MEFMI
Macroeconomic and Financial Management Institute of Eastern and Southern Africa

MARKET RISKS AND THE MTDS FRAMEWORK

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Discussion Outline

- Introduction
- Overview of market risks
- Sources of funding vis-à-vis market risks
- Market risks and linkages MTDS Framework
- Experiences from the MEFMI Region

Introduction

- The public debt management environment has changed significantly for most developing countries in recent years.
- Public debt ratios are significantly lower in most countries that benefited from HIPC and MDRI.
- However, the need to finance the numerous development needs have led to increased borrowing in some countries.
- This at a time when the flows on foreign concessional lending and foreign grants have reduced following the recent global financial crisis and the Euro Zone debt crisis.

Introduction (ii)

- Governments have, therefore, taken recourse to external and domestic funding options that are associated with high risks arising from volatilities in the market variables.
- These risks are aggravated by sub-optimal structures of existing debt portfolios.
- In this regard, there is need for debt managers to have a clear understanding of the nature and sources of such risks so as to come up with effective debt management strategies.

Defining Market Risks

- In the context of debt management, refers to the change in cost of debt due to volatility and trends in the underlying market variables (i.e. interest and exchange rate changes) as well as exposure to the risks factors.
- Typical measures of exposure to interest rate risks are:
  - **Fixed-Floating ratio:** i.e. Floating rate debt as % of total debt
  - **Debt exposed to interest rate re-fixing within a specific time period**
    - ✓ Variable rate debt
    - ✓ Maturing fixed rate debt to be rolled over
  - **Average Time to Re-fixing**

Measures of Market Risks

- Measures of interest rate risk capture the vulnerability of funding costs to higher market interest rates when variable rates are reset and/or fixed rate debt needs to be refinanced.
- Typical measures of foreign exchange rate risks:
  - **Share of external debt in total debt**
  - **Currency composition of debt**
  - **Degree of currency mismatch between sources of foreign earnings and currency mix of debt**

Sources of Funding & Associated Risks

- The main sources of funding that most countries in MEFMI region rely on are:
  - ➢ Foreign borrowing, including:
    - ✓ *Traditional multilateral sources,*
    - ✓ *Semi concessional, and;*
    - ✓ *Access to international capital markets*
  - ➢ Domestic borrowing:
    - ✓ Treasury bills and Treasury bonds

Risks from Foreign debt

- Foreign borrowing remains the main source of financing in the MEFMI region;
- This remains attractive because it is in the form of concessional loans which have low & fixed interest, thus reducing interest rate risks.
- However, the main risk is the exposure of the debt portfolio to adverse movements in exchange rates.
  - The risks are particularly high in countries with overvalued exchange rates.
- It is worth noting that concessional financing has reduced in recent years, particularly after the global financial crisis and the Euro Zone debt crisis. Thus, countries are going for new creditors, with harder terms.

Risks from New foreign creditors

- There has been an emergence of new creditors including China, India, Korea, etc.
- These lenders provide loans on less favourable terms, with shorter repayment periods and higher interest rates than the traditional creditors.
- Such borrowing has exposed the debt portfolio to both exchange rate fluctuations as well as higher interest rate risks.

