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MANAGEMENT CONSULTANTS

General Overview of the Domestic Debt Analysis

Commonwealth Secretariat
Seminar on Requirements for Domestic Debt Management Tools Module

Ian Storkey
Taj Lands End Hotel, Mumbai
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Outline

- Domestic debt program
  - Benchmark issues & fungibility
  - Pricing of bonds/bills
  - Analysis
- Case study: PNG
  - TBill program
  - Inscribed Stock program
  - Market analysis

- The Government has a key role to play in the development of the domestic fixed-income securities market and establish a benchmark which:
  - provides the “risk free” rate which is used to price all fixed-income securities
  - assures a regular supply of debt through planned auction schedules
  - introduces fixed-income securities trading and promotes the development of an investment culture
  - provides the instruments to serve as collateral and hedging vehicles for all market participants

Domestic Debt Management

- Strive to achieve a broad investor base, and treat investors equitably
- Operations in the primary market should be transparent and predictable
- To the extent possible, debt issuance should use market-based mechanisms including competitive auctions and syndications
- Promote the development of a resilient secondary market that can function under a wide range of market conditions
- Systems used to settle and clear financial market transactions involving government securities should reflect sound practices

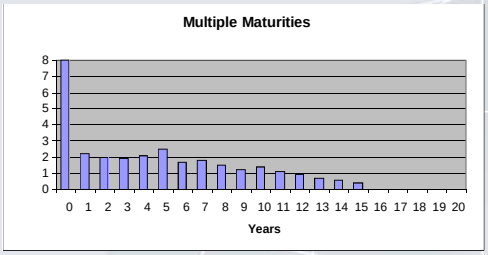
Domestic Debt Management

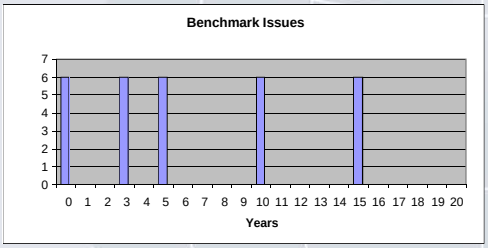
- Establish clear objectives for securities issuance and debt management
- Develop basic projections of the government's liquidity needs
- Create safe and efficient channels for the distribution of securities targeted to investor needs and thereby lowering transaction costs
- Progressively extend the maturity of government securities
- Consolidate the number of debt issues and create standardized securities with conventional maturities with a view to eventually provide market benchmarks
- Move towards a predictable and transparent debt management operation, e.g., with pre-announced issuance calendars, and greater disclosure of funding needs and auction outcomes

Domestic Debt Program

- Treasury Bills (up to 1 year)
- Treasury Bonds (1 - 30 years)
  - Fixed rate
  - Floating rate
  - Inflation indexed
- Retail Bonds (savings bonds)
  - Transferable / non-transferable
- Primary Market
  - Auctions: single/multi price
  - Tap issuance
  - Syndication
  - Non competitive
- Secondary Market
  - Government securities – trading, clearing & registry systems
  - Other instruments (Swaps, Futures, Repos, Options)

Benchmark Issues





Pricing of Treasury Bills

Settlement Price per N Principal

$$= \frac{N}{1 + \left(i \times \frac{n}{365} \right)}$$

Where:

N = the Principal of the Bill

i = the Yield divided by one hundred

n = the number of full days between the Settlement Date and the Maturity Date

Pricing of Treasury Bonds

Settlement Price per N Principal =

$$\left(\frac{\frac{1}{(1+i)^n} + r\left[c + \frac{1 - \frac{1}{(1+i)^n}}{i} \right]}{(1+i)^{\frac{a}{b}}} \right) N$$

Where:

N = the Principal of the Bond (Inscribed Stock / Gilt)

r = the annual Coupon Interest Rate divided by two hundred, i.e., the semi-annual Coupon Interest Rate (%)

i = the Yield divided by two hundred, i.e., the semi-annual yield (%)

c = where the Settlement Date is after the Record Date and up to, but not including, the next Coupon Interest Payment Date "c" has the value of 0, otherwise "c" has the value of 1

n = the number of full half years between the next Coupon Interest Payment Date and Maturity Date

a = the number of days from the Settlement Date to the next Coupon Interest Payment Date

b = the number of days in the half year ending on the next Coupon Interest Payment Date

