



WP/07/7

# IMF Working Paper

---

## Monetary Policy Implementation: Results from a Survey

*Inese Buzeneca and Rodolfo Maino*



## **IMF Working Paper**

Monetary and Financial Systems Department

### **Monetary Policy Implementation: Results from a Survey**

Prepared by Inese Buzeneca and Rodolfo Maino<sup>1</sup>

Authorized for distribution by Peter Stella

January 2007

#### **Abstract**

**This Working Paper should not be reported as representing the views of the IMF.**

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

Since the early 1990s, the IMF has been advising countries to shift to the use of indirect instruments for executing monetary policy. This paper provides information about a monetary policy instruments database, maintained by the Monetary and Capital Markets Department of the IMF. We offer an overview of the information contained in the database in the form of comparative summary tables and graphs to illustrate the use of monetary policy instruments by groups of countries (developing, emerging market and developed countries). The main trend that can be identified from the database information is the increasing reliance on money market operations for monetary policy implementation. We emphasize the relevance and usefulness of the data collected through periodic surveys of central banks, for general descriptive and analytical purposes.

JEL Classification Numbers: E50, E51, E52, E58

Keywords: Monetary policy, instruments

Authors' E-Mail Addresses: [ibuzeneca@imf.org](mailto:ibuzeneca@imf.org), [rmaino@imf.org](mailto:rmaino@imf.org)

---

<sup>1</sup> The authors appreciate the useful comments and suggestions received from numerous colleagues from the Monetary and Capital Markets Department.

Contents	Page
I. Introduction .....	3
II. Using the Database to Extract Information on the Instrument Mix .....	7
A. Direct Instruments.....	10
B. Reserve Requirements.....	11
C. Statutory Liquidity Requirements .....	15
D. Standing Facilities.....	20
E. Discretionary Monetary Instruments.....	24
F. Market Information.....	31
III. Final Remarks .....	32
Tables	
1. Types of Monetary Instruments .....	7
2. Use of Direct Instruments, 1998–2004 .....	11
3. Summary of Highly Reported Instruments by Groups of Countries .....	18
4. Use of Statutory Liquidity Requirements, 1998–2004 .....	19
5. Market-Based Instruments .....	26
6. Market Information, 2004 .....	32
Figures	
1. Highly Reported Instruments by Groups of Countries .....	8
2. Reserve Requirements .....	13
3. Reserve and Statutory Liquidity Requirements in Groups of Countries .....	17
4. Average Reserve Ratios in Groups of Countries .....	19
5. The Reporting of Interest Rate Arrangement in Groups of Countries.....	21
6. Standing Facilities.....	23
7. Designs of Lending Facility in Groups of Countries .....	23
8. Open Market Operations.....	28
Boxes	
1. Information System for Instruments of Monetary Policy .....	6
2. Reserve Requirements on Foreign Exchange Deposits .....	14
3. Lending Facility in Developing Economies .....	16
4. Government vs. Central Bank Securities: Advantages and Disadvantages .....	27
Appendices	
I. Characterizing Some of the Monetary Policy Instruments .....	34
II. Template for Monetary Instruments Database.....	35

## I. INTRODUCTION

The implementation of monetary policy involves the use of direct regulatory administrative measures and indirect instruments to influence the supply and demand for money. In this sense, the formulation of monetary policy operations—that is, the adoption of specific policy instruments and targets aiming at dealing with liquidity issues—is highly diverse among countries. During the last two decades, the IMF has explicitly advocated the use of market-based instruments to implement monetary policy, that is, to try to steer liquidity by influencing money markets through open market operations and auctions instead of relying on direct controls on credit and interest rates. It is now widely recognized that the use of indirect instruments allows for further flexibility in implementing monetary policy, in particular when facing exogenous shocks or abrupt changes in market conditions, and encourages financial intermediation. The purpose of this paper is to document these changes in monetary policy operations drawing on the Information System for Instruments of Monetary Policy (ISIMP), a database on monetary policy instruments maintained by the Monetary and Capital Markets Department (MCM) of the IMF (Box 1).

Borio (1997) warned about the relative neglect in the academic and public attention of issues relating to day-to-day or month-to-month implementation of monetary policy and to the corresponding choices regarding operating procedures, tactics, and instruments. Instead, the attention is usually devoted to ultimate objectives and strategic aspects of policy.<sup>2</sup> However, operating procedures and the way in which monetary policy is implemented may exert significant implications on money and capital markets. Moreover, a proper understanding of instruments and operational issues pertaining to monetary policy provides key information for the monetary authorities' ability to affect market conditions.

Laurens (2005) mentions some limitations that affect the development of a strong operational framework for monetary policy implementation namely,

- Macroeconomic Conditions:
  - Fiscal dominance has usually impeded the effectiveness of money market operations.

---

<sup>2</sup> For a concise portrait of today's perception of monetary policy implementation and how opinion in that field evolved in the course of the twentieth century see Bindseil (2004) who makes the case for the use of a short-term interest rate as an operational target for monetary policy by focusing on the remarkable policy of transparency of the US Federal Reserve System, the central banking abilities of the Bank of England, and European central banking tradition represented by the Reichsbank/Deutsche Bundesbank. In addition, Baliño and Zamalloa (1997) advanced an interesting description of operational procedures used by different central banks while the paper by Borio (1997) detailed descriptions of operational procedures of fourteen central banks. A description of the framework for monetary policy implementation of the Eurosystem is presented by ECB (2005). Meltzer (2003) provides a comprehensive description of the US monetary policy implementation further expanding the monumental work by Friedman and Schwartz (1963).

- Failure to develop a government securities market has prevented the separation of money creation and government funding needs thus complicating the management of the balance sheet of the central bank.
- Situations of structural liquidity surplus also complicate the transmission in countries with shallow markets.
- Market Participation Limitations:
  - Shallow interbank markets usually limit the effectiveness of money market operations by distorting the interest rate transmission mechanism.
  - Lack of an active secondary market for government or central bank securities.
- Institutional Shortcomings:
  - Lack of central bank autonomy and lack of operational autonomy may hamper the effectiveness of monetary policy in general and the effectiveness of money market operations in particular.
  - Weak liquidity forecasting frameworks complicate the implementation of monetary policy.
  - Weak liquidity payment systems also impede an efficient liquidity management implementation, thus obstructing the development of money markets.

Concerning the role of financial market development and other conditions to adopt indirect instruments for monetary policy, Alexander et al. (1995) stressed a number of common features in successful implementation experiences. Among these characteristics, there are certain conditions that are conducive to the adoption of indirect instruments such as the liberalization of the financial sector, the development of an interbank market, effective bank supervision, central bank autonomy, the efforts to avoid fiscal dominance and the liberalization of the economy in general. Laurens (2005) identified a sequence of reforms needed to support the introduction of money market operations which must be tailored to each country's particular circumstances. Moreover, the existence of an interbank market allows the monetary authorities to conduct monetary operations aiming at managing overall liquidity conditions. Thus a well functioning interbank market facilitates the shift to and operations of rules-based instruments. It is important to remark that the adoption of the above-mentioned conditions and the implementation of monetary policy involve an interactive process that reinforces itself. The causal relationship runs in both directions because the existence of appropriate financial market conditions turn the use of indirect instruments more effective while, at the same time, the availability of indirect instruments contributes to financial market development.

This paper provides an overview of the information contained in the database in the form of comparative summary tables and graphs to illustrate the use of monetary policy instruments

in three groups of countries: developing, emerging market, and developed countries. We emphasize the relevance and usefulness of the data that have been collected through periodic surveys of central banks, for general descriptive and analytical purposes. The survey complements previous work done in this area such as Alexander et al.(1995) and Laurens (2005) by showing a general pattern by which many countries have moved towards increased reliance on indirect instruments and on market-based interest rates. Another feature has been the sustained growth of interbank and government securities markets, which highlights the complementarity between market development and the use of market-based operating procedures.

We have identified several general trends in the use of monetary policy instruments in the three groups of countries.

- First, few countries are currently using direct monetary policy instruments.
- Second, the instrument mix in developed countries has become more diverse, encouraged by the advanced stage of market development and increased global linkages among financial markets. Central banks have managed to influence the demand for and supply of bank reserves through money market operations. Developed economies have increasingly relied on market-based instruments; given the complementarities with a market system that utilizes price signals to efficiently allocate resources.
- Third, due perhaps to the presence of excess liquidity and an early stage of market development, the instrument mix in developing and emerging market economies is less diverse than that in the more advanced group of economies. Countries that did not achieve money market development have found it difficult to switch to market-based instruments to implement monetary policy. There is also a tendency for developing economies to use rules-based instruments more intensively relative to more advanced economies. This could hamper market development and hold back the transition to market-based monetary operations in developing economies.

This paper is divided into two sections. Section II discusses several general trends in the use of monetary policy instruments as extracted from the database while Section III provides some important remarks and concludes.

### Box 1. Information System for Instruments of Monetary Policy

The Information System for Instruments of Monetary Policy (ISIMP) is an MCM database, which has been set up to track the use and design of monetary policy instruments in about 70 countries (several countries are represented under a monetary union umbrella, e.g., the CAEMC, the EMU, and the WAEMU).<sup>1/2/</sup> The database contains information collected from triennial surveys of central banks, starting from 1998. The latest survey was completed in 2004 and included 25 developed, 13 emerging, and 33 developing countries.<sup>3/</sup> The list of countries differs slightly between the 2004 and 2001 surveys, while the 1998 survey covered only a limited number of developing and emerging countries. Also, for the 1998 survey, the current EMU member countries are listed separately (EMU was formed in 1999). For our analytical purposes, we had to limit the list of countries to make it comparable among the surveys. As a result, our analysis will focus on 45 countries (among which there are 21 developed, 11 emerging, and 13 developing countries), with the current EMU member countries listed separately and African monetary unions represented by two countries that participated in the 1998 survey (Cameroon and Côte d' Ivoire).

The objective of the ISIMP database is to provide access to cross-country information on the monetary policy instruments employed by those countries included in the survey. For the analysis in this paper, we have grouped instruments of monetary policy in six major categories: direct instruments, reserve requirements, statutory liquidity requirements, central bank standing facilities, discretionary monetary instruments, and market information (money market and secondary market for government securities).

An overview of the information contained in each category is as follows:

- Direct instruments focus on interest rate controls and limits on bank lending;
- The reserve requirements section provides information on required reserve ratios, eligible assets, the practice of averaging reserve holdings over the maintenance period, penalty for reserve deficiency, and remuneration of required reserves among others;
- The statutory liquidity requirements section lists liquid assets ratios imposed by central banks;
- The central bank standing facilities section describes the details (collateral, maturity, interest rates, and penalty rates) of short-term credit to banks, rediscount credits, deposit facilities, and interest rate arrangements;
- Discretionary monetary instruments cover primary and secondary market operations (frequency of interventions, types of securities, method of sale/operations, etc.), as well as other instruments such as foreign exchange swaps, credit auctions, deposit facility, etc.;
- Finally, the market information section covers mostly interbank operations (market structure).

1/ The ISIMP database was pioneered at the IMF by Tomás J.T. Baliño, and was subsequently developed with the technical assistance provided by Kiran Sastry and Sandra Marcelino.

2/ CAEMC refers to Central African Economic and Monetary Community; EMU stands for the European Monetary Union; and WAEMU is the Western African Economic and Monetary Union.

3/ Countries included in 2004 survey are the following: Albania, Algeria, Argentina, Australia, Azerbaijan, Bolivia, Brazil, Bulgaria, Central African Economic and Monetary Community (CAEMC), Cambodia, Canada, China, Croatia, Czech Republic, Denmark, Egypt, European Monetary Union (EMU 12), The Gambia, Ghana, Hungary, India, Israel, Japan, Kazakhstan, Korea, Latvia, Lesotho, Malaysia, Mexico, New Zealand, Norway, Poland, Romania, Russia, South Africa, Sweden, Switzerland, Tanzania, Trinidad & Tobago, Tunisia, Turkey, Uganda, United Arab Emirates, United Kingdom, United States, Venezuela, West African Monetary Union (WAMU), and Zambia. The list of countries participating in a survey differs slightly between the years.

