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Assets and Liabilities Management: The Brazilian Experience

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Head of the Public Debt Strategic Planning Department
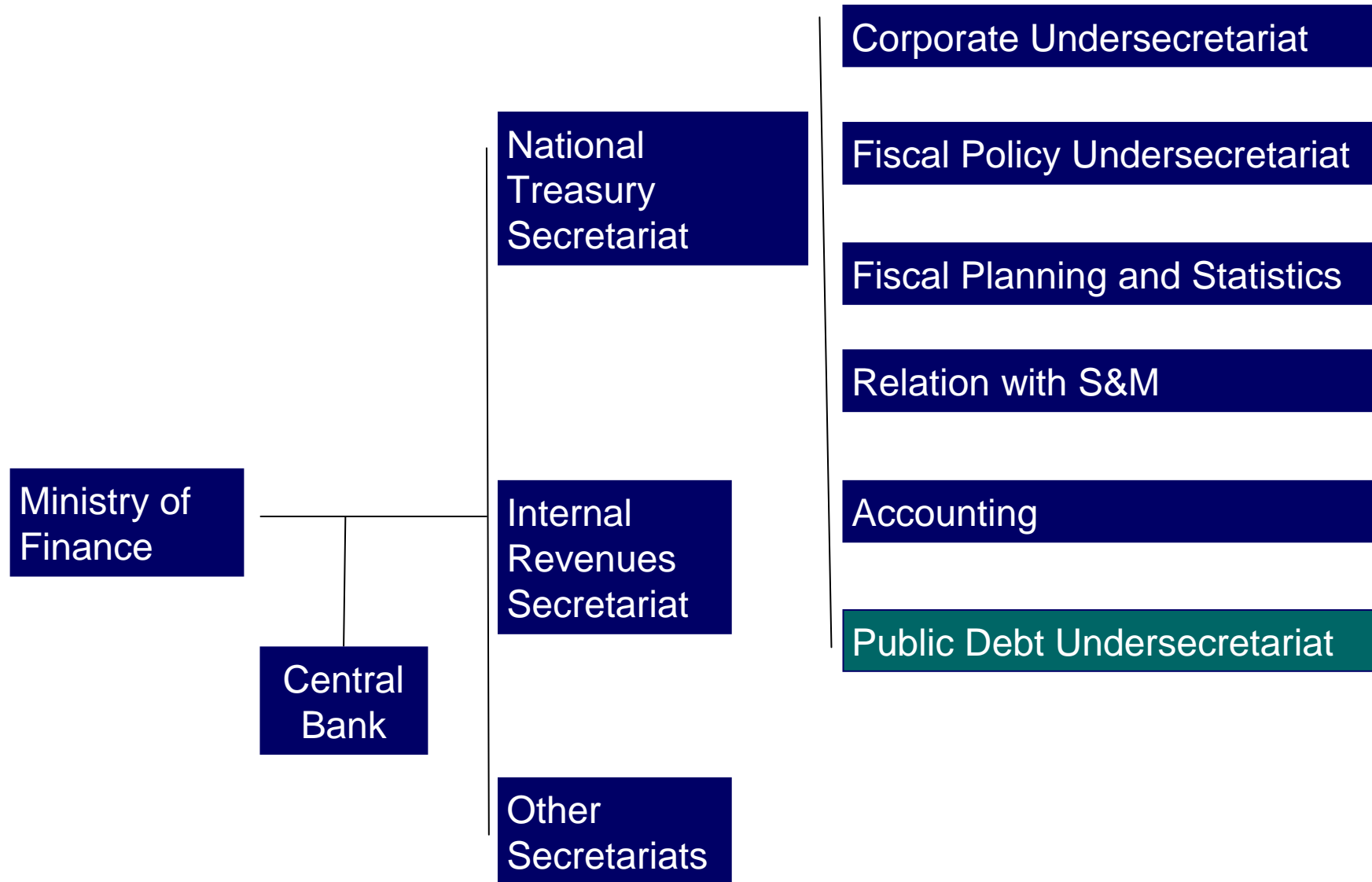
Brazilian National Treasury

Brazilian Public Debt Institutional Structure

ALM Evolution: the Brazilian Experience
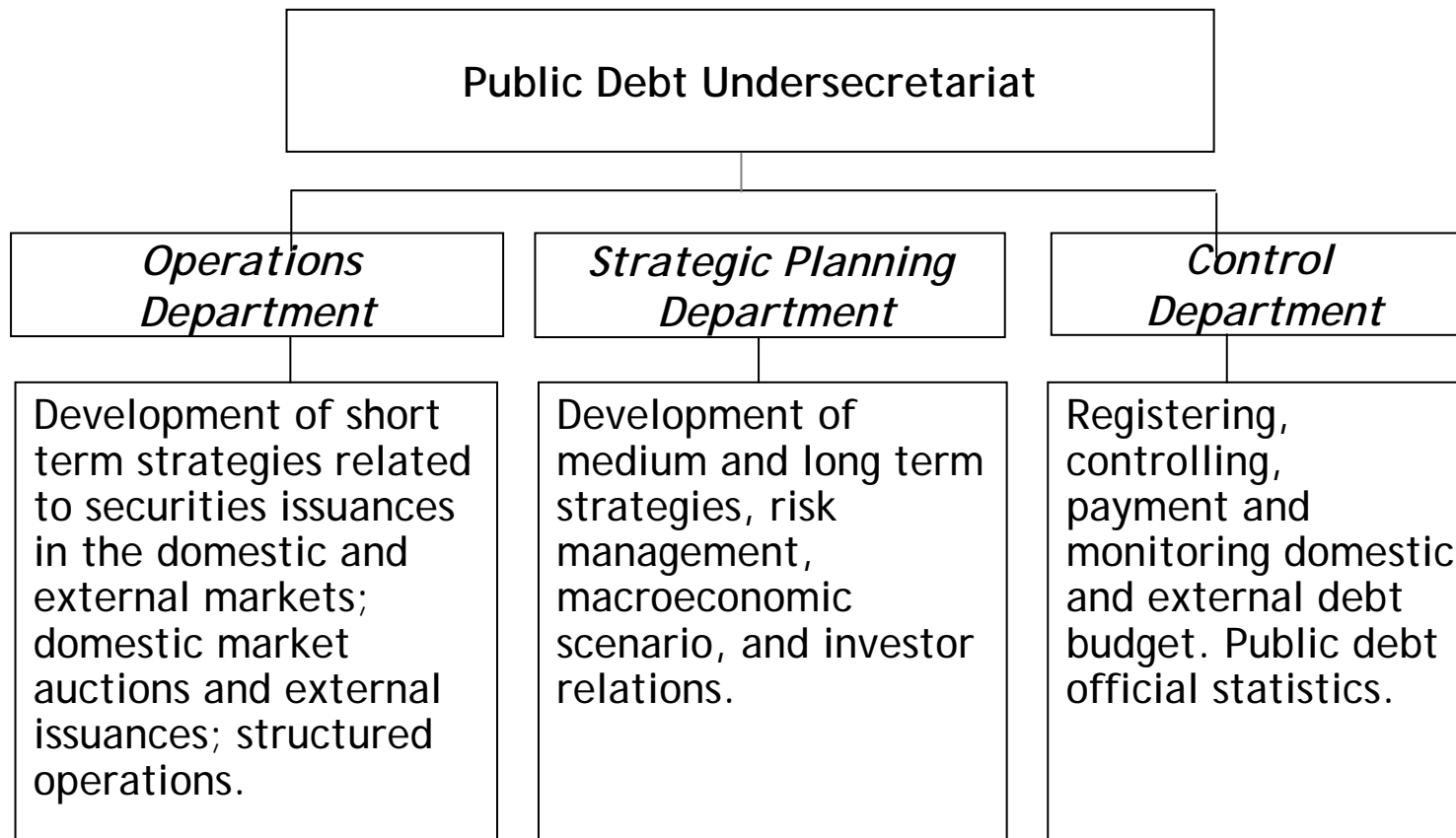
Contingent Risks to be monitored

