

# Accounting Standards for Central Banks



## An accountancy standard for monetary authorities

by

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*Secrecy is for losers.*

Daniel Patrick Moynihan (1998:1)

*[Transparency] improves policy, because policymakers operating in the light of day cannot do some of the things they can do in the dark of secrecy.*

Stanley Fischer (2001)

By any exacting standard of transparency, most monetary authorities (hereafter MAs) are losers (Hanke and Sekerke 2002). Indeed, most MAs fail to make timely, full and fair disclosures of their financial positions. This allows them to operate under a thick shroud of secrecy. The ensuing confusion and ambiguity renders MAs' finances impenetrable, even to the most experienced and skilled analysts.<sup>2</sup>

International demands for more transparency trebled after events in Thailand sparked the Asian financial crisis. In May 1997, currency traders took large short positions in the baht with Thai banks as counterparties. To absorb the concomitant risk to the banking sector, the Bank of Thailand (BoT) wrote offsetting forward contracts with the banking sector (selling dollars and buying baht forward), assuming a massive off-balance sheet long baht/short US dollar position. By May 15 1997 the BoT had, to a large extent, ended its interventions in the forward market, but these ongoing commitments were not disclosed. After the baht was devalued on July 2 1997, it became clear why the BoT's intervention had ceased. While defending the baht, the BoT had amassed commitments to swap \$23.4 billion for baht in the forward market - commitments which substantially depleted the \$32.4 billion in foreign reserves recorded on the balance sheet at the time (Lall 1997, Leightner 1999). Without knowledge of the BoT's off-balance sheet commitments, many observers judged the BoT's level of foreign reserves to be adequate and were subsequently caught wrong-footed when their expectations were proved illusory.

The BoT's lack of transparency and similar problems encountered at other MAs in the region motivated the Bank for International Settlements (BIS) to address the transparency issue.<sup>3</sup> In 1998, the BIS's Euro-currency Standing Committee wrote: "The Asian crisis has highlighted deficiencies in the availability and public disclosure of information relating to the on- and off-balance sheet foreign currency activities of public and private sector institutions alike. Such shortcomings arguably helped exacerbate the financial turmoil by obscuring the build-up of financial weaknesses and imbalances and by complicating crisis management"<sup>4</sup> (BIS 1998: 1).

In response to demands from the markets and the BIS, among others, MAs have begun to address ways to enhance the transparency of their operations. In particular, they have begun to grapple with the methods used to disclose their financial positions and commitments - including on- and off-balance sheet transactions - and the presentation of the regulations that govern their operations as well as those that govern the banking system. In consequence, the subject of accountancy standards for MAs is worth a serious hearing.<sup>5</sup>

### **The foundations of a standard**

A necessary condition for transparency is a uniform accountancy standard for the presentation of on- and off-balance sheet information. At present, one does not exist for MAs. This shortcoming explains, in part, why the state of MAs' finances remains obscure.<sup>6</sup>

The IMF's Special Data Dissemination Standard (SDDS) represents an interim standard, with 53 IMF members currently subscribing. While the SDDS is a worthwhile undertaking, it is still in its formative stage and remains an inadequate system for proper financial reporting by MAs. Before we describe the IMF's system, weigh merits or propose alternative standards, some preliminaries are in order.

### **Transparency and the balance sheet approach to financial crises**

Assessing MAs' finances and anticipating problems requires transparency.<sup>7</sup> When financial information is not disclosed or unreliable, countries pay a high price. For example, a recent survey of opacity conducted by PricewaterhouseCoopers found that debt issued by countries that lacked transparency paid a risk premium of up to 1316 basis points higher than Singapore and the US, countries with relatively high transparency rankings. To put it in other terms, the lack of transparency was found to have, at the extreme, the same negative effect on domestic and international investment in the economy as raising the corporate income tax rate by 46% (Barth et al 2001).

Transparency requires, above all, balance sheets, which are nothing more than snapshots showing the financial condition of an entity at a point in time. The detail contained in balance sheets is necessary for the conduct of economic analysis because the fine structure of the data contained therein comports with the structure of economic theory (Morgenstern 1963: 95). That is why Sir John Hicks - a high priest of economic theory and 1972 Nobelist - thought there was nothing more important than a balance sheet<sup>8</sup> (Klamer 1989).

When balance sheets are available, the risk of a financial crisis in the reporting economy can be assessed with relatively high confidence. The balance sheet approach to financial crises focuses on a country's sectoral balance sheets, how changes in them are transmitted across sectors and how balance sheet mismatches can set off financial crises.<sup>9</sup> Figure 15.1 demonstrates the interconnectedness of balance sheets in the government sector, financial sector, non-financial private sector, and the rest of the world. The MA figures in the universe of balance sheets as a subset of the government's accounts. While we focus our attention on MAs, we do address the other subset of government operations - the fiscal authority (FA) - because of the important linkages between the MA and FA.

### **On-balance sheet transactions of the monetary authority**

Typically, most MA operations are observable on the balance sheet. When the balance sheet is accompanied by clear explanatory notes, changes in a MA's net foreign assets, net domestic assets and its monetary liabilities (base money) can be determined. These data, coupled with knowledge of the exchange rate regime, provide a foundation from which a diagnosis can proceed (Hanke 1998).

First, let us consider the exchange rate regime and transactions with the rest of the world. Exchange rates can be classified as fixed, flexible or pegged rates. With an absolutely fixed rate employed by either orthodox currency boards or "dollarised" regimes, the MA has an exchange rate policy, but no money supply policy. Accordingly, changes in base money will be determined by changes in net foreign reserves. Changes in net domestic assets won't come into the picture as net domestic assets will either be zero or frozen. The money supply will, therefore, be on autopilot and determined by changes in the demand for domestic money. At the other extreme is the flexible exchange rate regime in which the MA has a money supply policy, but no exchange rate policy. The exchange rate is on autopilot. In this case, the money supply policy can be observed by looking at the changes in net domestic assets. In both the fixed and flexible exchange rate regimes, there cannot be conflicts between money supply and exchange rate policies.

**Figure 16.1 The interconnectedness of stylised balance sheets in an economy**

<b>Government sector</b>			
<i>Fiscal authority</i>		<i>Monetary authority</i>	
<b>Assets</b>	<b>Liabilities</b>	<b>Assets</b>	<b>Liabilities</b>
<b>Claims on</b> <i>Monetary authority</i> <i>Financial sector</i> <i>Non-fin. priv. sector</i> <i>Rest of the world</i>	<b>Obligations to</b> <i>Monetary authority</i> <i>Financial sector</i> <i>Non-fin. priv. sector</i> <i>Rest of the world</i>  <b>Net worth</b>	<b>Claims on</b> <i>Central government</i> <i>Financial sector</i> <i>Non-fin. priv. sector</i> <i>Rest of the world</i>	<b>Obligations to</b> <i>Central government</i> <i>Financial sector</i> <i>Non-fin. priv. sector</i> <i>Rest of the world</i>  <b>Net worth</b>

  