Countries are categorized according to the World Bank analytical classification based on GNI per capita in U.S. dollars for the Bank's fiscal year 2006 (2004 calendar year data). Developed countries are high income countries (GNI per capita >USD 10,065); emerging countries are upper middle income countries (GNI per capita between USD 3,256 –10,065); and developing countries are low and lower middle income countries (GNI per capita < USD 3,256).



## II. USING THE DATABASE TO EXTRACT INFORMATION ON THE INSTRUMENT MIX

A typical central bank conducts monetary policy by steering liquidity in the banking system through the use of direct and indirect instruments. Direct instruments comprise measures that establish limits on interest rates (price restrictions), credit or lending ceilings (quantity restrictions), while indirect instruments include setting the required levels of reserve requirements, or altering liquidity conditions through money market operations. The database, condensed in Table 1, reveals general trends and observations regarding the evolution of the instrument mix in developed, emerging market, and developing economies, over the three survey years (i.e., 1998, 2001, and 2004). The table shows a clear trend towards the use of indirect instruments and reliance on money market operations to implement monetary policy. The information also indicates possible factors that have contributed to the evolution of the instrument mix in these groups of countries.

The instrument mix in developed economies has become more diverse. As shown in Figure 1, the majority of developed countries in the sample have added more variety into their arsenal of monetary policy instruments since 1998. While the total number of highly reported instruments in developed countries was 4 in 1998,<sup>3</sup> this number increased to 5 and 8 in 2001 and 2004, respectively. This phenomenon may be related to the advanced stage of financial market development in developed economies. Liquid, deep, and well-developed money markets in advanced economies have brought about more diversified and complex financial transactions as well as enlarged global linkages between financial markets. These facts have induced an increased sophistication of monetary policy instruments to allow for clear signals of monetary policy stance to be passed on to market participants to preserve central banks' control over market expectations.<sup>4</sup>

Table 1. Types of Monetary Instruments  
(Percent of countries having the instrument in each group)

	Developing Countries			Emerging Countries			Developed Countries		
	1998	2001	2004	1998	2001	2004	1998	2001	2004
Direct Instruments	54	15	15	27	18	18	10	5	0
Reserve Requirements	92	100	100	91	91	91	71	67	71
Statutory Liquidity Requirements	38	46	46	64	27	18	24	10	14
Standing Facilities	100	100	100	100	91	100	86	100	100
Discretionary Monetary Instruments	92	85	92	91	100	91	95	100	100

Source: ISIMP

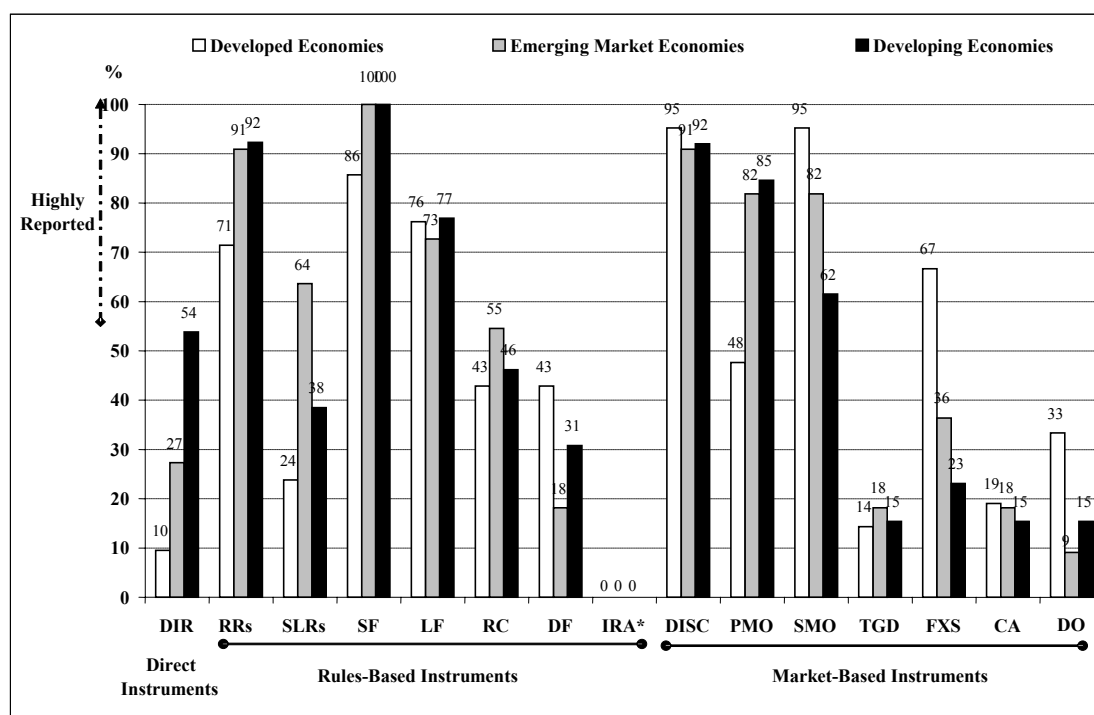
<sup>3</sup> Highly reported instruments are defined as those that are mentioned by at least 55 percent of countries participating in the survey.

<sup>4</sup> Blenck et al. (2001) stressed the signaling characteristics of the operational frameworks used by the Bank of Japan, the Federal Reserve, and the European Central Bank for implementing monetary policy.

This trend toward greater diversity is less evident in the instrument mix used in developing and emerging market economies, which has not kept up with the increased diversity in the more advanced group of economies.<sup>5</sup> As shown in Figure 1, in contrast to more advanced economies, the total number of highly reported instruments in developing and emerging market economies has increased only slightly since 1998. Against the backdrop of a shift away from fixed or predetermined exchange rate regimes, the standard instrument mix in these two groups of economies seems to revolve around the use of reserve requirements, lending facilities, auctions of treasury and central bank bills in primary markets and outright sales and purchases of government securities in secondary market operations. However, in 2001, the majority of developing economies added rediscount credit to their instrument mix, whereas in 2004, the majority of emerging market economies added deposit facilities.<sup>6</sup>

Figure 1. Highly Reported Instruments by Groups of Countries

Figure 1a. 1998



<sup>5</sup> Laurens (2005) discusses the most appropriate mix of rules-based instruments and money market operations in less developed markets. In particular, the study assesses which guiding principles a central bank may apply to design an action plan to develop strong operational frameworks for monetary policy implementation given the stage of money market development.

<sup>6</sup> A valuable reference concerning operations in money markets to implement monetary policy is provided by the Bank of England (2004) focusing on the maintenance requirement, remunerated reserves, open market operations, standing facilities, and end-of-day arrangements. In addition, the implementation of monetary policy in the Euro Area is presented in European Central Bank (2005).

Figure 1b. 2001

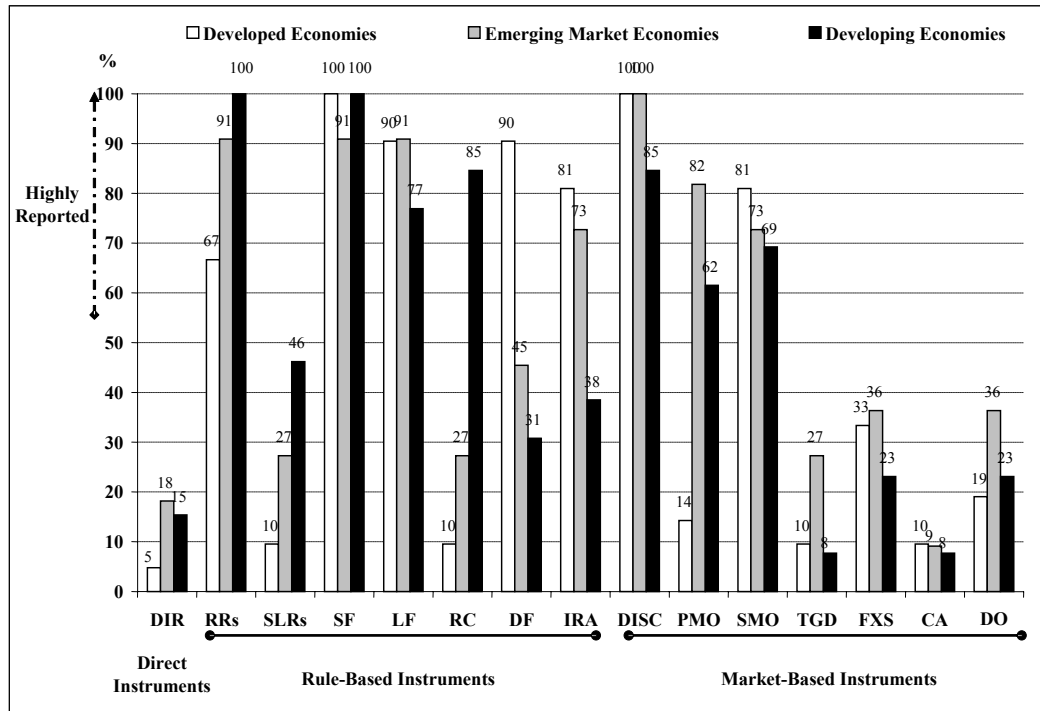
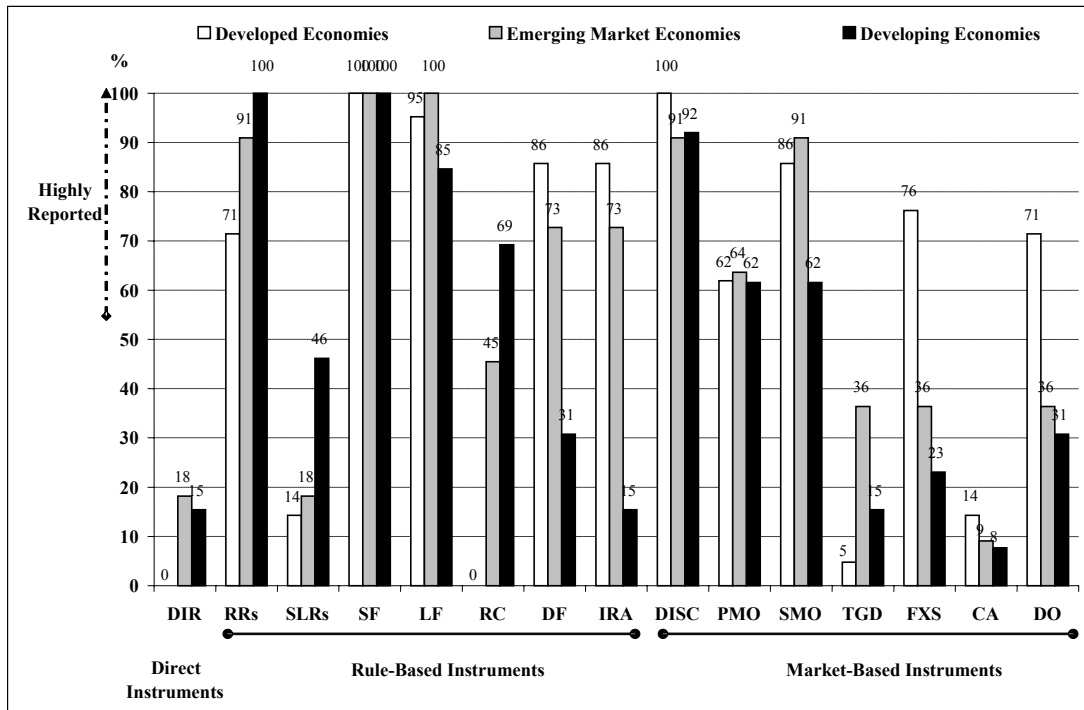


Figure 1c. 2004



Note: Data on interest rate arrangements for 1998 are not available.

