

**Public Debt Management and Fiscal Vulnerability:
Potential Roles for SAIs**

INTOSAI Public Debt Committee

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Public Debt Management and Fiscal Vulnerability: Potential Roles
for SAIs

“There will be another global economic crisis. The trigger will be different, the country will be different, but we will see a repeat.”

*George Muñoz, Overseas Private
Investment Corporation*

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Summary

Public debt managers are now operating in very sophisticated and complex financial environments. A global capital market can generate numerous benefits (for example, easier access to a larger pool of capital at a lower cost, more efficient domestic capital markets and the possibility to better tailor risks using new financial instruments). However, public debt strategies can become dangerously vulnerable when faced with unforeseen events such as deteriorating private sector balance that can trigger fiscal, financial and economic crises. Economic shocks can impact on an economy's external debt and make a public debt strategy vulnerable, which in turn can impact on the overall economy and seriously deteriorate the financial condition of a government. Recent examples in emerging economies have shown that shocks can mutate into financial crises, debt management difficulties and budgetary consequences.

In order to protect the financial condition of their government, debt managers must put in place robust debt management strategies and sound risk management practices. SAIs may wish to play an active role in protecting the financial condition of governments by promoting the need for sound public debt strategies and risk management practices, data disclosure policies and effective supervisory-regulatory regime for the banking sector so that the risks associated with future obligations and claims of the public sector as well as possible contingent obligations from the private sector can be minimised. Readers should note that the proposed roles should be within SAIs' legal authority. Furthermore, providing guidance is distinct from the auditor's traditional financial attest work, therefore SAIs would not be able to provide the same level of assurance.

More specifically, through performance audits of debt management practices:

- 1. SAIs may wish to play an active role in protecting the financial condition of governments by helping to ensure that sound and robust public debt practices are in place.*
- 2. SAIs could encourage governments to focus more on vulnerability monitoring and give high priority to risk management.*

SAIs could also encourage data disclosure and promote the need for a proper regulatory and supervisory framework to be adopted for the financial services sector. Hence,

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3. *SAls could encourage governments to produce better financial information and publish key debt information in order to assess their financial vulnerability and exposure. SAls may wish to assess how well governments perform in the release of data disclosure. Finally, SAls may wish to encourage their government to adhere to the international initiatives aimed at improving statistics disclosure and data requirements.*

 4. *SAls may wish to encourage governments to ensure that regulators and supervisors in the financial services sector adopt practices that comply with international standards, since a more robust financial services sector will in turn reduce the vulnerability of the public debt to events affecting the private sector balance sheet.*

Public Debt Management and Fiscal Vulnerability: Potential Roles for SAIs

Introduction

1. This paper examines the roles that Supreme Audit Institutions (SAIs) could possibly play to help reduce fiscal vulnerability of governments and make financial crises less likely. It is argued that SAIs could promote best practices for debt management, appropriate data disclosure standards as well as sound regulatory regimes for the financial services.
2. SAIs have no direct role to play in the establishment of public debt management, data disclosure policies and regulatory regimes for the financial services sector. A SAI's ability to influence and persuade public debt managers will depend on its powers, responsibilities and credibility. However, SAIs within the limits of their legal authority, could have a role in promoting and encouraging policy makers to adopt debt and risk management practices that will be sound and robust. As will be seen, debt managers operate in very complex capital market environment that can derail fragile debt strategies and jeopardise a government fiscal position. SAIs may need to incorporate new and interdisciplinary approaches in their methods.
3. Through these activities, SAIs could play a supporting role in the prevention of financial crises and reducing fiscal vulnerability, especially in a context where the world economic leaders have assigned high priorities to these issues. The final communiqué of the Finance Ministers and Central Bank Governors of the G-20 that met in October 2000 in Montreal showed clear commitments:

We agree to implement the emerging international consensus on policies to reduce countries' vulnerability to financial crises, including through appropriate exchange rate arrangements, prudent liability management, private sector involvement in crisis prevention and resolution, and adoption of codes and standards in key areas including transparency, data dissemination, market integrity and financial sector policy. (October 25, 2000)

4. Section A, explains why capital has been so easy to borrow and discusses the consequences of this massive borrowing.

Section B surveys the implications recent financial crises have had on debt management. One conclusion is that sound debt and risk management policies are a prerequisite for protecting the fiscal position of governments. Section C is more prescriptive and offers roles that SAIs may wish to have in promoting proper debt and risk management practices, data disclosure and sound supervisory function for the banking services sector. The paper contains 4 appendices. Appendix I examines the origin of the Mexican, Southeast Asian and Russian financial crises, what went wrong and why the fiscal position of governments became vulnerable. Appendix II examines the risks that public debt managers should identify, monitor and control. Appendix III examines the role that vulnerability indicators could have in identifying deteriorating economic conditions that could ultimately impact on the fiscal position of governments. The proposed set of indicators could be used by debt managers to identify potential weaknesses in public debt strategies and to detect deteriorating private sector balance sheets. Finally, Appendix IV surveys recent initiatives aimed at improving transparency and data disclosure.

A. Easier Access to Capital Markets and Increased Risks

5. Many changes on both the supply and demand sides in domestic and international capital markets have caused capital availability to surge in the 1990s. Deeper domestic markets as well as new information technology and new sophisticated financial instruments have allowed the issuance of more debt. Other factors can explain the explosion in international lending, especially by emerging and developing economies: the decline in world interest rates that pushed investors to emerging markets offering higher return on investments, the improvement in credit rating as a result of external debt restructuring, deregulation and macro-economic structural reform, the perceived “stability” resulting from fixed exchange rate regimes, the internationalization of financial institutions, and access to syndicated bank lending. All these factors have led to a surge in private capital inflows (mostly short-term foreign denominated lending) to emerging and developing economies because of the perceived low risks with high return. China, Brazil, Mexico, Thailand and Indonesia

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- accounted for 50 percent of total world private capital inflow between 1990 and 1997 (Lopez-Mejia, 1999). In 1996, the outstanding stock of debt issued or guaranteed by developing or emerging economies was valued at \$1.5 trillion (25 percent of their total GNP, 300 percent of their foreign exchange reserves) (Cassard, Folkerts-Landay, 1997). This extraordinary volume of capital propelled economic booms and allowed for the financing of large current account deficits.
6. Debt managers in these countries are facing different capital market conditions. Because of the absence of deep and liquid capital markets capable of handling domestic borrowing instruments, many governments have little choice but to issue foreign denominated debt instruments, often without being able to appropriately hedge currency or interest rate risks.
 7. Because governments in developed economies have access to deep domestic capital markets, they will usually limit the issuance of foreign currency debt. For example, Canada, Denmark or New Zealand will borrow in foreign currencies only for foreign exchange reserve purposes. For governments in developed economies, the sophistication of domestic capital markets and the unqualified access to capital greatly reduces the exposure to risks and fiscal vulnerability.
 8. Greater access to capital through international financial markets has generated in many instances significant economic benefits such as growth, increased standard of living and reduced poverty. Capital markets susceptibility can however lead to instability under weakening economic conditions. Large capital flows can reverse suddenly. The Institute of International Finance reported that private capital flows to emerging market economies peaked at \$327 billion in 1996, then went down to \$260 billion in 1997 and \$152 billion in 1998 (Institute of International Finance, 1998, p. 7). Private capital leaving Korea in 1996-97 totalled more than US\$42 billion (9 percent of GDP), while Thailand lost US\$25 billion (15 percent of GDP) the same year. In 1995, capital outflow from Mexico exceeded US\$55 billion (12 percent of GDP) (Lopez-Mejia, table 2).
 9. Poor debt and risk management (including foreign exchange reserves management), poor data disclosure and weak supervisory functions in the financial services sector are

factors that may increase a government's fiscal vulnerability and sensitivity to economic shock. For example, large amounts of external public and private debt, especially short-term unhedged foreign denominated debt, can lead to greater financial risk exposure for governments. Many emerging and developing countries often finance their economic growth, large current account deficits, public expenditures and large public debt by tapping the capital flows to emerging economies. Recent financial crises have shown that the financing can sometimes occur under weak fiscal and monetary conditions and weakening fundamentals in the banking sector.

10. Despite these common weaknesses, emerging and developing economies are able to attract capital because they often operate under fixed or pegged exchange rate regimes. These regimes give investors the impression that they are transferring the exchange rate volatility risk to the government. However fixed or pegged exchange rate regimes can become unsustainable and become a target for speculative attacks if, for example, monetary policy does not show a strong commitment to low inflation, if the banking system has weaknesses or if the international reserves are considered insufficient. When under speculative attack, economies with large foreign denominated liabilities and operating under these exchange rate regimes can become very vulnerable. Fixed currency regime will often collapse suddenly, as shown in Mexico, Thailand and Russia. In December 1994, attacks on the pesos that drained the central bank international reserve led the Mexican government to abandon the fixed rate. As foreign capital was leaving Mexico, the government had difficulties in refinancing its public debt. Similar events took place in Thailand in 1997, and resulted in other currency devaluation in the region. In Russia, the currency devaluation combined with a severe fiscal imbalance made the situation worse. The most recent casualty is Turkey where the government abandoned the pegged lira in February 2001 after speculative attack.
11. Governments operating under floating exchange rate regime and lenders are not immune either, since a loss in market confidence will trigger exchange rate depreciation. If deemed desirable, monetary authorities may intervene using foreign exchange assets and/or increase interest rates to defend the currency. Hence a currency crisis could trigger an increase in domestic interest rates. Whatever the exchange rate regime, governments

especially those with large external public and private liabilities that are not hedged appropriately could experience significant increases in debt-servicing costs and difficulty accessing international capital markets (see Calvo, 2000). Financial market will judge the appropriateness of the exchange rate regime based on its credibility. As long as the fiscal policy is sustainable, that the banking system is supervised and regulated appropriately, that the monetary policy is credible, and that enough international reserves are available, the vulnerability to large external shocks should be minimal (see Edwards, 2000a).