Brazilian Annual Borrowing Plan

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Brazilian National Treasury Institutional Structure

Ministry of Finance

Central Bank

National Treasury Secretariat
- Corporate Undersecretariat
- Fiscal Policy Undersecretariat
- Fiscal Planning and Statistics
- Relation with S&M
- Accounting
- Public Debt Undersecretariat

Internal Revenues Secretariat

Other Secretariats

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Brazilian National Treasury Institutional Structure

Public Debt Undersecretariat (DMO)

- Strategic Planning Dept
  - Risk Management
  - Economic Scenarios
  - Investor Relations
  - Research and Development
- Operations Department
- Control Department

Brazilian National Treasury Institutional Structure

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                    │     Public Debt Undersecretariat     │
                    └──────────────────────────────────────┘
                                      │
        ┌─────────────────────────────┼─────────────────────────────┐
┌──────────────────┐      ┌──────────────────────┐      ┌──────────────────┐
│   Operations     │      │  Strategic Planning  │      │     Control      │
│   Department     │      │     Department       │      │   Department     │
└──────────────────┘      └──────────────────────┘      └──────────────────┘
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Operations Department	Strategic Planning Department	Control Department
Development of short term strategies related to securities issuances in the domestic and external markets; domestic market auctions and external issuances; structured operations.	Development of medium and long term strategies, risk management, macroeconomic scenario, and investor relations.	Registering, controlling, payment and monitoring domestic and external debt budget. Public debt official statistics.

Brazilian Public Debt Institutional Structure

ALM Evolution: the Brazilian Experience

Contingent Risks to be monitored

Brazilian Annual Borrowing Plan

1st Phase - Central Government Asset and Liability Management - ALM

➢ The Annual Borrowing Plan 2002

   ✓ guidelines based on an Asset and Liability Management model, a tool to map and manage risks of the public debt portfolio

   ✓ the basic ALM objective is to change the debt composition to immunize the government balance sheet, through the balance between the characteristics of assets and liabilities, reducing its sensitivity to shocks in the economic and financial variables

➢ Refinancing and market risks are at the center of mitigation policies developed by the National Treasury

   ✓ four main market risk categories: inflation, exchange rate, floating rate, and fixed rate

   ✓ eight categories of time to maturity (refinancing risk)

➢ The result of the ALM model was the elaboration of regular reports, identifying the mismatches between assets and liabilities, in terms of indexes (risk categories), average time to maturities, cash flows and percentage of debt outstanding on the short term, including the simulation on the future evolution of these mismatches.

Central Government Assets and Liabitiies – Main itens by index (risk factor)

INDEX	TN/BC	ATIVOS	R$ bi	INDEX	TN/BC	PASSIVOS	R$ bi	Desc.	%PIB
TOTAL			**1.081,22**				**2.241,29**	**(1.160,07)**	**-39,3%**
Índice de preços			**450,48**	**Índice de preços**			**407,55**	**42,93**	**1,5%**
IGP				IGP					
	TN	LEI Nº 9.496/97	315,22		TN	NTN-C	**58,73**		
	TN	MP 2.185	50,01		TN	Outros IGP	16,20		
	TN	EMPRÉSTIMO BACEN / BANERJ - MP 2.179	10,90						
	TN	ROYALTIES - ESTADOS	8,96	IPCA	TN	NTN-B	**332,62**		
	TN	Outros IGP	65,38						
Câmbio			**448,99**	**Câmbio**			**103,00**	**345,98**	**11,7%**
	TN	DMLP - RESOLUÇÃO Nº 98/92 DO SENADO FEDERAL	6,32	**Dívida denominada**			**92,70**		
	TN	LEI Nº 7.976/89 - MF 030	0,27	Dólar	TN	Bradies	0,22		
	TN	Outros	43,72		TN	Globais	59,93		
					TN	Contratual	22,78		
	BC	Operações de SWAP (Câmbio)	0,00						
	BC	Reservas Internacionais Líquidas	398,67	Euro	TN	Euro Bonds	9,78		
				Dívida Referenciada			**10,30**		
					TN	Fixa	10,30		
					TN	Flutuante	0,00		
Juros			**150,15**	**Juros**			**748,76**	**(-598,61)**	**-20,29%**
	TN	SELIC	20,92			Total SELIC	**573,38**		
	TN	TR	35,09		TN	LFT's	507,66		
	TN	TJLP	94,14		TN	Outros	3,72		
					BC	Operações de mercado Aberto (até 1 mês)	60,18		
					BC	Operações de SWAP (SELIC)	0,00		
					BC	Outros Depósitos (SELIC)	1,82		
					TN	Total TR	**174,11**		
					TN	Div. Em proc de securitização (TR)	81,15		
					TN	Outros TR	33,83		
					BC	Outros Depósitos (TR)	59,13		
					TN	TJLP	**1,27**		
Pré	TN	Programas diversos	**18,28**	**Pré**			**836,85**	**(-818,57)**	**-27,74%**
					TN	LTN	246,35		
					TN	NTN-F	210,66		
					TN	BRL	10,34		
					BC	Operações de mercado Aberto (+ de 1 mês)	369,50		
Demais	TN	Programas diversos	**13,33**	**Demais**	BC	Base Monetária	**145,14**	**(-131,81)**	**-4,47%**
				PIB			**2.950,78**		

* Não foi considerado no balanço de ALM o valor presente do superávit primário do Governo Central.