Source: ISIMP. Legends: DIR: direct instruments; RRs: reserve requirements; SLRs: statutory liquidity requirements; SF: standing facilities; LF: Lombard facility; RC: rediscount credit; DF: deposit facility; IRA: interest rate arrangement; DISC: discretionary instruments; PMO: primary market operations; SMO: secondary market operations; TGD: transfer of government deposits; FXS: foreign exchange swaps; CA: credit auctions; DO: deposit operations/facility.

## **A. Direct Instruments**

Most countries have completely abandoned the use of direct instruments of monetary policy, either interest rate controls or other direct instruments. Direct controls pertain to administrative measures taken by the monetary authority to exert influence on financial prices (such as interest rates controls) or quantity restrictions (such as credit/deposit ceilings). Direct instruments are usually perceived as reliable to exert direct influence on credit and also as easy to implement by those countries that show rudimentary and non-competitive financial systems and want to channel credit/liquidity to specific objectives.

### **Interest rate controls**

As depicted in Figure 1a-c, direct instruments were still reported by a number of countries in the 1998 survey, especially the developing countries. The reporting of direct instruments has dropped quite significantly ever since. In the 2004 survey, none of the developed countries reported the use of direct instruments, and few countries in emerging market and developing economies continued to do so. A few developed and emerging economies used only a lower or an upper bound arrangement for interest rates.

Poor performance in terms of monetary control may have acted as the contributing factor behind the abandonment of direct instruments in many countries. Alexander et al. (1995) depicted many problems that have often been identified when direct instruments are used, including: (a) decreasing effectiveness of the instruments arising from evasion as the financial market develops and economic agents learn how to circumvent them; (b) increasing inefficiency in resource allocation; (c) potential inequity during implementation; and (d) lack of credible enforcement.

### **Other direct instruments**

Other direct instruments involve the use of credit ceilings and directed lending usually channeled at the behest of the authorities rather than for commercial reasons. Bank-by-bank credit ceilings have been completely phased out (Table 2). Bank-by-bank controls restrict competition in the banking sector thus implying a deadweight loss for borrowers and depositors. Also, direct control induces disintermediation, distortion in the allocation of bank resources, and loss of effectiveness. However, directed credits as well as specific lending requirements are still being used by emerging and developing countries.

Table 2. Use of Direct Instruments, 1998–2004

	Direct Instruments 1/		Interest Rate Controls 2/	Bank-by-Bank Credit Ceilings 2/	Directed Credits 2/	Specific Lending Requirements 2/
	Period Average	2004	2004			
Developed countries	4	0	0	0	0	0
Emerging countries	21	18	100	0	50	50
Developing countries	28	15	50	0	50	50

Source: ISIMP.

1/ Percentage of countries using the instruments in each group;

2/ In percent of countries using direct instruments in each group

## B. Reserve Requirements

Reserve requirements remain a highly used instrument of monetary policy in developing countries, while its role in policy design in developed countries has been decreasing over time.<sup>7</sup> As Figure 2a shows, in our sample of countries, about 70 percent of developed economies still require banks to hold reserves. Countries that opted out include Australia, Canada, Denmark, New Zealand, Norway, and Sweden.

In contrast, among emerging and developing countries, the share of countries using the instrument exceeds 90 percent. Some countries, most especially those in Latin America, have relied on the use of reserve requirements extensively.<sup>8</sup> Box 2 provides some details on reserve requirements on foreign exchange deposits. The overall design and operations of reserve requirements involve the type, definition and monitoring of the requirement base, the eligibility of assets, and averaging rules and the rate of remuneration. Particularly, the role of reserve requirements has changed in countries that still make use of them. It has to be noted that as instruments for monetary policy, reserve requirements lack flexibility. Moreover, Alexander et al (1995) underscored that frequent changes in reserve requirements might become disruptive and generate additional costs for banks. The specific design of reserve

<sup>7</sup> Reserve requirements are defined as a percentage of commercial banks liabilities required to be maintained as reserves at the central bank. As such, reserve requirements become the link between central bank and commercial banks' liabilities. Bindseil (2004) mentions seven justifications for imposing reserve requirements along the twentieth century: (i) to help ensure banks' individual liquidity, in particular against bank runs; (ii) to help monetary control as a reserve market management tool of the central bank; (iii) to help monetary control by serving as a built-in stabilizer; (iv) to contribute to generating central bank income; (v) to influence competition between banks; (vi) to create or enlarge a structural liquidity deficit of the banking system, stabilizing the demand for reserves above working balances, and (vii) to provide an averaging facility, such that short-term transitory liquidity shocks are buffered out without a need for open market operations and without related volatility of short-term interest rates.

<sup>8</sup> Reserve requirements provide not only income for a central bank when they are unremunerated but also a buffer of liquidity. When reserve requirements are unremunerated, they become a tax that leads to financial disintermediation.

requirements, whether remunerated or not, recognizes their different role in the current implementation of monetary policy in countries aiming at providing a buffer for liquidity shocks, thereby reducing money market volatility. In some developed countries, reserve requirements also play the role of creating or enlarging the liquidity deficit, and stabilizing short-term money market interest rates through averaging.

### **Type used**

Most countries have recently moved to uniform ratios for different maturities and currencies. Among those countries that still use reserve requirements, more than 60 percent of developed and emerging economies set uniform rates of required reserves (Figure 2b). For these two groups of countries, the trend of using the uniform rates has been increasing over time. Countries with non-uniform requirements set lower ratios for foreign currency deposits.

Uniform ratios facilitate liquidity management given that the errors in forecasting the demand for reserves as a result of shifts among the different components of the targeted monetary aggregate are smaller.<sup>9</sup> Developing countries, on the contrary, have increasingly opted for the use of different rates for different types of deposits. However, differentiated reserve requirements are likely to complicate monetary management by obscuring the links between a change in reserves and a change in the aggregate.<sup>10</sup> It is often argued that differentiated reserve requirements are likely to lessen the degree of monetary control and to create distortions. Multiple reserve requirements on similar liabilities could lead to disintermediation and even in relatively unsophisticated banking systems, economic agents would seek means to exploit less heavily taxed financial instruments.<sup>11</sup>

Among the countries that use the uniform rates, developed countries on average have the lowest ratios of required reserves and follow a downward trend (Figure 2c). In 2004, the average ratio for this group was 2 percent. Developing countries have the highest ratios, averaging around 8 percent in 2004.

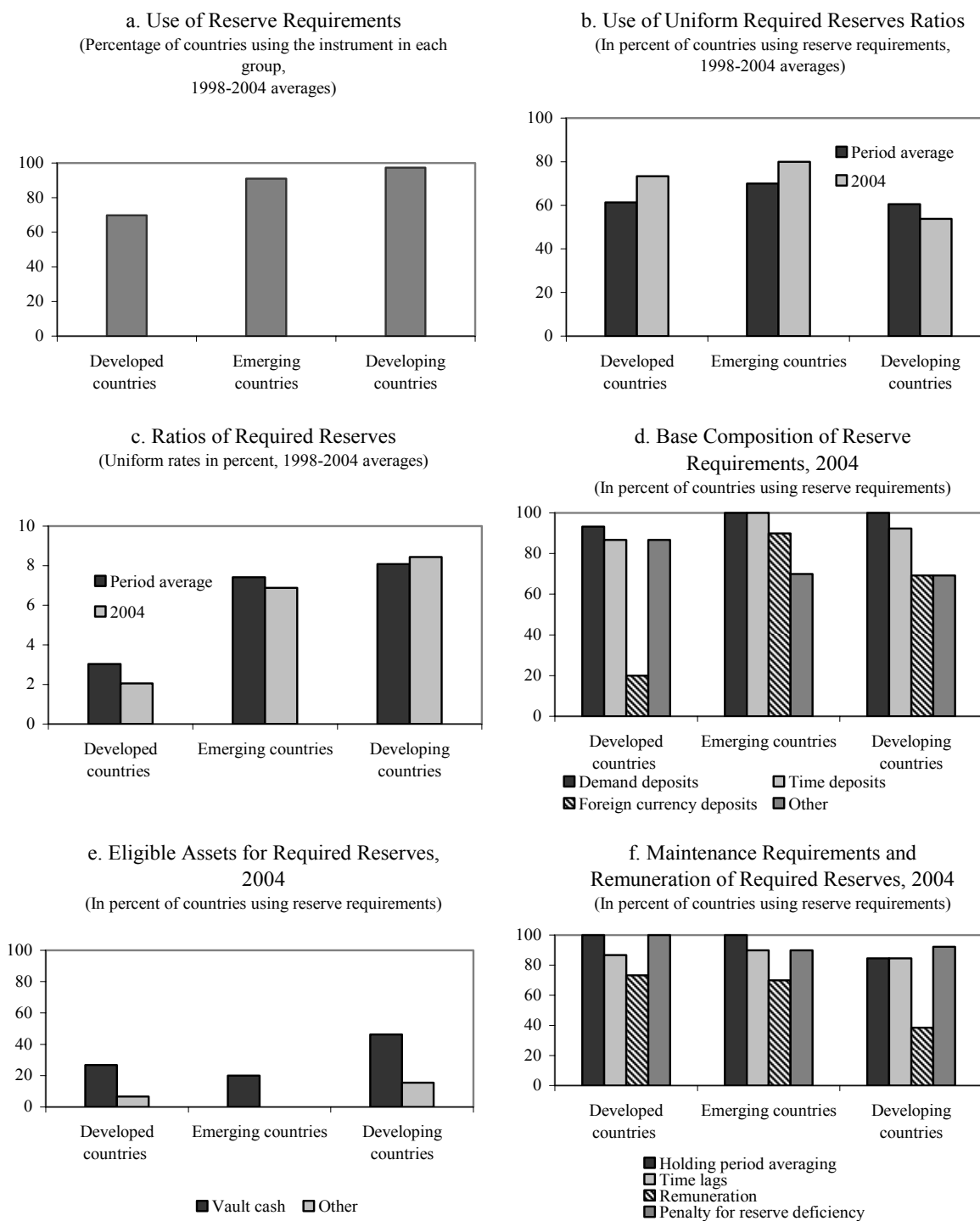
---

<sup>9</sup> Monetary and Exchange Affairs Department (1996).

<sup>10</sup> Monetary and Exchange Affairs Department (1996).

<sup>11</sup> Hardy (1993).

Figure 2. Reserve Requirements



Source: ISIMP

### Box 2. Reserve Requirements on Foreign Exchange Deposits

Foreign currency deposits (FCD) are still a significant share of total deposits in many countries. The table below shows that the use of FCD as a base is relatively low in developed economies compared with other countries. However, emerging economies exhibit for 2004, an increase compared with the base in 2001 going back to the level achieved in 1998. Concerning the denomination, local currency is used more often than foreign currency for reserve requirements (RR) on foreign exchange deposits.

Reserve Requirements on Foreign Currency Deposits (In percent)									
	Use of FCDs as a Base			Denomination of FCDs					
				Domestic currency			Foreign currency		
	1998	2001	2004	1998	2001	2004	1998	2001	2004
Developed countries	46	92	20	57	84	66	14	7	33
Emerging countries	90	80	90	55	62	55	22	37	33
Developing countries	75	76	69	22	70	44	22	30	33

In this regard, notwithstanding the general trend towards reducing RR worldwide, the characteristics of RR on FCD has become a relevant issue concerning liquidity management in dollarized economies. RR provide an automatic sterilization that limits credit expansion by reducing the magnitude of the multiplier. Although the final impact may depend on the degree of substitutability between local and foreign currency deposits and the extent of capital mobility, RR on FCD may improve monetary policy by controlling the foreign currency component of total liquidity.

RR on FCD may reduce the vulnerability to capital flows and, under certain circumstances, contain currency substitution by reducing the bias created against local currency deposits when RR are imposed on them.<sup>12</sup> It should be underscored that RR on FCD may not discourage the holding of foreign currency-denominated assets in general which broadly depends on the substitution relationship between FCD and other foreign currency-denominated assets.

