



MEFMI FORUM

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Guidelines for the MEFMI Forum

1. PREAMBLE

The MEFMI Forum is a bi-annual newsletter of the Macroeconomic and Financial Management Institute of Eastern and Southern Africa (MEFMI). The Institute is a regionally owned capacity building organization that is headquartered in Harare - Zimbabwe. Its current country membership includes: Angola, Botswana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. MEFMI's mandate entails fostering best practices through strengthening of sustainable human and institutional capacities in key identified priority areas of debt management, financial sector management and broader macroeconomic management. Sharing and dissemination of pertinent information and experiences is one of the modes of delivery employed by the Institute. The Forum, among other traditional and new information technology-driven mechanisms, plays a pivotal part in this regard.

2. OBJECTIVES

The overall aim of the Forum is to provide a widely accessible and informative media for the regular regional and international exchange of pertinent ideas, issues, speeches, experiences, new developments and sound or best practice.

Within this context, these guidelines are designed to:

- Inform stakeholders of the legal and institutional framework within which the Forum is published and disseminated;
- Provide editorial policy guidelines that set the required quality standards for the Forum; and,
- Lay down procedures for the sourcing and submission of contributions for publication in the Forum.

3. EDITORIAL GUIDELINES

- The Forum shall be published twice a year for the benefit of all MEFMI stakeholders;
- Contributions should be made in the English language;
- Contributions shall ordinarily be published on a continuous first-come-first-served basis, thus allowing for the deferring of some successful articles received late to subsequent issues of the Forum;
- **Contributions shall be published on a voluntary or pro-bono basis, with modest honoraria being paid to only defray personal expenses incurred;**
- The terms of reference of MEFMI resource persons shall provide for customization of their

presentations into short background papers for the MEFMI Forum articles;

- Special contributions may be occasionally commissioned on an exceptional case-by-case basis;
- Contributions submitted for publication should be related to capacity building in macroeconomic and financial management;
- The contributions should be incisive, informative and as far as possible original, with proper acknowledgement of the work of others used, so as to avoid plagiarism;
- Contributions will only be published with the authors' consent and their acceptance of liability for content and implications of their contributions;
- Personal details, such as authors' names, titles, designations, name of employers and recent photographs may be inserted into respective contributions for ease of identification and reference;
- The MEFMI website versions of the Forum issues shall have been appropriately adapted for ease of access by all stakeholders under varying information technology capabilities;
- The Editor-In-Chief shall reserve the right to decline to publish articles that are inconsistent with the above guidelines and / or to annul part or all of any honoraria that may be due to the affected contributions

4. LEGAL AND INSTITUTIONAL FRAMEWORKS

The authors of articles published in the Forum are deemed to accept personal liability for the content and implications of materials they submit for publication;

MEFMI shall not under any circumstance be held liable for contributions published through the Forum, and a disclaimer to this effect shall be inserted into every issue of the Forum;

The MEFMI Forum shall be published and disseminated through the office of the Editor-In-Chief, which is supported at various stages by the Editorial and Tender Committees and a Networking and Publications function from within the MEFMI Secretariat;

Prior written permission and /or acknowledged reference to the relevant issue of the Forum should be cited for any use of materials published in the Forum.

5. TARGET AUDIENCE AND CONTRIBUTORS

The Forum shall be open for contributions and readership from a wide, diverse and expert

stakeholder base from within the relevant MEFMI client institutions, member States, partners and other regional and international peers and networks;

The Forum shall be distributed to stakeholders and other relevant parties in hard copy and / or in electronic form, including through posting on the MEFMI website.

6. ELIGIBILITY CRITERIA

In addition to complying with the editorial guidelines as set out in section 3 above, contributions should meet the following specific criteria for eligibility for publication:

- Contributions should be relevant to macroeconomic and financial management;
- The contributions should be topical, analytical and applied than being of a purely research or theoretical slant;
- Contributions should be concise and brief, within a maximum limit of 5000 words, excluding diagrams and other necessary illustrations;
- Contributions need to properly acknowledge others' work, including appending of relevant bibliographies, references, etc;
- Where appropriate, prior clearance or authentication by employers or relevant authorities should be sought in cases where country-sensitive or country-specific information is involved;
- Contributions should adhere to the following lay-out:
 - o Title
 - o Author and Designation
 - o Overview / Executive Summary / Preamble
 - o Introduction
 - o The issues
 - o Purpose / objective/s
 - o Methodology
 - o Scope
 - o Body
 - o Facts
 - o Analysis
 - o Interpretation
 - o Conclusion / Recommendations
 - o Bibliography

There should be adherence to the following submission procedures:

- Meeting submission deadlines, i.e. articles should be received 2 months prior to date of next publication;
- Submission of contributions in both hard and soft / MS-Word copies.

From the Desk of the Editor in Chief

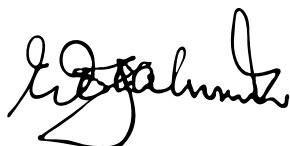
This issue of MEFMI Forum touches on some pertinent issues that are central to the economic well-being of the MEFMI region in particular and Africa in general. Articles contained in this issue encourage policy makers to focus on formulating appropriate macroeconomic policies to ensure regional stability.

The paper on *Short-term Capital Flows and Sustainability of the Current Account Balance* looks at the surge in capital inflows to emerging markets. It also highlights the challenges for macroeconomic management on the African continent. In particular it looks at the volatility of short term capital flows, an issue that is of great concern to most central bankers in the Africa region. This issue also drew great interest amongst Central Bank Governors who met at the annual meeting of the Association of African Central Bank (AACB) Governors that was held in Algiers, Algeria at the end of August, 2012. The paper outlines the major characteristics of volatile short term capital flows including their implications on current account sustainability and general macroeconomic policies. The paper concludes that there is need for the Africa region to undertake financial sector reforms which in turn will promote the implementation of transparent capital account policies and pursue sound macroeconomic management to effectively manage volatile short-term capital inflows.

The article on *SHIELDS: A framework for Assessing and Maintaining Financial Stability over Time and Across Nations* provides a new framework for the assessment and measurement of systemic stability. The article states that a comprehensive, forward-looking approach to financial stability assessment would promote the systematic identification, evaluation and monitoring of all key risks and vulnerabilities. It also says that there is a need to employ multiple diagnostic tools. The paper argues that quantitative models used should inform the policymaker rather than being automatic determinants of the ultimate decision. Accordingly, qualitative analysis, based on informed judgement, still plays an important role in financial stability. The paper proposes that the SHIELDS framework should be used for assessing and maintaining financial stability.

The paper on *Recommendations for the Development of Country Specific Risk Modeling Framework for Debt Sustainability Analysis* seeks to help member countries develop a risk modeling framework that explicitly recognises, measures and controls the relative cost and risks inherent in public debt management. The framework proposes to facilitate prudent risk management of sovereign debt, while minimising the potential debt-related burden on tax payers and maximising the resources available for other expenditure. The framework complements and augments the traditional debt sustainability analysis framework by facilitating assessment of the cost and risks of desired debt composition. Development of a country specific risk modelling framework for debt sustainability analysis will enable MEFMI member countries to avoid the previous costly mistakes of accumulating debt to unsustainable levels.

We trust that MEFMI client institutions will support the recommendations contained in this issue in order to promote economic stability in the region.



Elias E. Ngalande (PhD)

Short-Term Capital Flows and Sustainability of the Current Account Balance – Paper Presented at the AACB Symposium -29 August 2012, Algiers, Algeria by Dr Elias E. Ngalande; MEFMI Executive Director

*Prepared by Dr Elias E. Ngalande; MEFMI Executive Director;
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ABSTRACT

After being marginalised from world capital markets for decades, many developing countries experienced a surge in capital inflows since the early 1990s. The surge in volatile capital inflows to emerging markets and the destabilising capital flight, present challenges for macroeconomic management on the African continent. In particular, the volatility of short-term capital flows to Africa poses a threat to current account sustainability. Most African countries that have experienced high capital inflows have suffered from overheating, real exchange rate appreciation and current account instability. The flexibility of Africa to maneuver out of unsustainable current accounts depends very much on financial sector reforms, as well as capital account liberalisation.

This paper outlines the determinants and characteristics of volatile short-term capital flows including their implications on current account sustainability and general macroeconomic policies. The paper concludes that the major policy agenda for Africa is to undertake financial sector reforms, implement transparent capital account policies and pursue sound macroeconomic management to effectively manage volatile short-term capital inflows.

INTRODUCTION

Volatile short-term capital and current account sustainability have increasingly become a moot problem among policy makers in Africa. Reflecting this, is a plethora of excellent papers on destabilising short-term capital flows and their implications on macroeconomic management in emerging markets. There has also been much heated debate among scholars, academics, policy

makers and civil society on how volatile short-term capital inflows impact on sustainability of the Current Account Balance.

This paper revisits the current debate on short-term capital flows and the sustainability of the current account. It also scopes the challenges, opportunities and policy responses to global capital flows and current account sustainability as Africa tries to weather the effects of the Eurozone crisis and take advantage of the post-global financial crisis opportunities. The surge in capital flows to emerging markets and indeed capital flight presents challenges and opportunities for policymakers on the continent. Most countries that have experienced high capital inflows in the 1990s have suffered from overheating and real exchange rate appreciation. The policy responses have largely depended on the motivation.

Destabilising short-term capital flows, commonly known as "hot capital" has led to wider fluctuations in both the nominal and real exchange rates. This has prompted calls for policy initiatives to stabilise the exchange rate through in-built mechanisms to minimise speculative foreign exchange trading. Some countries, such as Malaysia and Hong Kong, even argued that controls are necessary to stem speculative short-term capital movements. Sustainability of the current account is also a major headache in emerging markets. The volatility and unpredictability of short-term capital flows into the continent poses a major threat to current account sustainability. Radical swings in short-term capital flows have, thus, made foreign exchange markets more uncertain. The flexibility of individual countries to maneuver out of the current account instability depends on financial sector reforms, especially relaxation of controls on portfolio

investment and FDI as well as capital account liberalisation.

Persistent current account imbalances in many developing countries, including South America, and recently in the United States of America (USA), has ignited considerable interest among economists and policymakers seeking to have a clear understanding of the role and importance of current account imbalances in macroeconomic issues. It is evident that a lot of countries, both developed and developing have run persistent large current account deficits which have been followed by severe crises, economic slowdowns, and contagion effects. Central to the debate is the issue of sustainability of the current account deficit in the wake of the surge in hot money across the globe. The question being posed is whether a country's current account imbalance is justifiable, structurally normal and sustainable or there is need for fundamental policy shifts to correct the imbalance to avert a crisis. Researchers have come to the conclusion that there is no simple definition of an unsustainable current account deficit. In general, the current account deficit is unsustainable if the country does not, at present or in future, have sufficient resources to finance it.

This paper is structured into five sections. In section 2, the paper reviews the theoretical underpinnings of short-term capital inflows and current account sustainability. Section 3 covers the magnitude and determinants of short-term capital flows into Africa and the policy implications. Section 4 assesses the sustainability of the current account while in section 5, the paper concludes with policy lessons for Africa in the wake of globalisation and regional integration.

Determinants and Characteristics of Global Capital In-flows

According to literature, capital flows can be a result of both push and pull factors. Notably, capital flows can be triggered by an increase in domestic demand and/or supply brought about by pull parameters such as economic reforms, positive fiscal impulses, rising income, favourable macroeconomic environment, favourable terms of trade, and increases in production efficiencies in the recipient economy.

The push factors include parameters such as low interest rates in advanced economies, abundant liquidity, slow growth and the lack of domestic investment opportunity as well as the need for global risk diversification in industrial countries. A surge in capital inflows can be accompanied by resurgence in total domestic investment and savings as well as an improvement in economic growth and employment. In particular, foreign direct investment has potential to jack up real investment and broaden the productive base in the economy. There are other significant benefits in terms of employment creation as well as scope for efficient use of resources which broadens the export and tax base. In many recipient countries, large capital inflows have however been associated with inflationary pressures, exchange rate volatility, and deterioration in the current account. Massive capital inflows may also lead to stock and property market bubbles as well as excessive expansion in domestic credit. Experiences from Asia show that short-term capital inflows tend to be accompanied with excess consumption which maybe unsustainable. The reversal of short-term capital or hot money has often led to financial crises.

Table 1: Net Financial Flows to Developing Countries, 1998-2012 (in US\$ billions)

Billions of dollars	Average Annual flow						
	1998-2001	2002-2007	2008	2009	2010	2011a	2012b
Developing countries							
Net private capital flows	56.8	160.9	176.5	350.6	404.5	522.7	528.7
Net direct investment	153.5	204.6	360.6	237.7	279.7	364.0	384.5
Net portfolio investment ^c	-5.0	-58.4	-94.2	28.5	46.8	-76.4	-84.5
Other net investment ^d	-91.7	14.7	-89.9	84.4	77.9	235.1	228.7
Net official flows	-12.9	-74.3	-125.4	14.6	47.7	-132.4	-147.8
Total net flows	43.9	86.6	51.2	365.1	452.2	390.4	380.9
Change in reserves ^e	-83.0	-534.0	-786.3	-691.5	-943.3	-1116.6	-1074.2
Of Which to Africa							
Net private capital flows	10.4	14.9	13.3	26.1	19.0	38.3	51.1
Net direct investment	12.7	25.2	51.4	46.1	35.0	40.9	46.1
Net portfolio investment ^c	-0.3	0.5	-43.0	-18.0	-6.1	-7.9	-1.6
Other net investment ^d	-2.0	-10.8	4.9	-2.0	-9.9	5.3	6.6
Net official flows	-1.7	-4.5	9.0	22.5	32.0	11.4	17.0
Total net flows	8.8	10.4	22.4	48.6	51.0	49.6	68.1
Change in reserves ^e	-7.2	-46.2	-74.0	2.3	-29.7	-49.9	-46.5

Source: International Monetary Fund (IMF), World Economic Outlook database, September 2011

Broadly, the increase in the net international indebtedness of the private and public sectors of a country can be identified with widened current account deficits and/or reserves accumulation. Though capital inflows can help boost the productive potential of developing countries, once capital accounts are fully liberalised, the same capital inflows can present fundamental policy dilemmas for recipient countries if not carefully managed.

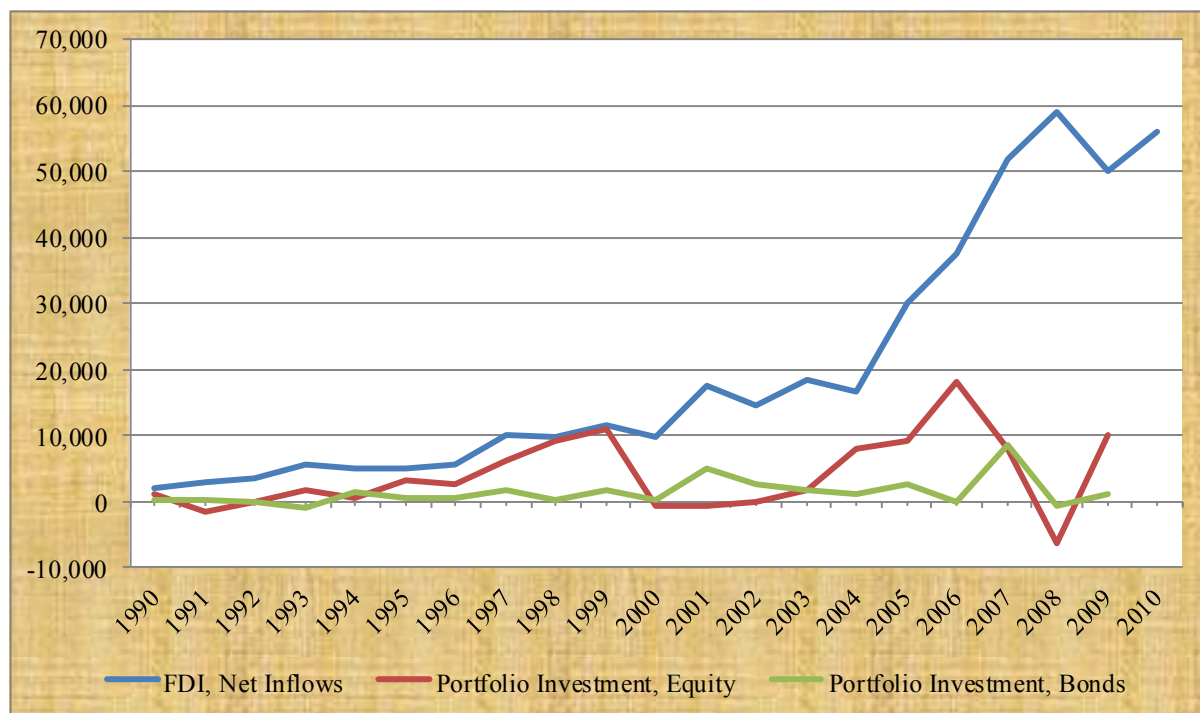
Trends in Capital flow to Africa

Since the early 1990s, private capital flows reached the shores of many developing countries. Although the foreign capital inflows have improved growth and investment levels in recipient countries, reversals associated with volatile flows have been extremely damaging. Notably, financial crises, emanating from reversals of volatile financial flows, have had negative effects on investment, growth and employment leading to increased poverty levels. Although global capital flows to developing countries surged over the last decade, very little has been destined for Africa. Table 1 above shows that in 2011, total private capital flows to developing countries amounted to US\$522.7 billion of which only US\$38.3 billion or 6.3% flowed to Africa.

