries, the majority (17 out of 20 countries) currently adopt the exchange rate as a monetary anchor. While no country has adopted an IT regime, Egypt, Morocco, Sudan, and Tunisia were identified as potential candidates in an IMF survey conducted in 2006, *Inflation targeting can work in non-industrial countries.* In this regard, Morocco's preparedness to transition to IT was highlighted in *Morocco—Concluding Statement, Article IV Consultation, July 2011* as follows (for the case of Egypt, see Section IX).[15]

The monetary authorities have the tools and capacity to implement the transition to a formal IT system with a more flexible exchange rate. Bank Al-Maghrib (BAM) has the necessary independence, expertise, statistical resources, range of instruments, as well as comfortable exchange reserves. Bank supervision for risk management is effective and foreign currency exposure is at a low level. However, the authorities believe that managing this transition requires ensuring fiscal sustainability and maintaining financial stability. Additional requirements entail more active interbank markets for local currency and FX as well as reforms of the operational framework for FX policy to govern active interventions by BAM on the exchange market. The mission considers that in the short term, the FX market could be further developed by broadening the CB spread from 0.6 percent to at least 2 percent (the IMF standard for conventional peg regimes) to encourage the development of interbank FX transactions.

B. Monetary Transmission Mechanism

Before delving into the MENA countries' operative MTM channels which have clear implications on the monetary policy decision-making process, the paper presents a general theoretical description of the MTM, positing the major *channels* through which it propagates. At one end of the MTM spectrum is the *ultimate target of policy* (a path to price stability which is itself a means to a non-monetary policy end, the end being a well-functioning economy with high levels of employment and rising standards of living), while at the other end is the *instrument* by which policy is implemented. Because of the long lags and very indirect connections between the two, most CBs make use of *operational targets* (influenced by CB), *intermediate targets* (variables that are closely linked to the ultimate target of policy and that are influenced by changes in

[15] Boubaker (2011) assesses IT suitability in Tunisia, Morocco, and Egypt, estimating a monetary policy derived from a flexible inflation forecast targeting based-rule (IFBR). Results tend to favor adopting IT where the central bank determines the paths of its interest rate through an IFBR. However, developing institutional arrangements in support of IT poses challenges including establishing operational monetary policy independence. It should be noted that the IMF has indicated, in the context of its report on exchange rate regimes in 2012, that the monetary policy strategy of BAM is based on a multi-criteria approach for the diagnosis of inflationary pressures, with the interest rate as an operational target.

the instrument of policy),[16] and *information variables or indicators* that stand in between.

The short-run effects of monetary policy on (real) economic activity have been shown to last, in some cases, for more than two years. However, a considerable disagreement exists on how monetary policy is actually conveyed to the real economy: the MTM process by which changes in monetary policy decisions are transformed into changes in economic growth or inflation (Taylor, 1995) is a complex process which operates through multiple channels and involves the behavior of all sectors of the economy. More specifically, monetary policy is often thought as based on changes of the interest rates which affect aggregate demand through a large set of variables, including real cost of capital, credit availability, exchange rate, income, wealth, and monetary aggregates.

Understanding the MTM, especially the time lag involved between a policy change and its impact on inflation and output, is therefore crucial to the successful conduct of policy. It constitutes a prerequisite to the implementation of monetary strategies and allows a judgment to be formed regarding the timing and the extent of interest rate decisions which are called for to keep future inflation in check. Such information is necessary to assess the extent to which previous policy decisions still have to produce their full effect. Further, uncertainty surrounding the MTM may weaken the effectiveness of the monetary policies and slow the credibility-building process, if not managed well.

Figure 1 is a common depiction of the MTM highlighting the major channels discussed in the literature.[17] The process begins with the transmission of monetary operations to market interest rates, either through the wholesale money market or through the supply and demand for money more broadly. From there, transmission may proceed through any of several channels.[18] Needless to say, these channels are not mutually exclusive, as the economy's overall response to monetary policy will incorporate the impact of the various channels.

[16] The key perceived advantage of an *intermediate target* is that it enables the central bank to move its instruments settings more quickly and more accurately in response to a shock to the system than it could if it focused solely on current values of the ultimate target. Of course, if the response of the central bank is not to actual movements of the ultimate target variable but to projected movements in this variable (where the projection is based in part on movements in various information variables or indicators), use of an intermediate target may or may not speed the policy response. Thus, whether or not an intermediate target improves the policy process is an empirical question.

[17] The explanation of the traditional MCM draws on two key papers by Kuttner and Mosser (2002) and Laurens and others (2005).

[18] A long list of comprehensive surveys of the monetary transmission process is available in the literature. For an early survey, see Mishkin (1999) and more recently, Ireland (2008).

Monetary transmission through the *interest rate channel*, regarded by many as the main channel of monetary policy transmission, occurs when changes in the monetary policy stance induce changes in the overall level of interest rates in the economy, and those in turn affect the overall level of absorption, through their effects on the demand for credit and the available income of borrowers and lenders. Changes in interest rates alter the marginal cost of borrowing, leading to changes in investment and savings and thus to variations in aggregate demand;[19] they have also a cash flow effect on borrowers and savers. If, as in some MENA countries, the majority of the population has only a low level of savings, this channel will be weak. However, Bernanke and Gertler (1995) have pointed out that the macroeconomic response to policy-induced interest rate changes is considerably larger than that implied by conventional estimates of the interest elasticities of consumption and investment. This observation suggests that mechanisms, other than the interest rate channel, may also be at work.

Monetary transmission through the *asset price channel* occurs when changes in the monetary policy stance affect asset prices in the economy (in particular, equity or the value of collateral such as bonds and residential property) which in turn induces changes in consumption and investment through the wealth effect and the implications on the financing cost of investments. Asset values play important and distinct roles in the related wealth and broad credit channels. In those MENA countries where the level of asset holdings is higher—the OX countries, notably—this effect will be greater.

Regarding the *wealth channel*, the main factor influencing the effectiveness of the asset price channel is the level of development and importance of bond, equity, and real estate markets in the economy. Where long-term bond markets are important, an increase in short-term interest rates may lead to a decline in bond prices if it is expected to persist,[20] and, consequently, a decline in aggregate demand due to reduced wealth. The more developed such markets are, the stronger will be the effectiveness of this channel in transmitting monetary policy signals. Most MENA countries do not have long-term domestic bond markets, either because the government has little borrowing need or because the longer-term yield curve development is impeded by economic and structural uncertainties.

Monetary transmission through the *credit channel* occurs when changes in the monetary policy stance affect the quantity of credit that is available, regardless

[19] Predictability of the response of lending and deposit rates to changes in money market rates will depend on the degree of competition in the banking sector, the extent of access to alternative domestic funding sources, and the depth of money and capital markets.

[20] A monetary policy tightening that is judged effective should lower future expectations of inflation, thus lowering longer-term yields and may even invert the yield curve.

of (or in addition to) what happens to interest rates. The credit channel emphasizes how asymmetric information and the cost of enforcing contracts can create agency problems in markets. Two channels arise: (1) the *balance sheet channel* (or broad credit channel), which looks at the impact of monetary policy on the capacity of firms (and consumers) to borrow in response to changes in their net worth arising from monetary policy decisions, and (2) the *bank lending channel* (or narrow credit channel), which looks at the impact of monetary policy on the capacity of banks to lend to firms (emphasis is on banks, which play a more central role, as per Bernanke and Blinder, 1988). Because a significant subset of firms and households relies heavily or exclusively on bank financing, Arab countries included, a reduction in loan supply is likely to depress aggregate spending.[21]

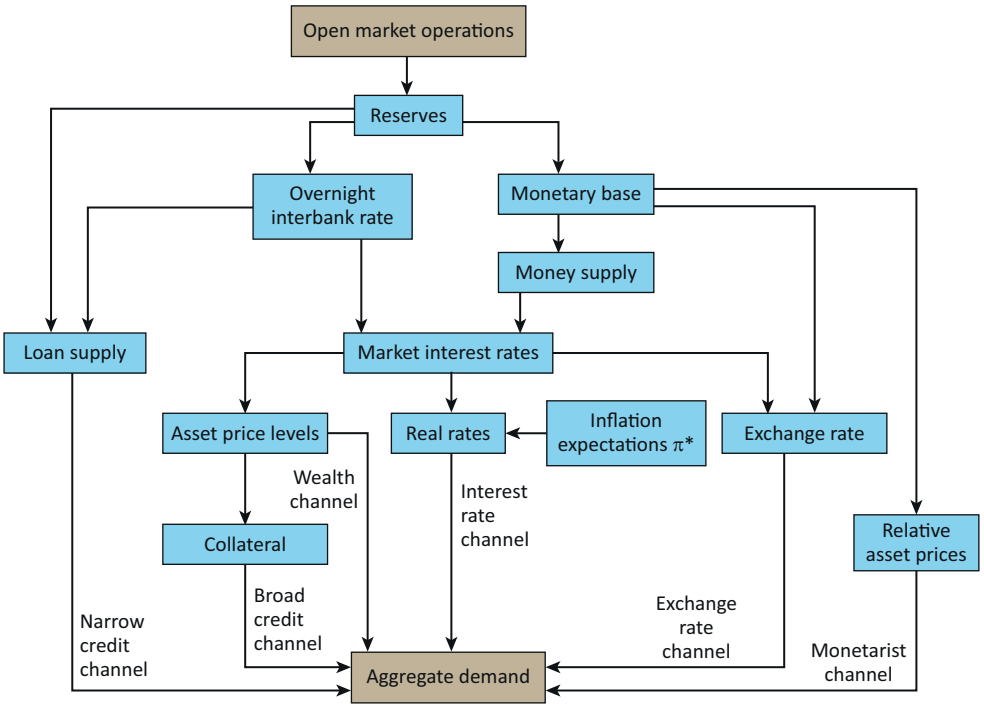
It is worth mentioning that the *financial condition of a country's banking system* is one of the most important factors influencing the transmission of monetary policy signals through the credit channel; it is an important determinant not only of the cost but also of the availability of bank loans. If the financial position of the banking system is weak, reflected by low capital/asset ratios and/or high non-performing loans, banks will tend not to respond to monetary policy impulses. The weaker the financial system, the more likely the asset price channel is to be irrelevant. Weaknesses in the banking system can also be reflected in terms of asymmetries of information and limited enforceability of contracts; where such asymmetries exist or when there is weak governance and judicial structures limiting the enforcement of contracts, banks may also not respond to monetary policy impulses.

Monetary transmission through the *exchange rate channel* occurs when changes in the monetary policy stance lead to changes in the exchange rate.[22] This affects the competitiveness of domestically produced goods and services vis-à-vis goods and services produced abroad and in turn the relative demand for both domestic and foreign goods and services. The exchange rate channel of monetary policy does not exist under a fixed exchange rate regime; among exchange rate regimes that allow flexibility, the channel will work more strongly with higher degrees of exchange rate variability allowed within the regime. In addition, the role of the channel will increase with an absence of capital controls and in a FX market characterized by substitutability between domestic and foreign assets. For economies with underdeveloped financial systems, the exchange rate channel may be weaker, because of controls on FX

[21] The essential insight is that because banks rely on reservable demand deposits as an important source of funds, contractionary monetary policy, by reducing the aggregate volume of bank reserves will reduce the availability of bank loans, provided that the decline in deposits cannot be offset by other funds (for instance, non-deposit funds that are not subject to reserve requirements).

[22] The chain of transmission here runs from interest rates to the exchange rate via the uncovered interest rate parity condition, relating interest rate differentials to expected exchange rate movements.

Figure 1. A Depiction of the Prototype Monetary Policy Transmission Channels



Source: Kuttner and Mosser (2002).

operations; but street trading and smuggling may offset the impact of such controls.

Finally, a *monetarist channel* focuses not on one relative asset price, the interest rate (or the exchange rate) but on the effects of the universe of relative asset prices and real wealth on monetary policy. Because various assets are imperfect substitutes in investors' portfolios, changes in the composition of outstanding assets brought about by monetary policy will lead to relative price changes, which in turn can have real effects. According to this view, interest rates play no special role other than as one of many relative asset prices.[23]

In addition to the foregoing channel-specific factors, there are a number of other factors of a macroeconomic nature that have a significant influence on the efficiency of the channels of transmission. The extent of government intervention in financial markets may influence MTM in three ways: (1) through explicit or implicit interest rate controls or other limits on financial

[23] Although this mechanism is not part of the current generation of New Keynesian macro models, it is central to discussions of the likely effects of policy when there is a binding zero lower bound on nominal interest rates (Kuttner and Mosser, 2002).

market prices, (2) through explicit or implicit limits on bank lending, and (3) through selective credit policies. Any of these situations is likely to impede the smooth functioning of markets and the transmission of monetary policy signals through them, and hence the effectiveness of monetary policy with market-based instruments (Laurens and others, 2005).

Various stages of the MTM: Direct and indirect channels

Monetary policy actions are transmitted through the economy in a variety of ways, all of which have an *indirect effect* on the evolution of prices of goods and services, summarized in *two broad stages*. At the *first stage,* changes in the policy interest rate or in base money lead to changes in financial market conditions (as reflected in market interest rates, asset prices, exchange rate, and general liquidity and credit conditions in the economy). At the *second stage,* changes in financial market conditions lead to changes in nominal spending on goods and services and, ultimately, in inflation. These changes may have an impact on real economic activity in the short-run only, depending on the degree of nominal price *rigidities* and on the flexibility of the economy more generally; they will not affect the real sector of the economy in the long-run, only the general price level.

More *direct* channels of MTM, namely the effect of monetary policy actions on *inflation expectations* may directly influence pricing decisions. *Expectations* play an important role in that agents will in general decide on the direction and magnitude of their actions in a forward-looking manner, taking into account their expectations of future inflation and general economic developments. In particular, the medium- and long-term interest rates, which are the relevant rates for investment purposes, and current pricing and wage decisions, depend on the expected future path of interest rates and inflation. Thus, the impact of monetary policy on the economy depends not only on the current stance of monetary policy, but also on its expected stance in the future. The latter is influenced by how the CB conducts monetary policy, and the credibility it has among the public.

From money markets to broader financial markets

Money market interest rates eventually influence the whole spectrum of retail interest rates in credit and deposit markets. The behavior of lending and deposit rates may depend on the extent to which households and firms have access to alternative domestic funding or investment sources, most notably through securities markets. Alternative sources of financing or investment for households and firms tend to limit the monopolistic power of banks. Moreover, if the banking sector and the securities markets are well integrated and if bank loans, bonds, and equity finance are close substitutes, then banks

may be forced to enhance the responsiveness of the interest rates under their control. In contrast, when markets are not fully competitive, a rate-setting (monopolistic) behavior will allow banks to benefit from changes in the general level of interest rates. In the MENA region, financial markets tend to lack depth and breadth while financing of real sector activity is predominantly availed through the banking sector. Such a monopolistic stance may have allowed banks to delay transmitting the changes in market conditions to their customers, with rent extraction (monopolistic profits) in sight. This often means that credit rates are less responsive to reductions in policy rates than those on deposits, while the feed-through of increases in policy rates may also be asymmetric, depending on loan demand—an issue observed in some MENA countries.

Borrowing and lending via banking sector intermediation in the MENA region

Using data from the IFS, Bankscope, and Zawya (the main MENA corporate data provider), the total amount outstanding of bank credit to GDP was 84 percent at the end of 2010 (no disaggregation is available at the household/corporate sectors). The ratio of total bank assets to GDP in 2010 averaged 149 percent whereas the outstanding values of corporate debt securities were only 3 percent of GDP. In this vein, the increase in the number of banks (many of them Islamic banks) and the provision of related financial services may have helped increase competitive pressures somewhat, albeit at a slow pace in light of sizable and lingering barriers to financial access. An increase in MENA bank disintermediation (i.e., the process in which financing intermediated by the banking sector gives way to direct financing means through financial markets) should in principle force banks to offer more competitive yields on traditional deposits, bringing credit and/or deposit rates in line with money market rates faster. More broadly, the assessment of the effect of growing competition in the financial services industry on banks' more efficient pricing of products and interest rate margins on bank deposits is incomplete.

Focusing on the credit supply role in the transmission process (apart from the price/interest rate signaling effect of monetary policy), an underlying process should be noted. An increase in short-term interest rates is usually accompanied by a reduction in the growth of overnight deposits which can lead banks to reduce their supply of loans, particularly if they cannot easily replace deposits with alternative liabilities. Bank-dependent borrowers such as small and medium-sized enterprises (SMEs) and households may then face a squeeze in their borrowing possibilities. To shed light on the latter, recent World Bank surveys establish that the share of credit to SMEs in MENA countries is very low (8 percent of total lending in 2010 or 6.7 percent of GDP). While this share is consistently very low across Gulf Cooperation Council (GCC) countries (around 2 percent of total loans) it is more variable

in non-GCC countries (highs of 16 and 20 percent in Lebanon and Yemen, respectively).[24] The simultaneous movements in loan demand and supply make identification of the different channels a non-trivial task, empirically.

Part II.C discusses further the strength of the bank-lending channel and its impact on monetary policy in MENA countries. The focus is on a micro approach of banks' balance sheet data which seeks to understand the behavior of individual banks (loans) following a monetary policy tightening. More specifically, do banks that hold relatively less liquid assets generally adjust their lending to changes in the policy rate by more than banks that hold more liquid assets—and if yes, should the response of loans to monetary policy changes be interpreted as dependent on bank characteristics (suppliers of loans) as opposed to household and non-financial firms' demand for loans? Second, do small banks or less-well capitalized banks in MENA countries react differently than other banks in most countries? If yes, what could the reasons be: existence of relationship banking, foreign ownership, membership of bank networks, explicit or implicit deposit insurance schemes or other forms of guarantee?[25]

Changes in financial market conditions...to nominal spending

Changes in financial market conditions will, with lags, lead to changes in nominal spending. If prices were fully flexible, no changes in real spending would be expected. In general, however, prices adjust only gradually. As inflation expectations take this slow adjustment into account, nominal changes in financial market conditions will in the short run translate into real changes. In particular, under constant short-term inflation expectations, a change in the nominal interest rate will imply a change in the short-term real interest rate.

Not all spending components are affected equally, and the effects might be spread over time. The strength and timing of the changes in spending will largely depend on the financial and economic structure of the economy. In addition, factors such as shifts in foreign demand, government spending, and changes in expected profits and wages will also have an impact on aggregate demand, complicating the task of drawing an inference about the importance of the different factors' strength and magnitude.

Spending to inflation

The speed with which changes in spending translate into price pressures depends on the degree of nominal price rigidities and the flexibility of the economy more generally. In the long run, the level of output tends to be

[24] See Rocha and others (2011).

[25] In principle, *small* banks or less-well *capitalized* banks will tend to respond to monetary policy changes more than other banks (discussed later).

determined by supply-side factors (technology, capital, and labor). This long-run level of output (or potential output) may vary over time due to changes in the labor participation rate, investment in capital, invention of new technologies, or changes in the tax regime. In the short run, labor can be employed more or less intensively by using overtime and additional shifts, and capital might be used more or less intensively by adjusting the utilization of the available capacity. However, increases in aggregate demand beyond potential output tend to create bottlenecks in the economy, which fuel inflationary pressures. The latter may arise through different channels: as firms are producing above capacity, they will increase employment and demand additional labor and/or overtime. If labor markets are already tight, this will lead to increasing wage pressure; and as wages increase over and above productivity levels, unit labor costs rise and the cost of production increases. Ultimately these cost pressures will be reflected in price inflation, as firms attempt to maintain their profitability. MENA countries which import labor may not be constrained in this respect, provided the global supply of the required labor skills is plentiful.

Slow adjustments of real wages and other relative prices will, in general, lead to more protracted effects on the real economy. Under a large proportion of structural unemployment and in the absence of structural reform, any fall in unemployment caused by increased demand might lead relatively rapidly to pay pressures, which, in the absence of countervailing productivity increases, would lead to price pressures and risks to price stability. Further structural reform to enhance the flexibility of labor and goods markets would make a contribution towards solving the structural unemployment problem and attaining higher levels of non-inflationary growth, and will also facilitate the primary task of maintaining price stability.

C. Monetary Policy Transmission Mechanism: Channels in MENA Countries

Focusing on the MENA region, we analyze and compare the working mechanisms through which monetary policy shocks tend to propagate under specific exchange rate arrangements. To the extent possible, a systemic assessment of the strength and operative relevance of the main channels and their implications on the monetary policy decision-making process is carried out. Furthermore, a focus on sub-regional groups (GCC, Mashreq and Maghreb) is followed in an attempt to explore the important and different features shaping their MTMs. In what follows, the degree of independence of monetary policy under a pegged regime, role of market infrastructure facilitating monetary policy conduct, requirements in gradually moving to flexible exchange rates, arriving at (empirically-backed) evidence of the operative channels in the MENA region are discussed in some detail.

Assessing the merits of monetary policy independence in the context of effective channels

GCC Countries.[26] Member countries of the GCC agreed in 2003 to peg their currencies to the U.S. dollar and to maintain the parity until the time of establishing a GCC Monetary Union (the initially targeted date was 2010). They have pursued economic policies consistent with exchange rate pegs which entailed implementing appropriate fiscal policies[27] and flexible labor and product markets, while accumulating significant FX reserves to underpin the credibility of the peg and discourage currency speculation. Although the choice of the U.S. dollar peg as the external anchor for monetary policy served the countries of the GCC well for many years in maintaining macroeconomic stability, factors such as possibly rising and persistent inflationary pressures, long episodes of weak U.S. dollar against major currencies, and differing economic cycles and policy needs from the anchor country may strain an otherwise viable peg policy. While the argument for a flexible exchange rate regime is that these countries could pursue better an internal goal of low inflation if they had monetary policy independence, its merit will need to be assessed in the context of the effectiveness of the MTM channels; namely, the independence argument may have less force in GCC countries where the lack of sensitivity to changes in policy interest rates weakens the *interest rate channel* and thus the efficiency of an independent monetary policy. Further, the impact of the *exchange rate channel* on inflation is more limited in an environment where the scope for expenditure switching between traded and nontraded goods is very limited and where administrative price controls may still linger (the GCC countries case).

Role of market infrastructure in effective monetary policy

Market infrastructure's main impediments to an effective reliance on money market interventions for the conduct of monetary policy are identified by Laurens and others (2005) as follows: strong fiscal dominance, lack of operational independence of CBs, and market participation limitation. Put the other way, monetary policy is most effective under conditions of (i) a stable macroeconomic environment and sound fiscal policies (less fiscal dominance and strongly committed fiscal and monetary authorities to monetary stability); (ii) sound and competitive financial system and adequate supervisory frameworks; and (iii) sufficient institutional and operational independence of CBs.[28] Jordan's latest efforts in strengthening its market infrastructure can offer a real case where this has strengthened the conduct of its monetary policy.

[26] IMF (2008).

[27] With full currency convertibility and pegged exchange rates, fiscal policy would act as the main policy instrument in steering the economy, to promote domestic and external stability.

[28] A sound institutional framework, where the *law* may define a clear primary objective for the central bank is not a sufficient condition for success in conducting monetary policy as a lack of *operational* autonomy may undermine policy effectiveness.

Jordan is an example of an exchange rate targeting country which managed to strengthen its market infrastructure.[29] It has operated a fixed exchange rate to the U.S. dollar since 1995, providing a credible anchor to its monetary policy and contributing to maintaining price stability and attracting foreign capital and investment (see Section IX for details). In the last two decades, the Central Bank of Jordan (CBJ) has gradually gained more independence; the legal and actual independence of the CBJ increased and its ability to achieve monetary stability improved with the adoption of more sophisticated indirect control policy instruments (mainly, certificates of deposit (CDs) and Treasury bill markets). At the same time, greater fiscal consolidation, improved debt management policy, along with the CBJ's acquired skills and experience in managing monetary policy enhanced its actual independence. This underlines the importance of mutually-supportive interaction between fiscal and monetary policies. Empirical investigation of the extent to which the CBJ possesses autonomy in its monetary policy under an exchange rate peg in light of the influence of world interest rates, suggests that it has achieved some flexibility in operating in the short-run. Some autonomy in determining the spread between domestic and U.S. interest rates is detected—in particular, the response of the policy rate in Jordan to innovations in the U.S. Federal Funds Rate is less than one-for-one and the CBJ appears to conduct monetary policy in response to domestic variables (inflation and output gap). In this regard, it is important to note that monetary independence is in tune with the fact that as emerging markets integrate further into the global economy, the impact on the domestic economy of world interest rates is going to increase and that this natural phenomenon does not necessarily preclude the operation of a monetary policy that is geared towards achieving domestic objectives. In a sense, the point about independence is not whether countries are responding to world interest rates, but whether they are still able to respond to domestic objectives at the same time.

Following an extended period of successfully operating a fixed exchange rate regime and building a credible track-record of maintaining low and stable inflation, the CBJ is capable of moving toward a more flexible monetary framework over the medium-term. This may afford it some further independence in operating its monetary policy (an IT framework, for example).

Transition to IT: Challenges in strengthening the traditional channels

To start with, it is worth mentioning that the IMF's Middle East and Central Asia Department (MCD) in its latest *Regional Economic Outlook* (REO) issues (i.e., October 2011 and April 2012) have argued that greater exchange rate flexibility may be warranted in discussing the exchange rate arrangement

[29] Maziad (2011) examines central bank independence and monetary policy operations in Jordan, as well as the issue of monetary autonomy in the context of Jordan's exchange rate peg.

and external vulnerabilities in the MENA region. Over the medium term, and depending on each country's circumstances, the monetary policy toolkit could be expanded by gradually moving away from the use of exchange rates as a nominal anchor. Further, maintaining external stability may require more exchange rate flexibility to mitigate external vulnerability

To transition from simple rules-based (i.e., exchange rate-based rules) to more sophisticated monetary frameworks over the medium term, some enabling elements are needed including the supporting institutional measures and a consistent macroeconomic framework to carry out inflation forecasts. What follows next is the example of Egypt which is moving toward an IT regime, despite some remaining challenges in anchoring inflation expectations and some difficulty in the use of monetary policy countercyclically.

Egypt. Until 2005, the Central Bank of Egypt (CBE) operational target for its monetary policy was excess reserves of banks and the intermediate target was growth in M2. Since then, the CBE began to move toward IT (see Al-Mashat and Billmeier, 2007, and Section IX for details), although it has not formally adopted an IT framework. Institutional measures implemented by the CBE to date include establishing the Coordinating Council on Monetary Policy, the Monetary Policy Committee (MPC), and the Monetary Policy Unit within the CBE. To enhance transparency, bolster the credibility of the CBE, and help anchor inflation expectations, MPC decisions are communicated to the market through a *monetary policy statement*, which is released on the CBE's website after each meeting.

On *operational* measures an interest rate corridor was introduced and for a period CB bills served as the primary instrument for liquidity management through OMOs. Moreover, consistent macro models are developed to forecast inflation and the CBE launched its core inflation index in October 2009 to capture the more persistent trend of underlying inflation by separating noise factors and short-run fluctuations. Since mid 2005, aside from a planned transition towards IT, Egypt adopted significant economic reforms characterized by increasing real and financial linkages with the rest of the world, which made the transmission of shocks in main trading partners' economic activities and global interest rates to the economy critical from a policy perspective.

To this end, Arbatli and Moriyama (2011) estimated a small open economy model (IMF GPM+ model) for Egypt to analyze inflation, output dynamics, and monetary policy during the 2005–10 period.[30] Focusing on the interest

[30] A monetary *policy rule* incorporates interest rate smoothing, and responds to the output gap and the deviation of expected inflation from its target (resembles a Taylor-type rule). The central bank can affect inflation through two channels: interest rate and exchange rate. The first is captured by the coefficient of the real interest rate gap in the evolution of the output gap (the IS curve) while the second operates through its direct effect on the output gap but also through the pass-through effect in the Phillips curve.

rate and exchange rate channels of the model, they found that the interest rate channel is relatively weak, which complicates the use of interest rates as the immediate target of monetary policy. Moreover, significant level of persistence existed in the policy rate, rendering monetary policy more procyclical.[31] It is perceived that a more active use of interest rate policy, measures to improve domestic debt markets, and a gradual path towards IT could help support a successful disinflation strategy for Egypt.

On the exchange rate channel, and in gauging its role on domestic activity, the (positive) effect of increased foreign real interest rates on the output gap is observed mainly through real depreciation (i.e., the output gap increase during 2005–08 reflected a depreciated exchange rate and a positive external demand). On the effect of main trading partners' economic activities, the response of the domestic output gap to the foreign output gap is relatively small, which is consistent with the relatively strong growth performance of Egypt during the recent global crisis. This could reflect the structure and composition of Egypt's exports and also the lack of strong financial linkages with advanced countries.

Analysis conducted using a consistent model (GPM+) is useful in highlighting challenges facing the CBE. For example, inflation dynamics which are modeled as a standard hybrid New Keynesian *Philips curve* equation that links current inflation to future expected inflation, lagged inflation (capturing both the indexation of price setting to past inflation and the backward looking component of inflation expectations), lagged output gap, and change in real effective exchange rate to reflect pass-through effects, can through an estimated large parameter for the lag of inflation indicate a more persistent inflation and makes disinflation more costly in terms of increased unemployment (a 'positive sacrifice ratio'). Further, large supply shocks (especially during the surge in 2008 and 2009) have also played a significant role in determining inflation, while exchange rate appreciation has somewhat helped mitigate inflationary pressures, consistent with the pass-through effect.[32]

[31] Inertia has prevented monetary policy from responding timely to inflationary pressures. For example, the responses of monetary policy to a spike in commodity prices in early 2008 and the global financial crisis were even more delayed than implied by an estimated Taylor rule, which already incorporates a significant level of persistence. Therefore, Egypt's high inertia in its nominal (policy) interest rate has caused real interest rates to be procyclical, magnifying economic fluctuations. A policy effort to increase the response of nominal interest rates to inflation and the output gap is desirable in reducing fluctuations in these two variables.

[32] Inflation (12-month) in Egypt: since 2007 appears to have a gradual increasing trend with several double digit inflation episodes: for example, the first spike in 2004 mainly reflected the pass-through effect of the huge devaluation of the Egyptian pound in 2003; the second spike in 2006–07 was due to an avian flu outbreak and world commodity prices increase; and the third one (2008) was caused by the increase in world commodity prices. The expected inflation proxied by the inflation projections in the Consensus Forecast after 2007 has been substantially higher than that before 2007, implying that the spikes in inflation at the time might have been feeding into a higher expected inflation, due partly to rigidities and distortions in price and wage settings.

In summing up, the GCC countries, Jordan, and Egypt are assessed in terms of the feasibility of adding flexibility to their exchange rate and the implications for monetary policy operational measures. A more flexible regime is either cautiously rejected (GCC), discussed with a potential in mind (strengthened capability) of being adopted (Jordan), or adopted (Egypt).

Beyond traditional channels: The role of credit and lending channels based on micro bank data

Large uncertainties surrounding the MTM in MENA countries have left many aspects of the transmission process understudied in terms of identifying the channels' operational relevance and strength and analyzing the propagation of monetary policy shocks in the various sectors of the economy. Besides the common interest rate, exchange rate, and asset prices channels, the focus here is on the credit channel, in particular the *(bank) lending channel*. Despite the scarcity of data preventing a systemic treatment of a larger set of countries, only selected MENA countries are considered as a good representation to illustrate the importance of this channel, using detailed *micro* data.[33]

In what follows, the operating transmission channels are evaluated in enabling CBs to better understand the policy implications of their actions under different settings. For example, under worsening bank capital conditions and weakened bank lending in recessions, an expansionary monetary policy (changing the policy rate) will not be necessarily effective in boosting real activity. Rather, injecting capital into banks to help them meet (regulatory) capital adequacy requirements and resume the lending activity will likely be more effective. An empirical focus on a subset of MENA oil-importing countries is illustrative of the issues that can arise in identifying the channels of importance in the region, while recognizing some important differentiating features which also need to be considered.

Egypt, Jordan, Morocco, and Tunisia. Analysis of the strength of the *lending channel* is carried out by Boughrara and Ghazouani (2009). Differential effects of monetary policy on banks' lending activity, depending on the *size*, *liquidity base*, and *capitalization* of banks in Egypt, Jordan, Morocco, and Tunisia are investigated empirically based on a panel of bank balance sheet data.[34] Credit markets and particularly banks, when capital markets

[33] These oil-importing countries have been implementing financial and monetary reforms as part of a broad macroeconomic adjustment program and structural reforms aiming at liberalizing interest rates, improving banking supervision, and introducing more market-based instruments of monetary policy. They have also increased trade and capital account liberalization and as a result may face increased volatility of capital inflows, which in turn can complicate the conduct of monetary policy.

[34] Love and Turk Ariss (2012) find evidence of a lending channel in a panel study, spanning 18 years of data of Egyptian banks.

are underdeveloped, constitute a critical element of the monetary policy process (Kashyap and others, 1993).[35] In this regard, and a priori, we expect firms dependent on bank financing in the majority of MENA countries to make for an important credit channel, particularly when capital markets are underdeveloped and access to financial markets is limited (under generally prevalent financial frictions). Focusing on SMEs, the relatively high cost of direct finance compared with the small size of overall financing needs makes SMEs more bank-dependent.[36]

Based on *micro balance sheet data of banks* for the countries under study, the reaction of banks to changes in monetary policy, highlighting the role of bank characteristics (size, capitalization, liquidity base, adoption of prudential regulations) in transmitting monetary policy impulses, will weigh in an important way on policy. General conclusions based on a number of focused studies on bank characteristics can be summarized as follows: (i) *small* banks tend to downsize lending by more than large banks in response to monetary tightening; (ii) banks with a large buffer stock of *liquid* assets can insulate their loans from the effects of monetary policy actions; and (iii) a high degree of *bank capitalization* serves as an indicator of bank health and therefore an indicator of a bank's ability to raise funds from alternative sources during contractionary monetary policy periods. Moreover, *prudential* supervision—in particular capital adequacy requirements—may affect the composition of bank asset portfolios in the sense that well-capitalized banks are less constrained during periods of tight monetary policy, as they isolate, to some extent, their loan portfolio from monetary shocks.

The importance of financial market conditions and the role played in monetary policy (mentioned above) is revisited here. Developed, efficient, and liquid money markets (for treasury bills, CDs, and interbank deposits) tend to strengthen the *interest rate channel*; in MENA countries, while some strides have been made to develop financial markets and short-term securities markets, they remain rather underdeveloped in most, particularly the corporate bond markets.[37] In terms of *bank-credit related channels*, banks in their response to tightened monetary policy are more inclined to cut back on the amount of loans they

[35] The role of banks in the MTM were discussed under the *bank lending* and *balance sheet channels;* the first channel emphasize the distributional consequences of monetary policy tightening when bank loans are the primary source of finance to SMEs. Theoretically, credit channels were discussed under the credit market frictions (information and agency costs) with empirical research increasingly exploring the role of financial markets and institutions in analyzing the role of monetary policy (IMF, 2010).

[36] In 2004 the share of SMEs in total enterprises in Jordan, Egypt, Tunisia and Morocco was estimated to be 93, 90, 83, and 86 percent, respectively or close to 90 percent on average. More recently, these shares were estimated to average 95 percent in the MENA region—see Stevenson (2010).