Risks from International Sovereign Bonds

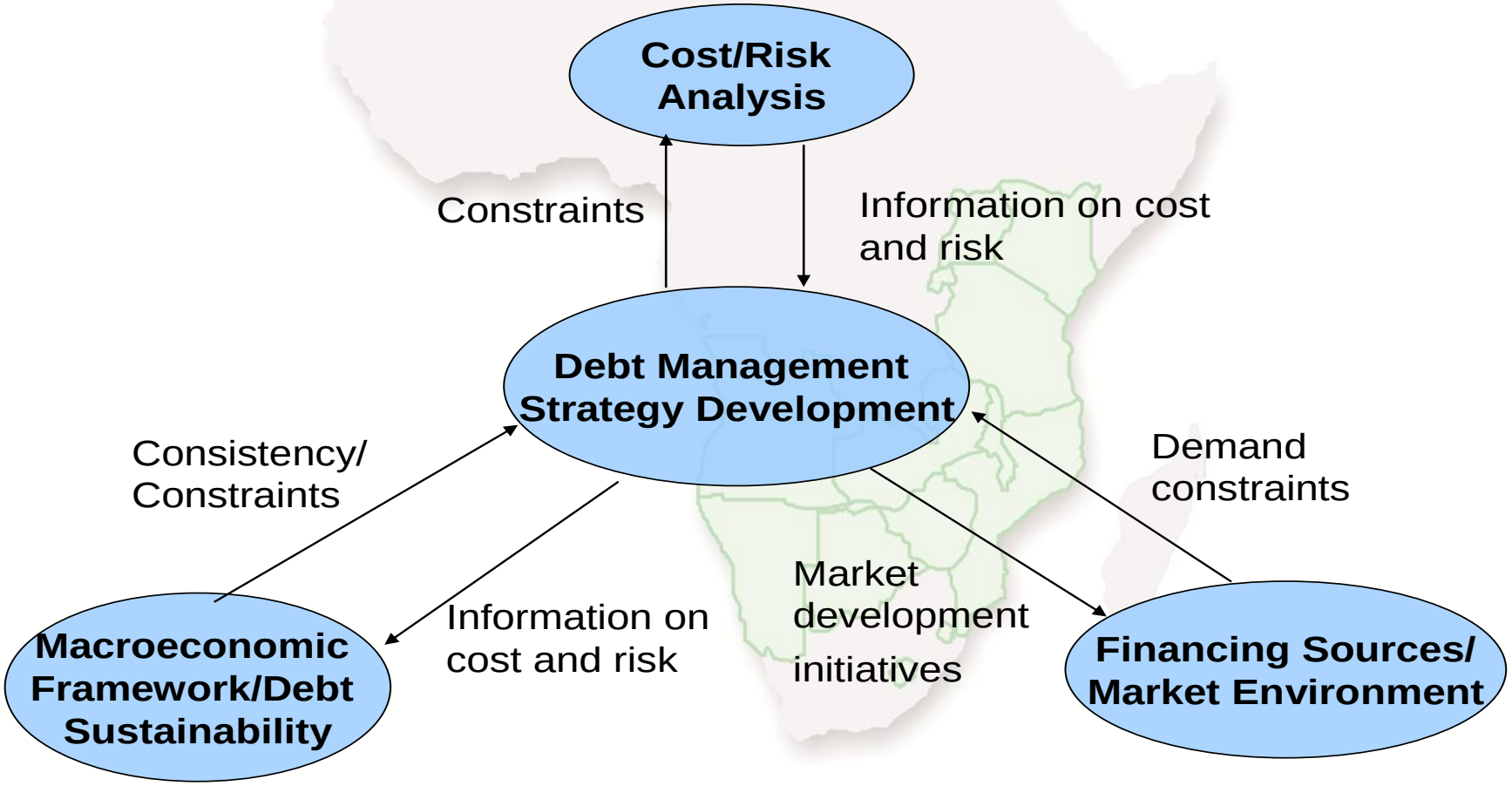
- In the last few years, a number of developing countries have made debut bond issuances on the international capital market e.g. Ghana, Namibia, Zambia, and Rwanda.
- The costs of such issuances are generally higher than the traditional external debt.
- The main risks associated with such funding are:
  - Higher interest rates at the time of issuance.
  - Exchange rate exposure, which could be aggravated by the bullet repayment structure.

Risks from Domestic Borrowing

- In general, domestic debt markets in most countries in the MEFMI region are underdeveloped and largely characterized by short term debt instruments.
- However, the level of domestic debt has increased drastically in the recent years.
- The short term nature of the domestic debt instruments is associated with rollover risks.
- Lengthening the domestic debt maturity has been hampered by the narrow base interests dominated by commercial banks. Hence, risks remain.

Market Risks and the MTDS

- Debt managers are increasingly examining the sources of funding and the market environment in order to understand the risks to alternative debt management strategies.



Market Risks and the MTDS

- Increasingly consideration is being made by debt managers on the appropriate balance between:
  - Foreign or domestic debt to avoid foreign exchange exposure from a large share of foreign debt
  - Fixed or floating rate debt to avoid increased interest rate exposures.
  - Concessional and non-concessional debt, especially the balance between traditional sources of borrowing and access to international capital market to avoid increases both interest rate and exchange rate risks.