In the pre-global financial crises period, most developing countries were basking in the glory of stable macroeconomic environments, high global demand, and a surge in capital inflows. Remittances and private capital flows overtook official aid as the main source of external finance for Africa. Having surged to unprecedented levels in mid-2008, private capital flows to developing countries came to a sudden stop and reversed direction as the system went into cardiac arrest. The intensity of the global financial crisis reversed previous economic gains as most African economies were hurt by a reduction and in some instances a complete reversal of capital flows to the region. During the process, private capital flows showed much variability with adverse effects on current account sustainability.

Tentative recovery began in 2009, buoyed by global support from key central banks in developed countries. Global capital flows increased from about \$180 billion in 2008 to about \$350 billion in 2009 driven by the combination of stronger economic growth in a number of developing countries and higher returns. Volatility however remained high and financial stress emerged in 2010, concentrated in the European countries that share the Euro as their currency.

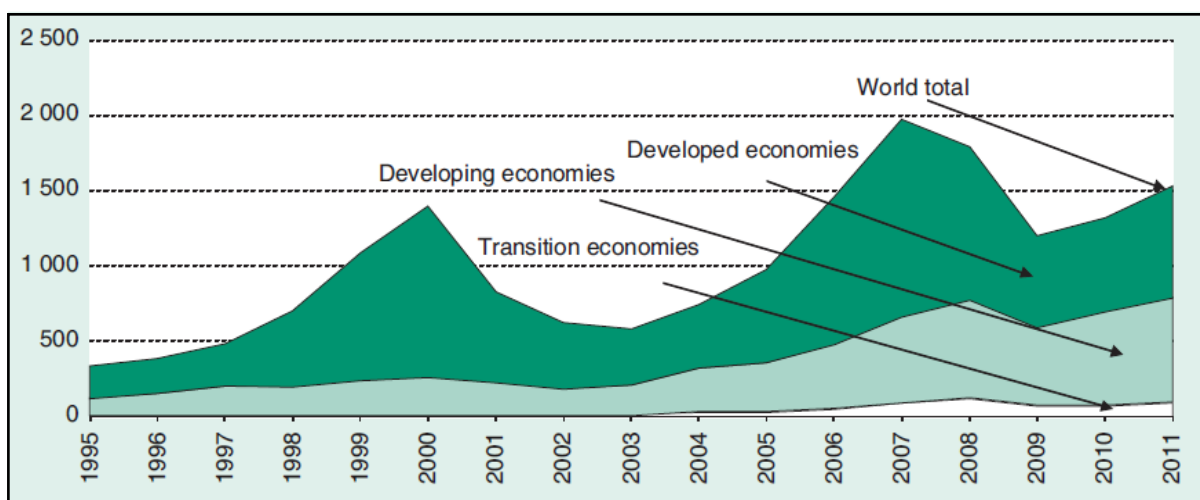
^a Preliminary. ^b Forecasts. ^c Including portfolio debt and equity investment. ^d Including short- and long-term bank lending, and possibly including some official flows owing to data limitations. ^e Negative values denote increases in reserves.

Chart 1: Net Private Capital Flows towards Africa, 1990-2010 (US\$ Millions)

Source: World Bank (2011)

In the post global financial crises era, as Africa and the rest of the world recover from the external shock, there has been resurgence in global capital flows causing exchange rate over valuations and overheating in emerging markets. Global capital flows recovered significantly thus presenting both risks and opportunities for growth in emerging markets. Reflecting this, global foreign direct

investment (FDI) inflows rose by 16% from US\$1.31 trillion in 2010 to US\$1.52 trillion in 2011. The growth in FDI flows in 2011 was mainly attributed to higher absorption in Greenfield investment to emerging markets and developing economies. This trend is expected to continue to be driven by commodities and oil price export boom.

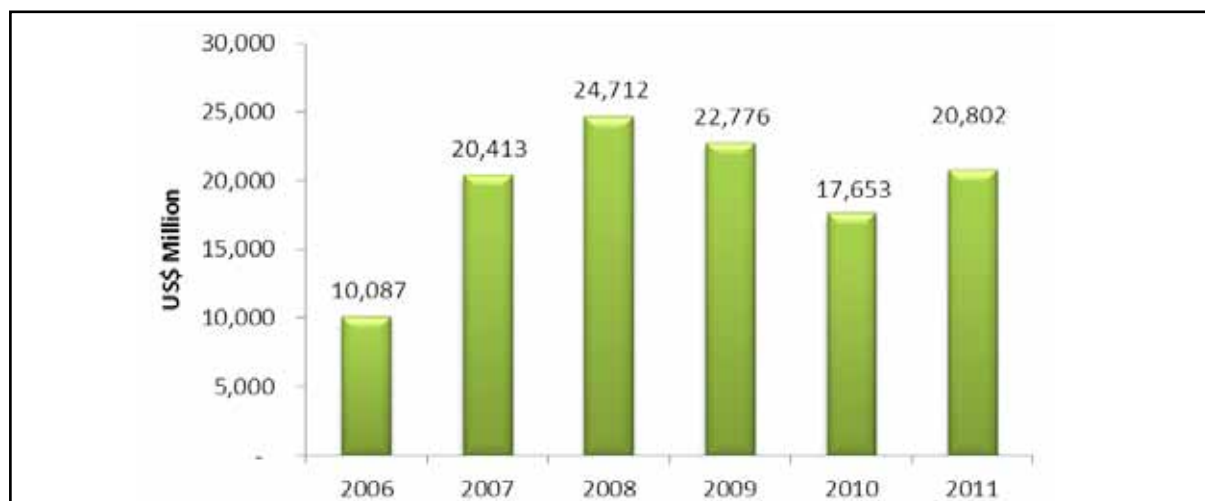
Chart 2: FDI inflows, 1995-2011 (US\$ billion)

Source: UNCTAD July 2012

In Sub-Saharan Africa, FDI inflows followed a similar trend, increasing from US\$17.6 billion in 2010 to US\$20.8 billion in 2011. Significant inflows to the region were attributable

to high economic growth, increased investment opportunities, improvement in creditworthiness, high expected profits and offers of better risk diversification.

Chart 3: FDI Inflows to Sub-Saharan Africa (in US\$ Million)

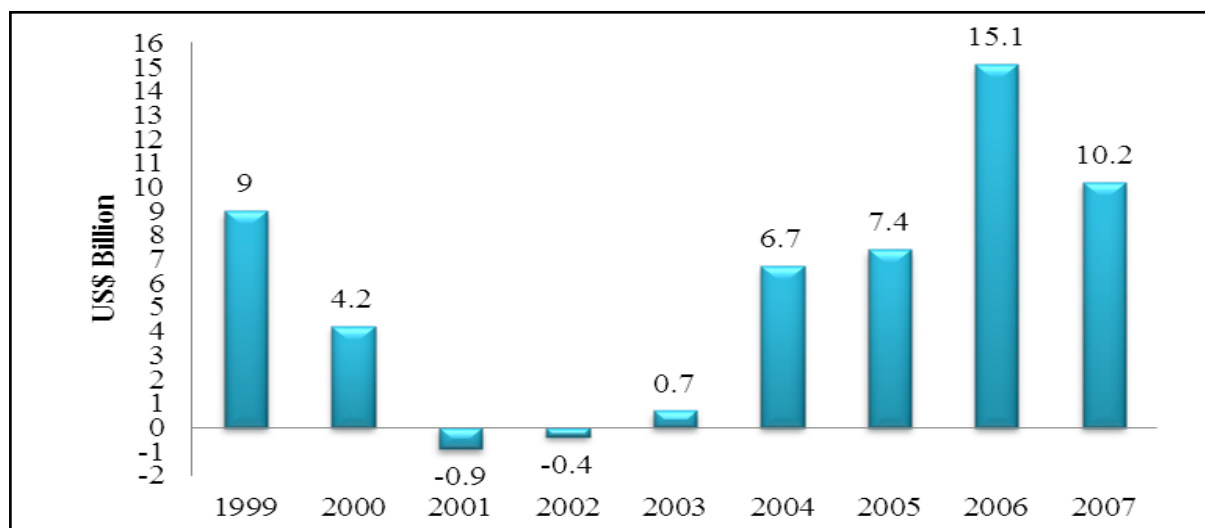


Source: UNCTAD World Investment Report July 2012

The huge increase in FDI has resulted in the transfer of technology, employment creation, tax revenue, fixed capital formation and complemented domestic savings. However, the rapid capital movements across economic

frontiers and abrupt reversals especially of hot money, increases the exposure of the recipient countries to adverse shocks; Notably exchange rate overvaluations and current account unsustainability.

Chart 4: Inflows of Portfolio Investment to Sub-Saharan Africa (in US\$ Billion)



Source: UNCTAD 2008

It is clear that though private capital flows destined for emerging markets have surged over the years, they have not resulted in marked improvement in social welfare. Inequality and lack of shared growth has

become cancerous in developing countries. Unemployment continues to rear its ugly head, protectionism has grown and the polarisation of economies has widened.

Policy Implications of Short-term Capital Inflows

Resolution of the macroeconomic difficulties arising from capital flows depends on the motivation, characteristic and likely persistence of the capital flows. The obvious strategy has been to discourage inflows through market friendly instruments or imposing restrictions on capital inflows. Other countries restricted reserve accumulation by encouraging a current account offset to the capital account surplus through liberalisation of trade and allowing the exchange rate to appreciate. Most emerging market economies have adopted different policy strategies to deal with capital inflows including the following:

- Cutting the link between reserve accumulation and monetary expansion by sterilising foreign exchange purchases. Governments can avoid expansion of base money or high powered money through sterilisation of capital inflows through open market operations to mop up the excess liquidity generated by the inflows. Of course the resultant high interest rates can however perpetuate foreign capital inflows where there is high capital mobility;
- Accepting expansion of base money but reducing its impact on broad money

through tight monetary policy, such as raising the bank rate. Selective credit policy can also be used to channel money to productive sectors so as to generate an anti-inflationary supply response;

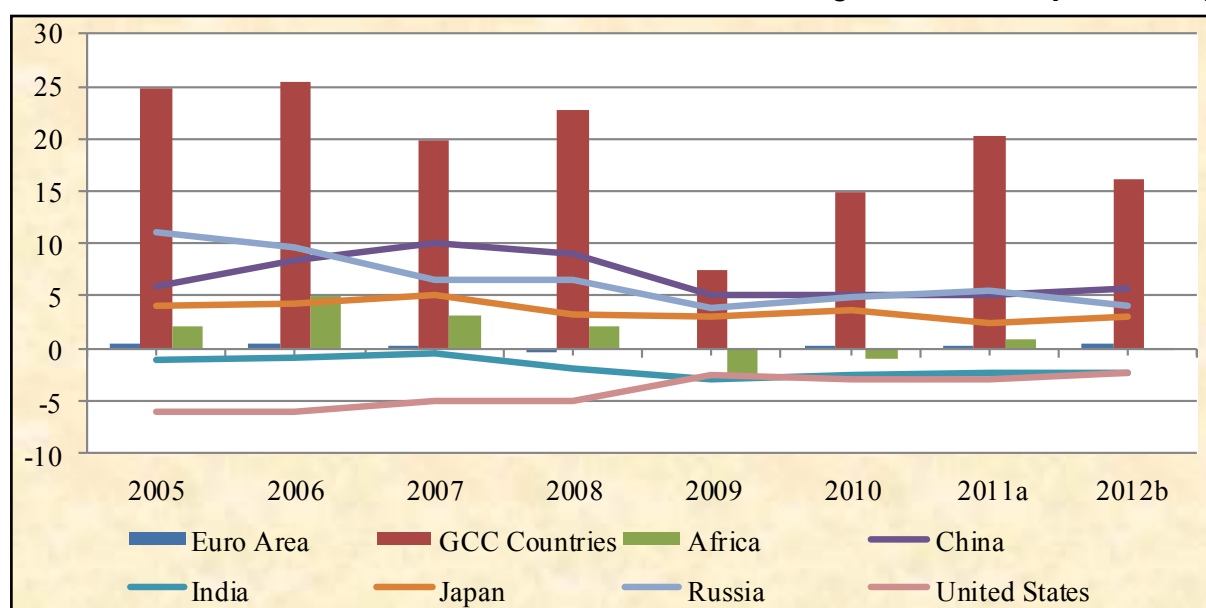
- Allowing expansion of base and broad money, but negating the inflationary effects through fiscal contraction to reduce demand pressures. The reduction in aggregate demand pressures helps avoid overvaluation of the exchange rate.

If competitiveness is a dominant concern, countries can consider nominal devaluation to induce real exchange rate depreciation. Governments can also induce current account deficits to offset net capital inflows, through trade liberalisation. Allowing a nominal exchange rate appreciation may also induce current account deficits by reducing exports and encouraging imports, but this may dislocate the export sectors.

Developments in the Current Account Balance in Africa

Chart 5 below shows how trade patterns constituted over the years a major determinant of the current account balances of most economies in the world.

Chart 5. Current Account Balances for Selected Countries and Regions, 2005-2012 (in % of GDP)²



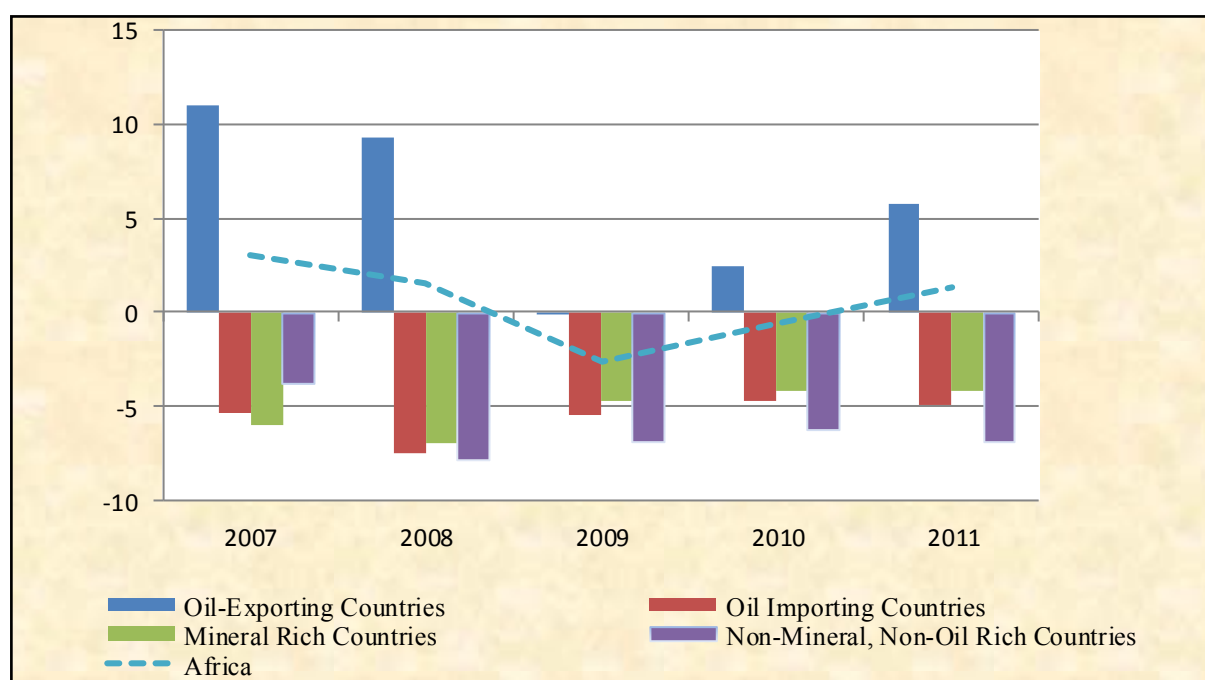
Source: IMF (2011).