<b>Financial sector</b>	
<i>Banks and other financial institutions</i>	
<b>Assets</b>	<b>Liabilities</b>
<b>Claims on</b> <i>Government sector</i> <i>Non-fin. priv. sector</i> <i>Rest of the world</i>	<b>Obligations to</b> <i>Government sector</i> <i>Non-fin. priv. sector</i> <i>Rest of the world</i>  <b>Net worth</b>

  

<b>Non-financial private sector</b>	
<i>Corporations and households</i>	
<b>Assets</b>	<b>Liabilities</b>
<b>Claims on</b> <i>Government sector</i> <i>Financial sector</i> <i>Rest of the world</i>	<b>Obligations to</b> <i>Government sector</i> <i>Financial sector</i> <i>Rest of the world</i>  <b>Net worth</b>

  

<b>Rest of the world</b>	
<i>Foreign investors and others</i>	
<b>Assets</b>	<b>Liabilities</b>
<b>Claims on</b> <i>Government sector</i> <i>Financial sector</i> <i>Non-fin. priv. sector</i>	<b>Obligations to</b> <i>Government sector</i> <i>Financial sector</i> <i>Non-fin. priv. sector</i>  <b>Net international investment position</b>

Consequently, when either regime is credibly employed, classic currency crises are not possible.

Most MAs operate with pegged rates, however. There are a wide variety of exchange rate regimes that fall into this category, including pegs, adjustable pegs, crawling pegs, managed floats, and other variations on the same theme. In all these cases, the MA has both a money supply policy and an exchange rate policy. Consequently, conflicts between them can arise.

These conflicts can be detected and crises anticipated by diagnosing a MA's balance sheet. Specifically, the neutralisation of foreign exchange (forex) flows must be evaluated. When net foreign reserves and net domestic assets are moving in opposite directions conflicts between money supply and exchange rate policies ensue, the balance of payments moves into disequilibrium, and it is usually only a matter of time before an exchange rate crisis follows.<sup>10</sup>

Secondly, the MA is usually banker to the banks. The extent to which rediscounting and overdraft facilities are utilised by banks is observable on the MA's balance sheet. Commercial banks are also required to keep reserves on deposit at the MA in most countries. The required reserves and excess reserves are observable on the balance sheet and constitute a non-negligible and economically important portion of base money.<sup>11</sup>

As well as with commercial banks, MAs conduct transactions with the government sector, which are usually found on the balance sheet, and may engage in a number of quasi-fiscal activities, which are usually not. The government sector encompasses the finance ministry and any parastatal enterprises. MAs finance government deficits by holding government securities, and may extend loans to the government at or below market rates. The MA is often the government's banker and holds government deposits to discharge fiscal obligations. Finally, the transfer of government deposits to the MA can be a last-resort method of sterilisation, since it reduces the MA's net domestic assets by increasing domestic liabilities (Fane 2000: 140).

Balance sheet data, therefore, are an objective indicator of the MA's independence from the government. MAs that operate as orthodox currency boards or "dollarised" regimes are totally independent because the MAs are not counterparties to the FAs and their balance sheets are not linked. The degree of independence of other types of MA will depend on the nature and magnitude of the balance sheet linkages.<sup>12</sup>

### Off-balance sheet transactions

In recent years MAs have availed themselves of a number of off-balance sheet operations. Such activities are frequently captured as assets and liabilities under conventional accounting procedures. These direct and contingent claims on the MA are recorded as notes to the balance sheet or not at all. For financial institutions - like commercial and investment banks - are often orders of magnitude larger than those recorded on the balance sheet (Lewis 1992: 67-72). Derivative instruments, which make up the lion's share of off-balance sheet commitments, have been used by MAs to influence domestic monetary conditions, to intervene in the spot and forward forex market, to provide guarantees to foreign creditors and the government and to hedge assets and cash flows related to normal operations.

Led by the growth of derivatives markets and by reserve and debt managers recruited from the private sector, MAs have become experienced and sophisticated users of swaps, forwards, futures and options on currencies and interest rates.<sup>13</sup> For example, a survey of MAs by Neely (2001: 5) found that more than half of the MAs surveyed sometimes intervened in the forward markets, and 6% sometimes intervened in futures and other derivative markets.

Other off-balance sheet contingent commitments arise from quasi-fiscal operations of the MA. Quasi-fiscal operations are actions of the MA related to the financial system or the exchange rate system undertaken for public policy, rather than monetary and exchange rate policy reasons *per se*. In principle, such commitments should be recorded off-balance sheet as memorandum items, but, in practice, few MAs report this information. Markiewicz (2001: 28) found that off-balance sheet quasi-fiscal operations of MAs in 17 transition economies were quite large and resulted in significant budget deficits - as large as 10.9% of GDP - when identified and consolidated with fiscal accounts.

No comprehensive treatment of MA activities that require off-balance sheet disclosure exists.<sup>14</sup> This is unfortunate because the scope and scale of these sometimes complex activities are nontrivial. As a first step in filling this void, a number of off-balance sheet commitments are discussed below.

Let us first consider **foreign exchange derivatives**. MAs' participation in forex derivatives markets has aroused much curiosity due to the role forex derivatives played in the Asian financial crisis. Even though forex derivatives are used in a variety of constructive and legitimate ways, the perception spawned by stories in the financial press remains negative.<sup>15</sup> Perhaps this explains why MAs have been reluctant to disclose complete information about their involvement in forex derivatives markets.

Management of domestic liquidity with *forex swaps* is widespread. In Switzerland, forex swaps have been the primary instrument for managing bank reserves since the early 1980s. Forex swaps have also been employed since the 1980s by Germany and the Netherlands, and to a lesser extent by the UK and France. They are particularly useful instruments for regulating the money supply when the outstanding stock of public debt is low, since open market sales or purchases of government securities are not readily available to the central bank as a policy instrument (Kneeshaw and van den Bergh 1989: 68-71).

To inject liquidity into the banking system, the MA buys foreign exchange from domestic banks and pays out domestic currency in the first leg of the swap. Under current accounting practice, the MA records the foreign exchange received on its balance sheet, whereas the forward leg of the swap - the MA's obligation to sell back the foreign exchange at a predetermined future date - appears as an off-balance sheet liability (Brookes 1999: 24, Reserve Bank of Australia 2002: 59). Because the swap rate is set to reflect covered interest parity, any shift in the true interest rate differential over the life of the swap will create a gain on the forward leg for one party and a loss for the other, creating a foreign exchange risk for the counterparties.<sup>16</sup> Whether the resulting expansion of base money is driven by an increase in net domestic assets - that is, the swap is understood as a loan to the banking sector<sup>17</sup> collateralised by foreign currency - or an increase in net foreign assets, as current convention suggests, is debatable.

Forex swaps may be combined with spot market transactions to intervene in forward markets. To accomplish this, the MA buys or sells currency in the spot market and conducts the spot leg of the currency swap in the opposite direction. The spot market transactions cancel out, leaving only the forward leg of the swap outstanding (Neely 2001: 2). Therefore, the two transactions are synthetically equivalent to a forward outright.<sup>18</sup>

MAs have intervened in forward markets to deter speculative attack and to indirectly influence the exchange rate in the spot market. In *forward outright* contracts counterparties agree to buy or sell currencies for a predetermined price at a specified future date. A MA may intervene in the forward market to counteract speculation virtually without limit, as no foreign reserves must be delivered up front, but it will have to reckon with the significant forex risk incurred as the contracts mature<sup>19</sup> (Freedman 1991: 56). Unlike exchange-traded futures, forward outright contracts also carry counterparty risk. Consequently, forwards are relatively risky and should be reported and disclosed regularly to prevent sudden realisations of potential losses.