[37] Indeed, capital market activity in the MENA region remains mostly concentrated in the financial services industry and the bond market is relatively insignificant, although financial markets have the potential to play a greater role in meeting the funding requirements of large corporations and infrastructure investment projects.

make when other funding options cannot be pursued such as selling banks' security holdings (T-bills) or raising more non-deposits financing (CDs, bonds, or equity). In general, the two necessary conditions for the existence of a *bank lending channel* are (i) the ability of CBs to impact on the supply of bank loans and, (ii) the degree of borrower dependency on bank loans. One can empirically investigate the relationship between monetary policy and bank lending by estimating a bank loan function that takes into account the monetary policy stance, macroeconomic variables, as well as bank-specific data on size, liquidity and capitalization with a caveat that the empirical methodology is not able to clearly identify the separate role of the underlying supply and demand factors.

In spite of similarities in somewhat underdeveloped financial markets, fledgling CB credibility and weak transparency conditions in the countries under study,[38] monetary policy is not uniform across them, and this is likely to result in different strength level of the *lending channel* (confirmed empirically). In the case of *Jordan*, lending by banks which are small in size and are relatively undercapitalized tends to react more to a change in monetary policy. Size also affects the way *Tunisian* banks react to monetary policy changes, whereas in *Morocco*, only liquidity appears to play a role in this context. Overall, these findings provide evidence that a bank lending channel (differentiated in strength and extent) exist in these countries. However, for the case of *Egypt*, Boughrara and Ghazouani (2009) could not provide clear-cut evidence of an operating lending channel. Liquidity and size do not seem to exhibit a significant role and capitalization affects the bank responses to monetary policy changes in a rather unusual manner, in that well-capitalized banks respond strongly to monetary policy when compared to the less-well capitalized. This runs counter to the convention (bank lending channel hypothesis) that undercapitalized banks are more affected by a monetary policy than an average bank. In all, evidence of a bank lending channel in Egypt is rather weak, and more analysis is needed to reach more clear-cut conclusions. However, Love and Turk-Ariss (2012) found that changes in interest rates are transmitted to banks in Egypt through a change in the quality of loan portfolios.

(cont.) To note, that while the banking sector remains the main source of financing economic activity compared to the capital market, the bond market in Morocco (excluding treasury bills) has experienced significant growth from 2008. Issuance by companies grew at rapid rates, with the outstanding bond debt at almost 19 percent of GDP at end-2011, compared with an average of 7 percent in the period 2003 to 2007. This ratio was thus broadly comparable to those observed in some emerging economies.

[38] Of course, progress has been made with tangible results in several MENA countries. For example, BAM has made significant progress in terms of transparency, in particular by improving the content and frequency of communication with the public. BAM publishes a press release announcing the decision of the quarterly Board meetings, and a report on monetary policy. The Governor holds a press conference to highlight the most recent economic, monetary, and financial developments and explain the basis for the decision on monetary policy. In addition, the data used in its analysis are available and regularly updated on the web portal.

To sum up, the identification of the strength of a bank lending channel will have large implications on the conduct of monetary policy in the MENA region. For example, undercapitalized banks in the midst of a (great) recession may require the injection of capital in an effort to ultimately boost real activity, via a sustainable lending channel; a conventional expansionary monetary policy may not be effective if the interest rate channel is found to be relatively weak. More generally, *monetary policy may become less effective* if (i) the domestic corporate sector finances its investments mainly by borrowing abroad (not the case in MENA), and as a consequence, the domestic interest rate does not affect its cost of capital; (ii) if domestic banks are foreign-owned and fund themselves through loans from their parent bank, hence rendering domestic interest rates less relevant (and also giving rise to cross-border, cross-currency funding risks); and (iii) in highly dollarized economies (limited control by the CB over imported inflation and over economic activity in the domestic economy).

D. Monetary Policy Response to the Crisis and Role in the Macroprudential Framework and Financial System Stability

Monetary policy frameworks evolved as *price stability* was established as the main policy objective and as independence in pursuit of this objective became enshrined in law in most countries. CB banks also played a role in safeguarding *financial stability* particularly in the oversight of payment systems and the supervision and regulation of the financial sector. In the wake of the global crisis, a need emerged for financial system developments and vulnerabilities to be more fully taken into account by CBs. This meant promoting financial stability without jeopardizing the primary objective of price stability. In this endeavor, the broadly accepted view that financial and price stability are imperfectly aligned objectives and thus need to be addressed separately, utilizing different policy instruments to successfully attain the different objectives, became more entrenched. Interest rate policy should be used primarily to achieve the price stability objective while other instruments, notably regulation and supervision, should be used to promote financial stability.

An IMF Board paper[39] suggests that for CBs, the crisis seems to provide three important lessons for policy frameworks, mainly concerning systemic financial stability.

[39] This section draws on the IMF (2010) policy paper.

First, financial stability should be addressed mainly using *macroprudential policies*.[40] They can mitigate the procyclicality[41] of systemic risk and the build-up of structural vulnerabilities (rooted in agency and collective action problems). Box 4 provides a comprehensive list of macro-as distinct from micro-prudential policies (Section VII discusses 'Basel III liquidity rules' and their likely impact on monetary policy implementation). All potentially systemic institutions and markets should be within the macroprudential regulatory perimeter. CBs should play a key role, whether or not they serve as the primary regulator.

Second, price stability should remain the primary objective of monetary policy. AE CBs have thus far maintained the price stability credibility they gained before the crisis and this success must be preserved. The monitoring and analysis of financial system developments and risks could be better integrated into the formulation and implementation of monetary policy. In normal economic times, price stability provides sufficient room for interest rate policy to react to short-run variations in economic activity. On rare occasions, a severe crisis may cause policy interest rates to reach the zero lower bound, constraining the freedom of policy choices. However, such severe crises usually stem from conditions that also make interest rates relatively ineffective in stimulating aggregate demand, while increases in risk aversion may well override the stimulus to consumption and investment of low real interest rates. In such circumstances, unconventional measures as used in the recent crisis may be more effective (examples from the MENA region are discussed in Part II.E). It is also important to note that institutional arrangements should ensure that the role of CBs in the design and application of macroprudential measures does not impinge on their ability to deliver price stability.

And third, changes to liquidity and crisis management arrangements are needed to make them more flexible. (See Appendix II: "Unconventional Tools and Financial Stability Concerns in Central Bank Responses to the Crisis" for detailed discussion of the global issues.)

[40] *Macroprudential policies* seek to ensure financial stability by mitigating the build-up of systemic risk (Crockett, 2000). Systemic risk arises both from linkages within the financial system and through its interaction with the real economy across the cycle; it can be defined as the risk of serious disruption of the provision of financial services (such as credit and payment services) to the economy that results from an impairment of the financial sector.

[41] Financial imbalances tend to build up in good times, as leverage increases and financial institutions become overexposed to correlated (or aggregate) risks. Possible corrective actions can be based on (i) preventing the excessive build-up of leverage; (ii) limiting the build-up of liquidity risk; and (iii) requiring prudent collateral policies; in all, redesign existing prudential tools to make them more automatically countercyclical.

Liquidity management and crisis frameworks

The crisis exposed weaknesses in CB liquidity management and in national and international crisis management frameworks. The greatly expanded operations of CBs during the crisis blurred operational targets, complicated communication, and exposed them to new risks. Gaps in crisis management frameworks led in a few cases to the prolonged involvement of CBs in unfamiliar areas. Further, these measures contributed to moral hazard by raising market expectations of large liquidity injections (and other public support) in times of stress. These weaknesses have created an awareness of the need for more flexible, but formalized and better coordinated arrangements.

Box 4. Prudential Policies—Micro versus Macro[1]

Micro-prudential policies. These policies attempt to improve individual institutions' resilience to risks (including those arising from international capital flows), but they may also reduce systemic risk by mitigating externalities arising from individual institutions' behavior. Examples include:

- ✓ Forward-looking provisioning of expected losses
- ✓ Valuation reserves to cover the risk of mean reversal in prices of marked-to-market assets
- ✓ Caps on Loan-to-Value (LTV) ratios/minimum collateral haircuts
- ✓ Higher risk weights on specific types of exposures (such as real estate lending)
- ✓ Minimum capital requirements, including better quality of capital (as in Basel III)
- ✓ Leverage ratios
- ✓ Capital conservation buffer (Basel III)
- ✓ Liquid assets buffer (Basel III)
- ✓ Limits on currency and maturity mismatches (Basel III NSFR)

Macro-prudential policies. Prudential policies in this case are aimed explicitly at systemic risk. Often, the macro-prudential toolkit will be based on existing

[1] Reference: Ostry and others (2011).

Box 4. (*concluded*)

micro-prudential tools, but with settings that are conditioned on macro-financial developments or indicators of systemic risk, either in a rule-based or a discretionary fashion. Some examples of such policies are:

- ✓ Cyclically varying provisioning requirements
- ✓ Cyclically varying LTVs
- ✓ Countercyclical capital buffer (Basel III)
- ✓ Capital/liquidity surcharge/levies on Systemically Important Financial Institutions (SIFIs)
- ✓ Tax on volatile funding (Shin, 2010)
- ✓ Caps on credit growth
- ✓ Higher reserve requirements

Liquidity management frameworks: Revisiting the operational framework of CBs

The short-term policy interest rate approach helped establish and entrench price stability before the crisis. For many AE CBs, the operational framework is complemented by standing lending and borrowing facilities that establish a corridor around the policy rate, and remunerated and/or required reserves (see Section III, on corridor systems used by AE and MENA CBs). This said, more flexible operational frameworks would enhance the resiliency of the system.[42]

E. Monetary Policy Response to the Crisis: MENA Countries

Monetary policies adopted in the region in the early years of the global financial crisis are discussed here, focusing on an assessment of the policy stance, the challenges and tradeoffs authorities are faced with, as well as the measures (traditional and not) sought in response. This is based in the main on a chronological depiction of the events surrounding policy responses,

[42] See Committee on the Global Financial System (2008) and Chailloux and others (2008) for discussions of changes in operational frameworks central banks made during the crisis and refinements of liquidity management operations.

as featured in the IMF-MCD REO publications. In what follows, MENA countries are split into oil-exporters (MENA-OX) and oil-importers (MENA-OM) to provide an adept analysis pertinent to the subgroups.

Phase I: 2009 to Fall 2010

MENA-OX. In the Fall of 2010, it was perceived that the accommodative monetary policy stance that had been in place since 2009 was largely justified to the extent that, in most countries, private-sector credit had not rebounded noticeably and inflation remained subdued. For the group, annual credit growth had ticked upward to 6.7 percent as of May 2010, from a low of 4.1 percent at end-2009, but was still well below the 32 percent growth achieved in the Fall of 2008 prior to Lehman. In several countries *(QAT, SAU,* and the *UAE),* credit growth remained weak.

The challenge for monetary policy at the time was to balance the need to support a revival of credit growth while mitigating a potential resurgence of inflation arising from a lagged effect of rising international food prices in 2009, and expansion of domestic demand as oil revenues rose. Although almost all *MENA-OX* in the region have limited options for conducting countercyclical monetary policy via domestic interest rates—given their pegged exchange rate regimes and open capital accounts (GCC)—some eased monetary conditions to cushion the slowdown in private-sector credit, lowering reserve requirements, and providing liquidity and capital injections to the banking sector. Other countries, by virtue of having more flexible exchange rate regimes *(ALG* and *SDN)*, had supplemented monetary easing with some nominal depreciation to prevent sharp deterioration in external balances.

With the recovery expected to take hold at the time and commercial banks more willing and able to lend, these easing measures needed to be rolled back. In *OMN*, certain measures that had eased credit conditions—an increase in the loan-deposit ceiling and a reduction in the required reserve ratio—had been reversed; a phasing out of CB lending to banks had begun in *SDN*; and *SAU* had began unwinding its extraordinary liquidity support. *QAT*, on the other hand, lowered its (policy) deposit rate—by 50 basis points—for the first time since April 2008, citing an improvement in the country's sovereign risk premiums and high real interest rates as the reason; for some time, *QAT* had been able to maintain relatively high interest rates without inducing a surge of disruptive capital inflows.

Policy sum up. A policy balance needed to be struck between supporting credit revival in the face of rising inflationary pressures from abroad, ensuring an orderly change in the accommodative monetary policy stance if and when pressures start to build up under strengthened demand and economic activity.

Another challenge was the appropriate timing in withdrawing the exceptional measures to prevent excess liquidity in credit markets. This issue, faced by many CBs, complicates the liquidity management role of the CB.

MENA-OM. In the Fall of 2010, outside of *EGY*, inflation was not perceived to be an immediate concern and given the relatively stable inflation rates, most had comfortably maintained their accommodative monetary policy stance. In *EGY*, inflation has in large part been driven by a surge in prices of several food items and the government's streamlining of some consumer subsidies; however, absent a clear nominal anchor, these price increases have raised inflation expectations and contributed to the inflationary momentum.

Following interest rate reduction in 2009 and early 2010, *MENA-OM* had for the most part kept policy rates unchanged and maintained existing spreads over rates in AEs. Until June 2010, *LBN* had gradually reduced its policy rate, in part to slow the pace of reserve accumulation (it had paused after June to allow for a fuller pass-through of earlier rate cuts before taking further interest rate decisions). And while low interest rates were thought to help spur growth in the region, real exchange rate appreciations may have had counteracting dampening effects on external demand. For example, currencies that tend to track the U.S. dollar *(LBN, JOR, DJI, SYR)* have seen their nominal effective exchange rates appreciate along with the dollar. For *EGY*, where relatively high rates of inflation and nominal appreciation coincided, the resulting real effective exchange rate appreciation pointed to a more difficult competitive position. On the other hand, currencies in *MAR* and *TUN* that are closely linked to the euro, and with the bulk of their trade with Europe were less affected by exchange rate changes.

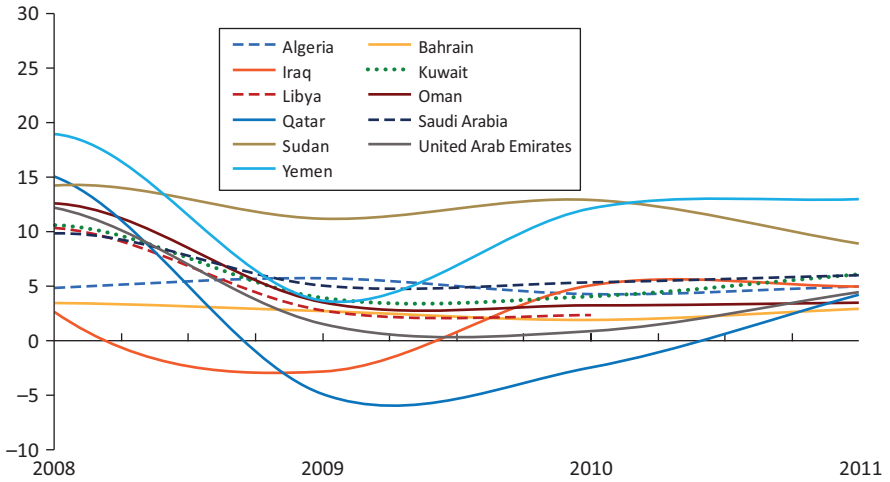
Policy sum up. An accommodative monetary policy stance to achieve economic stability was adopted under subdued inflationary pressures. As a group of predominantly exchange-rate targeters (pegged to a single or a basket of currencies), interest rate differentials with the country of peg and their impact on the accumulation of official reserves needed to be more closely monitored. Offsetting the accommodative stance in countries that peg to the U.S. dollar was the dampening effect of the dollar strength on real activity.

Phase II: Fall 2010 to Spring 2011

MENA-OX. For the period between the Fall of 2010 and Spring 2011, inflation pressures started to rise together with concerns about food security (Figure 2).[43] inflation was expected to increase in almost all countries—a

[43] Key grain prices, including those of corn and wheat, rose sharply, heightening food security concerns, given that many *MENA–OX* are among the largest importers of wheat in the world—*ALG* and *IRQ* rank third and ninth. World wheat prices rose by over 75 percent in the 12-month period ending March 31, 2011.

Figure 2. MENA-OX: Consumer Price Index, 2008–11
(Annual Percentage Change)



Source: National authorities; and IMF staff calculations and projections.

pickup to 5.3 percent in 2011 from 3.2 percent in 2010 in GCC countries, and to double digits in *SDN* and *YMN*. In all countries, the key driver of headline inflation was food prices, but core inflation had also increased in many reflecting a rise in inflationary expectations.

Policy sum up. Inflation has generally remained relatively subdued in most *MENA-OX* (registering low, single digit rates). However, performance varied considerably across countries—conditions were volatile as recovery in international commodity prices, and recovery in domestic demand can trigger inflation. It was important for the *OX* group to keep an eye on inflation pressures and monitor the second-round effects of food inflation which can translate rapidly into nonfood inflation. Some governments, particularly in the GCC *(KUW, QAT, SAU, UAE),* would also need to carefully monitor the impact of expansionary fiscal spending on aggregate demand to prevent a resurgence of inflationary pressures.

MENA-OM. In addition to challenges stemming from social unrest, the sharp increase in international fuel and food prices since late 2010 had brought additional costs. Holding policies and quantities constant, higher fuel and food prices are estimated to have led to an increase in *MENA-OM* import bill close to 3 percent of GDP on average (roughly two-thirds of it on account of higher fuel prices). This is especially the case in countries such as *DJI, JOR,* and *LBN* which are highly dependent on imports for their energy and foodstuff needs. The tradeoff between allowing the increase in the import bill normally to be reflected in higher consumer prices, or providing subsidies to counteract the price increase (at an increased fiscal cost) was a policy challenge.

Policy sum up. Greater inflation pressure meant less room for the monetary policy to maneuver. At the time, rising interest rates globally (emerging Asia, predominantly) and the recent increase in own risk premiums, may have required *MENA-OM* to raise policy rates. Commodity price increases were adding to price pressures in all countries and already appeared to be feeding into higher core inflation.[44] On the positive side, nominal exchange rate depreciation in almost all MENA-OM was helping offset lingering competitiveness problems.

Phase III: Spring to Fall 2011

MENA-OX. Despite the generally favorable outlook for these economies, the Arab Spring uprisings in early 2011 and the sovereign debt difficulties encountered in the euro area and the U.S. had resulted in heightened sovereign risk reflected in credit default swap (CDS) spreads—these rose in all countries during the first quarter and in early August 2011, although not as sharply as during the aftermath of the Lehman and Dubai World events. For all countries, the 2011 shocks interrupted a gradual decline in spreads that began in early 2009, when spreads reached historical highs.

Despite banks gaining strength, an incipient recovery starting in economic activity, and financial soundness indicators moving in the right direction, private-sector credit growth remained cautious. Further, in a few countries (*QAT* in particular and, to a lesser extent, in *SAU* and *OMN)* bank credit growth was modest compared to deposit growth.[45] The postcrisis credit crunch experienced throughout the region was the result of demand factors (weak economic activity) as well as supply factors (related to a collapse in funding and increased risk aversion on the part of banks). Some have attributed credit sluggishness and the downward trend in loan-to-deposit (LTD) ratios to risk aversion in banks and tighter prudential regulation on real estate and consumption credit, in light of difficulties encountered in the banking systems as a result of excessive precrisis credit growth. But changes in LTD ratios in fact reflect a range of factors, and are often driven by policy actions.[46]

[44] Food inflation in MENAP countries is higher, more volatile, and more persistent than nonfood inflation, and the weight of food in national consumption baskets is typically very large (an average close to 40 percent of the basket). Moreover, there are substantial second-round effects whereby food inflation propagates rapidly into nonfood inflation. Under these circumstances, monetary policy is well-advised to focus on keeping headline (not just core) inflation well anchored.

[45] See IMF, REO-MCD, May 2010, Chapter A.3, "Reviving Bank Credit in MENA." Historical analysis of credit boom-bust cycles in the MENA region indicate that, on average, it takes three years for credit growth to recover to normal rates following a credit bust.

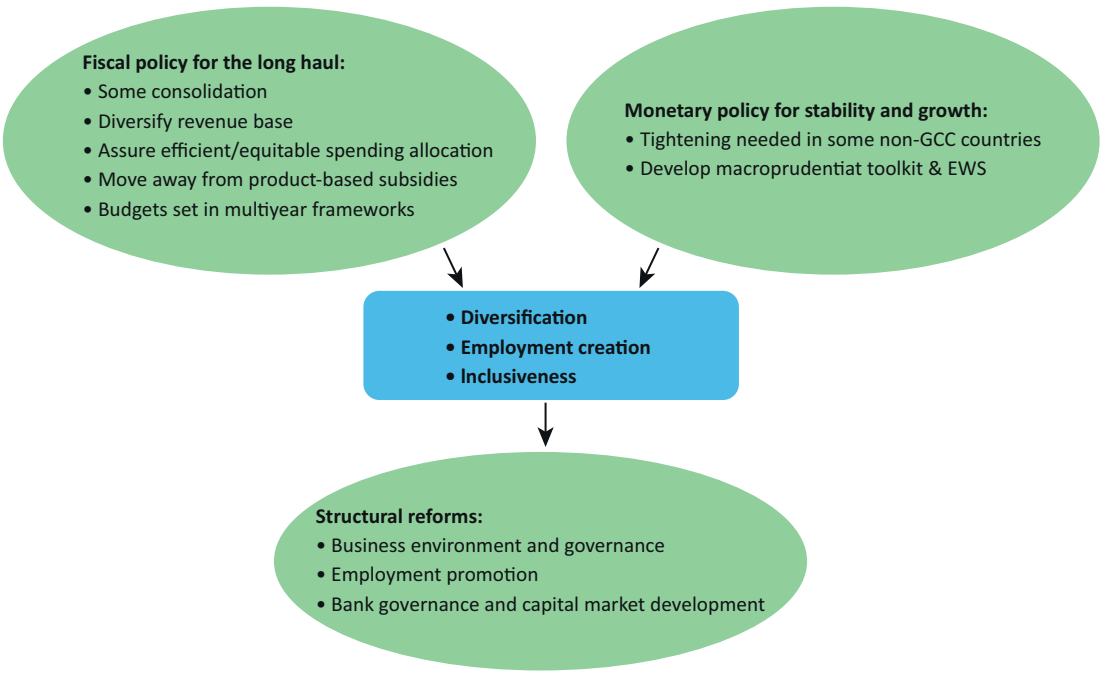
[46] See Section III.C for a detailed interpretation of the low LTD ratios which were observed post crisis.

inflationary pressures remained modest amid high commodity prices. For the most part, inflation had remained subdued, averaging 10½ percent as of June 2011. With the exception of *SDN* and *YMN*—the latter affected by a step adjustment in prices as energy subsidies are being reduced—OX were registering single-digit inflation, and seven of these countries were still recording inflation at less than 5 percent. Furthermore, core inflation remained moderate, at just over 4 percent on average, suggesting that second-round effects of the increase in imported food prices had not emerged.

Policy sum up. Policy was to remain supportive, but preparation for the long-run, promoting stability and growth are the key policy goals moving forward (Figure 3).

Monetary policy for stability and growth. As with fiscal policy, the accommodative monetary policy stance of the past few years remain broadly appropriate. However, policymakers should stand ready to adjust fiscal and monetary policies should inflationary pressures or credit bubbles emerge. This was particularly relevant in the GCC countries where reserve money balances held by commercial banks were more than ample and where a change in the willingness to lend could spark a rapid pickup in credit growth. Until

Figure 3. MENA OX: Promoting Stability and Long-Run Growth



Source: REO, MCD, Fall 2011.

Fall of 2011, monetary policy had been neutral and in some cases focused on addressing insufficient credit growth. *QAT*, for example, had reduced interest rates twice in mid 2011 to discourage speculative capital inflows while encouraging credit demand. Monetary policy tightening was seen as more urgent in non-GCC countries (*SDN)*, with fiscal consolidation required to reverse monetary financing by the CB.

Macroprudential issues. The macroprudential toolkit was to be developed further as a means to conduct countercyclical demand policy and to prevent excessive buildup of risks in the banking sector. *GCC countries* in general were successful in adopting *macroprudential tools* such as caps on loan-deposit ratios, increasing loan provisioning and capital requirements in good times, setting minimum liquidity ratios, and selective floors on capital requirements. Further use of these types of instruments aided by a developed *Early Warning System (EWS)* (UAE, for example) could enhance authorities' ability to meet *financial sector stability* objectives.

MENA-OM. inflation remained stable until Fall 2011 as expansion in domestic food and fuel subsidies counteracted the impact of rising global food and energy prices. Furthermore, second-round inflation effects were not evident in the face of weak aggregate demand. In response, monetary policy remained accommodative with real policy rates staying close to zero or slightly negative in *JOR, LBN,* and *TUN* and significantly below zero in *EGY*. While moderating food and fuel prices and continued weak aggregate demand kept inflation low in 2011–12, public sector wage increases in several countries could filter through to the private sector and result in inflationary pressures as the economy recovers. Looking into 2012, for some countries, scaling back of commodity subsidies *(MRT)* and structural factors and entrenched expectations of high inflation *(EGY)* are likely to push inflation higher. Finally, emerging external financing constraints have raised concerns about the remaining scope for policy buffers to support growth.

Policy sum up. In response to observed trends and pressures, policy rates nearing the zero lower bound, financing constraints raising fiscal sustainability concerns, costly untargeted subsidies, unrest rooted in inequitable distribution of the benefits of economic growth, the policy advice was best captured in the following figure (Figure 4) which called to seize the opportunity to develop a medium-term policy agenda for shared prosperity.

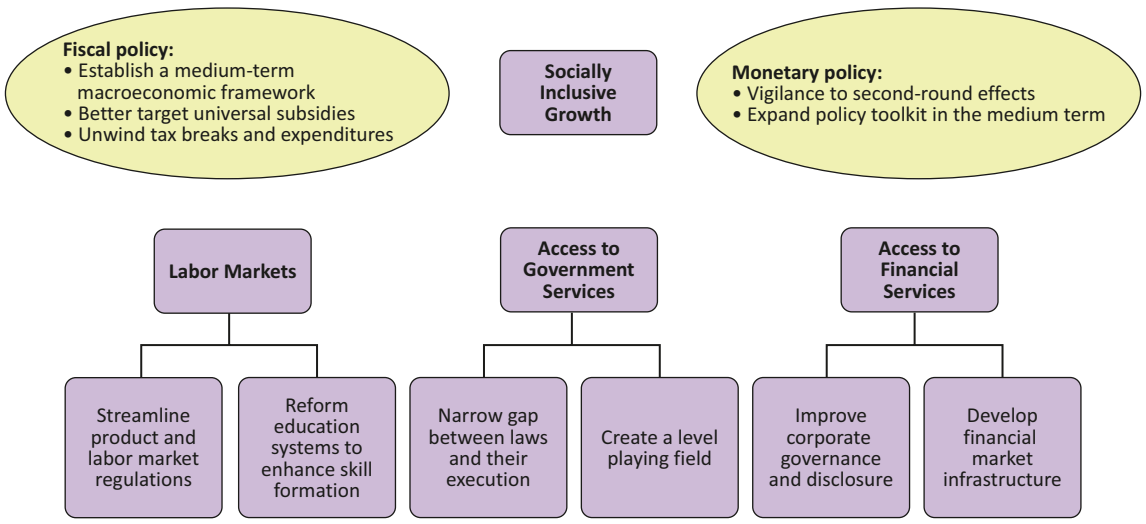
Phase IV: Developments up to mid/late 2012

MENA-OX. In Fall 2012, GCC inflation was expected to remain below 4 percent in 2012 (and 2013) due to expanding monetary aggregate at a slower pace than reserve accumulation; broad money growth and private sector

credit growth increasing but still below historical growth rates; and due to benign global inflationary environment despite recent increases in some food and other commodity prices. As a result, the accommodative monetary conditions in the GCC—which are largely the result of low interest rates in the United States, pegged exchange rates, and the absence of alternative monetary instruments—remain broadly appropriate. Any signs of overheating in the future are thought to be countered through fiscal tightening (as a most effective policy measure) supported by macroprudential policies. Outside the GCC, inflation rates were generally higher (*ALG* on account of higher gross reserves and back payments of civil-service wage increases; *YMN* on account of CB financing of fiscal imbalances which has often contributed to monetary growth and inflation). Signs of persisting high inflation could be reduced by both monetary and fiscal policies.

MENA-OM. Despite public-sector wage increases and rising global food and energy prices, in most countries, headline inflation remained subdued as aggregate demand faltered and government subsidies for key commodities rose. The outlook by Spring 2012 was that inflation pressures were projected to pick up in *EGY, JOR, MAR,* and *TUN,* as planned cutbacks in subsidies may cause consumer prices to rise. In other countries, weak aggregate demand and falling international food prices were projected to likely dampen inflation. Furthermore, countries facing diminishing reserve buffers needed to mobilize external financing in the near term to avoid an unduly sharp adjustment.

Figure 4. MENA OM: Promoting Stability and a Medium-Term Inclusive Growth Strategy



Source: REO, MCD, Fall 2011.

In the Fall 2012, monetary policy was to respond to second-round effects in case of high pass-through of international food and fuel prices and dampen inflation expectations. Although the degree of economic slack was increasing, the vulnerability of many countries in the region to supply-side inflation shocks during past downturns could raise concerns. While it was advised that monetary policy remain accommodative toward first-round effects, core inflation as a key indicator of domestic inflation was not to be ignored. Also, previous year's public-sector wage increases filtering through to the private sector as *MENA-OM's* economies begin to recover in 2013 should also be monitored by the monetary authorities.

More broadly, excessive reliance on domestic financing in a low-growth environment were perceived as a risk in crowding out credit to the private sector and putting pressure on domestic interest rates (i.e., *EGY*), worsening fiscal positions, and further slowing the recovery.

Given these domestic and external pressures, the threat was that exchange rate regimes could come under pressure as investors lose confidence—greater real exchange rate flexibility and expanded monetary and macroprudential policy toolkits to help adjust to external shocks and maintain competitiveness were being discussed as options. For instance, widening external current account deficits from already high levels (structural in some countries) had resulted in further accentuating the possibility of moving away from the use of exchange rates as a nominal anchor and allow for more flexible monetary policy to help restore and maintain price stability and competitiveness.

Sum up. This section chronicled the monetary policy challenges which had faced the region from 2009 until mid-late 2012. This included aspects of credit revival, addressing potentially surging inflationary pressures, and the impact of exchange rate movements on competitiveness. It concluded with a broader objective where a medium-term policy, spanning a consistent interaction of monetary, fiscal, and financial policies for inclusive growth, should be pursued.

CHAPTER

III Monetary Policy Implementation: Purpose and Framework

When monetary policy moves from the CB board room to the market place, it is transmitted via the CB's balance sheet. Commercial banks and other participants in the financial markets will no doubt listen to the judgments of the CB; but if policy is to be reliably implemented, the CB needs more than persuasive words. It needs to use its balance sheet. CBs transact with commercial banks in a range of ways. Most CBs—and all of the MENA CBs—impose reserve requirements on commercial banks, whereby they need to deposit funds equivalent to a certain percentage of their liabilities with the CB, often on a non-remunerated basis. This impacts the prices of the banks transactions with their own customers. Commercial banks—in MENA countries as elsewhere—also need to buy banknotes from the CB, to meet customer demand; they will normally undertake some FX transactions with the CB; and they operate current accounts with the CB in order to settle payments with each other and with the government (e.g., payments to or receipts from government—such as taxes, or civil servant salaries—on behalf of customers). CBs will either lend funds to the banks, if they lack sufficient reserve balances, or drain funds from the market, if banks hold excess balances. Most MENA CBs drain surplus liquidity from the market. The interest rate on these lending and draining transactions allows the CB to impose its policy interest rate on the market. Where there is a strong exchange rate target (as in the majority of MENA countries), the exchange rate used for FX transactions with the market allows the CB to support, guide or perhaps fix the exchange rate.

A. Monetary Policy Implementation: Interest Rate Corridors

Overview

Most CBs use interest rate levers—the interest rate on transactions between the CB and its financial market counterparties—to guide short-term interest

rates in the wholesale money markets and thus, indirectly, to influence both longer-term money market rates and the interest rates used by banks and other financial intermediaries in their transactions with the wider economy.

Policy setting in pre-financial crisis times would normally be centered on the targeted level for short-term interbank or wholesale money-market interest rates. Some CBs expressed policy in precisely such terms (e.g., the U.S. Federal Reserve Bank, the Bank of Canada, the Reserve Bank of Australia). Others announced policy in terms of an OMO rate at which the CB would transact with its counterparties, with an expectation that short-term market rates would trade close to this level—perhaps within 5–10 basis points (the ECB, the Bank of England, the Reserve Bank of New Zealand but also a number of Emerging Market (EM) CBs).[47]

In other cases, the CB would announce a standing credit facility (SCF) rate,[48] but market rates traded—and were expected to trade—well below this level.[49] Virtually all CBs make available a SCF, where banks have a right to borrow overnight funds from the CB, provided they meet pre-specified conditions, as this is important from a payment system point of view (this is in addition to the provision of intraday credit, which in almost all cases carries no interest rate charge). It prevents the risk that a shortage of reserve money at one bank might force the unwinding of payment orders made through the day. In practice, its role as a payment system safety valve means that the interest rate on the SCF does not have a central function for monetary policy purposes. Reflecting this purpose, the SCF is nearly always for an overnight maturity, and carries a penalty rate high enough to motivate effective liquidity management by commercial banks.

Not all CBs make available a standing deposit facility (SDF). It is not necessary from a payment system point of view, because excess reserves balances do not cause a payment systems problem; and provided liquidity can be managed sufficiently well—typically via a combination of OMO and RR averaging—interest rates may still be guided by the OMO rate.[50] The U.S. was an example of this prior to October 2008 (when the Federal Reserve was given the right to remunerate reserve balances of commercial banks); while

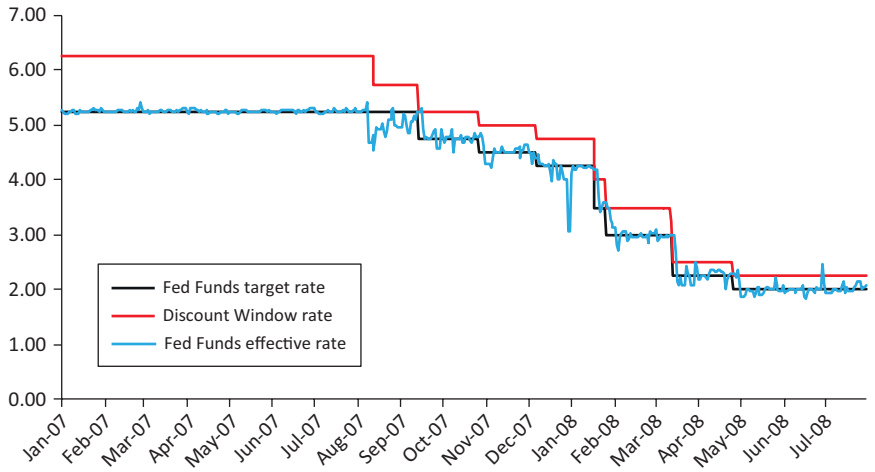
[47] The European Central Bank (ECB) sets the *minimum bid rate* for its short-term open market lending operations.

[48] Sometimes referred to as a refinancing rate, or Lombard rate, or Discount Window rate.

[49] Historically, a number of AE central banks operated this way, announcing a fixed rate for the SCF, but operating—often in a non-transparent manner—in the secondary market for short-term trade bills, in order to guide market rates toward the desired level.

[50] That said, an increasing number of central banks, perhaps because of difficulties in managing liquidity via OMO, offer a SDF to prevent an excess of reserve balances pushing interest rates too low. This matters both for inflation targeting and exchange rate targeting regimes.

Figure 5. U.S.: Policy and Interbank Rates 2007–08



Source: U.S. Federal Reserve Bank data.

the impact of financial market disruption from August 2007 is evident, the market rate still trades around the target rate (Figure 5).

