FOR AGENDA

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To: Members of the Executive Board

From: The Secretary

Subject: **Sri Lanka—Selected Issues**

This paper provides background information to the staff report on the 2008 Article IV consultation discussions with Sri Lanka (SM/08/311, 10/1/08), which is tentatively scheduled for discussion on **Friday, October 17, 2008.** At the time of circulation of this paper to the Board, the Secretary's Department has not received a communication from the authorities of Sri Lanka indicating whether or not they consent to the Fund's publication of this paper; such communication may be received after the authorities have had an opportunity to read the paper.

Questions may be referred to Mr. Faal (ext. 36798) and Mr. Saxegaard (ext. 39739) in APD.

Unless the Documents Section (ext. 36760) is otherwise notified, the document will be transmitted, in accordance with the procedures approved by the Executive Board and with the appropriate deletions, to the WTO Secretariat on Thursday, October 9, 2008; and to the Asian Development Bank, the Food and Agriculture Organization, the United Nations Development Programme, and the World Food Programme, following its consideration by the Executive Board.

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SRI LANKA

Selected Issues

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Approved by the Asia and Pacific Department

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I. AGGREGATE BALANCE SHEET VULNERABILITIES IN SRI LANKA [1]

Summary

An assessment of the balance-sheet vulnerabilities of the public, banking, and nonbank sectors in Sri Lanka finds that:

- The country's net foreign currency liabilities have increased significantly, with most of the increased vulnerability centered in the government sector;
- A rapid build-up of public foreign currency debt on commercial terms has increased maturity matches in the government and nonbank sectors;
- Systemically important banks are resilient to exchange-rate changes, but nearly 50 percent of the banking system assets are vulnerable to a spike in interest rates;
- The banking system is moderately vulnerable to deteriorating asset quality, but susceptible to concentration risks;
- The increased vulnerabilities in the public sector place a premium on frontloaded fiscal adjustment to bring the fiscal deficit to more sustainable levels and to underpin debt sustainability.

A. Introduction

1. **Balance sheet analysis has become an important tool for assessing countries' vulnerabilities.** [2] Lessons from past balance of payment crises suggest that macroeconomic and financial imbalances, as reflected in balance sheets, as well as rigidities in the policy framework, tend to increase the likelihood and severity of crises.[3] In this regard, the level and dynamics of Sri Lanka's public and private debt raises a number of concerns about the country's fiscal sustainability, the external current account and balance of payments, and external debt sustainability. A closer look at balance sheets in the main sectors of the economy to assess the asset and liability positions of sectors is therefore important to gauge vulnerabilities.

2. **A number of balance sheet features contribute to Sri Lanka's vulnerability.** The country's high level of short-term external debt (by remaining maturity) and rapid accumulation of foreign-currency denominated commercial debt, and resort to debt

[1] Prepared by Ebrima Faal, (APD).
[2] The balance-sheet approach (BSA) analyzes an economy as a system of interlinked sectoral balance sheets.
[3] There are many examples of macroeconomic crises triggered by public sector imbalances, including, for example, India (1991), Mexico (1995), Russia (1998), Argentina (2001), and the Dominican Republic (2002).

financing for new capital investments and imports has heightened debt-rollover risk in the event of a "sudden stop" in remittances or capital flows. Moreover, debt sustainability and debt rollover concerns, which have led to recent downgrades of Sri Lanka's sovereign debt by rating agencies, are likely to raise the cost of external borrowing and may ultimately increase the likelihood of a balance of payment crisis. High remittances have supported the balance of payments and mitigated some of the risks to the balance of payments. A recent staff study, however, has shown that remittances by expatriate Sri Lankans tend to decline in times of crisis, as they seek safer havens for their savings and investments, and thus remittances may provide no cushion in a crisis.[4] Moreover, with an increasingly open capital account, a decline in market confidence could quickly trigger net capital outflows, including from the stock market. Finally, close financial linkages between domestic sectors increase the likelihood that difficulties in one sector can spill over into healthy sectors.[5]

3. **A formal analysis and understanding of balance sheet related vulnerabilities of Sri Lanka's main economic sectors is one of the central themes of the 2008 Article IV consultation.** To support this theme, this chapter provides analysis of the balance sheets of the main sectors. The rest of the chapter is organized as follows: Section B provides an overview of Sri Lanka's external debt dynamics and vulnerabilities; Section C describes the construction of the balance sheet matrices for Sri Lanka, disaggregating the economy into four broad sectors; Section D analyzes net financial positions at the aggregate level while section E does so at the sectoral level; Section F discusses the issue of contingent liabilities; and Section G concludes with a discussion of policies to mitigate balance-sheet related vulnerabilities.

B. External and Foreign Currency Debt in Sri Lanka [6]

4. **Sri Lanka's public external debt stock remains high by regional standards.** The public external debt stock has increased significantly in nominal terms, but has slowly declined (from 62 percent in 2004 to 51 percent in 2007) in terms of GDP aided by strong GDP growth and sustained appreciation of the rupee.[7] This has masked important increases in commercial debt (about 9 percent of GDP in 2007), a persistent fiscal deficit of about 7 percent of GDP, and an increasing resort to dollar-related deficit financing.[8]

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[4] See Lueth, Erik and Ruiz-Arranz, Marta, "Are Workers' Remittances a Hedge Against Macroeconomic Shocks? The Case of Sri Lanka" (February 2007). IMF Working Paper 07/22.

[5] See Allen, et al. (2002). IMF Working Paper 02/210; and Mathiesen and Pellechio (2006) IMF Working Paper 06/100.

[6] Sri Lanka's domestic debt is held mostly by the nonbank sector. The bulk of the debt is held by captive holders, mainly the Employees' Provided Fund (EPF) and the National Savings Bank (NSB).

[7] A mitigating factor is that Sri Lanka's external debt is mostly concessional and predominantly owed to multilateral creditors.

[8] "Dollar debt" and "foreign currency" debt are used interchangeably in this chapter. The currency composition of public external debt is as follows: SDRs (37 percent), Japanese yen (25 percent), U.S. dollars (20 percent), and euros (11 percent).

5. Since 2004, the public sector has become increasingly reliant on foreign currency denominated commercial debt to finance its budget and support reserves. At the end of 2007, the stock of dollar denominated debt stood at over $3 billion (about 100 percent of reserves), compared to only $½ billion (30 percent of reserves) in 2004. Domestic foreign currency deposits from remittance inflows (about 8 percent of GDP) provide the main funding source for foreign currency denominated domestic borrowings—Foreign Currency Banking Units (FCBUs) and Sri Lanka Development Bonds (SLDBs). The two instruments have short average maturities of between 1–2 years, which has led to a bunching of amortization payments in 2008 and 2009.

6. **During 2007 and 2008, Sri Lanka has tapped global capital markets for funds.** In October 2007, the government successfully debuted its $500 million Eurobond, attracting $1.25 billion in bids at a yield of 8¼ percent and maturity of 5 years. A major objective of the issue was to set a benchmark for the refinancing of SLDBs falling due in 2008 and potential issuance of corporate bonds. In addition, the authorities have loosened restrictions on the capital account by raising the cap foreign holdings of government bonds. Foreign purchases are capped at 10 percent of outstanding Treasury bonds (up from 5 percent), effective November 30, 2007, and 10 percent of Treasury bills (from 0 percent), effective May 6, 2008. These changes would permit additional net inflows of about US$750 million.

C. Analytical Framework

7. **Balance-sheet matrices were constructed for Sri Lanka at the end of 2004 and 2007 (See Appendices 1 and 2), covering the period of sharp increases in commercial debt.** The framework is a simple one that disaggregates Sri Lanka's economy into four broad sectors—the government sector (including the Central Bank of Sri Lanka CBSL), commercial banks (including Offshore Banking Units (FCBUs)), the nonbank sector, and nonresidents. The balance-sheet matrix displays each sector's claims on other sectors as well as its liabilities to other sectors (all intra-sectoral assets and liabilities are netted out). Financial assets and liabilities are broken down by currency (domestic and foreign currency) and by maturity (short- and long-term). Because not all assets and liabilities are included in the BSA matrix, each sector's total assets may not equal its total liabilities. Balance sheet data are obtained from the statistical reports of Central Bank of Sri Lanka, the CEIC database, the Bank for International Settlements (BIS), and the Joint External Debt Hub. The many data limitations and other caveats that accompany this kind of analysis apply here as well.[9]

[9] For example, real assets and off-balance sheet items are not captured and the analysis provides a static snapshot at certain points in time with no dynamics. See Allen, et al. (2002). IMF Working Paper 02/210; and Mathiesen and Pellechio (2006) IMF Working Paper 06/100.