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Integrating assets in the analysis helped identifying opportunities…

Asset - Liability Mismatch

% GDP

(Bar chart showing Asset-Liability Mismatch as % GDP for categories: Inflation Linked, FX Linked, Floating Rate, Fixed Rate, Others, comparing dez/02 and dez/09)

■ dez/02   ■ dez/09

Central Government Cashflow

Billion R$

(Bar chart showing Assets and Liabilities in Billion R$ for: uo to 1 year, from 1 to 2 years, from 2 to 3 years, from 3 to 4 years, from 4 to 5 years, above 5 years)

■ Assets   ▨ Liabilities

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2nd Phase – Stochastic analysis

➢ As debt management evolves, more sophisticated tools become necessary: stochastic simulations increasingly used by DMOs as a tool to estimate risk

➢ General Methodology

   ✓ Generation of stochastic correlated scenarios

   ✓ Simulations of debt response in each nature state

   ✓ Calculation of uncertainty of specific indicators
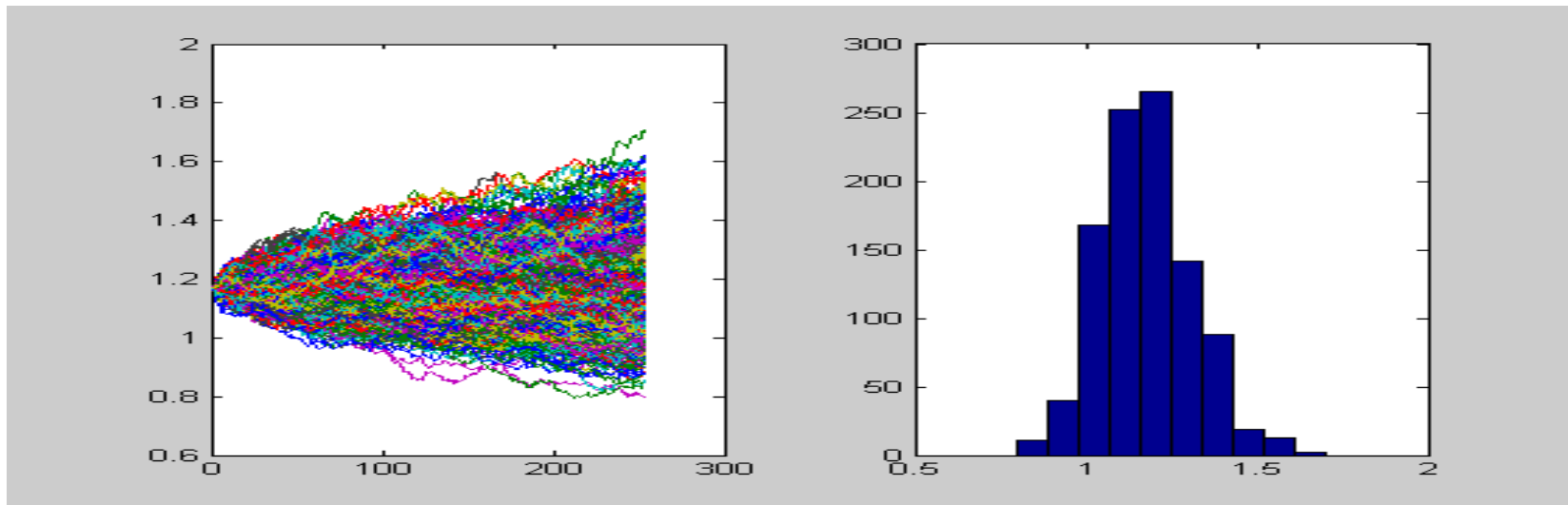
2nd Phase – Stochastic analysis

CfaR - possible percentage of increasing in the debt service under stress scenarios:

➢Individually, the floating rate or exchange rate debts have high risk.

➢However, a more balanced FPD profile makes the sum of debt flows less volatile.

CFaR Evolution

CFaR - 2010
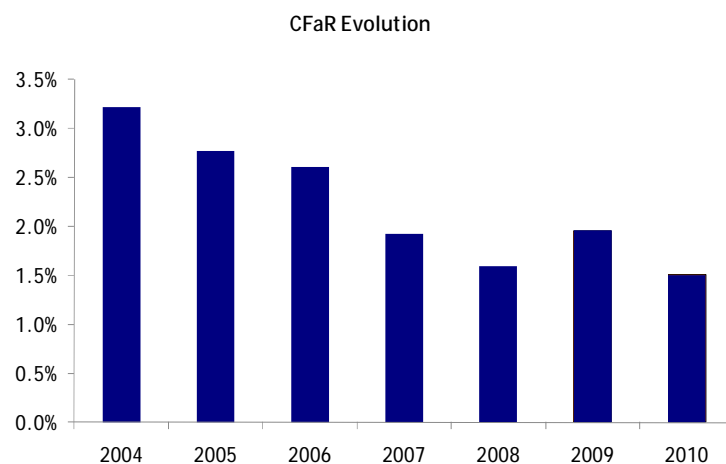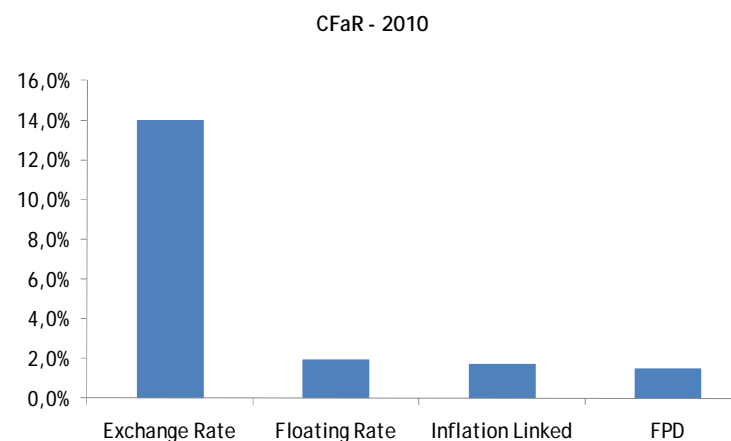
Foreseeability :

➢The impact of shocks in macroeconomic variable on the payments of public debt in one year fall from 3.21% in 2004 to 1.5% in 2010.