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Experiences in the MEFMI Region

- Results of analytical work done in Lesotho, Malawi, Namibia and Tanzania reveal the market risks they face.

Lesotho's Existing Debt Portfolio (2013)

Risk Indicators		External debt	Domestic debt	Total debt
Amount (in millions of USD)		775.7	134.8	910.5
Nominal debt as % GDP		34.7	6.0	40.8
Cost of debt	Weighted Av. IR (%)	1.2	7.9	2.2
Refinancing risk	ATM (years)	12.5	1.9	11.0
	Debt maturing in 1yr (% of total)	3.7	54.9	11.3
Interest rate risk	ATR (years)	12.5	1.9	11.0
	Debt refixing in 1yr (% of total)	4.2	56.7	11.9
	Fixed rate debt (% of total)	99.5	95.1	98.8
FX risk	FX debt (% of total debt)			85.2

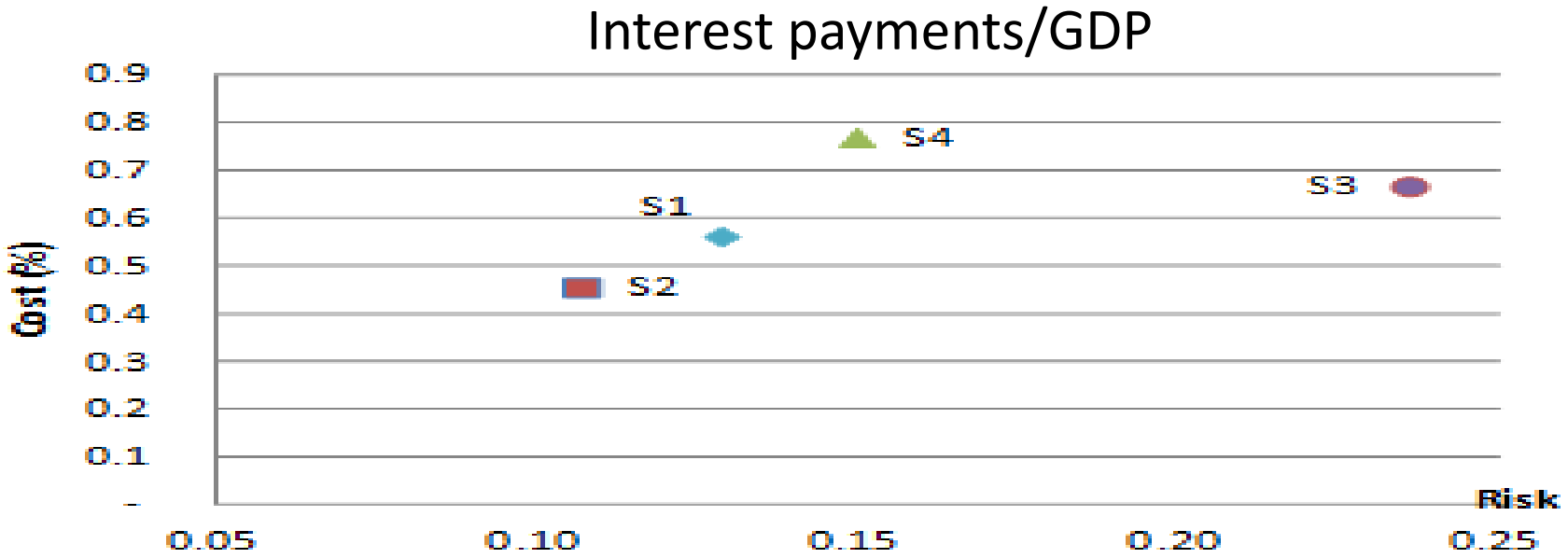
- Cost of existing debt is not very high compared to regional levels – Weighted average interest rate is 2.2%
- Refinancing risks
  - External debt portion is less exposed to refinancing risks
  - ATM of domestic debt is close to 2 years
  - Domestic Debt maturing in one year
- Interest rate risk exposure
  - External debt portion is well shielded
  - Domestic debt ATR is close to 2 years
  - More than half of domestic debt has interest rate re-fixed in 1 year
  - Domestic debt is less exposed to interest rate risk – 95% is fixed

Lesotho's Alternative Medium-Term Strategies

- The following alternative strategies were considered in the 2013 MTDS:
  - S1: Maintain status quo (85% foreign debt, 15% domestic financing)
  - S2: More concessional borrowing
  - S3: Less access to concessional loans.
  - S4: Development of domestic debt market.