*Futures* are a standardised version of forward contracts which transact through a clearing firm. Speculation in futures may, therefore, invite intervention by the MA as with forwards. Futures, like forwards, incur exchange rate risk. Counterparty risk is mitigated because a clearing firm stands ready to ensure settlement of the transaction, but since the volume of derivatives traded on exchanges is small relative to those traded over the counter, the cost of trading futures is relatively high (the bid-ask spreads are wider).

MAs' participation as buyers and writers of forex *options* contracts is a relatively new practice and less widespread than other uses of forex derivatives. In a forex options contract, the writer grants a buyer the right to buy (call) or sell (put) currency at a predetermined strike price in exchange for payment of a fee (the option premium). European options grant the right on a specified date, whereas American options may be exercised any time up to and including a specified date.

Forex options have been used in a variety of ways by MAs. The Banco de México began writing peso call/US dollar put options with a floating strike price in August 1996 to accumulate foreign reserves passively without signaling to the market an intervention level.<sup>20</sup> The Reserve Bank of Australia (RBA) intervened in the options market in August 1998 to defend the Australian dollar. It purchased Australian dollar call options to raise the demand for the Australian dollar in the spot market by option writers, who would otherwise have found themselves with uncovered short positions. In the absence of spot market intervention by the RBA this increased demand raised the value of the Australian dollar in the spot market - the desired result<sup>21</sup> (Hong Kong Monetary Authority 2000).

Options have also been proposed as a means to make a MA's commitment to a fixed exchange rate more credible. For example, in 1997 Nobelist Merton Miller recommended that the Hong Kong Monetary Authority (HKMA) write put options at the HKD/USD fixed rate of 7.8 to 1 (the official parity). By doing so, the HKMA would literally put its money where its mouth was, making its commitment to the official parity more credible, instilling confidence in its fixed exchange rate and reducing speculation about a possible devaluation<sup>22</sup> (Miller 1999).

As well as forex derivatives, **interest rate derivatives** deserve examination. Of the standard types of interest rate derivatives, interest rate swaps are perhaps the most operationally useful for MAs. Many MAs have interest-bearing liabilities, which can include remunerated reserve requirements, bonds issued for sterilisation purposes, or even some quasi-commercial

deposit business inherited from the MA's past as a privileged commercial bank. If the interest rate on the liability is fixed, the MA would do well to match it with a fixed-interest rate asset.<sup>23</sup> To match a fixed rate liability to a floating rate asset, the MA may engage in an interest rate swap in which it swaps floating rate coupon payments with a counterparty for fixed rate coupon payments on the same notional principal. In essence, the floating rate asset is converted into a fixed rate asset and cash flows generated by corresponding assets and liabilities are matched. In addition to hedging cash flows, interest rate swaps could conceivably be used to affect the term structure of interest rates (HKMA 1995).

Other interest rate derivatives are employed in a risk management context, as well as to change the maturity structure of the asset portfolio (Rigaudy 2000: 209). An interest rate forward contract - called a forward rate agreement (FRA) - allows a purchaser to fix an interest rate for a certain duration beginning at some future date. Interest rate futures, by contrast, require delivery of a specific interest rate security on a certain date in the future. And as with forex options, interest rate options confer the right, but not the obligation, to buy or sell a security with a certain interest rate. The use of these products has the obvious policy implication of matching the foreign asset portfolio's maturity structure to that of the external debt.<sup>24</sup>

Certain fiscal commitments may be similar in effect to currency derivatives, although pricing them as such would be difficult (Blejer and Schumacher 2001: 76). Exchange rate guarantees to the government can and do result in the creation of large and often unfunded **contingent liabilities**; as such they are operationally identical to unhedged currency options. The existence of a multiple exchange rate system can likewise be thought of as providing perpetual American currency options to privileged counterparties (often the government). The history of these experiments has been generally bad. For example, losses to Costa Rica from an exchange rate subsidy amounted to 4.5% of GDP in 1981. An exchange rate guarantee on foreign currency deposits during the mid-1980s in the former Yugoslavia had disastrous consequences for the National Bank of Yugoslavia and the banking sector.<sup>25</sup>

More importantly, a MA that is obligated to act as an unlimited lender of last resort to the banking system incurs a potentially unbounded contingent liability. In the event of systemic insolvency, the MA may be called upon to recapitalize the banking system. The costs of banking crises in countries with central banks acting as the lender of last resort have been staggeringly high (Frydl 1999).

To summarise, the popular quasi-hysteria surrounding derivatives is undeserved. Derivatives may be used to advance prudentially the three goals

of reserve management: security, liquidity and profitability (Nugée 2000: 176-177). The ability to hedge away various components of risk associated with a reserve asset increases security. Swaps operations - especially gold swaps - may be used to summon liquidity on short notice. And derivative instruments may be purchased or sold purely as an investment to enhance the profitability of ever-increasing foreign reserve portfolios. We have also shown how forex swaps may be used to influence monetary policy. Nevertheless, experience suggests that a certain amount of vigilance is required to prevent derivatives operations from creating real or perceived problems. This requires that derivatives be fully disclosed and properly valued. Similarly, steps should be taken to price and disclose other contingent liabilities of the MA in order to obtain an accurate assessment of the MA's potential commitments.

### **Legal and regulatory matters**

For an analyst, the data contained on- and off-balance sheet do not reach their full expression until the legal framework of the MA is understood. The legal framework of the MA is a crucial document (or set of documents) because it defines the scope and scale of its direct and contingent commitments.

The law on the MA often places restrictions on lending to the banking system and the government, or requires the MA to meet a nominal target. Analysis of the law on the MA has also formed the core of the conventional notion of central bank independence (see, for example, Cukierman 1992). Knowing the statutory objectives of the MA can allow the analyst to anticipate the extent to which the MA will be affected by problems in other sectors' balance sheets. For example, a currency may come under attack if the banking sector appears to be headed for bankruptcy as casual observers expect the MA to bail out banks. But if the MA's enabling law specifically prohibits or limits lender-of-last-resort activity and is published - and so long as the rule of law prevails - the analyst will know that the banking sector trouble cannot spill over to the MA, perhaps pre-empting a currency attack.

Many MAs are charged with regulating the banking sector. Regulations governing the banking sector are an important component of monetary control. In countries with poorly developed money markets, changes in the reserve requirement are usually the MA's most powerful tool for managing base money. Other regulations may adjust the definition of appropriate collateral for rediscounts and overdrafts and consequently change the extent to which base money can be expanded through loans to the banking sector. Deposit guarantees administered by the MA will also be explained in a law or regulation. This is the only way to verify to what extent the MA must

recognise potentially insolvent banks as a contingent liability (Chandavarkar 1996: 183).