However, when the exchange rate becomes unstable, the demand for reserves turns unsteady and unpredictable, thus complicating monetary management. When currency substitution is substantial, some countries opted for denominating RR on FCD in local currency to contain local currency issuance. For those cases of advanced stages of currency substitution, countries have opted for RR on FCD denominated in foreign currency because they limit the vulnerability to capital outflows, facilitate local interbank settlements in foreign currency, enhance the central bank's capacity to smooth out daily volatility in foreign currency liquidity, and shield banks from liquidity shocks.

### Reserve base

Most countries in the sample impose reserve requirements on demand deposits and time deposits (Figure 2d). In 2004, only 20 percent of developed countries also required holding reserves on foreign currency deposits, while for emerging countries the share was close to 90 percent. At the same time, more than 85 percent of developed countries required holding additional reserves on other liabilities, such as certificates of deposit and debt securities with maturities of up to two years.

<sup>12</sup> Monetary and Exchange Affairs Department (1995b).



### **Eligible assets**

Eligible assets for required reserves in developed and emerging economies include mostly deposits at the central bank. About 20 percent of countries in these groups also indicated vault cash as an eligible asset (Figure 2e). A relatively higher percentage (about 45 percent) of developing countries accept vault cash for required reserves purposes. Countries in this group also indicated other eligible assets, such as government securities and gold, which changes the nature of the instrument.

### **Holding period averaging and remuneration**

Reserve averaging allows commercial banks to stabilize cash flows and to contain the daily volatility of overnight interest rates, thus enhancing the flexibility to manage their own portfolio. These cushion characteristics allow banks to manage transitory liquidity shocks. The 2004 survey results indicated that most central banks in the sample specify the reserve maintenance requirement as a period average and charge a penalty in case the specific balance requirements over that period are not met.

With regard to remuneration of required reserves, developed countries tended to use it most actively, while developing countries were lagging behind (only 40 percent of developing countries indicated remuneration of reserves in 2004). High reserve requirements impose a tax on bank intermediation that leads to widening interest rate spreads and consequently disintermediation and disruption in banks' portfolios. This tax is usually neutralized through reserve remuneration at market rates.

## **C. Statutory Liquidity Requirements**

As previously noted, reserve requirements could also lead to disintermediation if the spread between lending and deposit rates widens as a result of its heavy use and may disrupt banks' asset /liability management. Furthermore, the imposition of statutory liquidity requirements, which obliges financial institutions to hold a certain percentage of their liabilities in the form of government securities, may also create market distortions, such as (a) constraining commercial banks' asset management, (b) distorting the pricing of government securities in the financial markets, (c) causing disintermediation and generating a loss of effectiveness to control monetary aggregates, and (d) suppressing secondary markets. Hence, the heavy use of the above two rules-based instruments in some developing countries could slow down market development considerably, which is a key institutional constraint for market-based monetary policy operations. In addition, the heavy use of the two rules-based instruments mentioned above may have also affected the design of the lending facility in the developing countries, causing these countries to differ from the best practices in the more advanced economies (shown in Box 3).

### Box 3. Lending Facility in Developing Economies

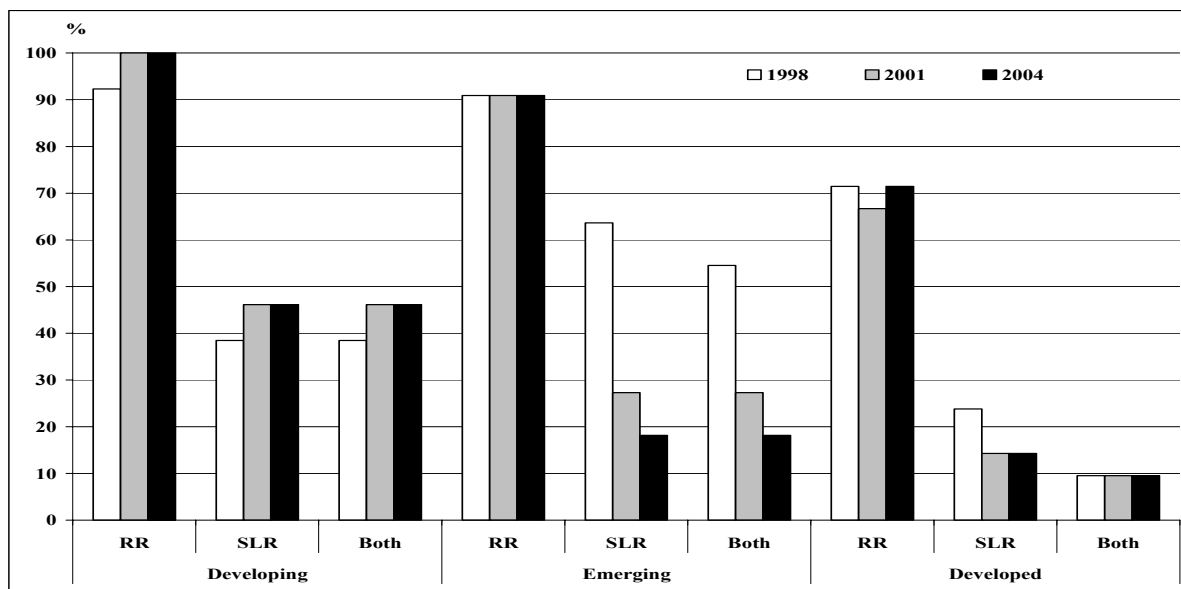
**Compared to developed and emerging market economies, lending facilities in some developing economies are often not collateralized and tend to be of longer maturity.** Figure 7 compares the design of lending facilities in the three groups of countries based on the 2004 survey. As can be seen from the figure, almost all countries impose a penalty rate defined as a spread above the market/central bank rate. In some developing countries central banks can lend without collateral, while in developed and emerging market countries this is not the case. Also, the maturity of lending facilities in developed and emerging market economies tends to cluster around the shorter end of the market, i.e., overnight, whereas in developing economies, a considerable number of countries offer lending facilities with maturities of one week or higher. The percentage of developing countries' central banks offering an overnight lending facility is also much lower than those in more advanced economies.

**The intensive use of reserve requirements and to some extent statutory liquidity requirements may have been the factors affecting the design of lending facility instruments in developing countries, in addition to the fact that interbank markets in developing economies remain relatively underdeveloped.** As mentioned previously and shown in Figure 4, reserve ratios have tended to be persistently higher in developing countries relative to more advanced economies and, recently, these ratios tend to be increasing in developing countries. Moreover, Figure 3 shows the increased reporting of the use of statutory liquidity requirements in some developing countries. These phenomena may explain the lack of collateral for lending facilities in some developing countries. It is no longer feasible for central banks in developing economies to impose collateral without placing an additional burden on the domestic banking system, because a large portion of commercial banks' liquid assets is already under central bank control. As has been discussed previously, such a combination of rules-based instruments could hamper market development, i.e., development of the secondary market for government securities, and constrain the development of financial intermediation as the financial positions of market participants are weakened.

One final note: In developed economies with liquid interbank markets and sound financial systems, the lending facility functions mainly as an overdraft facility to finance end-of-day clearing imbalances, with access limited by charging an interest rate slightly above market rates. In less developed countries, however, there is a danger of illiquid banks resorting to this facility and the penalty rate just slightly above market rates may not prevent those banks from doing so.

It might be misleading to derive implications from the use of a single monetary instrument unless the entire policy mix is taken into account. However, given the disadvantages mentioned above, we may conjecture that the intensive use of rules-based instruments, i.e., reserve requirements in combination with statutory liquidity requirements (Figure 3), could hamper market development and hold back the transition to market-based monetary operations. As developing countries impose heavy taxes on financial intermediaries through reserve requirements, market participations needed to help the development of secondary markets of government securities are constrained.

Figure 3. Reserve and Statutory Liquidity Requirements



### The use of rules-based instruments

There is a tendency for developing economies to use rules-based instruments more intensively relative to more advanced economies (See Table 3). This is perhaps due to the presence of excess liquidity and the early stage of market development in developing economies. In developed and emerging market countries, there has been a tendency to rely less on reserve requirements and more on money market instruments. One of the reasons is that reserve requirements lack flexibility and frequent changes in the rate of required reserves can be disruptive and costly for banks.<sup>13</sup> In developing economies, where the development of money market instruments is somewhat constrained by limitations in market participation and shallow markets, central banks rely more on reserve requirements to withdraw excess liquidity from the market or to accommodate structural changes in the demand for reserves.

<sup>13</sup> Alexander et al (1995) provide further considerations on this topic.

Table 3. Rules-Based Instruments

(Instruments mentioned by at least 55 percent of countries in each group)

Instruments	1998			2001			2004		
	Developed Economies	Emerging Market Economies	Developing Economies	Developed Economies	Emerging Market Economies	Developing Economies	Developed Economies	Emerging Market Economies	Developing Economies
Reserve Requirements	Y	Y	Y	Y	Y	Y	Y	Y	Y
Statutory Liquidity Requirements		Y							
CB Standing Facilities:									
Lending Facility	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rediscount Credit		Y			Y	Y		Y	Y
Deposit Facility				Y			Y		
Interest Rate Arrangement	N/A	N/A	N/A	Y	Y	Y	Y	Y	

Source: ISIMP.

In addition, the reliance on rules-based instruments in the developing countries is also apparent from (a) the increasing reporting of the use of statutory liquidity requirements as instruments in some developing economies vis-à-vis emerging market and developed economies (Figure 3 and Table 2); and (b) the relatively higher reserve ratios reported by developing economies vis-à-vis the more advanced economies (see Figure 4). Liquidity ratios are now being extensively used in developing countries although their use has diminished in emerging countries (Table 4).

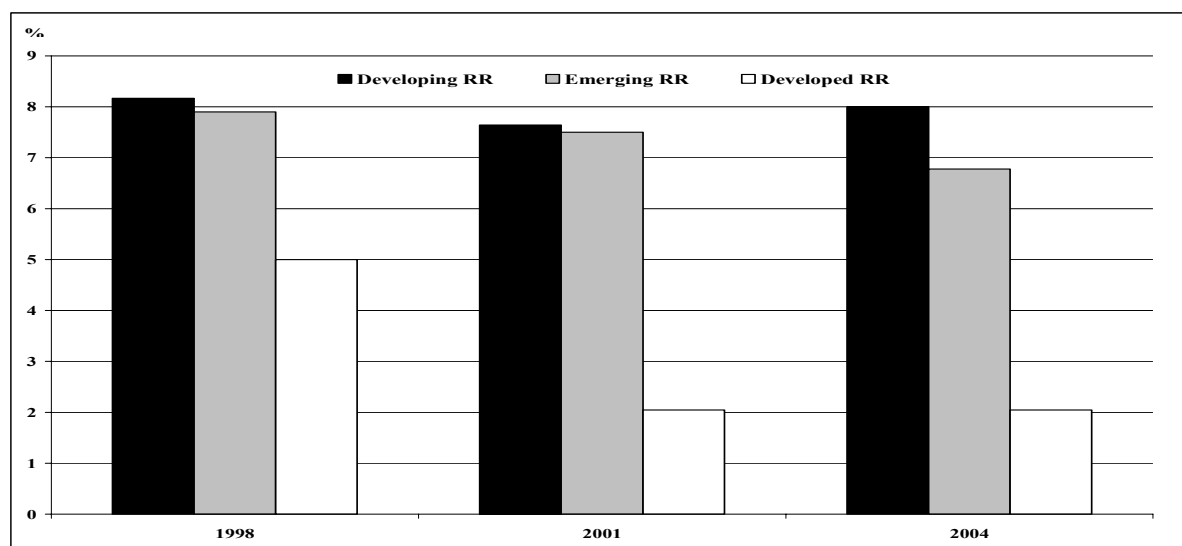
Table 4. Use of Statutory Liquidity Requirements, 1998–2004

(Percentage of countries using the instrument in each group)

	SLR		Liquidity Ratios, Percent	
	Period Average	2004	Period Average	2004
Developed countries	15	14	24	46
Emerging countries	36	18	13	5
Developing countries	43	46	31	35

Source: ISIMP.

