



Medium-Term Debt Strategy

Based on Client Presentation

May 2010

Outline

- Developing a Medium-Term Debt Strategy
- Risk Indicators and Sensitivity Analysis
- Cost-Risk Analysis
- Implementation
- Performance Measurement

Introduction

- A Debt Strategy is about how to develop the structure of the debt portfolio over time in a way that manages risk and the trade-off between cost and risk
 - Risk arises because future borrowing costs are uncertain
- Recognition of need for Strategy arises from emerging market crises of 1990s (Mexico, E. Asia, Russia, etc)
 - Demonstrated vulnerabilities
 - Crises made worse by poor debt structures and contingent liabilities
 - No understanding of (or data on) balance sheet
 - Poorly defined strategic objectives for portfolio
 - Realisation that risk is asymmetric

Medium-Term Debt Strategy (MTDS)

- MTDS makes operational a country's debt management objectives
 - Ensuring financing needs are met
 - Expressing cost-risk preferences
 - Developing a borrowing strategy that leads to the preferred debt composition, i.e. the preferred cost/risk trade-off, taking into account constraints
- In principle covers total non-financial public sector debt
 - In practice begin focussing on central government debt
 - Better data and reflects government's main area of influence
- Address contingency liabilities
 - Provinces, SOEs, banking sector, other enterprises
- Once agreed
 - Publish or otherwise disseminate
 - Develop financing plan
 - Monitor performance

The Importance of a Formal MTDS

- Clear framework for making informed and appropriate choices
 - Reduces opportunity for short-term fiscal expediency, at cost of increased risk in future
- Ensures consistency in borrowing strategies
 - Avoids conflicting sub-strategies for different components of the debt portfolio
- Improves coordination
 - In particular with fiscal and monetary policy - ensures debt management not dominated by monetary policy
- Also
 - Helps to identify constraints (eg market development)
 - Provides coherence for domestic debt market development
 - Should reduce costs (by reducing market uncertainty)

Different from Debt Sustainability

- Debt sustainability is “.... a situation in which a borrower is expected to be able to continue servicing its debt without an unrealistically large correction to the balance of income and expenditure” [IMF 2002]
 - Encompasses the concepts of solvency and liquidity.
- Standard templates used to highlight unrealistic assumptions and fiscal positions inconsistent with stabilizing debt/GDP
- Stress tests and alternative scenarios bring to light related underlying exposures, and instill realism into projections
 - Show dispersion of debt paths under alternative sets of assumptions for main macro variables
 - separately analysing public sector debt and (total) external debt.
 - The output is often a recommendation for path of primary balance.
- NB: The emphasis is on a country’s underlying vulnerabilities

DSA v Debt Strategy

- DSA feeds into fiscal policy decisions, esp the primary balance
- Debt strategy analysis focuses on the composition of the debt portfolio, rather than its overall size.
- But vulnerabilities can also arise from the composition of the debt portfolio:
 - Higher share of foreign currency debt implies higher vulnerability to real exchange rate movements
 - High short-term debt implies exposure to interest risk, rollover risk and liquidity risk at time of crisis
 - Higher share of official loans in the portfolio is associated with lower vulnerability - insofar as creditor groups may be more likely than others to roll over maturing claims
- Important that debt managers and DSA analysts work together to consider each other's results (also share data etc)

