

DRAFT

INTOSAI Public Debt Committee

Guidance for Using Substantive Tests in Audits of Public Debt Outline

June 2003

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Introduction

- Steps in public debt audits
 - Define audit objectives
 - Preliminary plan
 - Audit of internal controls
 - Finalize and execute audit plan
 - ***Perform substantive audit procedures***
 - Analyze audit evidence
 - Prepare audit report
 - Follow-up recommendations
- Link between substantive audit procedures and audit of internal controls

Define public audit objectives

- A main objective in an audit is to determine whether *ALL* public debt elements are
 - *Recorded* correctly with respect to accounts, amounts and periods
 - *Authorized* by law and executive regulations
 - *Disclosed* to policymakers and the public in a timely, consistent and transparent manner
- Substantive procedures are used to gather sufficient audit evidence to be able to reach a conclusion on whether public debt figures are fairly or properly presented

How *Objectives* are achieved with *Procedures*

<p>All public debt elements are included in government records</p> <p>All debt transactions are legally authorized</p>	<p><i>Perform</i> walk-through of facilities and operations</p> <p><i>Observe</i> recording, confirmation, and settlement operations, and selected meetings</p> <p><i>Confirm</i> debt with creditors and fiscal agent</p> <p><i>Inspect or review</i> laws, executive orders, budget documents, and financial records for all debt transactions and authorizations</p>
<p>Debt and related interest expense are recorded in correct accounts, periods and amounts</p>	<p><i>Vouch</i> and <i>tracing</i> additions and deletions of obligations</p> <p><i>Analyze</i> interest expense and <i>recalculate</i> accrued interest</p> <p><i>Perform</i> analytical procedures</p> <p><i>Analyze</i> debt transactions after cut-off date</p>
<p>Debt is reported correctly in timely manner</p>	<p><i>Examine</i> debt reports for contents and timeliness</p>

Types of substantive tests

- Tests of public debt *transactions*, including borrowings, debt servicing, voluntary and forced debt restructurings
- Tests of public debt *balances* and its components (domestic and foreign, short- and long-term, marketable and non-marketable, etc.)
- *Analytical procedures* or evaluations of plausible and expected relationships among public debt, interest, and other financial and nonfinancial variables.
- Tests make use of the properties of double-entry accounting systems to examine several accounts simultaneously.

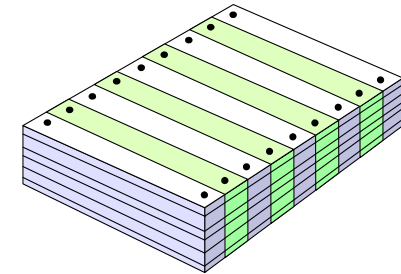
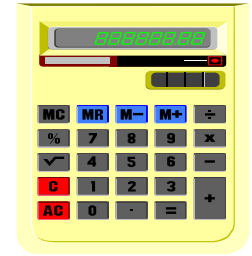
Some accounts examined in public debt audits

- (a) Borrowing cycle – sell 1-year zero bill, \$100 nominal value, \$10 discount
- (b) Borrowing cycle – sell 2-year note, 6% annual coupon rate, at \$200 par
- (c) Debt service cycle – accrue \$10 interest of bill, pay \$12 interest of note
- (d) Debt service cycle – pay back the \$100 bill at maturity
- (e) Advanced debt purchases – buy back 2-year \$100 note at 20% premium
- (f) Borrow to invest – World Bank loan \$500, invest \$450 in capital asset

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Ascertaining the quality of audit evidence

- The most reliable forms of audit evidence are visual observation of public debt operations and computations by auditor
- Written documents are the second most reliable form of audit evidence
- The least reliable audit evidence is oral representation of the debt management staff
- Oral interviews with third parties are more reliable than insider interviews, but less reliable than written documents
- The effectiveness of the debt management office's internal control structure has a significant impact on reliability of evidence



Evidence commonly examined in substantive audit procedures

- Public debt schedule obtained from accounting records in a computer system
- Reconciled public debt and budget results
- Public debt strategy and management reports