²a: estimates; b: forecasts

The US still ran a huge deficit against China's surplus, while the euro area's current account was in near balance. Japan's surplus narrowed, reflecting the earthquake's impact on its trade and post disaster reconstruction. The surplus in the Gulf Cooperation Council (GCC) countries rose by more than a third, propelled by high oil prices. Russia's surplus widened only a little, as the non-oil sector deteriorated.

Africa's current account improved slightly in 2011 due to increased demand of minerals and other natural resources mainly by China and India. The current account balance turned to a small surplus (0.8 per cent of GDP), from an equally small deficit in 2010 (see chart 5 above).

Chart 6: Current Account Balances in Africa, 2007-2011 (in % of GDP)



Source: UNECA (2012) and IMF (2011)

Chart 6 above depicts current accounts deficit and surplus within country groups and compared to Africa as a whole. The picture portrayed by the chart remained diverse, notably between oil-exporting and oil-importing countries. External surplus increased in most oil and mineral exporters, while the current account deficits of oil-importing countries widened. The improvement in the current account balances of exporting countries enabled them to build foreign exchange reserve buffers and to reduce their reliance on international assistance as a source of current account financing. However, ODA remained important to several countries with larger deficits.

Huge current account deficits are harmful to poor economies because they crowd-out domestic savings thus amplifying

macroeconomic instability. According to Lawrence Summers, the U.S. Deputy Secretary of the Treasury in the 1990s, large current account deficit can only be justified if they finance investment growth and should be limited to no more than 5% of GDP. But it is also widely accepted that the size of the current account deficit does not matter, but what is important is whether the deficit can be sustainably financed through capital inflows.

Capital Inflows and Current Account Sustainability

The current account is one of the most significant triggering factors of financial and/or currency crisis in developing countries in recent years, (IMF, 1997). The current account is the difference between national savings and investment of a country and is thus

identical to domestic savings investment gap. If a Government invests more than domestic savings, they finance the shortfall via foreign savings, which is a mirror image of the current account deficit. The sustainability of a current account deficit therefore depends on a country's ability to finance shortfalls in national savings and investment demands. The manner in which a government manages its expenditure, types of investment and productivity is thus critical in determining the sustainability of the current account.

Current account deficit is financed by direct foreign investment, foreign currency inflows or long term foreign loans. It is widely agreed that short-term capital inflows complement in sustaining current account balances, but its volatility can cause distortions in the foreign exchange market. Notably when a country is experiencing capital reversals, the attendant speculation and liquidation of short-term maturity instruments and equity securities can destabilise the current account balance. Empirical studies have found that short-term flows increase financial fragility and also make countries prone to financial crises. The analysis indicates that opening up emerging markets' capital accounts results in increased short-term capital flows, which could be destabilising. The appreciation of the real exchange rate associated with significant capital inflows results in loss of trade competitiveness. An increase in capital flows and hence foreign exchange liquidity in the

banking system can cause an exchange rate appreciation, which can worsen external competitiveness. A sudden reversal of the short-term capital inflows can lead to reduction in foreign exchange reserves, generating a foreign exchange crisis.

For many African countries, external borrowing has been the main source of financing current account deficits which leads to high external debt stock. This was evident in the highly indebted poor countries (HIPC), which experienced high interest payments on external debt stock further worsening their current account balance.

The Latin American and East Asian crises clearly brought to the fore the destabilising effects of short-term capital flows and the unsustainability of the current account. Latin America was affected by the abrupt halt in foreign lending in the 1980s leading to debt crisis and macroeconomic imbalances arising out of high budget deficits and overvalued exchange rates. The East Asian Economies were faced with a currency crisis in 1997 primarily due to a reversal in huge short-term external borrowings by banks and corporates. This confirmed Jagdish Bhagwati's (2008) scepticism about the gains from unfettered trade in financial assets. Prasad, Rajan and Subramanian (2007) also found that among non-industrial countries, lesser reliance on foreign capital is associated with higher growth.

BOX : Relationship between Capital Flows and Current Account Deficit

Private Savings = Gross National Income + Transfers – Household Consumption
= Disposable Income less Consumption

Public Savings = Taxes – Government Consumption – Transfers
= Budget Balance

Domestic/National Savings = Private Savings + Public Savings

If Domestic Savings is insufficient to finance investment, the shortfall is financed from external sources.

Capital Inflows = Domestic Investment – Domestic savings

The sustainability of the current account depends on a country's ability to finance shortfalls in national savings and investment demands. Specifically, current account deficit is considered sustainable if:-

- It does not generate increases in the external liabilities or indebtedness through financing trade deficit, interest payments and settlements of short-term maturities;

- The Current account deficit to GDP ratio does not exceed 5% (Summers 1996). This applies if the deficit is consumption driven, that is the one leading to falling national savings;
- It is not causing competitiveness problems through appreciation in exchange rate;
- It is supported by stable foreign exchange reserve measured in terms of months of imports;
- It is backed with long-term foreign private capital inflows; and
- A country implements macroeconomic policies, stable financial system and ensures political stability.

Lessons for Africa from Experiences in other regions

Africa has much to learn from the experiences of some South East Asian economies, where inadequate regulation and supervision, lack of commercial orientation, poor corporate governance and lax internal controls, contributed to imprudent lending. This, to a large extent, resulted in the currency crises experienced in these economies.

Globalisation brings with it large capital flows but if unchecked, these may be a source of currency volatility. Where capital accounts are liberalised before ensuring the existence of sound financial systems, the currency appreciation will generate strong expectations of future currency depreciation, which may degenerate into undesirable exchange rate movements. A sustainable approach would, therefore, be the gradual liberalisation of capital accounts whilst strengthening the financial systems.

The rapid pace of financial liberalisation and the globalisation of financial markets have meant that macro-economic mis-alignments in one economy can be highly contagious to other economies. Such contagion, however, can be mitigated through reinforced international financial co-operation. This could start with exchange of information and expertise amongst the monetary authorities regarding the management of domestic monetary systems, supervision of financial

institutions and the development of sound financial systems in general. Africa can draw lessons from East Asia which has been the main destination for foreign capital, as well as Latin America with huge investments having been financed from abroad and less from domestic savings. The immediate effect of such capital flows was the appreciation of domestic currencies and countries adopted some of the following policy responses.

- In Indonesia, Malaysia, Argentina, Bolivia, Chile and Sri Lanka, inflows generated expansion in reserve money but broad money expansion was kept in check through sterilisation;
- Most East Asian economies did not allow real appreciation in their exchange rates through fiscal restraint – Indonesia, Thailand, the Philippines and Malaysia;
- Current account deficits have been common during episodes of capital inflows – for example in Korea, Thailand, Argentina, Mexico, Bolivia and Costa Rica – accommodating a reduction in domestic saving; and
- Asian financial systems were adequately supervised to ensure proper asset-liability management.

One key lesson for Africa is that capital controls have potential costs through their macro-economic distortions on investment. Liberalisation of the capital account has however to be effected on a gradual basis, taking into account the level of development of the domestic financial system. Fiscal restraint is part of a broad strategy to enable individual economies' capacity to assimilate capital inflows. The pursuit of monetary integration and the development of regional capital markets is also of paramount importance. Sound, interlinked capital markets are critical to domestic resource mobilisation, essential for increasing the supply of long-term capital.

Within the context of regional integration, common legislation relating to the protection of users and suppliers of financial services would also be helpful. Regional financial institutions should thus put in place sound legal frameworks for the conduct of financial transactions and for supervision of banks and

similar institutions. Sound and well supervised financial institutions are a prerequisite for efficient management of capital flows.

Conclusion and the Way Forward

The magnitude of short-term capital inflows to Africa is increasing with the development of the banking system, investment funds and domestic stock markets which complement long term capital inflows – FDI - in financing the current account imbalances. However, volatile capital flows pose headaches on the exchange rate and the current account sustainability.

In Africa, focus should thus be placed on formulating appropriate macroeconomic and investment policies to attract long term stable capital (FDI). Prudent fiscal management and consistent monetary policy supported by appropriate incentives to channel FDIs into export oriented sectors or import substitution production activities is of paramount importance. In addition the business environment in Africa should be conducive to promote inward and outward capital flows. This includes good infrastructure which is important to reduce the cost of doing business, harness productive capacity and improve export production supported by strong institution and appropriate legal frameworks.

Critically, domestic financial markets on the continent should be strengthened through effective supervision and regulations. Bank liabilities need to be closely monitored and the short-term bank liabilities need to be

properly regulated. Weak banking systems create loopholes for speculation and reduce the willingness of foreign investors to hold portfolio or fixed assets in a recipient country. Some of the variability of the exchange rate on the African continent and other emerging markets are determined more by external factors than by own domestic or balance of payments developments. The resultant instability in foreign exchange markets has, thus, increased uncertainty about export earnings, and the real cost of imports.

Experience shows that foreign exchange markets have been highly volatile and that, by and large, changes in exchange rates of emerging markets have been both unpredictable and erratic. It is apparent that exchange rate stability can only be achieved in a stable macro-economic environment, characterised by low monetary growth and inflation, conducive for strong export growth. The volatility of short-term capital flows to Africa has been transmitted to the instability of macroeconomic variables, which is very negative both for growth and investment. Increased uncertainty caused by volatility significantly undermines private-sector confidence and therefore discourages investment.

It is crucial that policies be designed – nationally, regionally and internationally – to help attract long-term flows and discourage potentially volatile as well as reversible capital flows. In particular, emphasis should be placed on reforms that encourage more stable flows such as FDI and other long term loans.

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Annex 1

Table 2: Net Financial flows to developing countries and other economies, 1998-2012 (in US\$ billions)

Billions of dollars	Average Annual flow						
	1998-2001	2002-2007	2008	2009	2010	2011a	2012b
						!	!
<i>Net private capital flows</i>	56.8	160.9	176.5	350.6	404.5	522.7	528.7
<i>Net direct investment</i>	153.5	204.6	360.6	237.7	279.7	364.0	384.5
<i>Net portfolio investment^c</i>	-5.0	-58.4	-94.2	28.5	46.8	-76.4	-84.5
<i>Other net investment^d</i>	-91.7	14.7	-89.9	84.4	77.9	235.1	228.7
<i>Net official flows</i>	-12.9	-74.3	-125.4	14.6	47.7	-132.4	-147.8
<i>Total net flows</i>	43.9	86.6	51.2	365.1	452.2	390.4	380.9
<i>Change in reserves^e</i>	-83.0	-534.0	-786.3	-691.5	-943.3	-1116.6	-1074.2
<i>Net private capital flows</i>	10.4	14.9	13.3	26.1	19.0	38.3	51.1
<i>Net direct investment</i>	12.7	25.2	51.4	46.1	35.0	40.9	46.1
<i>Net portfolio investment^c</i>	-0.3	0.5	-43.0	-18.0	-6.1	-7.9	-1.6
<i>Other net investment^d</i>	-2.0	-10.8	4.9	-2.0	-9.9	5.3	6.6
<i>Net official flows</i>	-1.7	-4.5	9.0	22.5	32.0	11.4	17.0
<i>Total net flows</i>	8.8	10.4	22.4	48.6	51.0	49.6	68.1
<i>Change in reserves^e</i>	-7.2	-46.2	-74.0	2.3	-29.7	-49.9	-46.5
<i>Net private capital flows</i>	-9.4	101.5	21.3	273.7	298.7	324.5	314.5
<i>Net direct investment</i>	62.7	101.8	154.9	68.3	140.7	156.4	152.8
<i>Net portfolio investment^c</i>	5.9	-25.7	-42.2	47.5	41.3	-43.6	-72.3
<i>Other net investment^d</i>	-77.9	25.3	-91.4	157.9	116.7	211.7	233.9
<i>Net official flows</i>	0.9	-26.5	-30.4	-5.6	-5.4	-58.4	-71.1
<i>Total net flows</i>	-8.5	75.0	-9.1	268.1	293.3	266.0	243.4
<i>Change in reserves^e</i>	-75.5	-368.2	-528.8	-650.9	-708.7	-823.7	-856.1
<i>Net private capital flows</i>	8.1	17.3	87.0	68.1	49.7	39.7	63.8
<i>Net direct investment</i>	6.9	25.2	58.1	55.9	32.4	40.1	48.0
<i>Net portfolio investment^c</i>	-6.9	-24.8	10.2	14.7	0.9	-21.1	-9.6
<i>Other net investment^d</i>	8.1		18.7	-2.5	16.4	20.7	25.4
<i>Net official flows</i>	-18.1	-33.9	-105.5	-43.6	-25.6	-119.1	-123.5
<i>Total net flows</i>	-10.0	-16.6	-18.5	24.5	24.1	-79.4	-59.7
<i>Change in reserves^e</i>	-2.6	-73.6	-133.2	6.1	-101.7	-123.0	-109.3
<i>Net private capital flows</i>	47.6	27.2	54.9	-17.3	37.1	120.3	99.3
<i>Net direct investment</i>	71.2	52.3	96.1	67.4	71.7	126.7	137.6
<i>Net portfolio investment^c</i>	-3.7	-8.5	-19.2	-15.7	10.7	-3.8	-1.0
<i>Other net investment^d</i>	-19.9	-16.6	-22.1	-69.0	-45.3	-2.6	-37.3
<i>Net official flows</i>	6.0	-9.3	1.5	41.2	46.7	33.8	29.7
<i>Total net flows</i>	53.6	17.9	56.4	24.0	83.8	154.1	129.0

Annex 2. The global outlook in summary, 2010-2014

(percent change from previous year, except interest rates and oil prices)