Pricing of Treasury Indexed Bonds

Settlement Price per N Principal =

$$\left(\frac{\frac{1}{(1+i)^n} + r\left[c + \frac{1 - \frac{1}{(1+i)^n}}{i} \right]}{(1+i)^{\frac{a}{b}}} \right) \left(\frac{K_t \left(1 + \frac{p}{100}\right)^{-\frac{a}{b}}}{100} \right) \times N$$

Where:

N = the Principal of the Indexed Bond

r = the annual Coupon Interest Rate divided by two hundred, i.e., the semi-annual Coupon Interest Rate (%)

i = the Yield divided by two hundred, i.e., the semi-annual yield (%)

c = where the Settlement Date is after the Record Date and up to, but not including, the next Coupon Interest Payment Date "c" has the value of 0, otherwise "c" has the value of 1

n = the number of full half years between the next Coupon Interest Payment Date and Maturity Date

a = the number of days from the Settlement Date to the next Coupon Interest Payment Date

b = the number of days in the half year ending on the next Coupon Interest Payment Date

K_t = the total value of the Principal and Indexed Component at the next Coupon Interest Payment Date

p = the average percentage change in the Consumer's Price Index (CPI) over the two quarters ending the quarter which is two quarters prior to that in which the next interest payment falls

Mobilization/Financing Requirement

Recurrent			**Financed by:**
Revenue (incl investment income)	+		
Expenditure (incl debt interest & exps)	–		**Domestic**
Recurrent Surplus / Deficit		+ / –	Treasury bills
Capital			Treasury bonds (fixed)
Revenue	+		Treasury bonds (floating)
Expenditure	–		Foreign currency bonds
Capital Surplus / Deficit		+ / –	Treasury indexed bonds
Budget Surplus / Deficit		**+ / –**	Retail bonds
Financial Transactions & Adjustments			**External**
Debt Principal Repayments	–		Multilateral loans
Privatisation Receipts & Asset Sales	+		Bilateral loans
On-Lending	+ / –		Short term programs
Contingent Liabilities	–		International bonds
Other Adjustments	+ / –		Private placements
		+ / –	Syndicated loans
Government Financing Requirement (Mobilization)		**Financing Requirement**	Standby facilities
			IMF credits

Domestic Debt Management

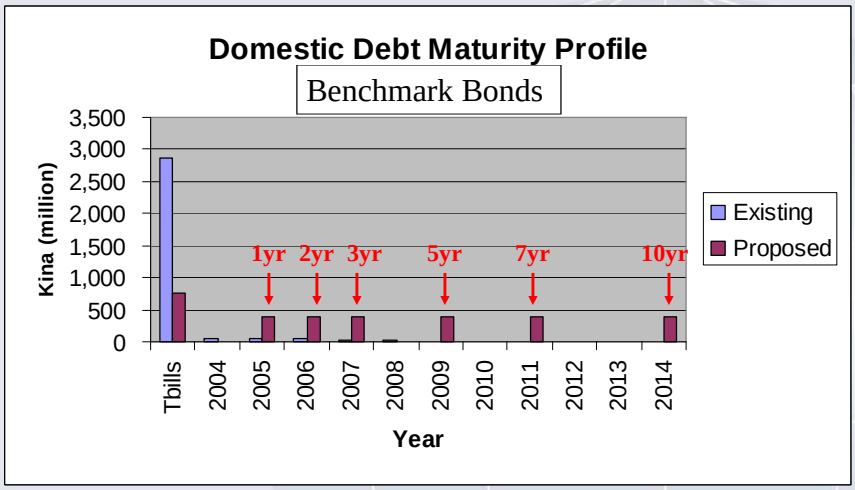
- Pre-issuance analysis - pre-announced annual debt issuance schedule
- Tender process
- Accepted bids and settlement
- Data capture and recording
- Registry functions
- Debt servicing and repayments