Sri Lanka: Data Sources for Estimating Intersectoral Foreign Currency Asset and Liability Positions

Holder of Liability (Creditor) / Issuer of Liabiltiy (Debtor)	Central Bank	General Government	Commercial Banks	Foreign Currency Banking Units	Nonbank Sectors	Nonresidents
Central Bank		Central Bank Balance Sheet (Liabilities)	Central Bank Balance Sheet (Liabilities)	BOP file/CBSL/Public Debt report	Central Bank Balance Sheet (Liabilities)	Central Bank Balance Sheet (Liabilities)
General Government	Central Bank's Balance Sheet (Assets)		Commercial Banks' Balance Sheet (Assets)	BOP file	Data Unavailable	BOP/ External Debt Database
Commercial Banks	Central Bank's Balance Sheet (Assets)	Commercial Banks' Balance Sheet (Liabilities)		Commercial Banks' Balance Sheet (Liabilities)	Commercial Banks' Balance Sheet (Liabilities)	Commercial Banks' Balance Sheet (Liabilities)
Foreign Currency Banking Units	Central Bank's Balance Sheet (Assets)	Foregin Currency Banking Units Balance Sheet (Liabilities)	Commercial Banks' Balance Sheet (Assets)		Foregin Currency Banking Units Balance Sheet (Liabilities)	Foregin Currency Banking Units Balance Sheet (Liabilities)
Nobank Sectors	Central Bank's Balance Sheet (Assets)	Data Unavailable	Commercial Banks' Balance Sheet (Assets)	Foregin Currency Banking Units Balance Sheet (Assets)		BIS/JDEH 1/
Nonresidents	Central Bank's Balance Sheet (Assets)	Assumed negligible	Commercial Banks' Balance Sheet (Assets)	Foregin Currency Banking Units Balance Sheet (Assets)	Assumed negligible	

Data Sources: Central Bank of Sri Lanka Monthly Statistical Bulletin and CEIC Asia.
1/ Bank for International Settlement (BIS) and Joint External Debt Hub.

D. Aggregate Balance Sheet Imbalances

8. **The key macroeconomic vulnerability indicators suggest that Sri Lanka's external vulnerabilities increased between the end of 2004 and the end of 2007.** All foreign currency debt indicators—gross foreign currency position, net foreign currency position and short-term foreign currency liabilities, expressed as a percent of GDP—rose sharply (see Text Table 1). The level of foreign exchange reserves rose from $1.9 billion to over $3 billion, but fell in terms of import cover. Moreover, external debt due within a year *plus* the current account deficit as a share of international reserves rose sharply from about 271 percent of GDP in 2004 to 564 percent in 2007 because of faster growth in short-term liabilities.

Table 1. Overall External Vulnerability Indicators, 2004 and 2007

	2004	2007	2004	2007
	(In billions of U.S. dollars)		(In percent of GDP, unless otherwise indicated)	
Gross foreign currency debt	12.0	27.1	58.2	83.9
Net foreign currency position 1/	-8.3	-13.5	-25.5	-41.7
Net external position 2/	-8.7	-18.3	-42.3	-56.5
Short-term foreign currency liabilities *plus* current account deficit	5.0	17.2	24.1	53.1
Short-term debt *plus CA deficit as a percent of Gross reserves*	271.2	563.5	…	…
Gross international reserves in months of imports	2.4	2.2	…	…

Sources: Central Bank of Sri Lanka; BIS-IMF-OECD-World Bank Joint External Debt Hub; and Fund staff estimates.

1/ Net foreign currency position is defined as foreign currency assets minus liabilities.
2/ Defined as gross foreign currency position minus foreign assets of the Central Bank of Sri Lanka and commercial banks.

Overall Currency Mismatches

9. **Information on Sri Lanka's aggregate balance sheet suggests a significant deterioration in Sri Lanka's net foreign currency position (Text Table 2).** The aggregate gross currency mismatch in the Sri Lankan economy—which is defined as the difference between foreign currency-denominated assets and liabilities—has deteriorated from negative 58 percent of GDP to the end of 2004 to negative 84 percent of GDP at the end of 2007.

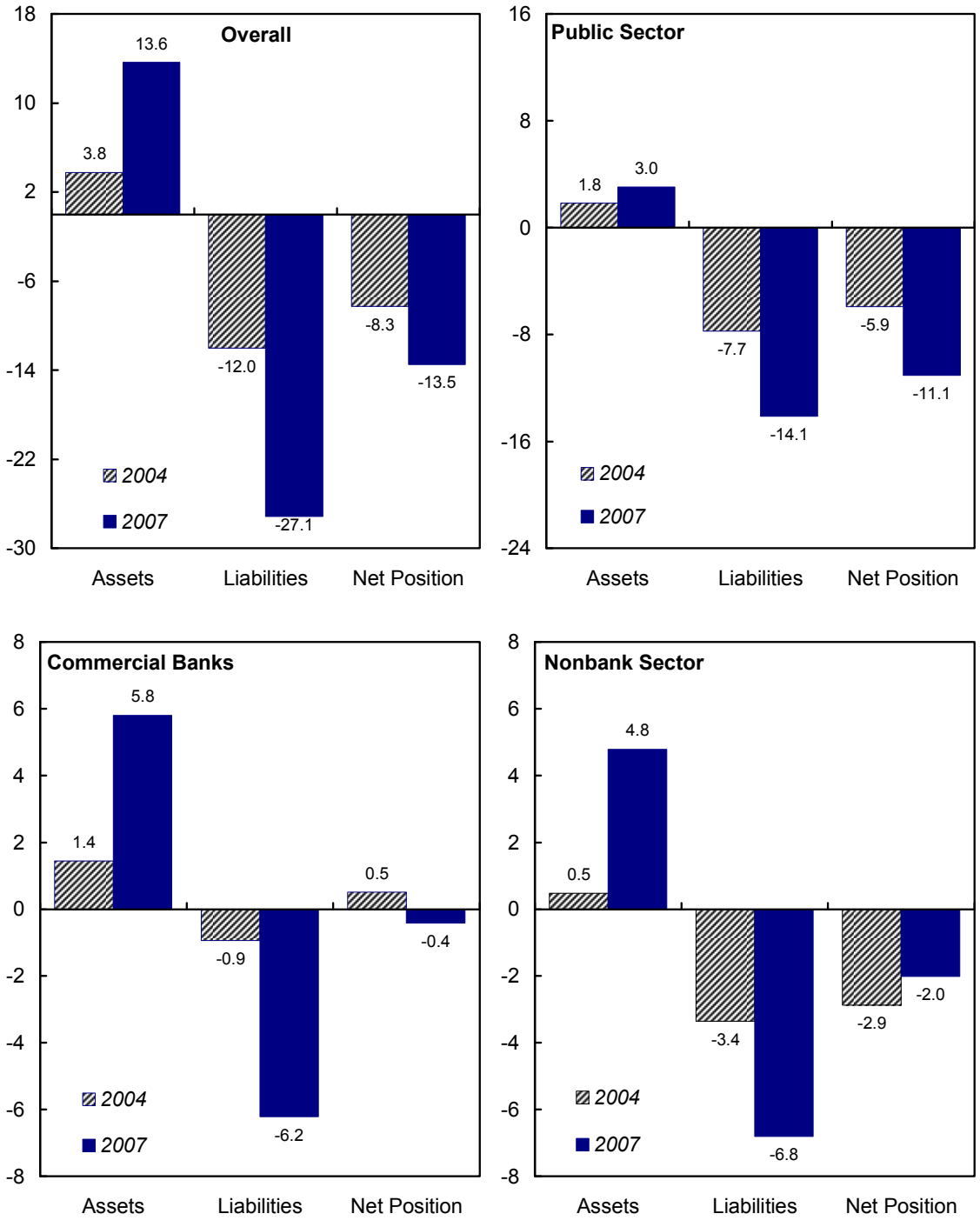
10. **The short-term net foreign currency positions of the government and nonbank sectors deteriorated significantly (Figure 1).** The currency mismatch of $11 billion in the public sector dwarfs those in the other sectors; it is about five times that in the nonbank sector. Commercial banks, on the other hand, have a small net foreign liability position of $0.4 billion, with an important foreign currency asset being the outstanding stock of SLDBs and FCBUs it holds against the government and deposits in banks abroad.