	2010	2011	2012e	2013f	2014f
Global Conditions					
World Trade Volume (GNFS)	13.0	6.1	5.3	7.0	7.7
Consumer Prices					
G-7 Countries ^{1,2}	1.2	2.4	1.9	1.8	2.0
United States	1.6	3.1	2.6	2.4	2.5
Commodity Prices (USD terms)					
Non-oil commodities	22.5	20.7	-8.5	-2.2	-3.1
Oil Price (US\$ per barrel) ³	79.0	104.0	106.6	103.0	102.4
Oil price (percent change)	28.0	31.6	2.5	-3.4	-0.6
Manufactures unit export value ⁴	3.3	8.9	0.9	1.2	1.5
Interest Rates					
\$, 6-month (percent)	0.5	0.5	0.7	0.8	1.1
€, 6-month (percent)	1.0	1.6	1.2	1.4	1.5
International capital flows to developing countries (% of GDP)					
Developing countries					
Net private and official inflows	5.8	4.6	3.3	3.6	3.8
Net private inflows (equity + debt)	5.4	4.4	3.1	3.4	3.7
East Asia and Pacific	5.9	4.9	3.3	3.4	3.5
Europe and Central Asia	4.9	4.4	2.6	3.7	3.9
Latin America and Caribbean	6.1	4.8	3.9	3.9	4.0
Middle East and N. Africa	2.3	0.0	1.0	1.7	2.2
South Asia	5.2	3.7	2.8	3.0	3.5
Sub-Saharan Africa	3.6	3.4	2.6	3.3	4.3
Real GDP growth ⁵					
World	4.1	2.7	2.5	3.0	3.3
Memo item: World (PPP weights) ⁶	5.1	3.7	3.3	3.9	4.2
High income	3.0	1.6	1.4	1.9	2.3
OECD Countries	2.9	1.4	1.3	1.8	2.2
Euro Area	1.8	1.6	-0.3	0.7	1.4
Japan	4.5	-0.7	2.4	1.5	1.5
United States	3.0	1.7	2.1	2.4	2.8
Non-OECD countries	7.4	4.8	3.6	4.3	4.1
Developing countries	7.4	6.1	5.3	5.9	6.0
East Asia and Pacific	9.7	8.3	7.6	8.1	7.9
China	10.4	9.2	8.2	8.6	8.4
Indonesia	6.2	6.5	6.0	6.5	6.3
Thailand	7.8	0.1	4.3	5.2	5.6
Europe and Central Asia	5.4	5.6	3.3	4.1	4.4
Russia	4.3	4.3	3.8	4.2	4.0
Turkey	9.2	8.5	2.9	4.0	5.0
Romania	-1.6	2.5	1.2	2.8	3.4
Latin America and Caribbean	6.1	4.3	3.5	4.1	4.0
Brazil	7.5	2.7	2.9	4.2	3.9
Mexico	5.5	3.9	3.5	4.0	3.9
Argentina	9.2	8.9	2.2	3.7	4.1

	2010	2011	2012e	2013f	2014f
Middle East and N. Africa	3.8	1.0	0.6	2.2	3.4
Egypt ⁷	5.0	1.8	2.1	3.1	4.2
Iran	2.9	2.0	-1.0	-0.7	1.5
Algeria	3.3	2.5	2.6	3.2	3.6
South Asia	8.6	7.1	6.4	6.5	6.7
India ^{7, 8}	9.6	6.9	6.6	6.9	7.1
Pakistan ⁷	4.1	2.4	3.6	3.8	4.1
Bangladesh ⁷	6.1	6.7	6.3	6.4	6.5
Sub-Saharan Africa	5.0	4.7	5.0	5.3	5.2
South Africa	2.9	3.1	2.7	3.4	3.5
Nigeria	7.9	7.4	7.0	7.2	6.6
Angola	3.4	3.4	8.1	7.4	6.8
Memorandum items					
Developing countries					
excluding transition countries	7.8	6.4	5.5	6.1	6.2
excluding China and India	5.6	4.4	3.6	4.3	4.5

Source: World Bank, *Global Economic Prospects*, June 2012.

Notes: PPP = purchasing power parity; e = estimate; f = forecast.

1. Canada, France, Germany, Italy, Japan, the UK, and the United States.

2. In local currency, aggregated using 2005 GDP Weights.

3. Simple average of Dubai, Brent and West Texas Intermediate.

4. Unit value index of manufactured exports from major economies, expressed in USD.

5. Aggregate growth rates calculated using constant 2005 dollars GDP weights.

6. Calculated using 2005 PPP weights.

7. In keeping with national practice, data for Egypt, India, Pakistan and Bangladesh are reported on a fiscal year basis in Table 1. Aggregates that depend on these countries, however, are calculated using data compiled on a calendar year basis.

8. Real GDP at market prices. GDP growth rates calculated using real GDP at factor cost, which are customarily reported in India, can vary significantly from these growth rates and have historically tended to be higher than market price GDP growth rates. Growth rates stated on this basis, starting with FY2010-11 are 8.4, 6.5, 6.9, 7.2, and 7.4 percent.

SHIELDS: A Framework for Assessing and Maintaining Financial Stability over Time and Across Nations

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The original version of this paper was prepared for the Common Market for Eastern and Southern Africa's (COMESA) Financial System Development and Stability Sub-Committee (FSDS). This article is a highly abridged and simplified version focusing on procedures for assigning stability ratings. The views, opinions and findings expressed herein are strictly those of the author and do not necessarily represent those of the Reserve Bank of Zimbabwe or its official policy. The usual caveats apply.

ABSTRACT

Financial stability assessments are complicated by the lack of a clear and consensus definition of financial stability. While the world, led by academics, awaits the development of a coherent, robust, consistent, and authoritative framework for measuring financial stability, financial stability practitioners meanwhile require pragmatic, rather than optimal methodologies, to maintain financial stability until definitive approaches materialise.

In this paper we review a new, structured, comprehensive, conceptually sound, analytical framework for the assessment and measurement of systemic stability over time and across nations, termed the SHIELDS rating system. The development of a structured analytical framework for the assessment of overall financial stability, as summarised in this paper, it is essential to discipline and inform the process of continuous information gathering, analysis, and monitoring to gauge resilience of the financial system to endogenous and exogenous shocks; as well as formulation of risk mitigation strategies.

A comprehensive, forward-looking approach to financial stability assessment would promote the systematic identification, evaluation and monitoring of all key risks and vulnerabilities, employment of multiple diagnostic tools, systematic consideration of various facets of

financial stability, analytical consistence and sharpen the focus of risk mitigation work.

The SHIELDS framework for assessing and maintaining financial stability has inbuilt flexibility in that it does not rely on any particular algebraic formulations, but pragmatic characterisation of the fundamental properties of financial stability. Quantitative models used should inform the policymaker rather than being automatic determinants of the ultimate decision. Accordingly, qualitative analysis, based on informed judgement, still plays an important role in financial stability. Thus the SHIELDS rating system facilitates the integration of various quantitative and qualitative financial stability analyses into a standard framework, results of which are amenable to comparison over time with a given country and across nations.

1 INTRODUCTION

At conceptual level, frequent episodes of financial distress, some of which have threatened domestic, regional and global economies, have rendered financial stability an increasingly important objective in economic policy-making in most countries. The recent global financial crisis of 2007/09 and the resultant recession, for instance, further demonstrated that maintenance of financial stability should be a major economic policy objective for all nations. Thus, in recent decades, especially following the East Asian financial crisis of 1997/8, many academics and financial stability practitioners have devoted considerable resources to the practice of monitoring and assessing financial stability.

In practice, however, financial stability analyses are complicated by lack of a clear and consensus definition of financial stability. There is no authoritative, universally accepted, clear definition of financial

stability in the laws of various nations and/or in academic literature on finance. As such, financial stability frameworks in most countries are largely under-developed with no clear institutional objective and/or legal backing.

In most cases, there is no standardised framework to discipline the gathering, processing, analysis and/or interpretation of financial and macroeconomic aggregates for financial stability purposes. Some countries produce Financial Stability Reports (FSRs) lacking in overall financial stability assessment, a forward-looking outlook, and granularity.

The development of a coherent Framework for Financial Stability Assessment will facilitate comparison of financial stability assessments over time within a given country and across nations. Such a framework will provide structure and discipline to the process of continuous information gathering, analysis, and monitoring as well as formulation of risk mitigation strategies.

The rest of this paper is organised as outlined hereunder. Section 2 provides a brief overview of the evolution of financial stability definitions. The objectives of financial stability assessment in Section 3 are followed by a conceptual outline of the key pillars of the new framework for maintaining financial stability in Section 4. Details of the framework's building blocks constitute Sections 5 to 9, being the on-going surveillance framework, diagnostic assessment framework and the policy framework. Section 7 in particular provides technical details of the financial stability assessment process (FiSTAS) followed by the implementation requirements in Section 10.

2 FINANCIAL STABILITY DEFINITIONS

The art and science of financial stability assessment is considered to be still in its infancy. Academics and policy-makers partly attribute this state of affairs to the absence of a clear cut definition of what constitutes financial stability. Goodhart and Tsomocos (1997, p18), for instance, observe that, "There is no consensus, either in theory or in practice," on the appropriate framework or institutional setting for maintaining financial stability. Schinasi (2004, p4), concurs that, "Without a good working definition, the growing financial stability profession will continue to

find it difficult to develop useful analytical frameworks for examining policy issues."

The development of a widely acceptable definition(s) of financial stability will, therefore, go a long way towards the establishment of a framework for financial stability. Admittedly, definitions of financial stability will change over the course of time on the basis of theoretical advances. Early definitions of financial stability tended to focus on its antitheses, i.e. financial instability or crises. As in Goodhart (2005, p2), "There is no clear-cut instrument, nor a clear-cut objective, except the negative one of avoiding financial instability." According to Mishkin (1999) financial instability "occurs when shocks to the financial system interfere with information flow so that the financial system can no longer do its job of channelling funds to those with productive investment opportunities." Similarly Schwartz (1986) stipulates that, "A financial crisis is fuelled by fears that the means of payment will be unobtainable at any price and, in a fractional reserve banking system, leads to a scramble for high-powered money."

Ferguson (2003) suggests that financial instability, "Involves some notion of market failure or externalities that can potentially impinge on real economic activity". It is characterised by three basic criteria:

- (i) Sharp divergence of some important set of financial asset prices from fundamentals; and/or
- (ii) Significant distortion of market functioning and credit availability, domestically and/or internationally, resulting in
- (iii) Significant deviation (or potential deviation) in aggregate expenditure, either above or below, the economy's ability to produce.

Direct definitions of financial stability are considered more useful in economic policy formulation than indirect ones. The alternative positive definitions of financial stability emphasises variegated aspects of systemic stability. The main themes discussed include:

- a. Effective discharge of key economic functions and roles, (including efficient allocation of resources);
- b. Adverse impact on both the real and financial sectors;
- c. Resilience to endogenous and

- exogenous shocks;
- d. Effective risk management;
- e. Collective stability of the main components of the financial system;
- f. Confidence is also critical in some definitions.

Crockett's positive definition (1997), for instance, distinguishes between stability of financial institutions and financial markets. Key financial institutions are stable if they continue to meet their contractual obligations without interruption or outside assistance, and there is a high degree of confidence in the financial system. Key financial markets are stable if asset prices reflect fundamentals and do not oscillate without changes in those fundamentals.

Foot (2003) proposes that financial stability subsists where there is: (a) monetary stability; (b) employment levels are close to the economy's natural rate; (c) confidence in the operation of the generality of key financial institutions and markets in the economy; and (d) where there are no relative price movements of either real or financial assets within the economy that will undermine (a) or (b).

Although Foot regards the first three elements of his definition as "non-contentious", Issing (2003) as cited in Bårdsen, Lindquist, and Tsomocos (2006, p7), argues that efficient allocation of savings to investment should not form part of a definition of financial stability. For instance, while the Soviet Union did not have efficient allocation of savings to investment opportunities between 1917 and 1991, it did not suffer from financial instability, except right at the end of its existence.

A number of central banks have adopted more pragmatic definitions of financial stability. According to the Czech National Bank (CNB) financial stability is a situation where the financial system operates with no serious failures or undesirable impact on the present and future development of the economy as a whole, while showing a high degree of resilience to shocks. The

Norges Bank, the Central Bank of Norway adopted a definition of financial stability that reads: "Financial stability means that the financial system is robust to disturbances in the economy, so that it is able to mediate financing, carryout payments and redistribute risk in a satisfactory manner."

The Reserve Bank of Australia, as represented in Hunter, Orr and White (2005, p12) defines financial stability around preconditions rather than outcomes: Financial stability exists when financial risks are, "Adequately identified, allocated, priced and managed." This is an *ex ante*, and not an *ex post* definition.

Goodhart, Sunirand, and Tsomocos (2004, 2005, 2006) and Tsomocos (2003) and Aspachs et al (2006) propose a two factor model of overall financial stability. In their view, financial stability can be summarised by two concepts namely the probability of default (PD)¹ of both banks and economic agents and bank profitability. In their view, episodes of financial instability are characterised by a combination of high probabilities of default and low bank profitability. Proponents of this approach argue that the focus on probability of default and bank profitability facilitates the modelling of financial stability as an equilibrium phenomenon amenable to comparative statistics.

Schinasi (2004, p7-8) suggests that financial stability is a broad concept which occurs on a continuum. The portrayal of financial stability as a broad and multidimensional phenomenon acknowledges that threats to financial stability can emanate from diverse endogenous and exogenous sources.

In a multidimensional and multifaceted setting, maintenance of financial stability requires stability of the individual components of the financial system and collective stability. Vulnerabilities in one component may affect the smooth functioning of the others, rendering the entire financial system unstable. Due to the multidimensional and multifaceted nature of financial stability, as well as conceptual challenges, some researchers,

¹Bank repayment rates are usually positively correlated with profitability. In good economic times, bank profitability rises, bank repayment rates improve, and thus PDs fall. In Aspachs et al's (2006) research, accounting data was found to be less informative for a number of reasons; hence reliance was placed on market data, especially percentage changes in equity values of the banking sector.

Schinasi included, are of the view that developments in financial stability cannot be summarised in a single generally accepted metric (quantitative number / indicator). Schinasi (2004, p4) is emphatic that, "A single target variable cannot be found for defining and achieving financial stability," and even doubts that, "A single target variable approach accurately represents actual practice in monetary policy making." A multidimensional approach is recommended. The COMESA definition of financial stability means a range of conditions in which the financial system, comprising of financial institutions, financial markets, and financial infrastructure:

- a. Fulfills its key economic functions and roles with no significant failures, cascading defaults, or adverse systemic impact, current or potential, on the real and/or financial sectors;
- b. Is resilient to endogenous and exogenous shocks (current or potential);
- c. Facilitates effective assessment, pricing and management of risks; and
- d. Promotes confidence in, and collective constituents' stability of the financial system even in periods of profound structural change.

3 OBJECTIVES OF FINANCIAL STABILITY ASSESSMENT

Following Bårdsen, Lindquist and Tsomocos (2006, p3) safeguarding financial stability, "Involves analyses of potential threats to financial stability, assessment of the present situation and the outlook ahead, and policy actions based on the risk assessment."

Thus the core objectives of financial stability assessment are to:

- a. Facilitate early identification of sources of risks (to stability) and of potential vulnerabilities that could threaten financial stability;
- b. Promote rigorous, accurate and systematic assessment² of the present degree of financial stability as well as the outlook ahead;
- c. Evaluate the ability of the financial

system to absorb shocks should the risks identified materialise;

- d. Provides the lead time for appropriate policy responses;
- e. Following Schinasi (2005, p11), promote adoption of preventive and timely remedial (risk mitigation) policies and/or restore the system to stability (via resolution of problems) when preventive and remedial action fail.

The emphasis should be on practical relevance rather than esoteric formal elegance. To paraphrase valuable insights in Taylor (1993, p209), maintaining financial stability does not require details of any particular algebraic formulations, but a pragmatic characterisation of the fundamental properties of the financial stability policy framework. Weber (2008, p5) argues that "financial stability assessment does not aim for clairvoyance." The objective is to minimise occurrence, costs, and risks of financial instability.

Qualitatively, threats to financial stability may stem from deep-seated weak spots within the system and/or strong shocks. Risks and vulnerabilities may thus develop from endogenous sources, within the financial system, as well as exogenously. Endogenous risks may arise in any of the three main components of the financial system, that is institutions, markets, and infrastructure, whereas exogenous risks originate from problems outside the financial system, say in the real economy (households, firms, and the public sector), natural catastrophes, political events, technological innovations, etc.

Proper determination of the different sources of risks and vulnerabilities is important as the risk reduction strategies employed sometimes depend on whether risks are of endogenous or exogenous origins. Ideally, financial stability assessments should entail, "A systematic and periodic process of monitoring each of these sources of risks, both individually and collectively by taking account of cross-sector and cross-border linkages." In practice there are too many potential risk triggers, while on the other hand, focusing on broad risk categories does not necessarily identify

²The assessment may also require calibration of the intensity of identified risks and evaluation of their probabilities (which may differ from country to country) of leading to financial-system problems and possible systemic effects. May also involve mapping of risk transmission channels.

the underlying source of risk that need to be managed.