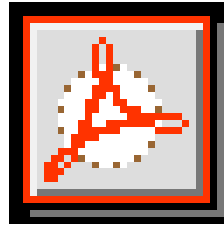
Evidence found in public debt schedule

General information	Principal	Interest expense
Payee Issue and maturity dates	Principal balance at beginning of period	Interest accrued or prepaid at beginning of period
Interest rate (%) Dates interest payments are due	Debt additions during period	Interest expense
Original amount of instrument	Debt payments during period	Interest paid
Collateral	Principal balance at end of period	Interest accrued or prepaid at end of period

Examples of public debt schedules

- Canada
 - Public Accounts of Canada, Section 6, Interest-Bearing Debt (www.fin.gc.ca)
- Panama
 - External Public Debt, Ministerio de Economía y Finanzas (www.mef.gob.pa)
- UK National Audit Office
 - Consolidated Fund and National Loans Fund Account 2001-2002 (www.nao.gov.uk/publications/nao_reports/02-03/0203112.pdf)
- US
 - GAO, Financial Audit of Public Debt Managed by Bureau of Public Debt (www.gao.gov/GAO-03-199)

Schedule of US federal debt



US budget and debt reconciliation

US Government (\$billion)	2002	2001
<i>Budget results (“above the line”)</i>		
Receipts	1,853.2	1,991.0
Outlays	2,011.0	1,863.9
<i>Budget deficit (-) or surplus (+)</i>	<i>-157.8</i>	<i>+127.1</i>
<i>Other financing items (“below the line”)</i>		
Premiums paid on debt buybacks	-3.8	-10.7
Change in cash accounts & other	-32.4	-4.3
Seigniorage on coins	1.0	1.3
Direct and guaranteed loan financings	-26.3	-23.3
Purchases of non-federal securities	-1.5	0.0
<i>Total, other financing items</i>	<i>-63.0</i>	<i>-37.0</i>
<i>Total, financing deficit or available</i>	<i>-220.8</i>	<i>+90.1</i>
<i>Equals: change in public debt</i>	<i>+220.8</i>	<i>-90.1</i>

Analytical Procedures (APs)

- Why use them?
 - APs using aggregate data could be more effective and efficient than tests of individual transactions
- Types of APs
 - Indicators used in ratio, trend and variance analysis
 - Econometric analysis, including regressions, simulations, stress-testing, and large-scale economic models

Steps in analytical procedures

1. Determine the amount of the limit. The limit is the amount of difference between the auditor's expectation and the recorded amount that the auditor will accept without investigation.
2. Identify a plausible, predictable relationship and develop a model to calculate an expectation of the recorded amount.
3. Gather data and perform appropriate procedures to establish the reliability of the data.
4. Develop the expectation of the recorded amount using the obtained information.
5. Compare the expectation with the recorded amount and note the difference.
6. Obtain explanations for differences that exceed the limit.
7. Corroborate explanations for significant differences.
8. Determine whether the explanations and corroborating evidence provide sufficient evidence for the desired level of substantive assurance.
9. If unable to obtain a sufficient level of substantive assurance from analytical procedures, perform additional procedures and consider whether the difference represents a misstatement.
10. Consider whether the assessment of combined risk remains appropriate.
11. Document the amount of any detected misstatements.
12. Conclude on the fair presentation of the recorded amount.
13. Include documentation of work performed, results, and conclusions in the workpapers.

Ratio, trend and variance analysis

- Public debt *indicators* are produced by comparing public debt to gross domestic product (GDP), financial assets, government revenues, operational outputs and costs, and other relevant variables
- Current public debt indicators are compared to
 1. Similar indicators of a prior period or periods
 2. Similar indicators in other countries
 3. Similar indicators designated as acceptable by laws and regulations, credit rating agencies, industry experts, or targets in debt management reports

Unexpected deviations are analyzed by SAI.