Where the exchange rate is the main target of monetary policy, and particularly where this takes the form of a hard peg, short-term interest rates are more often market-determined, since the CB cannot fix both the external price of money (the exchange rate) and the internal price (the short-term interest rate) unless it imposes effective capital controls.

While CBs with an exchange rate target—the majority of MENA CBs (see Section II.A)—cannot freely target a short-term interbank rate, they do need to set a rate for the credit SF. Where the exchange rate target is supported by interest rates, the CB will often put in place a deposit SF (Egypt, Jordan, Tunisia); and a number of other CBs use a deposit SF to guide short-term rates even if FX reserves are more than sufficient to stabilize the exchange rate.[51]

Corridor systems: Mid-rate and floor-rate targeting

Systems which set a bound to overnight interbank rates, by making available standing facilities to inject reserve money at the ceiling and to withdraw reserve money at the floor are typically referred to as 'corridor' systems, or frameworks. CBs can use OMO to try to keep short-term market rates around

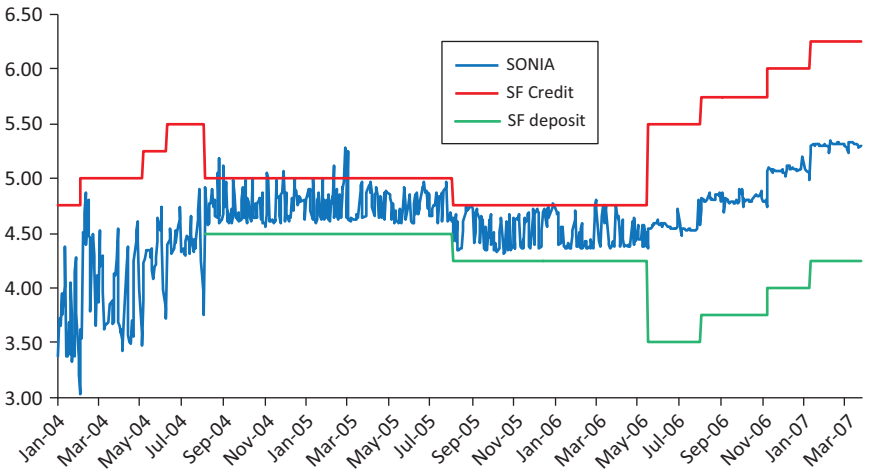
[51] Prior to the introduction of the euro, a few European central banks that targeted the exchange rate of their currency against the Deutschemark used a deposit SF to prevent the risk of short-term market rates falling too low and impacting the exchange rate.

the center of the corridor, or—particularly where there is a structural surplus of reserve money (the case in most MENA countries)—may allow market rates to trade around the bottom of the corridor.

Mid-Rate Corridor. The term 'mid-rate corridor approach' is used where upper and lower bounds for (most) overnight wholesale money market transactions—set by making available standing credit and standing deposit facilities, with overnight maturities—are set at symmetric margins around the targeted market rate. But the expectation, at least pre-crisis, was that actual short-term market rates would be steered within a much narrower band, in line with the policy target and in the middle of the corridor, by use of OMOs.

The U.K. provides an interesting example of the introduction of a mid-rate corridor approach in 2006 (Figure 6). A decision was taken in 2004 to restructure the framework for monetary policy implementation in order to deliver a relatively stable overnight interbank rate in line with the policy target. High volatility could obscure the monetary policy stance. Moreover, by setting a high barrier to market participation, volatility reduced competition in the interface between the CB and the wider economy. Because the full money market reform—involving averaging of contractual reserves, amongst other features—would take some time to implement, a narrow corridor was introduced as an interim measure. This reduced but could not eliminate volatility (cf the narrowing of the corridor in Russia, shown in Figure 8). With the introduction in May 2006 of the new system, a substantial degree of market stability was achieved, permitting the CB to widen the policy rate

Figure 6. Bank of England: Policy and Interbank Rates 2004-07



Source: Bank of England and WMBA data.

Note: SONIA (Sterling Overnight Interbank Average) is the weighted averaged of actual trades in the market.

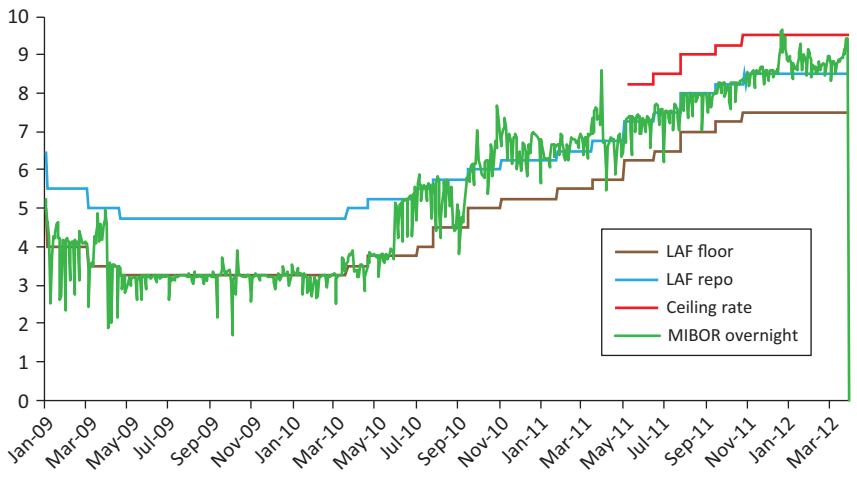
corridor from ±25bp to ±100bp, stimulating more market activity but without causing interest rate volatility.

Note that narrowing the corridor can reduce market rate volatility, but does not of itself stabilize market rates. The introduction of reserves averaging in May 2006, as part of the package of money market reforms, was significant in achieving that.

Floor-Rate Corridor. The term 'floor rate approach' is used where there is an asymmetric corridor around the target rate. The upper and lower bounds to market rates are still set by standing facilities; but there is no OMO undertaken at the middle of the corridor (or at least, not in sufficient volume to steer interest rates to this level); and the expectation is that market rates will be close to, but somewhat above, the SDF. CBs do not operate 'ceiling rate' approaches in normal times, though when faced with exchange rate pressures CBs will for a period allow interest rates to rise towards the ceiling of the policy rate corridor. A floor-rate system may reflect a policy decision that it is more important to set a floor for interbank rates (often for exchange rate reasons) rather than to try to steer rates to the middle of a corridor; or may be a result of weak liquidity management, or a policy decision not to pay the price of draining reserve balances surplus to demand, or a policy of QE or unsterilized exchange rate intervention.

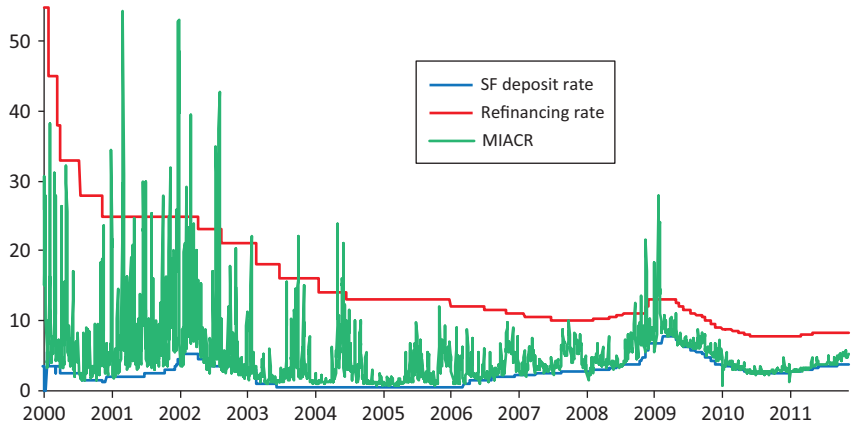
Floor rate approaches were more common in emerging market (EM) countries pre-crisis (such as India and Russia, as well as most MENA countries), though also used in a few AEs, notably Norway. Figure 7 of interest rates in India shows distinct phases: a floor rate approach in 2009

Figure 7. India: Policy Interest Rate Corridor and Overnight Interbank Rates



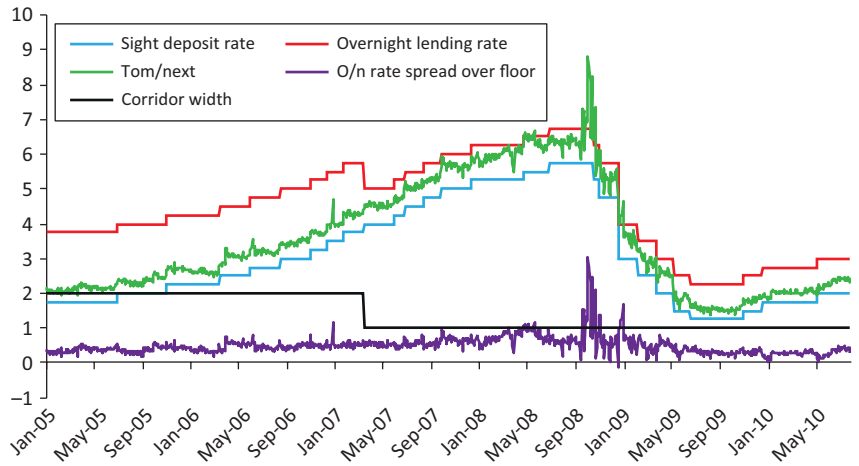
Source: Reserve Bank of India data.

Figure 8. Central Bank of Russia: Policy and Market Rates 2000–11



Source: Central Bank of Russia Bank data.

Figure 9. Norges Bank: Policy and Market Rates 2005–10



Source: Norges Bank data.

and early 2010, with rates close to or below the floor; a 'ceiling rate approach' as the CB allowed the market to react to periodic shortages of liquidity as a result of FX outflows, from mid-2010 to mid-2011; and the introduction of a 'mid-rate corridor' approach, involving changes to the operational framework, from mid-2011. The overall picture is very similar to that for Russia (Figure 8).

Norway operated an explicit floor-rate approach for many years, but saw a tightening of market rates in relation to the policy corridor during the crisis—similar to many other countries (Figure 9).

Importance of liquidity management

A market with a structural surplus of reserve money which is not fully drained by the CB's OMOs will effectively operate as a floor rate approach. By contrast, where markets have an ex ante reserve money shortage, the CB is most likely to operate a 'mid-rate corridor' approach—where short-term market rates are in line with the targeted policy rate. The CB will virtually always supply reserve money—to prevent disruptions in the payment system, for instance—so "ceiling rate" approaches are not found in normal circumstances.

This suggests that what matters most for monetary policy implementation is the marginal policy rate at which the market expects to transact in substantial volume with the CB. Some of the literature suggests that the market rate is determined as the average of the SF rates, rather than being determined by the OMO rate. But this is not borne out by the evidence. In cases where CBs did not (or do not) set a floor rate, the short-term market rate is rarely the average between the credit SF rate and zero; it is typically either around the OMO rate, or close to zero (the floor). If there is an expectation that use of standing facilities will be trivial, then the SF rate is unlikely to impact the market rate directly; whereas regular and substantial use of one or other of the SFs will tend to push the market rate to the boundary of the "corridor" (typically, the floor).

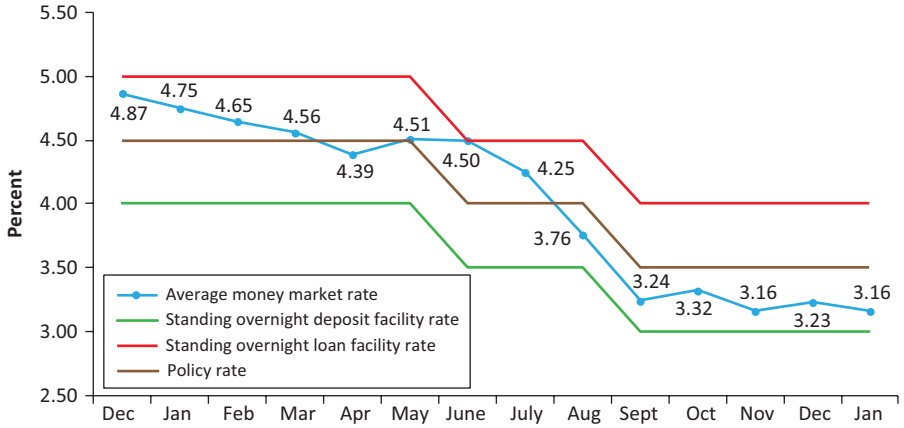
If the CB could manage liquidity perfectly, so that the market always expected to transact with the CB only at the policy rate and never at the SF rates, it would not matter how wide the corridor is, since the SF rates would effectively be irrelevant. The corridor width is relevant, however, whether because the CB cannot manage liquidity perfectly—especially in times of severe market stress—or because it uses a floor system rather than targeting the center of the corridor.

Impact of market pressures on liquidity management

Tunisia saw a tightening of liquidity—and so increase in market rates relative to the policy rate corridor—during the period of unrest (reflecting CB sales of FX, draining domestic reserve balances), but has since seen a return to a more "normal" situation (Figure 10).

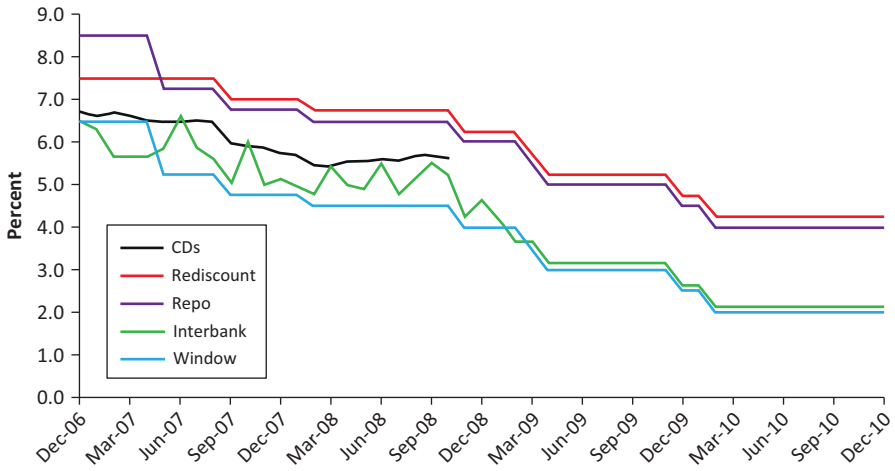
Jordan shows a similar picture; the decision in October 2008 to discontinue issuance of CB CDs, in order to make additional liquidity available to the market, saw the interbank rate quickly drop to the floor of the policy rate corridor (Figure 11).

Figure 10. Tunisia: Policy and Interbank Interest Rates 2011



Source: Bank of Tunisia.

Figure 11. Central Bank of Jordan: Policy and Interbank Interest Rates 2006–10

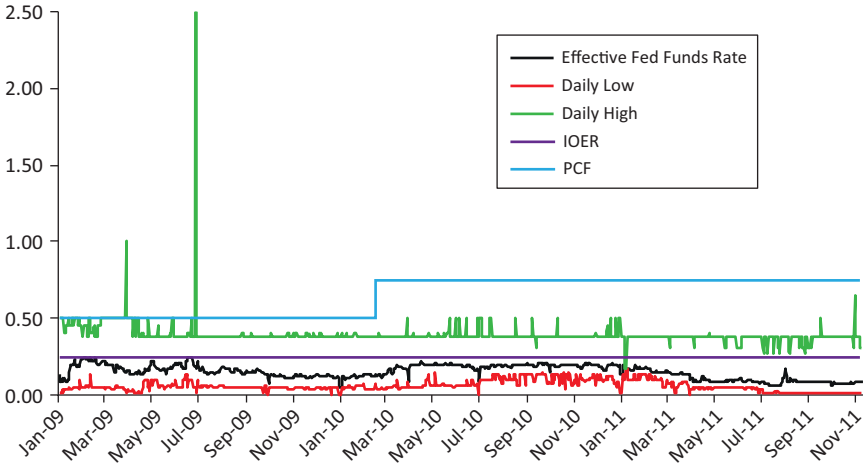


Source: Central Bank of Jordan.

Switching from a mid-rate to a floor approach

In the context of the financial crisis, floor approaches have become much more common in AE countries as reserve money balances have been expanded substantially, whether as a counterpart to QE purchases of government securities, or CB intermediation between banks in face of a continued weakness of the interbank market. The U.S., ECB, and the U.K. are all examples of this (Figures 12 and 13).

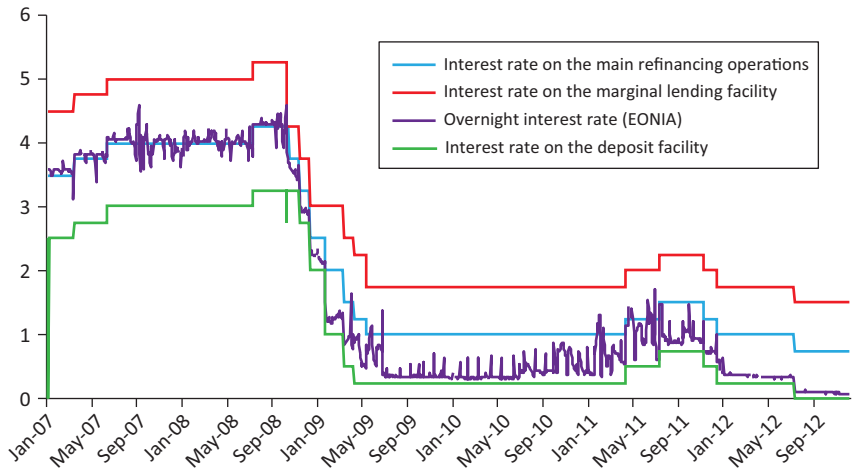
Figure 12. U.S.: Policy and Market Rates 2009–11



Source: U.S. Federal Reserve Bank data.

Note: IOER (Interest on Excess Reserves) is notionally the floor rate, but as non-banks cannot receive interest on Fed funds balances, the effective Fed funds rate has dropped below this "floor."

Figure 13. Euro Area: Policy and Market Rates 2007–10



Source: ECB data.

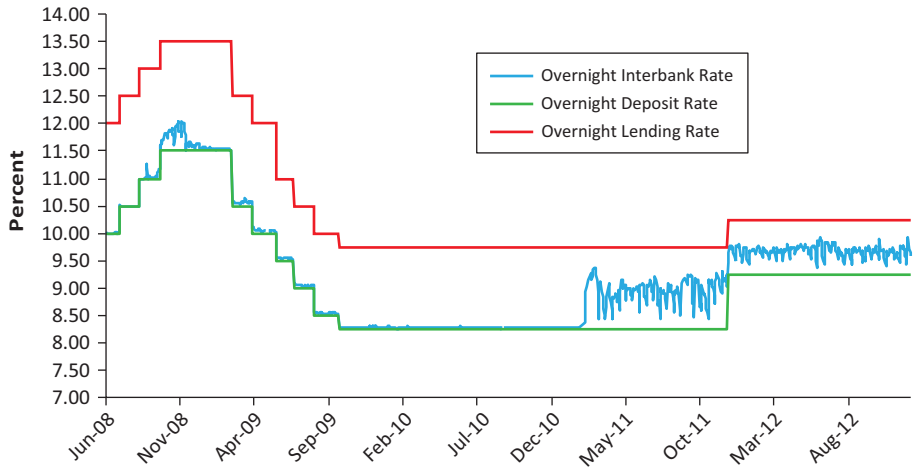
For these CBs, a change in circumstances—in this case, a major financial sector shock—means that a temporary move to a floor approach makes good sense, as the demands of financial sector stability outweigh the benefits for monetary policy transmission and market development of a mid-rate corridor approach.

From floor to mid-rate approach

In a few cases, EMs experiencing capital outflows in 2008–09 or later saw a movement in the other direction.[52] This describes the experience of a few MENA CBs as well. The sale of official FX reserves drained surplus reserve money balances from the commercial banks (because the commercial banks have to pay for the FX), in some cases leaving the banking system with an ex ante shortage of reserve money and thus a need to borrow from the CB. In such conditions, when the CB becomes a regular supplier of liquidity to the market, it tends to be easier to operate a mid-rate approach, although the need to forecast and manage reserve balances accurately often results in some rate volatility, especially early on. This can be seen in the cases of Egypt (Figure 14) and Morocco, as well as India and Russia (Figures 15 and 16), for instance.

In Egypt, surplus reserve balances held by banks kept overnight interbank rates at the floor of the policy rate corridor until February 2011. Following the revolution, the CB sold FX to stabilize the exchange rate as non-residents exited the market, and this drained all surplus liquidity from the market. A short-term liquidity-providing repo was introduced in February 2011 to meet market needs, and the overnight rate rose towards the repo rate, at the center of the policy rate corridor.

Figure 14. Central Bank of Egypt: Policy Corridor and Interbank Rate 2008–11

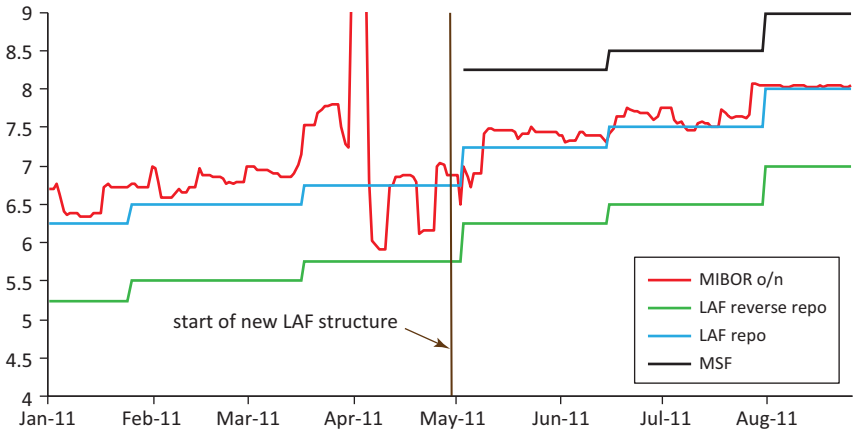


Source: Central Bank of Egypt data.

[52] Morocco has maintained a mid-rate approach throughout this period.

In the case of India, there were two important factors in bringing the overnight interbank rate into the middle of the interest rate corridor. First, the CB took a policy decision to pull back from exchange rate intervention, allowing greater market determination of the exchange rate, and sold some FX when dollar funding pressures were high. Since official purchases of FX were no longer generating domestic currency liquidity, the trend increase in demand for reserve money quickly moved the market to a structural shortage, giving the CB stronger leverage. Second, and following on from this, the CB

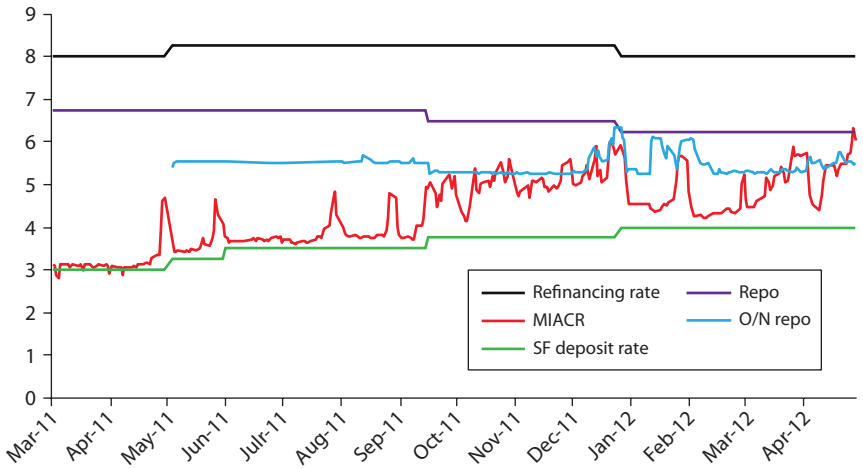
Figure 15. Reserve Bank of India: Policy and Market Rates 2011



Source: Reserve Bank of India data.

Note: LAF = Liquidity Adjustment Facility; MSF = Marginal Standing Facility.

Figure 16. Russia: Policy and Short-Term Interest Rates in 2011–12



Source: Central Bank of Russia data.

Note: MIACR = Moscow Interbank Average Credit Rate.

adjusted the structure of its operations in early 2011, using an OMO to guide market rates to the middle of the corridor and reduce volatility.

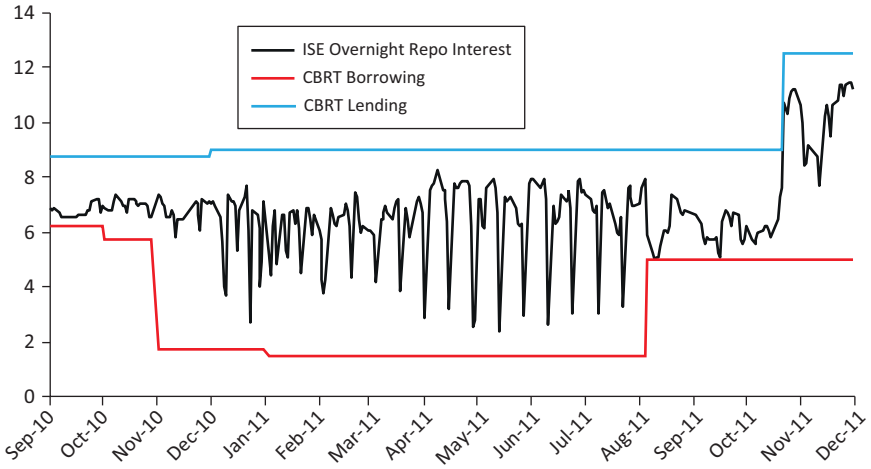
In Russia, a structural shift in market liquidity was seen through 2011, starting in April but being evidenced most clearly from late September when the repo OMO lending came regularly and substantially into play, with a consequent impact on the overnight market rate.[53] A marked slowdown in the level of official FX purchases—and occasionally net sales of reserves in the face of continued capital outflows—coupled with a reduction in net credit to government had drained surplus reserve money balances from the commercial banks, resulting in an overall market shortage and facilitating a move towards a corridor system. When the Central Bank of Russia (CBR) sold FX to support the FX markets in the late summer of 2011, this operation drained domestic currency reserves (because the commercial banks have to pay for the FX). At the same time, an increase in net government balances with the CBR and an increase in currency in circulation together drained liquidity from the market in 2011. Figure 16 above indicates a few points from April to September 2011 when the market was temporarily short of liquidity, resulting in a spike in interbank rates; and then from September 2011, a consistent move to a shortage allowed the shift to a mid-rate corridor approach, with interbank rates trading much closer to the overnight repo OMO than to the floor.

In Croatia, a change in the regulations on RRs from June 2005 moved the market from a structural surplus of kuna to a shortage, allowing the CB to move from a floor-rate approach—with notable volatility, reflecting FX intervention—to a mid-rate corridor approach, albeit with rates tending to trade in the lower half of the corridor. (The change in RRs involved a requirement that part of reserve balances held against FX liabilities should be held in domestic currency, substantially increasing the demand for domestic currency reserve money.)

As noted above, it is unusual for a CB to force the banking system to borrow at the corridor ceiling, rather than supplying reserve money at the (lower) policy rate, so that 'ceiling rate' approaches are rarely seen. However, there may be periods when higher interest rates serve to support the exchange rate. This may be done more or less automatically, as in the case of India (Figure 7) prior to 2011, when tight liquidity following capital outflows forced use of the credit SF rate and so pushed market rates to the ceiling. It may also be done

[53] The overnight market rate used here is the Moscow Interbank Average Credit Rate, known as MIACR. MIACR had been around the middle of the corridor in January-February 2009 when use of the repo OMO was also substantial, but for a briefer period.

Figure 17. Central Bank of Turkey: Policy and Market Rates 2010–11



Source: Central Bank of Turkey data.

in a more discretionary way, by restricting the amount of liquidity provided in OMO lending operations—see Figure 17, for the case of Turkey.

In Turkey, the CB operates an asymmetric corridor, with a floor of 5 percent and a 7 day OMO (repo) at 5.75 percent; but if there is excessive pressure on the exchange rate, the CB may choose to undersupply liquidity via OMO (FX sales drain domestic currency liquidity) and so push the market to borrow at the ceiling of the corridor, with an overnight rate of 11.5 percent.

Corridor width

Global practice regarding the width of policy rate corridors varies substantially (Table 3).

In normal (i.e., peaceful) times, it may be argued that the corridor should be wide enough to motivate banks to manage their liquidity primarily in the market rather than using the CB as an intermediary; but not so wide that it stimulates liquidity hoarding. Corridors that are too narrow and those that are too wide will both tend to discourage interbank trading, and will tend to dampen market and yield-curve development, weakening the transmission of interest-rate based monetary policy. Theory (the so-called "Martingale property") suggests that if interbank rates can be tightly anchored on the final day of the RMP, then intertermporal arbitrage will operate to keep overnight rates in line with the policy rates on other days of the RMP (see Box 5 for the relative importance of different policy rates).

Table 3. Interest Rate Corridors in Selected Countries

50bp	Australia, Canada, Chile, Israel, Malaysia	**Symmetrical**
100bp	**Egypt**, **Tunisia**, New Zealand, Singapore, South Africa, Sweden, Switzerland, Thailand	**Not all symmetrical**
200bp (pre-crisis for ECB, Bank of England)	**Bahrain**, **Jordan**, **Morocco**, **Oman**, Czech Republic, ECB, Bank of England,[54] Hungary, India, Korea	**Mostly symmetrical**
More than 200bp	**Iraq**, **Qatar**, Bolivia, Poland, Azerbaijan, Brazil	

Source: IMF ISIMP database.

What does 'penal' mean?

It is common to argue that SF rates should be 'penal,' in order to discourage market intermediation via the CB. This indicates that the CB needs to be able to judge what "penal" implies for a given market.

In normal market conditions, important factors to take into consideration are: the size of trades, the cost of trading, and the cost of alternatives. For example, if an overnight trade yields a gain of 25bp on US$1 million, the gain is US$6.85.[55]

Box 5. Which Central Bank Policy Rate Most Influences the Interbank Rate?

The interbank/market rate is normally around one of three rates: the OMO rate, or one of the two SF rates. Intuitively, one would expect market rates to be close to the policy rate at which the market expected to conduct the bulk of its transactions with the central bank, since this is the rate which will most impact the intermediaries' balance sheets.

Market rates should be affected by the expected rate applied to transactions over a particular period, and the expected probability of use of the OMO and SF in that period.

Short-term rates (until the next monetary policy rate review) should be guided by the current policy rate structure; longer-term rates will be influenced by expectations of future changes in policy rates, as well as other factors including possible exchange rate changes and the term premium.

[54] The Bank of England, pre-crisis, narrowed the corridor on the last day of the reserve maintenance period: in the system operational from May 2006 until the financial crisis (when the BoE has effectively ended short-term operations), the SF corridor was narrowed from ±100bp during the RMP to ±25bp on the last day of the RMP.
[55] US$1,000,000 * 0.0025*(1/365) = US$6.85.

Box 5. (*concluded*)

In most markets there is either a long-term structural surplus or a shortage of central bank reserve money: the structural position does not switch frequently from one to the other. The market will therefore expect to use either (i) a liquidity providing OMO or the credit SF, or (ii) a liquidity-draining OMO or the deposit SF. The theoretical construct of the market regularly expecting a 50 percent probability that its transactions will be at the credit SF and 50 percent at the deposit SF (with implicitly zero percent probability of accessing an OMO transaction) does not match reality.

The relationship between short-term market rates and the expected use of different policy rates is not linear. If the market expects substantial use to be made of one of the standing facilities, the overnight rate will tend to move quickly from the OMO to the relevant SF rate. In practice, this means 10–15bp above the floor or below the ceiling, since it rarely makes sense for an overnight market transaction to take place exactly at the SF rate: it is easier and safer for one party to transact with the central bank at that price.

Uncertainty in expectations—the market is unclear whether it will be able to or need to transact predominantly at an OMO or an SF rate—will lead to volatility in market rates, rather than a stable rate midway between the two.

Even if it is assumed that there is zero credit and liquidity risk associated with the trade, the back-office costs of settling may well exceed such a return. In this case, it is not worth picking up the phone to do a small deal. This is even more likely to be the case if the deal is secured, for example, by repo, as the settlement costs of repo transactions (including any fees payable to the securities depository) are greater than those for unsecured interbank transactions. If there is a perception of liquidity risk (i.e., that the counterparty may not repay the funds on the due date), the return will need to be correspondingly higher. (If there is a perceived substantial credit risk, the transaction will not be undertaken at all.) There may also be a matter of convenience: if transacting with the CB has a low opportunity cost, it may be cheaper than paying for a dealing room and the middle office necessary to use the interbank or wholesale markets.

Anecdotal evidence from AE markets suggests that the pick-up on an overnight transaction needs to be at least 10bp for the transaction to be worth undertaking. This would suggest that the spread between the OMO rate and SF rates needs to be at least 25bp even in stable markets where there are minimal short-term liquidity concerns, in order to provide some incentive for interbank trades.

If liquidity management is potentially difficult, so that a lending bank has a material degree of uncertainty regarding its own liquidity management, and may assume that counterparts may also face similar uncertainties, the probability of needing to access the CB's standing credit facility will be increased. If the marginal cost of accessing this facility is too high (too "penal"), then banks have an incentive to increase liquidity buffers in order to avoid this cost, holding reserves at the CB instead of trading. (This behavior is sometimes described as 'liquidity hoarding' with the implication that it is a bad thing; but is often a rational response to market circumstances, including the CB's operational structure, rather than perverse behavior.) For instance, a pick-up of 50bp from interbank overnight lending every day of the week would be more than offset if the lending bank had to access a credit SF at 300bp over the policy rate once a week.

Too narrow

Does it matter if the corridor is too narrow, such that the market has no incentive for short-term market trades? This may be of secondary importance from an immediate policy perspective: short-term rates should still be in line with the policy goal. But if the CB intermediates the market, this will be collateral intensive, since the CB will demand collateral from borrowing banks. This places a deadweight cost on financial intermediation, and may reduce the secondary market liquidity of securities accepted as collateral. There is also a risk that the CB may be inclined to offset these costs by accepting second-rate collateral. This could result in a degradation of the quality of collateral held by the banking system as a whole.

Automatic stabilizer?

The way that a corridor system is used by a CB may vary depending on market circumstances. For example, if there is surplus liquidity because the CB is buying FX to lean against exchange rate appreciation, then the CB may be happy for short-term rates to fall to low levels, as this will encourage banks and other economic agents to invest in FX-denominated assets, and so help in leaning against appreciation. Similarly, faced with depreciation pressures a CB could undersupply reserves to the market *via its open market operations*, forcing banks to make more use of the credit SF and so putting upwards pressure on short-term rates. This could give some support to the exchange rate. In both cases, a change in market rates would be engineered without any change to the official policy rates.

But this implies that the exchange rate goal may override use of interest rates to manage domestic inflation. This is of course a legitimate policy choice, but should be undertaken consciously. Moreover, it means that decisions

on liquidity provision or sterilization (other than those intended to achieve a "neutral" outcome) have a policy content and so may complicate the management and interpretation of policy signals.

Narrowing of the corridor?

Whatever the rationale for determining the corridor width in normal times, the width should at least be reviewed in times of market stress. Since 2007, a number of CBs have reduced the corridor width temporarily, judging that there is value in reducing short-term rate volatility from heightened levels, and that while interbank markets have become dysfunctional, or at least are weaker than previously, a wider corridor would not address the main causes of problems in the interbank market (increased perception of credit risk, increased liquidity risk), since liquidity uncertainties in the market meant that market intermediation could not be relied on to manage liquidity, and the SF rates took on a new importance. This is a temporary phenomenon, but important for use during stressed circumstances.