Some MAs occasionally resort to direct instruments of monetary control. Such instruments may include interest rate controls, credit ceilings, rediscount quotas, statutory liquidity ratios, selective credit controls, and moral suasion (Chandavarkar 1996: 30). These interactions with the banking sector do not show on the balance sheet and will only be discovered if the regulations are disclosed.

Finally, the MA is usually responsible for the maintenance of the payments system, which is simply a set of contractual arrangements and operating facilities used to transfer value (Davis 1995: 357).

Almost every action taken by MAs can be detected on- or off-balance sheet. The MA operates within the constraints contained in its legal framework and adjusts the constraints on the banking system by issuing regulations. There is, moreover, a substantial degree of interplay between these elements. Having appreciated these points, we can now consider the merits and shortcomings of the IMF's Special Data Dissemination Standard (SDDS) and make suggestions for its improvement.

## **The Special Data Dissemination Standard**

The SDDS has emerged as an interim standard for MA reporting. The SDDS was created in March 1996, with a transition period through the end of 1998, "to guide countries that have or seek access to international financial markets in the dissemination of economic and financial data to the public."<sup>26</sup> Forty-two IMF members subscribed in 1996, followed by eleven new members in seven subsequent years. The central bank balance sheet is the centrepiece of the SDDS.

In addition, on March 23 1999, an off-balance sheet component was added to the SDDS. The detailed requirements of this component are specified in the Data Template on International Reserves and Foreign Currency Liquidity (hereafter referred to as the IRFCL template). The IRFCL template was a response to the BIS Euro-currency Standing Committee's conclusions that a better statement of MAs' foreign currency liquidity position was "crucial" and that "the main shortcomings [in MAs' reporting] relate to the disclosure of potential drains associated with foreign currency liabilities and derivative instruments." In particular, the committee found there was "a general lack of public information about off-balance sheet positions" which created the potential for a MA to overstate its available foreign reserves (BIS 1998: 2, 4).

Ironically, this off-balance sheet component of the SDDS is better conceived than the balance sheet component.

### **SDDS balance sheet presentation**

The IMF integrates into the SDDS a rubric for the MA's balance sheet that is similar to that used in its *International Financial Statistics*. Prescribed components of the balance sheet include monetary liabilities outstanding (alternatively known as base money, reserve money or the monetary base), domestic assets, and foreign assets. Domestic and foreign assets may be reported on either a gross or net basis. Domestic assets should be broken down by sector (either public/private or government/non-financial public/private). Data are to be reported monthly with less than two weeks' lag.<sup>27</sup>

### **SDDS off-balance sheet presentation**

The IRFCL template deals with information on foreign currency liquidity and off-balance sheet activity in a clear, systematic way.<sup>28</sup> The template also recognises the grey area between the obligations of the MA and the central government by requiring disclosure of information from both. However, only a few countries, such as the UK and Italy, separate the accounts.

Section I of the IRFCL template details the foreign currency liquidity position of the authorities, breaking foreign reserve assets into cash, deposits in banks headquartered domestically and abroad, foreign-currency denominated securities, gold (and gold swapped), derivative assets, and other assets. All magnitudes are stated in US dollars at current exchange rates to facilitate international comparability and remove distortions from any fluctuation of the domestic currency against foreign reserve currencies (valuation effects).

Section II deals with predetermined net drains on foreign currency assets occurring within one year. These include flows related to principal and interest amortisations on foreign-currency denominated loans and scheduled deliveries of foreign currencies arising from forward, futures and swaps contracts.<sup>29</sup> Notional values, determined by the strike price, are recorded.

Foreign currency options and other contingent commitments are covered in Section III. Potential assets and liabilities such as undrawn credit lines (especially with the IMF and BIS, among others) and exchange rate guarantees are reported separately from securities with embedded options and possible flows related to options positions. Options are classified by long and short positions, calls and puts, and options written and options bought. Contingencies related to social security are excluded from Section III.

Section IV includes several useful memorandum items such as the net, marked-to-market values of derivatives, derivatives with a residual maturity of more than one year subject to margin calls, securities borrowed or lent on repurchase agreements, aggregated short and long options positions marked-to-market, and the currency composition of reserves.

## **Discussion and critique of the SDDS**

Though the SDDS is perhaps the only internationally-comparable format for disclosure of balance sheet and off-balance sheet information, it does not represent a satisfactory accountancy standard for MAs. Among other things, the SDDS does not include any legal or regulatory information, and does not make all the information disclosed available in a time series. Participating national authorities need to remedy these and other omissions for the SDDS to allow a truly meaningful evaluation of the information disclosed. The following highlights some of the key areas where disclosures could be improved.

### **Balance sheet requirements**

The SDDS's prescriptions for balance sheet presentation need more detail on net domestic assets and net foreign assets. For example, drawing on some possibilities we discussed earlier, an increase in net domestic assets driven by the public sector could be an increase in credit to state enterprises, the monetisation of government debt obligations, or the result of the government transferring its deposits from the MA to commercial banks. Each of these possibilities leads to different conclusions about the nature and riskiness of the MA's operations. Unless these operations are disaggregated, the data, as they are currently presented, can be misleading. Similarly, to detect the composition of net foreign assets requires making reference to a separate document (the IRFCL template) which, as we will see later, includes limited detail on asset quality, maturity, or currency composition. More importantly, the SDDS contain no explicit requirement to report domestic credit and the external position on a net basis. Without those data, the decomposition of base money into its foreign and domestic components - arguably the most fundamental diagnosis of monetary operations - cannot be performed (Hanke 2000).

### **Time series data**

Time series data on the required categories are not compulsory under the SDDS. New releases are compared only to the previous period, and the retention and presentation of old data is left to the discretion of each MA. Without these previous results for reference, the direction and magnitude of

long-term flows cannot be determined, leaving whatever information is presented, however detailed, without a point of reference.

### **Off-balance sheet requirements**

The MA's liquidity position, derivatives exposure and contingent commitments are critically important data. However, the IRFCL template's treatment of these elements is incomplete.

The IRFCL template does not require the disclosure of information on the maturity structure of foreign currency assets and their currency composition. As the magnitude of foreign reserves held by MAs has increased, a greater amount has been invested in securities - particularly securities with longer maturities - in order to increase return.<sup>30</sup> Securities that cannot be realised quickly at face value lack liquidity and cannot be considered available for payments or intervention. The SDDS requirements recognise this problem: to avoid overstating the reserves that are available, SDDS subscribers are to revalue securities in the reserve portfolio at market prices on at least a quarterly basis. However, the procedures used and frequency with which subscribers revalue their portfolios vary widely and are not necessarily disclosed. It would be simpler to break the security portfolio up by term structure to eliminate any ambiguity about the reserve portfolio's liquidity created by potentially arcane revaluation procedures.