Indicators of public debt management

- Macro-economy indicators
 - Public debt / GDP
 - Fiscal balance / GDP
 - Government revenues / GDP
- Debt management indicators
 - Fixed-rate / floating-rate debt
 - Foreign-debt / foreign-assets
 - Average term to maturity and duration
 - Cost at risk (CaR)
- Operational indicators
 - Percent of auctions completed in X minutes without errors

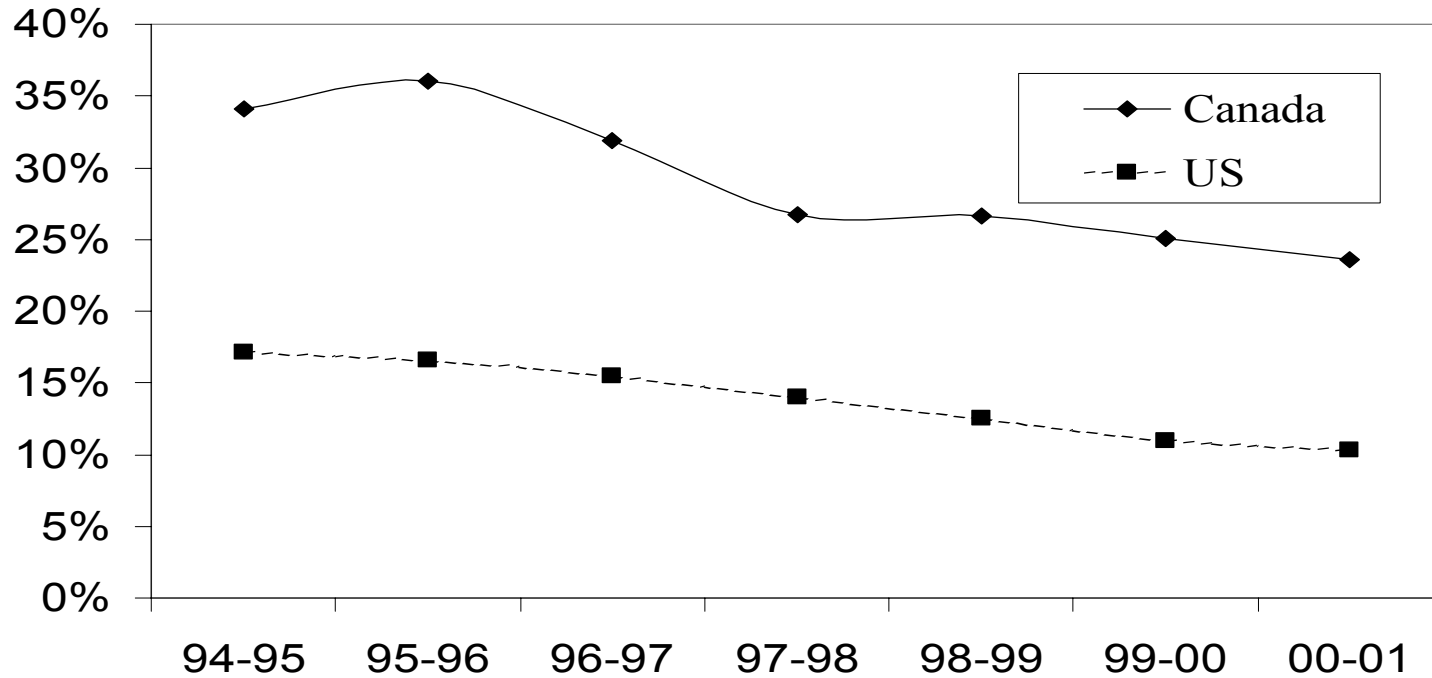
Indicators of public debt management

	<i>Sustainability</i>	<i>Flexibility</i>	<i>Vulnerability</i>
<i>Macro-economy</i>	Debt / GDP Deficit/ GDP	Revenue / GDP	Debt charges / government revenue Foreign-held debt / net government debt Foreign-denominated debt
<i>Debt management</i>	Debt maturity profile	Access to internal and external debt markets	Forecasting capabilities New debt products
<i>Operational</i>	Personnel turnover	Trained staff	Complexity of financial information system Shutdown capabilities

