Guidelines for Foreign Exchange Reserve Management

Prepared by the Staff of the
International Monetary Fund

International Monetary Fund

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International Monetary Fund
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Preface

The Guidelines for Foreign Exchange Reserve Management have been developed as part of a broader work program undertaken by the IMF to help strengthen the international financial architecture, to promote policies and practices that contribute to stability and transparency in the financial sector, and to reduce external vulnerabilities of member countries. The Guidelines parallel those for Public Debt Management that were developed by the IMF and the World Bank and released in March 2001.

In developing the Guidelines, IMF staff worked in close collaboration with reserve management entities from a broad group of member countries and international institutions in a comprehensive outreach process. The outreach process included regional meetings in Abu Dhabi, Basel, Gaborone, Mexico City, Singapore, and Washington, DC, to discuss earlier versions of the Guidelines. The practitioners' insight that this process brought to the Guidelines has enabled the enunciation of broadly applicable principles as well as institutional and operational foundations that have relevance for members with a wide range of institutional structures at different stages of development.

The staff acknowledges and greatly appreciates the efforts of all who contributed to the successful completion of this project.

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I

What Is Reserve Management and Why Is It Important?

Reserve management is a process that ensures that adequate official public sector foreign assets are readily available to and controlled by the authorities for meeting a defined range of objectives for a country or union.[1] In this context, a reserve management entity is normally made responsible for the management of reserves and associated risks.[2] Typically, official foreign exchange reserves are held in support of a range of objectives,[3] including to

- support and maintain confidence in the policies for monetary and exchange rate management, including the capacity to intervene in support of the national or union currency;
- limit external vulnerability by maintaining foreign currency liquidity to absorb shocks during times of crisis or when access to borrowing is curtailed, and in doing so
- provide a level of confidence to markets that a country can meet its external obligations;
- demonstrate the backing of domestic currency by external assets;
- assist the government in meeting its foreign exchange needs and external debt obligations; and
- maintain a reserve for national disasters or emergencies.

Sound reserve management practices are important because they can increase a country's or region's overall resilience to shocks. Through their interaction with financial markets, reserve managers gain access to valuable information that keeps policymakers informed of market developments and views on potential threats. The importance of sound practices has also been highlighted by experiences where weak or risky reserve management practices have restricted the ability of the authorities to respond effectively to financial crises, which may have accentuated the severity of these crises. Moreover, weak or risky reserve management practices can also have significant financial and reputational costs. Several countries, for example, have incurred large losses that have had direct,

[1]The word union is used to represent monetary or exchange management unions that also undertake reserve management.

[2]Among countries, and among monetary or exchange management unions, the entity responsible for reserve management may be a central bank or monetary authority acting either as a principal or as an agent for another repository of reserves such as an exchange fund. These entities may also have a range of policy responsibilities and functions that extend beyond their reserve management responsibilities. For discussion purposes, the term reserve management entity is used throughout this paper to refer to the entity that is responsible for reserve management, and the term reserve manager is used to refer to the specific area within the entity that performs the actual reserve management function.

[3]A number of countries also maintain separate stabilization or savings funds often related to nonrenewable resources. Such funds do not generally fall within the definition of reserve assets and are not specifically covered by these guidelines. They do, however, represent public sector assets that must be managed with due care and diligence. Accordingly, the principles contained in the guidelines may also have potential relevance for the sound management and stewardship of such foreign assets.

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or indirect, fiscal consequences.[4] Accordingly, appropriate portfolio management policies concerning the currency composition, choice of investment instruments, and acceptable duration of the reserves portfolio, and which reflect a country's specific policy settings and circumstances serve to ensure that assets are safeguarded, readily available, and support market confidence.

Sound reserve management policies and practices can support, but not substitute for, sound macroeconomic management. Moreover, inappropriate economic policies (fiscal, monetary and exchange rate, and financial) can pose serious risks to the ability to manage reserves.

[4]Such experiences are not discussed in detail in this paper, but have been drawn upon in identifying risks to which countries have been exposed. Some further detail, however, is provided in Chapter 4.

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Purpose of the Guidelines

The guidelines presented in this paper are intended to assist governments in strengthening their policy frameworks for reserve management so as to help increase their country's resilience to shocks that may originate from global financial markets or within the domestic financial system. The aim is to help the authorities articulate appropriate objectives and principles for reserve management and build adequate institutional and operational foundations for good reserve management practices.

The guidelines identify areas of broad agreement among practitioners on reserve management principles and practices that are applicable to a broad range of countries at different stages of development and with various institutional structures for reserve management. In doing so, the guidelines serve to disseminate sound practices more widely, while recognizing that there is no unique set of reserve management practices or institutional arrangements that is best for all countries or situations. In this respect, they should be regarded as nonmandatory and should not be viewed as a set of binding principles.

In their usage, the guidelines are intended primarily for voluntary application by members in strengthening their policies and practices. They could also play a useful role in the context of technical assistance and, as warranted, as a basis for informed discussion between the authorities and the Fund on reserve management issues and practices.

Although institutional arrangements and general policy environments can differ, surveys of actual practices indicate that there is increasing convergence on what are considered sound reserve management practices that taken together constitute a broad framework for reserve management. In the context of this paper, these practices are reflected in guidelines that encompass (1) clear objectives for the management of reserves; (2) a framework of transparency that ensures accountability and clarity of reserve management activities and results; (3) sound institutional and governance structures; (4) prudent management of risks; and (5) the conduct of reserve management operations in efficient and sound markets.

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The Guidelines

1. Reserve Management Objectives, Scope, and Coordination

1.1 Objectives

Reserve management should seek to ensure that (1) adequate foreign exchange reserves are available for meeting a defined range of objectives; (2) liquidity, market, and credit risks are controlled in a prudent manner; and (3) subject to liquidity and other risk constraints, reasonable earnings are generated over the medium to long term on the funds invested.

1.2 Scope

Reserves consist of official public sector foreign assets that are readily available to and controlled by the monetary authorities.

Reserve management activities may also encompass the management of liabilities, other short foreign exchange positions, and the use of derivative financial instruments.

1.3 Reserve Management Strategy and Coordination

Reserve management strategies should be consistent with and supportive of a country's or union's specific policy environment, in particular its monetary and exchange arrangements.

Evaluation of alternative reserve management strategies and their respective implications for reserve adequacy are likely to be facilitated by a cost-benefit analysis of holding reserves.

Reserve management strategies may also need to take into account strategies for the management of external debt for purposes of reducing external vulnerability.

2. Transparency and Accountability

2.1 Clarity of Roles, Responsibilities, and Objectives of Financial Agencies Responsible for Reserve Management

The allocation of reserve management responsibilities, including agency arrangements, between the government, the reserve management entity, and other agencies should be publicly disclosed and explained.

The broad objectives of reserve management should be clearly defined and publicly disclosed, and the key elements of the adopted policy explained.

2.2 Open Process for Reserve Management Market Operations

The general principles governing the reserve management entity's relationships with counterparties should be publicly disclosed.