Designing a MTDS: 8 Steps

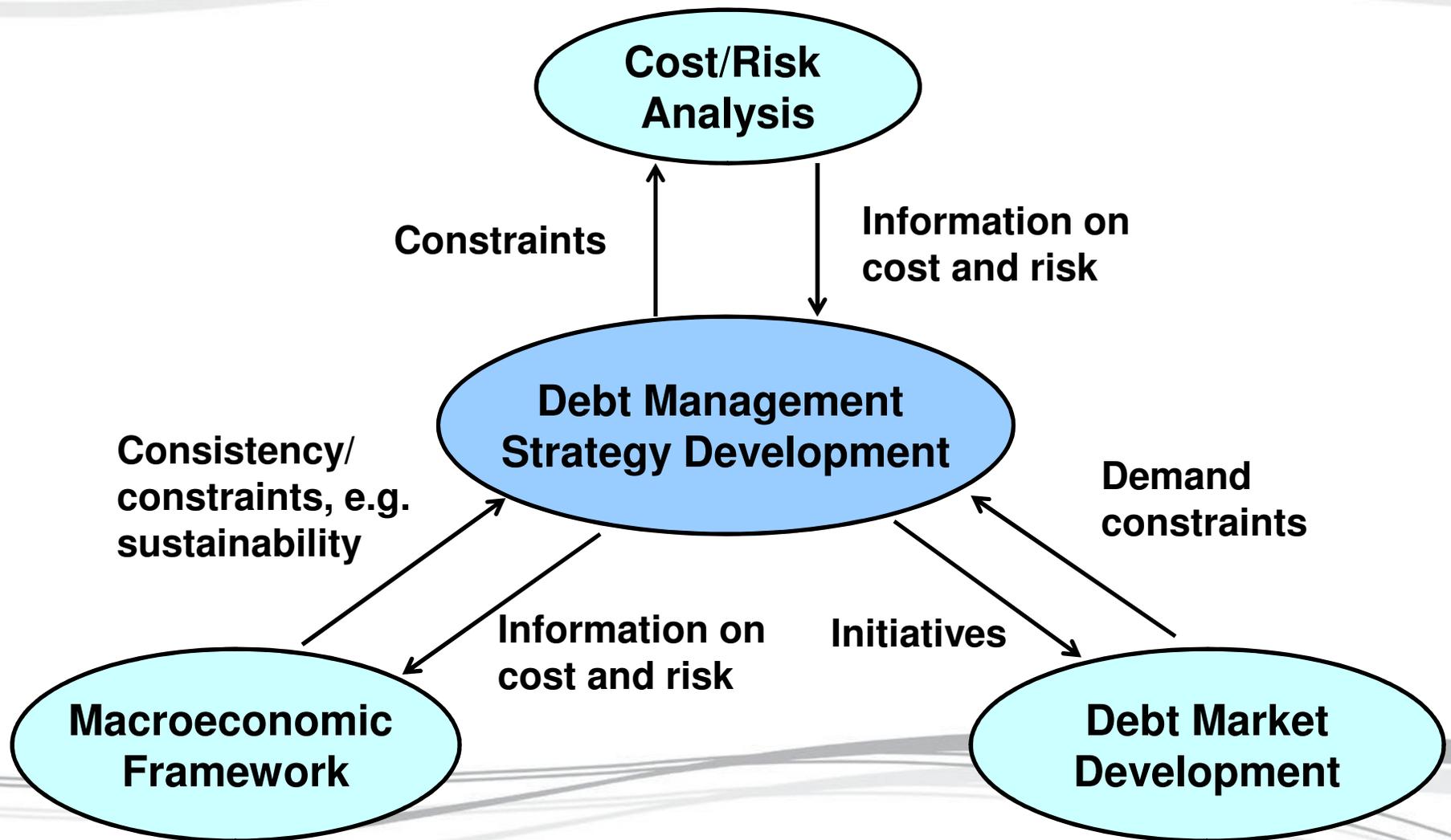
1. Identify objectives for debt management and scope of the MTDS
2. Identify cost and risk of the existing debt
3. Identify potential funding sources
4. Identify baseline projections and risks for key policy areas – fiscal, monetary and market
5. Review key longer-term structural factors and determine implications for MTDS
6. Identify the cost-risk tradeoffs for alternative strategies, and rank their performance
7. Review implications of preferred strategy with fiscal and monetary policy authorities, and for market conditions
8. Submit recommendation and secure agreement on MTDS

See World Bank/IMF MTDS Guidance

– also diagram on next slide

mike.williams@mj-w.net

MTDS: Key Linkages



1. Identify objectives for debt management and scope of the MTDS

- High-level objective
 - Of the kind “To ensure that the government’s financing needs and obligations are met on a timely basis, to do so in a way that minimises cost over the medium to long term while taking account of risk; and, subject to that, to develop over time a range of financing options.”
 - Already agreed in DR
- Define scope
 - Central government; general government; or wider public sector – to be discussed
 - Contingent liabilities