Lesotho MTDS Results

Risk Indicators		2013	As at end FY2017/18			
		Current	S1	S2	S3	S4
Nominal debt as % of GDP		40.8	37.7	37.6	37.9	38.0
Implied interest rate (%)		2.2	1.7	1.4	2.0	2.3
Refinancing risk	ATM External Portfolio (years)	12.5	16.4	16.8	14.8	16.1
	ATM Domestic Portfolio (years)	1.9	3.3	1.7	5.5	4.4
	ATM Total Portfolio (years)	11.0	15.6	16.4	13.8	14.2
Interest rate risk	ATR (years)	11.0	15.5	16.4	12.9	14.2
	Debt refixing in 1yr (% of total)	11.9	6.4	5.6	14.7	6.8
	Fixed rate debt (% of total)	98.8	99.2	99.4	91.1	99.9
FX risk	FX debt as % of total	85.2	93.2	97.5	88.3	83.7



Lesotho MTDS Results

- A shift from the current strategy (S1) in favour of less concessional borrowing (S3) and development of the domestic debt market (S4) leads to higher costs, based on the ratios of debt/GDP and interest payment to GDP.
- However, S3 leads is the most risky due to shocks to foreign interest rates;
- Although S2 implies more foreign debt, it is less risky because the borrowing is on concessional terms. Nevertheless, S2 is not realistic given the declining trends in concessional financing.

Malawi's Existing Debt Portfolio (2013)

Risk Indicators		External debt	Domestic debt	Total debt
Amount (in millions of USD)		974.3	668.0	1,642.3
Nominal debt as % GDP		30.9	21.2	52.1
PV as % of GDP		23.4	21.2	44.6
Cost of debt	Weighted Av. IR (%)	1.3	17.9	8.1
Refinancing risk	ATM (years)	16.2	1.2	10.1
	Debt maturing in 1yr (% of	2.1	75.0	31.8
Interest rate risk	ATR (years)	16.2	1.2	10.1
	Debt refixing in 1yr (% of tc	2.1	75.0	31.8
	Fixed rate debt (% of total)	100.0	100.0	100.0
FX risk	FX debt (% of total debt)			59.3
	ST FX debt (% of reserves)			9.4

- Cost of domestic debt is high – Weighted Av.IR is about 18%
- Refinancing Risks
  - ATM for domestic debt is relatively short 1.2 years
  - 75% of Domestic debt matures in 1 year
- Interest rate risk
  - Not exposed to interest rate variation – 100% of debt has fixed rate

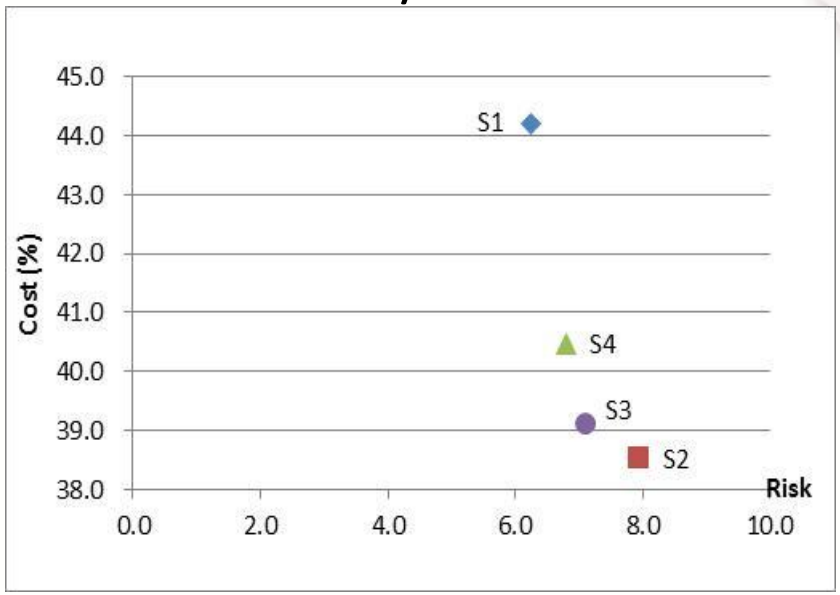
Malawi's Alternative Medium-Term Strategies