B. Implications of Recent Financial Crises for Debt Managers

12. Throughout the world over the last 25 years, numerous financial crises have affected governments' ability to repay their debts leading to budgetary difficulties and to economic disruptions. These crises had large negative consequences such as reduced growth rate, increase poverty, political instability, social unrest ... The recent financial crises in Mexico (1994-95), southeast Asia (1997) and Russia (1998) brought extensive economic dislocation, fiscal hardships and liquidity problems for these governments and others around the world (see Exhibits 1, 2 and 3 in Appendix I). The perceived robustness of these governments' fiscal condition proved to be insufficient when they were faced with unexpected large negative shock. In Brazil and some Southeast Asian countries, governments were forced to refinance maturing debt -- a good proportion of which was short-term foreign denominated debt with low coupon rates -- at much higher interest rates. Forced to refinance under deteriorating economic conditions (for example, higher interest rates, depreciated domestic currencies, collapse of the banking sector, lender strikes), the fiscal vulnerability of these governments increased significantly. For example, as of mid-1999, the Korean government had spent close to US\$ 39 billion to recapitalize failing financial institutions and to purchase non-performing loans. The budgetary costs (that is interests paid on bonds issued by the government to finance this rescue operation) amounted to US\$ 7 billion (IMF, 1999, p. 75). A three-year recession in Argentina has led to the most recent financial crisis. Because more than US\$ 50 billion in debt instruments were

coming due in 2006 creating liquidity problems, the government announced in May 2001 that it would offer a US\$ 66.7 billion bond swap maturing up to year 2031 to holders of publicly traded pesos or dollars denominated debt in order to ease funding pressure. While easing debt repayments, this action will result in higher debt-service payments because Argentina will have to offer higher return on the new debt instruments in order to compensate bondholders for the increased risk of holding longer-term securities and for the transaction costs. More recently, foreign investors became nervous because of the potential risk of default and the contagion effect this could have on neighbouring countries.

13. The combination of global risk-averse capital markets with national vulnerabilities can create difficulties for public debt managers. The origins of the shocks will vary from country to country. They can come from domestic macro-economic imbalances such as unsustainable budgetary policies, poor economic performance lowering government revenues, unsound monetary and exchange rate policies leading to a depreciating currency or mismatch in private sector's asset-liability resulting in expensive government bail-outs. The shocks can also be exogenous. External shocks such as increasing international interest rates that impacts on public debt charges, depreciating world commodity prices that lead to balance of payment difficulties, depreciating currency or simply contagion from a neighbouring country can all make a government's fiscal position vulnerable.
14. The quality of public debt management practices will influence a government fiscal vulnerability and sensitivity to shocks. If a government's public debt management strategy does not give sufficient attention to risks and costs and to potential macroeconomic and financial weaknesses, it could have difficulties facing debt servicing obligations. Policy makers must pay particular attention to delicate balance between minimizing debt servicing charges and minimizing exposure to risks such as refinancing and market risks. Debt managers must identify and recommend sound public debt policies in order to protect their government's bottom line. This recommendation must be based on sound risk management practices. Hence debt managers should manage the public debt according to

the likelihood that certain events will take place and the likely consequences and costs that these events could have on their government's fiscal position. Debt managers should strike for affordable strategies that will reduce the fiscal exposure to risks of their government.

15. When setting public debt strategies, managers would benefit from keeping in mind likely pessimistic scenario - events during which, if they became reality, unsound and fragile debt strategies could damage the government fiscal position. *The economic fundamentals and the financial state of the assets and liabilities of the economy (the public (including contingent liabilities) and private sector balance sheets) will affect a government's fiscal condition and its ability to service its public debt.* Therefore public debt managers should not plan in isolation by assuming that the debt they are responsible to manage is insulated from economic shocks and private sector liabilities.
16. Political, economic and institutional conditions will influence the way public debt is managed and debt managers will operate differently according to the risk and cost environment they face. For example, there is an inverse relationship between the size of an economy and its vulnerability. Emerging and developing economies with less developed domestic financial markets, limited access to international capital and less diversified economies are likely more vulnerable and exposed to economic shocks, including contagion from neighbouring countries. Debt managers operating in this type of unfriendly environment must be astute.

i. Emerging and developing economies

17. Given the implications of the recent financial crises and the complexity of capital markets, debt managers in emerging and developing economies may wish to consider strategies aimed at reducing fiscal vulnerability. Hence when seeking a balance between costs and risks, it could be argued that debt managers would benefit from leaning toward minimizing risks as much as can be afforded. Appendix II list the risks that should be managed by debt managers including among others: rollover risk, liquidity risk and market risks associated to currency fluctuations and interest rate variations.

18. A trade-off between minimizing risks and minimizing costs must be established. Minimizing risks and minimizing costs can be expensive. Long average-term maturity debt reduces risks but can be very costly if the yield curve is shaped positively. Short average-term maturity foreign denominated debt is appealing from a debt servicing cost perspective but can be very risky and increase a government's fiscal vulnerability. Relying too much on floating-rate securities or short-term instruments even if they are cheaper, might increase vulnerability because of the impact that higher interest rates could have on debt servicing costs. Maintaining low foreign exchange reserves could also impact negatively on the government by increasing the risk of default in time of crisis. In January 2000, the new Ukraine government was facing a US\$ 3 billion debt servicing burden armed with only US \$ 1 billion in foreign exchange reserves. Minimizing debt services charges without due regard to risk can be more onerous, considering the economic consequences of unforeseen shocks. In the case of emerging and developing economies, it may be worth paying more in debt service charges to create a debt structure that protects the government's fiscal balance.

19. Debt managers may benefit from planning for the worst-case scenario, including the impact that potential contingent liabilities could have on their government's financial position. Pessimistic planning will ensure that a sufficiently large cushion (such as foreign exchange reserves) against adverse shocks and an appropriate debt maturity profile are in place. As recently argued:

Manage your off-balance sheet as well as your on-balance sheet exposure. Emerging and advanced economies alike have seen how bad banks and/or poorly designed bank safety nets can lead to large costs to the public sector and an unexpected weakening of the government's own balance sheet. Other sovereign guarantees of private borrowing can have a similar impact. That is why sovereign debt itself should be managed with an eye on the sovereign's contingent liabilities. (Geithner, 1999)

20. Another strategy that public debt managers may want to consider is tapping domestic capital markets as much as

possible. Borrowing on foreign markets, using unhedged foreign-denominated debt instruments, could be unwise because of the risks and the potential consequences. When exchange rates depreciate, unhedged foreign-currency denominated debt instruments could significantly increase the government's liabilities and vulnerability (for example, risk of default) as the debt matures and is rolled over. Therefore what might be perceived as a sound debt strategy that minimizes debt servicing costs could be an unwise decision under degrading market conditions. If domestic capital markets are limited and massive foreign currency borrowing unavoidable, debt managers would be well advised to control currency risk by entering, if possible, into derivative instruments to mitigate currency fluctuations. However, because of the nature and complexity of derivative instruments, debt managers should be advised that poorly designed risk mitigation program can actually have the reverse effect and further increase exposure to risk.

21. Furthermore, considering the government's dominant role as an issuer in the domestic market of these economies, debt managers must pay attention to how it approaches the market and be careful with opportunistic behaviour.

ii. Developed economies

22. In the case of developed economies with efficient domestic capital market, with unlimited access to capital market and where the macro-economic conditions are sound, debt strategies face less pressure and are unlikely to collapse unless extraordinary abnormal market conditions occur. In a report on debt management, the Office of the Auditor General of Canada observed in April 2000 that despite a rapidly improving fiscal situation, the Government of Canada had decided to increase the fixed-rate portion of its debt. At the same time, the government also substantially increased the size of the foreign exchange reserves. The report concluded that the government should review its debt structure to determine whether, in light of the changing fiscal, economic and political environment, that debt structure still remained valid. In an environment of declining debt (and positively shaped yield curve) it might be irrational to lengthen the average maturity. A more appropriate strategy might be to shorten the average maturity as the debt is paid down. It might be unwise for policy makers to recommend a

public debt portfolio that maximizes unnecessarily robustness at the expense of larger debt servicing costs.