Overall Maturity Mismatches

11. **In addition to the overall foreign currency positions, the maturities of assets and liabilities are an important barometer of a country's balance-sheet vulnerabilities.**

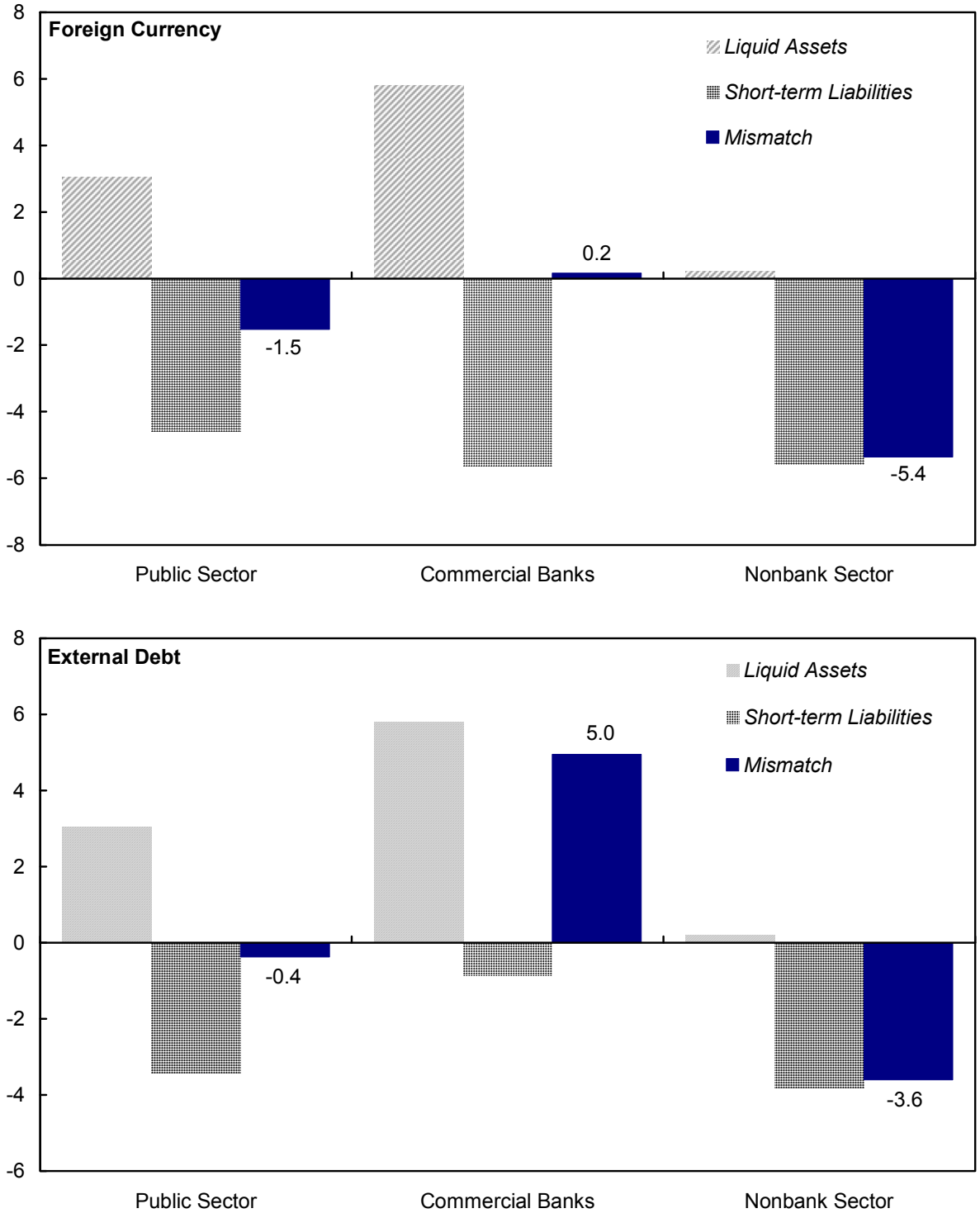
While the currency mismatch between all assets and liabilities is relevant for the effect on a balance sheet's net worth, it is the rollover risk—the inability to refinance maturing debts of foreign currency liabilities that might lead to liquidity problems and financial pressures. In Sri Lanka, the banking sector has liquid foreign currency assets well in excess of its liabilities and faces no maturity mismatches in its foreign currency position (Figure 2). This likely reflects the stringent net open positions limits required to meet prudential standards.

Figure 1. Sri Lanka: Overall and Sectoral Currency Mismatches
(In billions of U.S. dollars)



Sources: Central Bank of Sri Lanka; Bank for International Settlements; and Fund staff estimates.

Figure 2. Sri Lanka: Maturity Mismatches, December 2007
(In billions of U.S. dollars)



Sources:Central Bank of Sri Lanka; Bank for International Settlements; and Fund staff estimates.

Table 2. External Foreign Currency Financing Gaps, 2004 and 2007

	Government Sector (Including CBSL)	Commercial Banking Sector Including FCBUs 1/	Nonbank Sector	Country Aggregate	Government Sector (Including CBSL)	Commercial Banking Sector Including FCBUs 1/	Nonbank Sector	Country Aggregate
	(In billions of U.S. dollars)				(In percent of GDP)			
	Position in December 2007				**Position in December 2007**			
Foreign currency assets	3.0	5.8	4.8	13.6	9.4	17.9	14.8	42.2
Of which: Short term 2/	3.0	4.7	0.2	8.0	9.4	14.7	0.7	24.7
Foreign currency liabilities	14.1	6.2	6.8	27.1	43.6	19.2	21.0	83.9
Of which: Short term 2/	4.6	5.6	5.6	15.8	14.2	17.4	17.2	48.8
Net foreign currency position	-11.1	-0.4	-2.0	**-13.5**	-34.2	-1.3	-6.2	**-41.7**
Of which: Short term 2/	-1.5	-0.9	-5.4	**-7.8**	-4.7	-2.8	-16.6	**-24.1**
	Position in December 2004				**Position in December 2004**			
Foreign currency assets	1.8	1.4	0.5	3.8	8.9	7.0	2.3	11.6
Of which: Short term 2/	1.8	0.9	0.3	3.0	8.9	4.2	1.6	9.4
Foreign currency liabilities	7.7	0.9	3.4	12.0	37.4	4.5	16.2	37.2
Of which: Short term 2/	2.1	0.6	1.7	4.3	10.1	2.7	8.1	13.4
Net foreign currency position	-5.9	0.5	-2.9	**-8.3**	-28.6	2.5	-13.9	**-25.5**
Of which: Short term 2/	-0.3	0.3	-1.4	**-1.3**	-1.3	1.5	-6.5	**-4.0**

Sources: Central Bank of Sri Lanka Monthly Statistical Bulletin and CEIC Data Company Ltd.; and Fund staff estimates.

1/ Foreign Currency Banking Units.
2/ Short-term debt by residual maturity.

12. **In contrast, both the public sector and the nonbank sectors have significant maturity mismatches in their foreign currency positions (Figure 2).** The public sector's maturity mismatch of $1½ billion (48 percent of reserves) is about $4 billion (130 percent of reserves) less than that of the nonbank sector. The public sector's less than liquid position in its overall net foreign currency position indicates a high rollover risk, despite the relatively higher level of reserves in 2007 than in 2004. About 50 percent of the public sector's short-term dollar liabilities (by residual maturity) are due to nonresidents, highlighting the large proportion of these liabilities held by domestic banks.

E. Sectoral Analysis

Public Sector

13. **The balance sheet of the government is much weaker now than in 2004 (Text Table 3 and Appendices 1 and 2).** The net foreign liabilities of the public sector have increased by $5 billion between 2004 and 2007. The rapid build-up of the government's external debt in absolute terms has led to a large net negative position vis-à-vis both residents and nonresidents. Besides higher budgetary costs in terms of interest payments, the high debt level reduces the government's room to maneuver as it makes the public sector more sensitive to interest rates and debt rollover risks, despite the large proportion (80 percent) of concessional debt.

Table 3. Public Sector Net Financial Positions at end-2004 and end-2007 1/ 2/

(In billions of U.S. dollars)

	2004	2007
Net foreign currency position	-5.9	-11.1
Net short-term foreign currency position	-0.3	-1.5

Sources: Central Bank of Sri Lanka; BIS-IMF-OECD-World Bank Joint External Debt Hub; and Fund staff estimates.

1/ Net financial position is defined as foreign currency assets minus liabilities.

2/ External liabilities do not include equity and reinvested capital and interagency assets and liabilities.

14. **As a result, the perception of Sri Lanka's sovereign risk is high, as reflected in its EMBI spread—about 970 basis points as at end-September 2008.** The government's recent strategy of borrowing short-term foreign currency debt is a major source of vulnerability that exposes the public sector to exchange rate risk. Sensitivity analysis shows that a plausible exchange rate shock could push the public debt to GDP ratio to over 100 percent of GDP (Table 4).[10]

Table 4. Sensitivity of Net Financial Positions to Exchange Rate Shocks at end-2007 1/

(In percent of GDP unless otherwise stated)

	Baseline	15 Percent Nominal Exchange Rate Depreciation	30 Percent Nominal Exchange Rate Depreciation
Aggregate			
Gross foreign currency debt	83.9	100.0	118.6
Net foreign currency position 2/	-41.7	-49.0	-57.4
Net short-term external position 3/	-24.1	-28.1	-32.8
Short-term foreign currency liabilities *plus* current account deficit	53.1	62.3	72.9

Sources: Central Bank of Sri Lanka; BIS-IMF-OECD-World Bank Joint External Debt Hub; and Fund staff estimates.