Examples of public debt indicators in selected Countries

- Interest charges as a percent of government revenues – Canada and US
- New Zealand's Foreign Debt and Foreign Assets
- Internal public borrowings as percent of total borrowings in Argentina
- Differences between forecasts and outturn for interest rates made by HM Treasury in United Kingdom

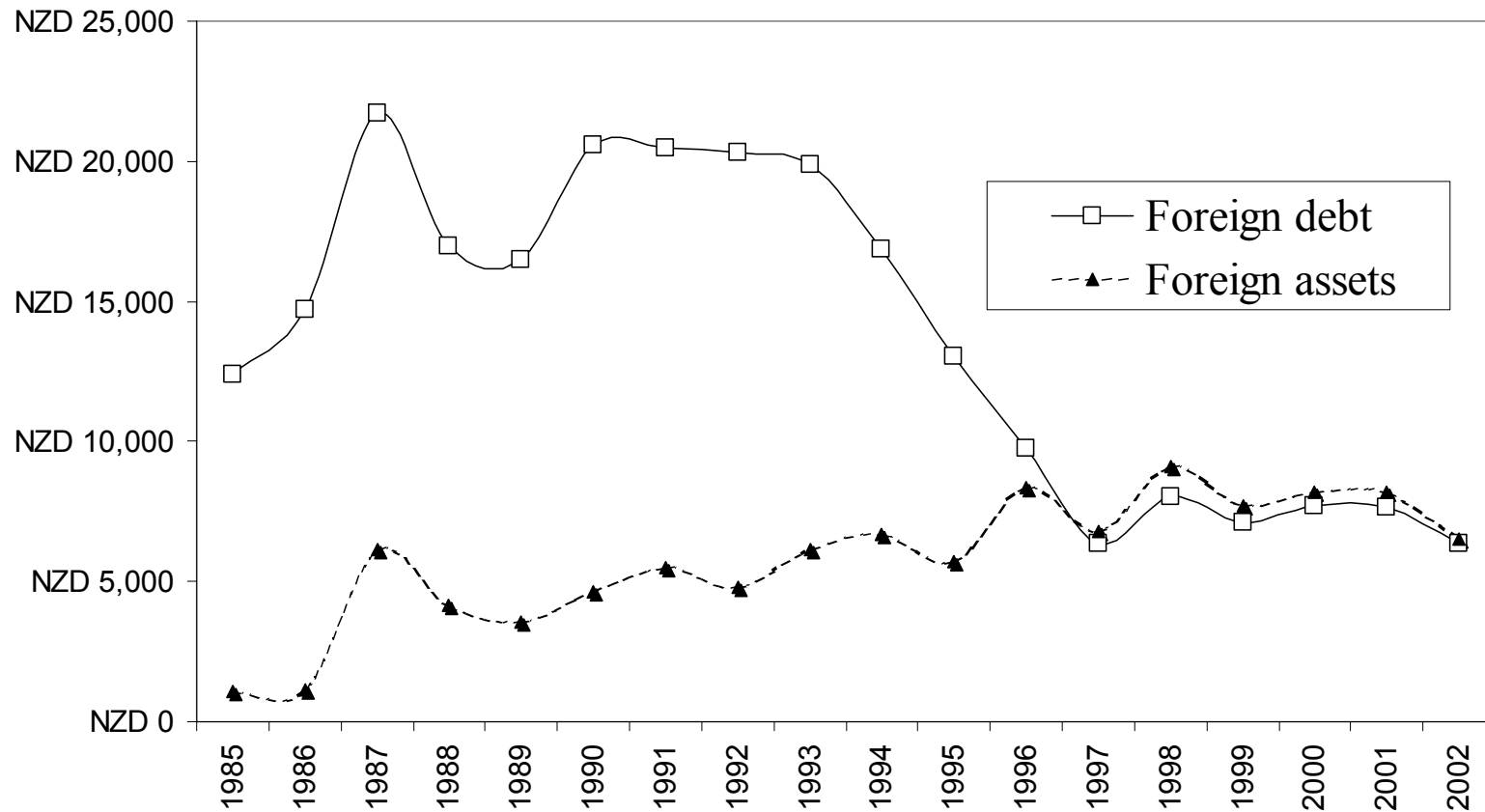
Interest charges as a percent of government revenues – Canada and US



Sources: Canada, Fiscal Reference Tables; United States, Historical Tables, Budget of the U.S.