C. Potential Roles for SAIs: Promote Good Principles and Practices

23. Recent events and the globalization of capital markets have heightened the need for sound public debt and risk management practices to better protect the governments' budgetary positions. SAIs may wish to play an active role in protecting the financial condition of governments by promoting the need for sound public debt strategies and risk management practices, data disclosure policies and effective supervisory-regulatory regime for the banking sector so that the risks associated with future obligations and claims of the public sector as well as possible contingent obligations arising from the private sector can be minimized. SAIs should act within their legal authority when adopting these roles. Furthermore, providing guidance is distinct from the auditor's traditional financial attest work, therefore SAIs will not be able to provide the same level of assurance.
24. More specifically, through performance audits of debt management practices:
1. SAIs may wish to play an active role in protecting the financial condition of governments by helping to ensure that sound and robust public debt practices are in place.
 2. SAIs could encourage governments to focus more on vulnerability monitoring and give high priority to risk management.

SAIs could also encourage data disclosure and promote the need for a proper regulatory and supervisory framework to be adopted for the financial services sector. Hence,

3. SAIs may wish to encourage governments to produce better financial information and publish key debt information in order to assess their financial vulnerability and exposure. SAIs may wish to assess how well governments perform in the release of data disclosure. Finally, SAIs may wish to encourage their government to adhere to the international initiatives aimed at improving statistics disclosure and data requirements.

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4. SAIs may wish to encourage governments to ensure that regulators and supervisors in the financial services sector adopt practices that comply with international standards, since a more robust financial services sector will in turn reduce the vulnerability of the public debt to events affecting the private sector balance sheet.

i. Role for SAIs: Promoting Sound Public Debt and Risk Management Practices

25. Through financial and performance audits, SAIs may wish to encourage the adoption of sound and robust public debt strategies and proper risk management practices. The debt strategy recommended to senior officials for approval should be based on a delicate trade-off between costs and benefits and must have been reached by using forward-looking tools and risks analysis. Not only can sound debt strategies and practices contribute to reduce fiscal vulnerability but also lower interest charges in the long term, which can have a positive impact on debt sustainability. Good debt strategies can also impact on the efficiency of capital markets (e.g. improved liquidity should reduce interest rate spreads).
26. To help governments and debt authorities put in place sound and robust debt strategies, the IMF and the World Bank have developed guidelines for sound practices in sovereign debt and liquidity management. The two organizations have co-operated in the development of broad principles to help governments to improve the quality of their debt management policy and to reduce their financial vulnerability (see IMF, 2001a). The proposal is not a one-size-fits-all approach. It is a compendium of agreed-upon public debt management practices for which there is convergence of what is considered prudent and desirable debt practices such as the setting of clear debt management objectives; the separation and co-ordination of debt and monetary management; limited debt expansion; clear delegation, transparency and accountability; and the establishment of benchmarks relating to currency composition, duration and maturity, etc. SAIs could wish to encourage their government to consider the value of these best practices approach for their debt management strategies.

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27. SAIs could also encourage practices to ensure that fiscal authorities are aware of the impact economic shocks could have on their government balance sheet and on public debt charges.
 28. SAIs could also encourage debt management authorities to give a high priority to sound risk management practices. A government's debt portfolio is often the largest financial portfolio in the country and can generate substantial risk to an economy's balance sheet and to a country's financial stability. Public debt managers should be expected to identify, monitor and control risks. Debt managers should watch for deteriorating economic fundamentals and review the debt strategies accordingly. In order to identify and monitor signs of deteriorating market conditions vulnerability indicators could be used. Appendix III discusses in detail their potential role.
 29. Debt managers should be expected to take into account not only the public debt environment in which they operate but also the overall economic environment. In an environment where governments are susceptible to contagion and large external shocks, and considering the impact the public debt portfolio can have on the overall economy, the issue of risk management is particularly important. This means taking into consideration the economic and financial risks to which the government and the other sectors of the economy are exposed (for example an asset-liability mismatch in the banking sector). Hence debt managers could identify strategies that will not only minimize costs and but also risks and the associated consequences that risky events could have. To measure the consequences of financial distress and monitor risks, debt managers can use forward-looking risk management techniques. Stress testing is an essential tool for simulating the degree of robustness of a government's debt strategy under adverse market conditions. It should be used to test scenarios that are extreme but possible. The impact on debt management of events, such as foreign exchange reserve losses due to exchange-rate variation, a capital flight due to a meltdown of the banking system, or different debt maturity structure can all be analyzed. Cost at Risk (CaR) is an important financial tool with which the

variability of debt service charges within a given confidence interval can be measured. The result is the probability that debt charges will not exceed a given threshold in a given year. When managed properly financial derivatives such as interest rate and cross-currency swaps are risk management tools that can reduce overall risk exposure. Complex financial instruments, they can increase exposure to risk if governed by inappropriate governance systems (e.g. ineffective risk limits). Together, all these techniques should allow public debt managers to identify, monitor and control risks and to put in place appropriate debt strategies. Better managed risks should safeguard against unforeseen events and protect the government fiscal position.

30. Sound debt management and risk management strategies are essential for protecting a government's fiscal position. Weakening market conditions that are not apparent today may erode the sovereignty of a government and limit its ability to respond to future policy challenge. Sound strategies and risk management should ensure that debt obligations are managed properly and orderly without too much fiscal stress on the budgetary position of the government.

ii. Role for SAIs: To Encourage Improved Data Disclosure and Best Practices Approaches

31. Financial crises in Russia, Southeast Asia and Brazil have shown how poorly risks had been assessed, monitored and controlled. Unreliable financial and economic data is partly to blame. Market participants and policy makers had difficulty assessing the financial vulnerability of the economies and of their government because of the limited set of data. As mentioned by Arthur Levitt, "A global economy demands that investors have confidence in financial numbers on a global basis" (Lewitt, 1999). Enhanced transparency should translate into a better functioning capital market place.
32. Good information, sound financial reporting and transparency are fundamental prerequisite to vulnerability assessment. The establishment of sound debt and risk management will be eased if quality government and economy-wide data is available. For example, the size of the foreign exchange reserves is sometimes

misreported and turns out to be lower than anticipated (as was the case of Korea, Thailand and Malaysia). A number of initiatives led by international organisations such as the IMF and the Bank for International Settlements that have been undertaken should set new disclosure standards and data requirements (see appendix IV). These initiatives should also contribute to the pursuit of sound macroeconomic policies.

33. Improved transparency and data dissemination could lead to improved debt management strategies, reduced fiscal vulnerability and strengthened international financial systems. Informed decision making in the public and private sectors should improve the functioning of global financial markets. With better information and accurate data, investors, policy makers, regulators and debt managers could be better equipped to assess vulnerability. They could be able to better assess the risks inherent in capital flows, international reserves, public debt and external debt (defined simply as an economy's total liabilities to the rest of the world -- see footnote 2 in Table 2).

34. Good public financial reporting practices will improve the accountability regime of governments and reduce their fiscal vulnerability. Hence it is believed that SAIs should, within the limits of their authority, scope and conduct audits that encourage their government to produce credible, timely and reliable information relative to the public debt and other economic data to assess fiscal vulnerability. More specifically, SAIs may wish to encourage governments to publish leading indicators on the size of the external debt, public debt structure (maturity, duration, fixed-floating ratio and currency composition) and detailed reporting on reserve assets (including liquidity level and foreign exchange position) and capital movements. SAIs could assess how well governments perform in the release of data disclosure.

iii. Role for SAIs: Promoting the Need for a Proper Regulatory and Supervisory Framework for the Banking Industry.

35. Deteriorating fundamentals in the financial services sector can impact on a sovereign's fiscal vulnerability, especially in emerging and developing economies. Hence they can become important

factors that can lead to financial crises. These financial institutions are particularly vulnerable because they are often highly leveraged, assets and liabilities (including foreign-currency maturity) are often mismatched, weak risk management practices are sometimes in place and weak regulatory and supervisory frameworks are common. In addition, because of dangerous dynamic associated with the “too-big-to-fail” principle (i.e. the implicit safety net that financial institutions would not be allowed to fail) excessive risks are sometimes undertaken.

36. In an economy, where corporations’ balance sheets are deteriorating and excessively leveraged private corporations, such as large financial institutions, are failing, the government’s balance sheet can suffer enormous fiscal loss if safety nets are provided. As stated by Standard & Poor’s: “Systemic crises often are a sizeable fiscal burden; when banks fail, governments frequently provide liquidity and back deposits, assume bad loans, and inject equity capital.” (Standard & Poor’s, December 1997) Furthermore,

The direct fiscal cost of financial assistance to a distressed banking system, as well as the indirect cost to the real economy, can be high. The size of those costs is a function of the likely level of systemic distress (in the financial sector) and the size of the financial system relative to a country’s output. (Standard & Poor’s, September 1998).