2.3 Public Availability of Information on Foreign Exchange Reserves

Information on official foreign exchange reserves should be publicly disclosed on a pre-announced schedule.

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2.4 Accountability and Assurances of Integrity by Agencies Responsible for Reserve Management

The conduct of reserve management activities should be included in the annual audit of the reserve management entity's financial statements. Independent external auditors should conduct the audit and their opinions on the financial statements should be publicly disclosed.

General principles for internal governance used to ensure the integrity of the reserve management entity's operations should be publicly disclosed.

3. Institutional Framework

3.1 Legal Foundation

Sound institutional and governance arrangements should be established through a legislative framework that clearly establishes the reserve management entity's responsibilities and authority.

3.2 Internal Governance

The internal governance structure of the reserve management entity should be guided by and reflect the principles of clear allocation and separation of responsibilities. Sound management of internal operations and risks requires appropriately qualified and well-trained staff, following sound business practices.

Effective monitoring of internal operations and related risks should be supported by reliable information and reporting systems, and an independent audit function.

Staff involved in reserve management should be subject to a code of conduct and conflict of interest guidelines regarding the management of their personal affairs.

Effective recovery procedures should be in place to mitigate the risk that reserve management activities might be severely disrupted by the failure of operating systems, or other catastrophic events.

4. Risk Management Framework

There should be a framework that identifies and assesses the risks of reserve management operations and that allows the management of risks within acceptable parameters and levels.

The risk management framework should apply the same principles and measures to externally managed funds as it does to those managed internally.

Risk exposures should be monitored continuously to determine whether exposures have been extended beyond acceptable limits.

Reserve managers should be aware of and be able to account for potential financial losses and other consequences of the risk exposures they are prepared to accept.

The risk management framework should also address risks associated with derivative financial instruments and other foreign currency operations.

To assess the risk and vulnerability of the reserve portfolio, the reserve management entity should regularly conduct stress tests to ascertain the potential effects of macroeconomic and financial variables or shocks.

5. Role of Efficient Markets

Reserve management, and any related policy operations, should be conducted in markets that have sufficient depth and liquidity, and can process transactions in a sound and efficient manner.

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IV
Discussion of the Guidelines

1. Reserve Management Objectives, Scope, and Coordination

1.1 Objectives

Reserve management should seek to ensure that (1) adequate foreign exchange reserves are available for meeting a defined range of objectives; (2) liquidity, market, and credit risks are controlled in a prudent manner; and (3) subject to liquidity and other risk constraints, reasonable earnings are generated over the medium to long term on the funds invested. Reserve management forms a part of official economic policies, and specific circumstances will impact on choices concerning both reserve adequacy and reserve management objectives. In order to ensure the availability of reserves, and as part of setting appropriate investment priorities, the reserve manager needs to have an assessment of what constitutes an adequate level of reserves. Such an assessment may be made by the reserve management entity, or it may involve consultation between the reserve management entity and other agencies. There are no universally applicable measures for assessing the adequacy of reserves and the determination of reserve adequacy falls beyond the scope of these guidelines. Relevant factors have traditionally included a country's monetary and exchange rate arrangements, and the size, nature, and variability of its balance of payments and external position. More recently, financial risks associated with a country's external debt position and the volatility of its capital flows have received particular attention, especially for economies with significant but not fully certain access to international markets. In the process, ensuring the availability of reserves will be influenced by the exchange rate system, and the particular objectives for which they are held.[5]

To ensure that reserves are available at the times when they are needed most, liquidity—which is the ability to convert quickly reserve assets into foreign exchange—usually receives the highest priority, albeit with a cost that usually involves accepting lower-yielding investment instruments. Closely following is the need for the management and control of risks to ensure that asset values are protected. Market and credit risks, for instance, can lead to sudden losses and impair liquidity. Finally, earnings are an important outcome of the management of reserve assets. For some countries, they play a role in offsetting the costs associated with other central bank policies and domestic monetary operations, which among other things fund the acquisition of reserves. In other cases, such as where reserves are borrowed in foreign markets, earnings play an important role in minimizing the carrying costs of reserve assets. Accordingly, achieving an acceptable level of earnings should be a priority within clearly defined liquidity and risk constraints.

In sum, the reserve management entity should seek to maximize the value of reserves, within the

[5]A discussion of reserve adequacy can be found in International Monetary Fund, 2000, *Debt- and Reserve-Related Indicators of External Vulnerability,* which is available on the IMF's website: http://www.imf.org/external/np/pdr/debtres/index.htm.

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prudent risk limits that form the framework for reserve management, so that reserves are always available when they are needed. As a consequence, reserve asset portfolios tend to be highly risk-averse, with a consequent priority for liquidity and security before profit or carrying cost considerations. This necessarily involves making a trade-off between risk and return in the context of setting reserve management priorities.

1.2 Scope

Reserves consist of official public sector foreign assets that are readily available to and controlled by the monetary authorities. Reserve asset portfolios usually have special characteristics that distinguish them from other foreign currency assets. First and foremost, official reserve assets normally consist of liquid or easily marketable foreign currency assets that are under the effective control of, and readily available to, the reserve management entity.[6] Furthermore, to be liquid and freely usable for settlements of international transactions, they need to be held in the form of convertible foreign currency claims of the authorities on nonresidents.[7]

Reserve management activities may also encompass the management of liabilities, other short foreign exchange positions, and the use of derivative financial instruments. Depending upon a country's or union's specific policy objectives and settings, the reserve management entity may also be involved in the borrowing of foreign exchange, or drawing against committed credit lines, as part of its responsibility for maintaining an adequate level of reserves. Managing reserves may also involve liability positions that derive from repurchase agreements, forward exchange and swap agreements, as well as positions arising from operations involving futures and options. In the latter respect, many countries now use derivative financial instruments as an integral part of reserve management operations to establish hedges against currency and interest rate exposures.[8]

1.3 Reserve Management Strategy and Coordination

Reserve management strategies should be consistent with and supportive of a country's or union's specific policy environment, in particular its monetary and exchange arrangements. Reserve management strategies will be shaped by the specific reasons for which reserves are held. In the context of monetary and exchange arrangements, the exchange rate regime and the degree to which exchange and capital controls have been liberalized are of particular relevance.

Under a free float, a public commitment by the authorities not to operate in the foreign exchange market gives the reserve manager greater latitude in structuring the duration and liquidity of the portfolio. In practice, however, the authorities may seek to maintain a capacity to ensure orderly markets during times of very sharp adjustments of the exchange rate or market pressures, or more generally to be able to counter unforeseen internal or external shocks.

In countries with fixed exchange rates, including those that operate currency boards, the authorities may need to operate often in the foreign exchange market and will therefore need reserves that can be readily converted into foreign exchange.[9] Especially in these cases, reserves are needed to provide confidence in the currency peg and deter speculation. For these purposes, reserves

[6]In general, control is assured when reserve assets are owned by the reserve management entity. However, external assets held by another authority may also be considered as reserve assets when such assets are under the direct and effective control of the reserve management entity. Comprehensive guidance on definitional and other aspects of reserves and liquidity can be found in International Monetary Fund, Statistics Department, 1999, "Data Template on International Reserves and Foreign Currency Liquidity—Operational Guidelines," October.