➢Gradually, the FPD profile changes have increased the foreseeability in the budget elaboration process and assessment of public borrowing requirement, reducing the refinancing risk.

… and developed a system to run the simulations - GERIR

Objectives

- Analyzing the strategy and its results:

  - Enabling an integrated analysis of assets and liabilities

  - Improving the elaboration and assessment of borrowing strategies

  - Estimating financial and risk indicators for the National Treasury's assets and liabilities

  - Calculating stochastic indicators for the Federal Public Debt

Scope and Flexibility

- Main inputs of the system:

  - Scenarios

  - Assets and Liabilities Portfolio

  - Strategies

  - Stochastic Model Parameters

Results

- Main outputs:

  - Reports with the main risk and debt indicators (e.g duration, composition, average maturity, % maturing in 12-months)

  - Stochastic indicators (Cost-at-Risk - CaR and Cash-flow-at-risk - CFaR)

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3rd Phase: The debt planning in Brazil reaches a more sophisticated stage….

Objective of Federal Public Debt Management

↓

Benchmark

Definition of Desired Long-Term FPD Structure

↓

Transition Strategy

Medium-Term FPD Planning

↓

Annual Borrowing Plan

Short-Term FPD Planning

↓

Debt Management Committee

Definition of targets, Tactical Planning and Monitoring
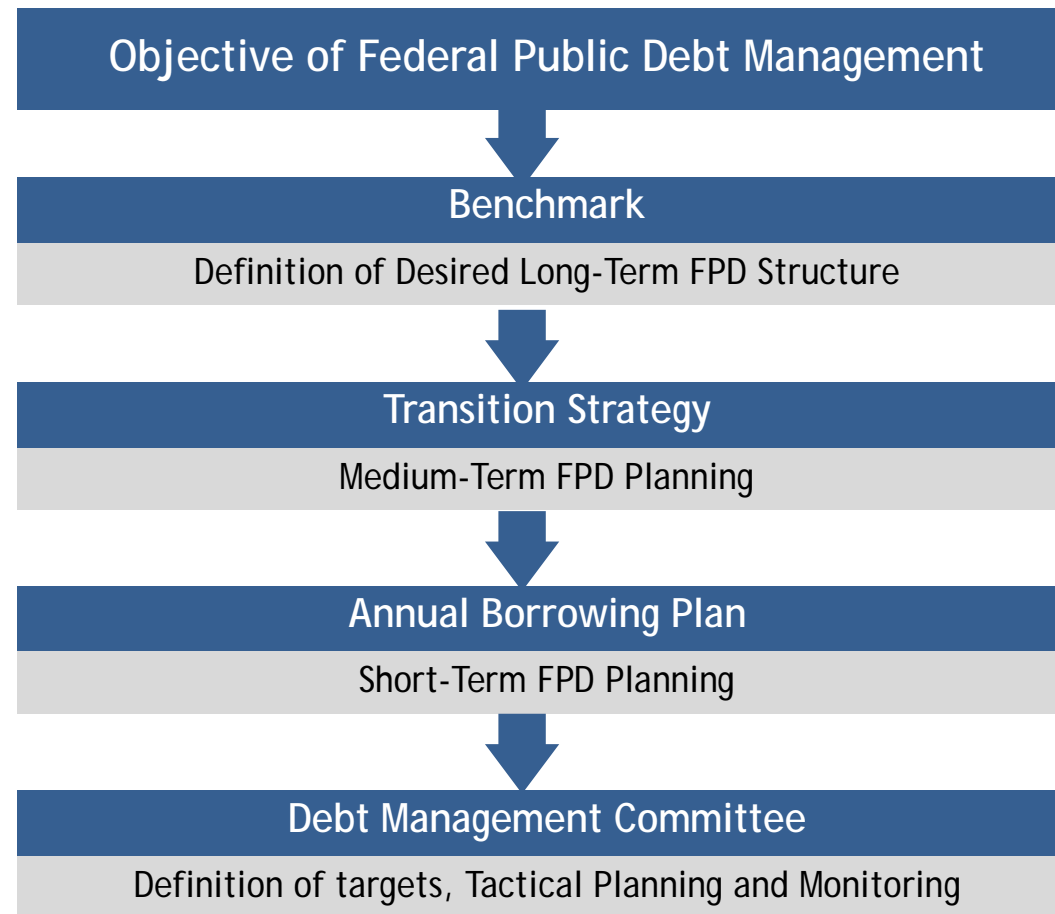
… but, it is a result of a long process of institutional advances and of a simultaneous development of the technical framework