- The U.S. Federal Reserve Bank cut the spread between its target rate (the Fed Funds Rate) and the credit SF (the Primary Credit Facility (PCF), known as the Discount Window) from 100bp to 50bp in August 2007, and further reduced it to 25bp in March 2008.[56] It was increased back to 50bp in early 2010 as interbank pressures eased (in part because of the large volume of liquidity injection arising from the Quantitative Easing program). Published data indicate that when the spread was increased to 50bp, banks made less use of the PCF and increased the volume of interbank transactions. Note that in the U.S. at present, 50bp represents the full width of the corridor between the rate paid on excess reserves (25bp) and the rate charged for SF credit (75bp).

- The ECB[57] operated a corridor of ±100bp from 1999 to 2008. This was narrowed to ±50bp in October 2008 in face of strong short-term rate volatility; restored to ±100bp in January 2009 but then narrowed to ±75bp as the markets failed to sustain a recovery. However, it may be argued that, since the introduction of fixed-rate, full-allotment OMO tenders in October 2008, the OMO lending rate has functioned in large measure as an SF rate, so that the effective corridor width is 75bp.

[56] The U.S. Fed was not by law permitted to pay remuneration of reserves balances until October 2008, so did not operate a corridor system until that point.

[57] As an exceptional measure, the ECB operated a narrow corridor when the euro was introduced. Between January 4–21, 1999, a narrow corridor of 50 basis points was applied between the interest rates for the marginal leading facility and the deposit facility, aimed at facilitating the transition to the new regime.

- The Bank of England introduced a narrow corridor of ±25bp in 2004, prior to the introduction of a reserves averaging system in May 2006, in order to limit overnight interbank rate volatility ahead of the introduction of the new system. Once the reserves averaging system was introduced, the corridor was widened to ±100bp as liquidity management was from that point capable of keeping actual overnight rates within a tight bank around the policy rate. The spread was narrowed to ±25bp in 2008, in the face of strong market volatility. When the policy rate was cut to 50bp in March 2009, the corridor effectively became 25bp wide, as all reserves are currently remunerated at the policy rate, so this operates as a deposit SF.

With a floor system, the width of the corridor needs to be re-evaluated, since the gap between the market rate and the credit SF is no longer half the width of the corridor, but (almost) the whole width. The cases of India and Russia (Figures 7 and 8 above) indicate that narrowing the corridor may, but does not necessarily, carry a policy rate signal. But even if there is little or no impact on the level of overnight market rates (for instance, if the ceiling is lowered by the floor is not changed), there may still be an impact on interbank trading and indirectly on effectiveness of the interest rate transmission mechanism.

Conclusions

One size does not fit all.

But we can say with some confidence that the width of the corridor matters more to the extent that (i) market participants expect to use standing facilities more, whether because there is no OMO, or because OMO and other liquidity management tools cannot be relied on to keep the balance between supply of and demand for reserve money within a sufficiently narrow band; and (ii) the width of corridor matters more if the market is segmented, such that liquidity-rich banks may not be prepared to lend to liquidity-short banks.

In addition, it seems clear that transactions in the interbank market will be discouraged if the corridor is (i) too narrow, because the benefits for liquidity-rich banks from dealing in the market do not outweigh the benefits of using the CB as an intermediary; or (ii) too wide, because the opportunity cost of being short of reserve balances motivates a "hoarding" of liquidity.

Further, it appears that, for all markets, a corridor narrower than ±25bp is too narrow to motivate interbank transactions. If the corridor is to be wider than ±100bp, the CB should be reasonably clear that a wider spread will incentivize interbank transactions (or reduce exchange rate pressures), rather than motivating hoarding of liquidity.

Different market conditions may justify varying tactical goals, and therefore the corridor width. Notably, in normal market conditions the CB may be keen to motivate the development of a nascent interbank market, and set the corridor width accordingly. But in times of severe market stress, banks may be reluctant to trade with each other at all; widening the corridor would then be unlikely to stimulate market activity and indeed may increase uncertainty. In such a situation, stabilizing short-term rates close to the policy target may justify a narrowing of the corridor temporarily.

B. Unconventional Monetary Policy and Operations

In the financial market turmoil and subsequent economic weakness over the past 3–4 years, some AE CBs have undertaken measures described as 'QE' and 'credit easing (CE)' respectively—see Box 6).[58] This section provides an overview of these unconventional policy operations; suggests why they would not be appropriate to MENA countries at present, while noting some similarities with FX purchases by MENA CBs; and finally discusses the indirect impact on some MENA countries of unconventional policies in AE countries.

The major examples of QE have been the Bank of Japan (from 2001–06), and the U.S. Federal Reserve Bank and the Bank of England from 2009 onwards. The QE policy is different to a statement that policy rates would be kept low for a (prolonged) period, although both may be undertaken at the same time. QE may, depending on maturities of securities purchased, aim to influence the yield curve out to 30 years or so; but no CB has indicated that its policy rates would be kept low for anything like this length of time.

Box 6. Definitions of Quantitative and Credit Easing

Quantitative easing, most simply put, is undertaken when very short-term interest rates[59] have reached the zero lower bound. The CB can no longer reduce very short-term interest rates, but it can commit to keeping interest rates low for a protracted period—aiming to lower the yield curve along its length. This could be done through a general indication of the policy stance ("The Monetary Policy Committee expects to maintain interest rates at the current low level for a prolonged period."); or perhaps through a specific commitment ("Interest rates will be kept at their current level until the monthly inflation figure has been above X percent for three consecutive months"). But it may be possible to send a more powerful and effective signal by undertaking the outright purchase of government securities.

[58] IMF (2009).

[59] Which the central bank would normally guide in the implementation of its monetary policy.

Box 6. (*concluded*)

Credit easing aims at reducing the spread over the risk-free yield curve (as represented by the yield curve for government securities) which is paid by private sector borrowers. This may be effected via actions which include the outright purchase of private sector securities. CE could be undertaken before the zero lower bound is reached.

Both QE and CE are distinguished from the normal (pre-crisis) operations of most AE CBs, in that they are asset-driven. Pre-crisis, AE CB balance sheets were mostly liability-driven: the economy had a certain demand for the CB's liabilities—currency in circulation (CIC) and commercial bank reserve balances at the CB; and the CB could more or less choose which assets it took on as the counterpart to these liabilities. But with QE, the scale of asset purchases may become dominant, such that the liabilities created as a counterpart to these asset purchases may exceed the economy's demand for them. The creation of surplus reserves is not normally sterilized. Although a substantial volume of reserves surplus to demand will depress short-term interest rates and in other circumstances could interfere with monetary policy, this is not an issue at the zero lower bound. Indeed, the intention is precisely to depress interest rates.

A small number of AE CBs have engaged in policies which lead to balance sheet expansion via the purchase of FX—notably Switzerland. These actions differ from QE in that the intention is to influence the exchange rate (to lean against appreciation) rather than the term yield curve; both, however, constitute monetary easing.

EM CBs have not undertaken QE policies. Two main reasons explain this. First, none has reached the zero lower bound in its policy rates, though some have come very close.[60] As long as policy rates can be adjusted downwards, there is no obvious justification for QE policies. Perhaps as important, the exchange rate is a more important factor in policy considerations for most EM CBs, than for the few AE CBs which undertook QE; and for many, CB operations are geared towards managing the impact of a structural excess of reserve balances. Asset purchases which would increase these balances would go in the wrong direction. For exchange rate targeters, regular purchases of FX when there are current or capital account inflows have some parallels with QE (as noted above, in the case of Switzerland), in that they result in an expansion of commercial bank reserve balances which, other things being

[60] If policy rates go as low as 50bp or less, most central banks judge that the effective zero lower bound has been reached.

equal, depress market interest rates. But, as with Switzerland, the goal is not to depress the whole of the yield curve, but to support an exchange rate policy.

Many EM CBs, particularly in 2008–09, experienced capital outflows which put pressure on their exchange rates; and this was often associated with a reduction in balance sheet size as the CB sold FX reserves with a counterpart drain of (surplus) commercial bank reserve balances. While some EM CBs have in this situation undertaken outright purchases of government securities (e.g., India, Indonesia), this has been as a liquidity management operation, to ensure that commercial bank balances are not too low (which would provoke an unwanted increase in short-term interest rates), rather than as a form of yield-curve manipulation.

Some EM CBs have engaged in monetary easing via a reduction in (short-term) policy interest rates, though without hitting the zero lower bound. Others, by contrast, have kept policy rates on hold or, more recently, even tightened policy rates in the face of a resurgence of inflation.

QE in AE countries has however had an indirect impact on some EM countries, including some MENA countries. Investors in AE countries, having sold government securities (medium to long term, credit-risk free assets) to the CB, now have a sight deposit at a commercial bank; and in addition to credit risk, this may have a very low or even zero return. In some cases, investors seek to move into assets with a positive yield, including investing in good quality assets in EM countries. Some EM (including MENA) CBs then need to manage the consequent FX inflow. Other things being equal, this will depress short-term interest rates and may, statistically, depress the LTD ratio of the commercial banks (see Section III.C for an illustrative example of the effects on LTDs of the CB buying FX).

C. Low Loan-to-Deposit Ratios: Are Banks Lazy?

While deposit growth has continued, both AE and EM economies have experienced a slow-down in credit growth. In some cases credit growth has been negative in real terms over the past few years. At the same time, in many countries banks have expanded their holdings of government securities and/or reserve balances at the CB. Mechanically, this means that loan-to-deposit ratios have tended to fall. Does this mean that banks are being lazy, investing deposits in risk-free assets rather than engaging in credit extension that would support a resumption of economic growth?

Low credit growth undoubtedly reflects, in part, an increased risk aversion on the part of the banks and in some cases a lower level of capital (because of losses incurred) as well as increased credit risk. It also reflects reduced loan demand (as discussed earlier in Section II.E): in the face of weak growth, and

prospects that global economic weakness may persist for some time, potential borrowers are—understandably—taking a more cautious approach to taking on new debt. Others, quite simply, can no longer afford it.

But these issues are somewhat separate to commercial bank holdings of government securities or CB balances. Indeed, in terms of causality it may be that government borrowing (the budget deficit to the extent the banking sector intermediates between government borrowing and the private sector savings which finance it) and CB actions (notably QE, or in the case of MENA CBs, a decision not to sterilize fully the impact of any net increase in FX reserves) are an important cause of low loan to deposit ratios, rather than a symptom of reluctance to lend.

Some indicative balance sheets below show the effect on the CB and commercial banking system balance sheets of (i) additional government borrowing; (ii) quantitative easing (or monetary financing); and (iii) unsterilized CB purchases of FX.

An economy holds more government debt because the government is running a budget deficit which it needs to finance, not because the banks are lending less money to the private sector. (Increased government borrowing may push up domestic interest rates, and could also create some uncertainties about future economic growth, both of which could depress loan demand.) The counterpart to government consumption being higher than its income, is that the non-government sector needs to save more than its income. To the extent that the savings are intermediated via the banking system, this will appear as higher deposits with the banks, matched by higher bank holdings of government securities—commercial bank balance sheets expand.

If this government borrowing were not intermediated via the banking system, bank balance sheets would be unchanged. It is not at all clear that credit to the private sector would be higher, in absolute terms, although it would be a higher proportion of a smaller balance sheet.

In balance sheet terms, when the government spends money—paying salaries, purchasing goods and services—the commercial bank accounts of its staff and suppliers are credited; and funds are transferred from the government's account at the CB to the accounts of commercial banks. In the tables which follow, the first tables consider the impact on the CB and commercial bank balance sheets of an increase in government borrowing of 50, funded either (a) by the non-bank sector (Table 4) or (b) by the banks (Table 5). It is assumed that government expenditure generates some additional demand for cash in circulation (equivalent to 20 percent of the additional government expenditure) in the economy; and that banks want to maintain their reserve balances at the CB unchanged (CB lending to banks increases by 10, to match increased cash demand).

Table 4. Government Borrowing, Funding by Non-Banks

Central Bank Balance Sheet	**Start**	**Step 1**	**Step 2**	**Post**		**Start**	**Step 1**	**Step 2**	**Post 1**
Assets					**Liabilities**				
NFA	150			150	CIC	50		10	60
Government Securities	-			-	Commercial Bank Accounts	50	50	(50)	50
Loan to Banks	-		10	10	Government Account	50	(50)	50	50
Total	150			160		150			160
Commercial Banks' Balance Sheets									
Assets					**Liabilities**				
Central Bank Account	50	50	(60)	40	Customer Deposits	200	50	(60)	190
Loans to Customers	100			100	Loan from Central Bank			10	-
Government Securities	50			50					-
Other	20			20	Capital	20			20
Total	220			210		220			210
Loan-to-Deposit Ratio	**50%**			**53%**					

Here the LTD increases marginally, as deposits fall: government spending initially increases deposits in banks, but the additional funds are used to buy government securities, and the spending additionally increases demand for currency in circulation. But the increase in the LTD reflects a smaller balance sheet: loans to customers do not increase.

Comparing the above two tables, it can be seen that when government borrowing is intermediated by banks—non-bank deposits (liabilities) increase, matched by holdings of government securities—the LTD ratio falls; but this reflects an increase in the balance sheet total, not a change in loans to customers.

In Table 6, there is no change in government activity, but there is a FX inflow. In Step 1, banks purchase 50 in FX from customers, whose deposit balances then increase. In Step 2, the CB buys the FX from the banks, whether to stabilize the exchange rate or allow the banks to keep unchanged net open FX positions (or both). But the resultant increase in commercial bank reserve balances at the CB is not sterilized. In this case, the LTD falls because commercial bank balance sheets increase. There is no change to the absolute level of customer loans.

Table 5. Government Borrowing Funding by Banks

Central Bank Balance Sheet	Start	Step 1	Step 2	Post		Start	Step 1	Step 2	Post
Assets					**Liabilities**				
NFA	150			150	CIC	50		10	60
government securities	-			-	Commercial bank accounts	50	50	(50)	50
Loan to banks	-		10	10	Government account	50	(50)	50	50
Total	**150**			**160**		**150**			**160**
Commercial Banks' Balance Sheets	**Start**	**Step 1**	**Step 2**	**Post**		**Start**	**Step 1**	**Step 2**	**Post**
Assets					**Liabilities**				
Central Bank Account	50	50	(50)	50	Customer deposits	200	50	(10)	240
Loans to Customers	100			100	Loan from central bank			10	10
Government Securities	50		50	100					-
Other	20			20	Capital	20			20
Total	**220**			**270**		**220**			**270**
Loan-to-Deposit Ratio	**50%**			**42%**					

Table 6. Central Bank Purchases Foreign Exchange

Central Bank Balance Sheet	Start	Step 1	Step 2	Post		Start	Step 1	Step 2	Post 1
Assets					**Liabilities**				
NFA	150		50	200	CIC	50			60
Government Securities	-			-	Commercial Bank Accounts			50	100
Loan to Banks	-			-	Government Account	50			50
Total	**150**			**200**		**150**			**200**
Commercial Banks' Balance Sheets									
Assets					**Liabilities**				
Central Bank Account	50		50	100	Customer Deposits	200	50		250
Loans to Customers	100			100	Loan from Central Bank				-
Government Securities	50			50					-
Other	20			20	Capital	20			20
FX		50	(50)	-					
Total	**220**			**270**		**220**			**210**
Loan-to-Deposit Ratio	**50%**			**40%**					

Table 7. Quantitative Easing

Central Bank Balance Sheet	Start	Step 1	Midpoint	Step 2	Post		Start	Step 1	Midpoint	Step 2	Post
Assets						**Liabilities**					
NFA	150		150	-	150	CIC	50		50		50
Government Securities	-	50	50	50	100	Commercial Bank Accounts	50	50	100	50	150
Loan to Banks	-		-	-	-	Government Account	50		50		50
Total	**150**		**200**		**250**		**150**		**200**		**250**
Commercial Banks' Balance Sheets											
Assets						**Liabilities**					
Central Bank Account	50	50	100	50	150	Customer Deposits	200	-	200	50	250
Loans to Customers	100		100		100	Loan from Central Bank			-		-
Government Securities	50	(50)	-		-				-		-
Other	20		20		20	Capital	20		20		20
FX			-		-					-	-
Total	**220**		**220**		**270**		**220**		**220**		**270**
Loan-to-Deposit Ratio	**50%**		**50%**		**40%**						

Table 8. Monetary Financing

Central Bank Balance Sheet	Start	Step 1	Step 2	Step 3	Post		Start	Step 1	Step 2	Step 3	Post
Assets						**Liabilities**					
NFA	150			(20)	150	CIC	50		10		60
Government Securities	-	50			100	Commercial Bank Accounts	50		40	50	70
Loan to Banks	-				-	Government Account	50	50	(50)		50
Total	**150**				**250**		**150**				**180**
Commercial Banks' Balance Sheets											
Assets						**Liabilities**					
Central Bank Account	50		40	(20)	70	Customer Deposits	200	-	40	(20)	220
Loans to Customers	100				100	Loan from Central Bank					-
Government Securities	50				50						-
Other	20				20	Capital	20				20
FX		-	-	-	-						-
Total	**220**				**240**		**220**				**240**
Loan-to-Deposit Ratio	**50%**				**45%**						

In Table 7, in Step 1 the CB buys government securities from the commercial banks (Quantitative easing); and there is no change to the commercial banks' balance sheet totals or to the LTD ratio ('Midpoint' balance sheets). In Step 2, the CB buys government securities from the non-bank sector (also Quantitative Easing), increasing deposits at banks. Mechanically, this lowers the LTD ratio but, as in the earlier tables, with no change to the actual level of bank lending to customers. There is no change in the economy's demand for currency in circulation, as there has been no additional government expenditure to stimulate demand.

In Table 8, instead of monetary financing, the CB engages in monetary financing, lending 50 to the government. Customer deposits at commercial banks increase as the government spends the money, and both the CB and commercial bank balance sheets increase correspondingly. In this example, it is assumed that some of the government expenditure stimulates additional demand for currency in circulation (as in Tables 4 and 5), and that some demand feeds through to imports, so that the CB sells part of its FX reserves to stabilize the exchange rate (and/or allow banks to maintain their net open FX position as customers buy FX from the banks). In this case, the reduction in the LTD ratio is smaller than in Tables 6 and 7, because banks deposits fall when customers by the FX. Some MENA countries have seen this combination of monetary financing of government coupled with a drawdown in FX reserves.

If, then, a fall in the loan to deposit ratio is a consequence of government and CB policy and actions, it would appear unfair to accuse commercial banks of laziness. It may be that some banks are now over-cautious in their approach to credit extension—though this is something banking supervisors may welcome (Section II.E highlights similar precautionary extension of credit in MENA countries). But even then, a high level of government indebtedness and concerns about the future consequences of the current monetary policy stance may be factors in this reluctance by the banks to lend, and corporate to borrow.

CHAPTER

IV Changes to Balance Sheets in Advanced Economies and Regional Central Banks: Before and During Crisis

A. MENA Central Bank Balance Sheets

For most CBs globally, the most important balance sheet items are foreign assets, lending to government (including holdings of government securities) and lending to banks (including any Lender of Last Resort (LOLR) credit) on the asset side; and on the liability side Currency in Circulation (CIC), deposits from banks, deposits from government and, in some cases, securities issued. Table 9 below shows the balance sheet structure for MENA CBs on average.[61]

An alternative presentation of the same data (Table 10) breaks the balance sheet down into three parts: (i) autonomous factors—those which the CB cannot directly influence; (ii) monetary policy operations—undertaken in order to adjust the impact of changes in autonomous items on commercial bank reserve balances; and (iii) commercial bank reserve balances. These broad categorizations may not hold in every case. For instance, some governments move balances between the CB and commercial banks in order to support the CB's liquidity management. However, the presentation should give a reasonable indication of the respective sizes of the key autonomous factors and monetary operations; and the size of the commercial bank free reserves compared to the CB balance sheet total.

A common feature of MENA CB balance sheets is that FX assets form the dominant part of assets, with a counterpart in liquidity draining operations (such as term deposits from commercial banks, or the issuance of CB bills) or, in some cases, simply excess free reserve balances.[62] Most CBs find that

[61] This comprises a simple average of the ratios of balance sheet composition, for the most recent available date, for the central banks of Algeria, Egypt, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, West Bank and Gaza, Qatar, Saudi Arabia, Syria, Tunisia, and the UAE.

[62] It is not always possible to tell from the balance sheet what percentage of commercial bank balances at the central bank comprise required reserves, and what percentage is free reserves—particularly where reserve averaging is used.

Table 9. MENA Central Bank Balance Sheets (Ratio)

MENA Average	
Assets	
Foreign Assets	70
Lending to Government	10
Lending to Banks	9
Other Items	11
Total	**100**
Liabilities	
Currency in Circulation	28
Bank Deposits: Current Accounts	20
Bank Deposits: Other Accounts	14
Securities Issued	–
Government Accounts	14
Foreign Liabilities	1
Other	23
Total	**100**

Source: Central Bank data.

Table 10. MENA Central Bank Balance Sheets, Alternative Presentation

Assets		**Liabilities**	
Autonomous Factors			
Foreign Assets	70	Currency in Circulation	28
Lending to Government	10	Government Accounts	14
Other Items	11	Foreign Liabilities	1
		Other	23
Monetary Policy Factors			
Lending to Banks	9	Bank Deposits: Other Accounts	14
		Securities Issued	–
Target		Bank Deposits: Current Accounts	20

Source: Central Bank data.

the investment return on FX reserves is lower than the cost of draining domestic liquidity. If liquidity draining operations—other than unremunerated reserve requirements—are large in relation to non-interest bearing liabilities of the CB (currency in circulation and commercial banks' current accounts), this points to potential pressures on the CB's balance sheet and profit and loss.

Grouping the balance sheets by major oil producers (MENA-OX), and oil importing countries (MENA-OM), it is clear that MENA-OX CBs tend to hold a higher ratio of FX assets to total; and on the other side of the balance sheet, higher deposits from governments (oil revenues may mean the government can afford to hold higher cash balances; and some of these balances may be FX denominated) and more capital (Tables 11 and 12).

Within this general picture, there are of course some wide variations. Country-by-country data are provided in (Table 13). In most cases, the overall structure of a CB's balance sheet does not show much change from month to month; but on occasions, and particularly when the economy or the financial sector is undergoing a large shock, the CB's balance sheet will reflect this.

Table 11. MENA OX Central Bank Balance Sheets

Assets		Liabilities	
Autonomous Factors			
Foreign Assets	82	Currency in Circulation	20
Lending to Government	7	Government Accounts	19
Other Items	6	Foreign Liabilities	0
		Other	32
Monetary Policy Factors			
Lending to Banks	5	Bank Deposits: Other Accounts	10
		Securities Issued	–
Target		Bank Deposits: Current Accounts	19

Source: Central Bank data.

Table 12. MENA OM Central Bank Balance Sheets

Assets		Liabilities	
Autonomous Factors			
Foreign Assets	58	Currency in Circulation	36
Lending to Government	13	Government Accounts	10
Other Items	16	Foreign Liabilities	2
		Other	13
Monetary Policy Factors			
Lending to Banks	12	Bank Deposits: Other Accounts	17
		Securities Issued	–
Target		Bank Deposits: Current Accounts	22

Source: Central Bank data.

Table 13. MENA Central Bank Balance Sheets by Country

	Algeria	Egypt	Iraq	Jordan	Kuwait	Lebanon	Morocco	Oman	Palestine	Qatar	Saudi Arabia	Syria	Tunisia	United Arab Emirates
Assets														
Foreign Assets	92	42	95	83	99	45	75	97	78	92	67	18	67	27
Lending to Government	0	51	5	12		0	2		0		5	29		41
Lending to Banks		15		4		2	20	0		6	26	23	23	0
Other Items	8	(8)	0	1	1	53		3	22	2	1	31	11	32
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Liabilities														
Currency in Circulation	17	48	46	30	19	3	72	20		12	4	53	44	22
Bank Deposits: Current Accounts	6	19	39	52	3	4	11	23	63	9	19		1	37
Bank Deposits: Other Accounts	0	6		1	26	68			27		9	19		33
Securities Issued														
Government Accounts	38	23	3	7	9	8	2	18		27	40	23	10	
Foreign Liabilities	0	2		1	1		5	2				0	5	
Other	38		12	10	43	16	11	37	10	52	28	5	40	8
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Central Bank data.

The balance sheets of the CBs in Egypt, Morocco and Tunisia have exhibited the most notable change since early 2011 (earlier in the case of Morocco). In each case, the main trend is a reduction in the proportion of FX assets, as some reserves have been used to stabilize the exchange rate in difficult circumstances, offset by a change in net lending to banks. This has typically involved initially a drawdown of excess reserves,[63] and then as the excess has disappeared, the CB has introduced, or increased, lending to the banks. As long as this lending is conducted as an OMO (rather than as LOLR finance), the CB's monetary policy interest rates tend to become more effective. This rebalancing of the CB's balance sheet may, at least to this extent, be seen as a positive side-effect.

B. Comparison of MENA and Advanced Economy Central Bank Balance Sheets

For comparative purposes, the figures for four AE CBs are shown in Table 14.[64]

Table 14. Advanced Economies' Central Bank Balance Sheets Pre- and PostCrisis (As percent of total balance sheet)

AE Pre-Crisis		AE Current	
Assets		**Assets**	
Foreign Assets	7	Foreign Assets	5
Lending to Government	40	Lending to Government	65
Lending to Banks	32	Lending to Banks	24
Other Items	21	Other Items	6
Total	100	Total	100
Liabilities		**Liabilities**	
Currency in Circulation	59	Currency in Circulation	31
Bank Deposits: Current Account;	16	Bank Deposits: Current Accounts	51
Bank Deposits: Other Accounts	0	Bank Deposits: Other Accounts	0
Securities Issued	0	Securities Issued	0
Government Accounts	2	Government Accounts	1
Foreign Liabilities	1	Foreign Liabilities	1
Other	21	Other	16
Total	100	Total	100

Source: Central Bank data.

[63] For example, reserve balances held by commercial banks at the central bank in excess of the demanded level, which in turn is normally required reserves plus a small buffer.

[64] The four are the U.S. Federal Reserve Bank, the ECB, the Bank of Japan, and the Bank of England, with data for end-2007 (pre-crisis) and mid-2012 (the most recent available).

Comparing AE CB balance sheets pre-crisis with those of MENA CBs, it is notable that foreign assets were typically a much smaller part of the balance sheet (in part reflecting the floating exchange rate policies of those CBs), while lending to banks and CIC were much higher than for MENA CBs (by three times and two times, respectively).

The striking changes in proportions comparing AE CB balance sheets pre-crisis and now are the increase in 'lending to government' (i.e., secondary market purchases of government securities) on the asset side, and increase in bank reserve balances on the liability side of the balance sheet. Demand for CIC has grown, but not nearly as fast as the balance sheets have grown as a result of QE (U.S. and U.K.) and expanded lending for financial stability purposes (ECB).[65] While lending to government has increased substantially in volume terms in the U.S., this part of the asset portfolio was dominant pre-crisis. Perhaps more significant is that holdings of government securities, for the group as a whole, now exceed CIC. Some CBs—notably in the U.S., Japan and the U.K.—had aimed to limit outright holdings of government securities to a margin below CIC, prior to the crisis.

[65] The Federal Reserve Bank's balance sheet is three times as large as pre-crisis; the ECB's is 2.5 times as large; and the Bank of England's nearly four times as large. The Bank of Japan's balance sheet has grown only 40 percent over this period, as quantitative easing in Japan began much earlier.

CHAPTER

V Maturity of Central Bank Securities

A. Objectives of Issuing Central Bank Securities

CB securities are one of the monetary policy instruments used primarily to absorb liquidity in the banking system, when there is a structural (or temporary) surplus of reserve money.[66] In a case where supply of reserve money exceeds its demand, CBs which use interest rates as a policy tool need to withdraw the excess amount in order to manage liquidity conditions and so achieve the operating target of monetary policy.[67] A tool for draining liquidity—such as the issuance of CB securities—is thus crucial for the conduct of monetary operations and effective liquidity management; this in turn helps enhance monetary transmission, leading to efficient implementation of monetary policy, particularly within an IT framework.

An increasing number of CBs have issued debt securities over the past few years. In emerging economies, continued capital inflows may prompt CBs to intervene in the FX market to curb exchange rate volatility or to slow down the appreciating trend. These CBs may then sterilize a major portion of domestic liquidity injection by CB securities. As for the developed countries where the financial systems were usually in a shortage of liquidity, the so-called quantitative/credit easing measures implemented in an aftermath of the 2008 financial crisis have in some cases led to a large volume of excess reserves in the financial system. Some CBs started to issue, or adjusted the issuance of, debt securities to absorb an amount of reserves deemed excess in the short run, for instance where market dysfunction meant that the CB had to intermediate between banks which were short of liquidity and those which held the excess reserve balances.

[66] Commercial banks hold balances at the central bank ("reserve money") to meet reserve requirements, and may hold additional balances for transactions or precautionary reasons. Balances in excess of the reserve requirement plus any additional demanded reserves are defined as excess reserves.

[67] If a central bank is operating a "floor" system, it could use the remuneration rate on excess reserves to steer short-term market rates; but this tends to weaken incentives for market development.

There are CBs which issue debt securities for other purposes. For example, the Bank of England issued FX securities to fund its foreign currency reserves, while Bank Negara Malaysia issued its own securities to raise funding for bank recapitalization after the 1997 financial crisis. In addition, some CBs, for instance, the Hong Kong Monetary Authority (HKMA), Bank of Korea (BOK) and Bank of Thailand (BOT), have designed an issuance program of CB securities in a way to help support development of domestic money and bond markets. These CBs announce a regular auction calendar in advance to ensure availability of certain issues and amounts in the market. They also emphasize setting up transparent and market-based auction procedures as well as establishing market infrastructures and entities that foster efficient trading, payment and settlement. In specific cases, the HKMA issues Exchange Fund Bills and Notes with maturities ranging from 91 days to 15 years to establish a reliable benchmark yield curve. The maturity of the BOK's Monetary Stabilization Bonds is limited to a maximum of two years in order not to collide with the government securities. Similarly, the BOT bills and bonds had different maturities with those of the government, as the CB aimed to provide a variety of debt instruments to boost market activity but without interfering with government debt issuance.

B. Comparing Central Bank Securities with Other Instruments

CB securities offer a number of advantages over certain other monetary policy tools. These include flexibility in terms, and independence from Ministry of Finance issuance plans. They also provide market participants with a fair investment opportunity, and better support market development and liquidity management than term deposits at the CB. This way, the issuance of CB securities helps stimulate the development of interbank money and bond markets.

First, CBs have more flexibility in choosing issuance size and maturity structure, than when using repurchase agreements or relying on the primary issuance of government securities. The issued amount of CB securities is neither constrained by the size of collateral assets in the CB's portfolio nor depends upon the government's preferences, unlike the cases of repurchase agreements and reliance on government securities primary issuance, respectively. Notwithstanding, CBs need to take into account the amount of excess liquidity and state of development of the domestic financial markets. CBs can also choose to issue debt securities in certain maturities, generally within the shorter tenors of the yield curve, provided that these are consistent with market preferences and do not collide with government securities issuance.

Second, transparent and market-based issuance procedures, together with the potential for secondary market liquidity, provide fair chances to hold

CB securities among banks and possibly also other market participants. Institutions with excess liquidity can decide whether they will invest in CB securities, and in which tenors. This allows an equitable and market-driven distribution of liquidity and CB securities across the financial system, which helps support the pricing process and market mechanisms, especially in countries with underdeveloped financial markets. Direct monetary instruments such as reserve requirements and credit controls are, by contrast, more bluntly imposed on financial institutions.

CB securities are marketable. Given somewhat developed money and secondary bond markets, banks can use CB securities as collateral in repo transactions or sell outright in the secondary bond market. This provides securities' holders with flexibility in financing options in the future. By contrast, term deposits at CBs are illiquid.

An appropriate design of the securities issuance program helps bolster financial market development. Consistent and predictable auction schedules coupled with regular communication with the market participants allow for better planning of investment strategies, which could lead to a broader investor base and subsequently higher trading liquidity. Besides, the pricing of CB securities can be used to form a risk-free yield curve.

Notwithstanding the aforementioned advantages, CB securities can potentially pose some risks on the CB's financial position. With their nature of relatively long maturities and the upward-sloping yield curve, costs of issuing CB securities tend to be higher than those of short-term monetary instruments.

Furthermore, CB securities may fragment the public sector debt market if CBs do not coordinate closely with the government in planning the issuance of public sector debt securities. Detailed discussion on this issue is provided in the following section.

C. Designing the Maturity Structure

Three main issues to be considered when designing the maturity structure of CB securities are:

1. **Primary objectives of monetary operations:** CBs conduct monetary operations mainly to implement monetary policy, manage liquidity conditions and support market functioning.

    - The effective implementation of monetary policy requires that monetary operations and instruments be designed to steer market rates in line with an operating target. In a case where a CB uses short-term interest rates as its operating target, the regular keynote operations are

typically conducted in the short tenors; that is, those with up to 14-day maturities. Short-term securities should therefore be issued to help steer short-term market interest rates.

- Both short-term and long-term instruments can be employed to manage liquidity conditions, depending on the size and nature of the system's liquidity positions. Longer-maturity securities are normally used to address a structural liquidity surplus stemming from, for example, large and sustained capital inflows and a banking system bail-out. Short-maturity securities are generally used to absorb temporary or seasonal surplus liquidity.

- To support market functioning and strengthen monetary transmission, longer-dated securities can be issued to convert a structural surplus of liquidity into a deficit. This creates demand for reserve money which helps strengthen the policy rate transmission.

2. The central bank's desired liquidity profile

- The maturity structure of monetary instruments has implications on the volume and frequency of monetary operations. In principle, CBs need to conduct a substantial volume of monetary operations, in relation to size of the banking system's balance sheet, at any given time and to operate in the market at sufficiently frequent intervals in order to have significant influence in the market. Insufficient frequency and size may weaken the impact of policy rates, while excessive frequency and size may disrupt market functioning. By shortening/lengthening the maturity profile, CBs may increase/reduce the amount and frequency of their market operations.

- To limit the potential overhang of liquidity in order to mitigate exchange rate pressure or prevent the use of liquid assets, CBs can lengthen the maturity structure when withdrawing liquidity from the market.

3. Market preference on certain maturities

- Market preference particularly matters when CBs have to drain surplus liquidity. Unlike where there is a liquidity shortage, banks can choose not to participate in liquidity-draining operations including an auction of CB securities and leave the excess reserves in their current accounts at the CB, if they do not like the instruments and maturities on offer. CBs should carefully analyze the desired liquidity profile of the banking system in order to manage the market liquidity effectively.

There are additional factors relating to the issuance of CB securities.

The maturity of CB securities should be decided primarily in order to achieve efficient liquidity management. It follows that CBs may have to fulfill market appetite at certain maturities in order to absorb a target level of liquidity. There is also an implication that longer-term securities are more likely to be issued when excess liquidity becomes increasingly larger and lasts longer.

Coordination with government securities issuance is important. Maturity profiles should be structured to meet the respective needs of government debt management and CB liquidity management. Normally, CBs focus on the short-end of the yield curve, while the government uses the longer-end. When both agencies issue in a similar segment of the yield curve, there is a case that CB issuance should follow that of the government (e.g., being undertaken the day after government issuance) as the government needs to borrow regardless of market liquidity, whereas the CB's needs depend on (residual) market liquidity.

CBs should take this opportunity to contribute to market development as long as it does not compromise the primary goal of efficient liquidity management.