As potential shock triggers are random, the focus is sometimes placed on assessment of key structural vulnerabilities. Haldane, Hall and Pezzini (2007, p4) suggest that financial stability surveillance work should focus on the identification of the most material risks to the financial system. In their view, the focus on detailed examination of key structural vulnerabilities helps improve understanding of the fault lines, to help predict the potential location of and possible scale of any future financial earthquake. As such attention should be drawn to a small number of key risks that could have material impact on financial stability

In 2007, the Bank of England, for example, identified six key vulnerabilities for the UK Financial System, namely: Low / High risk premia; Global imbalances; Global corporate debt; UK household debt; LCFIs stress; and Infrastructure disruption. The Bank of England (FSR 2008, p50) points out that fault lines are by nature likely to be broad, deep seated and long lived: "The key vulnerabilities ... are typically structural and slow moving, arising as a result of exposures, imbalances or dependences."

There are however, important linkages between key structural vulnerabilities and various categories of risk. Each vulnerability may be susceptible to many potential triggering shocks, which not only tend to change over time but also affect several vulnerabilities. The materialisation of one or more vulnerabilities may render simultaneous or sequential crystallisation of others if triggered by common shocks, or if they are interrelated. Davis and Karim (2008, p2) suggest that financial crises are not random events but may be generally characterised by common features with discernible phases, namely:

- a. Favourable primary endogenous and/or exogenous shocks to the economy and financial system;
- b. Build-up of vulnerability or imbalances in

the economy and financial system via, for example, the mis-pricing of risks or over-optimistic expectations;

- c. Adverse secondary shocks in the economy and financial system expose weak spots and imbalances;
- d. Crisis propagation, involving failure / collapse of institutions and/or markets (banking, currency, or debt crises), via systemic (contagion) risk, cascading defaults, collapse of market liquidity, waning profitability, asset price volatility / bubbles³, shift in expectations, and generalised insolvency;
- e. Policy prescriptions namely – preventive, remedial, and resolution – depending on the severity of the crisis;
- f. And, economic consequences – depending on severity of the crisis and policy actions adopted.

The causes of financial instability are well known and have been the focus of numerous studies. Kindleberger (1978) and Minsky (1977) popularised the "financial instability" hypothesis which suggests that the financial system is inherently fragile and prone to periodic episodes of financial crises. As in Simons (1936, p. 7-10) stability of the financial system and the economy may be impaired by a number of factors including: "hysterical mob bullishness and bearishness"; proliferation of short term loans; call-loan financing; inadequate capitalisation; unsecured short-term loans; widespread efforts to improve asset quality; solvency conditions of the banking sector and chaotic liquidations.

Shin (2005) outlines a framework wherein the value of claims and obligations are assessed in a closely knit system of interlocking balance sheets. In the financial system, many assets turn out to be claims against other borrowers. In other words one party's obligation is usually another party's asset. The relative value of assets and liabilities are interdependent on the creditworthiness of other institutions in the system and availability of credit. The value of each asset depends on a vector of all claims in the financial system. In a financial system where balance sheets are marked-to-market, asset price changes show up immediately on

³According to Franklin Allen (2005, p63), "The difference between the equilibrium price and the fundamental value is the 'bubble'". In simple terms the fundamental value is the discounted present value of the expected payoff where the discount rate is the opportunity cost of the investor (Ibid, p59).

the balance sheets. The equity value of the financial system depends on the marked-to-market value of "fundamental assets", which are assets that are not the obligation of any other investor. Balance sheets may serve as a conduit for the transmission of shocks and amplification of shocks in the financial system. And financial institutions actively manage their balance sheets in response to changes in prices and risk profiles.

Attempts by one economic agent to regain solvency by paying off debts or selling fundamental assets may undermine asset values and trigger solvency challenges on other investors' balance sheets via mark-to-market. Intuitively, the greater the fall in asset values due to selling pressure the more widespread de-leveraging effect may be.

Hawkesby (2000, p40-41) also identifies the following factors as contributory to financial instability: "small" capital base; liquidity mismatch; information asymmetries; complex risks; disaster myopia; and irrational exuberance. Additional factors are moral hazard; insufficient transparency; poor corporate governance; rapid financial sector liberalisation; deficiencies in supervision; poor macroeconomic policies; and poor exchange rate regimes.

Financial stability frameworks should, therefore focus on identifying and dealing with the exogenous and endogenous risk to financial stability, following a multidimensional approach.

4 COMESA FRAMEWORK FOR FINANCIAL STABILITY ASSESSMENT

The COMESA Framework for Financial Stability Assessments provides a practical example of a multi-faceted and multi-dimensional financial stability assessment framework. The diagram below shows the key elements of the framework.⁴

At a conceptual level, the COMESA Framework for Financial Stability Assessment is composed of three mutually reinforcing

building blocks / pillars namely: (a) on-going macro and micro surveillance; (b) diagnostic financial stability assessment; and (c) policy options.

The framework provides comprehensive structure, guidance and discipline to the process of continuous information gathering, analysis, monitoring, and assessment as well as the systematic identification of sources of risk and vulnerabilities.

5 ON-GOING SURVEILLANCE FRAMEWORK

Following the characterisation of financial stability as a multidimensional and multi-faceted concept, on-going surveillance is by necessity very broad in scope. In general terms, on-going surveillance involves periodic and systematic monitoring and analysis of the global macro-financial conditions (global economy and the international financial system); domestic financial system and its three main sub-components; and the domestic real economy and its main subcomponents; ideally by specialists in the respective areas.

The main objective is to define the nature and extent of risks and vulnerabilities as well as developments in or conditions of macroeconomic and/or financial sectors that might threaten overall financial system stability. This requires cooperation among, and input from, all the key stakeholders.

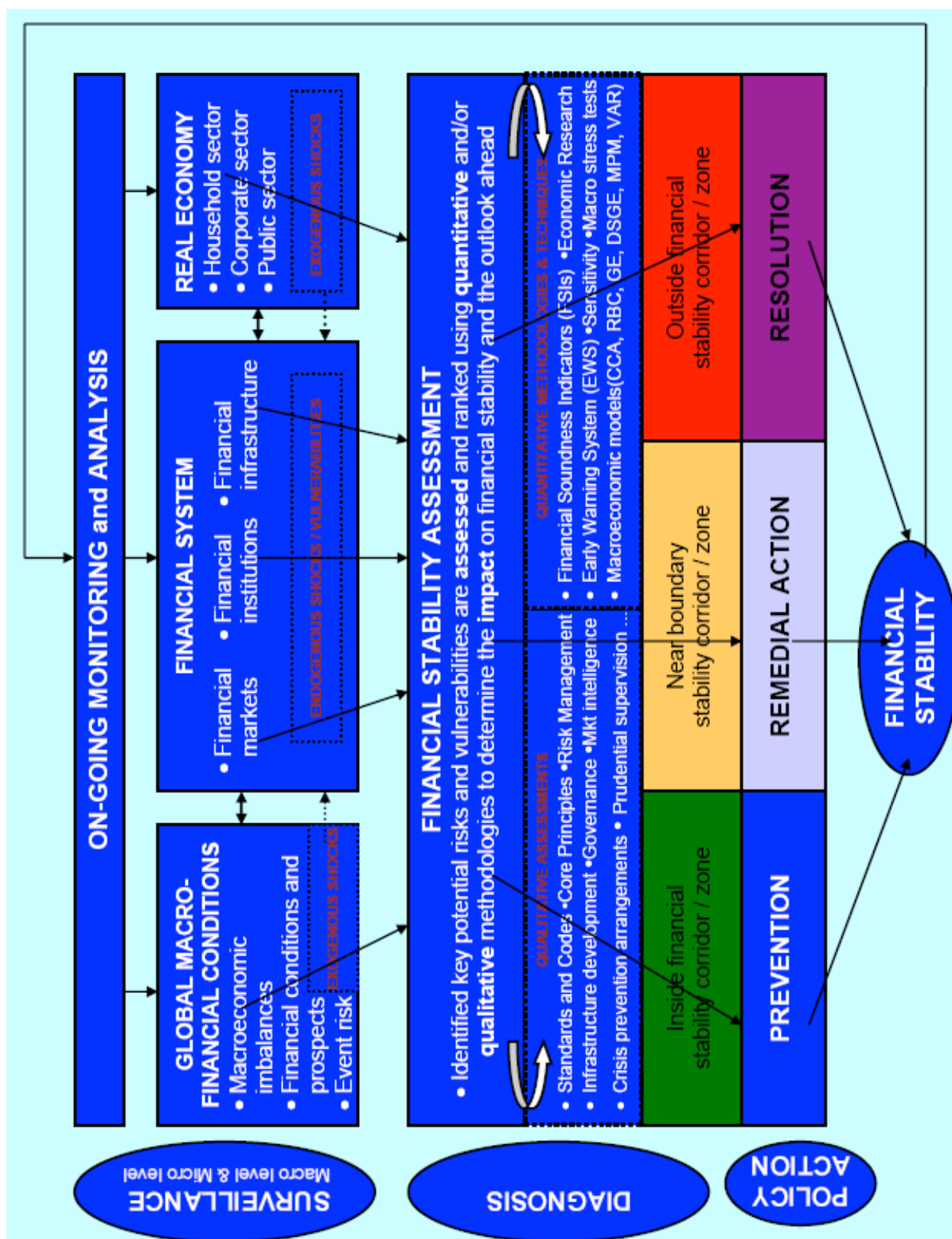
Approaches used include:

- Macro-level and Micro-level Surveillance;
- Quantitative and Qualitative Surveillance;
- Monitoring global and domestic macro-financial conditions;
- Assessment of macro-financial linkages and macro-prudential analyses; and
- Financial system supervision and regulation.

Static and trend analysis maybe used, as well as standard rating systems where applicable (e.g. CAMELS, CARAMELS, RIF(C)

⁴RBC: Real Business Cycle Models, GE: General Equilibrium Models, DSGE: Dynamic Stochastic Equilibrium Models, DAE: Dynamic Aggregate Econometric Models, MPM: Monetary Policy Models, CCA: Contingent Claims Analysis, DtD: Distance to Default, VAR: Vector Autoregressive Models, BRS: Bank Rating Systems.

CONCEPTUAL FRAMEWORK FOR MAINTAINING FINANCIAL SYSTEM STABILITY



Source: Developed from Schinasi (2005, p.13), Schinasi (2004, p.5) and Hunter et al (2006, p.15)

D, etc. Analytical emphasis should be on understanding why the indicators moved rather than descriptive narratives. In some instances, empirical modelling techniques, scenario analysis, and tests may be used if need be. The choice of the appropriate indicators and the analytical techniques employed may also vary from country to country depending on financial architecture.

6 DIAGNOSTIC ASSESSMENT FRAMEWORK

The ultimate objective of diagnostic assessment is to gauge the likelihood of identified potential risks, and determine impact thereof, on financial stability as well as the real economy, to enlighten the formulation and implementation of appropriate policy actions as determined by financial stability developments and conditions.

According to González-Páramo (2007, p8) diagnostic financial stability assessment is concerned about the "rigorous and accurate assessment of the degree of financial stability." In other words, this analysis strives to determine risk boundaries or the position of the financial system along the financial stability continuum. The focus is on overall financial sector stability and not individual financial institutions.

Diagnostic assessment employs a wide range of quantitative and qualitative methodologies to evaluate stability. Some of the specific methodologies are:

- a. Macro-prudential analysis;
- b. Macro-stress testing;
- c. Early Warning Systems (EWS) analysis;
- d. Economic Research / Macroeconomic Forecasts;
- e. Bank Rating Models; and
- f. Macroeconomic Models for Financial Stability.

Macroeconomic models for financial stability include Distance to Default (DtD) analysis; Contingent Claim Analysis (CCA), Value at Risk (VaR); volatility analysis; and several other model based analysis of identified risks. For instance, macroeconomic forecasts may cover corporate and household

sectors' impact on financial stability. A suite of models and stress testing are often required to safeguard stability of the financial system via on-going evaluation of multiple endogenous and exogenous risk factors, key structural vulnerabilities, and/or macro-financial imbalances. A critical component of the Diagnostic Assessment Framework is embodied in the Financial Stability Assessment Process.

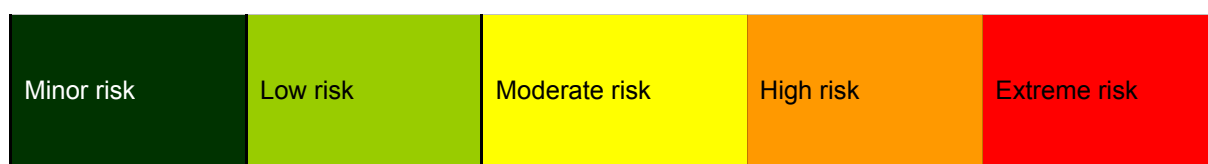
7 FINANCIAL STABILITY ASSESSMENT PROCESS

The Financial Stability Assessment System (FiSTAS) adopted by COMESA provides a standardised but flexible format by which financial and/or monetary authorities may identify, analyse, measure, mitigate, monitor and report financial stability issues, risks and vulnerabilities. FiSTAS provides a well-structured framework which facilitates the processes listed hereunder:

- a. Systematic identification of key vulnerabilities and imbalances;
- b. Translating process in (a) into potential risk scenarios;
- c. Identifying endogenous and exogenous triggers (shocks) for the scenarios;
- d. Assessing the likelihood of scenarios arising;
- e. Estimating the impact (costs) for the financial system; and
- f. Assessing robustness to shocks and ranking the risk.

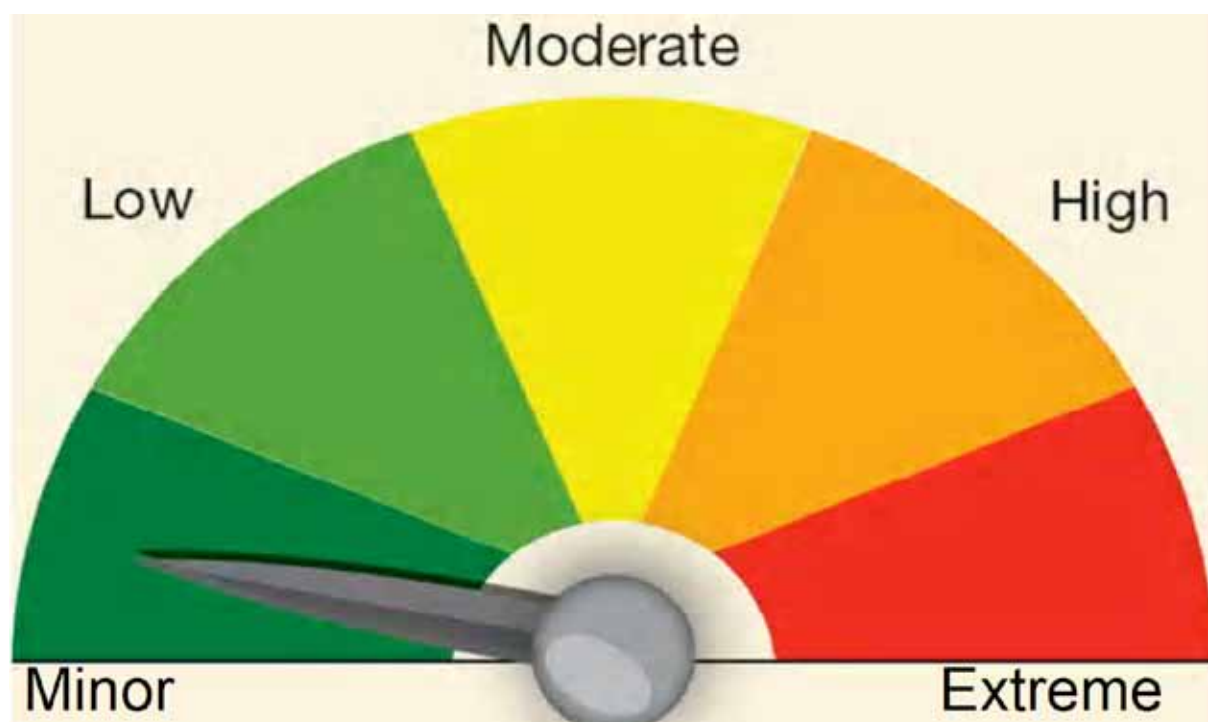
7.1 Risk Ratings

Notwithstanding the revered improvements in risk management following the adoption of Basel II, most well-known and widely used risk assessment systems have inadequate granularity. We introduce herein a novel five-tier GLYOR colour coding system adopted in this paper in order to enhance the granularity of the risk assessment system. The acronym GLYOR stands for **Green**, **Lime**, **Yellow**, **Orange** and **Red** wherein Green denotes Minor, Miniscule or Insignificant risk, Lime – Low risk, Yellow – Moderate risk, Orange – High risk, and Red – Extreme risk. Schematically, the GLYOR colour coding system may be portrayed as follows:



Source: Gift Chirozva

Alternatively, a GLYOR Scale may be used to represent the risk grading system.