### **Currency composition**

Knowledge of the reserve portfolio's currency composition is necessary to understand which currencies are the sources of exchange rate risk to the portfolio. The IRFCL template suggests disclosing composition only once a year; even then, the distinction is made only between currencies in the SDR basket and those not in the basket.<sup>31</sup>

Most SDDS member countries do not make explicit the ownership of foreign assets in their disclosures. Although ownership is supposed to be explained either by separation of accounts or in the SDDS metadata (the explanation of statistical definitions and procedures provided by participating countries to the IMF), the publication of metadata in this area is neither consistent nor universal. This is an important distinction, and more information in this area would be particularly useful. The line of demarcation between foreign assets available to the MA and those available to the finance ministry must be made absolutely clear, especially if the MA is to be considered independent from the FA. The MA's foreign assets may be held in the custody of the finance ministry, as is the case with the US Treasury's Exchange Stabilisation Fund (Lee 1998: 157). Conversely, foreign assets may be strictly the property of the MA. The Banco Central de la República Argentina under the

“convertibility” system, a prime example, was not banker to the government and its foreign reserves were not available to the distressed finance ministry for debt service.

### **Asset quality**

As a final remark on the reserve portfolio, there is still much scope for more clarity about the quality of various reserve assets. A category such as “foreign-currency denominated securities” lumps AAA-rated US Treasury bills together with securities issued by entities with less certain creditworthiness. Clearly, some differentiation would be useful. One option would be to specify a threshold level for the credit rating of security issuers. However, strictly disqualifying claims on riskier issuers is a question of reserve management policy that should be addressed individually by MAs and not by an accounting standard.

### **Derivatives**

The IRFCL template’s treatment of derivatives, though constructive, leaves the analyst with many unanswered questions. The MA’s aggregated derivatives position is presented in notional values in Section II of the template. Though the aggregated derivatives position is to be marked to market and classified by instrument (swaps, futures, forwards, etc.) in Section IV, very few MAs do so. Enforcement of this requirement has been weak, typically leaving MAs who have failed to disclose information in Section IV nevertheless compliant with SDDS procedures.

A much more useful disclosure would be an enumeration of individual derivative contracts by type of instrument and currency, at market values. Details such as these will cumulatively reinforce the *raison d’être* of the SDDS. For instance, derivative instruments will only be realised at market values. Therefore, reporting them at notional values is of little use and often misleading. The split between instruments is also important, because different instruments entail different risks. Different currencies entail different risks, too. Without requiring the classification of forex derivative contracts according to the currency involved, currency risks cannot be evaluated with the data disclosed in the IRFCL template. Addressing these issues will answer many questions raised by the IRFCL template in its current form.

### **Recognition of hedging**

In addition to problems of categorisation and valuation, the template does not match derivative instruments to hedged assets and cash flows. This is the practice required of the private sector by International Accounting Standard 39 (IAS 39) and Financial Accounting Standard 133 (*Accounting for Certain Derivative Instruments and Certain Hedging Activities*, FAS 133). Although

this practice would cause changes in the fair value of derivatives to be immediately manifested in the financial statements and eliminate surprises, experience with FAS 133 has proved problematic. It has been costly to implement (in terms of human and financial resources), increased earnings volatility, and discouraged firms from using certain types of legitimate risk management techniques.

The best way for MAs to clarify their objectives in derivative use is through a qualitative disclosure of derivative use on a portfolio level, coupled with market prices for the derivatives used listed as a memorandum item. Since the SDDS lacks such a qualitative component, information remains incomplete with regard to derivatives use. This potentially creates a perverse incentive. Conceivably, incomplete information may contribute to the currency speculation that publication of the IRFCL template is supposed to deter. After all, incomplete information has been a source of bank runs and panics throughout history (Davis 1995: 314).

### **Forex options**

Forex options are not widely used by MAs. Indeed, they rarely are reported in the IRFCL template. However, this does not give us license to be complacent about the manner in which options positions are disclosed. The fair value of options contracts may fluctuate considerably in short periods of time. Accordingly, certain events may cause a MA to find itself suddenly as the writer of options which will result in significant foreign currency outflows if exercised. To allow for such scenarios, the IRFCL template encourages the use of five simple stress tests for the options portfolio, including 0%, 5% and 10% appreciations or depreciations of the domestic currency versus all foreign currencies. Template users are also encouraged to mark their options positions to the market. Both of these criteria are commendable, but the lag in reporting these data for an options portfolio permitted by SDDS guidelines (as much as one month) means that data are mostly obsolete by the time they are disseminated. The stress test is also somewhat opaque since the particular currencies which pose exchange risk to the portfolio are not disclosed. Finally, the infrequent reporting of options positions (and others) results in MAs carrying potentially large unobserved mark-to-market risks. An accurate treatment of options requires a frequency of reporting that approaches real time.<sup>32</sup>

To improve the SDDS, reporting frequency should increase to approach real time, and consideration should be given to making the following additional disclosures obligatory:

- relevant legal and regulatory information;
- historical time series data on all components of the reporting standard;
- the on-balance sheet external position and domestic credit on a *net* basis;
- more detailed treatment of net domestic assets;
- the term structure, credit rating and currency composition of foreign reserve assets;
- the foreign reserve assets available to the MA and the FA;
- marked-to-market values for derivatives;
- classification of forex derivatives by instrument;
- classification of forex derivatives by currency; and
- a qualitative discussion of how derivatives are used by the MA, if at all, to manage risk and achieve other policy results.

## **Towards a new standard**

The following are what we believe to be fundamental characteristics for a comprehensive accounting standard for MAs.<sup>33</sup> The IMF's SDDS programme, incorporating the recommended improvements noted above, serves as a point of departure.

### **Nature and quality of data**

Data must be available to reflect MAs' transactions both on- and off-balance sheet, and supplemented by appropriate legal information. These data should be available in continuous time series, with a frequency to approach daily disclosure.<sup>34</sup> Ideally, data should be publicly available on the MA's website in a popular electronic format (such as comma-separated values) which allows data to be downloaded into a spreadsheet programme for analysis. Definitions for all data categories should be readily available, and if definitions are changed, previous data should, when possible, be restated according to the new definition to facilitate analysis. When this is not possible, it should be made clear what times-series data are and are not comparable.

### **Areas in need of more detail**

We have identified several areas where data could be improved. The opaque categories of foreign assets and foreign liabilities must be augmented to account for term structure, credit rating, currency composition, and liquidity. The foreign asset category on the balance sheet should include the classifications used in Section I of the IRFCL template, with the addition of classifications for longer-term assets based on maturity. Categories may be

further subdivided by currency, or currency composition may be disclosed as a memorandum item with the same frequency as other financial data. As with foreign assets, the term structure and currency composition of foreign liabilities must be made clear, whether they are those of the FA or the MA.<sup>35</sup> Finally, securitised assets below a threshold credit rating should be excluded from larger aggregates and disclosed separately.

The treatment of domestic assets deserves greater scrutiny, particularly because many countries lack well-developed markets for government debt. Developing countries' debt markets are often characterised by a high percentage of so-called captive buyers: institutions within the economy (such as the MA) which are required to hold government debt by government fiat. In a market like this, genuine market prices are not available for government securities, since the yields on government debt do not reflect the government's true opportunity cost of borrowing (Fry 1997: 9-12, 15-17, 123-39). Inflated valuations and unrecognised losses on holdings of government securities will overstate the net operating income of the MA and may hide a more comprehensive state of insolvency.