- The following strategies were considered in the 2013 MTDS:
  - S1: Maintain status quo (80% foreign borrowing, 20% domestic financing)
  - S2: Assumed a drastic reduction in treasury bills to a level that can entirely be financed by the private sector within one year by increasing foreign borrowing;
  - S3: Assumed a gradual reduction in treasury bills to a sustainable level within four years.
  - S4: Refinanced all the T-bills held by the central bank with a new 10-year domestic loan.

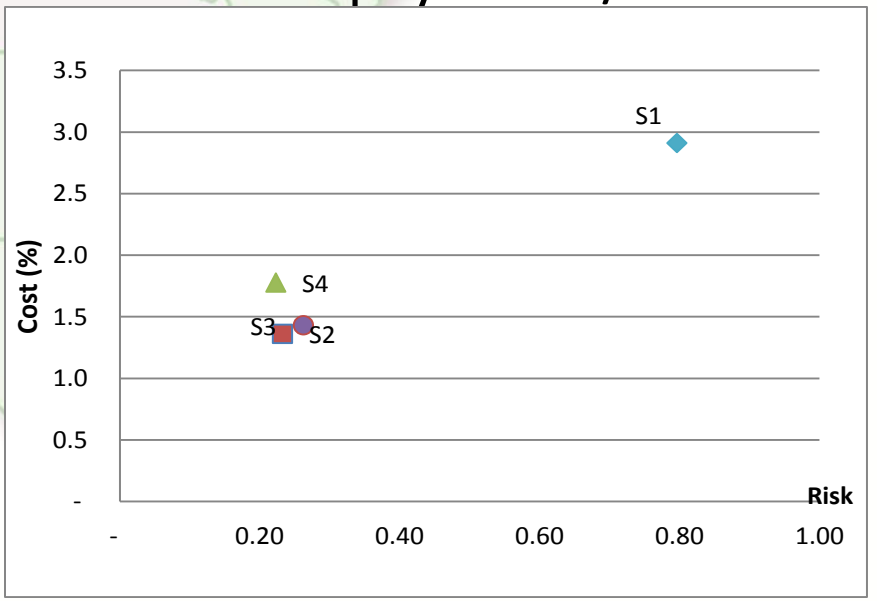
Malawi MTDS Results

Risk Indicators		2012	As at end FY2016			
		Current	S1	S2	S3	S4
Nominal debt as % of GDP		52.7	44.1	40.6	41.5	41.9
PV as % of GDP		45.3	37.0	32.4	33.1	34.2
Implied interest rate (%)		8.0	5.6	2.7	2.9	3.6
Refinancing risk	ATM External Portfolio (years)	15.9	15.7	15.9	16.1	15.9
	ATM Domestic Portfolio (years)	1.2	1.2	1.0	1.0	4.2
	ATM Total Portfolio (years)	10.0	11.7	14.5	14.8	13.8
Interest rate risk	ATR (years)	10.0	11.7	14.5	14.8	13.3
	Debt refixing in 1yr (% of total)	31.5	26.8	10.8	10.3	19.3
	Fixed rate debt (% of total)	100.0	100.0	100.0	100.0	90.7
FX risk	FX debt as % of total	59.8	72.2	91.0	91.4	82.5
	ST FX debt as % of reserves	10.4	3.9	3.9	3.9	3.9

PV/GDP



Interest payments/GDP



Results of Malawi MTDS Analysis

- The analysis shows that refinancing T-bill debt by external borrowing would lead to a significant reduction in the costs of debt, based on the model's cost indicators.
- Under all the strategies, the level of debt falls from 52 percent of GDP to between 40 and 44 percent of GDP, reflecting the importance of fiscal consolidation in reducing the level of debt.
- Based on the cost measure of the PV of debt to GDP, all the low cost strategies are associated with higher risks compared to S1, emanating from shocks to the exchange rate.
- The additional costs of an exchange rate shock are much lower based on the interest-GDP ratio, mostly reflecting the relatively low external debt service payments.