[7]Official foreign exchange reserves may also include holdings of gold. Such holdings would need to be held by the authorities as monetary gold so as to ensure ready availability for sale and delivery on world bullion markets.

[8]Examples of instruments used include swap, futures, and options contracts involving foreign currencies or interest rates. Risk aspects associated with these operations are discussed in Section 4.

[9]A currency board arrangement may also have a direct implication for the currency composition of reserves, if there is a requirement for base money to be backed wholly, or predominantly, by the currency to which the local currency is pegged.

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tend to be invested in a form that facilitates their ready availability.

Intermediate exchange rate regimes, such as managed float or peg arrangements,[10] require the authorities to operate in support of the arrangement. This may call for more or less active operations depending on market evolution and conditions with consequences for the choice of the appropriate level of liquidity that would need to be maintained.

Evaluation of alternative reserve management strategies and their respective implications for reserve adequacy are likely to be facilitated by a cost-benefit analysis of holding reserves. Such analysis would aim to place values on the costs and benefits of holding more or less reserves, for example, by weighing the costs of raising and holding additional reserves against expected benefits of less volatile capital flows, increased foreign investor confidence, and reduced risk of contagion.

Reserve management strategies may also need to take into account strategies for the management of external debt for purposes of reducing external vulnerability. Mutually consistent and supporting policies for debt and reserve management can be important elements of crisis prevention. At the public sector level, this might involve a coordinated approach that considers the assets and liabilities of several official institutions including, where relevant, positions of subnational authorities. The aim in these circumstances is to determine whether a country's official "whole of government" balance sheet has an adequate level of reserves to provide liquidity as needed, and to allow time to absorb shocks in situations where access to borrowing is curtailed or very costly. In some economies, short-term external private debt may also be an additional factor in determining reserve adequacy.

In countries where reserve management and debt management responsibilities are entrusted to the same authority, consistent strategies can be achieved through a well-coordinated asset-liability risk management approach. Where reserve management and debt management responsibilities are split between authorities, however, the respective policy objectives may differ. In situations where, for example, the reserve management entity has a primary responsibility for monetary policy, care should be taken to ensure that coordination efforts are not seen as compromising the separation between monetary policy and debt management. In such situations, coordination might also seek to ensure that the authorities' respective actions send out clear signals and avoid contradictory messages.[11]

2. Transparency and Accountability

The main issues of transparency in the context of good governance and accountability in reserve management are addressed in the IMF's *Code of Good Practices on Transparency in Monetary and Financial Policies: Declaration of Principles, September 1999* (MFP Transparency Code) and illustrated in the Supporting Document to the Code. The MFP Transparency Code aims at promoting transparency practices for central banks in their conduct of monetary policy, and for central banks and other financial agencies in their conduct of financial policies (Box 1). In doing so, it contains several elements of good transparency practices relating to foreign exchange policies, reserve management, and related foreign exchange market operations. In addition to identifying a range of general disclosures concerning foreign exchange policies and institutional responsibilities for reserve management, the MFP Transparency Code aims to promote transparency through accountability. The subsections of this chapter follow the respective headings of the Code that relate to reserve management. It should be noted that within the specific sections of these guidelines, references to the level of disclosure by a reserve management entity reflect those levels implied by the relevant section of the MFP Transparency Code, and where applicable, other relevant standards.

[10]Arrangements in this regard would include conventional fixed pegs, crawling pegs, horizontal bands, and crawling bands. Further details on these arrangements can be found in the IMF's *Annual Report 2001* (Appendix II, pp. 141–43), which is available on the Fund's website: http://www.imf.org/external/pubs/ft/ar/2001/eng/index.htm.

[11]This may involve, for example, a policy coordination body such as a separate treasury council that oversees external debt management and coordinates borrowing programs having regard to advice from the reserve management entity on the desired level of reserves.

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Box 1. Foreign Reserves Disclosures Under IMF Standards and Codes

Code of Good Practices on Transparency in Monetary and Financial Policies
(MFP Transparency Code)

The MFP Transparency Code, adopted by the Interim Committee in September 1999, requires specific public disclosures covering (1) the institution with responsibility for foreign exchange policy, paragraph 1.1.4; (2) the responsibilities of the central bank, if any, for foreign exchange reserves, paragraph 1.3.1; (3) rules and procedures for the central bank's relationships with counterparties in markets where it operates, paragraph 2.1.2, as well as regulations for the operation of organized financial markets (including those for issuers of traded financial instruments), paragraph 6.1.3; (4) information about the country's foreign exchange reserve assets, liabilities, and commitments by the monetary authorities, according to a preannounced schedule, paragraph 3.2.4; and (5) release of the central bank balance sheet on a preannounced schedule, and selected information on its market transactions, paragraph 3.2. Further detail on the specific disclosure requirements relating to foreign reserves can also be found in Section 1.3.1 of the Supporting Document.

Other more general disclosure requirements that would incorporate information on reserve management include (1) release of summary central bank balance sheets on a frequent and preannounced schedule; (2) preparation of detailed central bank balance sheets in accordance with appropriate and publicly documented accounting standards, paragraph 3.2.1; (3) public disclosure of financial statements on a preannounced schedule, paragraph 4.2, and that have been audited by an independent auditor, paragraph 4.2.1; and (4) internal governance procedures necessary to ensure integrity of operations, including internal audit arrangements, paragraph 4.2.

Special Data Dissemination Standard

The Special Data Dissemination Standard (SDDS) was established in 1996 to guide IMF member countries that have, or that might seek, access to international capital markets in the provision of their economic and financial data to the public. Subscription to SDDS is voluntary, but it carries a commitment by a subscribing member to observe the standard, including the reserves data template, as approved by the IMF's Executive Board on March 23, 1999.

The reserves data template is designed to provide information on the amount and composition of reserve assets, other foreign currency assets held by the central bank and the government, short-term foreign liabilities, and related activities that can lead to demand on reserves (such as financial derivatives positions and guarantees extended by the government for private borrowing).

The template consists of four sections: (1) official reserves and other foreign currency assets; (2) predetermined short-term drains on foreign currency assets; (3) contingent short-term net drains on foreign currency assets; and (4) memorandum items. Dissemination of the 55 data categories included in the template is mandatory for SDDS subscribers.

2.1 Clarity of Roles, Responsibilities, and Objectives of Financial Agencies Responsible for Reserve Management

The allocation of reserve management responsibilities, including agency arrangements, between the government, the reserve management entity, and other agencies should be publicly disclosed and explained.[12] A reserve management entity may perform its functions in a number of ways, acting, for example, either as principal or in an agency capacity. In each case, it is important, therefore, that the ownership of reserves be clearly established. Varying institutional responsibilities for foreign exchange policy may also have implications for reserve management responsibilities. Accordingly, the specific institutional responsibilities for foreign exchange policy and reserve management should also be disclosed. These disclosures help financial markets and the general public understand how exchange rate policy decisions are made, their impact on reserve management objectives, and the accountability framework for reserve management decisions and outcomes.