2: Identify the cost and risk of the existing debt

- Data should comprise:
 - Total size of debt
 - Breakdown by currency, creditor type, and instrument type
- Debt servicing and debt maturity profile should be readily determined and assessed
- Analyze the debt stock on the basis of key cost and risk indicators [see later]
 - nominal and expected real interest rate cost
 - interest rate risk
 - foreign exchange rate risk
 - refinancing risk.
 - liquidity risk
- Based on this assessment, identify sources of vulnerability to existing debt

3: Identify potential funding sources

- Identify the characteristics of existing financing instruments
 - assess the relative cost and risk
- Assess any limitations on the quantity/cost that could be borrowed from potential funding sources:
 - Concessional or multilateral funding mostly linked to projects
 - Programme lending highly advantageous – but limited
 - Commercial borrowing very expensive
 - Limited scope for domestic borrowing
- Consider potential new financing instruments that might become available within the horizon of the MTDS
 - e.g. access to international capital markets, retail debt, local market – reintroduce bills, introduce bonds, etc
 - Identify any necessary preconditions, including systems, operational procedures, etc necessary to facilitate use of new instruments

4: Identify baseline projections and risks for key policy areas

- Identify baseline projections for key fiscal and monetary policy variables, market rates and main uncertainties
 - Includes assessing market conditions potentially faced when contracting new debt or rolling over existing debt
 - Ideally identify:
 - Likely path for monetary policy, interest and exchange rates
 - Other relevant factors, e.g. inflation, GDP, and credit rating
 - Expected level and shape of the domestic and relevant international yield curves
- Requires interaction with fiscal and monetary policy authorities
 - Also consult officials in other policy areas
 - financial sector policies, regulatory policies or taxation policies
 - Clarify understanding of what could affect market environment for issuing debt
- In relation to budget projections, information largely same as used in DSA
- Also identify relevant risk scenarios
 - should reflect the stress tests and scenarios analyzed within the DSA

5: Review longer-term structural factors

- Identify long-term structural features that may influence the desirable debt composition
- Specific structural factors might include:
 - Dependence on tourism [and exposure to FX risk]
 - Terms of trade developments – long-term trend in real exchange rate
 - Access to concessional financing
- These factors influence the relative costs and risks of different strategic choices
 - e.g. foreign currency versus domestic currency, and long-versus short-maturity domestic currency debt

6: Identify the cost-risk tradeoffs for alternative debt management strategies

- Assess performance - qualitatively or quantitatively - of range of alternative strategies, including impact on debt sustainability indicators
- Initially consider the existing implicit debt management strategy, reflected in the existing debt composition. Then:
 - Identify alternative strategies that could help mitigate key vulnerabilities
 - Consider strategies that support development of domestic markets
- With appropriate tools, undertake quantitative assessment of the cost and risk of the alternative strategies (see later)
 - Consider debt characteristics that would offset key causes of volatility
- Test proposed set of strategies against the limits (identified in step 3), to ensure they will be feasible to implement
 - Identify any broader policy issues that constrain feasible strategies
 - Address as part of the future agenda

7: Review implications of possible strategies

- Review implications of candidate strategies with fiscal and monetary policy authorities. Identify:
 - Implications for risk to budget: e.g. avoid adding to variability in debt servicing flows
 - Impact on central bank's ability to conduct monetary policy operations
 - Impact on balance of payments or exchange rate
- Also consider market impact
 - Vulnerability of banking system
 - Risk of domestic crowding out

8: Submit recommendation on proposed MTDS for approval

- Submit recommendation [to Minister/Cabinet] with alternatives
- Consider other factors
 - the potential implications of each strategy for the development of the markets
 - regulatory concerns, such as concern about the exposure of the banking system
- Once approved, the debt management strategy should be formalized and an explicit mandate given to the debt managers to implement the strategy
- The MTDS is specified for the medium to long term; but important to review periodically
 - Assess if assumptions still hold and impact of changed circumstances
 - Review annually – or identify triggers for review