Transactions of MAs *vis-à-vis* the banking sector are important. They are somewhat obscure, however. The publication of the law on the MA and all other regulations which detail the MA's legal relationship with the banking sector would help correct this problem. For example, changes in reserve requirements, often a powerful tool of monetary policy, are not disclosed. They can only be detected indirectly by observing large changes in bank reserves on deposit at the MA. A clear presentation of the government regulations regarding reserve requirements and a description of how changes in these requirements affect base money would clarify the point. Also, deposit insurance schemes or other guarantees could be made explicit, revealing the MA's contingent exposure to such programmes. Finally, changes in regulations - amendments to capital adequacy ratios, for example - could be disclosed promptly.

The net worth of the MA is determined by realised and unrealised forex gains/losses, operating income, and dividends paid to the FA. Accordingly, an augmentation of the net worth entry on the balance sheet would serve as a proxy income statement for the MA while solving the problems of realised vs. unrealised forex gains and losses.<sup>36</sup> A more detailed treatment of the MA's net worth would also shed more light on the MA's relationship with the FA and, should losses be present, the sources of loss-making would be made explicit.

### **Treatment of derivatives**

A qualitative disclosure of how the MA uses derivatives to manage risk and achieve its policy goals should accompany an off-balance sheet memorandum item listing derivative instruments with their notional and marked-to-market values. The instruments should be categorised by the type of contract, the currencies or interest rates involved, and the duration of the contract. One exception concerns forex swaps with the banking sector. Since the primary objective of a forex swap with domestic banks is to affect base money, the swap should be treated as a collateralised loan to the banking sector and appear as a domestic asset on the MA's balance sheet.<sup>36</sup> In all cases, the reporting frequency for derivatives should increase in step with that for other on-and off-balance sheet items to approach daily or real-time frequency.

We emphasise that, whenever possible, MAs should use market prices as a basis for valuations of financial instruments. Perry (2000b: 31) wisely suggests that the methods used to determine the fair value of financial instruments be disclosed wherever appropriate. In the event that no external market price for a particular instrument exists, MAs should highlight the methods, assumptions, and market price inputs used to estimate market value.<sup>37</sup>

### **Is the MA the correct unit of analysis?**

The actions of the MA cannot be considered in a vacuum due to the influence of fiscal activities on the MA. The analytical perspective of Sargent and Wallace (1981) shows why.

A government, consisting of a FA and a MA, has only two liabilities: debt and currency. Thus, it has two options available for financing deficits: issuing debt, constrained by the public's willingness to finance the government,<sup>38</sup> or collecting seigniorage (ie, having the MA issue base money backed by government debt), constrained by an interest-elastic money demand function. Accordingly, the government faces a unified budget constraint. Whether the MA has the ability to control inflation in the long run depends on whether the FA is subordinated to the MA or vice versa. This is equivalent to a two-person game where the outcome depends on whether the FA or the MA moves first (more technically, it depends on which is the Stackelberg leader). If the FA chooses the size of its deficit and its debt issuance first, the MA must raise seigniorage revenue accordingly, and it loses independence over its money supply policy. Conversely, if the MA chooses its money supply policy first, the FA must adjust the size of its deficit to account for the level of seigniorage implied by the MA's policy prerogatives.

If the FA dominates and fiscal policy implies a series of future deficits, the FA's financing requirements will eventually exceed the public's demand for government debt. The government will have to resort to money creation by the MA in the future to make up the difference. If the desired seigniorage revenue can be raised by future money creation, the result is higher inflation today, because inflation today is a function of present and expected future levels of base money. In the extreme case where expected future deficits exceed the amount of possible future seigniorage revenue<sup>39</sup> and the public's demand for debt, the government resorts to hyperinflation. By hyperinflating, the government in essence nullifies its outstanding debt.

In both cases, the MA loses its ability to control the price level in the short run and the long run. Indeed, the only way the MA can be considered truly independent is if the FA is credibly subordinated to the MA by an orthodox currency board arrangement or official dollarisation. Therefore, *the state of the FA's finances impacts the MA's operations and the evolution of money supply policy*. Consequently, information on the FA's finances must be as forthcoming as information on the MA and a consolidated view of government accounts, a view that subsumes the MA as one component - although an important component - of government finances is necessary.<sup>40</sup>

### **Conclusion**

The need for an accountancy standard for MAs is widely recognised. Tentative first steps down the road to a standard must be accelerated and revised in favour of a more comprehensive approach. We have sketched the basic elements needed for a new accountancy standard, one that will achieve a full and fair disclosure of the MA's financial position. Moreover, we have argued that the same should be done for the FAs and that the government's accounts should be consolidated. Nothing less than a complete overhaul will do.

## Endnotes

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- 2 That conclusion corroborates Oskar Morgenstern's prescient observation that "decisions made in business and in public service are based on data that are known with much less certainty than generally assumed by the public or the government" (Morgenstern 1963: vii).
- 3 Thanks in part to a lack of transparency, one of the most spectacular items that went undetected by most observers of the Asian crisis was the fact that the crisis rendered the Bank of Indonesia insolvent (Hanke 2000).
- 4 Petersen and Sullivan (2000: 6) come to a similar conclusion: "A consensus has emerged that inadequate transparency by international organisations, national governmental units, and private sector entities was a contributing force to the serious financial disturbances that have plagued the global economy. The conclusion was reached that markets cannot function efficiently, and that they will continue to be highly vulnerable to instability, in the absence of adequate, reliable and timely information from all quarters. Lack of accurate and timely information on economic and financial developments and policies, particularly in an environment of economic and financial weakness, aggravates the weakness and contributes to the emergence of crises situations." Blejer and Schumacher (2001: 76) also note that "while central banks have frequently undertaken contingent commitments, it is only recently, with their involvement in derivatives markets, that these transactions have drawn more attention, particularly since these operations were important in the context of the Asian crisis." Consequently, both on- and off-balance sheet disclosures have been recognised as essential products of MAs' operations which can reduce the risk of financial ruin.
- 5 In addressing transparency, we focus solely on accountancy standards and the presentation of financial data by MAs. We do not address the broader issues of transparency that concern the degree to which a MA's methods of decision making are open to public scrutiny. In addition, we do not address how the information revealed can be used to predict policy changes (Sims 2002). Moreover, the administration and enforcement of accountancy standards, as well as the sanctions for noncompliance, are not addressed in this chapter. For a thoughtful introduction to this complex set of issues as it relates to private enterprises, see Jordan (2003).
- 6 With its relatively well developed set of standards, at times even the private sector labours under a great deal of complexity, ambiguity and confusion (Mulford and Comiskey 2002). The subject of whether more comprehensive standards are needed in the private sector is addressed by Myddelton (1995).
- 7 Transparency regarding the MA's financial position is also essential for monitoring progress and compliance in IMF programmes (Schaechter 2001). Several of the IMF's largest recent loan programmes include balance sheet indicators (such as net domestic assets and net international reserves) as performance criteria, for example in Argentina, Brazil and Turkey. Without timely balance sheet disclosures (and, in particular, balance sheet disclosures which are prepared in accordance with the definitions for balance sheet indicators specified by the IMF in its conditionality), observers cannot determine whether targets are being met or if the programme is credible.
- 8 For evidence of Sir John's reliance on the balance sheet approach at the introductory economics level, see Hicks, Hart and Ford (1955).
- 9 Efforts to predict crises - namely, large movements in exchange rates - using conventional macroeconomic models and data have been generally unsuccessful. Signals from these models often produce conflicting and inaccurate results (IMF 2001). In consequence, analysts are becoming attracted to the balance sheet approach. For an introduction to the balance sheet approach, see Allen, et al (2002), and for a discussion of the transmission of financial fragility via balance sheet channels, see Davis (1995: 32-40, 75-80). For examples of the usefulness of the balance sheet approach in anticipating troubles, see Mulder, Perrelli and Rocha (2002) and Ghosh and Ghosh (2002).
- 10 Again, Thailand provides an example of how offsetting foreign reserve outflows can cause trouble for a pegged exchange rate regime. "Between end-June 1996 and end-June 1997, the reported on-balance sheet NFA of the Bank of Thailand (BoT) fell by an amount equal to 44% of the initial level of the