- Basic features of CB and government securities should be harmonized to avoid fragmenting the market.
- Securities should be fungible to increase effective tradable size.
- An advance issuance calendar should be published.
- Product diversification could also be developed to tap new market segment or when market appetite for currently available products seems to be saturated (although there may be a tension between product diversification on the one hand, and the secondary market liquidity benefits of a smaller number of homogenous securities).

D. Other Considerations

CB securities were sold mainly through multiple-priced auctions and issued with a fixed coupon. Some of the medium-to long-term CB securities offered floating-rate coupons or yields that were indexed to interbank offer rates, or economic variables such as inflation or the exchange rate.

Malaysia and *Thailand* issued up-to-3 year floating-rate bonds that were linked to KLIBOR and BIBOR fixings, respectively. *Peru* auctioned a series of 2-month and 3-month bills which was indexed to the market exchange rate. *Chile* issued inflation-indexed bonds with maturities up to 20 years.

E. Cross-Country Comparison

Around one-third of CBs issue their own securities, mostly to drain excess reserves (from a survey covering 121 CBs as of end-2010). In particular, some AE CBs such as *New Zealand* and *Sweden* started to issue securities to sterilize liquidity injection to the banking system during the 2008 financial crisis, whereas a number of emerging market CBs, for example, *Korea*, *Thailand,* and *Indonesia*, have increased the issuance amount to absorb large and sustained capital inflows.

Some CBs issued their debt securities for specific policy goals: for instance, to sterilize the banking sector's recapitalization in *Malaysia*, or to finance FX reserves in the *United Kingdom*.

In addition to the abovementioned countries, several other CBs across different regions of the world had issued securities as for example, *Azerbaijan*, *Georgia*, *Russia; Afghanistan*, *Iraq*, *Jordan*, *Lebanon*, *Oman*, *UAE*; *Vietnam*; *Costa Rica*, *Dominican Republic*; *Ghana* and *Mauritius* (Table 15).

Most of the CBs issued securities with maturities of no longer than one year. A few CBs issued securities with very short tenors to fine-tune their liquidity management, while others auctioned longer-term securities which reflect largely a high volume of surplus liquidity needing to be absorbed.

- *Poland* and *Indonesia* issued up-to-7 day CB bills to help manage liquidity in the short-run and withdraw excess reserves that could stem from volatile portfolio inflows or unexpected government spending.

- *Sweden* has issued its 7-day certificates on a weekly basis since October 2008 in order to manage liquidity surplus stemming from crisis-related loans to banks. Between June—October 2010, the certificates with maturities of up to 2 months were issued as a complimentary measure.

- *New Zealand* issued bills with maturities ranging from 1 to 15 months during November 2008—December 2009 to withdraw excess liquidity arising from the use of Term Auction Facility (TAF).

- *Hungary*, *South Africa*, *Georgia*, *Russia* and *Indonesia* only auctioned CB bills with less-than-1 year maturities, whereas *Korea* and *Malaysia* extended the maturities to 2 and 3 years, respectively.

- *Costa Rica*, *Dominican Republic* and *Thailand* have maximum maturities of 7 years, while *Chile* stretched it out to 20 years.

Table 15. Examples of Central Bank Securities in 2010

Countries	Range of Maturities	Auction Methods	Counterparties
Poland	7 days–9 months	Fixed-rate (NBP's reference rate)	Banks, Bank-guarantee funds, Money market dealers
Hungary	14 days	Fixed-rate (the policy rate)	Same as OMOs
South Africa	28 and 56 days		
Georgia	3 months	Multiple-Priced (Maximum Bid Rate by NBG)	Commercial Banks
Russia	1–6 months		
Indonesia	7 days–9 months		
Peru	2 months–1 year	Multiple-priced	Banks, microfinance inst. insurance co., pension funds, mutual funds, investments funds, deposits insurance funds, public inst.
Korea	14 days–2 years	Fixed-rate	Commercial banks and Securities companies
Malaysia	44 days–3 years	Multiple-priced	All financial institutions
Thailand	14 days–7 years	Multiple-priced auctions for wholesale, Fixed-price tender for retail	Banks and institutional investors for wholesale, Individual for savings bonds
Dominican Republic	1 months–7 years	Multiple-priced	
Costa Rica	1–15 years	Multiple-priced	Stock Brokers only
Chile	2–20 years	Uniform-priced	Commercial banks, pension funds, insurance co., mutual fund and stock brokers.

Source: Relevant central banks.

Summary

Empirically, CBs determine the maturity structure of debt securities based primarily on needs to absorb surplus liquidity. That is, longer-dated debt instruments are issued to withdraw a structural surplus of long-term nature. A number of CBs also choose to issue certain maturities and design debt issuance plans in order to establish a pricing mechanism and stimulate trading in the money and bond markets. There is in fact no best practice for determining the maturity profile, and a prescription for one country might not work out successfully in another. CBs therefore have to make a decision by taking into consideration various factors in their own jurisdiction, such as nature and amount of surplus liquidity, the existing monetary operations framework and state of market development.

CHAPTER

VI Collateral: Range, Opportunity Cost, Liquidity, and Pricing of Liquidity Risk

Most CBs are nowadays required to take collateral when granting credit to banks. In this respect, this section examines the state of play at CBs in the MENA region as well as the operational implications of this requirement.

A. State of Play in the MENA Region

Appendix III provides some relevant excerpts from the Statutes of MENA CBs which regulate their responsibilities in the field of collateral.[68] Accordingly, these Statutes may impose the following tasks on the CB:

- definition and implementation of the collateral framework for CB credit to the banking system (Egypt, Jordan, Kuwait, UAE);
- definition of collateral protection for certain development purpose loans to the financial sector (within certain limits) (Kuwait); and
- definition of collateral for Emergency Liquidity Assistance purposes (Kuwait) (hereafter "ELA").

In general, these Statutes leave the implementation aspects to the decision-making bodies of the CB, but there may be exceptions, along the following lines:

- the Statutes may define the eligible assets (Jordan to some extent, Palestine Monetary Authority (PMA)) and the haircut (Oman);

[68] Descriptions follow the country responses to the IMF—Monetary and Capital Markets Department's questionnaire on "Information System for Instruments of Monetary Policy (ISIMP)," (2010).

- they may forbid the acceptance of certain instruments as collateral, especially equity instruments (Bahrain); in one Statute (Sudan), outright purchases of shares are allowed if they support economic development—this is then an exception to the practice that the universe of eligible outright assets should be a subset of the eligible collateral assets;

- they may allow uncollateralized emergency lending assistance (ELA) (UAE—uncollateralized loans of 7 days to maturity) and the acceptance of real estate as collateral for ELA (and the seizure of real estate in case of unwinding of the bank) (Jordan, UAE);

- they may regulate in some details the financial investment and margining conditions if derivatives (i.e., non-monetary) business is involved (Bahrain).

The above is a mere illustration of the relevant concerns CBs may have regarding the setting of collateral, including under conditions of liquidity surplus in the banking sector.

B. Objectives

The objectives of the collateral framework differ according to the prevailing general financial conditions of the economy. "Normal times" and "crisis times" can be identified.

Normal times. In normal times, the objective should be twofold, as follows:

(a) Financial protection of the CB: loss only in case of double default (of counterparty and of collateral issuer).

(b) Sufficiency of collateral, allowing all counterparties to access CB credit irrespective of their business model, their concomitant regular liquidity needs, and if applicable, the respective liquidity drain of the CB.

There may be some trade-offs between (a) and (b), at least measured by the very tight yardsticks of normal times (the acceptable financial risk being small compared with crisis times). The CB can address these trade-offs using the mainstream risk management approaches (essentially based on time series analysis).

Crisis times. In crisis times, the objective should be threefold, as follows:

(a) and (b) as above, whereby the latter may become critical for those banks which have a business model that implies a wide maturity gap and thus tight liquidity, and in addition:

(c) Financial stability: a broad range of eligible assets helps counterparties to access funding for assets that cannot be funded in broken markets. Eligibility becomes a necessary (but not sufficient) condition for the functioning of asset markets and the avoidance of fire sales during the crisis.

While there are trade-offs between these three aspects, there is also a strong endogeneity between them. Mainstream risk management approaches are insufficient to deal with the much more complex financial crisis environment and tend to be procyclical because their response to increased market volatility is over proportionally risk averse. Much depends on the *value* of unencumbered eligible assets which the banks may still have on their balance sheet. The dilemmas may be mitigated by (further) broadening the range of eligible collateral at the same time as the risk control measures are updated and tightened. The CB should be prepared to accept more risk, for a higher return.

This is an important reason why Statutes should leave ample room for maneuver to the Executive Board of the CB to change swiftly the collateral conditions in case of need.

C. Degrees of Operational Freedom

Legal technique: repurchase agreement versus pledge.

Operational setup: earmarking versus pooling.

Pledge allows pooling, and pooling allows overcollateralization.

Spectrum: at one end of the spectrum, a narrow approach can be conceived, with each credit earmarked with a very liquid asset as collateral (typical example until recently: central government bonds). At the other end of the spectrum, each counterparty can have a (preferably over-collateralized) collateral pool with the CB, which includes various eligible instrument classes, possibly including non-marketable assets, and serves to cover the sum of all the credits of the CB, irrespectively of whether they stem from reverse transactions, standing credit facilities or intra-day credit. Between these two, many options can be conceived, including collateral differentiation between monetary policy instruments (and intra-day credit) and different auction rates applicable to different types of collateral in tender operations or different facilities. The crisis has taught that it is recommended to have a buffer in terms of broadness of collateral, because it takes time to broaden it further (change IT, implement new processes, update legal documentation, etc.), the time required is to a certain extent commensurate with the scope of the broadening and rapid effects are needed when the crisis starts.

Overcollateralization resulting from a broad range has a cost (see below) but offers additional protection: in case of default of counterparty, the whole collateral pool should be seized and the CB should sell the assets according to their ease of sale and the prevailing market conditions. CBs do not need to carry out fire sales and should take their time to realize collateral, taking into account the need to preserve the functioning of the market. When the amount corresponding to the outstanding credit to the counterparty has been recovered, any remaining collateral can be transferred to the liquidator of the counterparty.

By way of example, Figures 18 and 19 show the large degree of operational freedom, which the Eurosystem can achieve by relying on a broad collateral framework. In particular, Figure 18 shows that, by accepting government bonds, senior unsecured bank bonds, covered bank bonds, asset backed securities, corporate bonds, other bonds and also bank loans, the Eurosystem ensures that an outstanding amount of EUR 13 trillion is available as collateral for the euro area banking system. In this way all banks can have access to Eurosystem credit (around EUR 1.3 trillion) irrespective of their business model. In addition, Figure 19 shows that euro area banks do not necessarily need, in order to access Eurosystem credit, to encumber assets that can be used on the private repo markets. This figure shows also how sizeably (more than 200 percent) the banking system can be overcollateralized with the Eurosystem.

D. Implications

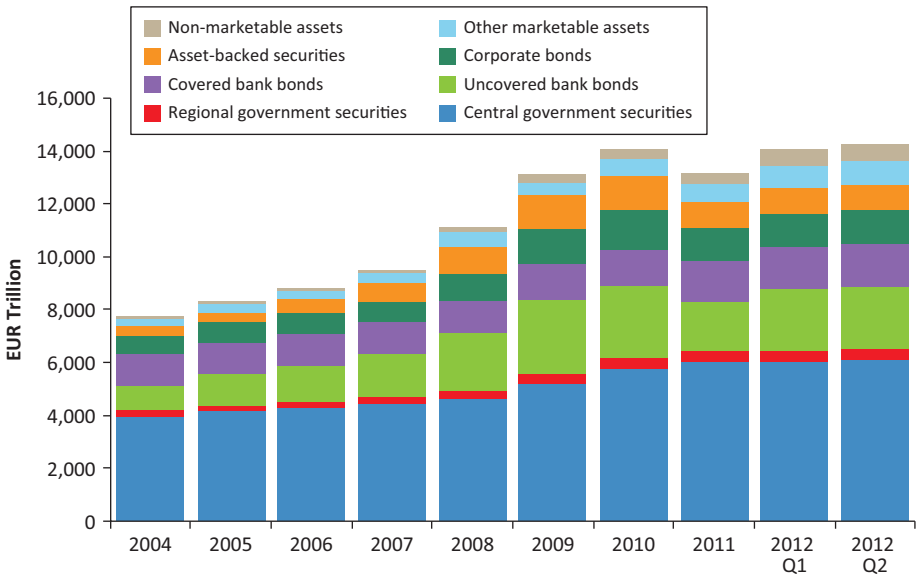
Unsurprisingly, the broader the collateral framework, the more costly and complex its operation becomes, including in order to maintain its consistency. Moreover, the additional cost and complexity differs from one asset class to the other. These aspects have to be balanced against the benefits mentioned above.

Operational effort: the eligibility criteria and the handling procedures have to be tailored to the distinct asset classes and should cover legal certainty, pricing, market and liquidity monitoring, handling costs and monitoring and planning of use by counterparties (including avoidance of close links between counterparty and collateral issuer).

Risk management has to ensure that the level of risk taken is homogenous across the spectrum of eligible instruments. This has to be done in a conservative manner, based on:

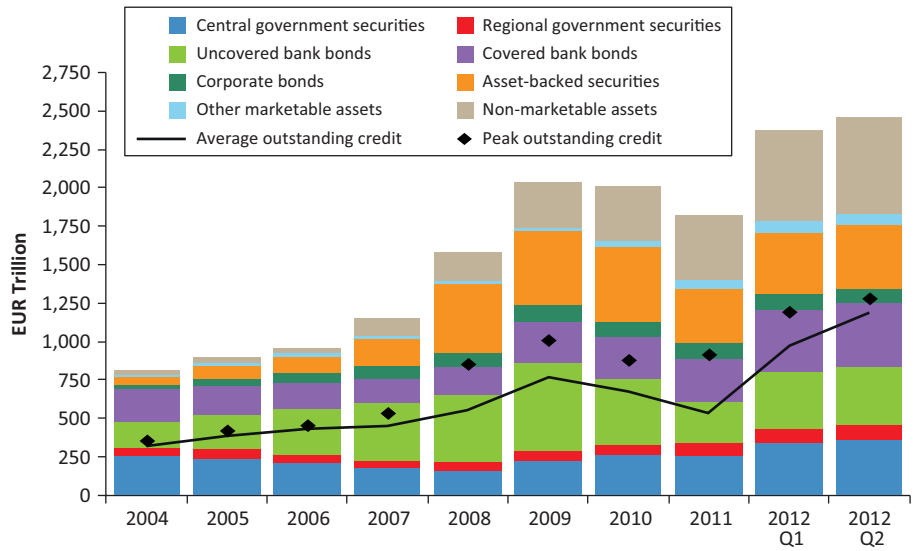
- *Credit quality*: for many marketable assets, rating agencies' credit assessment can be used; however, since 2008 this should be accompanied by a workflow on how to reduce the dependence on the rating agencies (increase competition, impose standards of soundness and transparency, etc.);

Figure 18. Eurosystem Eligible Collateral



Source: European Central Bank (Annual Report 2011).

Figure 19. Use of Eurosystem Eligible Collateral by Counterparties



Source: European Central Bank (Annual Report 2011).

for non-marketable assets, other procedures are needed: CB in-house rating procedures, Basle III bank internal rating procedures (approved by the supervisor) or third-party rating tools.

- *Mark to market*: the assets deposited as collateral should be revalued every day, or almost, on the basis of market prices; if this is not the case, or for

non-marketable assets, theoretical valuation should be applied, together with higher haircuts; as a minimum, the haircut-adjusted value of the assets deposited should remain equal to the outstanding credit; the CB should therefore make a margin call whenever needed.

- *Market liquidity*: for marketable assets, depending on their market liquidity, more or less significant valuation haircuts are applied; for non-marketable assets, the haircuts are calculated on the basis of the features of the specific instruments and transactions.

Many additional risk control measures can be conceived, such as initial margins (can be seen as a compulsory overcollateralization) or limits vis-à-vis issuers/debtors or guarantors. This increases the complexity of the operational framework and the trade-offs outlined above. *The possible advantages of this increase in complexity have to be balanced against considerations of transparency, effectiveness, cost, and level playing field for counterparties*.

E. Capital Markets Functioning

Normal times: the financial stability benefits mentioned above of a broad range of collateral may lead market participants to overestimate the (long term) liquidity of certain capital markets and in some cases to imprudent behavior.

Crisis times: CB funding replaces private investors' funding. Moreover, the private investors' requirements tighten more rapidly than those of the CBs. This greater preparedness of the CB to take risk is helpful at the start of the crisis (see above) but crowds out eventually the private investors. To avoid this, the CB should gradually align its requirements with those of the private investors. Moreover, it should support the industry in its efforts to restore investor confidence through greater transparency, simplicity, standardization, and liquidity (all interrelated).

F. Conclusions

The merits of broadening the range of collateral can be summarized as follows: (1) availing quasi-automatic crisis mitigation tool and (2) possibly increasing liquidity of assets/counterparties. As for possible drawbacks these can be: (1) increased incentives for risk taking, (2) more risk exposure to CBs, and (3) a possible crowding out of some private markets. Going forward, the optimal broad level of the collateral range will be based on lessons drawn from the crisis. This as well as other issues (e.g., reliance on rating agencies) need to be carefully considered—work is ongoing.

CHAPTER

VII Basel III Rules and Monetary Policy Implementation

The Basel Committee on Banking Supervision (BCBS)[69] issued on December 16, 2010 the "Basel III rules text and results of the quantitative impact study issued by the Basel Committee" (hereafter "the Basel III rules"). The Basel III rules contain the details of global regulatory standards on bank capital adequacy and liquidity, as agreed by the Governors and Heads of Supervision (to which the BCBS reports) and endorsed by the G20 leaders at their November 2010 Seoul summit.

The future interaction between these new global regulatory standards and monetary policy implementation will be significant and complex, and depend on the features of the national financial system and of the operational framework of the CB concerned. This section provides a tentative assessment of this interaction with a focus on the MENA region. It is structured as follows. Part A summarizes the main features of the Basel III rules. Part B analyses the economic relevance of the Basel III rules for the MENA region, taking into account that only one country of this region is member of the G20 (Saudi Arabia). Part C part assesses the possible impact of the Basel III rules on financial markets. Finally, Part D examines the implications for monetary policy implementation.

A. The Basel III Rules[70]

The Basel III rules set out the BCBS's reforms to strengthen global capital and liquidity rules with the goal of promoting a more resilient banking

[69] The BCBS consists of senior representatives of bank supervisory authorities and central banks from Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the U.S.A. It meets usually at the Bank for International Settlements (BIS) in Basel, Switzerland, where its permanent Secretariat is located.

[70] This Section is largely extracted from the Introduction of the "Basel III rules text and results of the quantitative impact study issued by the Basel Committee" issued on December 16, 2010.

sector. The objective of the reforms is to improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the real economy. The BCBS's comprehensive reform package addresses the lessons of the financial crisis and also aims to improve risk management and governance and strengthen banks' transparency and disclosures. Moreover, the reform package includes the BCBS's work to strengthen the resolution of systemically significant cross-border banks.

One of the main reasons why the economic and financial crisis, which began in 2007, became so severe was that the banking sectors of many countries had built up excessive on and off-balance sheet leverage. This was accompanied by a gradual erosion of the level and quality of the capital base. At the same time, many banks were holding insufficient liquidity buffers. The banking system was therefore not able to absorb the resulting systemic trading and credit losses and reintermediation of large off-balance sheet exposures that had built up in the shadow banking system. The crisis was further amplified by a procyclical deleveraging process and by the interconnectedness of systemic institutions through an array of complex transactions. During the most severe episode of the crisis, the market lost confidence in the solvency and liquidity of many banking institutions. The weaknesses in the banking sector were rapidly transmitted to the rest of the financial system and the real economy, resulting in a massive contraction of liquidity and credit availability. Ultimately the public sector had to step in with unprecedented injections of liquidity, capital support and guarantees, exposing taxpayers to large losses.

Against this background the BCBS is raising the resilience of the banking sector by strengthening its regulatory capital framework. The reforms enhance inter alia the quality and the quantity of the regulatory capital base and the risk coverage of the capital framework. They are underpinned by a leverage ratio that serves as a backstop to the risk-based capital measures, is intended to constrain excess leverage in the banking system and provides an extra layer of protection against model risk and measurement error. The reforms increase also the consistency in the definition of capital across jurisdictions and the level of disclosure that would have enabled the market to fully assess and compare the quality of capital between institutions. The BCBS has also introduced a number of macroprudential elements into the capital framework to help contain systemic risks arising from procyclicality and from the interconnectedness of financial institutions.

To address the systemic risk arising from the interconnectedness of banks and other financial institutions through the derivatives markets, the BCBS is supporting the efforts of the BIS's Committee on Payments and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) to establish strong standards for financial market

infrastructures, including central counterparties (CCPs). The capitalization of bank exposures to any CCP will be based in part on the compliance of this CCP with such standards. This will create strong incentives for banks to move exposures to such CCPs. Moreover, to address systemic risk within the financial sector, the BCBS has also raised the risk weights on exposures to financial institutions relative to the non-financial corporate sector, since the former are more highly correlated than the latter.

Strong capital requirements and robust financial infrastructures are a necessary but by themselves not sufficient condition for banking sector stability. A strong liquidity base reinforced through robust supervisory standards is of equal importance. The BCBS has therefore introduced internationally harmonized global liquidity standards. As with the capital standards, the liquidity standards will establish minimum requirements and promote an international level playing field to help prevent a competitive race to the bottom.

During the early "liquidity phase" of the financial crisis, many banks experienced difficulties—notwithstanding adequate capital levels—because they did not manage their liquidity in a prudent manner. Prior to the crisis, asset markets were buoyant and funding was readily available at low cost. The rapid reversal in market conditions illustrated how quickly liquidity can evaporate and illiquidity can last for an extended period of time. The banking system came under severe stress, which necessitated CB action to support both the functioning of money markets and, in some cases, individual institutions.

The BCBS has therefore developed two minimum standards for funding liquidity. These standards have been developed to achieve two separate but complementary objectives. The first objective is to promote short-term resilience of a bank's liquidity risk profile by ensuring that it has sufficient high quality liquid resources to survive an acute stress scenario lasting for one month. These high-quality liquid assets held in the stock should be unencumbered, liquid in markets during a time of stress and, ideally, be CB eligible. The BCBS developed the Liquidity Coverage Ratio (LCR) to achieve this objective. The second objective is to promote resilience over a longer time horizon by creating additional incentives for a bank to fund its activities with more stable sources of funding on an ongoing structural basis. The Net Stable Funding Ratio (NSFR) has a time horizon of one year and has been developed to provide a sustainable maturity structure of assets and liabilities. It requires a minimum amount of stable sources of funding at a bank relative to the liquidity profiles of the assets and the potential for contingent liquidity needs arising from off-balance sheet commitments, over a one-year horizon.

Finally, the BCBS has introduced transitional arrangements to implement the new standards. On the one hand, transitional arrangements help ensure

that the banking sector can meet the higher capital standards through reasonable earnings retention and capital raising, while still supporting lending to the economy. On the other hand, the LCR and the NSFR are subject to an observation period and a review clause to address any unintended consequences. Thus, after an observation period beginning in 2011, the LCR will be finally introduced in January 2015. The NSFR will move to a minimum standard by January 1, 2018. The BCBS has put in place rigorous reporting processes to monitor the ratios during the transition period and will continue to review the implications of these standards for financial markets, credit extension, and economic growth.

B. Relevance for the MENA Region

As already mentioned, the only MENA country which is also member of the G20 is Saudi Arabia. However, the Basel III rules have effects for all the countries of the MENA region. This is an implication inter alia of the comprehensive scope of application of the Basel III rules, including extra-territorial aspects. The new capital and liquidity requirements follow the scope of application of the Basel II Framework, which means inter alia that they are applied on a consolidated basis to internationally active banks. The scope of application covers, on a fully consolidated basis, any holding company that is the parent entity within a banking group, in order to ensure that it captures the risk of the whole banking group. Banking groups are defined as those groups that engage predominantly in banking activities and, in some countries, a banking group may be registered as a bank. Moreover, supervisors are required to test that individual banks are adequately capitalized and liquid on a stand-alone basis.

Against this background, the following channels can be identified through which the Basel III rules may influence economic and financial developments in the MENA region.

First, the domestic effects of the implementation of the Basel III rules in the G20 countries, in particular in terms of financial markets, credit extension and economic growth, spills over in the MENA region. The MENA region will benefit from the increase in the resilience of the G20 banking sector but also undergo the impact of the transitional effects related to the implementation of the Basel III rules. As shown earlier in this paper, together with the effects of the financial crisis proper, this is a particularly relevant channel for the MENA region, which is potentially strongly exposed to any contraction in global (or G20) liquidity, cross-border credit availability and demand for exports.

Second, the home supervision of the internationally active G20 banks includes the business of the subsidiaries of these banks established in the MENA region in their monitoring. The activity of these subsidiaries may therefore be influenced not only by the host supervision and domestic economic and financial developments in the relevant MENA country, but also by supervisory decisions in the (G20) home country.

Third and last, given the benefits expected from the Basel III rules for the resilience of the banking sector, and in the light of the scope and speed with which the recent and previous crises have been transmitted around the globe and of the unpredictable nature of future crises, it is critical that all countries, not just the G20 countries but including the MENA countries, adopt the Basel III rules or at least converge with these. While as mentioned above, this may imply transitional costs for the banking sector and for the lending to the economy, the increased resilience and transparency should support the attractiveness of the relevant countries for foreign investors and lower country risk premia.

C. Possible Effects on Financial Markets

The Basel III rules will in general increase, relative to the overall stock of available assets in the economy, the demand of banks for unencumbered high-quality liquid assets (HQLA), which are liquid in markets during times of stress and, ideally, CB eligible. This means that the financial markets will have to adjust to this new environment. The present Section will tentatively assess these adjustments, focusing on the effects of the new liquidity rules on the money markets, through which CBs generally implement their monetary policy, and on the securities markets, which are important for the CB's collateral strategy.

Money markets

The Basel III liquidity rules are expected to bring an overall positive effect on the functioning of the money market by internalizing negative externalities for financial stability and reducing information asymmetries concerning banks' liquidity risk exposure and their liquidity risk bearing capacity.

Still, the effect on the *unsecured* money market is difficult to anticipate. On the one hand, the Basel III liquidity rules may decrease the overall liquidity in the unsecured money market, thereby at a certain stage impairing its functioning and possibly unleashing negative dynamics. In particular, the length of the funding maturity forced by the LCR may imply that the volume in the unsecured interbank market below one month would decrease because banks

can no longer use the overnight market only to offset liquidity shocks. While a reduced reliance of banks on short-term funding is in line with the objectives of the LCR, it may lead to an overall decline in money market activity. Activity in the unsecured money market over one month may not increase correspondingly for reasons relating to credit risk.

However, this should be further qualified because transactions may impact banks' LCRs in different ways depending on their starting liquidity level. Banks having an LCR>1 will always be willing to engage in lending below one month since this would further improve their LCR. The reason is that in the case of a sufficient liquidity buffer, any decrease of this buffer (i.e., stock of liquid assets, numerator of the LCR) by a certain amount would, ceteris paribus, be more than offset (on a percentage basis) by the corresponding reduction in expected net cash outflows over the next 30 days (denominator). This is due to the fact that the LCR is calculated as a ratio: while the absolute change in the LCR denominator and numerator is similar, the proportional change of the ratio is different depending on its starting value. On the borrowing side, banks having an LCR<1 will always benefit from short term borrowing since this would improve their LCR.

At the same time, banks that engage in unsecured interbank lending exceeding 30 days would always see a decline in their LCR while banks that borrow would always see an improvement in their LCR. This is because unsecured interbank transactions over 30 days would only affect the numerator, not the denominator of the LCR. Hence, lenders' short-term liquidity positions would deteriorate in all circumstances because their stock of liquid assets would be reduced, while the opposite would apply to borrowers.

Still, the enforcement of the LCR may support the unsecured term money market to resume and possibly compensate reductions in activity in the short term segment, because banks having an LCR>1 may be prepared to initiate trades with banks having an LCR<1. In a way, the unsecured longer term money market may become an "LCR-market" in which LCR-qualifying liquidity would be traded. Banks would be forced to offset liquidity shocks with each other in the longer term money market, so that each individual bank remains within the LCR requirement. The relevance of this in practice will have to be assessed, because it depends on the following two strong assumptions: (1) the perceived high degree of credit risk and information asymmetry currently prevailing vanishes and (2) the banking system is, on aggregate, able to meet the LCR by a margin.

One may also query whether from a market perspective a possible decline in liquidity in the unsecured money market would be problematic in view of the significant growth observed and expected to continue in the *secured* money

market. In particular, term repo-transactions (> 30 days) involving non-LCR qualifying assets might become an attractive instrument to trade the LCR.

All in all, the Basel III liquidity rules increase the value of longer term funding as an instrument to fulfill the LCR and are thus likely to imply a steeper slope of the unsecured money market yield curve. At the current juncture the impact on the transmission of monetary policy from (very) short term rates to longer term rates is not entirely clear. In general, it depends less on the slope of the yield curve than its predictability, which will have to be studied further.

Securities markets

The Basel III liquidity rules attempt to promote financial stability by making banks rely more heavily on those assets for which market liquidity has appeared to be relatively resilient in the financial crisis. Hence, it may be expected that negative feedback effects from potential fire sales will be less likely in the future.

However, the regulatory bodies are discussing concerns that the two discrete categories (i.e., liquidity buckets) of the current definition of HQLA and the binary treatment of assets being in or out of the HQLA may result in increased market segmentation and cliff effects.[71]

Another concern is that the current rules may increase demand in certain market segments (e.g., sovereign debt), and lower demand in others (e.g., financial and lower-rated non-financial corporate bonds). This may be difficult to reconcile with the recent experience about the sovereign risk exposure of banks and the feedback loops between the solvency of the banks and of the sovereigns.

The BCBS is reviewing the assessment criteria and composition of the pool of HQLA. The regulatory bodies have initiated work on the definition of the operational criteria for liquid assets. Monitoring these regulatory developments will be crucial to properly assess the impact of the regulation on securities markets.

D. Implications for Monetary Policy Implementation

As already mentioned, the Basel III liquidity rules aim at ensuring that banks build larger liquidity buffers and raise bigger amounts of stable funding on

[71] Only sovereign paper can migrate between the buckets: a rating downgrade of a sovereign might lead to the transition of its paper from the first to the second bucket of liquid assets. In the EU, the legislation grants to the banks a period of 30 days to adjust their portfolio of liquid assets.

their own, and thus reduce reliance on CBs as liquidity providers, in particular during crisis times. Among their benefits, the Basel III liquidity rules will support monetary policy implementation to the extent that they reduce the share of overly dependent banks on CB credit. However, when monetary policy is implemented via a structural liquidity deficit of the banking sector, some degree of structural reliance of the banking sector as a whole on liquidity provision from the CB is inevitable. In such a monetary policy implementation, the operational framework of the CB allows for convenient use of its regular refinancing instruments by the banking sector.

In order to fulfill the LCR, banks have the following two procedures at their disposal: (i) increase the stock of unencumbered HQLA, thereby working on the numerator of the LCR or (ii) reduce the net cash outflow, thereby working on the denominator of the LCR. Since CB instruments can affect the extent to which banks will be able to comply with the LCR, the Basel III liquidity rules may have, ceteris paribus, the following impact on the way banks use CB instruments:

1. In jurisdictions where the collateral set eligible for CB credit is broad, substitution of HQLA pledged with the CB as collateral with non-HQLA, since this increases the amount of unencumbered HQLA and therefore, with a large leverage, the LCR;

2. Shift of CB funding from banks having an LCR>1 towards banks having an LCR<1 using non-HQLA as collateral, and more aggressive bidding of the latter banks in particular at longer term refinancing operations. This may crowd out banks having an LCR > or = 1 from the tenders, and possibly lead to higher (marginal and average) allotment rates at the refinancing operations in general.

For the CB, these two effects together may lead to lower average collateral liquidity; higher average counterparty liquidity risk and lower average counterparty credit quality (assuming that banks having an LCR > 1 feature lower credit quality), and higher collateral concentration of risks. Conceivably, these effects may be mitigated by measures such as credit ceilings per counterparty or different auctions for HQLA and non-HQLA collateral. But this may have the drawback of complicating the operational framework, encouraging circumvention and affecting transparency.

3. Beyond the shift with a zero net effect on global liquidity provision, of a given liquidity provision towards the banks having an LCR < 1, it may be that these banks want to improve their LCR through recourse to CB operations for a larger total amount than the liquidity deficit, by holding excess reserves. As a consequence, unless this variant of excess reserves can be estimated and forecast accurately, the minimum reserves

requirements may no longer be pivotal for the estimation of demand at open market operations;

4. Depending on the detailed LCR requirements and reporting framework established by the regulators, some of the effects mentioned above may be more pronounced around reporting days, even if the Basel III liquidity rules require that banks meet the LCR continuously, for example, due to recourse to the marginal lending facility on these days. The BCBS is considering an averaging methodology for reporting, with a requirement to additionally report period highs and lows, in order to minimize the impact of disclosure and window dressing behavior.

Another relevant topic relates to the treatment of CB reserves—defined as overnight deposits which are held with the CB and which count for the fulfillment of possible minimum reserve requirements—in the Basel III liquidity rules. These refer to CB reserves "*to the extent that these reserves can be drawn in times of stress*" but leave the precise treatment of such reserves to the judgment of local supervisors and CBs.

5. Several approaches for the treatment of CB reserves may be envisaged, depending on the features of the reserve requirement. If the reserve requirement includes an averaging provision for the maintenance period, CB reserves may to a certain extent be counted towards HQLA. In particular, the average daily reserve requirement over the maintenance period may be subtracted from the current account holdings (implying a preference for a linear reserve fulfillment pattern, ignoring any front or back-loading of reserve fulfillment) and treated as an "unencumbered" part counting towards HQLA. This liquidity value of reserve holdings would be simple to measure and avoid introducing incentives that may distort the averaging function of minimum reserve requirements.

Finally, since the Basel III liquidity rules may, as already explained, affect the interest rate structure across instruments and the term structure of instruments, they may also have a bearing on the choice of the operational target and the transmission mechanism of monetary policy. While somewhat higher tender rates may not be problematic, excessively high and volatile tender rates caused by a specific segment of market participants (banks having an LCR < 1) may have adverse implications for both the signaling of monetary policy and the steering of money market rates.

CHAPTER

VIII ISIMP Results and Analysis for the MENA Region

A. Background Information

Drawing from the IMF survey of CB monetary policy instruments (ISIMP)[72] in 2008 and 2010, this section analyzes the use of monetary policy instruments in the MENA countries, and compares the results with those in other regions.[73] Monetary policy instruments in the survey comprise direct instruments, reserve requirements, statutory liquidity requirements, standing facilities, government activities for monetary purposes and open market operations. Information on interbank market activities is included to reflect partially the state of development of domestic money markets.

Results from the 2010 survey illustrate the implementation of monetary instruments in 121 jurisdictions—of which 15 are from the MENA region—representing 81 percent of the IMF member countries and distributed evenly across regions. (Table 16: the CB participation increased considerably from the previous survey in 2008.)

B. Direct Instruments

Direct instruments of monetary policy in the ISIMP database include interest rate controls, credit ceilings, directed credit and specific lending requirements.[74] Overall, specific lending requirements were implemented by

[72] ISIMP: Information System for Instruments of Monetary Policy.