[12]See MFP Transparency Code, 1.1.4 and 1.3.1.

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Where the reserve management entity acts as the government's agent in performing reserve management functions, its role and powers should also be clearly defined, such as in the entity's enabling legislation, in addition to being publicly disclosed and explained.[13] Defining clearly the entity's agency role and powers avoids confusion over who has the ultimate responsibility for setting and implementing reserve management policy. Public disclosure enables the public to understand the extent of the reserve management entity's responsibilities and to hold the reserve management entity and government accountable for their respective responsibilities and actions.

The broad objectives of reserve management should be clearly defined, publicly disclosed, and the key elements of the adopted policy explained.[14] Public disclosure enhances the credibility of reserve management policies, goals, and results and is usually contained in the annual reports of reserve management entities. Information provided concerning, for example, the currency composition of benchmarks or the classes of assets would generally be couched in broad terms rather than by the provision of specific details of underlying assets and operations, which in some circumstances could be destabilizing. Some reserve management entities also include in their annual reports, and in broad terms, information relating to investment performance relative to the benchmarks adopted. Specific disclosure practices vary and may depend on country circumstances, including the stage of market development. Nonetheless, disclosure practices should strive to be consistent with the intent of the MFP Transparency Code.

2.2 Open Process for Reserve Management Market Operations

The general principles governing the reserve management entity's relationships with counterparties should be publicly disclosed.[15] Disclosure, in this context, serves to assure the public that reserve management dealings are based on objective criteria and are fair and impartial. Examples of particular disclosures could include the criteria used to determine eligible market counterparties, that reserve management dealings are undertaken at market-determined prices, and that market participants observe recognized codes of conduct. Confidentiality considerations are important, however, and public disclosure should not extend to operational details that may weaken the reserve management entity's ability to operate effectively in markets. Public disclosure would also not extend to providing specific details concerning relationships with individual counterparties.

2.3 Public Availability of Information on Foreign Exchange Reserves

Information on official foreign exchange reserves should be publicly disclosed on a preannounced schedule.[16] Public disclosure of a country's international reserve position and foreign exchange liquidity on a timely and accurate basis helps promote informed decision making in the public and private sectors, in both domestic and global financial markets. Experience also suggests that timely disclosure of such information may allow for a more gradual market adjustment.

The Fund's Special Data Dissemination Standard (SDDS), and its associated data template on international reserves and foreign currency liquidity (the data template), provides a comprehensive benchmark standard for the content and timing of public disclosures on foreign reserves and other activities of potential relevance (Box 1). The data template integrates balance sheet and off–balance sheet data of the international financial activities of the country's authorities,[17] and aims to provide a comprehensive account of foreign currency assets and drains on such resources arising from various foreign currency liabilities and commitments. The data template is also used as the

[13]See MFP Transparency Code, 1.3.1.
[14]See MFP Transparency Code, 1.1 and 5.1.
[15]See MFP Transparency Code, 2.1.2.
[16]See MFP Transparency Code, 3.1 and 3.2.4.
[17]It should be noted that this approach differs from more traditional entity-specific reporting regimes, in that it integrates the activities of all public authorities, including the reserve management entity, which may be responsible for, or involved in, responding to currency crises.

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basis for the reporting of data to the Fund for purposes of monitoring a Fund program.[18]

In many countries, public disclosure of information on foreign exchange reserves is also made through periodic releases, such as statistical releases on international liquidity and summary balance sheets, as well as in the annual reports of reserve management entities. Such disclosures are generally timed so that their release would not interfere with market operations, or that changes to reserve management strategies or priorities would not be publicized ahead of their implementation.

2.4 Accountability and Assurances of Integrity by Agencies Responsible for Reserve Management

The conduct of reserve management activities should be included in the annual audit of the reserve management entity's financial statements. Independent external auditors should conduct the audit and their opinion on the financial statements should be publicly disclosed.[19] External audits, when performed in accordance with internationally recognized auditing standards, provide an independent opinion on the truth and fairness of disclosures contained in the financial statements and, accordingly, the underlying financial records in respect to reserve management activities and results. An independent external audit of the annual financial statements of the reserve management entity would normally include an examination of the accounting records and controls associated with reserve management activities and also check for consistency between disclosures contained within the financial statements, and those elsewhere in the annual report. Publication of the audit opinion along with the financial statements should also be an integral part of the accountability framework.

Achieving a true and fair opinion requires that the financial information and other disclosures contained in the financial statements adhere to internationally recognized accounting standards, such as International Accounting Standards (IAS).[20] The adoption of high-quality accounting standards is an essential element in facilitating market understanding of the role and risks of a reserve management entity, and that its financial position and performance have been measured on a consistent and comparable basis. In recent years, a particular focus of IAS has been on standards covering principles for the recognition, valuation, and management of risks associated with financial assets and liabilities.[21] Valuation issues addressed in these standards relate closely to the widely adopted reserve management practice of "marking to market," by requiring that securities held for ready sale are properly reported at their fair or market value in the reserve management entity's financial statements.[22] To the extent that market-based valuation gains may be included in net profits, some reserve management entities may require supporting rules to avoid premature distribution of such profits.

General principles for internal governance used to ensure that the integrity of the reserve man-

[18]Further information on the SDDS and the data template, including data periodicity and timeliness, can be obtained from the Dissemination Standards Bulletin Board at http://dsbb.imf.org/sddsindex.htm.

[19]See MFP Transparency Code, 4.2.1 and 8.2.1.

[20]IAS are promulgated by the International Accounting Standards Board, London. The publication of annual financial statements that are prepared in accordance with such standards, or equivalent national standards, and are independently audited, is also a key element of the Fund's Safeguards Assessment framework. This framework has been adopted to ensure that central banks responsible for managing resources obtained from the Fund have adequate control, accounting, reporting, and auditing systems in place to manage funds and to ensure the integrity of operations. The Supporting Document of the MFP Transparency Code also suggests an approach to good accountability practices based on the adoption of internationally recognized accounting and auditing standards.

[21]While IAS do not contain any prescriptions relating specifically to international reserves, disclosures by a reserve management entity, on its reserve-related assets and liabilities, would likely form a large part of the more general annual financial statement disclosures required by IAS. Two relevant standards in this regard are IAS 32, *Financial Instruments: Disclosure and Presentation*, and IAS 39, *Financial Instruments: Recognition and Measurement.* These standards require, inter alia, financial statement disclosures relating to exposures to interest rate and credit risks, and the fair or market-based valuation of financial assets.

[22]The "mark to market" process of valuing all marketable investments at their current market price is a specific feature of the fair value measures defined in IAS 32 and IAS 39.