Benchmark model: Searching the optimal composition of the public debt

Macroeconomic and Stochastic Scenarios

Federal Debt Composition → Federal Debt carrying cost

Public Net Debt Composition ← Net Debt – Other Parameters

Costs and Risks
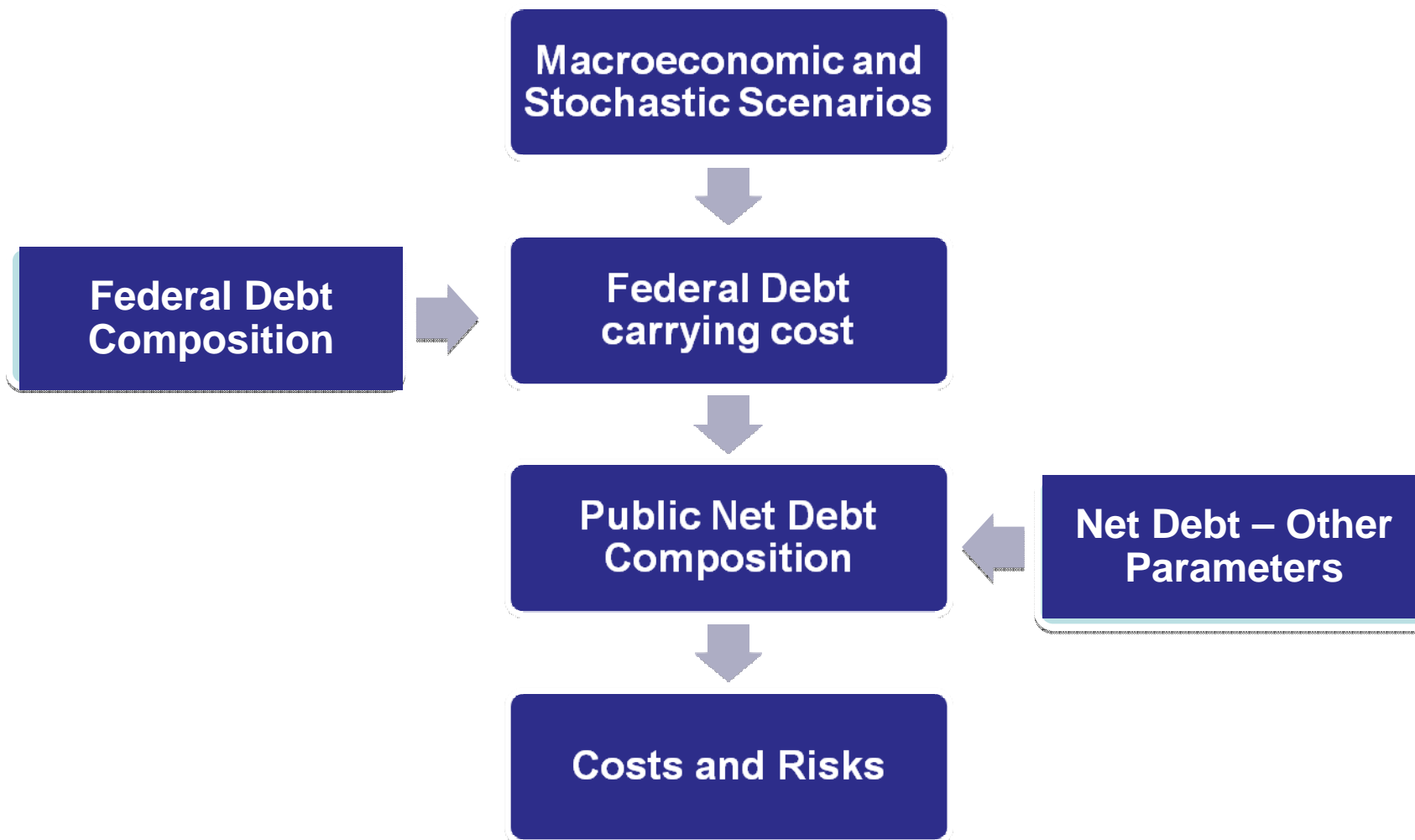
Benchmark model: Searching the optimal composition of the public debt

Motivation

- Public Debt Management: where we want to go ?

- Benchmark (optimal composition): instrument for risk management and for strategic planning

- How to measure the debt manager performance ?

Guidelines (World Bank and IMF)

- According to the Guidelines, the benchmark could work as a powerful management instrument as it represents the debt structure that the government would like to have, based on its expected risk and cost preferences. Thus, the benchmark could guide the debt administrator in his decisions regarding issuance and risk management.

Looking for the best indicator: Gross or Net Debt? Nominal or Real Debt?

➢ The Brazilian Government consider s the Public Sector Net Debt (PSND) to GDP the relevant indicator to be monitored to define the optimum debt composition. This indicator includes all assets and liabilities of the Federal Government, Central Bank, States and Municipalities, having the private sector as counterpart.

➢ Why was this indicator chosen?

- Its importance for Government decisions regarding economic policy, particularly tax burden level and primary balance, being mentioned in several documents, as the IMF Memorandum and the annex of fiscal risks of the annual Budgetary Guidelines Law;

- International organisms and financing analysts define the PSND to GDP as the Brazilian main fiscal sustainability indicator;

- If the Federal Public Debt - FPD increases but the PSND/GDP is maintained stable or in a decrease path (as it happened during recent years) the market is expected to feel comfortable with the public debt sustainability, not being afraid of financing the government;

- To minimize Federal Public Debt to GDP risks do not necessarily mean minimizing PSND/GDP risks, as the isolated analysis of FPD would ignore the structure of the federal government assets. However, the results have not presented relevant differences, given the strong influence of the GDP on both.

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Benchmark model: Cost and Risk Evaluation

➤ For each Federal Public Debt composition, we obtain a distribution of NPSD/GDP ratios

- Cost:

  ✓ Average of NPSD/GDP at the end of the period of analysis(10 years)

- Risk:

  ✓ Percentile 99 of the NPSD/GDP distribution at the end of the period of analysis (10 years)

➤ For each FPD composition, we also obtain the corresponding:

- FPD Average Maturity

- Percentage maturing in 12 months

Density probability function of NPSD / GDP
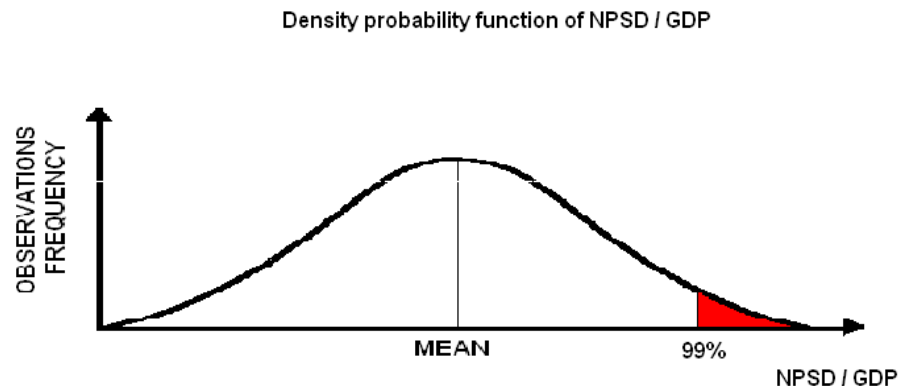
Benchmark model: Cost-Risk Tradeoff

➢ Optimal portfolio selection

- Financing efficient frontier

- Trade-offs performed by the model

➢ To determine the optimal portfolio (benchmark) it is necessary to choose the risk appetite of the government (in last instance, the taxpayers aversion to risk)

➢ Application of the model to measure performance: criterion based on the efficient frontier

Efficient Frontier:
Cost-Risk Tradeoff
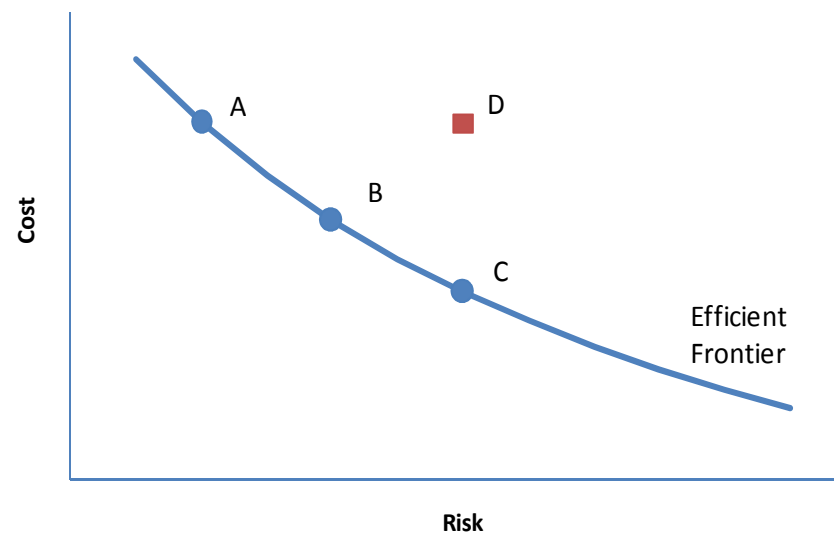
Use of not Traditional Financing Analysis Instruments

➢ The focus on trade-off between cost and risk could lead to the use of traditional financing analysis instruments.