37. Public bail-out costs have been reported to be very significant.

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The public-sector bail-out costs of resolving banking crises in developing countries (between 1980 and 1995) have been estimated at around \$ 250 billion. In more than a dozen of these banking crises, the public-sector resolution costs amounted to 10 percent or more of the country’s GDP. ...The cost of bank recapitalization for the countries most affected in the on-going Asian financial crisis is expected to be huge -- on the order of 58 percent of GDP for Indonesia, 30 percent for Thailand, 16 percent for South Korea, and 10 percent of GDP for Malaysia. (Goldstein 2000, p.1)

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38. To reduce the likelihood of financial crises, banking regulators could establish strong oversight functions for the financial services sector. A strong and effective regime could limit excessive risk taking and favour good governance practices for example. An effective supervisory regime could also include ensuring that financial statements produced by the financial sector are truly representative. Hence, for emerging and developing economies, when assessing a government's fiscal vulnerability, one of the most important judgment calls that has to be made is on the quality of the supervisory and regulatory framework relating to the financial services sector and how the banking sector could impact on the public debt.
39. Degrading asset quality in the balance sheets and sudden capital outflows will often surprise off-guard supervisors. The rapid credit growth in a lending boom will stretch the resources of the banking supervisory function. Recent financial crises in Southeast Asia and Russia can all be linked to poor oversight of the financial services sector, not just to poor data disclosure. It is worth noting that "the noncrisis countries in east Asia, Singapore, Hong Kong and Taiwan had very strong supervisory prudential supervision" (Mishkin, 2000, p. 9).
40. Numerous international organisations, agencies, working groups have been developing guidelines, best practices, and enhanced disclosure requirements as to how international financial stability might be improved. For example, the Basel Committee on Banking Supervision issued in 1997 the Basle Core Principles for Effective Banking. They are intended to serve as a basic reference for supervisory authorities to apply in the supervision of all financial institutions within their jurisdiction. In 1999, the Financial Stability Forum was established by the G-7 Ministers of Finance to strengthen co-operation among the international organisations involved in financial regulation and oversight such as the IMF, the World Bank, the International Federation of Accountants and the International Accounting Standards Committee. The Forum should promote international financial stability through the exchange of information and co-operation on international supervision. The same year, the IMF and the World Bank, introduced the Financial Sector Assessment Program. The program seeks to identify strength and weaknesses of a country's financial sector as well as review risk management practices.

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41. It could be argued that the recent financial crises could have been at least lessened had there been a stronger regulatory framework and better surveillance in the financial sector resulting in better governance practices of capital flows and lending practices and more transparent financial systems, including accurate financial statements.
 42. Hence, through performance audits, SAIs may wish to encourage governments to introduce better supervisory and regulatory functions in the financial sector. SAIs could promote the need for national banking regulators and supervisors to carefully consider the adoption of principles, practices and guidelines being developed and to respond positively to compliance assessment reports. It is believed that the widespread adoption of internationally accepted standards and practices dealing for example, with risk management, disclosure and transparency requirements governance, business ethics, and accounting standards could contribute to the well-functioning of financial markets, and could lead to stronger international financial systems. While promoting international financial stability, improving the functioning of markets and reducing systemic risk, these initiatives, if successful could reduce governments' fiscal vulnerability.

Conclusion

43. Recent events have proven that economic vulnerability and globalized financial markets can be an explosive combination. Sound budgetary policies leading to lower public debt to GDP ratio might not be sufficient to guard a government's fiscal position against economic shocks. The Mexican crisis illustrates that, despite healthy budgetary indicators, insulating the debt against adverse shocks is important. As argued by Cassard and Folkerts-Landay:

Mexico's public debt was relatively low by OECD standards – 51 percent of GDP, compared with an average of 71 percent for the OECD countries. The Mexican crisis underscored the difficulty and cost of refinancing a substantial volume of foreign currency debt maturing in turbulent foreign exchange markets. The Mexican economy's vulnerability to a financial crisis was

exacerbated by the fact that Mexico's foreign exchange reserves totalled \$6.3 billion at the end of 1994 and that tesobonos (short-term securities indexed to the dollar) worth \$29 billion were due to mature in 1995. (Cassard and Folkerts-Landay, 1997)

44. Recent financial crises have shown that the fiscal conditions of governments could not only be vulnerable to traditional shortcomings such as growing deficit or trade imbalances but also to the impact that volatile capital markets can have on public and private debt. Recent history provides many examples of emerging and developing countries with fixed exchange rates and large amounts of short-term debt that witnessed a sharp reversal of capital flow and sharp depreciation in asset prices, while at the same time the financial services sector collapsed. It is difficult to properly manage a sovereign debt in that type of volatile and risky financial environment where, for example, private sector liabilities can become public sector liabilities, threatening fiscal accounts.
45. This paper has shown why poor public debt management under degrading market conditions can lead to public finance weaknesses and fiscal vulnerability. Hence robust debt strategies and proper risk management could increase the ability of the economies and of their governments to withstand shocks.
46. For governments in emerging and developing economies proper debt and risk management practices could include keeping large foreign exchange reserves relative to the total external liabilities in the economy, reducing rollover risk by increasing long-term debt, lengthening the average term to maturity and issuing domestic currency debt while relying less on foreign borrowing. It is clear that the introduction of new debt management and risk management practices could be challenging for these countries because of factors such as weak monetary and exchange rate policy and limited access to foreign and domestic capital markets.
47. SAIs could, within the limits of their authority, play a role in ensuring that government's fiscal positions are less vulnerable by conducting performance audits that promote best practices in debt and risk management.

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48. Access to accurate and complete financial and economic information could also lead to reduced fiscal vulnerability. Recent initiatives (in the areas of fiscal policy transparency, monetary and financial policy transparency, data dissemination) could be very useful in these regards. SAIs could play a role in promoting the need for proper data dissemination and increased transparency. The publication of credible, reliable and accurate data on public debt, external debt, capital flows and liquidity level could reduce fiscal vulnerability.
49. Finally, SAIs through areas they chose to audit and the way they conduct these audits could encourage governments to strengthen as much as possible the regulatory and supervisory regime for the financial services sector, since this sector can be a significant source of fiscal vulnerability. This is especially true in emerging and developing economies. As stated by the IMF "...The public sector has a special role to play in ensuring that it creates or maintains conditions for sound risk management in other sectors." (IMF, 2000b, parag. 76). It is believed that role extends to SAIs. They could promote the need to identify, measure and monitor risks in the banking sector. Reversal in capital flows and collapses in the financial services sector can seriously damage the fiscal position of governments. Improved banking supervisory functions could allow government to better monitor short-term capital flows and assess asset-liability mismatch. Sound regulatory functions could help ensuring that the financial statements produced by the financial services institutions are accurate and that proper governance practices are in place. Maybe fiscal vulnerability could be reduced if governments adhered to the proposed "best practices" being developed for the banking sector through a number of international initiatives.
50. SAIs could play a catalyst role in all these areas. Their audit work could maybe encourage their governments to adhere to and participate to international initiatives, which could lead to increased transparency, improved reporting, better risk assessment and debt management practices and ultimately to a better functioning market place and reduced fiscal vulnerability.
51. We will conclude with two points of caution. Even though SAIs could promote sound practices to strengthen debt

management capability and reduce fiscal vulnerability, sound debt management should not be seen as a panacea for unsound fiscal and monetary policies. There is a limit to what debt and risk management practices can achieve if faced with the wrong macro-economic fundamentals. Furthermore, there could be occasions where international financial institutions interventions could sometimes translate into market failure. By reducing the probability of financial losses or the magnitude of the losses, governments will sometime avoid taking preventive actions. Even though, in such difficult environment SAIs' influence can be somewhat limited, it nevertheless remain important for SAIs to encourage as much as possible the adoption of practices and strategies that will reduce fiscal vulnerability.

Appendix I - Recent Financial Crises

Exhibit 1

1994-95 Financial Crisis in Mexico

1. The loss of confidence in Mexico's economic potential and payments capacity and the abrupt halt of capital inflows brought as a result of the devalued peso in December 1994 precipitated the Mexican economy into a financial crisis. During the meltdown, vulnerable debt strategies threatened Mexico's public finances. It appears that debt managers did not properly incorporate weakening economic fundamentals into their debt strategy.
2. The Mexican government had embarked on profound economic changes starting in the mid-1980s. It liberalized the trade sector, adopted an economic stabilization plan and introduced market-oriented policies. Following these reforms, the financial position of the government started to improve, growth increased substantially, inflation lowered and foreign investments brought in large capital inflows. The investors believed the economic fundamentals were strong and sustainable. A significant proportion of the capital inflows were in the form of equity and liquid short-term debt securities (for example, cetes - - short-term, peso-denominated government notes, tesobonos - - short-term, dollar-indexed peso-denominated securities), and not in the form of fixed assets. Mexico's mounting current account deficit was financed by the large influx of foreign capital.
3. Improved economic expectations, lower domestic public debt, a phenomenal international availability of securitized debt and a boom in the real estate market all contributed to the surperabundance of capital. In early 1994, with the first sign of economic slowdown, non-performing loans started to appear. The recently privatized banking sector simply could not handle properly the credit expansion and had not put in place proper credit lending policies (asset-liability mismatch, liquid liability structure, lack of qualified personnel, poor risk management, improper capitalization). Poor banking supervision appear to have exacerbated the market weaknesses.
4. In 1994, the up-rise in Chiapas in January, the assassination of a presidential candidate in March and of the secretary general of the PRI in September eroded investors' confidence. As well, the continued increases in U.S. real interest rates put downward pressure on the peso and made Mexican debt securities less attractive to investors. Rather than reduce expenditures, devalue the peso or further increase the interest rate to continue attracting investments, the government increased the issuance of tesobonos to finance a current account deficit, even though the sustainability of the exchange rate policy was in doubt. Throughout the year, interest rates in the U.S. increased substantially, making tesobonos less and less attractive to investors.
5. In December 1994, there was an important overvaluation of the peso and the government revealed that a larger current account deficit was projected for 1995. Mexico's foreign exchange reserves had fallen to US\$12.5 billion, while US\$30 billion tesobonos were due to mature in 1995. (GAO, 1996, p. 6)