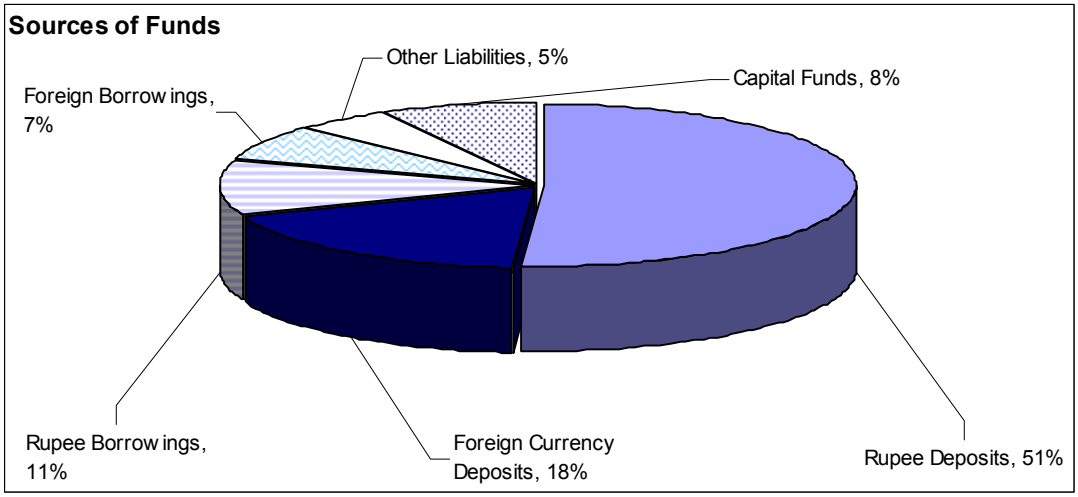
1/ Based on BSA matrices in Appendix 2.

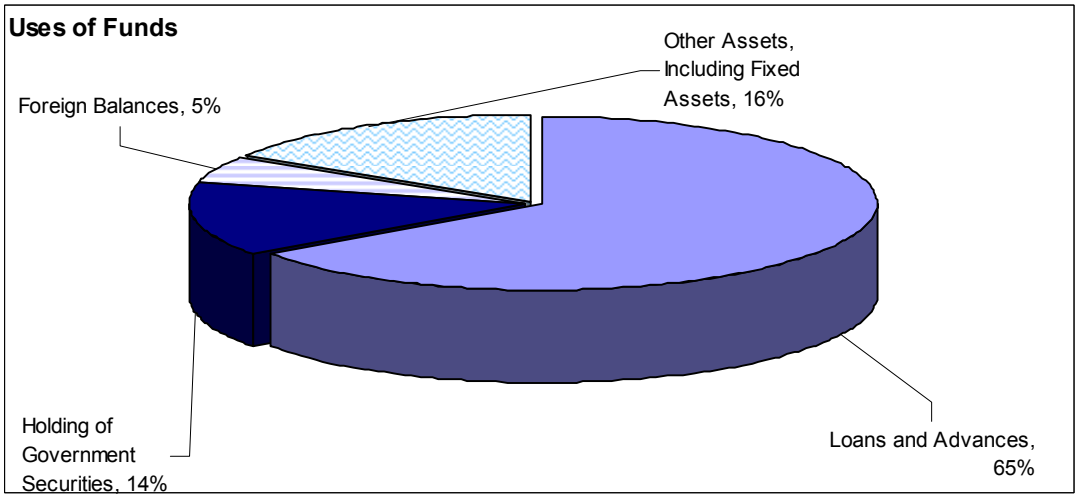
2/ Net foreign currency position is defined as foreign currency assets minus liabilities.

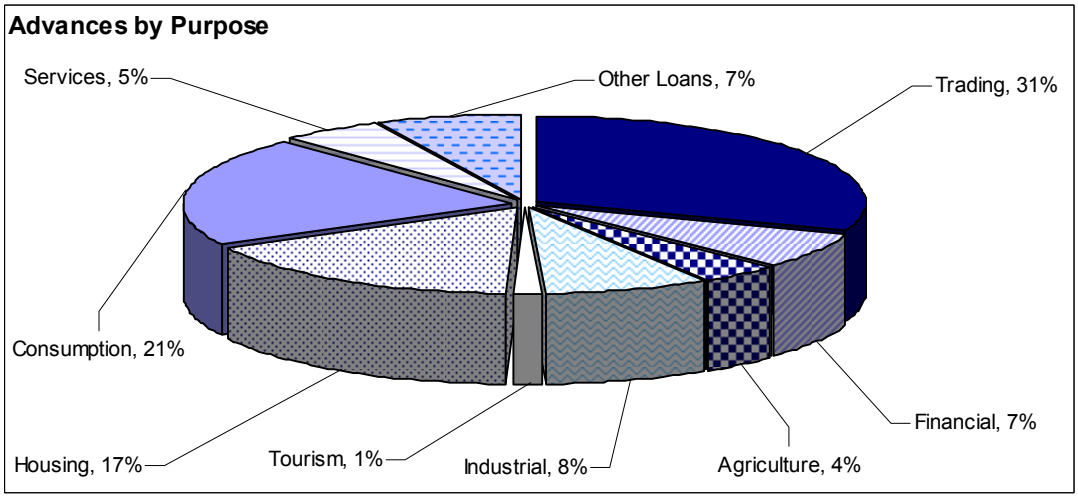
3/ Defined as gross foreign currency position minus foreign assets of the Central Bank of Sri Lanka and commercial banks.

[10] Some have argued that by issuing foreign currency debt in the domestic market, the government may provide residents a hedge against their rupee earnings or possible exchange rate depreciation. While this is possible, it may nevertheless undermine the government's financial position.

Figure 3. Sri Lanka: Commercial Bank Operations, 2007







Source: Central Bank of Sri Lanka.

15. **The government sector's balance sheet is therefore an obvious source of vulnerability.** The public debt to GDP ratio is sensitive to various shocks that would directly have an impact on revenues and the financing needs of the public sector. Moreover, given the high debt exposure, the government has little scope for pursuing countercyclical fiscal policies in the event of economic downturns. Finally, risks may also arise from a possible buildup of contingent liabilities in the context of increased reliance on quasi-fiscal activities such as any off budget military spending and the operations of the large state enterprise and banking sectors.

Commercial Banks[11]

16. **The commercial banking sector plays a key role in linking the sectoral currency exposures.** It creates dollar assets by extending dollar loans to domestic borrowers, financed by dollar deposits received mostly through remittance inflows. At end-2007, banks' foreign currency assets exceeded their foreign currency liabilities, creating a useful buffer against a potential depreciation of the rupee, as it would not directly reduce banks'net worth. However, it may still expose any mismatch between foreign currency assets and liabilities.[12]

17. **The Sri Lankan banking system is largely dependent on short-term funding sources—both deposits and debt.** Savings deposits can be withdrawn on demand and therefore are classified as short-term. Moreover, a large portion of time and savings deposits is less than one year in maturity. Similarly, bank borrowing is mostly for overnight liquidity purposes or taken from the central bank discount window and is classified as short maturity. About 70 percent of interest-rate sensitive liabilities are classified as less than three months maturity, and over 90 percent as less than 12 months' maturity. Similarly, over 60 percent of banks' assets have a maturity of less than one year.[13] A key factor that mitigates the apparent mismatch in banks' maturity structures is the fact that most deposits tend to be stable due to depositor preferences, making the apparent mismatch less skewed than it appears.

18. **Deposits continue to be the dominant source of funds for banks, although their share is decreasing.** The relatively low deposit growth could be partly attributed to increasing depositor preferences for alternative asset classes such as real estate and precious metals, which provides a hedge against the negative real rate of return that deposits yield in a high inflation environment.

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[11] Sri Lanka's commercial banks and OBUs are dominated by state banks and four large foreign-owned banks. Together, they account for over 80 percent of the banking sector.

[12] Under a depreciated exchange rate, the value of domestic dollar assets is likely to deteriorate, but dollar liabilities would still have to be financed. The risk of a run on dollar deposits could therefore expose banks to the maturity mismatches.

[13] See Fitch ratings, November 2007.