➢ However there are government peculiar factors that impede the indiscriminate use of the financing theory for the public debt analysis:

  ▪ The government could have more complex objectives than simply reduce costs conditioned to prudent levels of financial risk;

  ▪ Indicators related to cash flow and impacts on the annual budget have implications on the optimum portfolio choice; and

  ▪ The size and the nature of the bonds issuance and the composition of the public debt allow government to have a great influence on the prices and, though, on the cost and risk of its financing strategy.

➢ Brazil, as the majority of the countries, declares as objective of the public debt management the minimization of the long-term costs considering prudent levels of risk; it is also concerned with the secondary market improvement, the enhancement of the investors base and the development of the term structure interest rate (reference for public and private bonds).

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Federal Public Debt Optimal Composition

➢ The National Treasury decide to release, in the 2011 Annual Borrowing Plan, a Federal Public Debt optimum composition for the long run, in terms of lower and upper limits for the main financial risks

	Lower Limit	Upper Limit
Fixed Rate	40%	50%
Inflation Linked	30%	35%
Floating Rate	10%	20%
Exchange Rate	5%	10%

Source: National Treasury

A few warnings

- ➢ No model is a panacea, an answer to all questions.

- ➢ It is a simplified representation of reality, that help make important trade-offs explicit and guide the decision making process.

- ➢ Although modeling can add several benefits to decision-making, the model cannot replace the knowledge and the judgment of the debt manager

- ➢ As any model, results depend largely on the parameters and assumptions that serve as inputs.

- ➢ There seems to be no consensus regarding the methodology for the benchmark determination among countries that developed it.

- ➢ Messages need to be easily understood.

Main lessons

- ➢ Essential elements to an effective strategic planning and risk management

  - ▪ Well defined (long term) goals and guidelines

  - ▪ An appropriated institutional arrangement

  - ▪ A good data record

  - ▪ **These elements are more important than having sophisticated models**

  - ➢ Develop Risk Management framework

  - ▪ Start simple and add complexity along the way

  - ▪ Invest in IT systems and build capacity of technical staff

- ➢ The ability of the government to implement a debt strategy depends on the degree of development of the debt market, as well as the size of the investor base

- ➢ So, changes in the debt profile often occur in a gradual fashion, according to the market conditions

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DÍVIDA PÚBLICA FEDERAL BRASILEIRA

Contingent Risk to be monitored: The Brazilian experience

➢ Contingent liabilities related to public enterprises and government programs were

assumed by the federal government in the early 90's.

➢ The sub-national's (states and municipalities) debts were refinanced and sub-

national's banks closed or privatized in the late 90's.

➢ According to the Fiscal Responsibility Law, approved in 2000, credit operations

between entities of the federation are prohibited.

➢ Additionally, new contractual debt guaranteed by the federal government requires

counter guarantees (government constitutional transfers).

➢ A state or municipality is not authorized to issue bonds while its ratio debt to revenues

is above one.

STATE RELATED DEBT

Contingent Risk to be monitored: The Brazilian experience

➢ The System of Payments is modern and the banking system is robust and sophisticated , as the recent international banking crisis has shown;

➢ According to Brazilian Central Bank rules, a financial institution minimum capital ratio is 11%, above Basel limit (8%);

➢ The Credit Guaranteed Fund (FGC) supports up to R$ 70 thousand (USD 44 thousand) per client, if a bank fails;

➢ Based on a Brazilian Security and Exchange Commission instruction (CVM nº 475), all companies listed in stock exchange should disclose information about their operations with financial instruments, including derivatives, as well as sensibility analysis of these instruments on their balance sheet;

➢ According to the Fiscal Responsibility Law, all government contingent liabilities for the following 3 years need to be included in the annual Budgetary Guidelines Law.

STATE RELATED DEBT

## Restructuring the Sub national Debts: The Brazilian experience

➢ 80's and early 90's: number of different renegotiation operations by the federal government

➢ 1993: renegotiation of states and municipalities' debt with federal enterprises

  ▪ Federal government assumes the risk against creditors

  ▪ Innovation: mechanism to retain government transfers in case of default

➢ 1997: last renegotiation with states and municipalities

  ▪ Innovations: design of incentives, program of fiscal adjustment, guarantees

➢ 2000: Fiscal Responsibility Lay

  ▪ Consolidation of legal framework

  ▪ Limits and conditions for debt stock, debt service, credit operations, current expenditures, expenditures near elections etc.

  ▪ Increase in transparency, release of information, accounting

  ▪ Prohibition of credit operations between entities of the federation

Restructuring the Sub national Debts: The Brazilian experience

➢ Design of incentives

- Amount of short term amortization changes the interest rate charged

- Failure in achieving fiscal targets => increases the interest rate and increases annual

limit of revenues commitment

- If the sub-national is out of the estimated debt trajectory => it cannot sign new credit

operations

- While she sub-national still has debt under the renegotiation program => it cannot issue

bonds

- Incentives to clean-up and privatize state banks (23 banks => 4 left, that were

federalized)