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agement entity's operations be publicly disclosed.[23] Disclosure in this context is an important element in satisfying the general public and markets as to the competence and performance of the reserve management entity in discharging its responsibilities for reserve management activities, as well as for other functions the entity may perform. The disclosures may be made as part of the entity's annual financial statements, or they can be made in an official register or in other publications, as well as on the entity's website. In addition to the risk management disclosures, required by accounting standards, they could extend to a broad discussion of the role of the Governing Board and Investment Committee in setting reserve management policies and parameters, internal audit, the role of an audit committee, and external audit arrangements.

3. Institutional Framework

3.1 Legal Foundation

Sound institutional and governance arrangements should be established through a legislative framework that clearly establishes the reserve management entity's responsibilities and authority. An institutional framework that contains a clear identification of responsibilities helps ensure good governance and accountability, as well as ensuring that reserves are managed effectively and efficiently in a manner appropriate to a country's needs. Legal assignment of institutional responsibilities, supported by delegation of appropriate authority to a reserve management entity, is particularly important for ensuring effective coordination and performance where reserve management responsibilities and functions are allocated across more than one institution.[24] Clearly establishing the reserve management entity's authority in legislation and appropriate documentation such as secondary legislation or regulations, coupled with public disclosure, enhances transparency and accountability, and also assures counterparties of the reserve management entity's mandate.[25]

3.2 Internal Governance

The internal governance structure of the reserve management entity should be guided by and reflect the principles of clear allocation and separation of responsibilities. A well-defined organizational structure from the very top to operational levels of the reserve management entity establishes a clear separation of responsibilities and authority. In doing so, this creates a decision-making hierarchy that limits risks by ensuring the integrity of, and effective control over, reserve management activities. A supporting system of well-articulated, and formally documented, delegations and limits of authority works to ensure that persons involved in reserve management clearly understand their individual responsibilities and limits of authority, that risks are to be managed in a prudent and transparent manner, and that only authorized operations occur.

At the very top level of the reserve management entity, decisions are of a strategic nature and are usually made by the governing board or similar body, or the governor. Their role is to define and set the overall parameters for reserve management operations and the control of risk, including the preferred trade-off between the different risks faced and the entity's tolerance for loss in, say, any one year. The board's overall monitoring responsibilities would also see a requirement for the regular review of investment activity and performance. Such a review should occur at least annually but can also be more frequent, such as semiannually or quarterly.

Decisions concerning implementation of board strategies are usually the responsibility of an investment committee. The committee typically is chaired by the board member with responsibility for reserve management. It is responsible for setting the operational framework for reserve management activities, including the investment strategy and portfolio benchmarks, and for reviewing operations and performance on a regular basis. The committee would also have a responsibility for

[23] See MFP Transparency Code, 4.2.2 and 8.2.2.

[24] Responsibilities in this regard are usually allocated among the ministry of finance, central bank, or a central repository such as an exchange fund.

[25] Following, for example, Guideline 2.1.

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approving the inclusion of new types of investment operations and instruments. Such approval would also encompass the policies and procedures for assessing new investment proposals, particularly in terms of their risks and the ability of existing staff and systems to handle the operations proposed.

At the operational level, decision making and responsibility for day-to-day reserve management operations are usually separated between those who initiate reserve management transactions (front office); those who control and ensure that risk limits are observed, assess performance, and provide reports for management (middle office); those who arrange settlement of transactions (back office); and those who maintain the financial accounting records that form the basis of public disclosures (accounting department). Within this operational framework, many reserve management entities have established a separate risk management unit to monitor day-to-day operations and controls including, for example, breaches of delegated authorities and limits, errors and operational failures, and risk management measures such as Value-at-Risk (VaR),[26] duration, portfolio performance, and deviation from benchmarks.

Sound management of internal operations and risks requires appropriately qualified and well-trained staff, following sound business practices. All aspects of reserve management operations require well-trained staff. First and foremost, staff should have a firm grounding in market practices and instruments to undertake respective reserve management activities. Supporting this, the procedures that staff follow for settlement and, where necessary, resolution of disputes or differences should be based on sound business practices. Staff should also fully understand the risks and the control environment in which they operate. Failure of staff to observe controls, as well as failure of the control environment, can lead to significant financial losses and may tarnish the reputation of the reserve management entity. An added complexity for many reserve managers is the difficulty of retaining high-quality staff in a highly mobile foreign exchange and investment market environment. Some reserve management entities might seek to provide adequate additional remuneration or financial incentives to match market offers. This may not always be an option, however, and other nonfinancial options such as providing a challenging work environment, including increased levels of responsibility commensurate with skill and experience, and a well-structured staff training program, may assist in retaining qualified staff and in developing resources to cover the unexpected departure of a key member of staff.

Effective monitoring of internal operations and related risks should be supported by reliable information and reporting systems, and an independent audit function. Inadequate control over operational aspects can threaten the ongoing performance of reserve management operations and the ability of the reserve management entity to safeguard the assets under its control. Reserve managers need to be aware of the main operational risks they face in day-to-day operations and the appropriate procedures to control such risks.[27] Equally important, they need to be sure that the control measures adopted are being observed. In this context, reserve managers require access to reliable information and reporting that enables them to monitor risks and performance, as well as any breaches of controls. Ideally, transaction processing and information systems should be fully integrated to reduce the risk of error and to improve the speed at which management information is available. Establishing such systems can, however, involve a significant investment in the operating infrastructure of a reserve manager. Evaluation of particular systems may need to have regard to the size and complexity of the reserve management entity's operations, and the skills of staff, to ensure an appropriate balance between the costs and benefits of the chosen system.

[26]VaR methodologies can be a useful tool and component of risk management systems for the measurement of exposure to risks emanating from movements in market prices. Nonetheless, VaR has limitations and requires careful attention to the development, application, and analysis of results.

[27]Particular operational risks that might need to be addressed in the context of reserve management activities include control system failures associated with (1) dealing risks; (2) settlement risk; (3) custodial risk; (4) legal risk; (5) information technology risk; and (6) financial error or misstatement risk. Further details on each of these risks are contained in the glossary to these guidelines.

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An effective and independent audit unit plays an important role in providing independent assurance to the senior levels of the reserve management entity (such as the audit committee, or the governing board) that reserve management operations and internal control and reporting systems are operating properly to safeguard reserve and other assets.[28] The role of internal audit now tends to focus on a risk-based approach in assessing that the operating framework is adequate, and that control procedures have no gaps in addressing key reserve management and operational risks. Particular aspects of reserve management operations on which internal audit review might focus include (1) the degree of success in achieving reserve management objectives; (2) determining whether all relevant risks have been identified; (3) the adequacy of the system of internal controls in addressing risks and monitoring compliance with procedures and controls; (4) the existence of proper safeguards to protect assets; (5) the reliability, security, and integrity of Electronic Data Processing (EDP) communication and other information systems; and (6) the accuracy of accounting records and processes.