Tanzania's Existing Debt Portfolio (2013)

Risk Indicators		External debt	Domestic debt	Total debt
Amount (in millions of USD)		9,471.0	6,810.8	16,281.8
Nominal debt as % GDP		31.6	22.7	54.2
PV as % of GDP		18.2	22.7	40.9
Cost of debt	Weighted Av. IR (%)	1.6	7.1	3.9
Refinancing risk	ATM (years)	16.6	4.7	13.1
	Debt maturing in 1yr (% of	2.8	22.0	8.5
Interest rate risk	ATR (years)	15.8	4.7	12.5
	Debt refixing in 1yr (% of tc	19.8	22.0	20.4
	Fixed rate debt (% of total)	82.0	100.0	87.4
FX risk	FX debt (% of total debt)			58.2
	ST FX debt (% of reserves)			5.8

- Cost of debt is not high relative to the regional levels – with weighted average interest rate of 3.9% (mostly dominated by foreign debt with 1.6%)
- Refinancing risks
  - External debt is well shielded
  - Domestic debt ATM is reasonable – 4.7years
  - Domestic debt maturing in 1 year is not very high 22%
- Interest rate risk exposure is high
  - Variable rate debt is about 42% of total debt portfolio

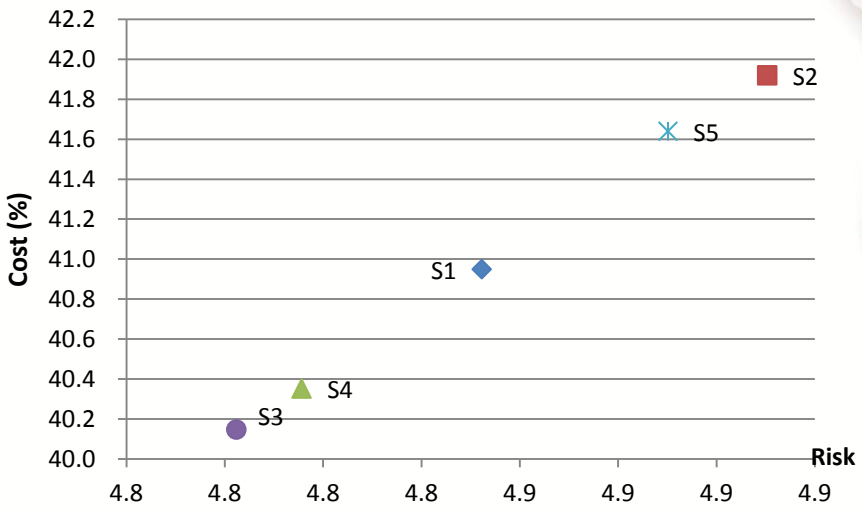
Tanzania's Alternative Medium-Term Strategies

- The following strategies were considered in the 2013 MTDS:
  - S1: is the current strategy of concessional and commercial borrowing. It assumes a policy constraint that limits the net domestic financing (NDF) at 1% of GDP.
  - S2: Reduce borrowing through export credit agencies in favour of other foreign financing sources, including access to international capital markets.
  - S3: More semi-concessional financing, including China as well as guarantees on IBRD or AfDB lending.
  - S4: Combination of semi-concessional borrowing and gradual increase in NDF to 1.5% of GDP over time