6. As investors lost confidence and redeemed their securities, the Mexican international reserve continued to drop. The peso/U.S dollar exchange band was abandoned. There was now growing fear that the government might default on its dollar-indexed and dollar-denominated debt. As the redemption of tesobonos accelerated, investors started to realize that foreign exchange reserves might be insufficient. The financial crisis that had been germinating in Mexico was unavoidable.
7. With the devaluation of the peso, the loss of confidence and the financial crisis that followed led to a surge in inflation and in interest rates. The crisis propagated to other emerging markets (such as Brazil and Argentina) as the capital inflows declined in Latin America. Risk premiums on developing countries' bonds increased, the stock market fell sharply and currency pressure was felt.
8. While the Mexican economy collapsed, the public debt service charges denominated in domestic and foreign currency increased. In addition, the government faced rollover difficulties because of the large proportion of short-term debt held by nervous foreigners exiting the country.
9. Maybe more transparent and credible information and a closer examination by debt managers of weakening economic fundamentals could have reduced the government's fiscal vulnerability. This information could have been used by policy makers to better insulate the government's fiscal position. Sound and appropriate risk management practices could have guided debt managers in designing a more robust debt strategy that could have reduced the government's vulnerability.

Exhibit 2

1997 Southeast Asian Crisis

1. The financial system crisis that started in southeast Asia (mainly South Korea, Indonesia, Thailand and later in Malaysia and the Philippines - (KITMP)) propagated into a global crisis. It hit the world financial community with very little notice. A huge reversal of capital flows plunged the region's economy into a deep crisis. After a rapid liberalization of the financial sector in the late 1980s and early 1990s, the region profited from unprecedented economic growth. Net capital flows to KITMP jumped from \$38 billion in 1994 to U.S. \$ 97 billion in 1996 (Radelet, Sachs).
2. The explanations for this large inflow of capital are numerous: they include investment by Japanese, U.S. and European banks tempted by a high projected rate of return, Asian leaders pushing their economic development plans without regard for economic fundamentals, and the appearance of international financial centres, among other factors. At one point, the World Bank claimed that Asia needed US\$1 trillion worth of investment in infrastructure (Wong, 1999, p. 393).

3. However, in this new market-based financial service environment, KITMP did not develop sufficient capacity to adapt and manage capital inflows properly. Outdated banking rules, poor risk management and weak supervision may have left these economies unprepared to deal with the capital flood. Financial institutions had little experience in asset management. Many were making the same mistake of having unhedged foreign currency exposure. Investment funds were misallocated and institutions ended up with excessive currency exposure and maturity mismatch. Corrupt practices seemed to have further magnified the banking weaknesses, all of which later proved fatal.
4. Deteriorating fundamentals were first noticed in 1995 when growing foreign competition affected particular East Asian export sectors. The appreciation of the U.S. dollar and of European currencies led to a decline in export prices and raised the debt burden.
5. More financial imbalances became apparent in the summer of 1997. Foreign creditors were providing short-term loans to finance long-term infrastructure and industrial and real estate projects. For years, creditors extended loans without adequately assessing credit risk. The Asian economies became more and more vulnerable as capital markets realized that excesses had been built up as a result of the poor investment decisions. The asset-liability maturity mismatch became intolerable. Similar to the situation in Mexico two years prior, short-term external debt exceeded available foreign exchange reserves.
6. Having second thoughts and realizing that asset quality was rapidly deteriorating, foreign lenders exited the country en masse by withdrawing short-term lines of credit, while domestic investors took their capital to offshore locations.
7. As argued by Timothy Geithner: "Weaknesses in the sovereign's own balance sheet were not the central source of vulnerability. ... (It) stemmed from the unhedged short-term foreign currency liabilities of banks, finance companies and individual firms in various combinations. When the exchange rate first dropped off the cliff, there was a generalized, reinforcing rush for the exit as firms rushed for cover."
8. The inflows suddenly reversed, with net private capital turning to an outflow of US\$12 billion. Radeket and Sachs have explained the sudden reversal in capital flows:

One reason that such a large amount of capital was able to leave so quickly was that a substantial portion was structured with very short-term maturities. In each of the severely hit economies, short-term foreign exchange liabilities of the economy grew in excess of short-term foreign exchange assets of the economy, leaving the economy vulnerable to liquidity problems in the event of a sudden withdrawal of foreign capital. ... Foreign lenders had made short-term loans under the assumption that they would routinely roll over such loans in the future. (Radeket and Sachs, 1999)

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9. By withdrawing the capital, foreign lenders put additional pressure on foreign exchange reserves. Because these economies were operating on pegged exchange rates, a panic by domestic and foreign investors depleted the exchange reserves further and faster, thereby precipitating the regional economies into a financial crisis.
 10. The Southeast Asian crisis is a prime example of how weaknesses in the private sector balance sheet can impact on a sovereign's balance sheet. For example, at the end, the South Korean government was forced to guarantee the bank's foreign currency liability. Because of the escalating cost of supporting the banking sector, the run on Korea's banks was transformed into a run on Korea's reserves. The same phenomenon occurred in Thailand when the government intervened. The Asian financial crisis shows why public debt manager must go beyond governments' obligations and assets. As shown here, in emerging and developing economies, deteriorating private sector balance sheet can impact on a government bottom line and increase its fiscal vulnerability.

Exhibit 3

1998 Russian Crisis

1. After the breakdown of the Soviet Union in 1991, the Russian government started to transform its economy. It faced numerous challenges such as low government revenues, an inefficient tax collection system and high expenditures. At the same time, the economic fundamentals were not very good, with a high inflation, negative growth, high unemployment and low productivity.
2. To reduce inflation, the central bank pegged the ruble to the U.S. dollar. Following the Southeast Asian crisis in 1997, the depreciation of commodity prices and energy prices had negative consequences on Russia's trade balance and the government's fiscal position. To finance its budget deficit, the government borrowed capital on both the domestic and the foreign market while little efforts were undertaken to improve the fiscal position. Thus it started to borrow more in Eurobonds denominated in U.S. dollars in order to finance its operation, increasing foreign exchange risks.
3. Debt-servicing costs totalled almost half of tax revenues (*Euromoney*, September 1998). Furthermore, the short average term to maturity of the domestic debt and the exposure to foreign capital made Russia extremely vulnerable. The short-term characteristic of the debt portfolio exposed the government's to interest rate risks.

Although the debt share in Russian GDP was not very high in comparison with other countries, the debt structure turned out to be unfavourable due to the high portion of short-term liabilities. It resulted in a significant increase in debt-servicing payments

that grew from 16% of the federal budget expenses in 1996 to 28% in 1997. (Strategic Advisor, September 1998)

4. The contagion created by the financial collapse in Southeast Asia led investors to become more risk averse. Foreign capital started exiting Russia for safer investment and speculation on the ruble started after the central bank was forced to abandon its exchange rate peg.
5. In the aftermath of the Southeast Asia crisis, the Russian government started having difficulties rolling over and issuing new debt. The financial situation in Russia was further aggravated by depleting foreign exchange reserves – the country was losing US\$2 billion a week in foreign exchange reserves (*Euromoney*, September 1998) -- and deteriorating trade balances led to severe problems with foreign currency debt charges. In August 1998, the government announced that it would default on the short-term domestic treasury debt (one third of which was held by foreigners) as well as Paris Club and London Club debts. The Russian government defaulted on the ruble-denominated debt because a substantial portion was held by non-residents desperate to reduce their holdings.
6. The negative consequences of these actions were significant. As a result of its default, Russia suddenly cut itself off from domestic and external capital markets. “The government, therefore, crippled the real economy, generated intense inflationary pressures, and sharply raised the default risk on its foreign currency debt.” (Standard & Poor’s, December 1998)
7. A few weeks before the loan default, the government was capable of issuing a US\$4.8 billion 30-year Eurobond. Even though market conditions were deteriorating, offshore markets were assuming that more IMF money was coming. Also, a few weeks before the loan default was announced, one could read: « Although the overall debt numbers are not bad -- the total stock of debt is a comfortable 50% of GDP, and some 60% of this, or 30% of GDP, is foreign-currency-denominated debt -- the portfolio is unstable and requires restructuring» (*Euromoney*, August 1998). Had debt managers better managed the Russian public debt, the financial condition of the government would have been better insulated.
8. It appears that because Russia relied excessively on short-term domestic debt, the fiscal position of the government was susceptible to collapse. Over 25 percent of Russia’s debt fell due or was repriced within one year (*Euromoney*, August 1998). In addition, longer-term Russian debt was reset against GKO (Russian bill) yields on a six-month basis, and a significant proportion of foreign debt was floating-rate paper. The debt strategies appeared weak in insulating the government against market risks, roll-over risks and liquidity risk. By the time the summer 1998 events unrolled, it was too late to review the debt strategy (such as extending maturity or increasing foreign exchange reserves) to provide cushion.