Dissemination of the MTDS

- Once the MTDS has been agreed and formalized, it should be made public – e.g. with annual budget or MTFE
- Good reasons for publication
 - Objectives enhanced if the goals are understood and authorities make a credible commitment to meet them
 - Accountability: debt portfolio poses significant risks - must assure markets and wider public that they are being well managed
 - Disclosure of the borrowing programme increases certainty for investors – lowers borrowing cost to government in the long run
 - Self interest of debt managers: public strategy reduces risk of criticism in future “with wisdom of hindsight”
- Consider the audience
 - Minister, Parliament, financial markets, public....
 - Simplicity and clarity promote transparency and accountability

Template for a Published Debt Management Strategy Document - 1

- Objectives and Scope
 - Description of debt management objectives and the scope of the MTDS
 - Regulatory and institutional framework
- Existing Debt Portfolio
 - Economic policy context and background
 - Historical analysis of the debt portfolio
 - Changes in its size (including relative to GDP) and composition through time
 - Commentary on changes in relevant market variables along with significant events in the evolution of the debt.
 - Analysis of risks associated with current debt structure
- The environment for debt management going forward
 - Fiscal and debt projections; debt sustainability analysis
 - Assumptions about exchange and interest rates
 - Constraints on portfolio choice
 - including those relating to market development and monetary policy implementation

Template for a Published Debt Management Strategy Document - 2

- The MTDS
 - The analysis undertaken to support the recommended debt strategy
 - Make clear the assumptions used and limitations of the analysis
- Set out the recommended strategy and its rationale
 - Specify targets for instrument composition or specific indicators of cost or risk
 - Debt volume, currency composition, duration, redemption profile, guarantees, etc
 - [Possible benchmark portfolio]
 - At initial stages indicators could be more descriptive, e.g., “to increase the share of domestic currency debt or gradually extend maturities.” Over time targets could become more precise, e.g., “setting a portfolio target of 60 percent domestic currency debts”
 - Measures or projects to manage non-quantifiable risks and remove constraints
 - Development of domestic market, attracting investors, investment in systems, etc
- The MTDS is specified for the medium to long term; but important to review periodically to assess if assumptions still hold
 - Strategy document could include a description of the review processes

MTDS: Lifting the Constraints

- Process for developing and implementing MTDS will highlight key bottlenecks that constrain the set of feasible strategies, e.g.
 - Shallow local debt markets
 - Limits on longer term availability of (concessional) external finance
- Other factors that can arise
 - Debt management capacity
 - Clarity in institutional roles and responsibilities
 - Potential conflict with operating framework for monetary policy
- Important to identify steps needed to relieve these constraints
- Identify need for follow-up action (inc technical assistance, internal decision making etc)

Implementation, Monitoring and Review

- Implementation
 - Annual financing plan – see later
- Need effective monitoring arrangements
 - To ensure programme is on-track
 - To re-evaluate risks and verify strategy
 - Check impact of operations on key risk indicators of choice
 - Modify strategy if necessary
 - Monitor changes in macro-environment
 - Linked to decision-making and accountability framework
- Key role for “middle office” function
 - Reporting internally and externally
 - Monitoring risk indicators



Risk Indicators and Sensitivity Analysis

Risk Indicators

- Interest rate risk
 - Ratio of fixed to floating rate debt in debt stock
 - Amount of (or share of) the debt stock refixing in a period
 - Average time to refixing of the debt portfolio
- Refinancing (roll-over) risk
 - The redemption profile of the outstanding debt.
 - Proportion of stock falling due within a period [adjusted by liquid assets]
 - Average time to maturity
- Foreign exchange rate risk
 - Ratio of foreign currency debt to total debt
 - Mismatch between foreign currency liabilities and foreign currency reserves
- Other useful debt indicators
 - The net present value (NPV) of the total debt
 - Liquidity risk indicators
 - Ratio of assets maturing in one year to debt maturing in same period
 - Ratio of short term debt to tax revenue or short term external debt to international reserves