19. **The aggregate balance sheet of the commercial banks does not reveal particular weaknesses** (Text Table 5, Appendices 1 and 2)**.** Largely due to the prudential limit on commercial banks' foreign currency exposure, their net foreign currency position is about balanced. A comparison of the commercial banking sector's balance-sheet positions at end-2004 and at end-2007 reveals the following:

Table 5. Banks Net Financial Positions at end-2004 and end-2007 1/ 2/

(In billions of U.S. dollars)

	2004	2007
Net foreign currency position	0.5	-0.4
Net short-term foreign currency position	0.3	-0.9

Sources: Central Bank of Sri Lanka; BIS-IMF-OECD-World Bank Joint External Debt Hub; and Fund staff estimates.

1/ Net financial position is defined as foreign currency assets minus liabilities.

2/ External liabilities do not include equity, reinvested capital,or interagency assets and liabilities.

- Sri Lanka's commercial banking sector does not seem to suffer from major balance sheet imbalances, but large credit exposures to the public and domestic private nonfinancial sector and the large net deposits of the nonbanking sector could have implications for banks' balance sheet stability.

- The sector has expanded its balance sheet markedly during 2004–2007 and the foreign currency position has deteriorated slightly. Banks' net foreign currency position is slightly negative in 2007 from $½ billion at end-2004. Banks' net short-term position shows a similar trend.

- Additionally, in terms of exposure to the other sectors, the commercial banks' balance sheet at end-2007 shows net asset positions vis-à-vis the government and nonresident sectors, but a net liability position relative to the nonbank sector (Appendix Table 1). Bank lending to government and state-owned enterprises accounted for over 30 percent of banking system advances at end-2007. The state sector's demand for credit to finance state utilities companies and the government's revenue shortfall increased by about 32 percent between 2004 and 2007.

20. **A recent staff study using data from all licensed banks as of June-2008, stress-tested movements in the exchange rate, interest rate, liquidity, and deterioration in asset quality shows that**:[14]

[14] See Box 4 of the 2008 staff report for Sri Lanka. The analysis was prepared by Shanaka Jayanath Peiris (MCM).

- **Systemically important banks are resilient to exchange-rate changes.** Only one bank, representing less than 1 percent of system assets, experiences a small drop in CAR.

- **Nevertheless, banks representing nearly 50 percent of the banking system assets are vulnerable to a spike in interest rates.** Although interest-rate risks have declined, a ten-percentage-point change in rates pushes the CAR below regulatory minimums in some important banks. (A "2001 scenario" with moves in the exchange rate, interest rates, and NPLs as occurred in 2001 had similar effects.)

Sri Lanka: Interest Rate and Exchange Rate Sensitivity Tests: Effects on the Capital Adequacy Ratio (CAR) 1/

(In Percent)

	CAR, June 2008 2/	CAR After Shocks 2/			
		Exchange Rate Scenarios 3/		Interest Rate Scenarios 4/	
		5% Depreciation	10% Depreciation	10% Increase	5% Increase
		Number of Financial Institutions			
CAR					
Above 20%	10	9	9	9	9
10% to 20%	12	12	12	11	1
5% to 10%	1	1	1	3	1
0% to 5%	0	1	1	0	0
Below 0%	0	0	0	0	0
Total	23	23	23	23	23
Below minimum CAR 2/					
% of the system assets	15.1	15.9	15.9	41.7	15.1
% of the state-owned bank assets	15.1	15.1	15.1	32.7	15.1

Source: Central Bank of Sri Lanka; and Fund staff estimates.
1/ Banks include all licensed commercial and specialized banks.
2/ Ten percent minimum capital adequacy ratio (CAR).
3/ Effect through the net open position (NOP). One specialized institution does not have a NOP.
4/ Effect through the cumulative gap in assets and liabilities with maturities less than a year.

- **The banking system was moderately vulnerable to deteriorating asset quality, though more susceptible to concentration risks.** While systemically important banks do not have significant vulnerability to credit shocks, given the high concentration of borrowers, default of the two and three largest borrowers including state-owned enterprises would cause a major part of the banking system to become undercapitalized.

The Nonbank Sector

21. **The nonbank sector includes households and nonfinancial firms, the Board of Investment, the provident funds, and the stock market (Text Table 6).** Based on the available data, the nonbank sector seems to have maintained net-long positions vis-à-vis domestic sectors while significantly increasing both domestic and foreign borrowing. The sector's net negative foreign currency exposure and rising external debt are the key concerns. Given that most of their liabilities are contracted at variable rates, the nonbank sector's balance sheets are likely to be sensitive to changes in domestic and foreign interest rates. Moreover, limited foreign currency hedging implies that the private nonfinancial

sector is likely to suffer losses in the event of a depreciation of the rupee, with implications for credit risk to the banking system**.**

Table 6. Nonbank Sector Net Financial Positions at end-2004 and end-2007 1/ 2/

(In billions of U.S. dollars)

	2004	2007
Net foreign currency position	-2.9	-2.0
Net short-term foreign currency position	-1.4	-5.4

Sources: Central Bank of Sri Lanka; BIS-IMF-OECD-World Bank Joint External Debt Hub; and Fund staff estimates.

1/ Net financial position is defined as foreign currency assets minus liabilities.

2/ External liabilities do not include equity, reinvested capital,or interagency assets and liabilities.

22. **Reliable assessment of the sector is admittedly difficult due to data limitations and large variations in data availability across firms.** The aggregate information used in this analysis is partial and incomplete and consolidates across households and businesses. The aggregate positions tend to mask potential risks that could spill over to other parts of the economy. Information on off-balance sheet positions is not available.

F. Contingent Liabilities

23. **The government's significant role in the banking sector and weak capital position of one of the large state-owned banks risks bank bailouts and related quasi-fiscal costs**.[15] Given the economic and political impact the failure of a bank can cause, precedents indicate that it could be reasonably expected that the state would intervene at some stage to try to resolve a bank failure. A recent example of state involvement is the attempted resurrection of the failed Pramuka Savings Development Bank (PSDB) and Sri Lanka Savings Bank (SLSB). PSDB was closed by CBSL in 2003 due to significant problems in asset quality, liquidity, and management. SLSB was floated as a state-owned bank that would take over PSDB's assets and liabilities, although it has yet to begin operations.

G. Policy Implications

24. The main policy recommendations stemming from this analysis are the following:

- **Up-front fiscal consolidation.** The increased vulnerabilities place a premium on frontloaded fiscal adjustment to bring the fiscal deficit to more sustainable levels. Fiscal tightening is needed to underpin debt sustainability.

[15] Fitch reports that the National Savings Bank Act provides an explicit government guarantee to depositors, though the timeliness of the repayment is not stated.

- **Prudent public debt management will be needed to bridge near-term funding pressures and prevent them from re-emerging in the medium term.** In the near term, refinancing of dollar-denominated commercial debt is the crucial challenge, particularly amid increasing global risk aversion and deteriorating security conditions. Debt sustainability will hinge on fiscal consolidation, lengthening maturities through a broadened investor base, and facilitating non-debt creating flows to finance development spending.

- **Significant exchange rate risks exist.** This risk is, for the most part, concentrated in the public sector, as other domestic sectors of the economy are either not exposed (banks) or significantly less exposed than the public sector. The authorities' current strategy of managing the exchange rate within an extremely narrow band is likely to be unsustainable given the low levels of reserves and the large imbalances in the economy. The loss of the present "peg" would expose this vulnerability and could exacerbate the government's solvency position, with important implications for the economy as a whole.

- **Sri Lanka's financial sector does not reveal major balance sheet imbalances.** Potential vulnerabilities may arise, however, from its credit exposure to the domestic public and nonbank sectors. In addition, stress tests reveal that banks have significant interest rate and liquidity exposures. Moreover, the aggressive lending by state-owned banks in the recent past and the various government-mandated initiatives such as loans to civil servants and other government agencies that are being pursued by state banks signal a greater risk at these institutions, as well as potential future liabilities to the government. Continued reforms to financial supervision and regulation would help to manage the maturing credit cycle while augmenting prudential buffers**,** and along with plans to monitor short-term foreign liabilities and maturity risks would contribute to financial stability.

- **Data issues:** Lack of data on private sector balance sheets limits the identification of distress across all domestic sectors and vis-à-vis the rest of the world. Cooperation with the IMF's Statistics Department could serve to develop a better sectoral matrix that would significantly improve the quality of the BSA analysis.