Appendix II — Glossary on Financial and Operational Risks

Debt managers will have to monitor and manage a number of financial and operational risks. The ability to put in place appropriate risk management practices will be a function of the sophistication of the domestic economy and of its ability to access capital markets abroad.

Rollover risk (or refinancing risk)

1. Any government with a large public debt could be exposed to capital market sentiments and possibly to refinancing difficulties. The inability to rollover maturing public debt at an affordable cost could lead to a financial crisis and to wide economic losses, as shown in Mexico and in Russia. Managing rollover risk is particularly important for emerging economies.
2. Governments in emerging and developing economies are particularly vulnerable to rollover difficulties, since they tend to borrow on the short end of the maturity structure with large benchmark issues in order to reduce the borrowing costs and to reap the immediate fiscal benefits of lower interest rates. This means that debt authorities must tap capital markets more frequently because of the short average maturity, sometimes in unfavourable market conditions. To have large refinancing needs concentrated in a short period when interest rates peak could translate in high rollover risk and result in higher debt charges. By focussing too much on minimizing short-term debt servicing costs and not enough on the likely consequences of degrading capital market conditions, debt managers could often jeopardize the budgetary position of their government.

Liquidity risk

3. Liquidity risk can be viewed as a broader definition of rollover risk since it related to cash and reserves adequacy. For example, it includes the problems associated with assets-liability mismatch. To have a maturity structure of assets that does not coincide with the maturity profile of the liabilities could translate into reduced liquidity. Cash might not be sufficient to cover financing

obligations. As a general principle, governments shall hold sufficient liquid assets to prudently meet operational requirements and have a prudent level of refinancing exposure.

4. There could be a point where debt cannot be rolled over, where capital is exiting an economy and where liquidity (for example, cash position or liquid foreign exchange reserves) run very low and where governments may default on their debt obligations. Venezuela defaulted on its local-currency-denominated debt in 1995. In August 1998, Russia decided to restructure its domestic debt (of which \$15 billion was held by foreigners), to suspend payment on private external debt and to devalue the ruble. According to a GAO study, “in 1995 alone, 36 countries were in default on some of their debt. All of these countries were either developing countries or countries that were part of the Soviet Union or Soviet-dominated Eastern Europe “ (USGAO, p. 17). Solvency crises will lead to high inflation, high unemployment rates, and a slowdown of the economy, as well as limited access to capital years after the crises.

Market risks

5. Borrowing will expose a government to market risks resulting from changes in market factors such as interest rates and exchange rates. For example, adverse movements in exchange rates, commodity prices or international interest rates could spell disaster for emerging and developing countries. For governments that have borrowed heavily on foreign capital markets the capacity to repay the foreign liabilities could be insufficient under deteriorating market conditions.
6. Recent examples of the impact that currency fluctuations and unfavourable interest rates have had not only on the public debt but also on an economy's external debts illustrate the need for debt managers to take into consideration the consequences associated with foreign exchange and interest rate risks. In the early 1980s, the debt servicing burdens of some countries in Africa, Southeast Asia and Latin America were severely affected by the U.S. dollar's appreciation, world-wide increase in interest rates, and declining commodity prices.

In the early 1980s, the debt servicing burdens of some countries in Africa, southeast Asia and Latin America were severely affected by the U.S. dollar appreciation, a world-wide increase in interest rates and a decline in commodity prices ... (S)everal Asian countries saw significant increases in their debt burden in the early 1990s because of their large, unhedged exposures to Japanese yen. A third of the increase in the dollar value of Indonesia's external debt between 1993 and 1995 ... was attributable to cross-currency movements.... At the time, 37 percent of Indonesia's external debt was denominated in yen, while about 90 percent of its export revenue (were) denominated in dollars (Cassard, Folkerts-Landay, 1997)

7. To monitor market risks forward-looking techniques such as scenario analyses (to estimate the sensitivity of the government's risk position to changes in market factor) and stress-testing (to test extreme movements) can be used. To control market risks and to reduce their vulnerability and exposure of the public debt to unforeseen events, governments can use derivative instruments. International derivative markets have grown in sophistication in recent years. Hedging foreign currency borrowing will reduce the impact of foreign currency fluctuations. This assumes that derivative markets are available in the domestic currency or in a closely correlated currency. Interest rate swaps can also be used to manage the debt's maturity structure. Both strategies will limit the volatility of debt service charges and insulate the government's fiscal position somewhat against unforeseen economic events.

Credit risk

8. Credit risk is associated with the risk a government could face through the non-performance of an issuer or of a counterparty to a transaction. For example, when managing the foreign exchange reserves, assets and liabilities will not only have to share similar characteristics such as term to maturity and currency but assets will have to be of high credit quality in order to minimize potential losses as a result of default.

Operational risk

9. Operational risk is the risk that deficiencies in debt management systems could lead to unexpected financial losses. For example, information system failure, human errors, procedural failure, errors in executing and recording transactions could trigger losses. Risk management guidelines (for example, defining acceptable legal risk and counterparty credit risk or establishing how assets and liabilities in the foreign exchange account are to be managed) will be of limited use without proper internal controls. Internal auditors should evaluate compliance with risk limits and the reliability and timeliness of information reported.

10. Debt managers operating in emerging and developing economies face much larger operational risks than those in developed economies. A less sophisticated debt-management system will usually not have the resources to ensure information systems and internal controls are guarding against deficiencies such as human error.

Appendix III — Risk Monitoring Could Include Early Warning Vulnerability Indicators

Introduction

1. Most market analysts and credit rating agencies did not see forthcoming the recent financial weaknesses in Mexico's and Southeast Asia's economies. Observers all over the world were taken by surprise as the crises unfold. Governments saw their fiscal condition degrade as the full impact of the economic shock unfold.
2. Fiscal vulnerability is the consequence of changes in economic fundamentals. Hence it is suggested that leading economic indicators of vulnerability to detect degrading conditions that could impact on the debt service costs and ultimately on the financial position of the government could be used to monitor signs of deteriorating market conditions. Early warning indicators are being developed and assessed by many economists. Indicators of financial vulnerability could maybe help public debt managers and lenders better assess the real financial situation of a government and its exposure to creditors as well as the robustness of its economy. Good indicators of vulnerability could allow lenders, borrowers and governments to foresee degrading market conditions that could have an impact on a government's fiscal condition. By monitoring changes in vulnerability indicators, one could maybe identify changes in economic fundamentals and foresee incoming market shocks and potential stress in the market place. Assuming it is determined that vulnerability indicators are good and effective predictors, SAIs could encourage governments to focus more on vulnerability monitoring.

1. Role of Vulnerability Indicators

3. Financial statements provide backward-looking information reporting past events. Even though the numbers on an audited financial statement may be reliable, they do not always provide a good assessment of the overall financial well-being and robustness of a government, especially in

the context of a financial crisis that could adversely affect the budgetary position. Thus by looking at a government's financial statement, it is very difficult to judge whether its fiscal position is sustainable and how vulnerable it is.

4. Even with standard economic indicators, one cannot easily monitor economic events that could impact on the fiscal vulnerability of governments. There is no doubt that the indicators such as debt to GDP, deficit to GDP, debt charges to revenues or tax revenues to GDP are important for measuring the financial condition of a government. Because they are static indicators that are primarily year-end cost based measures they may not be timely or comprehensive enough to fully signal deteriorating conditions. The prospective nature and scope of traditional indicators are somewhat limited. For example, while a government might reduce the size of its annual deficit, the debt to GDP ratio could continue to grow overtime. Thus, it can be argued that traditional debt and fiscal indicators alone can be of limited use when trying to identify deteriorating economic conditions and their consequences. As will be seen in section 2, other more powerful predictors of potential vulnerability could maybe be used to supplement traditional indicators.
5. The financial stability of a government will become vulnerable as the macro-economic fundamentals deteriorate. While a government's fiscal position could be considered healthy (for example, it might have a low debt to GDP ratio with a budgetary surplus position and low debt-servicing charges), that position could soon be jeopardized because of external events having large budgetary consequences. For example, lower public debt charges relative to revenues could be seen as a sigh of improvement and desirable from a fiscal point of view. However, lower interest charges might be symptomatic of a much larger potential problem. It might mean that debt strategies have focussed too much on minimizing costs rather than on paying more to create a debt structure that is insulated against negative shocks.
6. If one had used a set of traditional macroeconomic indicators, Southeast Asian countries would have appeared to be on a long path to prosperity (see table 1). Economic conditions

were good, fundamentals appeared healthy, inflation was low, projected real growth high, public debt was within carrying capacity and the fiscal situation relatively healthy. Some of the traditional indicators were unable to capture the first signs of over-leveraged economies, threatened assets and threatening liabilities.