Outcomes – primary surplus

States and Municipalities
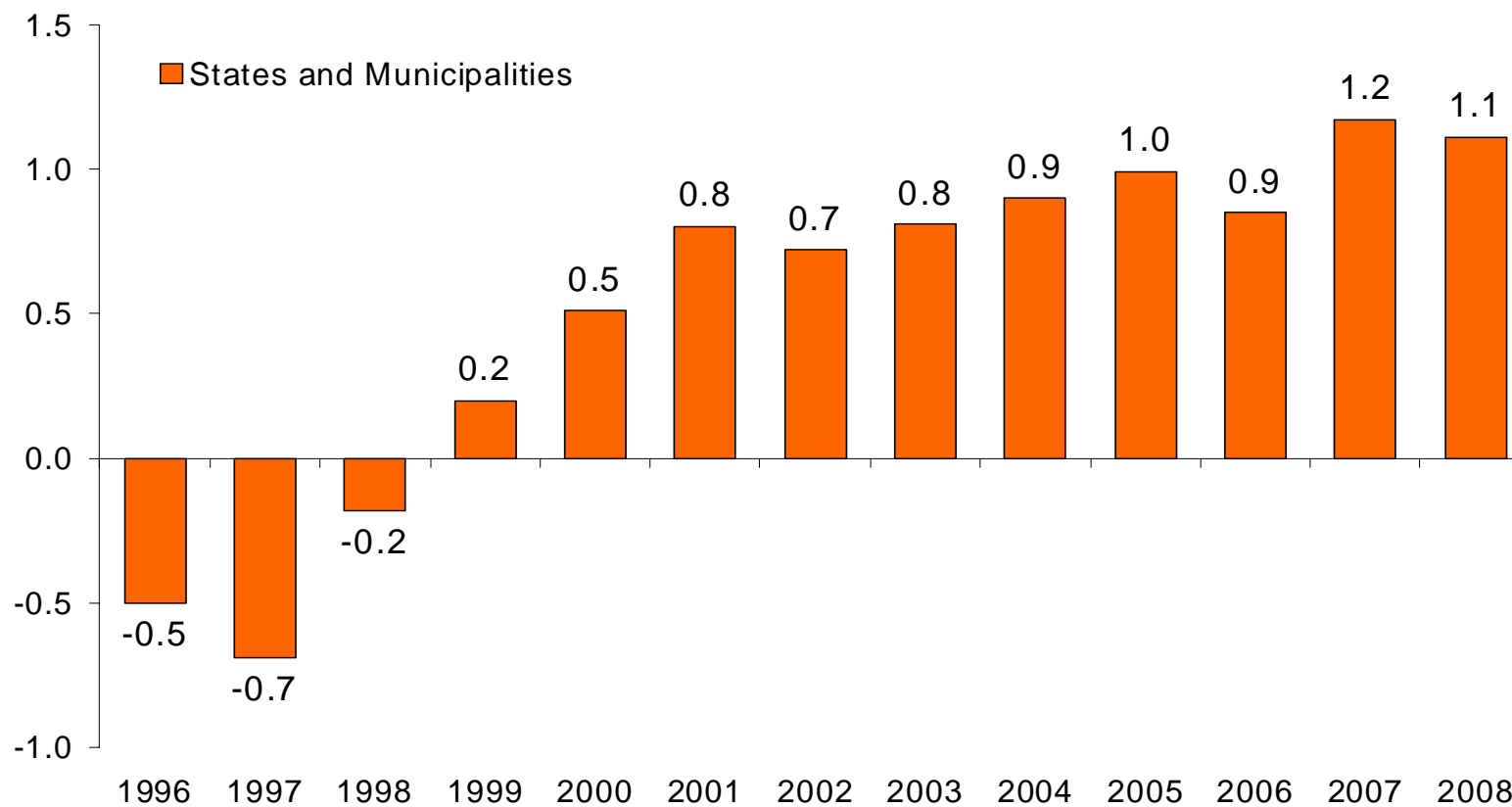
Source: Central Bank

STATE RELATED DEBT

- 1996: 21 states with primary deficits and 6 with primary surpluses
- 2007: 2 states with primary deficits and 25 with primary surpluses

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Key Publications

Debt Management Strategy: **predictability, transparency and simplicity**

- **Annual Borrowing Plan**:

  - ➢ National Treasury publication that shows the goals, guidelines, issuances planning for the fiscal year and targets to be reached regarding the Federal Public Debt (domestic and external), beyond risk analysis associated to the strategy.

- **Annual Public Debt Report**:

  - ➢ Shows the main indicators related to Federal Public Debt (domestic and external) and presents a retrospective analysis of the FPD management, in line with the Annual Borrowing Plan's forecasts. Additionally, presents procedures done to development of bonds' market and the National Treasury institutional improvements of human and technology resources.

- **Federal Public Debt Monthly Report**:

  - ➢ Shows the main indicators related to Federal Public Debt (domestic and external), as issuances, redemptions, cost and average maturity of the outstanding, percentage due to 12 months and public debt composition by indexes, beyond statistics about public bonds' holders.

PUBLIC   DEBT   PLANNING

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The objective of the Federal Public Debt Management is that of efficiently meeting the National Treasury Borrowing Requirements, at the lowest possible long-term financing costs, while ensuring the maintenance of prudent risk levels. Additionally, the aim is to contribute to the smooth operation of the Brazilian government securities market.

To achieve this objective, the guidelines underlying FPD management are as follows:

Increase the average maturity of the outstanding debt

Smooth the maturity profile, with special attention given to short-term maturities

Gradual replacement of floating-rate securities by fixed-rate and inflation-linked instruments

Improvement of the External Federal Public Debt (EFPD) profile through issuance of benchmark securities, buyback program and structured operations

Development of the yield curve on both domestic and external markets and growth in the liquidity of federal government securities on the secondary market