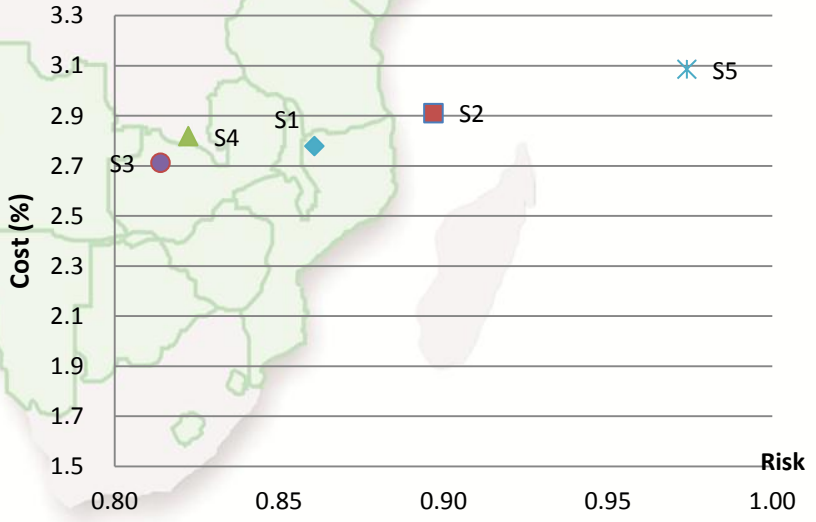
Tanzania MTDS Results

Risk Indicators		2012	As at end FY2017			
		Current	S1	S2	S3	S4
Nominal debt as % of GDP		55.6	55.1	55.3	54.0	54.1
PV as % of GDP		42.8	40.9	41.9	40.1	40.4
Implied interest rate (%)		7.0	5.6	5.9	5.6	5.8
Refinancing risk	ATM External Portfolio (years)	16.6	15.7	14.8	16.2	16.2
	ATM Domestic Portfolio (years)	7.2	5.8	6.0	6.0	6.1
	ATM Total Portfolio (years)	12.7	12.9	12.3	13.3	13.1
Interest rate risk	ATR (years)	12.2	11.6	11.2	11.3	11.4
	Debt refixing in 1yr (% of total)	16.9	29.4	25.3	26.4	24.6
	Fixed rate debt (% of total)	89.5	76.8	79.4	78.4	80.6
FX risk	FX debt as % of total	56.8	69.9	70.0	69.3	67.0
	ST FX debt as % of reserves	5.8	11.9	10.9	9.3	9.3

PV/GDP



Interest payments/GDP



Results of Tanzania MTDS Analysis

- The MTDS results indicate that a shift towards semi-concessional borrowing (S3) yields the most attractive cost and risk outcomes relative to all the strategies.
- A combination of semi-concessional borrowing with an increase in domestic financing offers the second best choice (S4);
- S5 (issuance of an international bond) is the least attractive. This is because an eight percent coupon rate.
  - Shocks to interest rates and exchange rates increase the risks of this option.

Namibia's Existing Debt Portfolio (2012)

Risk Indicators		External	Domestic	Total
Nominal debt	(% of GDP)	7.9	16.2	24.1
Present value of debt	(% of GDP)	7.3	16.2	23.6
Cost of debt:	Weighted Av. IR	3.9	7.8	6.5
Refinancing risk:	ATM (years)	7.8	3.4	4.9
	Debt maturing in 1 year (% of total)	4	49	34.3
Interest rate risk:	ATR (years)	7.5	3.4	4.8
	Debt refixing in 1 year (% of total)	9.2	49	34.3
	Fixed rate debt (% of total)	94.2	100	98.1
Foreign currency risk:	FX debt (% of total)			32.7

- Cost of debt is not high relative to regional levels – weighted Av IR 6.5%
- Refinancing Risks
  - ATM for the portfolio is relatively short – 4.9years
  - About half of domestic debt matures within a year
- Interest rate risk exposure is low
  - Slightly less than 2% of the total portfolio has variable interest rate
- Portfolio not exposed to forex risks – about 33% is denominated in foreign currency

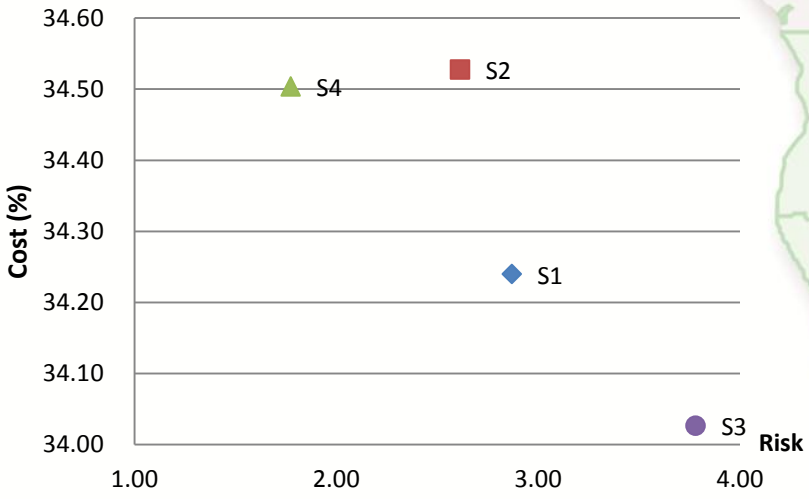
Namibia's Alternative Medium-Term Strategies