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Appendix Table 1. Sri Lanka: Intersectoral Balance Sheet Positions - Asset and Liability Positions

(In billions of U.S. dollars)

Government Vis-à-Vis Other Sectors	2004	2007	Commercial Bank Vis-à-Vis Other Sectors	2004	2007	Nonbank Sector Vis-à-Vis Other Sectors	2004	2007	Nonresident Sector Vis-à-Vis Other Sectors	2004		2007
Commercial banks			**General Government**			**General Government**			**General Government**			
In domestic currency	-0.7	-1.0	In domestic currency	0.7	1.0	In domestic currency	4.9	1.0	In domestic currency	0.0		0.0
Short-term	-0.5	-0.7	*Short-term*	0.5	0.7	*Short-term*	3.8	0.7	*Short-term*	0.0		0.0
Long-term	-0.2	-0.3	*Long-term*	0.2	0.3	*Long-term*	1.1	0.3	*Long-term*	0.0		0.0
In foreign currency	-0.5	-1.7	In foreign currency	0.5	1.6	In foreign currency	0.5	1.7	In foreign currency	5.3		9.4
Short-term	-0.3	-1.2	*Short-term*	0.3	1.2	*Short-term*	0.3	1.2	*Short-term*	-0.1		0.4
Long-term	-0.2	-0.5	*Long-term*	0.2	0.5	*Long-term*	0.2	0.5	*Long-term*	5.4		9.0
Nonbank private sector			**Nonbank sector**			**Commercial Banks**			**Commercial Banks**			
In domestic currency	-8.3	-7.1	In domestic currency	1.3	2.2	In domestic currency	-1.3	-2.2	In domestic currency	0.0		0.0
Short-term	-6.2	0.0	*Short-term*	0.0	0.9	*Short-term*	0.0	-0.9	*Short-term*	0.0		0.0
Long-term	-2.1	-7.1	*Long-term*	1.3	1.4	*Long-term*	-1.3	-1.4	*Long-term*	0.0		0.0
In foreign currency	0.0	0.0	In foreign currency	0.4	-2.7	In foreign currency	-0.4	2.7	In foreign currency	0.5		-0.6
Short-term	0.0	0.0	*Short-term*	0.2	-3.0	*Short-term*	-0.2	3.0	*Short-term*	0.2		-1.0
Long-term	0.0	0.0	*Long-term*	0.2	0.3	*Long-term*	-0.2	-0.3	*Long-term*	0.2		0.4
Nonresidents			**Nonresidents**			**Nonresidents**			**Nonbanks**			
In domestic currency	0.0	0.0	In domestic currency	0.0	0.0	In domestic currency	0.0	0.0	In domestic currency	0.0		0.0
Short-term	0.0	0.0	*Short-term*	0.0	0.0	*Short-term*	0.0	0.0	*Short-term*	0.0		0.0
Long-term	0.0	0.0	*Long-term*	0.0	0.0	*Long-term*	0.0	0.0	*Long-term*	0.0		0.0
In foreign currency	-5.3	-9.4	In foreign currency	-0.5	1.0	In foreign currency	-1.7	-4.5	In foreign currency	3.4		4.5
Short-term	0.1	-0.4	*Short-term*	-0.2	1.0	*Short-term*	-1.7	-3.8	*Short-term*	1.7		3.8
Long-term	-5.4	-9.0	*Long-term*	-0.2	0.0	*Long-term*	0.0	-0.7	*Long-term*	1.7		0.7
Aggregate			***Aggregate***			***Aggregate***						
In domestic currency	-9.0	-8.1	In domestic currency	2.0	3.3	In domestic currency	3.5	-1.2	In domestic currency	0.0	0.0	0.0
Short-term	-6.7	-0.7	*Short-term*	0.5	1.6	*Short-term*	3.8	-0.1	*Short-term*	0.0	0.0	0.0
Long-term	-2.3	-7.4	*Long-term*	1.5	1.7	*Long-term*	-0.2	-1.1	*Long-term*	0.0	0.0	0.0
In foreign currency	-5.9	-11.1	In foreign currency	0.5	-0.1	In foreign currency	-1.6	-0.1	In foreign currency	9.2	0.0	13.3
Short-term	-0.3	-1.5	*Short-term*	0.3	-0.9	*Short-term*	-1.6	0.4	*Short-term*	1.8	0.0	3.2
Long-term	-5.6	-9.5	*Long-term*	0.2	0.8	*Long-term*	-0.1	-0.5	*Long-term*	7.3	0.0	10.1

Sources: Central Bank of Sri Lanka; Bank for International Settlements; and Fund staff estimates.

Appendix Table 2. Sri Lanka: Intersectoral Foreign Currency Asset and Liability Positions
(In millions of U.S. dollars, end-2007)

Issuer of liability (debtor) \ Holder of liability (creditor)	General Government	Commercial Banks	Nonbank sector	Rest of the World	Total Liabilities
Government Sector and Central Bank of Sri Lanka					
Total other liabilities		**3,138.5**	**7,116.9**	**12,441.4**	**22,696.7**
Short term		**2,301.9**	**0.0**	**3,416.4**	**5,718.3**
in foreign curency		1,162.0	0.0	3,416.4	4,578.4
in domestic currency		1,139.9	0.0	0.0	1,139.9
Medium and long term		**836.6**	**7,116.9**	**9,025.0**	**16,978.5**
in foreign curency		498.0	0.0	9,025.0	9,523.0
in domestic currency		338.6	7,116.9	0.0	7,455.5
Commercial Banks					
Total Liabilities	**436.4**		**10,728.1**	**1,215.3**	**12,379.7**
Short term	**396.4**		**8,084.8**	**850.7**	**9,332.0**
in foreign curency	0.0		4,789.2	850.7	5,639.9
in domestic currency	396.4		3,295.6	0.0	3,692.1
Medium and long term	**39.9**		**2,643.2**	**364.6**	**3,047.8**
in foreign curency	0.0		215.8	364.6	580.4
in domestic currency	39.9		2,427.4	0.0	2,467.3
Corporate and household					
Total liabilities	**156.6**	**11,771.0**		**4,492.0**	**16,419.5**
Short term	**0.0**	**7,427.9**		**3,822.1**	**11,249.9**
in foreign curency	0.0	1,753.0		3,822.1	5,575.0
in domestic currency	0.0	5,674.9		0.0	5,674.9
Medium and long term	**156.6**	**4,343.1**		**669.9**	**5,169.6**
in foreign curency	0.0	559.8		669.9	1,229.7
in domestic currency	156.6	3,783.3		0.0	3,939.8
Stock Market (forex)				**2,259.0**	**2,259.0**
Rest of the World					
Total liabilities	**3,046.0**	**1,828.5**			**4,874.5**
Currency and short term	3,046.0	1,828.5			4,874.5
Medium and long term					
Total assets (holdings of liabilities)	**3,638.9**	**16,737.9**	**17,844.9**	**18,148.7**	**51,496.0**
Short term	**3,046.0**	**4,141.3**	**5,005.0**	**5,707.3**	
in foreign curency	3,046.0	4,743.5	4,789.2	8,089.2	
in domestic currency	396.4	6,013.5	10,412.5	0.0	
Medium and long term	**196.5**	**5,179.7**	**9,760.1**	**10,059.5**	
in foreign curency	0.0	1,057.8	215.8	10,059.5	
in domestic currency	196.5	4,121.9	9,544.3	0.0	

Sources: Central Bank of Sri Lanka; BIS-IMF-OECD-World Bank Joint External Debt Hub; and Fund staff estimates.

II. Monetary Policy Implementation in Sri Lanka[1]

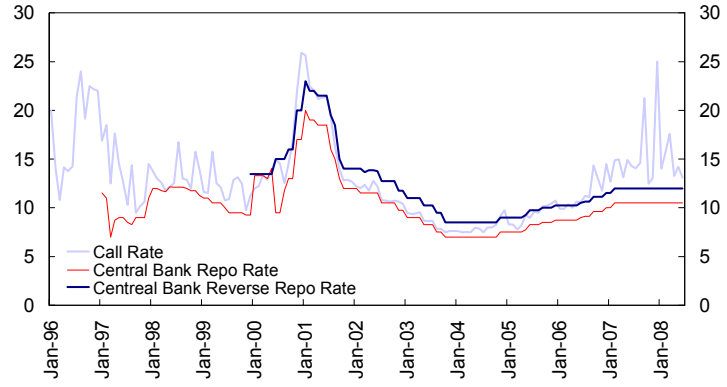
A. Introduction

1. **Recent staff research evaluates the monetary policy transmission mechanism in Sri Lanka.** The results suggest that the ability of the Central Bank of Sri Lanka (CBSL) to influence inflationary developments has been limited. The paper argues that this can be attributed to (i) inconsistencies in the operational framework of monetary policy, which may have undermined the expectations channel of monetary policy; and (ii) volatile interbank market interest rates, which have tended to weaken the effectiveness of the interest rate channel.