Staff involved in reserve management should be subject to a code of conduct and conflict of interest guidelines regarding the management of their personal affairs.[29] Such codes help to allay concerns that staff's actions or personal financial interests may subvert reserve management practices. These arrangements should also include a requirement that staff adopt and comply with professional codes of conduct that apply in the markets in which reserve management operations are undertaken. Similar arrangements might also be extended to staff of external managers through the contractual arrangements with such managers.

Effective recovery procedures should be in place to mitigate the risk that reserve management activities might be severely disrupted by the failure of operating systems, or other catastrophic events. Reserve management systems now typically depend upon the continuous operation of efficient and secure EDP and communications systems. Such systems require controls that protect against major interruptions to business from events such as equipment or power failure, unauthorized access, natural disaster, or other external acts. These controls should also include comprehensive business recovery procedures including backup systems and contingency plans to ensure that operations can be resumed with a minimum of delay should a catastrophic event occur.

4. Risk Management Framework

There should be a framework that identifies and assesses the risks of reserve management operations and that allows the management of risks within acceptable parameters and levels. Reserve management involves a number of financial and operational risks. A summary of external market-based and operational risks, which have been faced by reserve management entities, is provided in Box 2. A risk management framework seeks to identify the possible risks that may impact portfolio values and to manage these risks through the measurement of exposures and, where necessary, supporting procedures to mitigate the potential effects of these risks.

Although there is no set formula that suits all situations, in practice, many reserve management entities draw upon generally accepted portfolio management principles in determining the strategy for asset selection and allocation to control exposures to external risks. Typically this involves establishing parameters for (1) the currency holding and mix necessary to maintain the ready availability of convertible currencies, and also to maintain cross-rate exposures within acceptable limits; (2) the permissible range of investment instruments that meet liquidity and security requirements; and (3) maturity or duration requirements for limiting exposure to interest rate or market price risks. Regarding the second point, risk parameters should include the minimum acceptable credit ratings for the issuers of those instruments.

The strategic asset allocation is typically embodied in a benchmark portfolio that represents the best

[28]Typically a separate area, such as the internal audit unit, within the reserve management entity performs this function. In some cases, particularly those involving smaller entities with a limited resource base, consideration might also be given to contracting out internal audit work associated with specialized operations such as reserve management.

[29]See MFP Transparency Code, 4.4 and 8.4.

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Box 2. Adverse Reserve Management Experiences

External Market-Based Risks

Liquidity risks. The pledging of reserves as collateral with foreign financial institutions as support for loans to either domestic entities or foreign subsidiaries of the reserve management entity has rendered reserves illiquid until the loans have been repaid. Liquidity risks have also arisen from the direct lending of reserves to such institutions when shocks to the domestic economy led to the borrowers' inability to repay their liabilities, and impairment of the liquidity of the reserve assets.

Credit risk. Losses have arisen from the investment of reserves in high-yielding assets that were made without due regard to the credit risk associated with the issuer of the asset. Lending of reserves to domestic banks, and overseas subsidiaries of reserve management entities, has also exposed reserve management entities to credit risk.

Currency risk. Some elements of currency risk may be unavoidable with reserve asset portfolios. There have, however, been instances where large positions were taken in other countries' currencies in anticipation of favorable future changes in major cross-rates, but where subsequent adverse exchange rate movements led to large losses.

Interest rate risks. Losses have arisen on reserve assets from increases in market yields that reduced the value of marketable investments below their acquisition cost. Losses have also arisen from operations involving derivative financial instruments, including the taking of large positions, which have been subject to the effects of sharp and large adverse movements in market yields. In some instances, reserve managers may have had an inadequate understanding of all the characteristics and risks of the instruments used, and may also have lacked the technical skills required to manage exposures.

Operational Risks

Control system failure risks. There have been a few cases of outright fraud, money laundering, and theft of reserve assets that were made possible by weak or missing control procedures, inadequate skills, poor separation of duties, and collusion among reserve management staff members.

Financial error risk. Incorrect measurement of the net foreign currency position has exposed reserve management entities to large and unintended exchange rate risks, and led to large losses when exchange rate changes have been adverse. This has also occurred when risk has been measured only by reference to the currency composition of reserves directly under management by the reserve management unit, and has not included other foreign-currency-denominated assets and liabilities on and off the reserve management entity's balance sheet.

Financial misstatement risk. In measuring and reporting official foreign exchange reserves, some authorities have incorrectly included funds that have been lent to domestic banks, or the foreign branches of domestic banks. Similarly, placements with a reserve management entity's own foreign subsidiaries have also been incorrectly reported as reserve assets.

Loss of potential income. A failure to reinvest funds accumulating in clearing (nostro) accounts with foreign banks in a timely manner has given rise to the loss of significant amounts of potential revenue. This problem arises from inadequate procedures for monitoring and managing settlements and other cash flows, and for reconciling statements from counterparts with internal records.

or optimal portfolio given the reserve management objectives and risk constraints (Box 3). In order to guide investment operations, the benchmark portfolio needs to be well defined,[30] including in terms of the notional size, security composition, and rebalancing rules. Considerations in the selection of the currency mix within the benchmark portfolio include liquidity as well as currency risk. The reserve management entity may, for example, wish to hold some additional liquidity in the main intervention

[30]The definition of a benchmark portfolio may be based on, or similar to, recognized investment "industry" benchmarks such as those used and published by major investment houses. Many reserve managers, while drawing on such industry measures, choose to define and construct their benchmarks with more specific regard for the objectives, operations, and risks of the reserve management entity.

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currency, or in specific currencies to facilitate debt servicing. It may also wish to consider whether other major liquid currencies should be held for purposes of hedging currency risk in the portfolio vis-à-vis other liabilities.

A number of reserve management entities also subdivide their reserves portfolio into "tranches" according to liquidity and investment objectives and policy requirements. A "liquidity tranche" would reflect transaction and/or intervention needs based on the assessment of potential need for liquidity on demand. Such portfolios are typically invested in the most liquid and risk-averse instruments. For reserves that are held to provide an additional cushion, but are less likely to be drawn upon, an "investment tranche" may be created where greater emphasis is placed on return as well as safety and liquidity. The relative size of each tranche may be determined as part of an assessment of reserves adequacy, and each tranche would have a separate benchmark reflecting the different objectives. In some countries, tranching is also used to immunize market and foreign exchange risks on the reserve balance sheet, by establishing characteristics for a particular asset portfolio that match those of a group of counterpart foreign liabilities.

The risk management framework should apply the same principles and measures to externally managed funds as it does to those managed internally. Many reserve management entities allocate part of their reserves to one or several external institutions for management. External managers may have skills that the reserve management entity lacks, or they may provide a level of safety to foreign operations that the entity is unable to achieve. They may, for example, have skills and established systems for undertaking investment activities in specialized instruments and markets for which the reserve manager does not wish to develop a capability. Alternatively, they might provide access to new markets and activities or new investment strategies in which the reserve management entity is seeking to expand its operations. Finally, they may also assist smaller reserve management entities in managing or reducing the costs of maintaining a reserve management operation in a particular market or instrument.