Source: Gift Chirozva

The aggregate inherent risk rating to financial stability for each risk element is determined by a combination of impact / effect (the potential harm that could be caused) and probability (the likelihood of the particular event [vulnerability] crystallising as illustrated below.



Source: Financial Services Authority (2006, p10)

Risk Rating Scales

IMPACT / EFFECT		PROBABILITY / LIKELIHOOD	
Colour Code	Score / Rating	Colour Code	Score / Rating
Green	1 = No impact	Green	1 = Remote / Unlikely
Lime	2 = Low impact	Lime	2 = Low
Yellow	3 = Moderate impact	Yellow	3 = Moderate
Orange	4 = High Impact	Orange	4 = High
Red	5 = Catastrophic	Red	5 = Imminent

AGGREGATE INHERENT RISK RATING [Impact X Likelihood]		
Colour Code	Score / Rating / Points	
Green	1 = Minor risk	[01 to 02] ¹¹
Lime	2 = Low risk	[03 to 05]
Yellow	3 = Moderate risk	[06 to 10]
Orange	4 = High risk	[11 to 16]
Red	5 = Extreme risk	[17 to 25]

Source: Gift Chirozva

Overall Composite Risk

AGGREGATE INHERENT RISK RATING [Impact X Likelihood]			QUALITY OF CONTINGENCY PLANS IN PLACE	
Colour Code	Score & Rating		Colour Code	Score & Rating
Green	1 = Minor risk	[01 to 02]	Green	1 = Very Strong
Lime	2 = Low risk	[03 to 05]	Lime	2 = Strong
Yellow	3 = Moderate risk	[06 to 10]	Yellow	3 = Acceptable
Orange	4 = High risk	[11 to 16]	Orange	4 = Weak
Red	5 = Extreme risk	[17 to 25]	Red	5 = Poor

OVERALL COMPOSITE RISK		
Colour Code	Score / Rating / Points	
Green	1 = Minor risk	[01 to 04]
Lime	2 = Low risk	[05 to 12]
Yellow	3 = Moderate risk	[13 to 33]
Orange	4 = High risk	[34 to 64]
Red	5 = Extreme risk	[65 to 125]

Source: Gift Chirozva

A qualitative or quantitative approach may be used to determine the overall risk to financial stability. The two approaches are illustrated below, beginning with the qualitative approach:

Determining the Overall Risk – qualitative approach

Quality of Contingency Plans in Place	Aggregate Inherent Risk				
	Minor	Low	Moderate	High	Extreme
	Overall Composite Risk				
Poor	Moderate	Moderate or High	High	High or Extreme	Extreme
Weak	Low or Moderate	Moderate	Moderate or High	High	High or Extreme
Acceptable	Low	Low or Moderate	Moderate	Moderate or High	High
Strong	Minor or Low	Low	Low or Moderate	Moderate	Moderate or High
Very Strong	Minor	Minor or Low	Low	Low or Moderate	Moderate

Source: Gift Chirozva

Illustrative Numerical GLYOR Rating					
Inherent Risk to Financial Stability [Probability x Impact] [A]	Quality of Contingency Plans (on scale of 1 to 5) [B]	Overall Composite Risk to Financial Stability [A x B]	Indicative External Rating	Composite Descriptive Risk Rating & Numerical Score	
1		1 to 2	AAA	Minor	1
2		3 to 4	AA+		1
3		5 to 6	AA	Low	2
4		7 to 9	AA-		2
5		10 to 12	A+		2
6		13 to 16	A	Moderate	3
7		17 to 20	A-		3
8		21 to 24	BBB+		3
9		25 to 28	BBB		3
10		29 to 33	BBB-		3
11		34 to 38	BB+	High	4
12		39 to 43	BB		4
13		44 to 48	BB-		4
14		49 to 53	B+		4
15		54 to 58	B		4
16		59 to 64	B-		4
17		65 to 70	CCC+	Extreme	5
18		71 to 76	CCC		5
19		77 to 83	CCC-		5
20		84 to 90	CC		5
21		91 to 97	C		5
22		98 to 104	SD / DDD		5
23		105 to 111	D / DD		5
24		112 to 118	D		5
25		119 to 125	-		5

Source: Gift Chirozva

Preliminary results of the financial stability assessment may be recorded in a Financial Stability Assessment Matrix. The matrix facilitates the systematic evaluation of all the key risk elements that might affect stability. It takes into account quantitative (e.g. scope and severity of the potential risk) as well as qualitative factors.

The abridged version thereof is illustrated below:

Abridged Risk Assessment Matrix as at 31 December 20XX

Risk / Vulnerability ⁱ⁵	Indicator ⁱⁱ / Risk Element	Impact / Effect ⁱⁱⁱ	Probability / Likelihood ^{iv}	Composite Rating ^v	Contingency Plans in Place ^{vi}	Actions Required
GLOBAL CONDITIONS						
• Macroeconomic Imbalances						
• Financial Vulnerabilities						
• Event risk issues						
FINANCIAL SYSTEM						
• Financial Markets issues / factors						
• Financial Institutions issues						
• Financial Infrastructure issues						
REAL SECTOR						
• Household Sector issues						
• Corporate Sector issues						
• Public Sector Issues						
OVERALL RATING						
• Impact on financial system						
• Impact on economy						

Source: Follows concepts in FSA (2006, pp 54-55) & Schinasi (2007, p29)

Decomposition of various categories of risk into key constituent risk elements may assist in the assessment the aggregate inherent of risk to financial stability. An illustrative detailed financial stability assessment matrix is available upon request to facilitate this process (see FSA (2006, pp. 54 to 55)) for instance for further guidance. Admittedly, some quantitative measures are at best proxies.

7.2 Overall SHIELDS Rating ...

There is need for a standardised financial stability rating framework that provides

coherent overall financial stability assessments over time and across different countries.

In this regard, a SHIELDS Rating System is hereby recommended, which is an acronym of the following factors:

Solvency Conditions;
Health of the Macroeconomy;
Institutional Quality;
Earnings Conditions;
Liquidity Conditions;
Default Conditions; and
Systemic Loss

ⁱ⁵. Current major risks or threats to financial stability

ⁱⁱ. The indicators are expressed in different formats such as absolute value, ratio, change a year, trend, deviation from trend, model generated parameters, etc

ⁱⁱⁱ. Assessed expected impact on financial stability if a vulnerability or risk factor is triggered.

^{iv}. Assessed likelihood of a vulnerability crystallization at some point over the next three years.

^v. A product of assessed impact and probability

^{vi}. Risk mitigation / management strategies

Each component of SHIELDS is assessed / rated using various metrics & qualitative considerations. A similar approach is used in the CAMELS system. Each component rating may be assigned a rating on a scale of “1” to “5” with “1” being the best possible and “5” the worst. A composite financial stability rating (systemic stability) is derived from the seven component ratings.

The determination of an overall shields rating will facilitate a comparison of the state of financial stability over time within a given country as well as across nations, or both. Financial stability reports produced in most countries do not have a framework which facilitates credible comparison among results of the different reports. The SHIELDS rating system is implementable in all countries notwithstanding their level of regulatory sophistication. The multi-component construction of SHIELDS, for instance, is familiar to most bank examiners using CAMELS rating system. The SHIELDS rating system, like CAMELS, is based on a comprehensive quantitative and qualitative evaluation criteria. It was further noted that the rating of Sovereign risk, also makes use of a number of cross-sectoral factors.

The SHIELDS rating system has inbuilt flexibility which allows Financial Stability Assessment practitioners to employ the most appropriate tools and instruments in accordance with developments in the real and financial sectors. As is the case with other regional initiatives, the emphasis is on enforcement of minimum standards. A member country may adopt stricter standards subject to their degree of sophistication.

We have argued throughout this study that risks to financial stability are random, numerous, and vary from time to time and across nations. It should be noted that identical shocks may vary in terms of speed, dynamic properties, and duration (transitory or permanent). Identical exogenous shocks may result in different outcomes across different economies due to variations in economic structures, adjustment mechanisms, and structural rigidities. These challenges call for a standardised framework whose results are easy to use over-time and across countries. The COMESA Framework for Financial Stability Assessments provides for systematic monitoring of the individual parts

of the financial system (institutions, markets, and infrastructure); components of the real economy (households, firms, & public sector); global macro-financial developments; and event risk (e.g. catastrophes).

7.3 Outlook

To provide a forward looking perspective, there is need to indicate an outlook for the SHIELDS rating. An outlook indicates the direction a rating is likely to move over a one year period.

A positive outlook indicates that there is a possibility to upgrade the rating in the course of the year, on the condition that positive tendencies are maintained and that current risks are mitigated. A stable outlook indicates that there are no anticipated reasons to change the rating. A negative outlook indicates that there is a possibility to downgrade the rating in the course of the year, if negative tendencies are maintained.

8 SOURCES OF DATA

8.1 Global Macro-financial Conditions

The SHIELDS rating system draws its inputs from the Financial Stability Assessment Matrix, Risk Assessment Rationale and other credible analyses. Regarding source of data in respect of the Global Macro-financial Conditions, reliance may be placed on several authoritative publications produced by specialist international institutions including:

- The Global Financial Stability report by the IMF;
- Global Risks report by the World Economic Forum; and
- Publications by regional blocks such as the African Development Bank (AfDB), the European Union (EU) the OECD including reports by other reputable central banks.

A critical perspective is useful as focus is on the tail-end of events as opposed to regurgitation of the publications. The main objective would be to evaluate current and potential impact of the global macro-financial conditions and prospects on financial stability in a subject country. The impact may be manifested and transmitted via the real or financial sector.

Overall SHIELDS Rating System

SHIELDS ASSESSMENT		Financial Stability Rating	
		Dec 2011	June 2012
EVALUATION CRITERIA	INDICATORS		
Solvency Conditions	- Current and future - Capital adequacy		
Home Economic Conditions	- Home economic conditions (household, corporate, public and external) - Credit conditions (booms or crunches) - Asset quality - Macroeconomic imbalances - Hard-wired Vulnerabilities - Current account developments		
Institutional Quality	- Institutional governance - Risk management - Infrastructure conditions - Systemic impact		
Earnings Conditions	- Bank profitability - Income generation risk - Systemic impact		
Liquidity Conditions	- Current & future developments in market, monetary, funding, balance sheet, and bank liquidity conditions - Short term loans - Systemic Liquidity		
Default Conditions	- Default Conditions - Impact of price changes - Systemic Default		
Systemic Loss	Systemic Loss [losses (to) depositors and creditors; deposit protection agencies; owners; the public sector fiscal accounts; on assets; and macroeconomic losses]		
COMPOSITE RATING	Systemic stability		

Source: Giff Chirozva

8.2 Financial System Surveillance

The framework relies, for its inputs, on concepts and international standards that are well established in the micro-prudential and macro-prudential financial system supervisory and regulatory fraternity. Most supervisors for instance, are familiar with the CAMELS and CARAMELS ratings, Basel II/III and Solvency II evaluations, Financial Soundness Indicators (FSIs) for banks, capital markets, and the insurance sectors, Financial Development Indicators as well as stress testing. Financial stability assessments employ both quantitative and qualitative analytical methods.

8.3 Health of the Home Economy

There are challenges in respect of data availability for assessment of the corporate, household and the non-bank financial sectors. Alternative sources of data include:

- Surveys;
- Statistical Offices;
- Tax Authorities;
- Registrar of Companies;
- Consumer Councils;
- Credit Reference Bureaus; etc

Time series and data on the housing sector in COMESA and other regions are often

sparse and fragmented. Some jurisdictions place reliance on survey-based indicators of household finances. In Australia, "information on the financial position of households is

provided by the Household, Income and Labour Dynamics in Australia (HILDA) Survey, which is conducted annually."

Household Assets [Per cent] For Period Ended Dec 20XX		
	Share of Total	Growth
Non-financial assets		
Houses		
Consumer durables		
Financial Assets		
Pension and life insurances		
Equities and units in trusts		
Currency and deposits		
Other		
Total		

Source: Gift Chirozva

Consideration of changes in the composition of household assets over time, as tabulated above, may provide potential indicators of threats to financial and economic stability.

"Among other things, the HILDA Survey⁶ asks each participating household a series of seven questions on whether it has experienced various specific financial difficulties during the year due to shortages of money;

- Could not pay utility bill on time
- Asked for financial help from family and friends
- Could not pay mortgage or rent on time
- Pawned or sold something
- Asked for help from charity
- Went without meals
- Were unable to heat home

"The HILDA Survey also asks households to make a self -assessment of their relative financial position given their current needs and financial responsibilities:

- a Self-assessment of financial position:
 - i. Prosperous or comfortable
 - ii. Just getting along
 - iii. Poor or very poor
- b Ability to raise funds(US\$2000 in a week) for an emergency:
 - i. Easily
 - ii. Would require a drastic change
 - iii. With some scarifies
 - iv. Unlikely

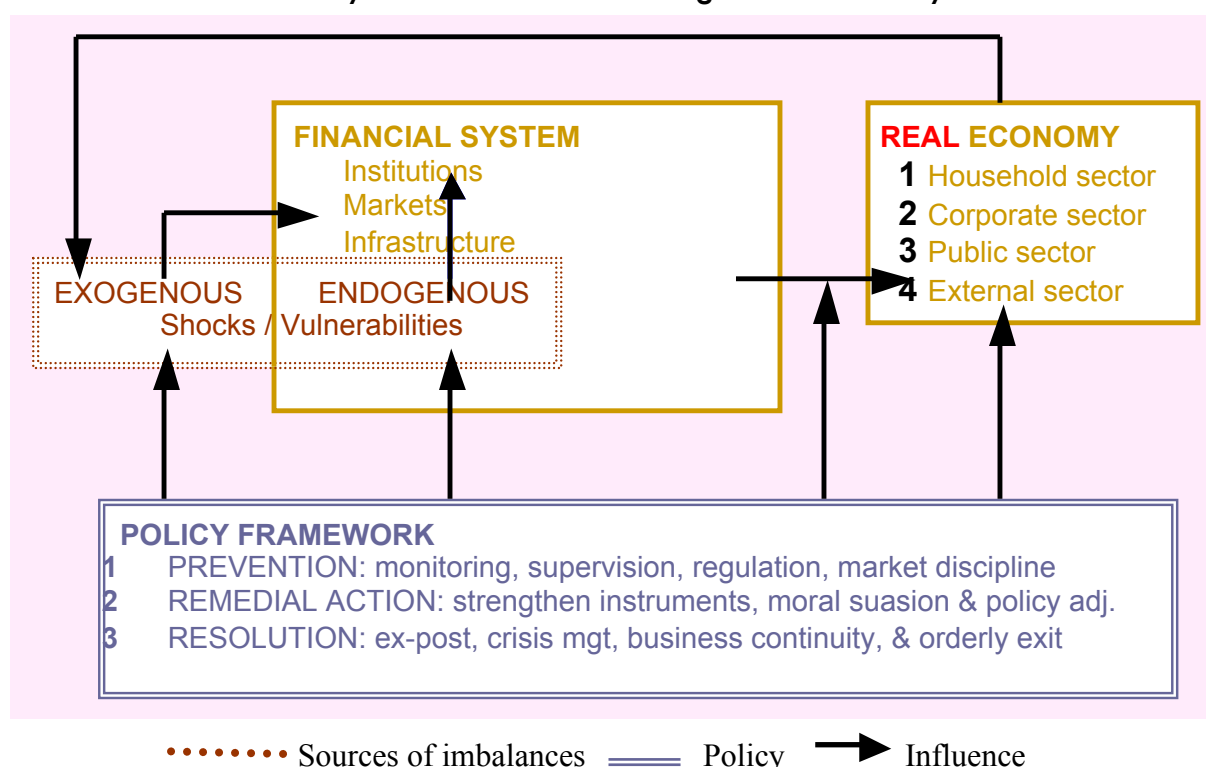
9 POLICY FRAMEWORK

Following diagnostic assessment of financial stability, the results may indicate that the financial system may be in a zone or corridor of stability, nearing the boundary of the stability zone or corridor, or in a crisis situation i.e. outside the zone of stability.