2. **Monetary management in Sri Lanka is based on a monetary targeting framework.** In this framework, the final target, price stability, is to be achieved by influencing changes in broad money supply, which is linked to reserve money (the operational target) through a multiplier. The main instruments the CBSL uses to achieve its operational target are (i) policy interest rates (repo and reverse repo facility); (ii) open market operations (OMO); and (iii) the statutory reserve requirement (SRR) on commercial bank deposit liabilities.[2] The exchange rate is a de jure float but in 2008 has been effectively pegged to the U.S. dollar.

3. **Changes in the operational framework of monetary policy have induced shifts in the volatility of interest rates in Sri Lanka.** Figure 1 shows the behavior of average monthly interest rates between January 1996 and June 2008, and highlights how interest rates in the call money market stabilized in early 2001 when the exchange rate became more flexible (Wijesinghe, 2006). The CBSL was able to maintain the call money rate within the interest rate corridor formed by the repo and reverse repo rates—albeit with some lapses due to limitations in the liquidity management framework (Wijesinghe, 2006)— through the introduction of active open market operations (OMOs) in March 2003. However, interest rate volatility re-emerged in mid-2006 when the exchange rate once again became more tightly managed. Since January 2007, the introduction of administrative measures to limit access to the reverse repo standing

Figure 1: Sri Lanka: Policy Interest Rates and Call Money Rate



Sources: Central Bank of Sri Lanka; and CEIC Data Company Ltd.

[1] Summary of forthcoming IMF Working Paper by Shanaka J. Peiris (MCM) and Magnus Saxegaard (APD).
[2] The CBSL charges a penalty rate of 19 percent to banks that borrow more than 3 times per month.

facility in January 2007, and liquidity shortages among some banks, have also contributed to greater call money market volatility (CBSL, 2007).

B. Monetary Transmission Mechanism

4. **Estimates from a structural VAR suggest that monetary policy shocks only weakly affect inflation**.[3] A 100 basis point rise in interest rates (measured by repo rate) is found to reduce inflation by less than 0.1 percent after 4 quarters. The effect on inflation is significantly lower than typically observed in the literature, although the impact on output is more comparable. The exchange rate channel is more visible, albeit with an incomplete exchange rate pass-through of about 0.3 percent within 4 quarters, in line with estimates reported in Wimalasuriya (2007) and Duma (2008). Overall, however, the results raise concerns about the strength of the monetary policy transmission mechanism and the ability of the CBSL to control inflation.

5. **The weak transmission mechanism may be related to inconsistencies in the operational framework of monetary policy and volatility in market interest rates.** Since mid-2006, market interest rates, such as the call money market rate or 91-day Treasury Bill rate, have consistently been outside the interest rate corridor. This reflects CBSL's policy of keeping policy rates unchanged since January 2007 and restricting access to the standing facilities, at the same time tightening reserve money through OMOs. These policies, while successful at restraining reserve money growth, may have confused markets about the stance of monetary policy and thus undermined the CBSL's influence over inflationary expectations. At the same time, the volatility of call market interest rates—which when measured by the standard deviation was more than twice as high in the post-2006 period than before—may have weakened the pass-through of interest rate changes to the financial and real economy.[4]

6. **A threshold VAR (TVAR) analysis confirms the hypothesis that high interest volatility weakens the monetary policy transmission mechanism.**[5] In particular, an interest rate increase lowers CPI inflation more when call market rate volatility is low than when volatility is high. Also, interest rate shocks have a stronger effect on output when interest rate volatility is low. These results suggest that high call market rate volatility has undermined the strength of the monetary policy transmission mechanism and thus the ability of the CBSL to influence inflationary developments.

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[3] The structural VAR is estimated on quarterly data from 1996 and includes the following variables: global oil prices, the output gap, headline inflation, interest rates, a monetary aggregate, and the exchange rate. Both a recursive identification scheme—with the variables ordered as above —and a non-recursive identification scheme allowing contemporaneous feedback between interest rates, money, and the exchange rate (as suggested by Kim and Roubini, 2000; and Sims and Zha, 2006) were examined; the results were broadly similar.

[4] The stickiness in retail banking sector rates as a result of structural weaknesses may also have hampered the transmission mechanism of monetary policy

[5] The TVAR is estimated using the same variables as in the benchmark linear VAR. Regime changes are determined by the volatility of call market interest rates.

7. **Further analysis suggests that interest rate volatility is partly related to the degree of exchange rate stabilization.** An econometric analysis of foreign exchange interventions in Sri Lanka confirms that the CBSL has, at least at times, attempted to lean against the wind and resist depreciation pressures.[6] At the same time, the CBSL has fully sterilized its foreign exchange interventions. This explains why periods of sterilized intervention to stabilize the nominal exchange rate have been correlated with increased interest rate volatility. This is consistent with the experience in several other countries that have experienced higher interest rates and/or inflation as a result of attempts to target the exchange rate (see Calvo, 2005).

8. **Interest rate volatility has also increased since 2007 as a result of administrative restrictions on access to the standing facilities and weaknesses in the monetary operations framework.** The inconsistency between policy rates and quantitative targets, and use of administrative restrictions to limit credit growth, has contributed to greater interest rate volatility. In the current framework, market interest rates are effectively allowed to move within a corridor defined by the repo and penalty rate (10.5 percent and 19 percent, respectively) rather than a more narrow, formal interest rate corridor that would effectively anchor market interest rates.

C. Conclusions

9. **Our findings suggest that increasing exchange rate flexibility and reforming the monetary operations framework would strengthen the monetary policy transmission mechanism.** Exchange rate flexibility would avoid the need to use interest rates to resist pressure on the exchange rate and clarify that inflation, not the exchange rate, is the nominal anchor. Raising policy rates and making more active use of OMOs to maintain market rates within the interest rate corridor could clarify the monetary stance and help anchor inflationary expectations—in line with the signaling role highlighted in CBSL (2007)—and strengthen the effectiveness of the monetary transmission mechanism by reducing interest rate volatility.

[6] Consistent with the literature on foreign exchange intervention, the research investigates the extent to which official intervention in the forex market—captured by changes in official reserves—is determined by changes to the nominal exchange rate. The analysis also includes the volatility of the exchange rate and lagged intervention to capture attempts to mitigate "excessive" volatility and to smooth intervention operations.

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III. The Use of Core Inflation in Monetary Policy: The Case of Sri Lanka[1]

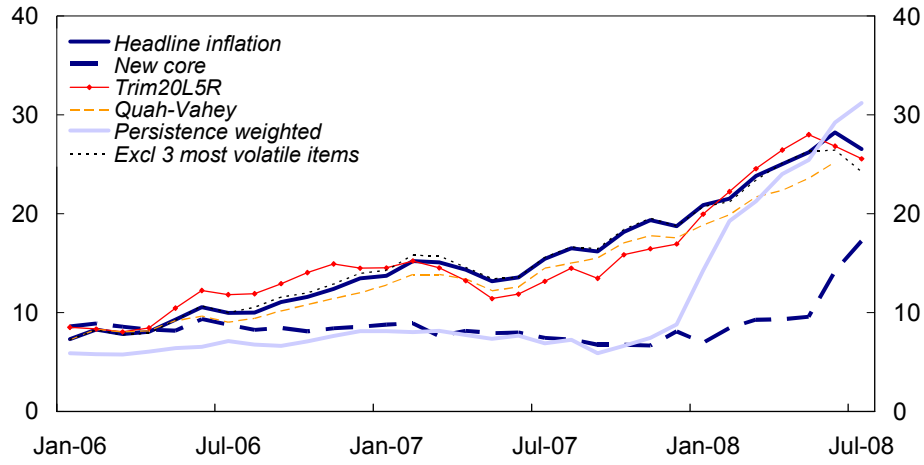
A. Background

1. **The increase in world commodity prices has coincided with a near doubling of headline inflation in Sri Lanka since the beginning of 2007**.[2] At the same time, the Central Bank of Sri Lanka (CBSL) has stated that monetary policy has been successful in managing demand pressures due to the—until recently—low level of their new measure of core inflation, and argued that headline inflation will decline toward core inflation once world commodity price shocks die out. However, the recent increase in core inflation suggests that inflation in Sri Lanka has become more broad-based this year, and that second-round effects are becoming increasingly important.[3] These recent developments raise concerns about the usefulness of the authorities' measure of core inflation for the conduct of monetary policy, in particular its role as a leading indicator of future headline inflation. Recent staff research evaluates the authorities' new measure of core inflation by comparing it to other measures that have been proposed in the literature and makes some observations about the use of core inflation in monetary policy.