Broadening of the investor base
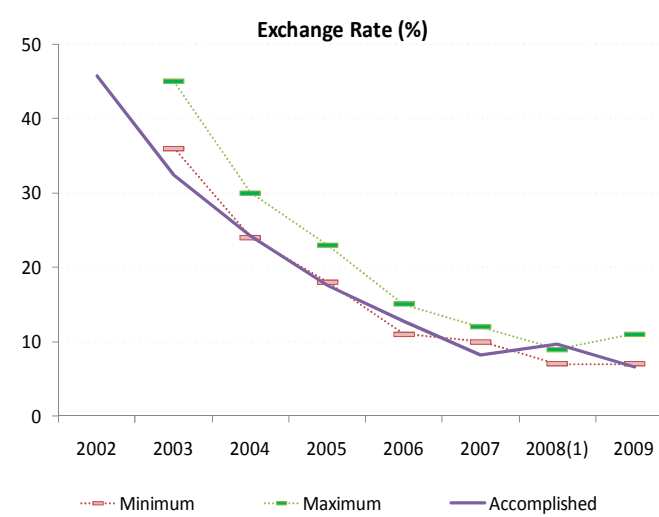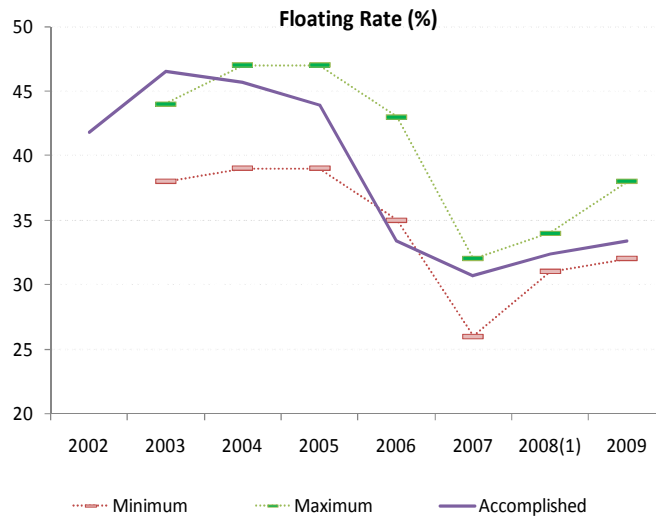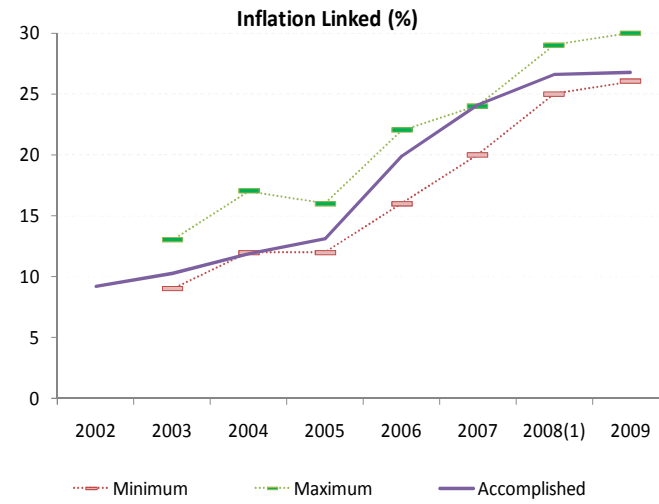
Federal Public Debt (FPD) Indicators*

Indicators	2004	2005	2006	2007	2008	2009	2010	2011 **	Limits for 2011	
									Minimum	Maximum
Stock of FPD* held by the public (R$ Billion)										
	1.013,9	1.157,1	1.237,0	1.333,8	1.397,0	1.497,4	1.694,0	**1.805,4**	1.800,0	1.930,0
FPD Profile (%)										
Fixed Rate	16,1%	23,6%	31,9%	35,1%	29,9%	32,2%	36,6%	**38,1%**	36,0%	40,0%
Inflation Linked	11,9%	16,1%	19,9%	24,1%	26,6%	26,7%	26,6%	**27,0%**	26,0%	29,0%
Floating Rate	45,7%	43,9%	33,4%	30,7%	32,4%	34,5%	31,6%	**30,9%**	28,0%	33,0%
Exchange Rate	24,2%	17,6%	12,7%	8,2%	9,7%	6,6%	5,1%	**4,0%**	4,0%	6,0%
FPD Maturity Structure										
Average Maturity (years)	2,9	2,8	3,0	3,3	3,5	3,5	3,5	**3,6**	3,5	3,7
Percentage Maturing in 12 Months	39,3%	36,3%	32,4%	28,2%	25,4%	23,6%	23,9%	**21,0%**	21,0%	25,0%

* Includes domestic debt (R$ 1,729.46 billion - Jun/11) and external debt (R$ 75.97 billion - Jun/11) managed by National Treasury.

** until June

Note: FPD statistics and its components DFPD and EFPD are monitored in the Federal Public Debt Monthly Report, which can be accessed at http://www.tesouro.fazenda.gov.br/english/hp/public_debt_report.asp.

32

Federal Debt (FPD) Indicators Evolution and ABP's targets

Federal Debt (FPD) Indicators Evolution and ABP's targets

FDP Average Maturity (years)

Percentage Maturing in 12 months (%)
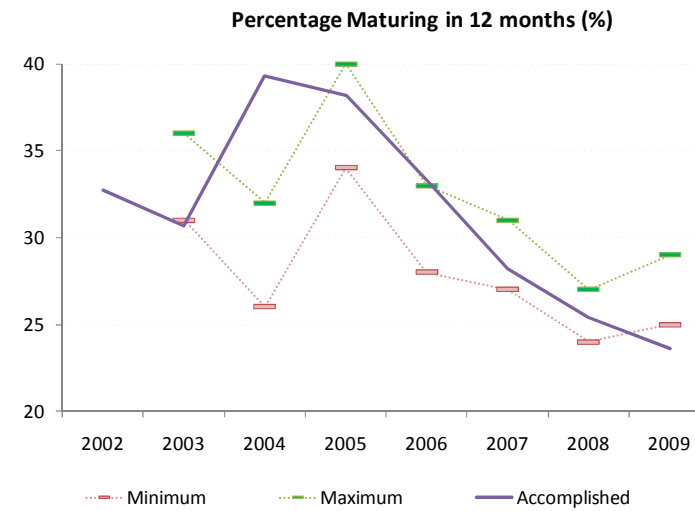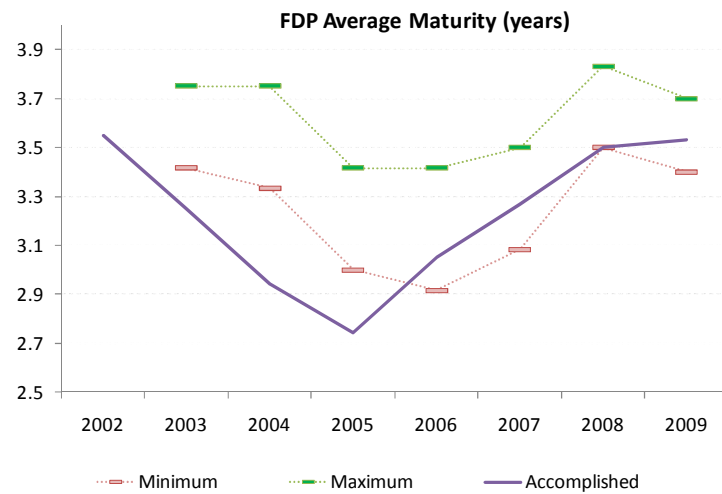
For additional information access the National Treasury website:

www.tesouro.fazenda.gov.br

Or contact our Institutional Relations Unit:

stndivida@fazenda.gov.br