Analysis

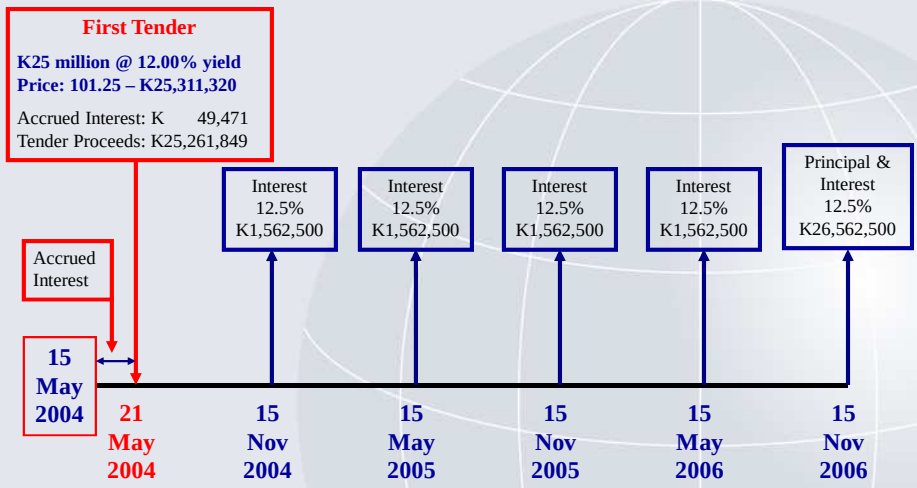
- Examples
  - NZ: Bond Program Announcement
    http://www.nzdmo.govt.nz/media/19may05.asp
    (Bond Program 2005.pdf)
  - Greece: Public Debt Publication
    ..\..\..\Sovereign Debt Mgmt\Other DMUs\Greece\Greece public debt bulletin 36.pdf
  - UK: Quarterly Review Publication
    ..\..\..\Sovereign Debt Mgmt\Sovereign DMOs\UK\UK DMO Qtly Rev Jan-Mar05.pdf
  - PNG: Public Debt Trends & TBill Analysis
    ..\..\..\Sovereign Debt Mgmt\Other DMUs\PNG\Public Debt Trend Q2 2004.pdf
    ..\..\Papua New Guinea\PNG Spreadsheets\TBills 2003 and TBills 2004.xls

Case Study: PNG

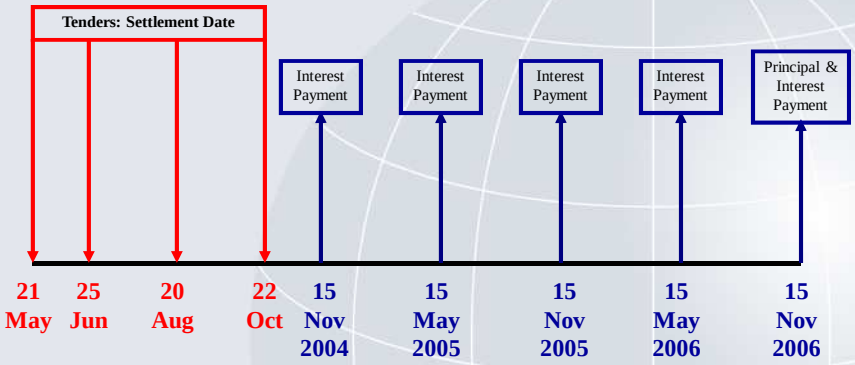
Planned Maturity Profile



November 2006 Inscribed Stocks



Tender Process



Case Study: PNG

- Bid Calculation spreadsheet
  ..\..\Papua New Guinea\Bid & Switch Calculation.xls
- Inscribed Stock tender spreadsheet
  ..\..\Papua New Guinea\Tender Results 23rd February 2005_230205.xls
- Inscribed Stock spreadsheet
  ..\..\Papua New Guinea\PNG Spreadsheets\Inscribed Stock 2005.xls
- Debt buyback/switching
  ➔ to be covered on Wednesday

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