Eighth UNCTAD Debt Management Conference
Geneva, 14 - 16 November 2011

Optimal Uses of Risk Management Techniques
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The views expressed are those of the author and do not necessarily reflect the views of UNCTAD
OPTIMAL USES OF RISK MANAGEMENT TECHNIQUES

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UNCTAD DEBT MANAGEMENT CONFERENCE
NOVEMBER 14–16, 2011
GENEVA, SWITZERLAND
Overview

- Policy intervention and sovereign risk
- Legacy of the crisis
- Principles for effective debt management
- Constraints on effective debt management
- Issues in risk management
- Sovereign risk management framework
- Stress testing sovereign balance sheet
- Challenges and upcoming work
Direct impact on fiscal balance

Rise in risk exposures
- Guarantees
- Lending facilities
- Loans
- Assets

Unconventional central bank role with balance sheet impact
- Liquidity support
- Quantitative and credit support
- Different central banks had different reactions (FED: QE and ECB: SMP)
MACRO-FINANCIAL LINKAGES AND BALANCE SHEETS INTER-CONNECTIONS

Financial Markets
- Uncertainty about Banks’ asset quality
- High Leverage of Banks
- Investor concerns about debt
- Higher tail risk of banks

Sovereign Risks
- Maturity Profile
- Political Risks
- Economic Growth
- Contingent liabilities

Sovereign Risk
- Fiscal Deficit
- Debt Stock
- Revenue Base uncertainty
- Investor Base

Uncertainty about Banks’ asset quality
- Bank funding pressures
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LEGACY OF THE CRISIS

- Impact on sovereign debt level
- Re-pricing sovereign risk for developed economies
- Amplification of contagion channels
- Financial sector at risk
- Erosion of sovereign investor base
- New regulatory framework (macro-prudential)
- New standardized markets (derivatives)
AGGREGATE (SOV.+BANKS) TRADABLE DEBT LEVELS

(2010, in € billion)

Source: Bloomberg, WEO and staff estimates

(2010, in percent of GDP)
Funding pressures
Credit rating downgrades

Materialization of contingent liabilities/
call on government guarantees

Sovereign

Asset side:
Losses on holdings of sovereign bonds

Domestic Banks

Liability side:
Higher funding costs; credit rating downgrades

BANK FUNDING DIFFICULTIES INCREASES THE SOVEREIGN DEBT BURDEN
Rollover risk is not longer only related to Sovereign debt profile

Source: Bloomberg

Source: Bloomberg and IMF staff estimates
Debt Management practices can help manage rollover pressures and investor expectations, critical to mitigate the build up of sovereign risk.

The Stockholm Principles, out of the 10th Annual Debt Management Managers’ Forum (July 2010), reaffirmed a series of good practices and principles by most countries’ debt managers.

These principles are organized in main three areas:

- Framework and operations
- Market communication strategies
- Risk management
Framework and operations
- Preserve sufficient flexibility to smoothen maturity profile and minimize execution risk of issuances and liability management operations
- Accounting for financial stability implication
- Supporting information sharing at domestic and global levels

Market Communication
- Maintain an open dialogue among debt managers and with other policymakers and market analysts
- Share any change that may occur to avoid surprises
- Support a predictable operational framework

Risk Management
- Adopt and communicate to investors a strategy that minimizes funding costs over the medium to long term while keeping risks at prudent levels
Level of Public Debt

- High levels of public debt limits policy options, reducing the ability to absorb unexpected shocks
- Make risk management of debt portfolio even more relevant to reduce vulnerabilities offsetting the “size effect”

Structure and composition

- Should reflect debt strategies that diversify debt instruments and investor base

Contingent liabilities

- Sudden withdrawal of investor base
The crisis raised significant challenges for DM in advanced economies

- The assumption of automatic access to financing in financial markets by advanced countries was tested
- Increased financing operations
- Raised the execution risk
- Strained operational framework

Most EM experienced a relatively less impact on their financing operations

- Result of sustained efforts to enhance the resilience of their debt profiles (e.g.: large liquidity buffers), larger domestic investor base and deeper domestic debt markets
- However, there is still need for strengthening debt structures to reduce risk of reversals

Debt Management challenge of LICs was largely contained

- Low integration with international financial markets
- Challenge reflected potential shortfall in donor disbursements
DIFFERENT APPROACHES FOR ASSESSING SOVEREIGN RISK

- Number of complementary frameworks – answering different questions:
  - Cost-at-Risk → impact of changing interest and exchange rates on the debt portfolio
  - Debt Sustainability Analysis (DSA) → debt-to-GDP
  - Augmented DSA → linking DSA to more granular portfolio composition
  - Merton’s pricing models → sovereign credit risk (CCA)
CURRENT APPROACH

*Only debt side and no feedback loops*

- Cost and risk analysis
- Debt strategy
- Stress tests
- Macro-economic framework / Exchange rate regime
ISSUES IN SOVEREIGN RISK MANAGEMENT

- Importance of risk management for:
  - Reducing the likelihood of crises
  - Ameliorating the impact of a crisis if occurs

- Identification and measurement of sovereign balance sheet risks

- How to Integrate Risk Management in:
  - Debt strategy formulation
  - Debt sustainability analysis
  - Macro-financial policy decision framework
The global crisis highlighted the need for revisiting the risk management approach in debt management.