Figure 4. Average Reserve Ratios



Source: ISIMP.

## D. Standing Facilities

The rates of the standing facilities and the reserve supply through open market operations are part of the relevant set of tools to a central bank to steer the short-term market interest rate.<sup>14</sup> Although the quantitative importance of standing facilities has been diminishing in recent years, they still play an important role as an instrument of emergency funding to finance end-of-day imbalances, thus helping to smooth out fluctuations in market rates.

In the 2004 survey, most countries reported the use of a standing facility that provides short-term uncollateralized credit at a penalty rate. The refinance standing facility is used to meet the short-term liquidity needs of banks at their request (Figure 5a). In many developing countries, the refinancing facility is also designed to support the treasury securities markets, by allowing banks to obtain liquidity from their t-bills at a predetermined rate. This may explain the longer maturities employed in such countries. A deposit facility was also commonly used among developed countries, although significantly less so among developing economies. The latter group of countries tended to rely more on rediscount credit facilities, which according to the 2004 survey results, was not among the instruments used in developed countries.

### Refinance standing facility

In 2004, lending facilities were used in more than 80 percent of the countries in the sample (Figure 5a). The refinance standing facility (Lombard) window is used at the discretion of banks. The use of Lombard windows requires a decision by banks to borrow from the central bank with appropriate collateral and other conditions regarding maturities and access.

As an instrument for monetary policy it provides facilities for short-term (collateralized) loans that are usually priced above any alternative source of funds and as such they signal changes in policy stance. Most of these countries reported collateral requirements and short-term (overnight) maturity of lending (Figure 5b). Overdraft occurs automatically and may or may not be collateralized.<sup>15</sup> In some cases, lending ceilings may be indispensable, and penalty rates may increase with the frequency of the use of the facility. Also, in cases when the demand for credit is highly inelastic, additional measures may be appropriate, such as, for example, intervention of the banking supervision authorities.<sup>16</sup> There has been also a significant increase in the use of overnight lending facility over the years in all groups of countries (Figure 5c).

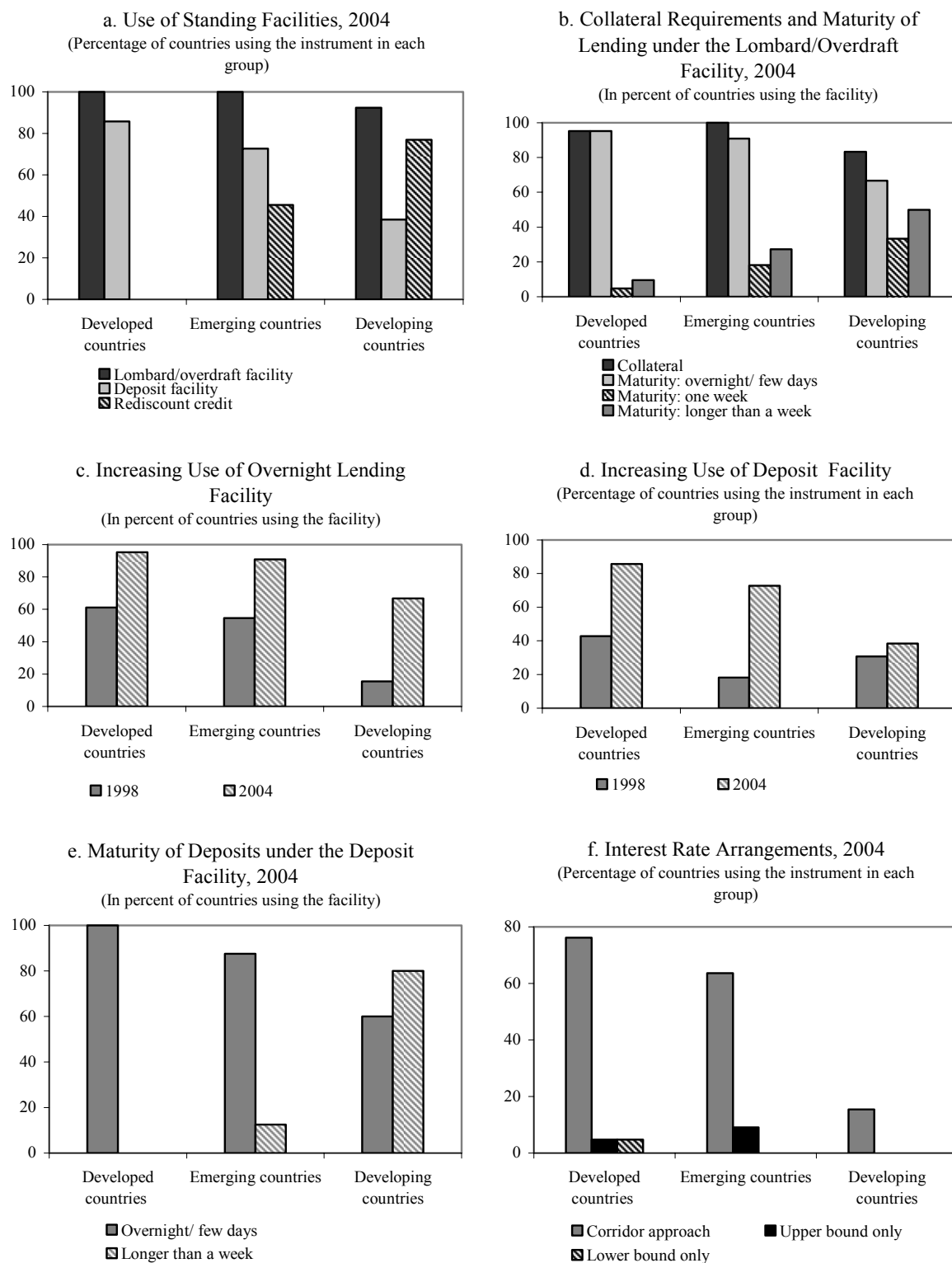
---

<sup>14</sup> Bindseil (2004) underlines that the question of how to make the best use of *the one degree of freedom* that a central bank has to achieve its operational target rate (with OMO and standing facilities) is probably the oldest of all questions in central-bank monetary implementation. The way by which central banks make use of this degree of freedom becomes critical for the simplicity and transparency of monetary policy implementation.

<sup>15</sup> Usually, Lombard operations are configured on repurchase operations so as to give the central bank an unambiguous ownership to the security in case of default. In some other cases, central banks accept hard currency deposits as collateral.

<sup>16</sup> Laurens (1997).

Figure 5. Standing Facilities



In contrast, longer maturities of a week and more were rarely used in developed countries, while still being popular in the developing world. One explanation for this is that developed countries have liquid interbank markets and sound financial systems, so that the lending functions mainly as an overdraft facility to finance end-of-day clearing imbalances, with access limited by charging an interest rate slightly above market rates.

Lombard or overdraft windows can be key parts of payment system arrangements. In less developed countries, with underdeveloped interbank markets and payment systems and weak financial institutions, there is a danger of illiquid banks resorting to this facility and the penalty rate just slightly above the market rates may not prevent those banks from doing so.

### **Deposit facilities**

Deposit facilities have been used increasingly over the years in all groups of countries (Figure 5d). At a deposit facility, commercial banks can deposit excess liquidity at a fixed predetermined rate. The trend has been especially pronounced in emerging and developed economies and somewhat less so in developing countries. In 2004, developed countries used the facility only for overnight deposits, while in the group of developing countries, longer maturity (a week and longer) deposits were more widely used (Figure 5e).

### **Corridor approach**

Interest rate arrangements, especially the so-called “corridor approach,” are widely used in developed economies (Figure 6 and 5f). The popularity of this particular arrangement is also increasing among the emerging markets, while developing countries use it relative infrequently. A corridor allows banks to deposit or borrow funds from the central bank. countries—the width of the corridor is set so that it would become costly for the market to make too frequent use of them. Nevertheless, a narrow corridor—with small bid/ask spreads—would prevent the development of liquid markets, because banks and financial institutions would tend to avoid the interbank market to manage liquidity.<sup>17</sup>

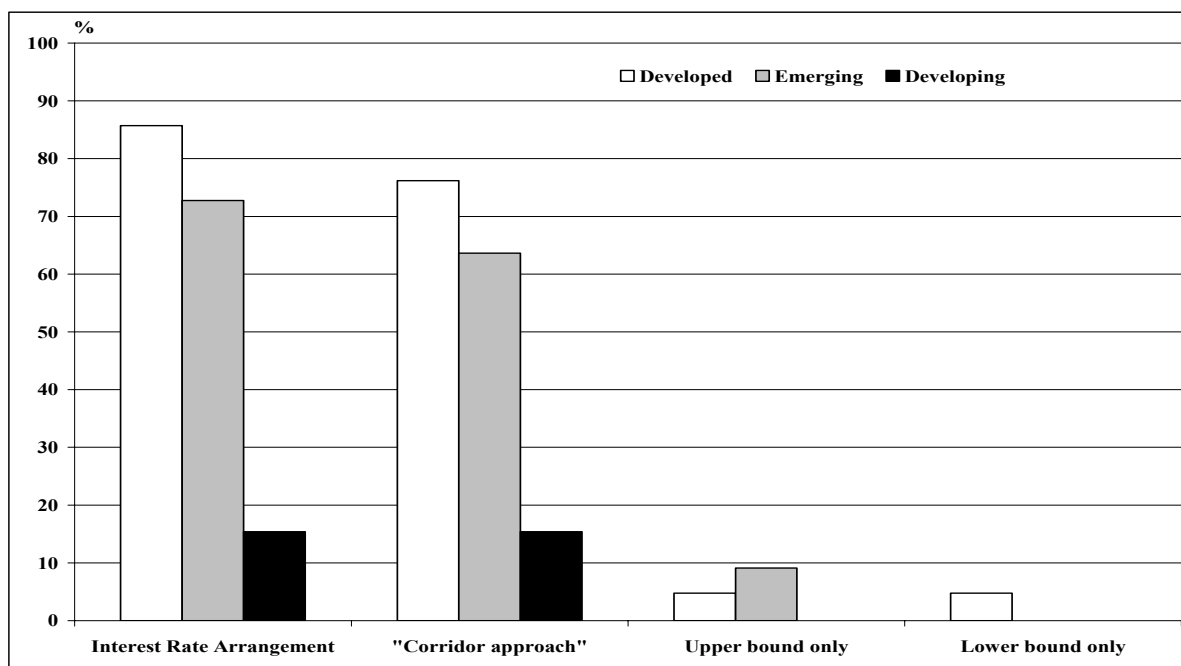
The general understanding is that countries should aim at designing the instruments in such a way as to provide an incentive to trade funds first on the interbank markets (when they exist), and to prevent the central bank from taking credit risk.

---

<sup>17</sup> Enoch, Hilbers, and Kovanen (1997) provide an interesting discussion on the issues surrounding the establishment of a corridor in European money markets in preparation for the operation of the European Economic and Monetary Union in 1997.