[73] Data and information on monetary policy instruments in other regions are from an unpublished IMF paper by Simon Gray and Claudia Jadrijevic (December 2010). In this paper, countries are categorized into five regions in accordance with the IMF's area departments; namely, Africa (AFR), Asia and the Pacific (APD), Europe (EUR), the Middle East and Central Asia (MCD) and Western Hemisphere (WHD).

[74] In some countries, commercial banks are required to fulfill sector-specific lending requirements.

Table 16. Central Bank Responses by Region

	2008		2010		
	Number	%	Number	%	Additional Responses
AFR	16	17	25	20.7	+9
APD	23	24.5	27	22.3	+4
EUR	20	21.3	22	18.2	+2
MCD	19	20.2	25	20.7	+6
MENA	*10*	*10.6*	*15*	*12.4*	*+5*
WHD	16	17	22	18.2	+6
Total	94	100	121	100	27

Source: IMF ISIMP Survey (2010).

Table 17. Direct Instruments of Monetary Policy
(Number of Responses and Percent of Total Responses)

	2008		2010	
	Number	%	1	%
Interest Rate Control	13	13.8	13	10.7
Credit Ceilings	12	12.8	14	11.6
Directed Credit	4	4.3	12	9.9
Specific Lending Requirements	17	18.1	21	17.4

Source: IMF ISIMP Survey (2010).

more CBs in 2008 and 2010, while there was an increase in the use of directed credits in 2010.

In 2008, some of the MENA CBs imposed interest rate controls, credit ceilings and specific lending requirements on the banking system (Tables 17 and 18). The use of interest rate controls and specific lending requirements decreased in 2010 while credit ceilings and directed credits became more common, consistent with trends in the Middle East and Central Asia. It should be noted that the MENA CBs have made uses of the direct instruments partly because most have implemented the exchange rate pegged regime. Under such policy framework, CBs do not have monetary independence while the use of direct instruments could prove useful in helping to manage domestic monetary conditions.

Table 18. Uses of Direct Instruments by Region
(Percent of Responses by Region)

	2008				2010			
	Interest Rate Controls	Credit Ceilings	Directed Credits	Specific Lending Requirements	Interest Rate Controls	Credit Ceilings	Directed Credits	Specific Lending Requirements
AFR	0	6.3	0	6.3	12	20	4	16
APD	21.7	17.4	4.3	34.8	22.2	11.1	7.4	18.5
EUR	5	10	0	5	0	0	9.5	19
MCD	15.8	15.8	5.3	26.3	4	16	8	12
MENA	*20*	*20*	*0*	*20*	*0*	*26.7*	*6.7*	*13.3*
WHD	25	12.5	12.5	12.5	13	8.7	17.4	21.7

Source: IMF ISIMP Survey (2010).

C. Reserve Requirements

More than half of the CBs in survey implemented reserve requirements (RRs) with a single ratio; however, the number of CBs using a range of RR ratio increased significantly in 2010. Regarding the RR ratio, a majority of CBs imposed a ratio in a band of 6–15 percent, although this trend declined somewhat with the number of CBs in the 0–5 percent band increasing (Tables 19 and 20, and Figure 20). These changes contrasted to RR ratio in the MENA region (Box 7) where more CBs imposed a ratio in a band of 6–15 percent in 2010.

Box 7. Reserve Requirements in the Region[1]

The use of RR is a common monetary policy instrument in the MENA region, as in other regions. Most of the central banks impose RR on both domestic and foreign currency deposits of the banking system, with exceptions in Algeria, Bahrain, Morocco and Tunisia where RR are applied only to domestic currency deposits. Around half of the former group require that banks maintain reserves denominated in foreign currency against foreign currency deposits. Banks are obliged to hold required reserves in their current accounts at the central banks in order to meet the specified RR ratio. Other types of assets cannot fulfill the required reserve threshold, with the exception of Iraq, which counts cash in vault as part of banks' eligible assets (but this cannot exceed 20 percent of the total RR).

[1] Country responses to the 2010 ISIMP survey include Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Unite Arab Emirates, and Yemen.

Box 7. (*concluded*)

The majority of the regional central banks impose a required reserve ratio of 5–10 percent and a maintenance period of one month. The RR ratio in Kuwait, Iraq, and Lebanon fall into the higher-than-15-percent category, while those in Qatar, Oman, and Bahrain are among the lowest level, at 4.75–5 percent. Approximately two-thirds of the MENA central banks implement a one-month maintenance period, and allow for reserve averaging. Saudi Arabia on the other hand stipulates that banks maintain RR on a daily basis.

Most MENA countries do not remunerate banks' required reserves. Only three central banks; namely Algeria, Morocco, and Kuwait,[2] pay remuneration on RR balances. The remuneration rates in these countries are set separately from the key interest rates, and the two rates do not have a standard relationship. Every central bank imposes a penalty on banks' reserve deficiency, should one arise. Around half of the group set the penalty rates as spreads over the policy interest rates or, in some instances, the penalties are set as margins on interbank interest rates.[3]

In addition to its main role in the monetary policy context, some central banks use RR as a supplementary tool to stimulate growth in particular sectors. For example, banks in Egypt are exempted from the statutory reserve requirement on liabilities equivalent to the amount lent directly to SMEs. Lebanon exempts banks from the legal reserve for loans denominated in Lebanese pounds which are extended to production, microfinance, housing and education sectors. Syria lowers the reserve requirement ratio imposed on domestic banks in proportion to a share of SMEs credit in the credit portfolio. It also reduces the required ratio in relation to a portion of deposits devoted to financing investment and tourism projects.

Reserve requirement ratio was also adjusted to help manage capital inflows. During the fourth quarter of 2007 and 2008, Saudi Arabia raised a required reserve ratio to mob up parts of excess domestic liquidity stemmed from a large amount of capital inflows. The increase in RR also led to a reduction in bank deposit rates discouraging episodes of capital inflows. This consequently helped the authorities lean against capital inflows without weakening the monetary policy impact.

---

[2] Kuwait remunerates KWD RR, but not foreign-currency RR.

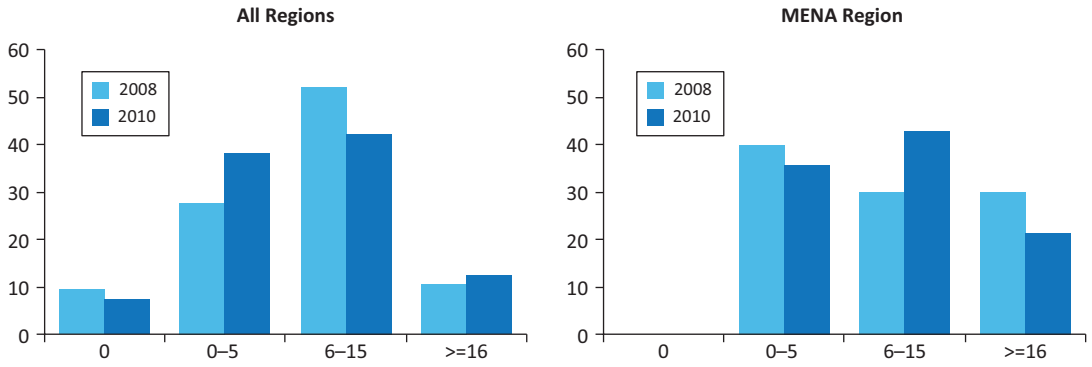
[3] In the latter case, it is unlikely that this would create an upward spiral effect on the prevailing domestic interbank rates as the penalties are based on offshore interest rates, or average interbank rates in the previous periods.

Table 19. Reserve Requirements (Number of Responses)

	2008	2010
None	9	9
Single Rate	68	65
Range	17	47
Total	94	121

Source: IMF ISIMP Survey (2010).

Figure 20. Levels of Reserve Requirements (Percent of Total Responses)



Source: IMF ISIMP Survey (2010).

Table 20. Regional Representation in the Use of Reserve Requirements in 2010 (Percent of Responses by Region)

	No RR	0.5%	6-15%	>=16%
AFR	0	40	36	24
APD	11.1	55.6	25.9	7.4
EUR	18.2	50	27.3	4.5
MCD	0	32	56	12
MENA	*0*	*33.3*	*46.7*	*20*
WHD	9.1	9.1	68.2	13.6

Source: IMF ISIMP Survey (2010).

As for remuneration on RRs, a majority of CBs in all regions did not remunerate banks' required reserves (Table 21). In case of CBs that pay remuneration, most of the remuneration rates were below the policy interest rate. The most common reserve maintenance periods were 15 days or longer (Table 22).

Table 21. Remuneration Rates on Reserve Requirements in 2010 (Number of Responses and Percent of Total Responses)

	All Regions		MENA Central Bank	
	Number	%	Number	%
At Policy Rate	7	5.8	0	0
Fixed Margin Below Policy Rate	3	2.5	1	6.7
Below Policy Rate	25	20.7	2	13.3
No Remuneration	86	71.1	12	80
Total	**121**	**100**	**15**	**100**

Source: IMF ISIMP Survey (2010).

Table 22. Reserve Maintenance Period in 2010 (Number of Responses and Percent of Total Responses)

	All regions		MENA Central Bank	
	Number	%	Number	%
No RMP	8	6.6	0	0
1-7 days	25	20.7	3	20
8-14 days	27	22.3	3	20
>=15 days	57	47.1	9	60
Varies	4	3.3	0	0
Total	**121**	**100**	**15**	**100**

Source: IMF ISIMP Survey (2010).

D. Statutory Liquidity Requirements

Statutory Liquidity Requirements (SLRs) are primarily imposed by CBs for prudential purpose, and not for monetary policy. Approximately 38 percent of all CBs use SLRs of 20 percent or higher; and 20 percent use SLRs of less than 20 percent. Among the MENA CBs, 60 percent imposed the SLRs of 20 percent or higher (Table 23).

E. Standing Facilities

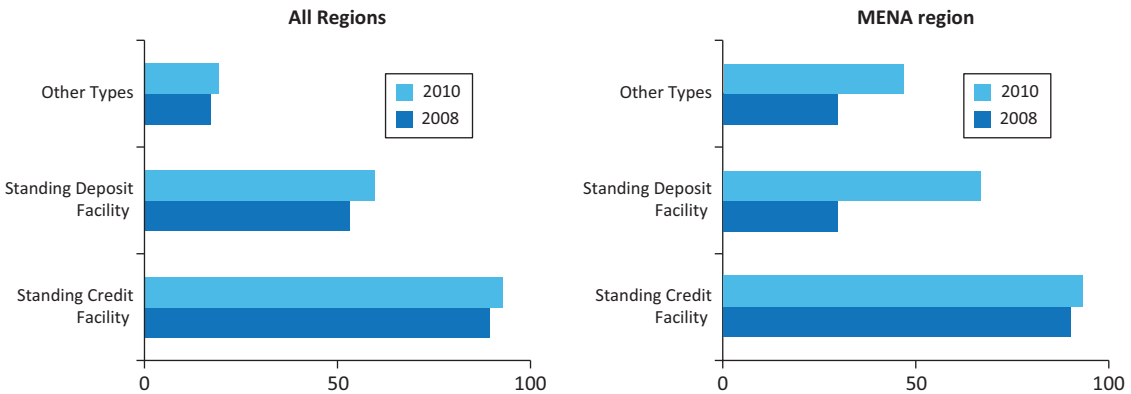
Two main types of CB standing facilities are SCF and SDF. While a higher proportion of CBs have made used of SCF since 2008 (Table 24), both SCF and SDF were made available by more CBs in 2010 (Figure 21). In the MENA region, the use of SDF increased substantially, which may in part reflect an increase in the number of participating banks. Around 67 percent of the

Table 23. Liquidity Ratio in 2010
(Number of Responses and Percent of Total Responses)

	All regions		MENA Central Bank	
	Number	%	Number	%
>=20	46	38	9	60
<20	24	19.8	1	6.7
0 percent	51	42.1	5	33.3
Total	**121**	**100**	**15**	**100**

Source: IMF ISIMP Survey (2010).

Figure 21. Standing Facilities (Percent of Total Responses)



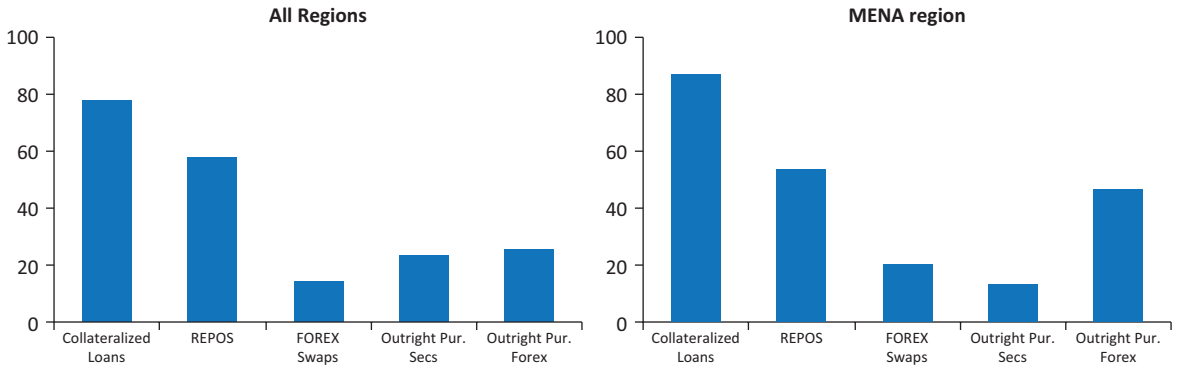
Source: IMF ISIMP Survey (2010).

Table 24. Regional Distribution of Central Banks that Have SCFs (Number of Responses and Percent of Responses by Region)

	2008		2010	
	Number	%	Number	%
AFR	15	94	24	96
APD	19	83	25	93
EUR	18	90	20	91
MCD	17	89	24	96
MENA	*9*	*90*	*14*	*93*
WHD	15	89	19	86
Total	**84**	**89**	**112**	**93**

Source: IMF ISIMP Survey (2010).

Figure 22. Instruments of Standing Credit Facilities in 2010 (Percent of Responses)



Source: IMF ISIMP Survey (2010).

MENA CBs had SDF in place in 2010, increasing from 30 percent in 2008. There was an increase in the number of CBs that used more than one SCF.

Collateralized loans, repo transactions and outright purchase of FX were common instruments for the SCF in the MENA countries, as elsewhere (Figure 22). The use of outright FX transactions were considerably higher than other regions, reflecting a currency peg regime implemented by most of the MENA CBs.

F. Government Activities for Monetary Purposes

Overall, less than half of the CBs in survey reported involvement in government activities for monetary policy purposes; 32 percent engaged in the sale of government securities and 44 percent involved in the transfer of government deposits to/from the CBs. Around 40 percent had government deposit accounts at the CBs which were used to sterilize the proceeds of the primary auction.

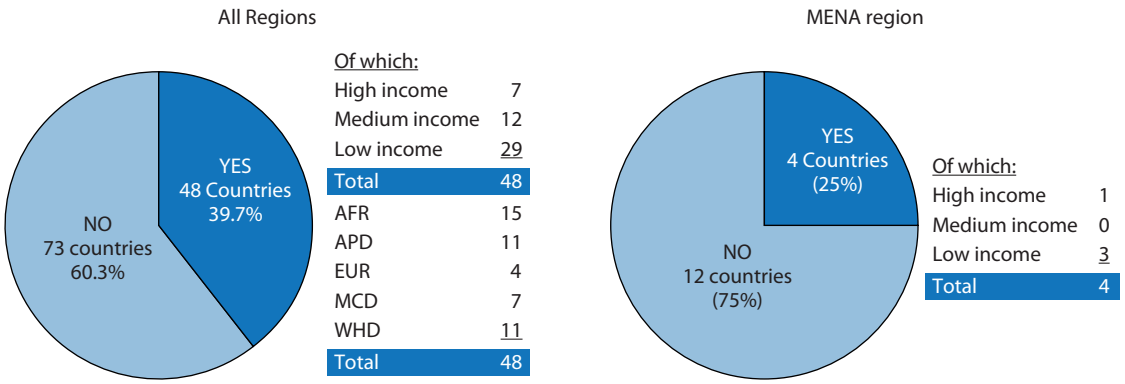
Among those involved in government activities for monetary purposes, CBs from the Middle East and Central Asia represented the highest proportion in 2008, while the African CBs took over in 2010 (Table 25). During 2008–2010,

Table 25. Involvement in Government Activities for Monetary Purposes (Percent of Central Banks that Responded 'Yes')

	CBs Sale of Government Securities		Transfer of Government Deposits to/from CBs	
	2008	2010	2008	2010
AFR	19.4	30.8	17.8	34.0
APD	22.6	23.1	22.2	22.6
EUR	9.7	7.7	11.1	7.5
MCD	35.5	25.6	26.7	18.9
MENA	*16.1*	*12.8*	*13.3*	*7.5*
WHD	12.9	12.8	22.2	17.0
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: IMF ISIMP Survey (2010).

Figure 23. Government Term Deposit Accounts at the Central Banks



Source: IMF ISIMP Survey (2010).

the shares of the MENA CBs decreased for both types of government activities. There were 4 MENA countries that had government term deposit account at the CB to sterilize liquidity injecting transactions (Figure 23).

G. Open Market Operations

(i) Outright Sale/Purchase of Securities and Foreign Exchange

Around two third of the CBs in survey conducted outright sale and purchase of securities and FX in 2010. Securities outright transactions were likely conducted at higher frequencies,[75] whereas FX outright transactions were executed more at lower frequencies.[76]

In terms of shares by region, the MENA countries constituted a higher ratio for FX outright transactions in 2010, largely reflecting exchange rate arrangements in the region. Within the MENA countries, a slightly lower proportion of the CBs carried out securities outright transactions in 2010, contrasting with other regions where more CBs engaged in this type of operations (Table 26). As for FX outright, a higher portion of the MENA CBs engaged in the sale and purchase operations during 2008–2010 (Table 27).

Table 26. Outright Sale/Purchase of Securities and Foreign Exchange by Region (Percent of Central Banks that Responded 'Yes')

	Securities		Foreign Exchange	
	2008	**2010**	**2008**	**2010**
AFR	16.4	19.3	23.5	19.8
APD	27.9	26.5	21.6	17.3
EUR	16.4	14.5	17.6	18.5
MCD	23.0	20.5	25.5	25.9
MENA	*9.8*	*12.0*	*9.8*	*13.6*
WHD	16.4	19.3	11.8	18.5
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: IMF ISIMP Survey (2010).

[75] Higher frequencies are defined as daily, weekly and every other week.
[76] Lower frequencies are defined as less frequency and irregularly.

Table 27. Outright Sale/Purchase of Securities and Foreign Exchange within Each Region (Percent of Central Banks that Responded Yes Within each Region)

	Securities		Foreign Exchange	
	2008	2010	2008	2010
AFR	62.5	64	75	64
APD	73.9	81.5	47.8	51.9
EUR	50	54.5	45	68.2
MCD	73.7	68	68.4	84
MENA	*63.6*	*62.5*	*54.5*	*75*
WHD	62.5	72.2	37.5	68.2

Source: IMF ISIMP Survey (2010).

Table 28. Reverse Transactions of Securities Repo and Foreign Exchange Swap by Region (Percent of Central Banks that Responded Yes)

	Securities Repo		Foreign Exchange Swap	
	2008	2010	2008	2010
AFR	17.9	21	22.2	25.6
APD	28.6	27.2	22.2	28.2
EUR	23.2	18.5	22.2	20.5
MCD	17.9	17.3	14.8	17.9
MENA	*7.1*	*11.1*	*18.5*	*5.1*
WHD	12.5	16	18.5	7.7
Total	**100**	**100**	**100**	**100**

Source: IMF ISIMP Survey (2010).

(ii) Reverse Transactions of Securities Repo and Foreign Exchange Swap

Around 67 and 32 percent of the CBs conducted securities repo and FX swap in 2010, increasing slightly from 60 and 29 percent in 2008, respectively. Of all CBs that reported securities repo and FX swap operations, CBs from the MENA region represented a higher proportion for securities repo transactions while their shares among CBs conducting FX swap declined considerably (Table 28).

Table 29. Collateralized Lending and Deposit Taking by Region (Percent of Central Banks that Responded 'Yes')

	Collateralized Lending		Deposit Taking	
	2008	2010	2008	2010
AFR	19.4	22.1	15.9	22.6
APD	16.7	16.2	20.5	20.8
EUR	22.2	19.1	22.7	20.8
MCD	25	22.1	22.7	18.9
MENA	*11.1*	*13.2*	*11.4*	*13.2*
WHD	16.7	20.6	18.2	17
Total	**100**	**100**	**100**	**100**

Source: IMF ISIMP Survey (2010).

Table 30. Central Banks that Used the Same List of Eligible Collateral for OMOs and SFs by Region (Number of Responses and Percent of Central Banks that Responded 'Yes')

	2008		2010	
	Number	%	Number	%
AFR	10	22	15	24
APD	11	24	14	23
EUR	15	32	14	23
MCD	5	11	11	18
MENA	*1*	*2*	*6*	*10*
WHD	5	11	8	13
Total	**46**	**100**	**62**	**100**

Source: IMF ISIMP Survey (2010).

(iii) Collateralized Lending and Deposit Taking

Approximately 56 percent of the CBs used collateralized lending while 44 percent took deposits for monetary policy purposes. A classification by region shows that proportions across regions including the MENA countries did not change significantly during 2008–2010 (Table 29).

(iv) Uses of Collateral

The CBs in survey were closely split between those that used the same list of eligible collateral for open market operations and standing facilities, and those that did not. There were 6 out of all MENA CBs that applied the same list in 2010 (Table 30).

Table 31. Central Banks that Had Restrictions on the Ownership of Central Bank Bills by Region (Number of Responses and Percent of Central Banks that Responded 'Yes')

	2008		2010	
	Number	%	Number	%
AFR	4	15	9	22
APD	6	22	7	18
EUR	7	26	8	20
MCD	7	26	11	28
MENA	*4*	*15*	*5*	*12*
WHD	3	11	5	12
Total	**27**	**100**	**40**	**100**

Source: IMF ISIMP Survey (2010).

Table 32. Interbank Market Activities (Percent of Total Responses)

	2008	2010
Active	34.0	33.9
Inactive	10.6	15.7
In Between	48.9	47.9
No Answer	6.4	2.5

Source: Central Bank of Tunisia.

(v) Central Bank Bills

The majority of CBs which issued CB bills did not have restrictions on ownership. However, an increased proportion of CBs in Africa, the Middle East and Central Asia and Western Hemisphere reported such restrictions in 2010 (Table 31). Out of 6 MENA CBs that issued CB bills, there were 5 CBs that had restrictions on ownership.

H. Interbank Market Activities

Almost half of the CBs indicated that interbank activities were at the level between active and inactive (Table 32). Of the 19 CBs reporting an inactive interbank market, 8 were in Africa, 5 in the Middle East, and 4 in Asia and the Pacific. In addition, 70 percent of all CBs reported that the interbank market was not collateralized.

CHAPTER

IX Country Case Studies

A. Central Bank of Egypt[77]

Steps towards Reforming Egypt's Monetary Policy Framework

Over the past few years the Central Bank of Egypt (CBE) has taken many important steps to upgrade Egypt's monetary policy with a view to adopting IT as a monetary policy framework once the prerequisites are fulfilled. The CBE has been granted more independence under the banking law number 88 which entrusts the CBE with the formulation and implementation of monetary policy, with price stability being the primary and overriding objective. Towards that end, the CBE has (i) strengthened its technical capacity in modeling and forecasting through setting up a Monetary Policy Department which provides monetary policy analysis, assessment and communication through its research, and other functions; (ii) moved from a quantitative operational target (excess reserves) to a price target (overnight inter-bank rate), and launched a Corridor system in June 2005; (iii) issued its own instruments for the first time in August 2005 as the primary instruments for liquidity management through open market operations to enhance the role of monetary policy operations; and (iv) continues to work closely with statistical government agencies to improve macroeconomic statistics. In the transition period towards IT, the CBE meets its inflation objectives by steering short-term interest rates, keeping in view the developments in credit and money supply, as well as a host of other factors which may influence the underlying rate of inflation. There are, however, a number of outstanding issues that need to be addressed before Egypt will be ready to adopt a fully fledged IT framework. In particular, efforts are needed to consolidate the fiscal position, deepen the FX market and continue to improve the macroeconomic databases.

Over the last few years the CBE has taken many important steps to upgrade Egypt's monetary policy with a view to adopting IT as a monetary policy framework once the prerequisites are fulfilled. The CBE has been granted

[77] Prepared by Ms. Rania Al-Mashat. This section reflects the views of the author and not necessarily those of the CBE.

more independence under the banking law number 88 of 2003 and an explicit institutional framework was set up for interest rate determination. In addition, the CBE launched a comprehensive and far-reaching *banking sector reform program* in 2004, which contained important steps to help overcome the previous shortcomings in the banking sector and fulfill the prerequisites for IT. It included the (non-performing-loans-related) restructuring and privatization of banks with state participation, and other regulatory reforms, the liberalization of the FX and money markets, and ongoing efforts to strengthen the supervision of banks.

Restoring confidence in the *FX market* and replacing quantitative monetary instruments with price instruments were the cornerstones in the CBE's monetary policy reform program. A FX inter-bank market was introduced at the end of 2003 and price stability has been declared the overriding policy objective. The CBE is committed to achieving, over the medium term, low rates of inflation, which it believes are essential for maintaining confidence and for sustaining high rates of investment and economic growth. Egypt made the transition to a unified, flexible exchange rate regime during 2004. The parallel market rate, which had a premium of over 15 percent in late 2003, converged with the banking rate in the second half of 2004 as confidence was restored.

A *deep and well-developed banking sector* is also important to allow for proper transmission of monetary policy actions. Monetary policy within an IT framework is highly market-oriented, and the banking sector is expected to function based on market principles. The dominance of the state-owned banks in the market had tended to create rigidities in the interest rate structure in Egypt. Under the banking system reform program, the banking sector has undergone substantial transformation that has entailed the exit of several weak banks, large-scale financial restructuring, and divestiture of state shares in private banks and privatization of a major state bank. These actions have reduced the share of banks with state participation significantly. The large stock of non-performing loans (NPLs) has been largely addressed through provisioning and cash settlements. The government and the CBE implemented programs designed to clean up banks' balance sheets and settle NPLs of public and private enterprises.

Moreover, several institutional and operational changes were initiated under the program to help facilitate *monetary policy formulation and assessment.*

Institutionally,

- The CBE strengthened its technical capacity in modeling and forecasting through setting up a Monetary Policy Department which provides objective monetary policy analysis, assessment and communication through its research and other functions.

- To carry out its better-defined mandate, the CBE established a *Monetary Policy Committee (MPC),* which convenes on Thursday every six weeks to decide on key policy rates. The MPC consists of seven members from the CBE's Board of *Directors*. The full year MPC schedule is posted on the CBE web-page.

- To enhance transparency, bolster the credibility of the CBE, and help anchor inflation expectations, MPC decisions are communicated to the market through a *monetary policy statement*, which is released on the CBE's website after each meeting.

Operationally,

- Price stability has been declared the overriding policy objective and the CB has worked on safeguarding an orderly functioning FX market.

- Moved from a quantitative operational target (excess reserves) to a price target (overnight interbank rate). On June 2, 2005 the CBE introduced an interest rate corridor with two standing facilities, the overnight lending and deposit facilities. The interest rates on the two standing facilities define the ceiling and floor of the corridor, respectively. By setting the rates on the standing facilities, the MPC determines the corridor within which the overnight inter-bank rate can fluctuate. Effectively, steering the overnight interbank rate within this corridor is the operational target of the CBE.

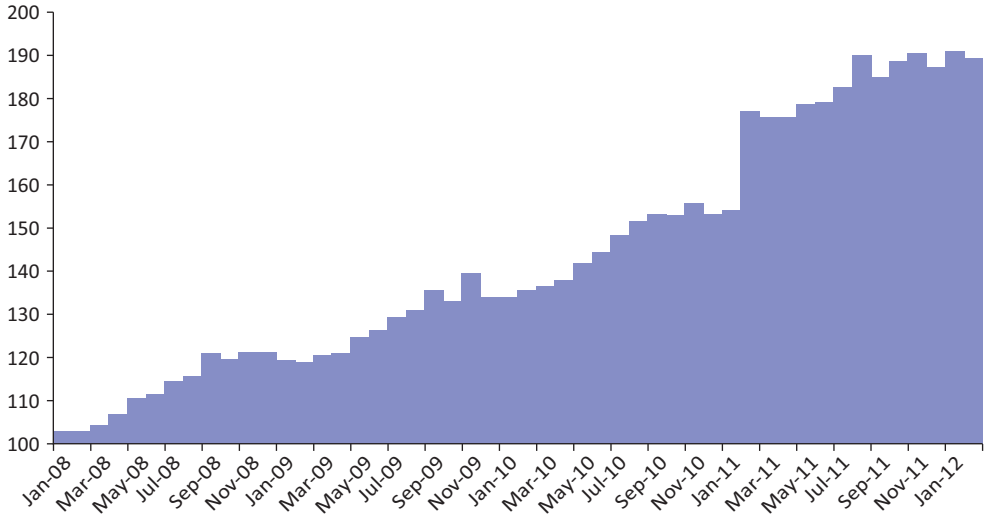
- In August 2005, the CBE began to issue its own securities for liquidity management through open market operations to differentiate between monetary and fiscal tools.

- In October 2009, the CB introduced a core inflation index that strips out fruits and vegetables as well as administered prices. The index has helped the CB communicate better how it views underlying inflationary pressures. It has been well-received and will serve as an important tool in an effort to prevent spill-over from food and fuel price volatility.

Monetary policy during the revolution

Before discussing developments that occurred during the first quarter of 2011, it is important to characterize the initial conditions that existed during the fourth quarter of 2010. Egypt entered the revolution with a very comfortable cushion, a by-product of monetary and fiscal reforms implemented since 2004, which provided support to the CB and the government over the past fifteen months. This cushion was in the form of

Figure 24. Egypt: Currency outside CBE (in EGP billions)



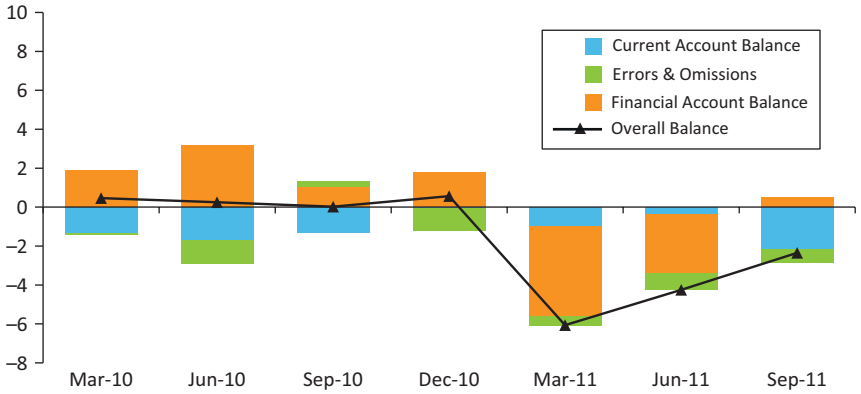
Source: Central Bank of Egypt.

structural surplus liquidity in the banking sector on the back of the sizable capital inflows witnessed since 2006. This was also reflected in the all-time high levels of net international reserves which recorded US$36 billion. In what follows is a description of the challenges that faced the CB during the revolution and the measures undertaken to mitigate their effect.

1. Providing Domestic Currency Banknotes

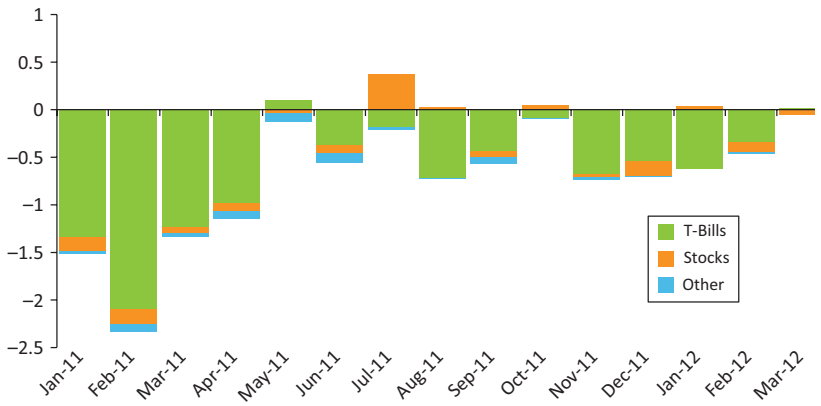
Following January 25, 2011 banks were closed for a week in light of lack of security concerns. Against this background and in a preemptive action and to face above average demand for domestic currency banknotes outside the banking system, the CBE provided EGP 23 billion in February 2011 (Figure 24) and transported the cash to the various governorates via airplanes with the assistance of the armed forces to ensure the availability of cash in ATMs. The public sector banks played a very important role in supplying their branches, even for other banks that were closed during this period. Moreover, given the anticipation of sharp withdrawals after banks reopened, the CBE imposed restrictions on daily withdrawals of domestic currency for individuals, limiting it to EGP 50 thousand. This action was meant to mitigate panic withdrawals from banks and was lifted in April 2011. Moreover, to avoid transferring illegally obtained funds, the CBE imposed restriction on foreign currency transfers of the household sector, limiting it to USD 100 thousand while exceptions included: (i) trade related transactions; (ii) funds of foreign portfolio investors; and (iii) funds of foreign corporations operating in Egypt. These actions allowed the Egyptian households and investors as well as

Figure 25. Egypt: Balance of Payments



Source: Central Bank of Egypt.

Figure 26. Egypt: Net Portfolio Inflows



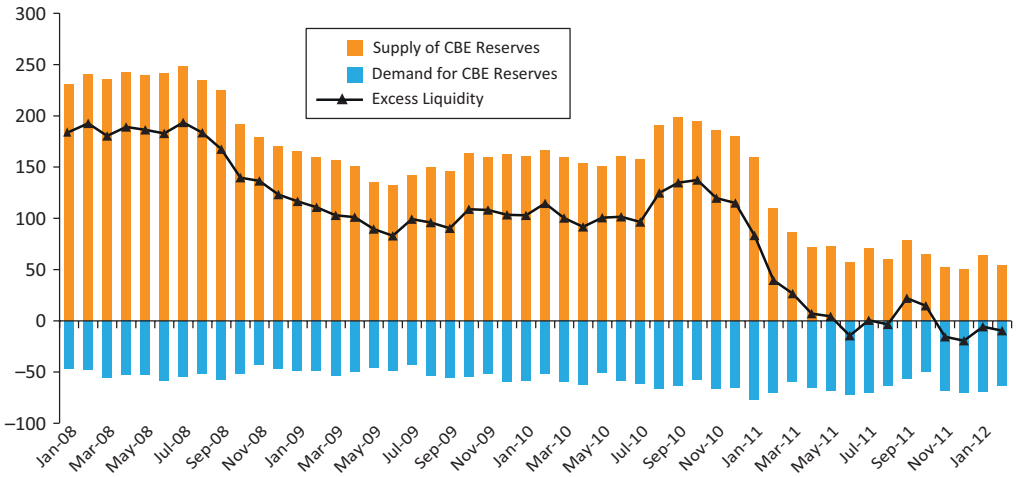
Source: Central Bank of Egypt.

foreign investors to test the markets in an orderly manner and consequently created the confidence needed to protect the country from a possible bank run as we have observed from the historical experiences of other countries in similar circumstances.