Sound risk management of externally managed funds begins with the careful selection of reputable external managers, and a clear mandate for the managers to follow, together with agreed understandings of expected performance and tracking error. These arrangements should be set out clearly in separate written contracts with each appointed manager to ensure accountability. It is also important that appointment of an external manager not result in the reserve management entity accepting operations and risks that would not normally be considered, or are not fully understood. Appointment of external managers can also have implications for the reserve manager's choice of a custodian for its foreign securities. Generally, there should be a clear "firewall" separation between any external management and custodial functions performed by any one entity.

In principle, and in practice, there should be no difference between the risk management and performance-monitoring framework that is applied to externally and internally managed portfolios. Most likely it will, however, be necessary to establish a separate unit, or assign a position within the middle office, to enable the reserve management entity to fully monitor the activities of the external manager and custodians.

Risk exposures should be monitored continuously to determine whether exposures have been extended beyond acceptable limits. Monitoring is essential in identifying and limiting any cumulative losses associated with either deviations from the benchmark, any underperformance of the portfolio vis-à-vis the benchmark, and increases in exposures associated with the benchmark itself due to market developments or structural changes. Since risk is inherent in both benchmark[31] and actual portfolios, monitoring should occur regardless of whether "passive" or "active" reserve management approaches are adopted.[32] VaR or other simulation

[31]All benchmark portfolios, for example, reflect tolerance for risk that can, and will, vary among reserve management entities.

[32]Reserve management strategies can reflect varying choices between approaches that are generally described as either active or passive management. These terms, however, can be understood in different ways. Sometimes, a buy-and-hold-only strategy is viewed as passive management. The more generally accepted

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Box 3. Benchmark Portfolios and Risk Management

Senior management needs to specify a strategic long-term portfolio that represents the best available trade-off between the different risks that the reserve management entity is facing. This is the entity's investment benchmark, which is made operational through the construction of actual benchmark portfolios that include the chosen currencies with desired weights, investment instruments with appropriate credit characteristics, and duration that reflects the desired level of interest rate risk. The benchmarks should not include transient factors or reflect short-term market expectations, but their appropriateness should be reviewed regularly. Changes to the benchmark would be triggered by changes in market structure or characteristics that alter the investment environment. The adoption of investment benchmarks is a sound practice that brings discipline to the investment process.

There are various approaches to measuring risk and controlling exposures as a result of deviations from the benchmark. Typically, such exposure is limited by the setting of quantitative limits on the size of any deviation from the benchmark in terms of currency, duration, or credit that may be permitted by those responsible for the investment of reserves. Currency risk is usually managed through quantitative limits on how much each individual currency, or all currencies in the benchmark taken together, may deviate from the benchmark structure. Interest rate risk can be managed by establishing benchmarks with a given duration and by limiting the actual portfolio's deviation both in terms of duration and yield curve mismatches. Credit (default) risk has traditionally been managed by placing limits on eligible issuers or counterparties based on their capital and ratings. VaR methodologies can also be used to provide a quantified estimate of the maximum potential loss, with a given probability and time horizon, resulting from deviations from the benchmark portfolio.

Investment benchmarks are an important tool for assessing performance and enforcing the accountability of reserve managers. Where managers are permitted to deviate from the benchmark portfolio, performance assessment and accountability will occur through the comparison of performance of the actual portfolio with that which could have been generated by holding the benchmark portfolio. Where portfolio managers seek to replicate the benchmark, assessment of performance would also be based on comparison of actual performance versus the benchmark. In both cases, the benchmark establishes the reference point for the reserve management entity's accountability in terms of its choice of risk tolerance.

methodologies may also form an integral part of the risk management and monitoring framework.

Reserve managers should be aware of and be able to account for potential financial losses and other consequences of the risk exposures they are prepared to accept. Active management based on expectation of movements in interest rates or exchange rates, or a choice by the reserve management entity to accept a higher risk tolerance in its benchmark portfolios, requires that management is able to monitor and control any cumulative financial losses. Implicit in such an environment is the need for specific and monitorable risk limits on the extent to which managers can deviate from the benchmark, and a reliable and timely accounting system for measuring and reporting exposures and losses. In addition to possible financial losses, other consequences can occur, such as the risk of adverse signaling to participants with respect to monetary and exchange policies, damage to the reputation of the reserve management entity, and, possibly, a breach of a country's obligations in terms of the Fund's Articles of Agreement. In this latter context, reserve management entities need to be aware of their country's obligations to collaborate with the Fund and other member countries to ensure orderly exchange arrangements (Article IV.1) and consistency of policies on reserve assets in promot-

view of passive management is one where the risk characteristics of the portfolio replicate those of the benchmark. In this case, portfolio managers take no view on the direction of the market (i.e., the rate of return provided by the benchmark is accepted). However, over time, transactions would be necessary to maintain the alignment of the portfolio with the predetermined benchmark. This is the kind of passive management discussed here. Active management implies that the actual portfolio deviates from the benchmark as managers take views on the direction of the market or some of its components.

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ing better international surveillance of international liquidity (Article VIII.7). Accordingly, governance arrangements to avoid such instances might include the requirement for investment committee approval of changes to benchmark parameters or portfolio allocation policies.

The risk management framework should also address risks associated with derivative financial instruments and other foreign currency operations. As noted earlier, derivative instruments may be used as part of reserve management operations, particularly in reducing risk exposures. Effective risk management requires that the reserve management entity is aware of and understands the risks and benefits of these instruments, and that staff has a sound knowledge of the underlying risks and the modalities of particular instruments used. It also requires reserve management systems that are sufficiently developed to properly measure the values and exposures associated with operations. As the use of derivatives and other structured financial instruments grows, legal risk issues become particularly relevant. In this regard, risk mitigation could involve the use of standardized legal documentation and the performance of periodic reviews of documentation.

Beyond their reserve management operations, some reserve management entities also have other functions that involve foreign-currency-denominated assets and liabilities both on and off balance sheet.[33] While such operations do not fall within the definition of reserve management operations, per se, they may, nonetheless, represent an important part of a reserve management entity's broader mandate and involve policy choices in the utilization of the country's foreign exchange resources.

The reserve management entity, therefore, may be exposed to a range of additional risks that need to be managed in a coordinated and consistent manner. In this regard, a comprehensive asset and liability risk management framework could be used to address the overall risk exposure of the reserve management entity's entire balance sheet and, in doing so, reduce the risk of loss or impairment of reserves.

To assess the risk and vulnerability of the reserve portfolio, the reserve management entity should regularly conduct stress tests to ascertain the potential effects of macroeconomic and financial variables or shocks. Stress testing can have several objectives and is often conducted using financial models ranging from simple scenario-based models to more complex models involving sophisticated statistical and simulation techniques. One objective typically is to determine the exposure of the portfolio to changes in market factors, such as changes in exchange rates or interest rates, often by using VaR models.