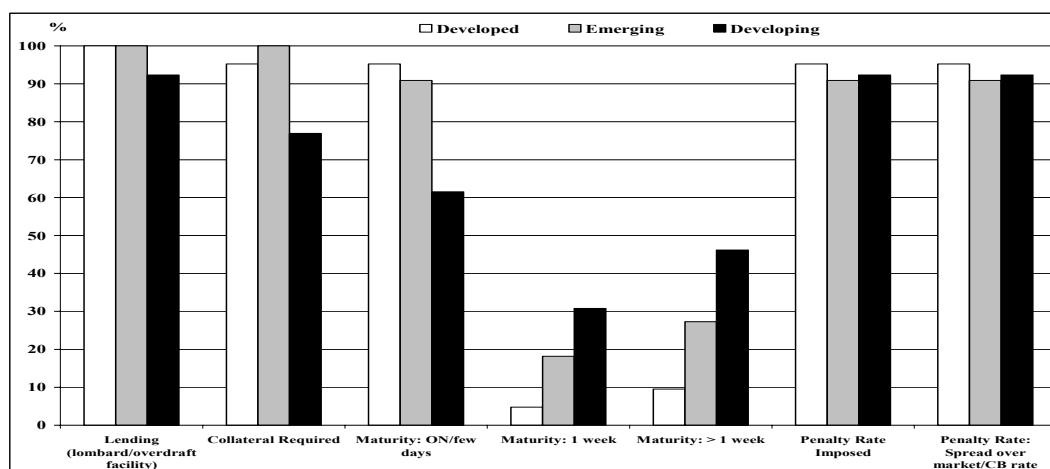


Figure 6. The Reporting of Interest Rate Arrangements, 2004



Source: ISIMP.

Figure 7. Designs of Lending Facility, 2004



Source: ISIMP.

### **E. Discretionary Monetary Instruments**

Working on a voluntary rather than a compulsory basis, open market operations (OMO) are flexible instruments to conduct monetary policy because they can be deployed frequently and in the amount necessary to stabilize money markets (Table 6). In developed economies, OMOs are the main instruments used to steer interest rates and manage liquidity.<sup>18</sup> OMOs can be performed either in primary markets by issuing short-term central bank or government bills, or in secondary markets. The latter offer even more flexibility for policymakers by including collateralized lending, repurchase agreements (repos) of securities (using short-term securities, in general), outright transactions (usually involving longer-dated securities or foreign exchange), and foreign exchange swaps. Box 4 discusses some of the advantages and disadvantages associated with the use of central bank vs. government bills.

#### **Primary market operations**

Primary market sales of central bank paper (open market-type operations) are market-based operations based on auction techniques regulated by the monetary authority. Figure 8 illustrates some of the characteristics associated with primary market operations in developed, developing, and emerging countries involving the frequency of intervention, the kind of securities used, the methods of sale, and the type of auction.

Primary market operations (PMO) involve (i) primary market issuance of central bank securities or government securities for monetary policy purposes, and (ii) acceptance of fixed-term deposits and credits. The use of central bank bills by developed and emerging and to a lesser degree developing economies increased throughout our surveys (Figure 8e).

On the other hand, the use of primary market operations in government securities has decreased in the developed and emerging world, while it has increased in developing economies. The practical arrangement for the issuance of government securities is, generally,

---

<sup>18</sup> Blenck et al. (2001) describe some interesting insights concerning the Bank of Japan, the Eurosystem, and the Federal Reserve in conducting OMOs. In particular, it is interesting to note that the Bank of England has a long tradition of conducting monetary operations as fixed interest rate tenders. The Fed, on the other side, usually applies variable rate tenders. The recent experience of the European Central Bank shows a continuous shift from variable to fixed interest rate tenders as a method to conduct open market operations. Bindseil (2004) discusses and illustrates tender procedures (fixed and variable rate) which have become, today, the standard tool for open market operations since the late 1970s.

similar to the issuance of central bank bills. Treasury bill issuance may need to exceed fiscal funding requirements. It encourages fiscal discipline on the part of government if direct central bank financing is discontinued.

Table 5. Market-Based Instruments

(Instruments mentioned by at least 55 percent of countries in each group)

Instruments	1998			2001			2004		
	Developed Economies	Emerging Market Economies		Developed Economies	Emerging Market Economies		Developed Economies	Emerging Market Economies	Developing Economies
Primary Market Operations		Y			Y		Y	Y	Y
Secondary Market Operations	Y	Y		Y	Y		Y	Y	Y
Foreign Exchange Swap	Y						Y		
Deposit Operations							Y		

Source: ISIMP

**Box 4. Government vs. Central Bank Securities: Advantages and Disadvantages**

Type of Securities	Advantages	Disadvantages
<b>Government Securities</b>	<ul style="list-style-type: none"> <li>• Help develop viable primary markets that stimulate financial markets and the transmission of monetary policy.</li> <li>• Shift cost of monetary tightening to government and make it transparent in the budget.</li> <li>• May encourage fiscal discipline on the part of the government, if direct central bank financing is discontinued.</li> </ul>	<ul style="list-style-type: none"> <li>• Require high degree of coordination between central bank and treasury.</li> <li>• If not properly coordinated with treasury, the central bank's operational autonomy may not be guaranteed and primary market interventions may not be effective.</li> </ul>
<b>Central Bank Securities</b>	<ul style="list-style-type: none"> <li>• Facilitate the central bank's operational independence (provided their issuance is coordinated with that of government securities).</li> <li>• Flexible instrument for liquidity management.</li> </ul>	<ul style="list-style-type: none"> <li>• May, under certain conditions, reduce central bank profits, or lead to central bank losses if issued in large amounts.</li> <li>• Require some degree of coordination with treasury to avoid small and segmented markets.</li> </ul>
<b>Auctions of Central Bank Credits/Deposits</b>	<ul style="list-style-type: none"> <li>• Ensure the central bank's operational independence and avoids competition with treasury securities.</li> </ul>	<ul style="list-style-type: none"> <li>• Do not assist in developing securities markets (unless they are negotiable, but then they are similar to central bank securities).</li> </ul>

Source: Adapted from IMF (1995a).

Figure 8. Open Market Operations

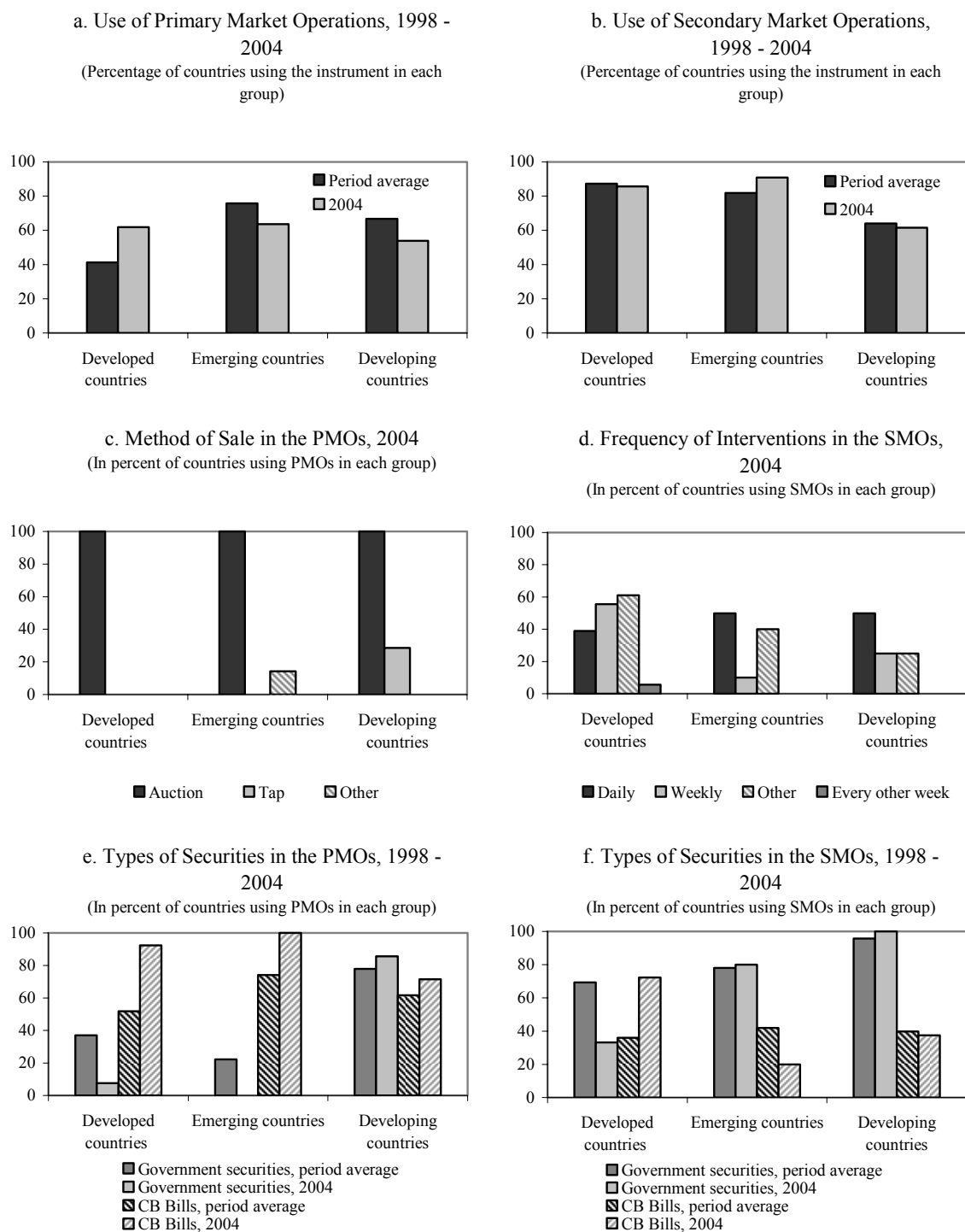
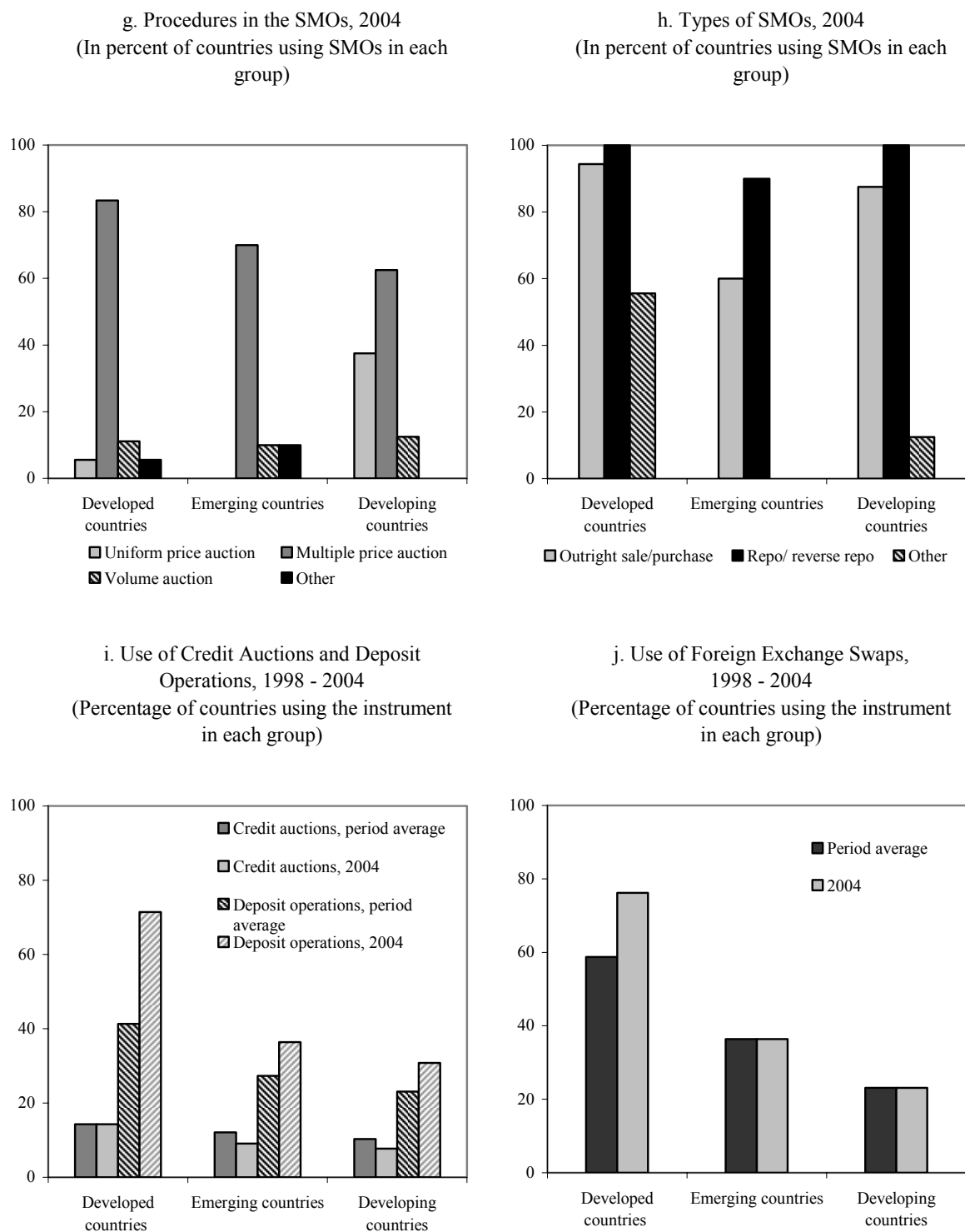


Figure 8. Open Market Operations (Concluded)



Source: ISIMP

Management of liquidity can be achieved through staggered primary issuance. Procedures involve decisions on the auction system, counterparties, frequency, maturities, and settlement rules. The frequency of operations has evolved differently among the groups. In developed economies, the frequency of weekly operations has decreased steadily.