2. Facing Capital Outflows and Domestic Liquidity declines

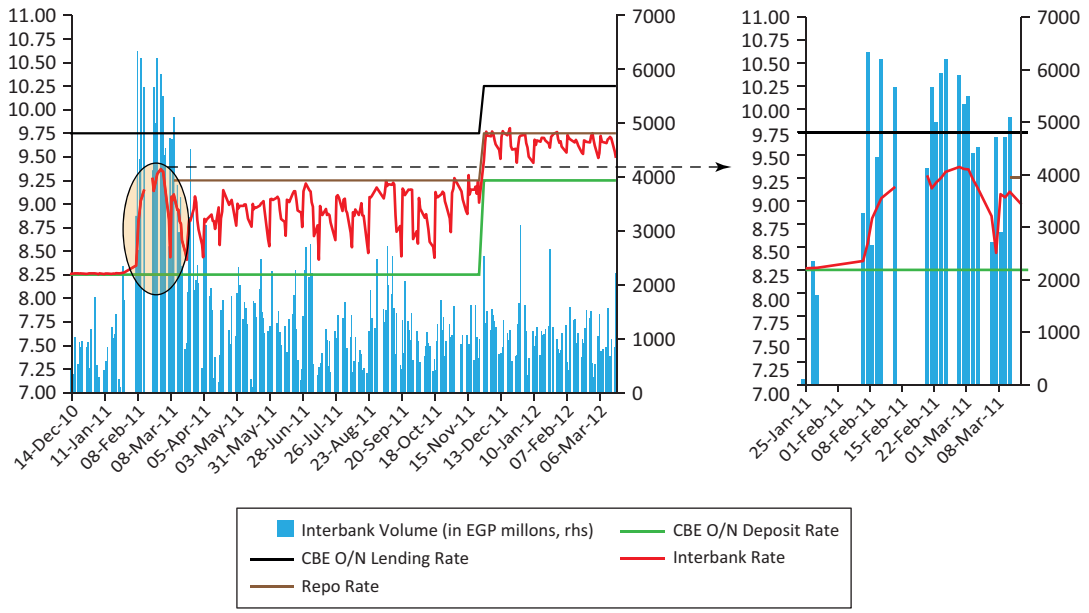
In the meantime, the balance of payments deteriorated markedly (Figures 25 and 29) on the back of significant outflows from the domestic treasury bills market. Capital outflows recorded US$5 billion in 2011 Q1 alone. This led banks to draw down their reserve balances to purchase foreign currency in the USD interbank market and to a drawdown in the CBE's FX reserves. In

Figure 27. Egypt: Market for CBE Reserves



Source: Central Bank of Egypt.

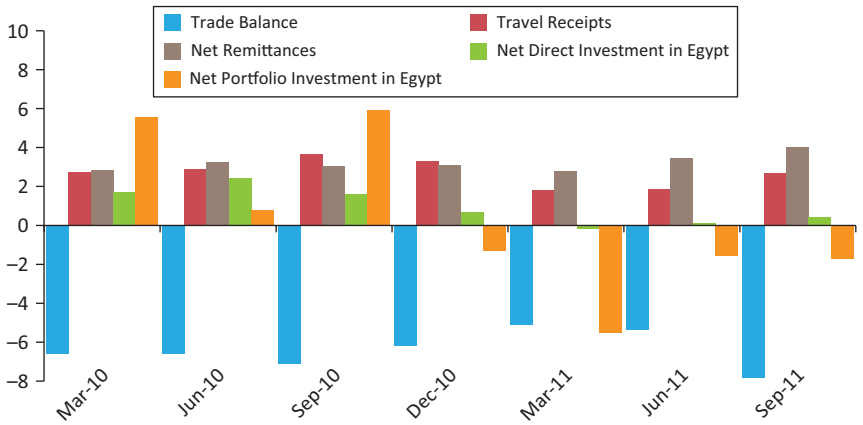
Figure 28. Egypt: CBE's main Policy Rates and the Interbank Rate



Source: Central Bank of Egypt.

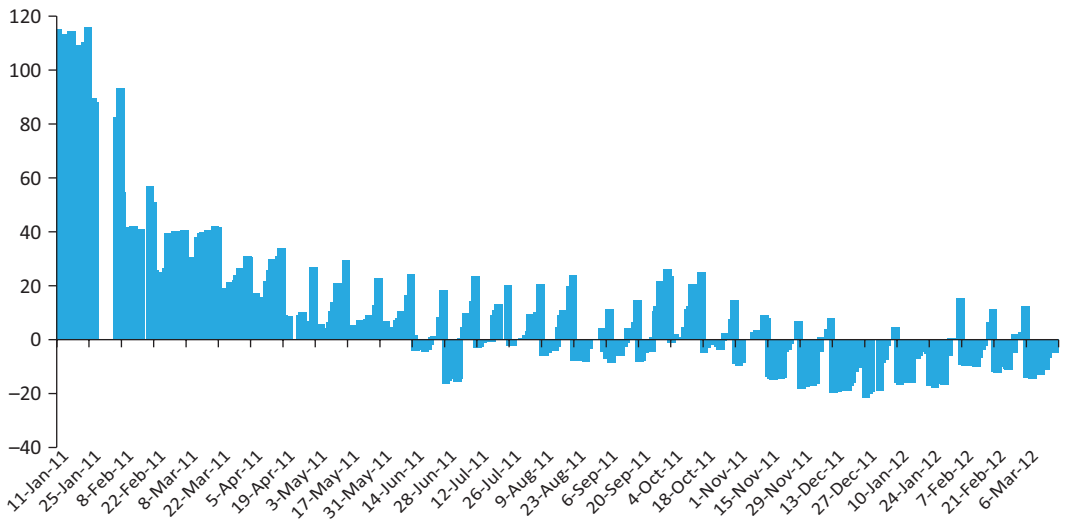
February 2011, to avoid the transfer abroad of illegally obtained funds, the CBE imposed restrictions on foreign currency transfers of the household sector, limiting it to US$100 thousand. Exceptions were: (i) trade related transactions; (ii) funds of foreign portfolio investors; and (iii) funds of foreign corporations opera ting in Egypt.

Figure 29. Egypt: Selected Balance of Payments Items



Source: Central Bank of Egypt.

Figure 30. Egypt: Excess Liquidity



Source: Central Bank of Egypt.

Against this background, excess liquidity in the market declined by EGP 78 billion to average EGP 33 billion in the maintenance period ending March 7, 2011 (Figures 27 and 30). Deposit auctions were redeemed at maturity and saving certificates before maturity. These measures had been used to absorb the excess liquidity in the market prior to the January 25. The interbank activity rose markedly with daily interbank volumes averaging EGP 7.5 billion and EGP 4.9 billion in February and March 2011, respectively, after averaging EGP 1.2 billion in 2010. Moreover, the overnight interbank rate rose by 112 basis points above

the CBE's implied policy rate of 8.25 percent at the time and caused borrowing at the CBE's overnight facility at 9.75 percent to reach EGP 10 billion (Figure 28).

To reduce the volatility of the interbank rate and to steer it towards the target rate consistent with the CBE's price stability mandate, in its first MPC meeting following the revolution, on March 10, 2011, the CBE announced the launch of regular one week repurchasing agreements on March 22, 2011 at a fixed rate of 9.25 percent. Consequently, after operating in a floor liquidity system, the CBE shifted towards a corridor system, where the operational target became around the middle of the corridor (Figure 28).

3. Interest Rate Decisions

In the meantime, total deposit growth in 2011 was very weak, increasing by only EGP 29 billion at a constant exchange rate. This compares to 2009 and 2010, where total deposit growth averaged EGP 85 billion. Moreover, the EGP 29 billion increases mainly reflected additional foreign currency deposits, which increased by EGP 17 billion on the back of dollarization of private sector deposits. Against this background, to secure the household domestic currency deposit base and attract new longer-term domestic currency deposits, in its MPC on November 24, 2011, the CBE raised the standing facilities and the Repo-Rate, while it narrowed the corridor width via raising the overnight deposit rate twice as much as the repo-rate and the overnight lending rate.

4. Adjusting the Reserve Requirement Ratio

Furthermore, as market liquidity continued to decline, on the back of a deteriorating balance of payments and given the uncertainty facing the balance of payments and fiscal outlooks, the CBE decided in March 2012 and in May to reduce the reserve requirement ratio, consecutively, by 4 percentage points to 10 percent. The objective was to provide permanent liquidity to the banking sector and help ease credit conditions in the market.

It is worth emphasizing that the past 18 months have been a period of crisis management which is far from tranquil times where fundamentals take center stage. Each and every day, the CB's information set changes, which necessitates extreme pragmatism from its side to try to weigh all the tradeoffs and use best judgment to make a decision that would alleviate the downward pressures on market liquidity and consequently economic growth without jeopardizing the CBE's overriding price stability mandate. The steps undertaken throughout the whole period have been timely and supportive of orderly and well functioning markets which will facilitate the expected economic rebound.

B. Central Bank of Tunisia[78]

1. The objectives of the Central Bank of Tunisia's monetary policy

Pursuant to Article 33 of Law 2006–26, the principal objective of Tunisia's monetary policy is the preservation of price stability.[79] To this end, and taking into account macroeconomic projections (GDP, balance of payments and the public finances), the CB draws up a monetary program in which it sets an intermediate target for growth of the money supply (M3), with base money[80] (the level of which is influenced through its interventions on the money market) being the operational target on which the Central Bank of Tunisia (BCT) acts.

The acceleration of the M3 aggregate over the course of recent years has sparked instability in the velocity of circulation of money. Thus, the link between the growth of monetary aggregates and inflation has weakened, calling into question the reliability of the monetary aggregates as intermediate targets for the conduct of monetary policy.

The poor performance of monetary targeting, on one hand, and the progressive liberalization of the capital account on the other hand, have led the CB to strengthen its analytical framework through indicators linked to inflation, taking as examples the output gap and underlying inflation while progressively developing a tool for analyzing and forecasting inflation and economic growth that will serve as the basis for closer analysis of the channels by which monetary policy is transmitted.

The monetary program remains an indispensable tool for the estimation of future inflation trends. Although it is used less than in the past, the monetary program is now prepared on a quarterly basis, and is used for information purposes to estimate future inflation trends by comparing forecasts of money supply and economic activity.

2. BCT's monetary policy instruments

2.1. Instruments at the discretion of the Central Bank:

a) Auction (*appel d'offres*). This is the principal instrument for intervention on the money market, whereby the BCT injects or soaks up liquidity against the exchange of Treasury bills or performing loans as collateral.

[78] Prepared by Zouaghi Chedly Karim. This section reflects the views of the author and not necessarily those of the Central Bank of Tunisia (BCT).
[79] This objective was explicitly mentioned in law 2006–26 of May 15, 2006, amending the law establishing the CB.
[80] Base money = balance on the current account of the banking system at the BCT + banknotes and coins in circulation + standing overnight deposit facilities.

The amount allotted is determined on the basis of forecasts of changes in the autonomous factors influencing liquidity, the level of the banking sector's current account, and the lag or anticipation detected in the establishment of required reserves. This amount is distributed among the banks according to the multiple rates method, starting with the highest rates in case of injection and the lowest rates in case of absorption. The auction is normally for seven days but, in light of the tightening of bank liquidity in 2011, the BCT began to hold auctions for one to three months with a view to meeting the money market's structural liquidity needs and laying the groundwork for a yield curve.

b) Fine-tuning operations *(opérations ponctuelles ou de réglage fin)*. These are overnight transactions whereby the BCT injects or mops up liquidity on the money market. The amount is determined by the liquidity situation at the end of the day on the money market and by the behavior of the daily money market rate. The CB has been making less use of this instrument since the introduction in February 2009 of standing overnight facilities.

c) Repo operations *(pensions livrées)*. Introduced in 2006, repos allow the BCT to inject or absorb liquidity in the money market through the temporary purchase or disposal of treasury bills.

d) Outright purchase or sale of treasury bills. This allows the BCT to buy (or to sell) Treasury bills outright against the injection (or absorption) of liquidity on the money market. Unlike the others instruments, the exchange of liquidity between BCT and banks is made without any repayment.

e) Reserve requirements. This is a direct instrument which the BCT can use to deal with a surplus or shortfall in structural liquidity, considering its immediate impact on liquidity.

The rate of required reserves has been changed several times in light of the liquidity situation of the banking sector. The rate currently required for reserves is 2 percent of demand deposits.

2.2. Instruments at the discretion of the banks

Standing overnight loan or deposit facilities *(facilités permanentes de prêt ou de dépôt à 24 heures)*. These facilities allow banks to cope with significant and unexpected fluctuations in banking liquidity and to contain the behavior of the overnight interest rate on the money market within a clearly defined corridor.

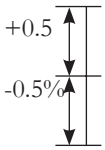
- The lending facility allows the banks to meet their liquidity needs through overnight loans from the CB. The rate is equal to the BCT's policy rate, plus a margin of 50 basis points.

- The deposit facility allows the banks, in the absence of placement opportunities on the interbank market, to make overnight deposits with the BCT. Its rate is equal to the policy rate minus 50 basis points.

3. The money market rate

The introduction of standing overnight facilities in 2009 has allowed the BCT to establish a band within which the daily money market rate fluctuates.

The upper limit of the band is the standing overnight lending facility rate, and the lower limit is the standing overnight deposit facility rate, while the policy rate of the BCT constitutes the midpoint of the band.



Upper limit: Standing overnight lending facility rate

Midpoint: BCT policy rate

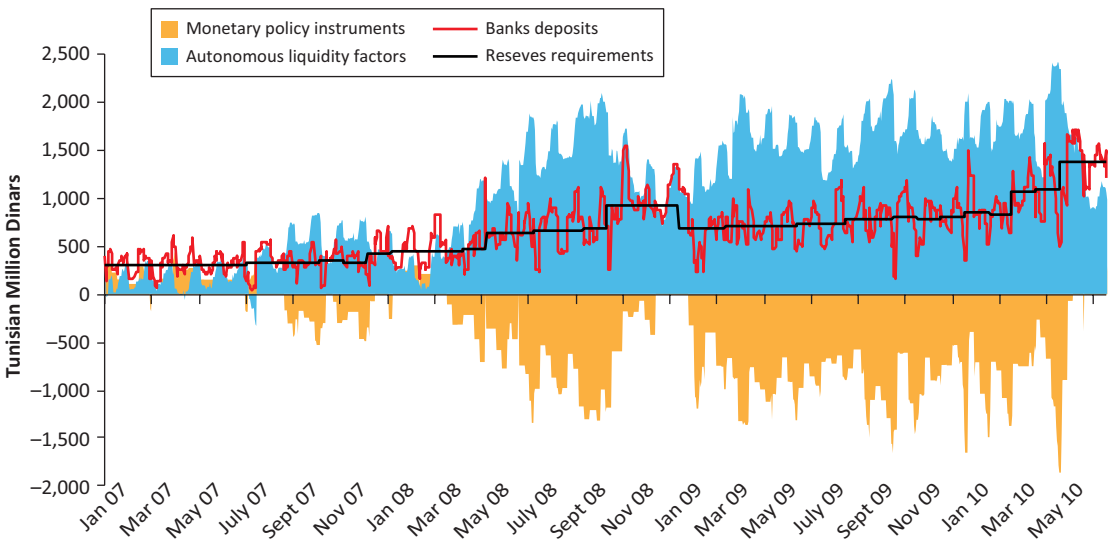
Lower limit: Standing overnight deposit facility rate

4. Behavior of bank liquidity since 2007

4.1. The period from 2007 to mid-2010

This period was characterized by a situation of excess liquidity (Figure 31), due to the significant inflow of foreign direct investment and the privatization of several public enterprises, mainly in favor of nonresident investors.

Figure 31. Tunisia: Excess Liquidity in the Financial System (January 2007–June 2010)



Source: Central Bank of Tunisia.

Table 33. Trend in the Required Reserve Rate (In Percent)

Date of decision	Demand deposits (less than 3 months)	Time deposits (between 3 and 24 months)
December 31, 2008	7.5	1
February 25, 2010	10.5	1
April 30, 2010	12.5	1.5
March 2, 2011	10	1
April 1, 2011	5	1
May 26, 2011	2	0

Source: Central Bank of Tunisia.

This caused a substantial increase in net foreign currency holdings, which rose from TD 8.924 billion in 2007 to TD 12.963 billion in 2010.

This situation triggered an increase in bank liquidity and in fact consolidated that increase, particularly with the easing of the State's cash situation, which allowed it to cover its expenses from its own resources, bolstered by the proceeds of privatization, and thereby to reduce its reliance on financing from the banking sector.

This surplus liquidity thus took on a structural nature, and the BCT instituted a series of measures to forestall inflationary pressures that could potentially have resulted from this situation. Those measures related primarily to:

- Mopping up surplus liquidity, essentially through weekly reverse auctions.
- On three successive occasions, increasing the required reserves rate[81] applied to demand deposits, raising it from 7.5 percent at the beginning of 2009 to 12.5 percent at end-April 2010 (Table 33).
- Sterilization of the proceeds from privatization of public enterprises in a special government account held in foreign currency with the BCT, in order to reduce their impact on liquidity in the banking sector.

Thanks to these measures, excess liquidity was reduced during the second half of 2010.

4.2. The period since the second half of 2010

Following the last increase in the required reserve rate to 12.5 percent, a liquidity need appeared, which was addressed through BCT refinancing.

[81] The constitution of the required reserves is based on the average credit balances in the banks' current accounts for a calendar month. Since the beginning of October 2012, a new rate of reserves requirements (50 percent) is also applied to the increase in some consumer loans outstanding compared to September 2012 in order to reduce consumer loans by banks.

However, the political instability that gripped the country in December 2010 after the beginning of 2011 had a major impact on the business climate, causing a sizable retreat in the volume of foreign investment, a decline in tourism receipts and a slowing of the pace of growth of exports. This situation sparked a significant drop in net foreign currency holdings, which lost an amount equal to 34 days of imports in 2011 compared to 2010.

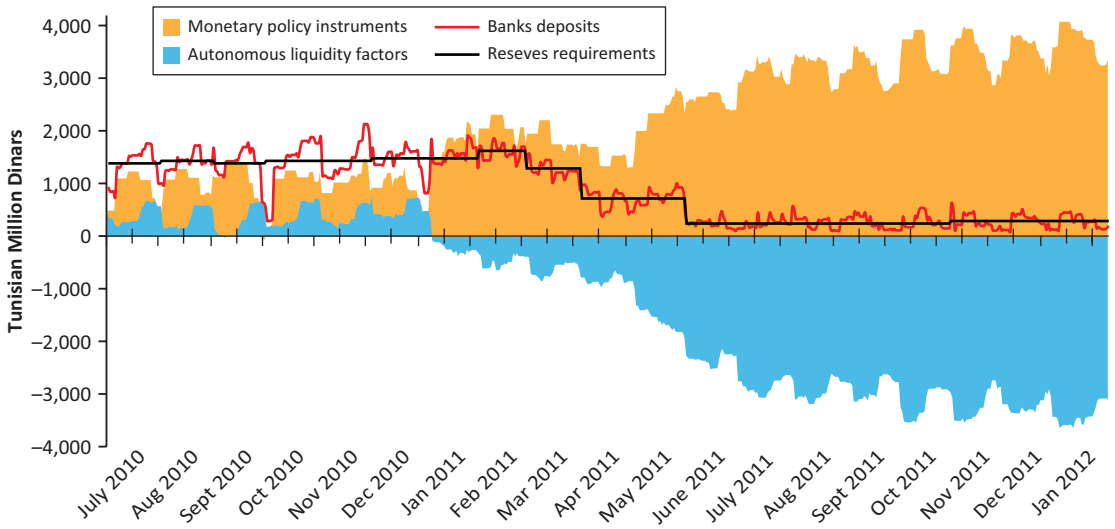
These disruptions also caused a massive withdrawal of banknotes and coins from the financial system, due to hoarding.

In fact, the average volume of banknotes and coins in circulation increased by TD 1.231 billion in 2011, compared to TD 569 million in 2010.

In the face of unprecedented growth in the banking sector's needs, the CB took a series of measures to provide more liquidity to the banks and to support production in units that were heavily affected by fallout from the downturn in economic activity (Figure 32). The main provisions were:

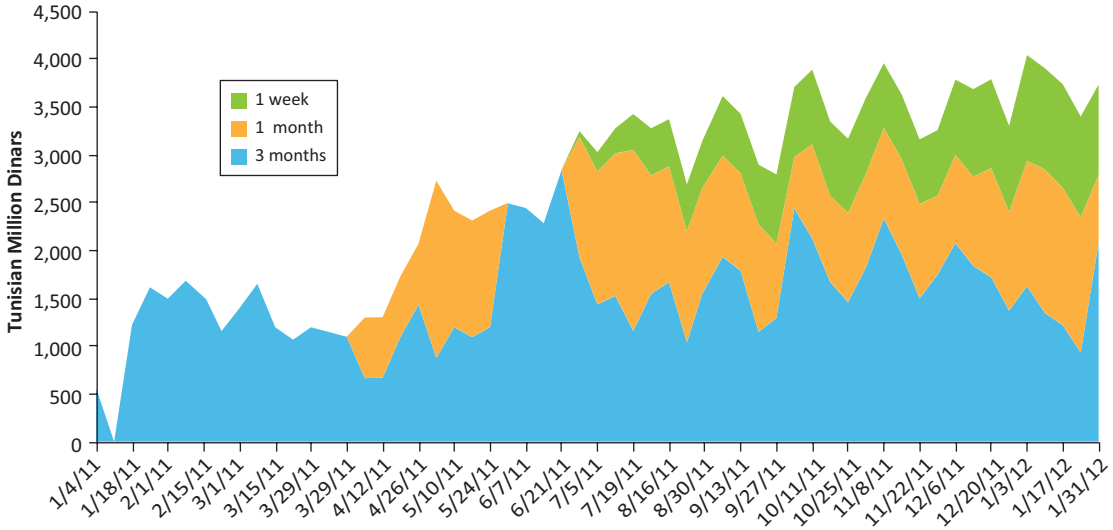
- On three occasions within close succession, a cut in the required reserves rate applied to demand deposits, bringing it gradually from 12.5 percent to 2 percent at end-May 2011.
- Pursuit of an accommodating monetary policy stance, meeting nearly all the liquidity needs of the banking sector, essentially through auctions (Figure 33).

Figure 32. Tunisia: Banking Sector Liquidity Needs



Source: Central Bank of Tunisia.

Figure 33. Tunisia: Auction Volumes, by Maturity



Source: Central Bank of Tunisia.

- An extension of maturities for auctions (one month and three months) in order to provide more liquidity and to meet the structural liquidity needs of certain banks over longer periods.

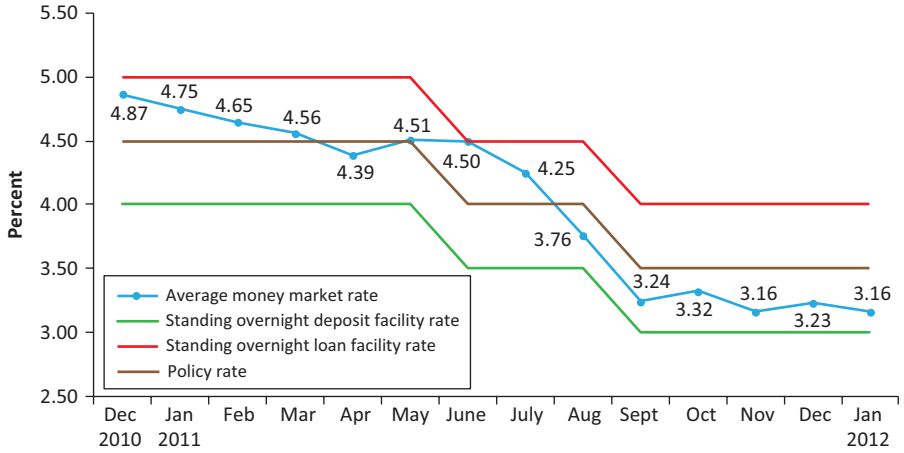
- A downward adjustment of the BCT policy rate, lowering it from 4.5 percent to 4 percent at the end of June 2011 and then to 3.5 percent at the beginning of September,[82] in order to alleviate the interest charges borne by economic enterprises (since bank loan rates are indexed to the money market rate), particularly those that had suffered damage or experienced economic difficulties. This in turn had an impact on the overnight lending and deposit facility rates, which dropped by 100 basis points to stand at 3 percent and 4 percent respectively as of September 5, 2011.

Thus, the money market rate has followed a downward trend (Figure 34).

Relief from the tightening of bank liquidity and restoration of balance on the money market are still very much dependent on the economic, political and social situation in the country. However, if the banking sector's liquidity needs persist, the BCT could consider intensifying longer-term refinancing, reactivating its outright purchase of treasury bills (which can reduce the return of liquidity to CB), and instituting non-standard monetary policy measures.

[82] This is the minimum rate for banks' weekly bids for all maturities (7 days, 1 month, and 3 months).

Figure 34. Tunisia: Money Market Rates



Source: Central Bank of Tunisia.

C. Central Bank of Jordan[83]

1. *Introduction*

Jordan is a small open economy with limited natural resources (oil, coal, water, and other commodities). It is highly dependent on foreign grants, foreign direct investment, travel receipts and workers' remittances for foreign currency resources, while at the same time it is highly susceptible to commodity price shocks and to regional and global economic shocks.

During the oil boom of the late 1970s and early 1980s, Jordan benefited from increased Arab aid reaching on average a real GDP growth rate of more than 10 percent a year; however, reductions in both aid and worker remittances in the latter part of the 1980s, slowed real economic growth to an average rate of roughly 2 percent a year. In response, Jordan relied heavily on external borrowing to close an ensuing external financing gap and a shortage in fiscal revenues. It suffered a balance of payments crisis by the end of 1989, followed by 50 percent currency devaluation. In response, Jordan adopted significant structural, economic, legal, administrative and social reform programs; while many elements of these programs have been successfully implemented others are being gradually implemented in meeting their final objectives.

[83] Prepared by Malik Bani Hani. This section reflects the views of the author and not necessarily those of the CBJ.

During the 2000s, growth expanded at an average rate of close to 6 percent, propelled by a strong global growth—real GDP grew twofold from 4 to 8 percent between 2000 and 2007. The global economic crisis that followed dampened growth, which along with the social and political unrest that has swept the region slowed real growth to mere 2.6 percent in 2011.

2. *Monetary policy*

The Central Bank of Jordan (CBJ) implemented a monetary policy prior to 1989 which was strongly shaped by the developmental role of the CBJ in the economy, focusing mainly on financing either the government's budget deficit or supporting and subsidizing the banking credit extended to sectors which were deemed as "essential" to the performance of the economy. Monetary policy tools (interest rates and the exchange rate) were determined administratively with no role for market forces in the banking sector. In all, monetary policy was carried based on direct controls, with the CBJ frequently setting ceilings on credit extended by banks and limits on lending and borrowing rates.

Following the financial crisis in 1989 and in consultation with the IMF and World Bank, Jordan implemented several adjustment programs which aimed at reforming the main sectors of the economy, including monetary and external. Beginning in 1993, CBJ abandoned its old directive approach, and shifted to indirect controls of monetary policy, introducing CBJ CDs as its main instrument—CBJ's monetary policy primary focus on meeting developmental objectives was relinquished, switching to maintaining stability in prices and the exchange rate (given its pegged regime), and a supportive level of interest rates taking into account domestic and international economic developments. The CBJ conceives monetary stability to be a catalyst for an attractive investment environment for foreign and domestic investors and strong economic growth as a byproduct.

3. *Monetary policy instruments*

With a structural reform strategy in place and a growing reliance on market forces (which is likely to reduce distortions in saving and investment and improve efficiency in resource allocation), the CBJ at the start of the 1990s moved to an indirect intervention policy relying on market interest rates and on OMO as main instruments in achieving monetary stability.

The efficiency of OMOs in achieving the objectives of monetary policy depends on the existence of well-developed and deep financial markets. Lack of such markets in Jordan as a result of insufficiently issued government debt instruments (treasury bills and bonds), at low frequency and at the short

tenure of the yield curve) impeded carrying an effective monetary policy. Further, the secondary markets for these instruments were also considerably shallow. By the end of 1993, taking these deficiencies into consideration, the CBJ resorted to issuing own Jordanian Dinar (JD)—denominated CDs as a way to absorb excess liquidity in the banking system and to mitigate unintended negative effects on the price level and exchange rate. CDs were issued on a bi-weekly basis through a public auction system with banks being the main counterparty to the transactions.

By mid-1997, CBJ added more transparency in issuing CDs by disclosing openly the auction interest rates on CDs, the volume of issuance, and the balance of excess liquidity in the banking system. It also introduced repurchase agreements (which can be traded among banks) in assisting banks improve their excess liquidity management, and provide the necessary liquidity to the economy as needed.

In addition to the main use of OMOs, the CBJ also relies on the reserve requirement (RR) ratio for instrument. RR rates were unified across banks and deposits (JD- and foreign currency-denominated), gradually declining from 35 percent in 1989 to 7 percent in 2011. It also makes use of the rediscount rate instrument which serves as a signal to banks and financial markets and which can be used quite flexibly in response to changing economic conditions. Beginning in 1998, the CBJ also resorted to using the overnight deposit window (to influence bank reserves) and the overnight repo facilities. Beginning in 2000, the CBJ moved away from targeting CD auction *rates* to a *corridor system* with the overnight window set as the floor and the 7-day repo facility (introduced in 1994) set as the ceiling. In May 2007, the CBJ simplified its interest rate structure by reducing the corridor width by 125 basis points and replacing the 7-day repo facility with an overnight facility to ensure symmetry with the overnight deposit window.

4. *Monetary policy operations in the wake of the global financial crisis*

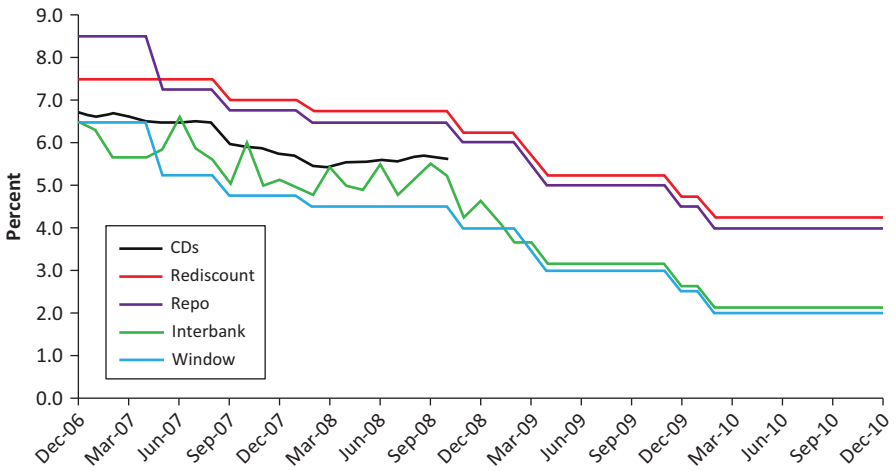
The CBJ pursued expansionary monetary policy gradually to mitigate the repercussions of the global financial and economic crisis on the national economy; at the same time, it reinforced its mandate in pursuing financial and monetary stability while strengthening the economy's resilience to external shocks. In this context, the CBJ ceased issuance of CDs beginning in October 2008 as a way to preserve adequate levels of liquidity in the banking system (Figure 36) and to encourage banks to extend credit to firms and households in the economy. This was combined with cutting interest rates on monetary policy instruments gradually by a total of 250 basis points (Table 34 and Figure 35), in addition to reducing the required reserve ratio from 10 to 7

Table 34. Jordan: Monetary Policy Interest Rates during 2008–10
(In Percent)

Date of Decision	Discount Rate	Overnight Repo Rate	Deposit Window Rate
Feb. 3, 2008	6.75	6.5	4.5
Nov. 25, 2008	6.25	6	4
Mar. 12, 2009	5.75	5.5	3.5
Apr. 12, 2009	5.25	5	3
Dec. 12, 2009	4.75	4.5	2.5
Apr. 23, 2010	4.25	4	2

Source: Central Bank of Jordan.

Figure 35. Jordan: Interest Rate Structure Dec. 2006–Dec. 2010



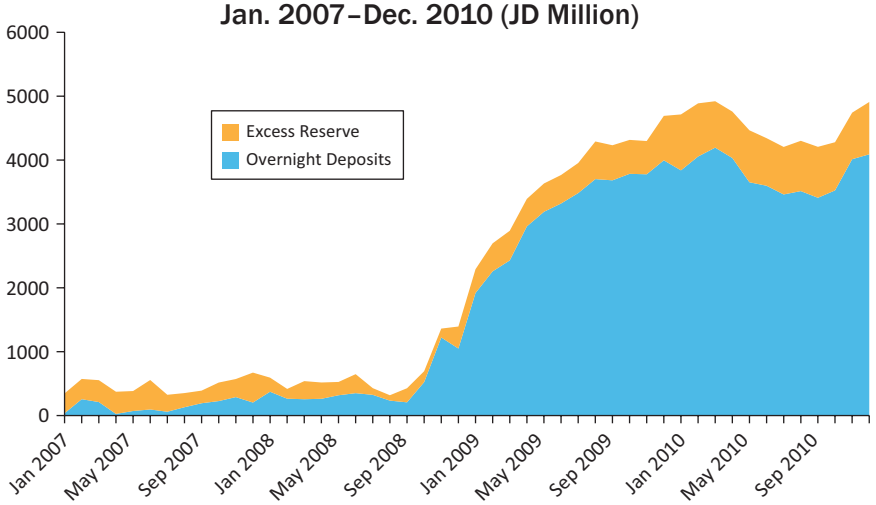
Source: Central Bank of Jordan.

percent. Such measures helped stabilize the economy. FX reserves increased by US$4.5 billion in 2010 (from the end of 2008) and reached a record high of just over US$12 billion by the end of 2010 (the equivalent of close to eight months of Jordan's imports of goods and services).

5. *Monetary Policy Operations from 2011 to Present*

The global financial and economic crisis, accompanied by regional social and political unrest, advanced economies' sovereign debt debacle, and rising oil prices had important implications on the economy. Starting in 2011, Jordan's external account has faced increasing pressures as a result of higher import

Figure 36. Jordan: Excess Liquidity in Banks during Jan. 2007–Dec. 2010 (JD Million)



Source: Central Bank of Jordan.

Table 35. Jordan: The Structure of Monetary Policy Interest Rates during 2011 (In Percent)

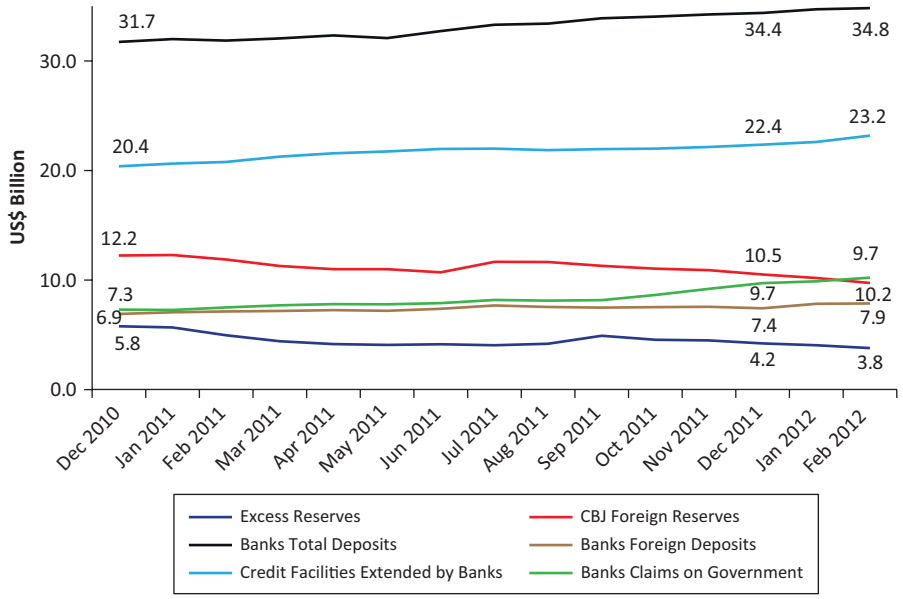
Date of Decision	Discount Rate	Overnight Repo Rate	Deposit Window Rate
Feb. 23, 2010	4.25	4	2
Jun. 1, 2011	4.5	4.25	2.25
Feb. 5, 2012	5	4.75	2.75
May 31, 2012	5	4.75	3.25

Source: Central Bank of Jordan.

prices, lower tourism and workers' remittances receipts, as well as lower grants and FDI inflows; these combined with an increasing government's budget deficit, affected the accumulation of the country's buffer of foreign reserves declining to US$6.7billion by the end of June 2012.