- The following strategies were considered in the 2012 MTDS:
  - S1: is the current strategy: 80% domestic and 20% foreign financing.
  - S2 aims to reduce refinancing risk in the domestic market through shifting from Tbills to long term bonds.
  - S3 assumes that there is a new Eurobond issuance in 2013.
  - S4 assumes 100% domestic financing, with no new external borrowing except for some undisbursed debt on existing foreign loans.

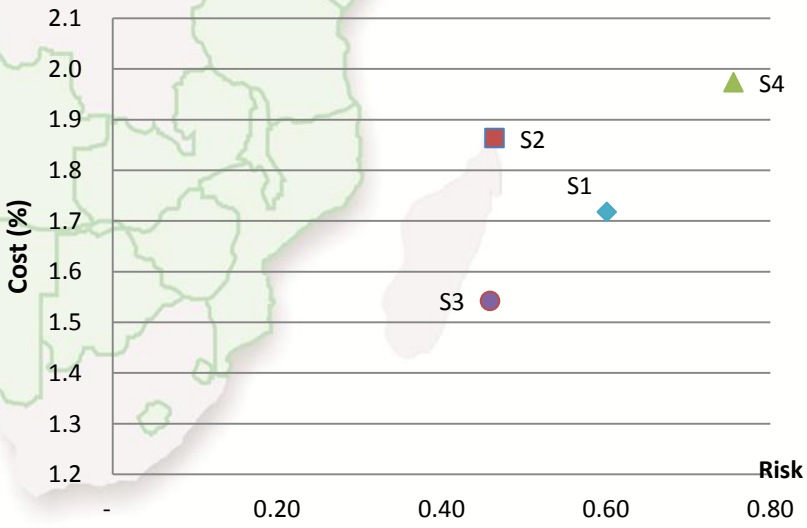
Namibia MTDS Results

Risk Indicators		2012	As at end FY2017			
		Current	Cur.Strategy	D Mat.Extend	More FX debt	All NAD debt
Nominal debt as % of GDP		24.1	32.4	32.7	32.2	32.7
PV as % of GDP		23.6	31.6	32.0	31.2	32.5
Implied interest rate (%)		6.5	6.7	7.2	6.0	7.8
Refinancing risk	ATM External Portfolio (years)	7.8	7.6	7.2	7.6	4.6
	ATM Domestic Portfolio (years)	3.4	2.8	5.4	3.0	3.8
	ATM Total Portfolio (years)	4.9	4.9	6.0	5.8	3.9
Interest rate risk	ATR (years)	4.8	4.9	6.0	5.8	3.9
	Debt refixing in 1yr (% of total)	36.0	38.9	20.1	26.5	48.6
	Fixed rate debt (% of total)	98.1	99.5	99.5	99.5	99.5
FX risk	FX debt as % of total	32.7	44.3	35.2	61.4	12.6

Debt/GDP



Interest payments/GDP



Results of Namibia MTDS Analysis

- Analysis of the strategies indicates that a shift from the current strategy (S1) to issuance of bonds (S2) represents a better option for meeting the Governments priority of reducing refinancing and interest rate risks.
- Although S2 leads to increase costs in both cost indicators (debt to GDP and interest payment to GDP), the increase is marginal.
- While S4 yields lower risks to the portfolio (debt to GDP ration), it is more risky in terms of the interest payments to GDP ration, reflecting interest rate risks or shocks.

Conclusions

- Foreign debt dominates the debt portfolios in most developing countries, including those the MEFMI member states.
- Implementing strategies that favour domestic borrowing increases debt costs but are less risky than foreign borrowing.
- In some cases like Malawi, refinancing Treasury bills with concessional borrowing reduces the cost of debt significantly while additional costs due to foreign exchange exposure are minimal.
  - But this strategy may not be feasible due to declining trends in concessional lending, and the need for domestic market development.
- Increased foreign borrowing on semi-concessional terms and access to international capital market increases exchange rate and interest rate risks.