Table 1 -- Example of traditional economic indicators unable to predict the looming Southeast Asian crises.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999 (1)
Indonesia										
Real GDP growth (forecast)							7.8	4.9	7.5	
Real GDP growth (actual)	9.00	8.90	7.20	7.30	7.50	8.20	8.00	4.60	-13.6	-3.9
Inflation	7.80	9.40	7.50	9.70	8.50	9.40	7.90	6.60	60.70	25.40
Central government balance/GDP	1.34	0.04	-1.15	-0.71	0.01	0.77	1.16	-0.67	-4.46	-6.48
Broad money growth	29.70	24.60	22.60	21.10	21.80	26.70	27.00	27.40	61.70	15.6
Private sector credit/GDP	46.10	45.80	45.S	48.90	51.90	53.50	55.40	61.00	51.60	...
Korea										
Real GDP growth (forecast)							7.1	5.5	6.3	
Real GDP growth (actual)	9.50	9.10	5.10	5.80	8.60	8.90	7.10	5.50	-5.5	2.00
Inflation	8.60	9.30	6.20	4.80	6.30	4.50	4.90	-4.4	7.50	1.80
Central government balance/GDP	-0.67	-1.62	-0.49	0.64	0.32	0.35	0.28	0.28	-3.78	-5.12
Broad money growth	17.20	21.90	14.90	16.60	18.70	15.60	15.8	14.10	25.20	.
Private sector credit/GDP	52.50	52.80	53.30	54.20	56.80	57.00	61.80	69.80	73.60	...
Malaysia										
Real GDP growth (forecast)							8.6	7.8	7.9	
Real GDP growth (actual)	9.60	8.60	7.80	8.30	9.30	9.40	8.60	7.70	-7.5	-1.6
Inflation	2.80	2.60	4.70	3.50	3.70	3.40	3.50	2.70	5.30	3.80
Central government balance/GDP	-3.08	-2.48	0.13	0.52	1.45	1.30	1.07	2.58	-1.91	-6.05
Broad money growth	18.2	24.40	18.1	23.80	15.80	18.2	23.70	9.60	1.3	6.10
Private sector credit/GDP	71.40	75.30	74.30	74.10	74.60	84.80	89.80	100.40	108.70	...
Philippines										
Real GDP growth (forecast)							5.7	5.1	6.4	
Real GDP growth (actual)	3.00	-0.6	0.30	2.10	4.40	4.70	5.80	5.20	-0.5	2.30
Inflation	14.10	18.70	9.00	7.60	9.10	8.10	8.40	6.00	9.70	8.50
Central government balance/GNP	-3.8	-2.4	-1.3	-1.6	-1.7	-1.3	-0.6	-0.7	-2.6	-2.7
Broad money growth	15.50	1S.5	11.00	24.60	26.50	25.30	15.80	20.90	7.40	1S.0
Private sector credit/GNP	20.50	18.90	21.50	27.20	30.00	38.20	50.00	57.60	50.50	46.90
Thailand										
Real GDP growth (forecast)							6.4	-1.3	7	
Real GDP growth (actual)	11.60	8.10	8.20	8.50	8.60	8.80	5.50	-0.4	-8	1.00
Inflation	6.00	5.70	4.10	3.40	5.10	5.80	5.90	5.60	8.10	0.50
Central government balance/GDP	4.60	4.14	2.53	1.98	1.98	2.49	1.04	-1.62	-2.88	-3.84
Broad money growth	26.70	19.8	15.60	18.4	12.9	17.00	12.60	16.4	9.50	4.70
Private sector credit/GDP	64.50	67.70	72.20	79.80	90.90	97.50	100.00	116.30	109.50	...
(1) Estimate										
Source: IMF, Financial Sector Crisis and Restructuring: Lessons from Asia, Washington 1999										

2. Examples of Vulnerability Indicators

7. Given the potential limitations of traditional indicators, other indicators could prove to be more useful predictors of weakening fundamentals and fiscal vulnerability (see Table 2). The indicators have been sorted into two categories: public debt indicators and external debt indicators; each of these sets were in turn divided in two sub-group: domestic and foreign indebtedness measurements and liquidity indicators. The proposed measurements *are advanced indicators of potential vulnerability*. They should not be seen as *predictors of actual vulnerability*. To assess the fiscal vulnerability from a public debt perspective, information on maturity, currency composition and fixed-floating ratio would obviously be desirable. Debt managers and other market participants should however keep in mind that it is the financial state of the assets and liabilities of the overall economy that affects the government's financial condition. Hence debt managers must monitor public debt vulnerability in relation to the overall robustness of the private sector, using economy-wide indicators (what we call external debt indicators). Because some private liabilities have the potential to become state liabilities, fiscal vulnerability must include potential contingent liabilities, such as government guarantees and indemnities to insolvent public or private enterprises. The proposed leading indicators may be useful for example to identify liquidity problems and to adjust the debt strategy in time to ensure that liquidities are sufficient to absorb shocks.

Table 2 - Example of Debt and Liquidity Vulnerability Indicators

Public Debt Indicators ¹	External Debt Indicators ^{1,2}
<u>1. Domestic and foreign indebtedness-</u>	
Public debt ³ / GDP	Total short-term external debt / GDP
Public debt service / exports revenues	Total external debt service / exports revenues
	Total external debt service / imports
Public debt service / government revenues	
Average term to maturity and duration	
Changes in total amount of public and publicly guaranteed debt / GDP growth	Change in total external debt /GDP growth
	Current account balance/GDP
Foreign-held public debt / total public debt	
Foreign currency denominated public debt / total public debt	Foreign currency debt / total external debt
<u>2. Liquidity</u>	
Foreign exchange (FX) Reserves / Amount of domestic and foreign public debt due within one year	
FX reserve assets in the Foreign exchange account / FX reserve liabilities	FX reserves / Total short-term external debt
	FX reserves / Current account balance
	FX reserves / imports
	FX reserves / M2 ⁴

1. A new series of quarterly releases of statistics on external debt for 176 developing and transition countries has been jointly published by the Inter-Agency Task Force on Finance Statistics (comprising: the BIS, the IMF, the OECD, the World Bank, the United Nations, the European Central Bank and Eurostat). The aim of this initiative is to facilitate access to a single set of data, bringing together information on components of countries' external debt that is currently compiled and published separately by the contributing institutions. The publication also includes data on international reserves. The statistics are mostly from creditor and market sources, but also include data provided by debtor countries. Particular emphasis is placed on debt due within a year. Also, to help analysts, flow data (where available) are provided in addition to stock data.
2. **External debt can be defined as an economy's liabilities to the rest of the world i.e. all debt instruments held by non-residents, including the public debt, financial and monetary authority liabilities and non-financial private sector debt. The IMF (2000b, p. 17-18) discusses in more details the concept of short-term external debt.**
3. Public debt should include liabilities to domestic and foreign creditors (e.g. debt securities issued on international markets, export trade credit, multilateral claims and bilateral loans).
4. M2 can be defined as a country's broad money supply (including currency in circulation, demand deposits and saving deposits).

i. Domestic and foreign indebtedness indicators

8. Domestic and foreign debt vulnerability indicators can be useful as precursor signal of deteriorating economic conditions that governments and the economy could encounter, and the potential risks associated with debt management.
9. Indicators based on short-term external debt (defined as public and private sector debt instruments maturing in no more than 12 months) could be useful indicators of debt sustainability and fiscal vulnerability. A large short-term total external debt relative to export revenues, to import or to GDP could be a signal of a disproportionate debt servicing burden.
10. The public debt service charges (including government guaranteed debt obligations) over government revenues could be used as a signal of public sector vulnerability and liquidity stress. The public debt service to export revenues ratio is a useful measure of the repayment ability of a government and of its economy. Where public debt is predominant in an economy (as in heavily indebted countries) the public debt charges (including government guaranteed debt obligations) measured against export revenues could also be used as a predictor of potential public sector vulnerability.
11. By assessing the life span of debt instruments, the average term to maturity of public debt instruments indicator could be used to signal potential refinancing problems. A low average term to maturity result could mean that the government will have to tap capital markets on more occasions, increasing the risk that refinancing this short-term debt could occur under unfavourable market conditions.
12. Duration is another important, but complex measures that should be considered when assessing the robustness of the debt strategy. Duration is a measure of the portfolio's interest rate sensitivity. It is the weighted average term to maturity of a bond's cash flows, where the weights are the present value of each cash flow as a percentage of the bond's price. For example, the issuance of debt at lower interest rate will translate in longer duration resulting

in increased sensitivity to changes in interest rates. By accurately measuring the exposure of bonds to interest rate risk and taking into account opportunity gains and losses, duration can recognize the implicit economic benefits/costs of debt management decisions.