In response, the CBJ started a tightening monetary policy cycle, increasing its policy rates (Table 35 and Figure 37). This action aimed at supporting monetary stability in curbing expected inflationary pressures and ensuring a competitive return on the JD-denominated assets would ultimately promote a favorable investment environment in support of sustainable growth. At the same time, with the aim of providing the necessary liquidity to the banking system and minimizing volatility in interest rates in the interbank market, the CBJ introduced the weekly repurchase agreements facility.

Figure 37. ordan: Main Money and Banking Indicators during 2010–12



Source: Central Bank of Jordan.

6. *Monetary and Exchange Rate Policies*

The exchange rate policies adopted in Jordan ranged from a peg to the British pound, the SDR, and the U.S. dollar to a managed float arrangement; the JD was pegged to the British Pound until 1975, followed by a peg to the SDR within a narrow band during 1976–1988. In 1988, the JD was allowed to float under pressure but was pegged again to the SDR in 1989. Since October 1995, the JD has been pegged to the U.S dollar. Shortly after, in mid 1996, all exchange rate controls were abolished and the capital account was fully liberalized.

The fixed exchange rate regime adopted in 1995 has served Jordan well, fostering confidence in the JD demonstrated through the strong economic performance, export growth, productivity improvements, reasonable inflation levels, unprecedented level of foreign reserves (exceeding JD 12 billion at the end of 2010), as well as the surge in foreign direct investment inflow.

Risks. The ongoing regional and global risks and uncertainties continue to exert pressure on the Jordanian economy, requiring vigilance on the part of the CBJ in monitoring and analyzing the main macroeconomic and financial indicators on a continual basis as well as meeting its mandate of maintaining monetary stability and preserving external competitiveness while taking more into consideration financial sector development and financial stability.

Appendix I: Exchange Arrangements and Monetary Policy Frameworks in IMF Arab Member Countries

Algeria

Classification: Other managed arrangement

The de jure exchange rate arrangement is managed floating. The Bank of Algeria (BA) does not announce the future path of the exchange rate. The external value of the dinar is determined in the interbank FX market, in which the BA is the main seller because of the significant inflows related to commodity exports, including hydrocarbons, which, under current law, must be surrendered to the BA. The BA manages the dinar with reference to a basket of currencies.

The rate of the dinar relative to the currencies in the basket is based on balance of payments data. The BA has not set a target range for fluctuation of the dinar outside or within any particular band and the observed exchange rate movements do not confirm any constant weights of the currency composite. Accordingly, the de facto exchange rate arrangement is classified as other managed arrangement. The BA does not disclose any information about its interventions [clarity: low].

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis a currency composite.

Bahrain

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional pegged arrangement. The rate is indicated in the Official Gazette of the CBB.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Comoros

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional peg. The Comoros participates in the franc zone area. The monetary cooperation agreement

established between CAEMC member countries and France is based on three pillars: (1) a common issuing institution, (2) fixed parity with the euro, and (3) an unlimited convertibility guarantee. The exchange rate arrangement is established in the following documents: (1) the Monetary Cooperation Agreement between the Comorian and French governments, November 23, 1979; (2) the decision by the European Council of Ministers authorizing France to maintain its monetary arrangements with both the CFA zone countries and the Comoros, November 23, 1998; and (3) the order by the governor of the Central Bank of Comoros (CBC) on euro–Comorian franc parity, January 14, 1999.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the euro. Government borrowing directly from the CB is limited by the CB law.

Djibouti

Classification: Currency board

Djibouti's monetary system is based on a currency board. The Djibouti franc has been pegged to the U.S. dollar since 1949, but the legislation establishing the currency board and determining the fixed exchange rate is Law No. 91/AN/05/5èmeL of January 16, 2005. The Central Bank of Djibouti (BCD) guarantees and provides for unlimited conversion into U.S. dollars of banknotes and coins used as legal tender in Djibouti. The full issue of Djibouti francs is covered by FX reserves. The National Assembly of Djibouti has the authority to make decisions regarding changes in the exchange rate arrangement.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Egypt

Classification: Crawl-like arrangements

The de jure exchange rate arrangement is floating. The exchange rate is determined through supply and demand in the FX interbank market, and the CBE buys and sells FX daily at the rate prevailing in the interbank market. The CBE does not publish its intervention data.

From March 2009 through January 2010, the pound gradually appreciated against a euro–U.S. dollar basket, followed by a gradual depreciation since

then. Therefore, the de facto exchange rate arrangement has been reclassified retroactively to a crawl-like arrangement against a composite from other managed arrangement, effective March 12, 2009.

Monetary policy framework: Other monetary framework

The monetary policy framework pursues multiple targets.

Iraq

Classification: Stabilized Arrangement

The de jure exchange rate arrangement is floating. The Central Bank of Iraq (CBI) has allowed the exchange rate to appreciate gradually vis-à-vis the U.S. dollar following a predetermined path. Within these limits, the exchange rate of the dinar is determined in the FX market. Since January 2009, the CBI has set the rate of crawl at zero, stabilizing the exchange rate at about ID 1,170 per U.S. dollar. Accordingly, the de facto exchange rate arrangement is classified as a stabilized arrangement against the dollar. The intervention data a republished on the CBI website.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Jordan

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional pegged arrangement. The dinar is officially pegged to the SDR, but in practice, it has been pegged to the U.S. dollar since late 1995.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Kuwait

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional peg. According to the law of the Central Bank of Kuwait (CBK), the exchange rate arrangement is specified by an Amiri decree after seeking the opinion of the governor of the CBK (see CBK Law, Chapter I, Article II). The arrangement

is a conventional peg vis-à-vis a currency composite. Intervention data are not disclosed to the public.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis a composite.

Lebanon

Classification: Stabilized arrangement

The de jure exchange rate regime is free floating. In practice, the exchange rate remains within a very narrow band vis-à-vis the U.S. dollar. Therefore, the de facto exchange rate arrangement is classified as a stabilized arrangement. The Banque du Liban (BDL) intervenes in the FX market daily from 10:00 a.m. until 2:00 p.m., Monday through Thursday, and from 10:00 a.m. until noon on Friday. The BDL does not publish intervention data.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar. The BDL manages the exchange rate of the pound vis-à-vis the U.S. dollar as part of its role to maintain sustainable economic growth, a stable inflation rate, stable purchasing power, and accordingly social and economic stability.

Libya

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional peg vis-à-vis the SDR. The U.S. dollar is the intervention currency.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis a currency composite (the SDR).

Mauritania

Classification: Other managed arrangement

The de jure exchange rate arrangement is floating. The ouguiya was previously de facto pegged to the U.S. dollar, at an exchange rate of UM 268.6 per U.S. dollar. The new FX uses a fixing system in which the Central

Bank of Mauritania (BCM) intervenes. The BCM intervenes in order to regulate the exchange market according to its exchange rate policy objectives (smoothing the exchange rate) and the projected level of official reserves. Due to authorities' control over the exchange rate, the de facto exchange rate arrangement is classified as other managed arrangement. A summary statement of BCM intervention data is updated daily on the BCM website.

Monetary policy framework: Other monetary framework

The monetary framework pursues multiple targets.

Morocco

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional peg vis-à-vis a composite. Since April 2001, the basket has been composed of the euro and the U.S. dollar, with weights of 80 percent and 20 percent, respectively. The BAM publishes its monthly FX purchases and sales on its website. Authority to establish the fixed exchange rate arrangement is found in Dahir No. 1–05–38 of November 23, 2005, promulgating Law No. 76–03 establishing the charter of Bank Al-Maghrib (Chapter II (Missions, Section I (Core missions)), Article 8).

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis a composite, comprising the euro and the U.S. dollar. Within the framework of an exchange rate fixed to a currency composite, the BAM adopted in 2006 a monetary policy framework based on various inflation indicators with the overnight interest rate as its operational target to pursue its main objective of price stability. The BAM reference interest rate is set at 3 percent since March 2012 (it was stable at 3.25 percent for the previous three years).

Oman

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional peg to the U.S. dollar.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Qatar

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional pegged arrangement vis-à-vis the U.S. dollar. The targeted peg was officially authorized by Amiri Decree No. 34 of 2001 issued in July 2001, replacing the de jure exchange rate policy of pegging to the SDR, which had been in effect since 1975. The Qatar Central Bank (QCB) does not publish data on its interventions.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Saudi Arabia

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional pegged arrangement. The GCC Supreme Economic Council adopted the U.S. dollar as a nominal anchor on December 31, 2001, with an effective date of January 1, 2003. The rate of the riyal against the U.S. dollar is determined by the Saudi Arabian Monetary Agency (SAMA) and has been stable since June 1986. The SAMA, in coordination with the minister of finance, decides on changes in the exchange rate arrangement. Historically, the SAMA has not published its intervention data.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Somalia

Classification: Not available

Monetary policy framework: Other monetary framework

No relevant information on the monetary policy framework is available.

Sudan

Classification: Other managed arrangement

The exchange rate is determined in the interbank market, in which participants deal directly with each other. The Central Bank of Sudan

(CBOS) participates in the market through swaps under a rules-based mechanism that triggers intervention if the exchange rate exceeds a band of ±3 percent around the previous day's closing rate. The main objective of the policy is to achieve exchange rate stability. Given the focus of the CBOS on exchange rate stability and in line with recent exchange rate movements, the de facto exchange rate arrangement has been reclassified retroactively to other managed arrangement from floating, effective December 1, 2009. The CBOS does not disclose information on its interventions to the public.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is primarily an exchange rate anchor vis-à-vis the U.S. dollar; the CBOS aims to control broad money as a monetary target.

Syria

Classification: Stabilized arrangement

The de jure exchange rate arrangement is a pegged exchange rate within horizontal bands. Since the revaluation of the pound against the U.S. dollar, the official rate is pegged to the SDR within a ±9 percent band. However, the pound has shown limited volatility against a composite including the SDR basket of currencies (euro, pound sterling, U.S. dollar, and Japanese yen), although the U.S. dollar has a larger weight than in the SDR basket. Accordingly, the de facto exchange rate arrangement is classified as a stabilized arrangement against a composite.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the SDR.

Tunisia

Classification: Stabilized arrangement

The de jure exchange rate arrangement is floating. The exchange rate of the dinar is determined in the interbank market. The Central Bank of Tunisia (CBT) intervenes in the FX market to regulate FX demand and supply and publishes daily an indicative interbank exchange rate for the dinar against the main international foreign currencies. Since January 2009, the dinar has been very stable against a euro–U.S. dollar composite. Therefore, the de facto exchange rate arrangement is classified as a stabilized arrangement against a composite. The CBT intervenes in the FX market in response to requests from banks for quotes. The rates posted by the CBT reflect the exchange rates prevailing in the international FX market. Effective January 1, 2011, the CBT posts the volume of transactions between authorized intermediaries

(IATs) and the volume of its daily interventions in the interbank FX market on its website. Previously, the CBT did not release intervention data to the public.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is primarily an exchange rate anchor vis-à-vis a euro–U.S. dollar composite. The CBT also tries to pursue a monetary aggregate target. The CBT applies a quantitative approach on a monetary basis, which is the operational target, and fine-tunes bank liquidity with open-market operations.

United Arab Emirates

Classification: Conventional peg

The de jure exchange rate arrangement is a conventional pegged arrangement. The dirham was officially pegged to the U.S. dollar in January 2003. The United Arab Emirates Central Bank (UAECB) does not publish its intervention data.

Monetary policy framework: Exchange rate anchor

The monetary policy framework is an exchange rate anchor vis-à-vis the U.S. dollar.

Yemen

Classification: Other managed arrangement

The de jure exchange rate arrangement has been free floating since July 1996. The Central Bank of Yemen (CBY) receives most of the FX proceeds of the country, particularly crude oil export revenues, official loans, and official development assistance. Faced with falling reserves, on June 1, 2009, the CBY reverted from an open window on FX sales (at a steady rate of about Yrls 200 per U.S. dollar) to periodic auctions, which allowed some depreciation of the rial. After a gradual depreciation of 9 percent against the U.S. dollar during the first half of 2010, the rial experienced a further drop of more than 6 percent in July alone followed by a rapid appreciation of 10 percent in August. From September 2010 through mid-February 2011, the exchange rate remained stable in the region of 214 to 215 rial per U.S. dollar, mainly in the context of recent CBY measures mitigating speculative activity in the FX market and the CBY's policy of providing banks with FX to finance imports of essential commodities. In February 2011, the FX market was disrupted and remains uncertain, with no discernible pattern for the rial. Therefore,

the de facto exchange rate arrangement is classified as other managed arrangement.

Monetary policy framework: Monetary aggregate target

The stated monetary anchors comprise reserve money and M2. An exchange rate anchor vis-à-vis the U.S. dollar has also been used periodically to stabilize the rial.

Appendix II: Unconventional Tools and Financial Stability Concerns in Central Bank Responses to the Crisis

Monetary policy and financial stability frameworks before the crisis—main features

Maintaining low and stable inflation was thought to be the main contribution monetary policy could make to *financial stability*. Policy objectives other than price stability—notably output or exchange rate stability—were taken into account in policy, but financial stability was often not a major consideration. This reflected a number of factors, among them (i) the conventional policy framework focused on relatively rapid channels of policy transmission to inflation and the implications of financial market vulnerabilities for the conventional policy framework were not well understood; and (ii) there was a broadly accepted view that different policy instruments are needed to successfully attain different policy objectives.

CBs were meant to fulfill their role in financial stability by providing an overview of risks to the financial system, often using stress tests to gauge solvency risks in recession scenarios, and promulgating results in financial stability reports. However, the techniques used were not sufficiently advanced to take account of the endogenous interaction between solvency and liquidity pressures, while published *financial stability reports* often stopped short of mapping vulnerabilities to concrete policy actions.

While CBs recognized potential risks associated with asset price bubbles, these were not seen, in general, as justifying monetary policy responses. It was argued that CBs did not have reliable means of identifying asset bubbles, and that, even if they could, using interest rate policy to prick bubbles was likely to involve high costs in terms of output foregone. A bias towards inaction was reinforced by the view that monetary policy could cushion the impact on the economy when bubbles burst.[84] Furthermore, market excesses, reflecting a number of factors left unaddressed by regulatory measures played a major role in setting the stage for the crisis. With inflation expectations well-anchored and inflation subdued by virtue of global supply factors, many advanced economy (AE) CBs kept policy rates low during the early 2000s in support of price stability. Low global interest rates and expectations of continued macroeconomic stability may have led market participants to underestimate risks in many asset classes.

Response of central banks to the crisis—unconventional tools, financial stability concerns

The crisis made it necessary for CBs to take a range of exceptional policy actions beyond cutting interest rates to historical lows, including:

[84] Box 9 describes the "clean versus lean" debate.

- AE CBs greatly expanded the reserve money base. This reflected the need for them to substitute for wholesale bank and shadow bank funding markets when they dried up. New facilities were established to alleviate liquidity shortfalls in specific markets that were spreading to the system as a whole and cutting off credit flows.
- in some countries, a considerable amount of FX liquidity was injected into local markets to ease tensions in global funding markets after the collapse of Lehman in September 2008. AE CBs took prompt action to provide FX liquidity across borders, as facilitated by a number of CB swap facilities.
- a few AE CBs purchased private and public long-term securities and took other measures after their policy interest rates hit the effective lower bound. These purchases were mainly intended to lower long-term interest rates, primarily for the purchased securities, but also were aimed at improving overall credit conditions.
- CBs intervened in their function as a LOLR and were intimately involved in the resolution of large systemically-important institutions (SIFIs).

On the use of unconventional monetary policy tools, experience so far suggests elements of good practice which are summarized in Box 8.

Box 8. Best Practices Using Unconventional Monetary Policy Tools[1]

Policy objective—The overarching objective of the tool should be defined clearly at the outset to facilitate understanding of the measure and minimize the possibility of overlap across policy areas, including between monetary and fiscal policies. This will help stabilize expectations.

Transmission—A communication of the transmission of unconventional measures enhances understanding of how the policy is likely to work and helps underpin its effectiveness.

Transparency—A clear initial explanation, regular updates including balance sheet data, and formulation of an exit strategy should enhance effectiveness and accountability.

Balance sheet protection—Risks taken on by the CB should be managed. Ideally, any substantial credit risk should be transferred to the government.

Adherence to these practices would help preserve the high degree of CB independence that has proven crucial for maintaining price stability. Quasi-fiscal roles taken on by CBs in the past undermined their credibility. Any losses from long-term security holdings that threaten the financial integrity of CBs should be met by government financing. The expanded post-crisis balance sheets make even more important effective collaboration between the CB and government in macro-policy coordination, cash management, and broader asset and liquidity management.

[1] IMF (2010).

In further promoting financial stability, financial system developments and vulnerabilities need to be more fully taken into account. A priority is to strengthen CBs' monitoring and analysis of macroprudential imbalances and risks whereby incorporating features of financial balance sheets, financial intermediation, and asset prices into more elaborate macroeconomic models will be essential for monetary policy makers to assess the consistency of financial sector developments with price and output stability.[85]

It is also argued that CBs may need to adopt longer planning horizons if they are to bring financial stability concerns into their decision making (see Borio and White, 2004, and Gerlach and others, 2009). The financial and asset price imbalances that can magnify risks to financial stability tend to develop gradually, and therefore generally lie beyond the conventional planning horizon for monetary policy of two-three years. But a concern in this context is that tolerating more persistent deviations of inflation would both dilute policy accountability and fuel uncertainty about the CB's long-term commitment to price stability.

A remaining open question is whether monetary policy should go beyond these measures and add financial stability as a distinct policy objective. In this regard, more relevant instruments (beyond policy interest rates) rooted in the macroprudential framework need to be elaborated to meet the financial stability objective.

Box 9 addresses a pertinent question as to whether CBs should "lean against" emerging financial imbalances or "bubbles" or wait to clean up after a bubble had burst. Three views are briefly posited. A common view has been that leaning mechanistically against financial imbalances could increase inflation volatility, require strong interest rate responses to be effective (thus imposing high output costs), and may be counterproductive in small open economies where high interest rates can attract capital inflows. Nevertheless, the high costs of systemic financial instability shown by the crisis can be seen as strengthening the case for using monetary policy to lean against asset price bubbles. Until financial developments are better structurally incorporated in monetary policy decision making, CBs should utilize judgment in deciding whether to maintain interest rates somewhat higher than otherwise in order to avoid imbalances from undermining financial stability, which would endanger longer-term price stability. For example, a combination of rising asset prices and rapid credit growth may warrant a higher policy rate, even if inflation projections for the normal policy horizon are benign.

[85] Kohn (2009), among others, noted that standard macroeconomic models used for monetary policy had largely ignored those features.

Box 9. Central Banks' Reaction to Asset Price Imbalances: Lean or Clean?

"Reactive" view

- ✓ Changes in asset prices should influence monetary policy only insofar as they influence the expected inflation and the output gap.
- ✓ Monetary policy would not be effective in "leaning" against the upswing of a credit cycle (the boom).
- ✓ CBs should only address the fallout from an eventual crisis (the "Greenspan Put").

"Proactive" view

- ✓ If advanced country CBs had reacted more forcefully to the sharply rising asset prices between 2003–07, the bubble on equity and real estate markets would not have been as large, and the crisis may have been averted.
- ✓ This does not necessarily mean that CB should "target" a certain level of asset prices (or asset price inflation), nor that policy rules need to be modified to include asset prices.
- ✓ Policy reactions to asset price misalignments must be qualitatively different from reactions to asset price changes driven by fundamentals (Cecchetti and others, 2002).

Preconditions for proactive approach

- ✓ Policymakers must be able to identify bubbles in a timely fashion and with reasonable confidence.
- ✓ Monetary policy must have a high probability of being able to check some of the speculative activity.
- ✓ Expected improvement in economic performance from pricking the bubble must be large enough to justify preemptive action.

"Intermediate" view

- ✓ Form views about risks to macroeconomic and financial stability, including risks arising from asset price bubbles.
- ✓ Devise contingency plan.
- ✓ Strengthen prudential and supervisory policies: monetary policy is not the only instrument to curb or curtail asset price bubbles.

Appendix III: Excerpts from MENA Central Bank Statutes Relating to Collateral

Central Bank of Kuwait

Article 26

Within the provisions of this Law, the Board of Directors shall exercise the full powers necessary to perform its duties, and shall do the following in particular:

(c) determine the system of discounting and rediscounting commercial papers and of granting loans and advances, and specify the collateral required;

Article 37

For the purpose of financing development projects or strengthening the financial market, the CB may upon approval of the Minister of Finance:

2. extend loans to banks, public financial or credit establishments, against collateral of their holdings of such shares or bonds. Provided that the total amounts allocated for the acquisition of the aforementioned shares or bonds, or for lending against the collateral of their holding, does not exceed the value of the reserves of the Bank;

Article 41

The CB may carry out the following operations with banks only, and not otherwise:

(b) give *loans* or advances, in emergency cases, through current account for a period not exceeding six months against such collateral as the Bank may consider adequate.

Central Bank of Bahrain

Chapter 6
Central Bank's Transactions and Investments

Article (31)
Prohibited Transactions

Except as otherwise provided for in this law, the CB shall not:

(5) Accept shares or convertible public debt instruments as collateral.

Part 6
Netting and Collateral

Chapter 1
Netting

Article (108)
Close-Out Netting Due to Market Contract

(a) The CB shall issue regulations regarding conditions and controls to be incorporated in a Market Contract as well as the procedures for carrying out clearance according to such contract.

(b) Notwithstanding the provisions of any other law relating to clearance, bankruptcy or insolvency, any Close-out Netting shall be carried out according to the Market Contract in connection with debts, loans and dealings between the parties thereof that were originated or completed before any of the parties became insolvent or bankrupt.. The same shall apply against the parties of the contract their receivers in bankruptcy and their creditors.

(c) The previous paragraph shall not apply if one party knew or ought to have known that:

1. an application, for the liquidation and winding up of the other party by reason of insolvency, is being considered by the concerned authority.

2. the other party has taken formal steps under any other

Article (109)
Exceptions

(a) Notwithstanding the provisions of any other law, no restriction or suspensions shall be applied to any provision related to clearance according to a Market Contract.

(b) Notwithstanding the provisions of any other law relating to clearance, bankruptcy or insolvency, the parties in a Market Contract may;

(1) agree to any system which will enable the parties to convert a non-financial obligation into a financial one of equivalent value and to valuate such an obligation for the purposes of any clearance or Netting.

(2) agree on the rate of exchange or the method to be used to establish the rate of exchange to be applied in effecting any clearance or Netting when the sums to be cleared or netted are in different

currencies, and to establish the currency in which payment of the net sum is to be effected.

(3) agree that any transactions carried out pursuant to any Market Contract shall be treated as a single transaction for the purposes of the contract whether such transactions were completed by the parties, a receiver in bankruptcy, a competent court, an officer representing the parties or that such transactions have been categorized or attributed to a certain type of trading.

Chapter 2
Collateral

Article (110)
Provisions Governing the Collateral

With consideration to the provisions of the Civil Law and Commercial Law regarding pledging, the CB shall issue the terms and conditions for the provision of any pledge, insurance, collateral or title transfer collateral to beneficiaries according to a Market Contract.

Central Bank of Sudan

Shares of financial enterprises held

54. The Bank may subscribe to the shares of any enterprise, purchase, sell or hold such shares, whenever participation to such enterprise, or the initiation thereof, achieves the objectives of the Bank, or the same is generally in the interest of the national economy.

Operations which the Bank shall not undertake

55. The Bank shall not:-

(f) purchase, or acquire shares, or accept the same as collateral security, save in accordance with the provisions of section 54;

Central Bank of Oman

Article 14 Powers

The Board of Governors shall be authorized and empowered to do the following:

(q) To promulgate regulations of the CB and to issue directives to particular licensed banks concerning the relationship between collateral and the

purposes of the loan secured by such collateral and the limitations on the amount of collateral which a licensed bank may require as security for the loan of money or the extension of credit;

Article 28 Investment and Credit Functions

The CB, when so authorized by the Board of Governors and except as otherwise provided by this Law, may undertake to do any one or more of the following:

Grant advances to licensed banks for fixed periods not to exceed 90 days at a rate of interest determined by the Board of Governors, provided, however, that such advances are evidenced by promissory notes secured by a pledge of one or more of the following collateral:

(1) Securities of the Government of the Sultanate which have or will have a public market and are to mature within a period of not more than ten years, provided, however, that any such advance may not at any time exceed 75 percent of the current market value of the security pledged;

(2) Promissory notes and other negotiable instruments eligible for purchase, discount or rediscount by the CB under this Article 28, provided, however, that any advance shall not exceed 75 percent of the principal amount of the instruments pledged.

Central Bank of UAE

Chapter Four
Management

Section Two:
Jurisdiction and Meetings of the Board of Directors

Article (18)

The Board of Directors shall, within the limitations imposed by this Law, exercise all powers required for attaining the objectives for which the Bank has been established. In particular, the Board of Directors shall exercise the following:

7. Establish rules to govern the granting of loans and advances to domestic banks, define the upper limits of such loans and advances and specify the collateral security required thereof.

Chapter Five
Operations of the Bank

Section Two:
Relations with Local Banks and Financial Institutions

Article (44)

The Bank may carry out the following operations solely with banks operating in the United Arab Emirates:

3) Offer loans or advances on current account for seven days without collateral, or up to six months against such collateral as the Bank may deem adequate.

Article (46)

The Bank shall not renew maturing bills that have been discounted by it nor shall accept, for discount or as a collateral any commercial paper signed by a member of the Board of Directors, or by any of the Bank's staff.

Chapter Seven
Miscellaneous Provisions

Article (56)

The bank may accept real estate and movable property mortgaged or pledged as collateral security, or transferred to it by relinquishment in its favor as a guarantee for settlement of its claims.

Central Bank of Jordan

Article 39

(a) The CB may discount or rediscount for, sell to, or buy from Licensed Banks the following credit instruments;

2. Bills of exchange, promissory notes and other credit instruments drawn in the Kingdom to finance industrial, tourism, agricultural, constructional or mining operations provided that they mature within not more than nine months from the date of their acquisition by the CB, and provided that the Licensed Bank concerned undertakes to repurchase them on the dates fixed by the CB. The CB may require as collateral the assignment, mortgage or pledge of the related products or properties, or demand any other security or collateral.

Palestine Monetary Authority (PMA)

Article 57

The Monetary Authority may provide banks with loans or advances for a period not exceeding 120 days to cover their cash flow requirements, the collateral for which may be from any of the following assets:

1. international reserves instruments;

2. other public debt securities issued or guaranteed by the National Authority which constitute a part of a public subscription;

3. deposits with the Monetary Authority or another depository acceptable to the Monetary Authority in the form or assets which, in accordance with this law, the Monetary Authority is permitted to buy, sell, or deal in, them including gold.

Central Bank of Egypt

Chapter 4
Supervision over Banks and Guaranteeing Deposits

Article 56

The Board of Directors of the CB shall set rules for regulation and supervision over banks, and the regulations relevant to their activities according to the provisions of this Law, with due regard to international banking norms, providing they shall comprise the following:

(D) the maximum limits of the lending value of the collateral/guarantees provided against finance and credit facilities, and the determination of maturities,

Article 57

To extend a credit to the customer, the Bank shall ensure that he is of good reputation and has adequate self-resources, and the studies establish that the expected cash flows of his activities are adequate to fulfill his obligations.

The bank, in the cases judged thereby, shall ask the customer to provide additional collateral/guarantees, whether in-kind, or of any other nature accepted by the bank.

The Executive Regulations of this Law shall set forth the standards of evaluating the collateral/guarantees provided to the bank for the finance and

credit facilities it extends to the customer. The Executive Regulations shall also set forth the necessary regulations for applying the provisions of this Article.

No credit shall be renewed or modified before the customer's approval of the balances of finance and credit facilities offered to him by the bank.

Article 68

The CB shall prepare a register of the houses of expertise that are capable of participating in the evaluation of the collateral/guarantees provided to banks. The Executive Regulations of this Law shall set the rules, conditions, and procedures of recording in this register, and shall specify the obligations of those in charge thereof. These houses shall be responsible for the contents of the evaluation reports.

Article 69

Each bank shall maintain a register of the in-kind collateral submitted by customers for the finance and credit facilities offered to them, and shall ascertain the validity of this collateral, its title deeds, and its value upon providing the credit.

The audit committee prescribed in Article (82) of this Law shall ensure that the executive management at the bank verifies the values of this collateral periodically, and shall determine the measures to be taken for facing any drop in these values.

These registers shall be subject to inspection by the CB that may ask for a confirmation of this collateral whenever necessary.

References

Arbatli, E.C., and K., Moriyama, 2011, "Estimating a Small Open-Economy Model for Egypt: Spillovers, Inflation Dynamics, and Implications for Monetary Policy," IMF Working Paper 11/108, (Washington: International Monetary Fund).

Bernanke, B.S., and M. Gertler, 1995, "Inside the Black Box: The Credit Channel of Monetary Policy Transmission," *Journal of Economic Perspectives*, Vol. 9, No. 4 (fall): 27–48.

Bordo, M. and A.J. Schwartz, 1995, "Monetary Policy Regimes and Economic Performance: The Historical Record," *Handbook of Macroeconomics*, Vol.1a.

Boubaker, H., 2011, "Inflation Forecast-Based Rule for Inflation Targeting: Case for Some Selected MENA Countries," Economics Research Forum, WP 628.

Boughrara, A., and S. Ghazouani, 2009, "Is There a Bank Lending Channel of Monetary Policy in Selected MENA Countries? A Comparative Analysis," Economic Research Forum, WP No. 471 (Egypt).

Boughrara, A., 2009, "Monetary Transmission Mechanisms in Morocco and Tunisia," Economic Research Forum, WP No. 460 (Egypt).

Chailloux, A., S. Gray, U. Kluh, S. Shimizu, and P. Stella, 2008, "Central Bank Response to the 2007–08 Financial Market Turbulence: Experiences and Lessons Drawn," IMF Working Paper 08/210 (Washington: International Monetary Fund).

Committee on the Global Financial System, 2008, "Central Bank Operations in Response to the Financial Turmoil," CGFS Publications No. 31, July.

Crockett, A., 2000, "Marrying the Micro- and Macro-Prudential Dimensions of Financial Stability," BIS Speeches, (Switzerland: Bank of International Settlements), September.

Gray, S., and N. Talbot, 2006, "Monetary Operations," Bank of England, Center for Central Banking Studies, Handbooks in Central Banking, No. 24 (London, England), March. http://www.bankofengland.co.uk/education/ccbs/handbooks/ccbshb24.htm

Heenan, G., M. Peter, and S. Roger, 2006, "Implementing Inflation Targeting: Institutional Arrangements, Target Design, and Communication," IMF Working Paper 06/278 (Washington: International Monetary Fund).

International Monetary Fund, 2008, "The GCC Monetary Union—Choice of Exchange Rate Regime," (Washington), August.

———, 2009, "Unconventional Central Bank Measures for Emerging Economies," IMF Working Paper 09/226. (Washington: International Monetary Fund).

———, 2010, "Central Banking Lessons from the Crisis," IMF Policy Paper (Washington: International Monetary Fund), May.

———, 2010, *Regional Economic Outlook*, Middle East and Central Asia Department, Chapter A.3, "Reviving Bank Credit in MENA," (Washington: International Monetary Fund), May.

———, various issues (2010, 2011, 2012), *Regional Economic Outlook*, Middle East and Central Asia Department, various sources (Washington: International Monetary Fund).

Ireland, 2008, "Monetary Transmission Mechanism," in *The New Palgrave Dictionary of Economics*, ed. By Steven N. Durlauf and Lawrance E. Blume (Houndmills, Basingstoke, United Kingdom: Palgrave MacMillan, 2nd ed.)

Kuttner, K.N. and P.C. Mosser, 2002, "The Monetary Transmission Mechanism: Some Answers and Further Questions," FRBNY Economic Policy Review, May. http://www.ny.frb.org/research/epr/02v08n1/0205kutt.pdf

Laurens, B., and others, 2005, "Monetary Policy Implementation at Different Stages of Market Development," IMF Occasional Paper No. 244 (Washington: International Monetary Fund).

Love, I. and R. Turk Ariss, 2012, "Macro-Financial Linkages in Egypt: A Panel Analysis of Economic Shocks on Loan Portfolio Quality," World Bank Mimeo (Washington, DC: World Bank).

Maziad, S., 2011, "Monetary Policy and the Central Bank in Jordan," IMF Working Paper 09/191 (Washington: International Monetary Fund).

Mishkin, F.S., 1999, "International Experiences with Different Monetary Policy Regimes," *Journal of Monetary Economics*, Vol. 43, No. 3 (June) pp. 576–606.

Mishkin, F., 2004, "Can Inflation Targeting Work in Emerging Market Countries?" NBER Working Paper 10646 (Cambridge, Massachusetts: National Bureau of Economic Research).

Ostry, J.D., A.R. Ghosh, K. Habermeier, M. Chamon, M.S. Qureshi, and D.B.S. Reinhardt, 2010, "Capital Inflows: The Role of Controls," IMF Staff Position Note, SPN/10/04 (Washington: International Monetary Fund), February.

Ostry, J. D., A. R. Ghosh, K. Habermeier, L. Laeven, M. Chamon, M. S. Qureshi, and A. Kokenyne, 2011, "Managing Capital Inflows: Which Tools to Use?," IMF Staff Discussion Note, SDN/11/06 (Washington: International Monetary Fund), April.

Rocha, R., S. Farazi, R. Khouri, and D. Pearce, 2011, "The Status of Bank Lending to SMEs in the Middle East and North Africa Region: Results of a Joint Survey of the Union of Arab Banks and the World Bank," Policy Research Working Paper 5607 (Washington D.C.: World Bank).

Scott, R., 2010, "Inflation Targeting Turns 20," *Finance and Development* (Washington: International Monetary Fund), March.

Stevenson, L., 2010, "Private Sector and Enterprise Development: Fostering Growth in the Middle East and North Africa," International Development Research Centre, Edward Elgar Publishing, Inc.

Stone, M., and A. Bhundia, 2004, "A New Taxonomy of Monetary Regimes," IMF Working Paper 04/191 (Washington: International Monetary Fund).

Taylor, J. B., 1995, "The Monetary Transmission Mechanism: An Empirical Framework," *Journal of Economic Perspectives*, Vol. 9, No. 4 (fall): 11–26.

Monetary Issues in the Middle East and North Africa Region
A Policy Implementation Handbook for Central Bankers

ISBN: 978-1-47559-056-2