monetary base (M0). However, the BoT pursued such a vigorous sterilisation policy that the increase over this period in NDC (as measured by reported on-balance sheet items) was 74% of the initial level of M0. The monetary base therefore rose by 30% (74% - 44%).” And as we noted in the text, “the true fall in NFA and the true rise in NDC were far larger than the ones reported, because the BoT’s balance sheet did not show the foreign exchange liabilities and baht assets created by its foreign exchange swap transactions” (Fane 2000: 144-45).

- 11 Some countries have done away with a reserve requirement for banks because the reserve requirements are deemed to be an inefficient tax on banks and a form of financial repression. For a discussion, see Fane (2000: 106-31).
- 12 Two “smoking guns” denoting lost central bank independence stand out. First, under normal circumstances, as the monopoly issuer of currency and collector of seigniorage, the MA should make profits, add to its capital, and pay periodic dividends to the government. Therefore, a loss-making MA, displaying a falling net worth, is unusual and symptomatic of severe malfeasance usually brought on by the “fiscalisation” of the MA (Beckerman 1997, Chandavarkar 1996: 174-191, Ernhagen, Vesterlund and Viotti 2002, Leone 1994, and Vaez-Zadeh 1991). On the other hand, large profits resulting from a rapidly-growing monetary base characterise a MA whose seigniorage-generating capabilities have been exploited by a revenue-thirsty government. Secondly, the MA may also be called upon to fund the FA’s foreign debt amortisations in an emergency. If the foreign assets and liabilities of the MA and FA are not explicitly partitioned by law and accounting practice, the MA cannot be considered completely independent.
- 13 The menagerie of available derivatives products is vast and growing; a full enumeration would be impractical. For the purposes of this chapter, we focus primarily on these eight products (four contracts times two underlying prices). Our approach covers the contracts that are most commonly used. “At present, central banks are mostly using straightforward, linear products such as futures, forwards, short and medium-term currency and interest rate swaps (often referred to as “first generation” derivatives). Sophisticated structured products, which were extensively marketed to central banks in the early 1990s, have seen a declining interest owing to their lack of liquidity and transparency - and perhaps also to the increased capacity of central banks to adjust their risk profiles by using common (plain vanilla) derivatives” (Rigaudy 2000: 209). In light of the HKMA’s 1998 intervention in the equity derivatives market, we will also address equity derivatives briefly. For material on the increasing use of derivatives in the interbank market, see Davies (1995), and for their use in government debt management, see Piga (2001).
- 14 An exception is Blejer and Schumacher (2001), although their article, reproduced in Appendix 3, is predominantly concerned with the use of derivatives for foreign exchange intervention. It has nothing to say about reserve management and debt management applications - thus interest rate derivatives receive little attention - and quasi-fiscal operations are not elaborated upon because, as we discuss later, they are difficult to quantify.
- 15 See Culp and Hanke (1994) and Culp, Hanke and Neves (1999) for an analysis of the financial press’ propensity for making spurious claims concerning the legitimacy and risk of derivatives transactions.
- 16 Brookes (1999) and Reserve Bank of Australia (2002) incorrectly insist that there is no foreign exchange risk involved in forex swaps. In addition to foreign exchange risk, there is a small settlement risk associated with foreign exchange swaps, namely that the counterparty will become insolvent in the time that it takes to settle delivery of foreign exchange as stipulated in the swap contract. This is called Herstatt risk after a German bank that famously failed, leaving its extensive US dollar commitments unsettled. New foreign exchange settlement systems operated by CLS Bank are expected to reduce Herstatt risk to virtually zero. See “Plumbing Revolution,” *The Economist*, 16 November 2002, p. 71.
- 17 The banking sector likewise loans foreign currency to the MA, so the forex swap is actually two loans: one in the domestic currency and one in foreign currency.
- 18 This synthetic approach is often preferable to a forward outright because the swaps market is considerably deeper and more liquid than forward markets.
- 19 In forward outright contracts both the short and the long are obligated to deliver the gross amount of cash specified in the contract. This is in contrast to non-deliverable forwards (NDFs), where the obligations of the short and the long are netted to reduce credit risk, leaving one party to deliver the difference in cash.