13. The relative speed at which total external debt increases relative to the rate at which the economy grows is also important. For example, if the total external debt of an economy is growing faster than its GDP, the economy may be on an unsustainable path. The same is true for the public debt.
14. The impact that exchange rate fluctuations will have on a government balance sheet will be a function of the currency exposure of the liability portfolio. The larger the amount of foreign denominated debt instruments, the more exposed the government is to currency variation. The same is true for interest rate fluctuation and the debt structure. A sharp increase in the interest rate could have an adverse effect if a larger proportion of the government debt was issued using floating rate instruments. In both cases, when looking at these indicators, it is important to take into consideration the effect that derivative instruments such as currency or interest rate swaps will have on reducing the vulnerability.
15. Other indicators could be used such as the current account to GDP ratio. The size of a current account deficit, even large, may not in itself be problematic but could be a cause for concern (for a debate on the role large current account deficits have played in recent financial crises see Edwards, 2000b). It appears that the level of the current account deficit is less important than its sustainability. For example, Singapore ran very large current account deficits that were readily financed because they were not the by-products of fiscal mismanagement. However, Thailand's foreign exchange crisis in 1997 was a sharp reminder that large current account deficits can also be a symptom of serious underlying weaknesses (such as diminishing asset quality after years of rapid domestic credit growth). As mentioned before, Mexico's large current account deficits were financed by inflow of foreign capital investments that exited

the country precipitously. While increasing vulnerability in creditors' sentiments, large current account deficits can be a concern.

ii. Liquidity Indicators

16. Foreign exchange reserves can act as liquidity during periods of stress involving balance of payment difficulties. Monetary authorities can use these assets for the direct financing of external payment imbalances. Reserves can also be used to stabilize a domestic currency in a floating exchange rate regime (or to defend a currency under a pegged or fixed exchange rate regime) or used simply as cash. To judge whether or not foreign exchange reserves are low, one must consider the government's financial and exchange rate policies and its potential vulnerability to shocks in trade and capital flows. Furthermore, in making that judgment, on-demand stand-by positions that can be used to augment the reserve position should be included.
17. One would not expect a sovereign with a floating currency, having unlimited access to international capital markets and little foreign denominated currency debt to have large foreign exchange reserve. However the government of a country with a large external debt would be expected to maintain high reserve, since economic weaknesses (such as public finance imbalances, poor banking supervision and high taxes) or social or political shocks could limit access to capital markets and have negative consequences for public debt managers. Vulnerable economies are expected to maintain very large financial cushions in order to maintain investors' confidence.
18. The size of foreign exchange reserves relative to total short-term external debt and medium and long-term borrowing maturing within one year, could be a useful liquidity indicator especially for countries with large but fragile access to capital markets. This ratio can measure the economy's ability to cope if it were completely cut off from external borrowing. For governments in emerging economies trying to minimize risks and the probability of crises, one would expect foreign exchange reserves to cover most if not all total short-term

external debt (foreign exchange reserves / short-term external debt = 1). Two years before their respective crises, the foreign exchange reserve to short term debt ratio of Russia, Brazil, Thailand, Korea, Mexico and Indonesia weakened from an average of 1 to the equivalent of around nine months coverage (0.75) in the few months prior to the crises (IMF, 2000b, box 6).

19. There have been cases where no crises occurred despite very low reserves relative to short-term debt (for example in Brazil (1990) with a 0.12 ratio or in South Africa with a 0.19 ratio) (IMF, 2000b, p. 24). Other factors such as exchange rate flexibility and control of capital flow appear to have been strong enough to avoid a sharp decline in exchange rate and reserves. Conversely there have been cases (for example, Venezuela's 2.5 ration in 1994 and Malaysia's 1.5 ration in 1997) where crises occurred despite high reserves. The large exchange rate and foreign exchange reserves variation may have been the result of political risks or contagion.
20. The foreign exchange reserves to total short-term external debt ratio can also be used to assess the appropriateness of the repayment structure. A proper repayment structure will allow debt managers to avoid refinancing and liquidity problems.
21. To judge the liquidity adequacy of the economies of indebted countries with limited access to capital markets, one could also look at the relation between Foreign exchange reserves and imports (that is, reserves expressed in months of imports). One can thus measure the number of months a country could continue importing if access to capital market ceased.
22. Comparing the size of foreign exchange reserve (including lines of credit also known as stand-by position) to broad money supply (M2) can be a useful tool to predict the potential for capital flight. One would want to avoid large discrepancies between liquid assets (foreign exchange reserves) and liquid liability (M2). In countries with a weak banking sector, small size reserves in relation to large money stock can sometimes suggest a large potential for domestic capital flight, which could result from a loss of confidence in

the domestic currency. This would appear to be particularly true under fixed exchange rate regimes, which could easily lose their credibility.

3. Examples of Indicators for Assessing Risks in the Financial Services Sector

23. Recent financial crises has shown that it could be desirable for governments, especially in emerging and developing economies, to monitor excess leverage and measure excessive capital flows as part of their supervisory functions of the financial sector. Deteriorating market conditions can put immense pressure on financial institutions' balance sheets. Excessive short-term capital flows that result in overvalued assets price can be dangerous. A weakening financial sector could lead to large public expenses and unexpected weakening of governments' balance sheet, including official reserves. The direct fiscal cost of financial assistance to a distressed banking sector and the indirect cost to the economy can jeopardize the financial condition of a government. The indicators listed in table 3 are example of vulnerability indicators focussing on capital growth and credit expansion, including foreign liabilities.

Table 3 -Examples of Financial Sector Vulnerability Indicators

Financial sector indicators
Domestic credit to the private sector / GDP
Foreign direct investments / GDP
Real Growth in credit to the private sector
Estimated share of bank lending to the real estate sector
Stock of non-performing loans / total loans
Stock market capitalization / GDP

24. Monitoring credit growth in economies could act as precursor indicators. Excessive leverage will usually lead to a deterioration in asset quality. For example, in 1997, domestic credit to private and public enterprises in Korea, Indonesia and Thailand ranged from 147 percent to 163 percent of GDP. Most Latin American sovereigns had a lower ratio ranging from 13 percent to 45 percent of GDP, indicating relatively modest leverage and therefore reduced vulnerability to financial market volatility. (Standard & Poor's, December 1997)

Appendix IV—Examples of Recent Initiatives Aimed at Improving Data Disclosure

1. It is in the context of better disclosure and improved oversight that the IMF embarked on a number of projects as part of the *Strengthening the Architecture of the International Monetary System* initiatives. The IMF and other standard setting agencies, such as the International Accounting Standards Committee, the International Federation of Accountants, the Basle Committee on Banking Supervision and the International Organisation of Securities Commissions, are working on new disclosure requirements and best practices.
2. Following the Mexican crisis of 1996, the « Special Data Dissemination Standards » (SDDS) initiative was established by the IMF. The SDDS is a voluntary standard of good practices against which a country's dissemination practices can be measured. The initiative should enhance the quality, integrity and the availability of timely and comprehensive economic and financial statistics. As of the end of January 31st, 2000, 47 nations had subscribed to the new standards.
3. Recent financial crises have underscored the importance of more comprehensive and timely information on international reserves and external debt statistics. In response, a separate SDDS was established in the area of reserves and external debt. The proposals for reserves data are intended to establish new standards for the provision of information to the public on the amount and composition of reserve assets, other foreign exchange assets held by the central bank and the government, short-term foreign liabilities, and related activities that can lead to demands on reserves (such as financial derivatives positions and guarantees extended by the government for private borrowing). By the end of 2001, countries should start issuing data on their international investment position (defined as the balance sheet of a country's external financial assets and liability (IMF, 2000, Box 1).
4. The Inter-Agency Task Force on Finance Statistics (involving the IMF, OECD, World Bank, Bank for International Settlements) developed joint external debt statistics to facilitate access to data from creditors sources for 176 developing and emerging economies.

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5. The BIS is continuing to enhance the international banking statistics. Financial services sector supervisory authorities must understand the importance of enhanced reporting in the financial services sector and external financial flows. In this regard, the Financial Stability Forum's Working Group on Capital Flows has identified information gap on cross-border capital movements.
 6. In addition to these improved international reserves and external data dissemination standards, the IMF embarked on other good practices initiatives. In 1998, the IMF published *Code of Good Practices on Fiscal Transparency*. The Code is based on the principles that roles and responsibilities of government should be clear; that governments should commit themselves to making comprehensive, reliable information on fiscal activities available to the public; that the process of budget preparation, execution and reporting should be undertaken openly manner; and that fiscal information should be subjected to independent assurances of integrity. The Code sets out what government should do to implement these principles. For example, paragraph 3.2.3 of the Code states that "The overall balance of the general government should be a standard summary indicator of the government's financial position. ... " Paragraph 4.1.1 recommends that a national audit body, or equivalent organization, be appointed by the legislature, with the responsibility to provide timely reports to the legislature on the financial integrity of government accounts.
 7. Furthermore, in reaction to the Southeast Asia crisis and in order to strengthen the architecture of the international monetary and financial system, in 1998 the IMF developed a set of transparency standards related to monetary and financial policies. The *Code of Good Practices on Transparency in Monetary and Financial Policies* guides central banks in their conduct of monetary policy and central banks and other financial agencies in their conduct of financial policies. Transparency refers to an environment in which the objectives of policy, its legal, institutional and economic framework, policy decisions and their rationale, data and information related to monetary and financial policies, and the terms of agencies' accountability are provided to the public on an understandable, accessible and timely basis. Thus, the transparency practices listed in the Code focus on clarity of roles, responsibilities and objectives of central banks and financial agencies; the processes for formulating and

reporting monetary policy decisions by the central bank; public availability of information on monetary and financial policies; and accountability and assurances of integrity by the central bank and financial agencies.

8. Finally, the need for accurate reporting of the liquidity conditions of the economy in particular the size of foreign exchange reserves have been shown. In this regard the IMF is developing *Sound Practices in the Management of Foreign Exchange Reserves* which will include disclosure and reporting requirements (see IMF, 2001b).

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