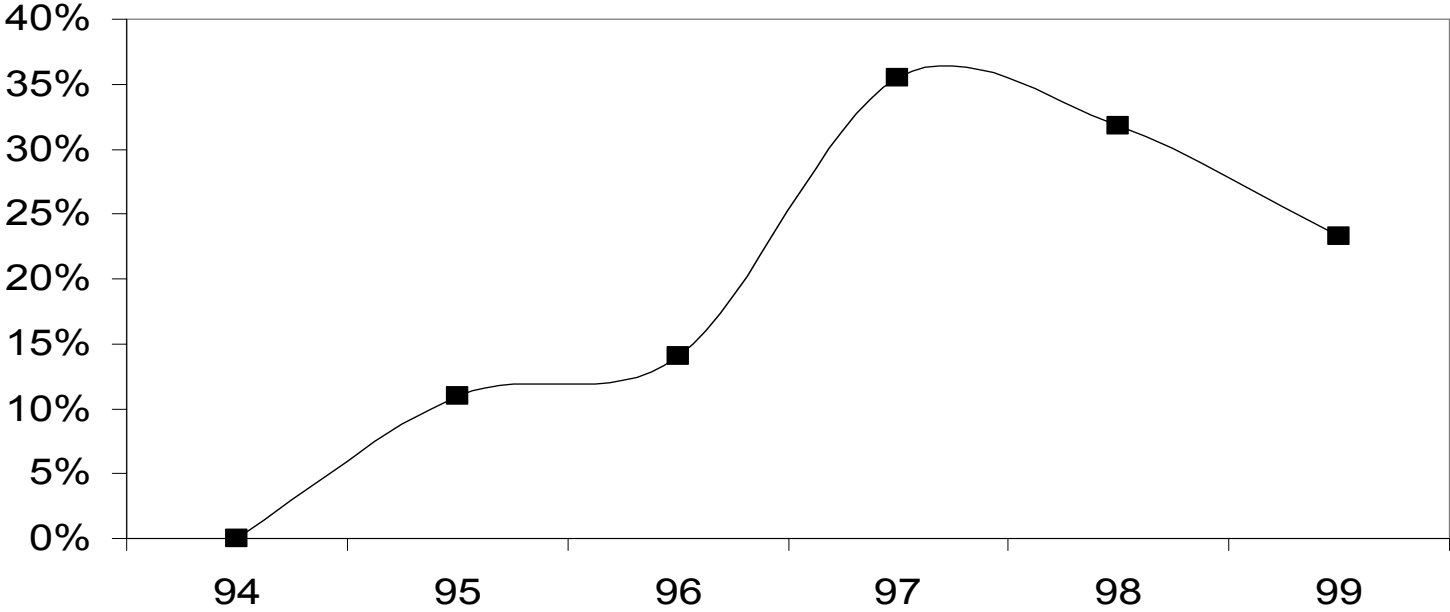
In Canada, interest charges / government revenues. In US, net interest / total receipts.

New Zealand's foreign debt and foreign assets (million)



Source: Public Debt History of New Zealand, www.nzdmo.govt.nz.

Internal public borrowings as percent of total borrowings in Argentina



Source: Argentina, Auditoria General Nacion, Informe de Mercados Internos de Deuda Publica en Argentina.

Differences between forecasts and outturn for interest rates made by HM Treasury in UK (%)

Forecast made for	2000-01	2001-02	2002-03
Budget 2000	0.7	2.4	2.9
Budget 2001		0.8	1.4
Budget 2002			0.8

Note: UK Treasury uses Bloomberg's 3-month forward interest rates for projecting public finances.

Forecast values exceeded outturns in last 3 years.

This suggests that the forecasts were cautious.

The average forecast error has been less than 1%.

This suggests forecasts were reasonable.

Source: UK NAO, Audit of Assumptions for Budget 2003.