The policy framework has three stages namely prevention, remedial action, and resolution, depending on the financial stability assessments as illustrated below.

⁶See Reserve Bank of Australia (2008) "Financial Stability Review" March 2008

Policy Framework for Maintaining Financial Stability



Source: Adapted from Schinasi (2004, p5)

Prevention: In a stable financial system, the focus is on prevention and identification of potential problems. Authorities rely on efficient regulation, supervision and surveillance; lender of last resort function; market discipline; proper functioning of the payment system; sound monetary and fiscal policies, prudential meetings, and moral suasion. Surveillance enhances corporate governance and risk management practices.

Remedial/Corrective Measures are activated when preventive action fails. May include moral suasion; intensified prudential supervision and surveillance; and strengthened safety nets. Adjustments to monetary and fiscal policy instruments (for instance interest rates, exchange rates, taxes, subsidies, etc) are useful remedial measures if used appropriately. Preventive measures including speeches may be designed to influence incentive structures and risk taking behaviour.

Resolution techniques are implemented ex-post the on-set of crises and include arrangements for crisis management, business continuity, and orderly exit (closure or liquidation).

The effectiveness of a resolution framework depends on prompt identification of vulnerabilities and imbalances as they arise; the soundness of supervisory, regulatory, and legal frameworks; and the suitability of the resolution techniques to be applied (e.g. arrangements for crisis management, business continuity, problem bank resolution, and orderly exit- closure / liquidation.)

10 OPERATIONAL IMPLEMENTATION AND WAY FORWARD

In view of the multifaceted and multi-dimensional nature of financial stability, the COMESA Framework requires all member countries to establish Financial Stability Units and the creation of Multidisciplinary Financial Stability Committees incorporating all financial sector regulatory agencies, and other key stakeholders including departments of the Central Bank.

Financial Stability Units are usually established within central banks to draw on accumulated prudential and/or financial system data as well as economic research competencies. In some jurisdictions the Financial Stability Unit

(FSU) is a sub-set of the Banking Supervision Department while in some the FSU is housed in Economic Research. One approach is to set up a standalone FSU. The key conceptual issues to consider are access to data, propensity to act and independence. Propensity to act considers responsiveness, incentives and competencies to act on financial stability developments.

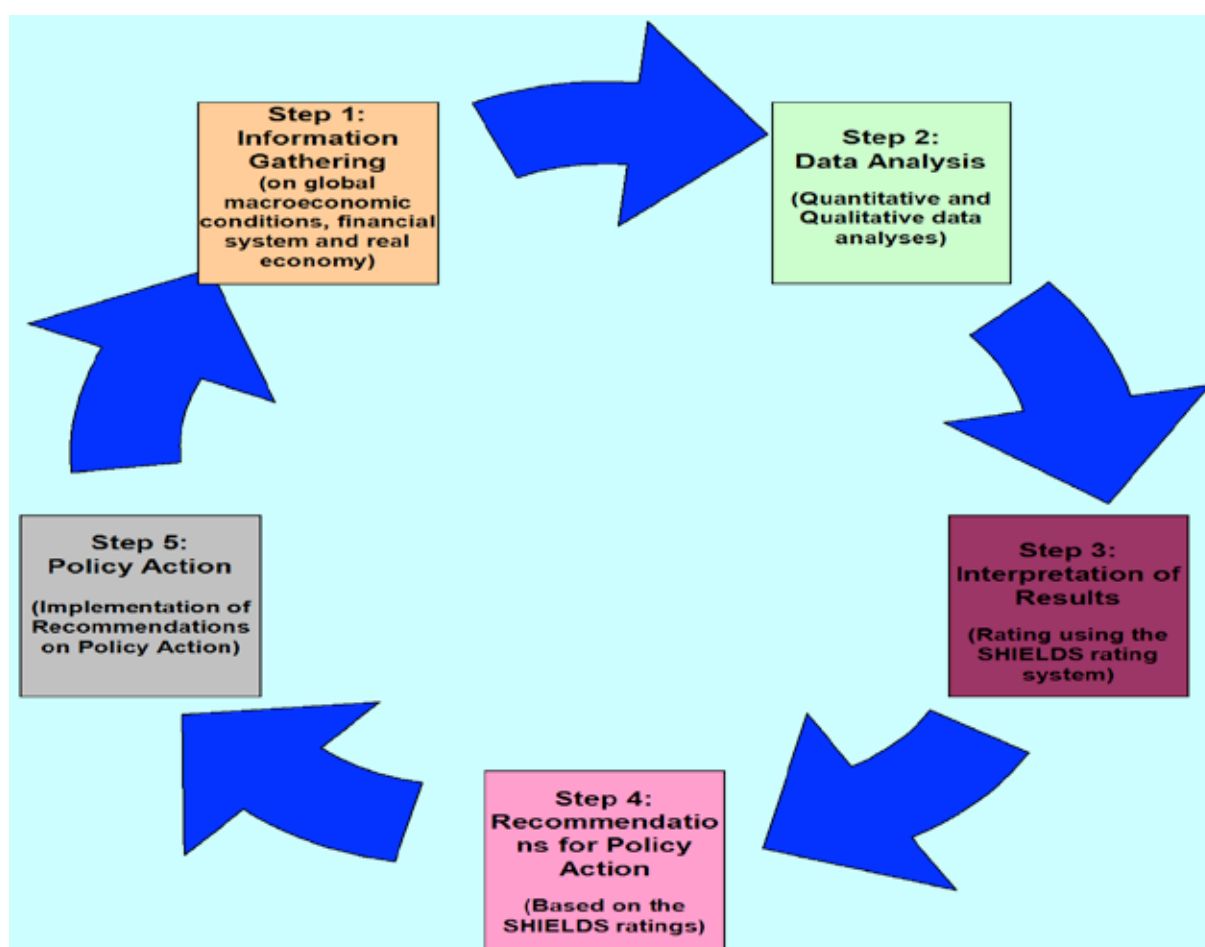
Member countries will decide composition of the Multidisciplinary Financial Stability Committees, its terms of reference, and frequency of the meetings. Among other

responsibilities, the committee also oversees internal and external presentation and/or publication of financial stability reports (FSRs).

10.1 Strategic Implementation Framework

To facilitate effective implementation of the COMESA Framework for Financial Stability Assessment, COMESA member countries are required to put in place National Strategic Implementation Frameworks.

The diagram below indicates some of the issues which may be considered.



Source: E. Zulu (Unpublished)

11 CONCLUSION

Whereas a lot of countries appreciate the need for conduct of on-going financial stability assessments, the high level of awareness is, however, not always followed by effective implementation on the ground. Compared to Risk-Based Supervision and Basel II, not much focus and resources are being committed to financial stability assessments.

In practice, financial stability frameworks in most central banks are largely under-developed with no clear institutional objective. While a number of in-country and regional workshops have been conducted by regulatory authorities on Risk-Based Supervision and Basel II for instance, training on financial stability assessments has to date

been unsystematic and scant, and often lasting one day or two. Financial stability assessment, like any other worthwhile cause, calls for aggressive implementation. Building a robust financial stability assessment regime also requires an ex-ante commitment of substantial time and resources.

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Recommendations for Development of Country Specific Risk Modelling Framework for Debt Sustainability Analysis

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This paper is an extract from a technical paper A Risk Modelling Approach to Debt Sustainability Analysis, presented by Nebson Mupunga as partial fulfilment of his MEFMI Fellows Development Programme.

EXECUTIVE SUMMARY

This paper proposes a risk modelling framework for debt sustainability analysis in MEFMI member states. The proposed framework seeks to help member countries to develop a risk modeling framework that explicitly recognises, measures and controls the relative cost and risks inherent in public debt management taking into consideration the linkages with key macroeconomic policies consistent with maintaining debt sustainability. The framework will facilitate prudent risk management of sovereign debt, while minimising the potential debt-related burden on tax payers and maximising the resources available for other expenditure.

The framework complements and augments the traditional debt sustainability analysis framework by facilitating assessment of the cost and risks of desired debt composition. It facilitates the monitoring of key financial risks, and establishes strategies that ensure member countries are well placed to take advantage of new borrowing opportunities in a considered and risk conscious way. The basic steps and issues in public debt risk modelling are highlighted in this paper and a recommendation is made for member countries to develop in-house risk models using a cautious step by step approach based on country circumstances rather than using sophisticated or off the shelf models.

1. INTRODUCTION

"The right answer for crisis avoidance is controlling risk... There are genuine issues of

modelling, but there is no issue whatsoever in recognizing that this approach is the right one. If authorities everywhere enforced a culture of risk-oriented evaluation of balance sheets, extreme situations such as those of Asia would just disappear or, at worst, become a rare species." Dornbusch (1998)

The importance of better understanding the potential vulnerabilities inherent in public debt portfolio and the measures to assess them particularly within MEFMI member countries can hardly be over emphasized especially due to increasing volatilities in the global financial markets. Increasing liberalization has brought global financial integration and greater access to new and complex sources of external and domestic financing. Concomitantly, global financial markets have been very volatile with large changes in commodity prices, foreign exchange, interest rates, and capital flows, posing the risk of raising the debt burdens to unsustainable levels and negatively affecting economic performance¹.

This exposure to exogenous shocks, as well as the high level of indebtedness has over the years, raised many questions for policy makers and the general public. For example, at what level does public debt become too high to be sustainable? What can policy makers do to cushion the economy against the risks that high debt presents, and, perhaps most importantly, what policy actions are needed to ensure that a particular debt reduction strategy is sustainable. These concerns points to the need for a robust debt management strategy with clear debt management objectives. As a consequence, debt sustainability and risk management have become key policy issues, given the instability that has been cogent to the international financial system².

The 2008/09 global economic and financial crisis has also underscored the benefits of

¹Claessens et al. (2000)

²A Benchmark For Public Debt: The Brazilian Case (2008)

prudent sovereign risk management. The crisis exacerbated debt sustainability problems in the region by adversely affecting capacity to repay, as traditionally measured by exports, GDP, and government revenues. At the same time, external borrowing increased in some countries to cushion the impact of the crisis and safeguard social and development objectives. Although the crisis has temporarily closed some of the potential financing avenues for developing countries, they are likely to become a general feature in most countries' financing options going forward³.

Reflecting the growing concern of potential debt distress, policy makers particularly in the developed world, have focused attention on developing frameworks which can assess the vulnerability to debt default and mitigate its impact on economic performance and financial stability. This, notwithstanding, many countries in the region still lack a coherent framework to fully assess the related costs and risks associated with the changing role of a public debt manager.

The capacity to identify, measure, and manage risks systematically throughout the operations of PDM in the region still lagged behind those in advanced and other emerging economies. This poses the risk of making the previous costly mistakes of accumulating debts to unsustainable levels, underscoring the need to strengthen PDM through development of prudent risk models to address concerns about growing potential risks of debt distress.

In the developed economies, benchmarks and stress testing methodologies are now being used as tools for setting public debt risk thresholds. The IMF and the World Bank have also developed quantitative tools for use by member countries to assess vulnerabilities inherent in public debt portfolios. For most countries, this entails modelling market risk, credit risk and operational risk⁴.

The most commonly used risk modelling techniques encompass the basic cost at risk

modelling, Asset Liability Management (ALM) modelling, Cash flow at risk (CFaR) modelling, Value at risk (VaR) modelling and budget at risk (BaR) modeling number of tools have also been developed by both multilateral institutions and private firms for use in the assessment of debt sustainability and risk. The commonly used tools are those developed by multilateral institutions since they are offered free of charge⁵ and are at the disposition of regional countries on non-commercial basis. The commonly used tools in this regard are the World Bank DSM+, the World Bank and IMF LIC-DSM Template and the World Bank and IMF MTDS Tool.

Although these risk modelling techniques may be more appropriate in quantifying public debt risk, many countries in the region have not yet adopted these frameworks due to lack of quality data, competent staff and thorough understanding of risk modelling techniques. Some countries in the region such as Uganda⁶ are in the process of implementing risk models that are consistent with international best practices, while others are still in the process of building this capacity.

It is against this backdrop that a regional risk modelling framework reminiscent of those used in advanced economies should be developed including specification of strategic benchmarks to assess sustainability of the desired debt portfolio composition. The framework should explicitly recognize the relative costs and risk inherent in public debt portfolios of MEFMI member countries and takes account of the inter-linkages with other key macroeconomic policies consistent with regional circumstances.

2. PUBLIC DEBT ANALYSIS IN THE REGION

Analysis of public debt sustainability in the region has traditionally focused on trends in sustainability indicators and composition of public debt without paying particular attention to risk issues. Emphasis has mainly

³Joint-IMF-World Bank Board Paper on Medium Term Debt Management Strategies (MTDS) 2009

⁴Rasheeda (2006)

⁵Private firms normally charge a fee for the license and for maintenance of the tool, but multilateral institutions would only charge for training on the use of the tool-(UNITAR (2008).

⁶The Government of Uganda is developing a public debt risk model dubbed Uganda Sovereign Liabilities Risk Management Project (SLRMP). The project begun early 2006 and had 3 phases. The model is not yet operational and Authorities are working towards its finalization.

centered on debt sustainability analysis (DSA) extensively carried under the HIPC initiative to determine the countries' entitlement, the magnitude and timing of debt relief. Non-HIPC MEFMI⁷ member countries have also undertaken DSA exercises jointly with the IMF under various Article IV Consultations.

However, comprehensive analysis of external and fiscal sustainability requires both DSA and risk modelling to be jointly undertaken. DSA looks at debt burden and liquidity flows indicators, while risk modelling, is confined to flow measures in terms of interest and exchange rate costs⁸ and also the concentration of cash flows in the short-term. Risk modelling also takes into account the correlation structure between different instruments to facilitate computation of the optimal issuance strategies. It also helps debt managers to prepare strategies that may assist in risk mitigation.

Recently, most countries in the region have embraced the risk modelling and analysis techniques as part of the medium term debt strategy formulation with the help of international financial institutions such as IMF and World Bank. Accordingly, risk analyses of public debt in countries such as Rwanda, Zambia, Botswana, Tanzania, Kenya, Mozambique, and Malawi have so far been undertaken as part of the MTDS formulation process. Other countries such as Uganda have also initiated the process of development of a customized sovereign debt risk model with the assistance of external consultancies, while other countries are at different stages of building capacity in sovereign risk analysis of public debt.