- 20 If the MA were to purchase foreign assets in the spot market regularly at a certain exchange rate, that exchange rate may be perceived by market participants as an intervention level or *de facto* peg, inviting speculative activity which may require the MA to sell rather than accumulate foreign assets.
- 21 This behaviour exhibited by the options sellers is referred to as dynamic hedging. As the probability of a currency option being exercised increases, the seller of the option must increase his holdings of the asset which he is "short" - that is, the asset which he must deliver in the event the option is exercised - to remain risk-neutral (also called delta-neutral). MAs must take this into consideration as potential writers of puts on their own currency, either as stand-alone options or embedded in securities. As the probability of the put option being exercised increases, the amount of foreign reserves necessary to make the contract credible increases. See HKMA (2000). Reserves that are encumbered in this manner cannot be considered liquid.
- 22 The HKMA's defense of its fixed exchange rate did not involve formal put options. Instead, the HKMA offered to allow Hong Kong banks to convert HKD into USD at a rate slightly lower than the official parity (7.75 to 1) with the promise that the exchange rate would soon return to the official 7.8 to 1. This guarantee would last for six months, making the arrangement, in essence, a six-month American put option. However, Miller argued that the HKMA could make its commitment to a fixed exchange rate fully credible only with a formal put (Miller 1999)
- 23 The same logic applies for floating rates, provided both are based on the same underlying rate, such as LIBOR.
- 24 For a discussion of the use of interest rate derivatives in debt management, see Piga (2001). Of lesser importance are equity derivatives, although they are of interest. MAs are not known to be regular participants in equity derivatives markets, but the HKMA intervention in the Hang Seng Index (HSI) futures market in August 1998 bears mentioning. Equity derivatives are similar to other derivatives contracts but are based on underlying equity prices. The underlying price may be that of one company's equity or an entire index. In the wake of crises in Thailand, Indonesia and Korea, the HSI went into decline from mid-1997 through 1998. Hedge funds, expecting another spectacular blowout, began building short positions in stock index and forex futures and forwards markets for a "double market play": speculators would go short stocks via the HSI and short the HKD via futures or forwards. This would cause a squeeze in the money markets, driving interbank (HIBOR) rates up; those higher interest rates would cause the HSI to decline. The increase in interest rates also benefitted speculators who were short the HKD forward. Noting evidence of this behaviour and citing public doubts about the credibility of Hong Kong's fixed exchange rate regime and a possible devaluation of China's renminbi, the HKMA initiated a double bear squeeze by buying shares directly and through the HSI and selling US dollars in both the spot and forward markets (Jao 2001: 86-87). Strictly speaking, however, the intervention in the stock market by the HKMA was not a monetary operation but counterspeculation by what amounts to the government's own hedge fund: the fiscal reserve. See Hanke (2002).
- 25 Jordan (1991) notes that the total losses to the central bank in the 1980s from this activity amounted to some \$10 billion, or 17% of Yugoslavia's national output in 1989. For more examples and a further discussion, see Mackenzie and Stella (1996). Other fiscal activities sometimes required of MAs are discussed in Fry (1995: 393-419) and Chandavarkar (1996: 179-191).
- 26 From the IMF's Fourth Review of the Fund's Data Standards' Initiatives, July 23 2001, p. 8. The document is available at <http://www.imf.org/external/np/sta/dsbb/2001/071001.pdf>.
- 27 The official definition given by the IMF at [http://dsbb.imf.org/category/spec\\_fin.htm](http://dsbb.imf.org/category/spec_fin.htm) is "reserve money, base money, or the monetary base; domestic credit, broken down by general government/nonfinancial public enterprises/private sector or public sector/private sector; and the external position of the central bank on either a gross or a net basis."
- 28 The particulars on the IRFCL template may be found in Kester (2001).
- 29 These drains may be the result of contracts with both residents (individuals or entities residing or headquartered in the reporting country) and nonresidents.
- 30 More aggressive investment of foreign reserves by MAs may also be attributed to the preference of many MAs, especially in developing economies, to build up large "excess" reserves. In the wake of recent crises MAs have sought in this way to deter a speculative attack on their currency. MAs demand a return on their foreign currency assets because governments demand compensation for the opportunity cost of greater foreign reserve holdings at the MA. The excess foreign reserves accumulated by the MA could be used to reduce other government obligations, and should arguably

be remitted to the FA. However, if the MA earns a return on those foreign reserves which is greater than or equal to the cost of FA borrowing, the consolidated government sector profits and the FA consents to greater foreign reserve holdings at the MA.

- 31 We know from IMF and BIS data that, in the aggregate, the majority of foreign reserves are denominated in US dollars and that the majority of derivative contracts in foreign exchange have the dollar on one side. This, however, does not preclude the possibility of a MA choosing to allocate its reserves to, say, mostly euros in the event that its country trades mostly with the euro area or because it anticipates a greater international role for the euro in the future.
- 32 Because option values can be difficult to calculate, it is critical for the MA to specify the inputs used for its options valuations. This will ensure that the reported values are independently observable. Such “fair value”-oriented accounting concerns are not limited to options and may apply to any number of derivative contracts. Indeed, Neu (2001) notes that a “transparent market may not exist to price the [derivative] assets/liabilities readily, for example; or if one does exist, it may be sufficiently volatile to erode the meaning of any intermittent snapshot.”
- 33 A more complete set of recommendations, including a new reporting template, is forthcoming (Hanke and Sekerke 2003).
- 34 We must emphasise also the importance of proper editing (ie, presentation in a clear, easily-understood format) and auditing for publicly-released data. Governmental accounts (of which the MAs accounts are a component) are notoriously confusing even when they are available. “The budgets of modern economies, particularly those of countries with large public sectors, are very complex. Politicians typically do not have an incentive to adopt the most transparent practices. Lack of transparency helps to create confusion and ambiguity on the real state of public finances, by hiding as much as possible of the current and future tax burdens, overemphasising the benefits of spending, and underestimating the extent of current and future government liabilities” (Alesina and Perotti 1996: 403). The General Accounting Office’s audit of the US government’s financial statements stated that “various material weaknesses related to financial systems, fundamental record keeping and financial reporting, and incomplete documentation continued to (i) hamper the government’s ability to accurately report a significant portion of its assets, liabilities and costs, (ii) affect the government’s ability to accurately measure the full cost and financial performance of certain programs and effectively managed related operations, and (iii) significantly impair the government’s ability to adequately safeguard certain significant assets and properly record various transactions” (US Treasury 2001: 27-28). A case in point is the US department of education, which was unable to document the numbers contained in its financial statements, made numerous errors in manually adjusting accounts, and generally lacked effective internal controls (Lewis 2001). State-owned enterprises are also prone to fabrication, distortion and obfuscation. Angola’s state oil company Sonangol has contributed to a number of unexplained fiscal losses. Among its woes are financial statements not prepared in line with international accounting standards, a lack of independent audits and management of income through “opaque offshore accounts.” The total losses to Angola from this sort of activity “over the last several years have represented anywhere from 2% to 23% of the country’s gross national product” (Cauvin 2002).
- 35 Because optimal debt management policy involves matching the currency composition and maturity structure of the foreign asset portfolio to foreign liabilities, a number of countries have decided to integrate their foreign assets and liabilities management, blurring the dividing line between the foreign assets and liabilities of the FA and the MA. For more discussion, see Cassard and Folkerts-Landau (2000), Hawkins and Turner (2000), and Nugée (2000).
- 36 Perry (2000a: 19) also mentions the possibility of combining the income statement with a statement of changes in equity and reserves. Kurtzig (2001: 77-79) offers more detail on the problems of unrealised foreign exchange gains and losses. See Appendix 2.
- 37 This treatment is appropriate because both parties to the transaction are residents, and the procedure is initiated by the MA specifically to influence domestic monetary conditions. The practice of adding the foreign exchange gain in the first leg of swap to foreign assets simply allows the MA to overstate its available foreign currency assets for the duration of the swap. Accounting for other ‘repo’ transactions can create similar problems. For example, the Bank of Japan virtually double-counts assets under repo transactions, with two entries on the asset side (receivables under repo agreements and cash collateral for government securities borrowed) against one entry on the liabilities side (payables under repo agreements).
- 38 What must be avoided are contracts in which the valuations are based on prices of assets for which

no liquid market exists. A famous example from the private sector were the bandwidth swaps between Enron and Qwest; without reliable market prices, the two companies were able to attach astronomical value to an asset which was arguably worthless in the end. See Culp and Hanke (2003).

- 39 Sargent and Wallace also assume that the interest rate on government debt exceeds the real rate of growth in the economy. Therefore if the FA continues to run deficits it will eventually reach a situation where the revenue from new bond issues is less than the interest due on outstanding debt.
- 40 Because money demand is interest elastic, seigniorage revenue has a maximum at some finite level of inflation.
- 41 Others have noted the difficulties inherent in measuring central bank losses as a result of convoluted government accounting policies. For an example, see Fry, Goodhart and Almeida (1996: 31).

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