Increase in Interest Rates of 1%

- Debt servicing cost increases in future
 - this is a loss – but will have a lagged impact
- Face or nominal value does not change
 - though it may have to increase when refinanced
- Market or fair value of the debt decreases
 - this is a gain – a balance sheet transfer from investors to the government
 - but not of much help if cost and risk objectives are defined primarily in cash terms
 - especially if investors demand a risk premium in future
- Note: higher inflation similarly taxes investors to benefit of government
 - but investors will require higher interest rates in future

Time to Refixing

$$\text{Average Time to Maturity} = \frac{\sum[(\text{Value of bond}) * (\text{Days to Maturity})]}{\sum(\text{Value of bonds})}$$

$$\text{Average Time to Resetting (for floating rate bond)} = \frac{\sum[(\text{Value of bond}) * (\text{Days to Resetting})]}{\sum(\text{Value of bonds})}$$

Average Time to Refixing = Weighted average of Time to Maturity for Fixed rate bonds and average time to resetting for floating rate bonds



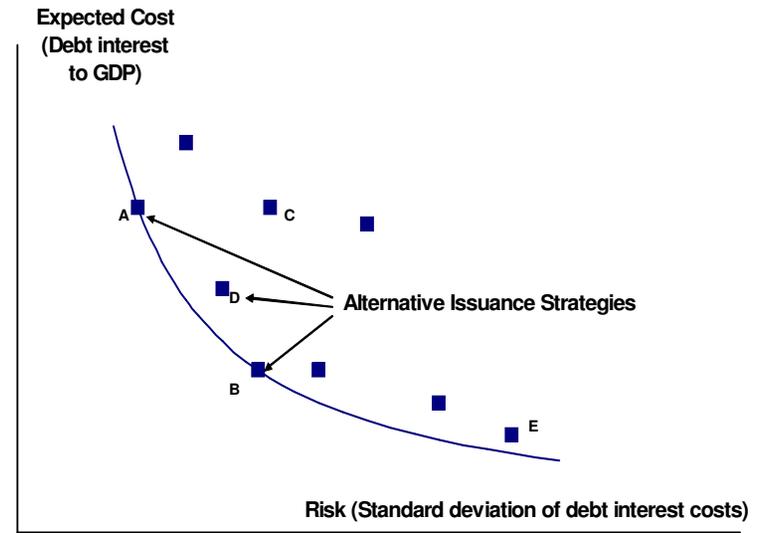
Cost-Risk Analysis

Developing Cost-Risk Analysis

- Framework to model risk and identify cost v risk trade-offs
- Exploring the cost and risk characteristics of different issuance strategies and comparing them
 - Cost = debt servicing costs (usually as % of GDP)
 - Risk = volatility of debt servicing costs
- Basic methodology
 - Specify base case for financing requirement and servicing costs
 - Assess different issuance strategies against range of macroeconomic scenarios – deterministically or stochastically generated
 - Stress tests to ensure that portfolio and government can cope with possible economic shocks
 - Take account of contingent liabilities
 - Assess cost and risk v base case
 - Test for different debt issuance programmes
 - Identify preferred issuance programme

Identifying the Trade-off

- The Conceptual Problem
 - Identify issuance mix that delivers over time the portfolio that has the preferred cost-risk trade-off from the point of view of the issuer
 - Note that
 - Scenarios and models are decision making tools, not forecasts
 - Long term analysis – e.g. quarterly based model with 10 year horizon; not about next year's costs
- Identify ways to shape portfolio to preferred structure
 - New issuance, restructuring, active management



- Focus is on debt portfolio – but same principles apply to other assets & liabilities
- => explore cash flow characteristics of assets & liabilities - scope for hedging

Asset Liability Management (ALM)

- ALM framework – risks of government liabilities measured relative to its assets (including its power to tax)
 - Allows matching of cash flows from assets and liabilities and a framework for measuring costs and risks
 - Offsetting movements in costs and revenues in response to shocks helps to stabilise debt/GDP ratio
- Possible to model jointly debt servicing costs and revenues – but complex
 - Requires jointly modeling interest and exchange rates, macro variables and the government's assets and liabilities