3. THE NEED FOR RISK MODELLING

Risk modelling has recently gained significant importance as a tool for achieving strategic debt targets and is now an integral part of a wider public debt risk management framework based on benchmarks in many jurisdictions⁹. The need for risk modelling emanates from increasing complexity and risk structures of government debt portfolio, which the IMF

considered to be the largest portfolio in most countries¹⁰. Complex public debt structures, coupled with adverse movements in interest and exchange rates can generate substantial risk to debt sustainability. Risk modelling is, therefore, crucial to reduce the exposure to market, funding or rollover, liquidity, credit, settlement and operational risks¹¹.

Empirical evidence suggest that poor debt management was either a direct contributor to the 1997 economic crises experienced in Southeast Asia, Eastern Europe and Latin America or at least it seriously impaired the government's financial stability, severely curtailing the degrees of freedom needed to cope with the downturn of the economy¹². This indicates that proper risk analyses of public debt portfolio, including contingent liabilities, enables governments within the region set up debt policy guidelines and an optimal debt structure that can ensure long-term debt sustainability and protect them better in times of crisis.

To meet the government's financing needs, including its objectives of ensuring low-cost and stable financing, the debt manager needs a framework that facilitates selection of a financing strategy in the face of substantial uncertainty about the future. Given the complexity of this task, a mathematical model is needed to help debt managers better understand the implications of various financing strategies under alternative market scenarios.

In view of the foregoing, a key question of this study is how MEFMI member countries can formulate a model or framework that will enable them to fully assess public debt sustainability through proper identification, measurement and control of risks inherent the public debt portfolio. Although there is some consensus, on the adequacy of existing risk modelling tools and techniques developed by international financial institutions such as the IMF and world bank and also by developed economies particularly in the OECD countries¹³, simply adopting these methodologies in the region will not be

⁷Non-HIPC MEFMI member countries are Lesotho, Swaziland, Namibia, Botswana, Kenya and Zimbabwe

⁸Cost at Risk Modelling- Sangarabalan and Jönsson (2007)

⁹Blommestein (2005)

¹⁰IMF and WB (2001)

¹¹Storkey (2001)

¹²Velandia (2002)

appropriate and likely to result in spurious relations and poor DSA for various reasons discussed hereunder.

The structure and composition of the debt portfolios in the region is significantly different from those in advanced economies making it difficult to religiously apply the existing risk modelling techniques which are based on implicit simplifying assumptions. More developed countries can trust in their domestic markets to finance their fiscal gap and, therefore, debt stock is dominated by domestic debt instruments. External debt is usually a small percentage of total debt, largely as a result of issuing internal bonds that are purchased by non-residents.

Although many MEFMI member countries have a dominant domestic market, total debt composition and new borrowing is dominated by external debt. There is also more multilateral and bilateral debt including export credits debt as opposed to international bonds raised by developed countries. Accordingly, risk modelling assumptions in the region must be specifically tailored to the availability of concessional¹⁴ flows, macroeconomic volatility, shallow domestic markets and institutional weaknesses, which are significant features that distinguish the region from advanced economies.

The structural circumstances of MEFMI member countries point to the need for a greater risk modelling. Paradoxically, the greater complexity of the structure of the risk as well as higher macroeconomic volatility and significant historical structural breaks makes it difficult to apply existing risk modelling techniques. These structural rigidities also makes it difficult to define and apply quantitative benchmarks with desirable properties in terms of the trade-offs between costs and risk, undermining the ability of debt managers in the region to construct a risk model that can serve as a reliable guide to DSA.

4. THE PROPOSED RISK MODELLING FRAMEWORK

An effective risk modelling framework for debt sustainability analysis should contain all the factors that influence the cost of servicing public debt. These factors include the size and composition of the debt portfolio, the state of the real economy, the term structure of interest rates, inflation and the financing requirement of the Government¹⁵. The framework should capture in a highly stylized fashion how these factors interact to determine the cost and risk of public debt. In this paper, the proposed framework consists of eight main building blocks as follows:

4.1 Macroeconomic Block

The major macroeconomic information required in a risk modelling framework include national output, government's primary balance, inflation and interest rates. Accordingly, the key macroeconomic variables should be modeled and inputted in the model. Alternatively debt managers need to coordinate with departments responsible for fiscal, monetary and balance of payments and assess how developments in these sectors affect debt dynamics.

4.2 Financial Market Block

The framework should specify all the relevant financial variables that influence the country's debt dynamics. The major financial variables that influence debt servicing costs in member countries include interest rates, exchange rates and commodity prices. Accordingly the framework should specify mechanisms to track developments in these variables. The framework should also specify how the country's yield curve is determined and the tools and techniques to assess the impact of changes in market variables on debt service. In countries where the yield curves are nonexistent, or has gaps, the framework should specify how to estimate the relevant yield curves in such scenarios. The commonly used methodology is to estimate the implied yield curve from foreign yield curves like the united states curve and euro curve and adjust

¹³Risk quantification model for public debt - Valendia (2002)

¹⁴A loan is considered concessional if its grant element, i.e., the difference between the nominal value of the loan and its NPV, is equal to or exceeds 35 percent. Moreover, the concessionality of a loan, i.e., its grant element, increases respectively with lower interest rate, longer grace and maturity periods, and a more back loaded repayment profile - IMF Guideline to DSA for Low Income Countries (2003)

¹⁵Pick and Anthony (2006)

for credit risk premium and inflation differential to get the yield curve for the country.

4.3 Debt Strategy Formulation Block

The central component of the debt-strategy block is the financing strategy. Mathematically, a financing strategy is defined as a set of weights that describe the proportion of new issuance in each of the government's financing options. Within MEFMI, the financing options generally include 3, 6, and 12 month treasury bills; 2, 5, 10 year nominal coupon bonds; bilateral concessional loans, multilateral concessional loans and bilateral non concessional loans and export credits, among others.

The framework should clearly define the relevant weights or financing options, and the quantitative descriptions of the allocations to each strategy that permit an understanding of how different decisions affect the risk and cost characteristics of the debt portfolio. The methodology for assigning the weights and assumptions thereof must clearly be specified in the risk modelling framework. In most cases, the financing strategy is assumed to be constant through time, i.e. the allocations do not vary from year to year in search of short-term cost reductions. This assumption permits a mathematically precise and succinct definition of a government financing strategy. This will also reflect the reality that the government does not typically alter its financing strategy dramatically from one year to the next.

4.4 Simulation Engine Block

The simulation engine is a model that combines all the information to compute the relevant cost and risk of public debt portfolio. The simulation engine should be developed taking into consideration country specific circumstances. The MTDS AT and the traditional IMF –Work Bank debt sustainability framework can serve as a starting point for countries at an initial stage of developing a risk modelling framework for debt sustainability analysis. Going forward, countries should be in a position to develop own models that a flexible and pragmatic to country circumstances. Accordingly, the methodology for developing the simulation engine and the assumptions thereof should be clearly stated in the Framework.

The simulation engine will determine the financing requirements and issuance of government securities and new public external debt. The engine will calculate new debt, principal cash flows for new debt and the resultant costs and risk of the new debt. The debt servicing flows are projected based on the principal repayment and interest payment profile of loans outstanding, including future committed disbursements and their associated debt service. The simulation for new debt will be undertaken on the basis of the following relationship:

- $$\text{New Borrowing requirement} = \text{Primary Balance} + \text{redemption} + \text{interest payments}$$

This new borrowing requirement is then split into different instrument categories by multiplying the simulated new borrowing requirement by the respective weight of each borrowing instrument.

- #### Computation of Costs and Risk Indicators

The framework should clearly define what constitute the country's total debt servicing costs and risk. In the MEFMI region, total debt servicing cost mainly relates to nominal interest and principal revaluations on exchange rate differential¹⁶. The cost¹⁷ should be calculated on an annual basis as the sum of nominal interest payments and the exchange rate differentials in Euro, United States dollar, Japanese yen and British pound on an unrealised basis. Generally, the Euro and the US dollar are the most dominant currency in the region.

The framework should clearly define the major risk inherent in the country's debt management system. The common risks faced by debt managers include interest rate risk, exchange rate risk, operational risk and macroeconomic risk. These risks are generally a function of the exposure of the public debt portfolio and the likelihood of a shock on the specific risk factor. Normally risk is computed as follows:

- $$\text{Risk} = f(\text{Exposure, Probability, Loss given default})$$

The risk factors, includes adverse movements in interest rates, exchange rates and commodity prices. The risk factors are considered

exogenous in the framework since they are driven by factors beyond the control of the debt manager, including macroeconomic developments in the country and the rest of the world, changes in market sentiment, and other factors that give rise to unanticipated changes in market prices, such as financial crisis.

The exposure of public debt portfolio is endogenous to management decisions and hence the control variable. Debt managers can reduce the vulnerability of the government debt portfolios to changes in market prices by reducing the debt portfolio exposure. To this end, appropriate indicators that gauge the extent to which the debt portfolio and debt cost are exposed to various types of risks are measured and appropriate limits on debt sustainability should be included in the framework to facilitate monitoring and controlling of the debt portfolio.

Although there are many ways to calculate risk, countries can make use of the definition utilised by the Basel Committee on Banking Supervision (BCBS)¹⁶ on computing risk. The BCBS define risk as a product of **Exposure * Probability * loss given default**. For example, if the Government provides a guarantee to a state-owned corporation amounting to US\$100 million. Probability that guarantee is called is 60% and that 80% of the loss will be covered by government. The risk to the government will be US\$48 million as follows:

Risk = US\$100 million * 60% * 80% = US\$48 million

This analysis requires the debt manager to collect all the relevant information on government debt including guarantees and to assign relevant probabilities of failure and loss given defaults on each guarantee based on historical analysis or statistical methodologies to compute the implied risk. The methodology for assigning the probabilities of failure and loss given default should be clearly stated in the framework.

4.5 Strategic Benchmarks Block

The framework should specify the applicable benchmarks for effective management of the cost and risks of public debt. The benchmark is usually seen as a formalisation of the high level (strategic) objectives of the public debt manager. The benchmarks will act as triggers or early warning signals of potential debt sustainability problems by defining the cost-risk preference that can serve as a reference for evaluating the cost and risk of the actual portfolio - Sten et al. (2005).

The benchmark also provides information to market participants regarding the consistency of debt management objectives and the ability to achieve long-term debt sustainability. The benchmark in its function as a management tool requires the government to specify its risk tolerance and other portfolio preferences concerning the trade-off between expected cost and risk¹⁹.

As a starting point, current international benchmarks can be utilised taking into consideration a number of ratios and thresholds currently being used by some regional and international organisations. For instance, the IMF considered the ratio of nominal external public and private debt to GDP of greater than 60% as an indicator of a high debt burden in low-income countries, regardless of policy level²⁰. However, the government risk tolerance and country specific characteristics together with interaction of macroeconomic variables should also be considered.

4.6 Link to Debt sustainability framework

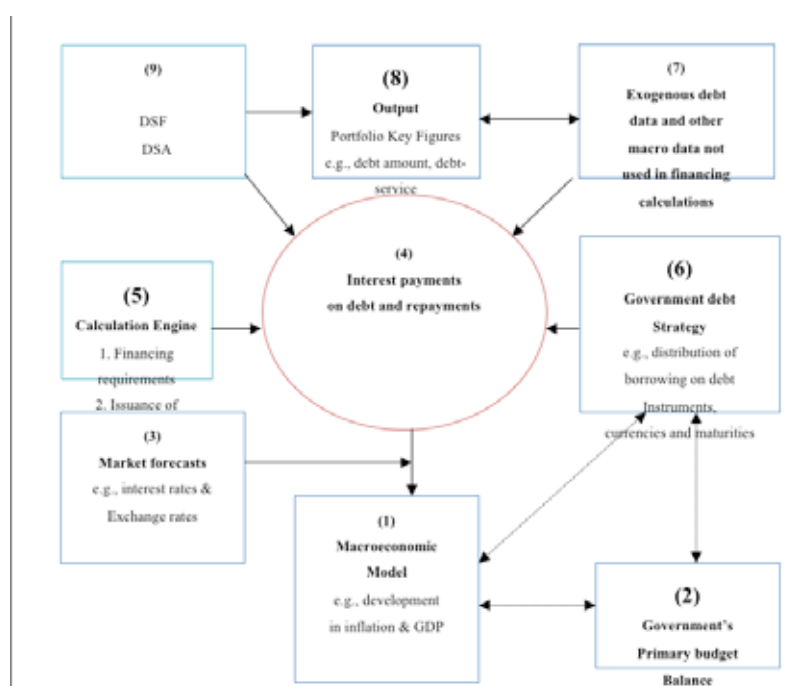
The framework should provide a link to the traditional debt sustainability framework. The framework can include a provision to conduct risk modelling and debt sustainability analysis concurrently. If the initial debt strategy assumptions do not give desirable outputs, an alternative strategy will be considered and the process reiterated until an acceptable trade-off between cost and risk is achieved. The link to the traditional debt sustainability framework (DSF) will enable debt managers to assess the sustainability of the preferred debt strategy.

¹⁶Costs on inflation linked bonds are excluded since they are not a common feature in the region. However, the cost definition can easily be expanded to incorporate such costs.

¹⁷The cost definition also excludes other costs, such as commissions, legal fees and other administrative outlays that are typically associated with incurring debt in the region.

¹⁸See Basel 2 Document produced by the Bank for International Settlements (BIS)

¹⁹Bloomenstein et al. (2005).

Figure 1: Structure of Government Risk Modeling Framework

The preferred strategy from a cost-risk perspective is fed into the DSF to assess its long-term sustainability. If the results point to debt sustainability problems, the risk analysis process can be repeated until a desired strategy is found. Similarly, the DSF can complement risk analysis by changing the assumptions about the primary balance.

5. MODEL OUTPUT

The framework should clearly state the key portfolio outputs from the risk modelling exercise. The expected output figures should facilitate analysis of the tradeoffs between the cost and risk of alternative debt strategies at the disposal of country authorities. Among the expected key portfolio output from the risk modelling framework include public debt cash flows, debt cost and risks, duration, average time to maturity, average time to refixing, redemption profile and sensitivity of the debt indicators to changes in interest rates, commodity prices and exchange rates.

The framework should have a mechanism to make comparisons on the model results and set targets or objectives for these characteristics consistent with the government's risk tolerance. If the targets are not met, the strategy may have to be changed and the model may have to be adjusted and run again. In this way the model can provide a quantitative basis for decisions on public debt strategies in line with debt management objectives.

6. REPORTING AND FEEDBACK MECHANISMS

The framework should specify the type of reports expected from the risk modelling exercise. Accordingly a prototype report should be included. The reporting frequency should also be specified and publication details. Publication and disclosure of the risk modelling and debt sustainability results coupled with adherence thereto improves relations with creditors and fosters market discipline.

²⁰Joint Ministerial Forum on Debt Sustainability The World Bank, 1818H Street NW, Washington, DC 20433, USA 23 April 2009

7. CONCLUSION

Development of a country specific risk modelling framework for debt sustainability analysis will enable MEFMI member countries to avoid the previous costly mistakes of accumulating debt to unsustainable levels. At the same time, regional economies will be in a position to benefit from and cope with the ever changing role of debt management emanating from new borrowing opportunities and prospective access to international capital markets.

Working with risk models, however, require a considerable investment in resources and full commitment by senior management to develop and modernize middle office functions responsible for developing and running risk models. The process is critically determined by hiring competent staff and decisions concerning software applications. Adoption of risk models in the region, therefore, requires particular focus on key person risk.

MEFMI member countries are, therefore, recommended to develop country specific risk modelling frameworks for debt sustainability analysis starting from simple applications of cost-risk analysis and gradually move to more advanced applications such as the Asset Liability Management (ALM) framework. Debt managers would initially calculate on a regular basis the cost-risk trade-offs on a deterministic basis and eventually migrates to more sophisticated use of an integrated ALM framework that would require coordination with other key macroeconomic policies such as fiscal, monetary and exchange rate policies. To this end, the MTDS Analytical Tool could, therefore, provide a starting point.

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