Econometric models used in public debt

- Sweden
 - Central Government Debt Management –
Proposed Guidelines, Oct 2001
- Mexico
 - Evaluacion de la Deuda Publica Directa, 2003
- Other countries

Case of a significant difference between expected and paid interest expense

- Audit assumptions – analytical procedures materiality limit is \$5 million.
- Estimated interest expense = \$80 million = average annual loan balance of \$1 billion times the average annual interest rate of 8 percent.
- The recorded amount of interest expense is \$94.5 million,
- The difference - \$14.5 million - exceeds the test materiality by \$9.5 million.
- Debt manager's initial explanation is insufficient.
 - "we borrowed more money and interest rates are higher than last year"
- This explanation needs to be quantified and corroborated.
- For example, interest rates increased during the year and then fell, and were computed to average 9 percent based on a monthly average instead of 8 percent.
- Additionally, loan statements from lenders indicate that \$100 million was borrowed and repaid during the year, and the additional borrowings were outstanding for 6 months.
- Therefore, the average loan balance was actually \$50 million higher and the average interest rate was 1 percent higher than the figures used in the auditor's original estimate.

Audit procedures to identify unrecorded public debt and contingencies

- Review the cash disbursement journal for the period after the balance sheet date
- Vouch a sample of invoices to determine to which period the payment relates
- Examine **lease agreements** for possible capital lease recognition
- Examine **pension agreements** for vesting provisions
- Examine **privatization agreements** for minimum revenue government guarantees
- Examine approved budget for government guarantees, subsidies and commitments

Substantive audit procedures used in complex debt transactions

- Voluntary debt restructurings
 - Brady bonds advance purchases
 - Debt exchanges
- Financial derivatives embedded in public debt transactions
 - Foreign currency and interest rate swaps
 - World Bank loans with collars and rate options
- Other debt restructurings
 - HIPC initiative
 - London and Paris Clubs agreements

Substantive tests for debt buybacks

- Debt buybacks can be done in the open market or on a negotiated basis.
- In negotiated debt buybacks, a country can repurchase its debt at below-market prices. This transaction is evaluated by comparing its cost with that of a hypothetical open-market buyback of the same size.
- Case: Mexico's February 1988 debt restructuring
- Mexico's debt was selling on the secondary market at 52 percent of face value
- Mexico negotiated jointly with its creditors and retired \$1.4 billion worth of debt at a cost of \$480 million, so the actual debt buyback cost was 35 cents on the dollar.

Derivatives used in public debt

- Countries use derivatives to reduce their cost of borrowing given a certain level of interest rate risk, and to provide liquidity to its benchmark securities across the yield curve
- Case: How to assess the cost of a derivative to the government
 - Government A issues its benchmark 10-year 6% fixed-income bond and simultaneously enters into a 10-year domestic interest rate swap with counterpart Y, agreeing to pay Libor 6-month rate plus or minus a spread based on the 10-year swap-market rate.
 - The 10-year swap spread favors the government, The government pays a 10-year rate equals to 6% on its benchmark and receives the 10-year swap rate or 6.5%. Thus, the swap spread is equal to 50 basis points in government's favor.

Derivatives used in public debt

Every 6-month period, the government borrower will pay

$$6\text{-month Libor} - (\text{swap rate} - \text{benchmark rate}) = 6\text{-month Libor} - (0.50)$$

This cost of borrowing should be compared with the government's opportunity cost, that is, the government's cost for 6-month.

Assume the government could finance itself on the 6-month end of the curve by issuing T-bills at a 5.5% rate. The Libor rate is equal to 5.7%.

In this case, the savings from the derivatives transaction are

$$(5.5 - 5.7) + (6.5 - 6.0) = 0.30$$

Conclusion: a positive swap rate is not always a perfect indicator of savings. It has to be much greater than zero. For example, Canada only does swaps when the spread is greater than 30 basis points. This positive spread can be viewed as compensation for basis risk and counterparty risk borne by the government.