Simplifying the Approach

- Many debt offices simplify the process by focusing on liabilities only – the traditional scenario approach to optimisation
 - Implicitly assumes that assets are denominated in local currency and of long duration
 - Risk measured in terms of volatility of debt service in local currency over the medium to long term
- In practice combine the approaches: two stages
 - Matching explicitly the risk characteristics of various financial assets and liabilities on the government's balance sheet (asset and liability management at the sub-portfolio level)
 - E.g., short-term investments, FX reserves, pension funds
 - Relating the cost and risk of the residual debt relative to GDP (sometimes referred to as “fiscal insurance”)

Stylised Balance Sheet

- “Government” balance sheet (integrating central bank)

Assets	Liabilities
PV of Tax Revenues	PV of Expenditure
Loans to provinces, SOEs, others	Guarantees due, arrears
Cash and other financial assets [inc mortgages, commercial paper....]	Project and programme loans
Foreign Currency Reserves	Marketable debt
"Equity" in SOEs [inc banks]	Other debt, credits, etc

Sub Portfolio Matching

- External credits may be on-lent to SOEs on exactly the same terms as to interest rate and maturity

Assets	Liabilities
PV of Tax Revenues	PV of Expenditure
Loans to provinces, SOEs, others	Guarantees due, arrears
Cash and other financial assets	Project and programme loans
Foreign currency Reserves	Marketable debt
"Equity" in SOEs	Other debt, credits, etc

Sub Portfolio Matching

- Foreign currency reserves may be financed by matching debt

Assets	Liabilities
PV of Tax Revenues	PV of Expenditure
Loans to provinces, SOEs, others	Guarantees due, arrears
Cash and other financial assets	Foreign Currency Debt
Foreign currency Reserves	Domestic currency debt
"Equity" in SOEs	Other debt, credits, etc

Fiscal Insurance

- Framework boils down to matching the fiscal position – the present value (PV) of future taxes less the PV of future expenditures – and the PV of debt
 - Debt is the equivalent of deferred taxes
 - Ideal debt structure generates servicing cost positively linked government revenues – i.e., fiscal insurance

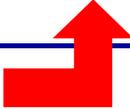
Assets	Liabilities
PV of Tax Revenues	PV of Expenditure
Loans to provinces, SOEs, others	Guarantees due, arrears
Cash and other financial assets	Project and programme loans
Foreign currency Reserves	Marketable debt
"Equity" in SOEs	Other debt, credits, etc

Some Notes

- Models are not “optimisation” models - just present costs and risks of the alternative programmes to the decision makers
- Choice between modelling flows and stocks
- Explore scope for fiscal insurance
 - “Tax Smoothing” – taking advantage of programmes that hedge against exogenous shocks – e.g. index linked debt robust against demand shocks
 - How do financial variables behave in practice
- Importance of taking into account contingent liabilities – allow in scenarios for the risk of liabilities being called
- Path over time also matters
- Consider practical programmes – but do not impose constraints too soon