The survey also illustrates the fact that all three groups of economies have resorted to irregular operations which are usually undertaken at short notice and involving irregular set-piece operations and bilateral operations encompassing one or several discrete unannounced interventions.

Central bank bills are used by many countries, in particular when there is a need to separate monetary policy objectives from public debt management objectives, and also when secondary markets are insufficiently developed to permit open market operations in the secondary market. These are flexible instruments to conduct short-term liquidity management because their issuance is at the discretion of the central bank. There exist many auction/tender formats that are commonly used to steer interest rates. According to the survey, the primary method of sales continues to be multi-price auctions.

A central bank may incur losses if a large primary issuance is required to sterilize liquidity. When central bank bills are used in conjunction with treasury bills, issuing agents should coordinate carefully.

### **Secondary market operations**

With the aim of developing secondary markets, some economies have introduced operations in government securities (Figure 8). Secondary market operations involve also outright purchases and sales or repo and reverse repo operations. They can be undertaken on a continuous basis and thereby provide even greater flexibility and transparency. Although open market operations in the secondary market for government securities may enhance market development, their final impact on liquidity depends on the depth of the secondary market.

Secondary market operations (SMO) induce an immediacy of response in the money market and they have the advantage of being automatically reversible, which is especially well suited for offsetting seasonal fluctuations. However, a successful and smooth operation requires a liquid and deep secondary market. In addition, central banks must have an adequate stock of marketable assets to undertake these operations.

The surveys depict a more intense use of government securities by developing and emerging economies through, mainly, repo operations (Figure 8). Central bank bills are more widely used by developed economies which are characterized by liquid and deep secondary markets.



However, it is worthwhile noticing that fiscal weaknesses and dominance may have also constrained the transition to market-based instruments in developing economies.<sup>19</sup> As shown in Figure 1a-c, the reporting of the use of secondary market operations in developing countries has been quite weak since 1998 relative to more advanced economies. The frequency of weekly and daily interventions has increased for all countries. Concerning the type of securities used, developing and emerging economies have opted to use more government bills than central bank bills in secondary market operations, together with the increased use of multi-price repo operations.

## **F. Market Information**

A market for short-term lending between banks exists in all developed and emerging countries of the sample. Most of developing countries also exhibit some forms of short-term lending among banks (Table 6).

The development of liquidity in the interbank market provides the basis for growth and further liquidity increases in the broader money market, including secondary markets for treasury bills and private sector money market instruments. The latter might include commercial papers (broadly used in developed countries and in a lesser extent by emerging and developing countries) and bankers' acceptances (Table 6).

The repurchase agreement, by which a central bank lends securities against cash has become a relevant instrument for market operations in several countries.<sup>20</sup> These agreements usually require government (or other) securities of any maturity acting as collateral.<sup>21</sup> Interbank market operations are collateralized in more than 70 percent of the countries included in our sample. However, this practice is not widespread in emerging and developing countries. According to the survey, repurchase agreements are used by more than 80 percent of emerging and developed countries and they are also extensively used in developing countries (Table 6).

---

<sup>19</sup> Laurens (2005) describes the effect of fiscal dominance in the transition to reliance on money market operations.

<sup>20</sup> A reverse repurchase agreement is an operation by which the central bank borrows securities against cash. Several distinctive features of money markets and monetary policy operations are presented in IMF (2001).

<sup>21</sup> The list of collateral eligible in reverse operations is a key issue concerning the implementation of monetary policy. Bindseil (2004) underlines that central banks usually tend to accept a long list of collateral in order to avoid any possible lack of resources that might jeopardize the implementation of monetary policy. However, this option might imply accepting low quality collateral whenever adequate risk control measures (margin requirements and haircuts are imposed). Although the Eurosystem and the Bank of England avoid any form of discriminating among different types of collateral, the solution adopted by the Fed was to define separate tranches of OMO for different classes (types) of collateral.

Table 6. Market Information, 2004  
(In percent of countries using the instrument)

	Developed Countries	Emerging Countries	Developing Countries
Interbank market	100	100	85
<i>Of which</i>			
Collateralized	71	27	46
Other money market instruments			
Bankers acceptances	19	36	31
Commercial paper	71	46	39
Master Repurchase Agreement	86	82	69
<i>Of which</i>			
For central bank operations	100	89	78
For interbank operations	89	78	67
Secondary market			
For government securities	100	100	62

Source: ISIMP.

### III. FINAL REMARKS

This paper provided an overview of the information contained in the Information System for Instruments of Monetary Policy (ISIMP) database maintained by MCM. The database showed the relevance and usefulness of the information that has been collected through periodic surveys of central banks.

Several general trends can be observed from the database regarding the evolution of the instrument mix in the three groups of countries.

- Direct instruments of monetary policy are no longer used in the majority of countries.
- The instrument mix in developed economies has become more diverse with the use of a variety of central bank standing facility instruments and of discretionary (market-based) instruments. This has been necessitated by the advanced stage of market development and increased global linkages between financial markets in developed countries.
- The diversity of the instrument mix in developing and emerging market economies has not kept up with the increased diversity in the more advanced group of economies and there is a tendency for developing economies to use rules-based instruments more intensively relative to more advanced economies. This phenomenon could be due to the presence of excess liquidity and the early stage of market development in developing economies.
- Developing economies tend to use rules-based instruments more intensively relative to more advanced economies, which could hamper market development and hold back the transition to market-based monetary operations. On the other hand, greater reliance on rules-based instruments is a reflection of shallow markets. In this regard, the challenge

for central banks is to strike an appropriate balance and make sure that their reliance on rules-based instruments is also mindful of the need to develop markets.

In many respects, the above findings in many aspects support the agenda for action to enhance monetary policy effectiveness in developing countries as outlined in IMF Occasional Paper 244. Laurens et al.(2005) have argued that to enhance the effectiveness of monetary policy in countries with less developed financial markets, the following headings, in order of priority, should set the Fund's work agenda so as to cooperate technically with those countries to: (a) curtail fiscal dominance, (b) deal with structural liquidity surplus, (c) establish efficient money markets, and (d) strengthen financial market infrastructure.<sup>22</sup>

Going forward, we envisage that a direct use of the database by future researchers will allow them to assess the evolution of an individual country monetary framework by depicting the complementarities across instruments within that framework. The latter is outside the scope of this paper but promise to become a useful role for this datababe. In this sense, the ISIMP opens new horizons for research on monetary policy implementation.

---

<sup>22</sup> To further improve the information content of the database, the survey questionnaires will be redesigned to better capture the intensity in the use of monetary policy instruments in groups of countries.

## APPENDIX I. CHARACTERIZING SOME OF THE MONETARY POLICY INSTRUMENTS

The instruments can be categorized in many different ways. One possibility is the one advanced by Laurens (2005) as:

**Rules-based instruments:** Monetary instruments based on the regulatory power of the central bank. These include:

- **Liquid asset ratio (LAR):** Requirement for a bank to hold minimum amounts of specified liquid assets, typically as a percentage of the bank's liabilities.
- **Reserve requirements (RRs):** Requirements for a bank to hold minimum balances with the central bank, typically as a percentage of its liabilities. When averaging provisions are allowed, banks can fulfill reserve requirements on the basis of average reserve holdings during the maintenance period.
- **Standing facilities:** Monetary instruments (voluntarily) activated at the initiative of commercial banks and other market participants. They bear a pre-specified interest rate, which allow banks to borrow from the central bank (refinance standing facility) or deposit funds with the central bank (deposit standing facility).

**Money market operations:** Monetary instruments used at the discretion of the central bank and bearing an interest rate linked to money market conditions. These are meant to influence the underlying demand and supply conditions for central bank money. They include:

- **Open market-type operations:** Market-based monetary operations based on auction techniques regulated by the central bank. OMO-type operations involve (1) lending/borrowing with underlying assets as collateral, (2) primary market issuance of central bank securities or government securities for monetary policy purposes, and (3) acceptance of fixed-term deposits.
- **Open market operations (OMOs):** Market-based (voluntarily) monetary operations conducted by the central bank as a participant in the money market. OMOs involve (1) buying/selling assets outright on the secondary market and (2) buying/selling assets under a repurchase agreement in the repo market or through foreign exchange swaps.
- **Auction techniques:** Used by central banks in their money market operations, these include: (1) volume tenders, with banks bidding only for volumes supplied by the central bank at a preset interest rate; and (2) interest rate tenders, with banks bidding for both the amount and the rate; the central bank charges the rates offered (multiple-rate auction) or the cutoff rate (uniform-rate auction).
- **Fine-tuning operation:** An irregular money market operation executed mainly to deal with unexpected liquidity fluctuations in the market.

## Appendix II. TEMPLATE FOR MONETARY INSTRUMENTS DATABASE

Country: .....  
 Respondent's name and position: .....  
 Address: .....  
 Phone: .....  
 Fax: .....  
 Email: .....

Item	Policy
<b>1. DIRECT INSTRUMENTS</b> .....	<input type="checkbox"/> [YES]..... <input type="checkbox"/> [NO]
1.1 Interest rate controls.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
1.2 Bank-by-bank credit ceilings.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
1.3 Directed credits.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
1.4 Specific lending requirements.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
1.5 Other (please specify) .....	
 <b>2. RESERVE REQUIREMENTS (RRs)</b> .....	 <input type="checkbox"/> [YES]..... <input type="checkbox"/> [NO]
2.1 Type used:	
2.1.1 Uniform rate.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.1.2 Reserve ratio (in percent).....	
2.2 Reserve base:	
2.2.1 Demand deposits.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.2.2 Time deposits.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.2.3 Foreign currency deposits (FCD).....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.2.4 Other (please specify) .....	
2.3 Denomination of reserves on FCD .....	<input type="checkbox"/> [Domestic] <input type="checkbox"/> [Foreign]
2.4 Eligible assets:	
2.4.1 Cash in vault .....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.4.2 Deposits at the CB .....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.4.3 Other (please specify) .....	
2.5 Holding period averaging .....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.6 Lagged.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.7 Remunerated .....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
2.8 Penalty for reserve deficiency.....	<input type="checkbox"/> [Yes]..... <input type="checkbox"/> [No]
<b>3. STATUTORY LIQUIDITY REQUIREMENTS</b> .....	<input type="checkbox"/> [YES]..... <input type="checkbox"/> [NO]

- 3.1 Liquidity ratio (in percent).....  
 3.2 Holding period averaging ..... ☐ [Yes] ..... ☐ [No]

**4. CENTRAL BANK STANDING FACILITIES** ..... ☐ [YES] ..... ☐ [NO]

- 4.1 Lending (Lombard/overdraft) facility ..... ☐ [Yes] ..... ☐ [No]

- 4.1.1 Collateral ..... ☐ [Yes] ..... ☐ [No]

- 4.1.2 Maturity:

- 4.1.2.1 Overnight or a few days ..... ☐ [Yes] ..... ☐ [No]

- 4.1.2.2 Approximately one week ..... ☐ [Yes] ..... ☐ [No]

- 4.1.2.3 Longer than one week ..... ☐ [Yes] ..... ☐ [No]

(maximum maturity) .....