- Traditional cost-at-risk analysis might not be particularly effective at capturing the full range of risk factors.
- Some cost-at-risk models abstract from analysis of the underlying macroeconomic framework (e.g.: by modeling interest and exchange rate independently).
SOVEREIGN RISK MANAGEMENT FRAMEWORK (CONT.)

- Efforts are needed to ensure non-traditional risk exposures are also adequately captured including:
  - Near-term liquidity risks (e.g.: arising from a sudden withdrawal of investors)
  - Implicit contingent liabilities, especially those arising from the financial sector, and explicit guarantees
  - Large quasi-sovereign and sub-national debt
  - Other off-balance sheet risks

- These risks factors may significantly understate the extent of sovereign balance sheet vulnerabilities
Testing the robustness for relevant risk factors and scenarios

- Modeling **feedback loops** underlying macro variables, debt composition, and outstanding stock
- Putting in place frameworks and tools (**MTDS, Risk Measures**)
- Integrating **sovereign risk** into the financial stability risk analysis (**FSAP**) stress test

**What is the government’s real financial exposure?**
Risk-Measures template: Tools for risk management of *bonded public debt*.

Conventional measures: Market risk metrics

- *Interest rate risk*: Duration, proportion of floating rate debt to total debt
- *Roll-over risk*: Average time to maturity, proportion of short-term debt to total debt.
- *FX risk*: proportion of foreign debt to total debt.
- *Debt maturity* profile and Cost-at-Risk
“Overall, the importance of augmenting traditional cost-risk analysis with appropriately designed stress tests has been brought into sharp relief.”

IMF Board Paper (2011)
Managing Sovereign Debt and Debt Markets through a Crisis:
Practical Insights and Policy Lessons
Principles of sovereign stress testing

Quantitative tool for stress testing

- Provides a flexible and tractable approach in a forward-looking framework
- “Seoul principles”: discussed in the 11th Annual debt managers Forum (June 2011) could serve as a guide to judge stress test framework of sovereign debt portfolios

The IMF continues working along these lines to develop an operational tool for sovereign stress testing
STRESS TESTING

- Builds a more *systematic* approach for managing sovereign balance sheet risks.
- Provides a *macro financial* perspective.
- Clarifies ‘*what if’ dimension’ to debt structure and sustainability.
- Defining objectives of the exercise:
  - To make risks more *transparent*
  - To assess the impact of *abnormal* conditions
WHAT TO STRESS?

- Defining the **scope** of the debt portfolio:
  - ✓ Central government, general government, or the entire public sector?

- Defining the **perimeter** of the exercise:
  - ✓ What is contingent liability?
  - ✓ Liquid vs. illiquid assets

- Assessing **both sides** of the government balance sheet
  - ✓ ALM outlook
SOVEREIGN PORTFOLIOS ARE VAST ...

Foreign Exchange Reserves Excluding Gold
(in trillions of U.S. dollars)

Total Government Debt Securities Issued
(in trillions of U.S. dollars)

... WITH ASSOCIATED RISKS AND OPPORTUNITIES HIGHLY SIGNIFICANT FOR MACRO AND FINANCIAL STABILITY ...
Sovereign ALM Framework

- Defining SALM Objectives
- Defining relevant assets and liabilities
  - Definition of Government balance sheet
  - Money base, international reserves, contingent liabilities (e.g.: financial institutions), others
- Integrating assets and liabilities: manage risk in an integrating fashion contribute to mitigate sovereign vulnerabilities
- Institutional constraints: SALM requires coordination but different objectives could pose an challenge
WORK IN PROGRESS:
SOVEREIGN ALM APPROACH

Incorporating Asset side feedback loops

- Macro-economic framework / debt strategies
- Stress tests: shocks to market prices, banking sector, etc

Sovereign balance sheet: assets & liabilities

Cost and risk indicators vs. thresholds (stocks & flows)

Feedback into macro-debt policies

Implications for debt management / fiscal & monetary policies
Decision Tree: in t=0 the economy is shocked and risk measures compared against thresholds

Risk Measures (solvency/liquidity)

Risk indicators > Threshold value

“Unsustainable” risk levels

Policy discussion / adjustment

Risk indicators < Threshold value

“Sustainable” risk levels

Policy stance remains same

Re-Run the exercise with another set of shocks

Note: a time horizon needs to be chosen (e.g.: 3-5 years). If the economy copes with the shocks well under different scenarios (key indicators below thresholds), it could be considered relatively safe.
Challenges:

- Definition of sovereign risk and its sources (terms of trade, commodity prices, contingent liabilities, etc)
- Building the proper channels of real-financial linkages
- Liquidity risks: different definitions for AMs and EMs?
- Shocks: standard (e.g.: 2 std dev.) vs. tail risks.
- Correlations break around crisis time
- Risk indicators/thresholds: what is the “stress point” for a sovereign? Threshold based on country’s history / vs. peer group?
- How to model feedback loops?
Recent crisis revealed important sources of risks and channels of transmission.

A new risk management framework is needed.

Both assets and liabilities of the government balance sheet presented and managed in an integrated manner.

Work–in-progress: Sovereign ALM Balance sheet stress testing as a comprehensive framework that may guide policymakers’ decision process.
THANK YOU!