Explore Characteristics of Bond Mix

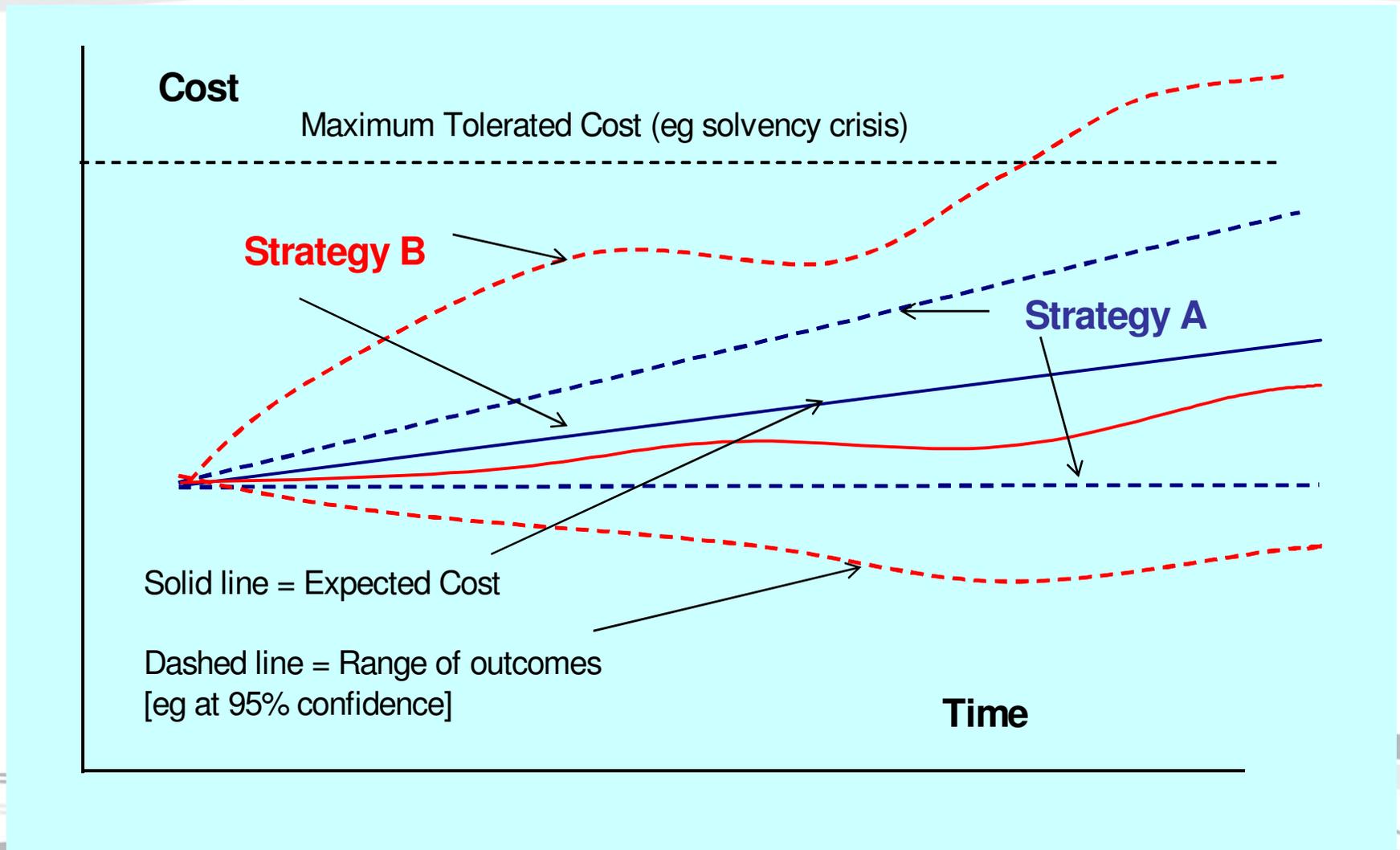
- The ideal debt instrument is negatively indexed to public spending and positively indexed to output and tax revenues (e.g. GDP-linked bond)
- In practice have to mix nominal, indexed, fixed/floating and FX bonds

Assets	Liabilities
PV of Tax Revenues 	PV of Expenditure
[Other assets]	Debt linked to GDP or Commodity Prices 
	[Other debt]

How do Financial Variables Behave?

- Explore correlations of financial variables with the cycle:
 - **Interest rates:** if they move with the cycle then floating debt acceptable; but if correlation is negligible, would be better off with long duration debt not to be affected by short term rate spikes
 - **Exchange rates:** if move cyclically (i.e. appreciate with upturn but depreciate with downturn) then FX linked debt risky – looks very affordable in upswing but servicing costs increase with downswing, when revenues already weakened
 - **Consumer Prices:** if move with cycle, then offers some fiscal insurance i.e. costs will fall as revenues decline with downturn. However, exposed to negative supply side shock.
- Remember that fiscal revenues are already volatile (cycles, internal & external shocks); must not add volatility, but offset volatility already there