A second objective concerns assessing the possible impact on the level of official foreign exchange reserves of external shocks, contingent obligations that might materialize with such shocks, and sudden calls on reserves that may result from a reversal of short-term capital flows or closing out of the open foreign exchange position of the commercial banking system. Stress testing in this context is qualitatively different from measuring changes in the market value of the portfolio, and can be particularly useful in the formulation of asset and liability management and strategic asset allocation policies to ensure reserve availability during times of external stress.

5. Role of Efficient Markets

Reserve management, and any related policy operations, should be conducted in markets that have sufficient depth and liquidity and can process transactions in a sound and efficient manner. Reserve managers need to be certain that reserves can be liquidated in a prompt and efficient manner to provide the necessary foreign exchange for the implementation of policy objectives relating to, for example, market intervention, meeting balance of payments or debt-servicing needs, or limiting external vulnerability. Policy actions, on the other hand, can also involve the purchase of

[33]Examples of other foreign currency activities include the issue of foreign-currency-denominated securities to fund lending to domestic entities, facilities to support exporter access to pre- and post-shipment finance, placement of deposits with foreign subsidiaries of the reserve management entity, guarantees, and letter of credit facilities. In some cases, commitments have also been given to foreign supervisory authorities to support the capital and liquidity of the reserve management entity's foreign subsidiaries.

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foreign exchange that should be placed promptly into investment portfolios. In these situations, undertaking the relevant investment transactions in deep and liquid markets serves to ensure that they can be easily absorbed by these markets and without undue impact on investment prices received, or paid, by the reserve manager. Policy actions invariably, however, involve transactions initiated in the reserve management entity's domestic foreign exchange market, and that have a consequential implication for the reserve manager. In these circumstances, the effectiveness of the policy action will be dependent upon the efficiency and soundness of the domestic market. Furthermore, and of particular relevance for reserve levels, any failings or operating weaknesses in that market can directly impact either the amount of reserves required to support the policy action or the amount of foreign exchange added to reserve holdings.

Undertaking transactions in deep and well-established markets ensures that reserve-related transactions can be easily absorbed at market-determined prices without undue distortions or adverse impacts on the level and availability of foreign exchange reserves.

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Glossary

Asset liability management. The management of business and financial risks by matching the financial characteristics (on and off balance sheet) of an entity's assets to those of its liabilities.

Back office. The area of reserve management operations responsible for confirmation, settlement, and, in many cases, reconciliation of reserve management transactions.

Benchmark. The mix of currencies, investment instruments, and duration that reflect the reserve manager's tolerance for exposure to liquidity, credit, and market risks.

Credit risk. The risk of nonperformance or default by borrowers on loans or other financial assets, or by a counterparty on financial contracts.

Currency risk. The risk of adverse movements in foreign currency cross-exchange rates that reduce the domestic currency value of international reserves. Currency risk also arises with an appreciation of the domestic currency.

Custodial risk. The failure of a foreign agent or custodian to deliver securities held on behalf of the reserve manager.

Dealing risk. Dealers exceed their authority in dealing with counterparties or instruments, or incorrectly process a transaction.

Duration. A measure of the sensitivity of a portfolio to movements in market yields by determining the time-weighted average of the present values of all future cash flows of a security or a portfolio, discounted at current interest rates.

Financial error or misstatement risk. The failure of the accounting system and related controls to properly record all transactions and accounting adjustments.

Front office. The area responsible for initiating investment transactions in accordance with approved delegations, limits, and benchmarks and the prompt and accurate entry of transactions into the investment management system.

Information technology risk. The failure of critical electronic data processing and communication and information systems, thereby causing severe disruption to reserve management functions.

Interest rate risk. Sometimes also referred to as an element of market risk, interest rate risk involves the adverse effects of increases in market yields that reduce the present value of fixed interest investments in the reserve portfolio. Interest rate risk increases, ceteris paribus, with the duration of a portfolio.

Internal audit. An independent source of assurance about the management of risks and the operation of the control system that assists management of an organization in the effective discharge of its responsibilities.

Legal risk. The possibility of losses from contracts that are not legally enforceable or not properly documented.

Liquidity risk. Liquidity risk refers to the possible difficulties in selling (liquidating) large amounts of assets quickly, possibly in a situation where market

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conditions are also unfavorable, resulting in adverse price movements.

Market risk. Risks associated with changes in market prices, such as interest rates and exchange rates. Changes in interest rates affect market prices of fixed-interest securities. Hence, shorter duration securities are less at risk than long-term, fixed-rate securities.

Middle office. Located between the front and back offices, the middle office's role is to monitor that all transactions have been performed properly, that risks are being monitored and limits observed, and that relevant information is available for management.

Official foreign exchange reserves. Those external assets that are readily available to and controlled by monetary authorities for direct financing of payments imbalances, for indirectly regulating the magnitudes of such imbalances through intervention in exchange markets to affect the currency exchange rate, and/or for other purposes.[34] To meet this definition, reserve assets need to be liquid or marketable foreign currency assets that are under the effective control of, or "usable" by, the reserve manager and held in the form of convertible foreign currency claims of the authorities on nonresidents. To be recognized as part of official foreign exchange reserves, gold must be held by the monetary authorities as monetary gold.

Operational risk. A range of different types of risks, arising from inadequacies, failures, or nonobservance of internal controls and procedures that threaten the integrity and operation of business systems.

Public debt management. The process of establishing a strategy for managing the government's debt in order to raise the required amount of funding, achieve its risk and cost objectives, and meet any other sovereign debt management goals the government may have set.

Reputation risk. A reserve manager's reputation and credibility may be called into question as a result of inappropriate reserve management actions or unauthorized release of information.

Reserve assets. See official foreign exchange reserves.

Reserve management. The process by which public sector assets are managed in a manner that provides for the ready availability of funds, the prudent management of risks, and the generation of a reasonable return on the funds invested.

Risk. The possibility of financial or other losses arising from an entity's financial exposures and/or the failure of its internal control systems.

Safeguards Assessment. A two-stage evaluation of a member country's central bank control, accounting, reporting, and auditing systems to ensure that resources, including those provided by the Fund, are adequately monitored and controlled. The first stage will determine whether there are clear vulnerabilities in these systems, based on information provided by central banks. If weaknesses in internal procedures are suspected, a second stage will comprise on-site evaluations and recommendations for improvements. Safeguards Assessments for all new users of Fund resources began in mid-2000.

Settlement risk. The potential loss as a result of failure to settle, for whatever reason other than default, by the counterparty.

Sovereign risk. The risk that a foreign sovereign government will restrict the ability of holders to gain access to their assets or the proceeds from the sale of such assets. Sovereign risk is an inevitable feature of reserve management since assets are necessarily held in foreign countries, often in sovereign government securities of major investment currencies, and for which there are no better investment alternatives available.

[34]Source: International Monetary Fund, 1998, *Balance of Payments Manual*, 5th ed. (Washington: IMF), paragraph 424.

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