- 4.1.3 Penalty rate

- 4.1.3.1 Spread over market or  
main central bank rate ..... ☐ [Yes] ..... ☐ [No]

- 4.2 Rediscount credit ..... ☐ [Yes] ..... ☐ [No]

- 4.2.1 Type of instrument rediscounted:

- 4.2.1.1 Government security ..... ☐ [Yes] ..... ☐ [No]

- 4.2.1.2 Central bank bill ..... ☐ [Yes] ..... ☐ [No]

- 4.2.1.3 Other (please specify) .....

- 4.2.2 Maturity:

- 4.2.2.1 Overnight or a few days ..... ☐ [Yes] ..... ☐ [No]

- 4.2.2.2 Approximately one week ..... ☐ [Yes] ..... ☐ [No]

- 4.2.2.3 Longer than one week ..... ☐ [Yes] ..... ☐ [No]

(maximum maturity) .....

- 4.2.3 Interest rate

- 4.2.3.1 Spread over market rate ..... ☐ [Yes] ..... ☐ [No]

- 4.3 Deposit facility ..... ☐ [Yes] ..... ☐ [No]

- 4.3.1 Interest rate

- 4.3.1.1 Spread below market or  
main central bank rate ..... ☐ [Yes] ..... ☐ [No]

- 4.3.2 Maturity:

- 4.3.2.1 Overnight or a few days ..... ☐ [Yes] ..... ☐ [No]

- 4.3.2.2 Approximately one week ..... ☐ [Yes] ..... ☐ [No]

- 4.3.2.3 Longer than one week ..... ☐ [Yes] ..... ☐ [No]

(maximum maturity) .....

- 4.4 Interest rate arrangement (combination of standing facilities):

- 4.4.1 "Corridor approach"

- (with upper & lower bound) ..... ☐ [Yes] ..... ☐ [No]

- 4.4.2 Upper bound only ..... ☐ [Yes] ..... ☐ [No]

4.4.3 Lower bound only ..... ☐ [Yes] ..... ☐ [No]

**5. DISCRETIONARY MONETARY**

**INSTRUMENTS** ..... ☒ [YES] ..... ☐ [NO]

5.1 Primary market operations ..... ☒ [Yes] ..... ☐ [No]

If Yes:

5.1.1 Frequency of intervention:

5.1.1.1 Daily ..... ☐

5.1.1.2 Weekly ..... ☐

5.1.1.3 Every other week ..... ☐

5.1.1.4 Other (please specify) .....

5.1.2 Security(s):

5.1.2.1 Government securities ..... ☐

5.1.2.2 Central bank bills ..... ☐

5.1.2.3 Other (please specify) .....

5.1.3 Method of sale (government securities and CB-bills):

5.1.3.1 Auction ..... ☐

5.1.3.2 Tap ..... ☐

5.1.3.3 Syndication ..... ☐

5.1.3.4 Other (please specify) .....

5.1.4 Type of auction (if used):

5.1.4.1 Uniform price ..... ☐

5.1.4.2 Multiple price ..... ☐

5.1.4.3 Volume auction ..... ☐

5.1.5 Government account with the central bank to sterilize the proceeds of

the

market operation ..... ☐ [Yes] ..... ☐ [No]

5.2 Secondary market operations ..... ☐ [Yes] ..... ☐ [No]

If Yes:

5.2.1 Frequency of intervention:

5.2.1.1 Daily ..... ☐

5.2.1.2 Weekly ..... ☐

5.2.1.3 Every other week ..... ☐

5.2.1.4 Other (please specify) .....

5.2.2 Security(s):

5.2.2.1 Government securities ..... ☐

5.2.2.2 Central bank bills ..... ☐

5.2.2.3 Other (please specify) .....

5.2.3 Type of operations:

5.2.3.1 Outright sale/purchase ..... ☐

5.2.3.2 Repo/reverse repo operation .. ☐

5.2.3.3 Other (please specify) .....

5.2.4 If both, which one is used

more often ..... ☐ [Repos] ..... ☐ [Outright  
sale/purchase]

5.2.5 Procedures (if used):

5.2.5.1 Uniform price auction ..... ☐

5.2.5.2 Multiple price auction ..... ☐

5.2.5.3 Volume auction ..... ☐

5.2.5.4 Other (please specify) .....

5.3 Other instruments:

5.3.1 Transfer of government deposits ..... ☐ [Yes] ..... ☐ [No]

5.3.1.1 Frequency of intervention ..... ☐ [Regularly] ..... ☐

[Intermittently]

5.3.2 Foreign exchange swaps. .... ☐ [Yes] ..... ☐ [No]

5.3.2.1 Frequency of intervention ..... ☐ [Regularly] ..... ☐

[Intermittently]

5.3.3 Credit auctions ..... ☐ [Yes] ..... ☐ [No]

5.3.3.1 Frequency of intervention ..... ☐ [Regularly] ..... ☐

[Intermittently]

5.3.3.2 Maturity of operations:

5.3.3.2.1 Up to one week ..... ☐

5.3.3.2.2 Up to two weeks..... ☐

5.3.3.2.3 Other (please specify) .....

5.3.3.3 Collateralized ..... ☐ [Yes] ..... ☐ [No]

If Yes:

5.3.3.3.1 Government securities ..... ☐

5.3.3.3.2 Central bank bills ..... ☐

5.3.3.3.3 Other (please specify) .....

5.3.4 Deposit operations ..... ☐ [Yes] ..... ☒ [No]

5.3.4.1 Frequency of intervention ..... ☐ [Regularly] ..... ☐

[Intermittently]

5.3.4.2 Maturity of operations:

5.3.4.2.1 Up to one week ..... ☐

5.3.4.2.2 Up to two weeks..... ☐

5.3.4.2.3 On call ..... ☐



5.3.4.2.4 Other (max. maturity) .....

5.3.4.3 Auction used:

5.3.4.3.1 Multiple price.....☐ [Yes] .....☐ [No]

5.3.4.3.2 Single price .....☐ [Yes] .....☐ [No]

5.3.4.3.3 Volume auction.....☐ [Yes] .....☐ [No]

5.3.5 Other discretionary instruments.....

## 6. MARKET INFORMATION

6.1 Money market .....☐ [Yes] .....☐ [No]

6.1.1 Interbank .....☐ [Yes] .....☐ [No]

6.1.1.1 Mostly collateralized.....☐ [Yes] .....☐ [No]

6.1.1.2 Daily turnover as percent of  
total bank deposits.....

6.1.1.3 Maturity:

6.1.1.3.1 Overnight .....☐ [Frequent] ..☐ [Intermittent] ..☐ [Rare]

6.1.1.3.2 Up to one week .....☐ [Frequent] ..☐ [Intermittent] ..☐ [Rare]

6.1.1.3.3 Up to one month.....☐ [Frequent] ..☐ [Intermittent] ..☐ [Rare]

6.1.1.3.4 Over one month.....☐ [Frequent] ..☐ [Intermittent] ..☐ [Rare]

6.1.2 Other money market instruments:

6.1.2.1 Bankers acceptances .....☐ [Yes] .....☐ [No]

6.1.2.2 Commercial paper.....☐ [Yes] .....☐ [No]

6.1.2.3 Other (please specify).....

6.1.3 Use of Master Repurchase Agreement .☐ [Yes] .....☐ [No]

If Yes:

6.1.3.1 For central bank operations....☐ [Yes] .....☐ [No]

6.1.3.2 For interbank operations .....☐ [Yes] .....☐ [No]

6.2 Secondary market for government securities.☐ [Yes] .....☐ [No]

6.2.1 Daily turnover as percent of stock government securities .....

## 7. COMMENTS

## References

- Alexander, William E., Tomás J. T. Baliño, and Charles Enoch, 1995, *The Adoption of Indirect Instruments of Monetary Policy*, IMF Occasional Paper No.126 (Washington: International Monetary Fund).
- Baliño, Tomás J.T., and Lorena M. Zamalloa, eds., 1997, *Instruments of Monetary Management: Issues and Country Experiences*. International Monetary Fund.
- Bank of England, 2004, *Reform of the Bank of England's Operations in the Sterling Money Markets*, A second consultative paper by the Bank of England, November. Available on the Bank's website at <http://www.bankofengland.co.uk/markets>.
- Bindseil, Ulrich, 2004, "Monetary Policy Implementation, Theory-Past-Present," Oxford University Press Inc., New York.
- Blenck, Denis, Harri Hasko, Spence Hilton, and Kazuhiro Masaki, 2001, "The Main Features of the Monetary Policy Frameworks of the Bank of Japan, The Federal Reserve and the Eurosystem," BIS Papers N. 9.
- Borio, Claudio, 1997, "The Implementation of Monetary Policy in Industrial Countries: A Survey," Bank for International Settlements, Economic Papers, No. 47.
- \_\_\_\_\_, 2000, "A Hundred Ways to Skin a Cat: Comparing Monetary Policy Operating Procedures in the United States, Japan and the Euro Area," BIS papers No. 9.
- Enoch, Charles, Paul Hilbers, and Arto Kovanen, 1997, "Some Issues in the Design of Monetary Instruments for the Operation of European Economic and Monetary Union December," IMF Working Paper No. 97/178 (Washington: International Monetary Fund).
- European Central Bank, 2005, *The Implementation of Monetary Policy in the Euro Area*, General Documentation on Eurosystem Monetary Policy Instruments and Procedures, February.
- Friedman, Milton, and Anna Jacobson Schwartz, 1963, *A Monetary History of the United States, 1867-1960*, Princeton University Press.
- Hardy, Daniel, 1993, "Reserve Requirements and Monetary Management: An Introduction," IMF Working Paper No. 93/35 (Washington: International Monetary Fund).
- Meltzer, Allan, 2003, "A History of the Federal Reserve," Chicago, University of Chicago Press.

- Monetary and Exchange Affairs Department, 1995a, “Monetary Policy through Primary Market Issues: Government Securities or Central Bank Securities?” MAE Operational Paper 95/01 (unpublished: Washington: International Monetary Fund).
- , 1995b, “Reserve Requirements on Foreign Currency Deposits,” MAE Operational Paper 96/05 (unpublished: Washington: International Monetary Fund).
- , 1996, “The Use of Reserve Requirements in Monetary Control: Operational Features and Country Practices,” MAE Operational Paper 96/01 (unpublished: Washington: International Monetary Fund).
- International Monetary Fund, 2001, *Developing Government Bond Markets: A Handbook*, (Washington: International Monetary Fund).
- Laurens, Bernard, 1997, “Refinance Instruments: Lessons from Their Use in Some Industrial Countries,” in *Instruments of Monetary Management: Issues and Countries Experiences*, ed. by Tomás J. T. Baliño and Lorena M. Zamalloa (Washington: International Monetary Fund).
- , 2005, *Monetary Policy Implementation at Different Stages of Market Development*, International Monetary Fund, Occasional Paper No. 244 (Washington: International Monetary Fund).
- Levy-Yeyati, Eduardo, 1999, “Monetary Operations and Government Securities Markets,” in *Transforming Financial Systems in the Baltics, Russia, and Other Countries of the Former Soviet Union*, ed. by Malcolm Knight, Arne B. Petersen, and Robert T. Price (Washington: International Monetary Fund).