Cost v Risk over Time



Managing the Transition

- Implementation involves designing a plan for moving towards the benchmark
 - Issuing new debt of the required characteristics
 - [Interest rate or currency swaps]
 - [Bond exchanges or buybacks]
- Subject to
 - Market access
 - Macroeconomic conditions
 - Developing domestic market
 - Internal capability

Determining the Financing Plan

- Need projected implementation of budget
 - Impact on government's cash balance
 - Identifies timing of financing requirements – both external and domestic
- Map expected timing of external financing
 - Identify any available project financing; overlay expectation of likely disbursement of project loans
 - Adjust for uncertainty in timing of disbursement; assess availability of any FX buffers
 - Determine implications for timing and quantum of other (external) borrowing
- Determine plan for domestic borrowing
 - Identify target quantum domestic financing
 - Consider evolution of projected balance on TSA, and the uncertainty surrounding that
 - Assess availability of domestic cash buffers
 - Identify issuance plan to meet those gaps
 - Adjust for maximum size of domestic auctions, seasonal factors, etc.

Annual Financing Plan

Government Expenditure	A	
Government Revenue	B	
Surplus (-) or Deficit (+)	C=A-B	
Other flows:		
Assets sales or privatisation receipts	D	
On-lending, net of repayments	E	
Debt redemptions and repayments	F	
Gross Financing Requirement	G=C-D+E+F	
Sources of Financing:		
I. External Loans and Credits		
• Project-related	H	Target
• Programme loans	I	Forecast
• Commercial borrowing	J	Forecast
II. Domestic Borrowing		
• [Bonds]	K	Target [publish calendar]
• Bills	L	Target or Forecast [Target for total; forecast for categories]
• [Loans]	M	
Net change in short-term liabilities*	N	Forecast [and Residual]
Total Gross Financing	G=H+I+J+K +L+M+N	

* Increased overdraft net of increased cash balances

mike.williams@mj-w.net



Performance Measurement

Performance Measurement

- Debt managers' performance in achieving objectives set by Ministers should be measured and reported
- Publish objectives and progress against them
 - Central element of transparency and accountability for both Ministers and officials
 - Distinguish between performance of:
 - Ministers – did they set the right high-level objectives and targets
 - Debt Managers – did they achieve Ministers' targets in an efficient and effective way
 - Requires clarity in the respective roles and relationships – separation between policy and execution
 - In an integrated office middle office will have responsibility for monitoring and reporting against strategic objectives

Delivering the Strategy

- The preferred strategy often represented as a “benchmark” portfolio
 - Expresses strategy in an operational manner
 - Comprises a number of risk indicators
 - Currency composition
 - Fixed/floating or duration
 - Maturity or refinancing profile
 - Other objectives, e.g. guidelines for funding source, etc
- NB: “Benchmark” means different things:
 - Issues on the yield curve
 - Benchmark portfolio as shadow or notional portfolio for performance measurement (compare asset managers)
 - Strategic benchmark or strategic target - derived from cost/risk analysis and unique to each sovereign

Measuring Performance in Practice

- Strategic benchmark or target benchmark
 - Strategic benchmark an expression of preferred portfolio
 - Publish how far actual has deviated from it
 - Target portfolio – updated by a predetermined financing strategy; and cost of actual compared with cost of target. But:
 - Requires sophisticated skills and systems
 - Important to avoid opportunistic behaviour - risks adding to market uncertainty and damaging debt office's credibility
 - [Outside eurozone] benchmark not independent of debt office's actions
 - Not recommended for emerging or transition countries
- “Too difficult” – focus instead on performance indicators

Performance Indicators

- Must be measurable, and provide useful information
 - May be difficult to identify the precise contribution made by the debt manager to actual outcomes
 - Monitor movement of indicators over time
- High-level objectives
 - Meeting the annual financing plan or strategic benchmark
 - Tracking the risk indicators
- Market performance
 - Auction performance, market liquidity, effective market-makers, spreads
- Efficiency of operations and service to market and public
- Indirect measures
 - Review by the IMF or others,
 - Peer review: agreement with one or more comparable countries to review each other's arrangements.
 - External “audit” by consultants to compare against best practice or performance of comparable countries