Substantives tests for derivatives - completeness and existence

- Confirm significant terms with the holder of, or counterparty to, the derivative
- Inspect underlying agreements and other forms of supporting documentation, in paper or electronic form
- Ask holder of or counterparty to the derivative to provide details of all derivatives and transactions with the debt management office.
- Send zero-balance confirmations to potential holders or counterparties to derivatives to test completeness
- Review brokers' statements for existence of derivative transactions and positions held
- Review counterparty confirmations received but not matched to transactions records
- Review unresolved reconciliation items
- Inspect agreements, such as loan or equity agreements, for embedded derivatives

Substantive tests for derivatives - valuation and effectiveness

- Valuation is management's responsibility
- Assessing reasonableness of models, variables and assumptions requires considerable judgment, knowledge of valuation techniques and market conditions
- Quoted market prices listed on exchanges may be considered sufficient evidence if they are recent and are firm. More than one pricing source may be considered.
- Assess sensitivity of valuation to changes in variables and assumptions
- Inspect supporting documents for settlement of the derivative transactions after end of the reporting period
- May use proprietary models or the debt management office's internally developed models when no market prices exist
- Analytical Procedures can be used to evaluate risk management policies, including
- Compliance with credit limits.
- Effectiveness of hedging activities (e.g., to detect large gains or losses)
- APs may not be provide sufficient evidence as volume and complexity of derivative transactions increase, unless there are detailed, disaggregated information available

Substantive tests for derivatives used for hedging

- In the case of derivatives used in hedges, auditors should gather sufficient evidence to determine effectiveness of the hedging relationship. This entails the following.
 - Whether the derivative was designated as a hedge at the inception of the transaction
 - What is the nature of the hedge
 - What is the risk management objective for undertaking the hedge
 - What is the debt manager's assessment of the hedge's effectiveness
 - Where the derivative is hedging a future debt transaction, what is the debt manager's assessment of the likelihood of the future event
- Disclosures of derivatives
 - Laws and regulations may require extensive disclosure of derivative transactions, including notional and fair value, number and credit quality of counterparties, value at risk, stress test results, etc.

Substantive tests in other debt transactions

- **Brady Bonds**
 - Auditoria General de la Nacion, Canje de Bronos Brady 15/06/00 (use of present value analysis)
- **HIPC Initiative**
 - Nicaragua, IMF Article IV Agreement, 2003 (use of Debt Sustainability Module (DSM) software)
- **Paris Club Agreements**
 - June 2003 Agreement with Ecuador

Ecuador: special debt terms in Paris Club agreements

- The Paris Club concluded an agreement with Ecuador on 13 June 2003. The rescheduling is conducted under "Houston terms".
 - Non-ODA credits are to be repaid over 18 years, including 3 years of grace and progressive payments, at the appropriate market rate.
 - ODA credits are to be repaid over 20 years, including 10 years of grace.
 - This rescheduling is expected to reduce debt service to \$ 272 million.
 - The Paris Club Creditors agreed to continue to monitor the external debt and examine an updated debt sustainability analysis by the IMF in 2004.
 - On a voluntary and bilateral basis, each creditor may also undertake debt for nature, debt for aid, debt for equity swaps or other debt swaps.
 - Ecuador agreed to seek comparable treatment from non-Paris Club categories of creditors.

Appendix: Sampling techniques in public debt audits

- ***Probability-proportional-to-size sampling or dollar-unit sampling***
 - Used to give larger debt items proportionally more opportunity to be selected than units with smaller debt amounts.
 - PPS is used to detect a very small number of large debt misstatements (needles in haystack challenge)
 - PPS usually results in smaller sample size
 - PPS can be used in conjunction with stratified selection
- ***Stratified Selection***
 - Allows auditor to group together homogeneous debt transactions and instruments
 - Allows auditor to apply different audit techniques to each debt classification
 - Improves efficiency of sample design, achieving a smaller sample size
 - By stratifying the population, the auditor can give greater representation to the larger recorded debt transactions that are small in number

Appendix: Accounting standards used in public debt

- National accounting standards-setting bodies
- European Commission (<http://europa.eu.int>)
- International Accounting Standards Committee
(www.iasf.org.uk)
- IFAC Public Sector Committee (www.ifac.org)

Thank You for Your Attention

Any Questions?