B. Measurement of Core Inflation

2. **Numerous weaknesses in the consumer price index (CPI) detract from its usefulness for monetary policy.** Conceptually, the role of monetary policy is primarily to create conditions for the price mechanism to function effectively and not to stabilize the cost of living as measured by the CPI. Moreover, seasonality, indirect taxes, and changes in the relative price of goods affect the CPI, but do not warrant a

Figure 1. Measures of Core Inflation
(In percent, year-on-year) 1/



Sources: Central Bank of Sri Lanka; and Fund staff estimates.
1/ Annualized percent rate of month-on-month changes for the alterative measures of core inflation, except for Quah-Vahey measure.

[1] Summary of a forthcoming IMF Working Paper by Magnus Saxegaard and Souvik Gupta (both APD).
[2] Headline inflation based on the New Colombo CPI (2002=100) has increased from 13.5 percent at end-2006 to 24.9 percent in August 2008.
[3] Official core inflation increased from 9.6 percent in May 2008 to 17.4 percent in August 2008.

monetary policy response, while interest payments—which also affect the CPI—are a tool, rather than a goal, of monetary policy. Finally, in the short-run, CPI inflation is the product of nearly every shock hitting the economy, while monetary policy operates with a considerable lag. A more useful measure of inflation for policy purposes would therefore be a leading indicator of CPI inflation that strips out the effect of exogenous shocks over which the authorities have no control.

3. **There is no consensus in the literature on how best to measure core inflation or how best to evaluate the various measures that have been proposed.** Instead, a consensus is emerging that different estimators are appropriate for different purposes. Estimators that exclude components of the CPI (e.g., all food and energy prices as in Sri Lanka), or trim the tails of the distribution of price changes, benefit from being timely, simple, independently verifiable, and not subject to revisions, thus rendering them particularly suitable for backward-looking policy assessment.[4] Measures that have theoretical underpinnings or emphasize the most persistent components of the CPI may be more suitable for policy formulation. Figure 1 plots CPI inflation and official core inflation, together with several alternative measures of core inflation for Sri Lanka.[5] The results suggest that core inflation at end-July was in the range of 24.2 to 31.2 percent, compared to headline inflation of 26.5 percent and official core inflation of 17.2 percent.[6, 7]

C. Evaluating Measures of Core Inflation

4. **The performance of different measures of core inflation is typically found to vary according to the country and the time period analyzed.** As a result, a data-driven approach to evaluating different measures is crucial to reflect individual country circumstances. While a number of different criteria have been proposed, there is broad agreement that a measure of core inflation should be (i) unbiased; (ii) cointegrated with headline inflation with unit coefficient; and (iii) an attractor for headline inflation but not vice versa. A biased measure would undermine the claim that core inflation represents the

[4] It is crucial, however, that the criteria for exclusion are transparent (e.g., volatility) to ensure that the authorities are not perceived to be manipulating core inflation. Also, public sensitivity to excluding items such as food, which are of particular importance to poorer members of society, should be considered.

[5] The alternative measures of core inflation include (i) a measure that excludes the three most volatile components of the CPI based on the month-on-month changes; (ii) one measure that asymmetrically trims 20 percent and 5 percent of the left and right tails, respectively, to compensate for skewness of the distribution of monthly price changes (Trim20L5R); (iii) a measure that reweights the components of the CPI according to the estimated persistence of monthly inflation; and (iv) a structural VAR approach proposed by Quah and Vahey (1995), which—consistent with the idea of a vertical long-run Phillips curve—identifies core inflation as that component of inflation that has no medium to long-term impact on real output.

[6] Our data consists of 32 components of the New Colombo CPI for the period January 2005 to July 2008.

[7] The comparatively low level of official core inflation reflects the exclusion of all food prices regardless of volatility and persistence. The excluded components in the official core measure have a weight of 54.6 percent in the headline CPI index, with food accounting for 45.5 percent.

underlying trend of inflation. Cointegration ensures that core inflation does not diverge from headline inflation in the long-run. Condition (iii) ensures that core inflation is a leading indicator of headline inflation, and thus useful for policy purposes.

5. **The results reveal that no one measure of core inflation in Sri Lanka satisfies all the criteria.**[8] This is consistent with the fact that different estimators are designed for different purposes and also with the trend toward relying on more than one measure of core inflation for policy formulation. If the various measures of core inflation give similar signal—as in Sri Lanka where, with the notable exception of the authorities' official measure, all core inflation measures suggest that underlying inflation is close to or slightly higher than headline inflation—then they should give confidence to the monetary authorities in formulating decisions based on such measures.

6. **Finally, attention should be given to institutional arrangements surrounding core inflation measures.** To be effective in anchoring inflationary expectations it is important that the CBSL publish the data underlying their measure of core inflation, that its

Table 1. Evaluation of Measures of Core Inflation 1/

Methodology	Unbiased	Cointegrated with unit coefficient	Core inflation an attractor for headline inflation	Headline inflation not an attractor for core inflation	Overall
New Core	No	No***	Yes*	No***	1/5
Old Core	Yes**	No***	No	No***	1/5
Quah Vahey	No	No***	No	No***	0/5
Trimmed Mean 15L5R 2/	No	No***	No	Yes	1/5
Trimmed Mean 20L5R 2/	No	Yes	No	No*	2/5
Trimmed Mean 25L5R 2/	No	No***	No	Yes	1/5
Trimmed Mean 25L10R 2/	Yes**	Yes	No	Yes	3/5
Persistence Weighted 3/	No	No***	No	Yes	1/5
Exclusion 3 4/	No	Yes	No	No*	1/5
Exclusion 6 4/	No	Yes	No	Yes	2/5

Source: Fund staff estimates
1/ Statistical significance at 1, 5 and 10 percent levels are indicated by ***, ** and * respectively.
2/ 15L5R refers to a trimmed mean measure that assymetrically trims 15 and 5 percent of the left and right tails of the distribution of monthly price changes, respectively.
3/ Components of the CPI are reweighted according to the persistence of monthly inflation.
4/ Excludes 3 or 6 of the most volatile components of the CPI based on month-on-month changes.

[8] When interpreting the results of these tests, however, a few caveats need to be borne in mind. The small sample size (particularly in the case of the trimmed mean measures, the persistence weighted measures, and the alternative exclusion based measures) reduces the power of the tests. This may explain why these measures do not perform well in the empirical tests. In addition, Mankikar and Paisley (2004) note that Marques et al's tests are subject to the Lucas critique: if future policy is based on some estimated relationship between core and headline inflation, that relationship is likely to break down and become misleading.

strength and weaknesses be clearly laid out, and that its role in the formulation of monetary policy is made clear.

D. Conclusions and Policy Recommendations

7. **Alternative measures of core inflation suggest that underlying inflation has been, and continues to be, significantly higher than the official measure.** Econometric results also suggest that the official measure of core inflation does not satisfy many of the key criteria for a useful measure of underlying inflation, and performs significantly worse than some of the alternative measures. These results underlie the importance of the CBSL's ongoing efforts to improve their measure of core inflation and suggests that monetary policy should err on the side of caution in the months ahead to avoid inflationary expectations becoming entrenched at a high level.

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IV. External Competitiveness and the Real Exchange Rate in Sri Lanka[1]

Summary

Various approaches suggest that the Sri Lankan rupee is overvalued:

- Sri Lanka is experiencing a surging oil import bill, and the non-oil current account is projected to deteriorate by 2 percentage points of GDP in 2008, weighed down by a widening trade deficit.
- The share of Sri Lanka's merchandise exports in global exports has been on a declining trend since 2000.
- The PPP-approach, the ERER approach, and the external sustainability approach suggest rupee overvaluation of 7, 9, and 16 percent, respectively. The ERER approach was applied using 2007 data (latest available annual data) and the real appreciation so far during 2008 exacerbates the estimated overvaluation of 9 percent.

A. Introduction

1. **The ongoing strong appreciation of the real effective exchange rate (REER) together with the surge in international oil prices since August 2007, have heightened concerns regarding Sri Lanka's external competitiveness.** The staff's 2007 assessment concluded that the level of the REER was broadly in line with fundamentals (Rahman (2007)). However, by June 2008 (latest available observation), the CPI-based REER had appreciated by 18 percent compared to the 2007 average. High domestic inflation and the de facto peg to the U.S. dollar since January 2008 account for the bulk of the recent appreciation of the REER. At the same time, international oil prices are projected to rise from US$71 per barrel in 2007 to an average in excess of US$100 per barrel in 2008, which significantly worsens the outlook for Sri Lanka's current account for 2008 and beyond.

2. **This note examines a broad set of indicators of Sri Lanka's external competitiveness**. Trends in the current account and non-oil current account as well as broad trade patterns are briefly discussed. In addition, three quantitative approaches are applied to assess the appropriateness of the exchange rate level.

[1] Prepared by Geert Almekinders (SPR).

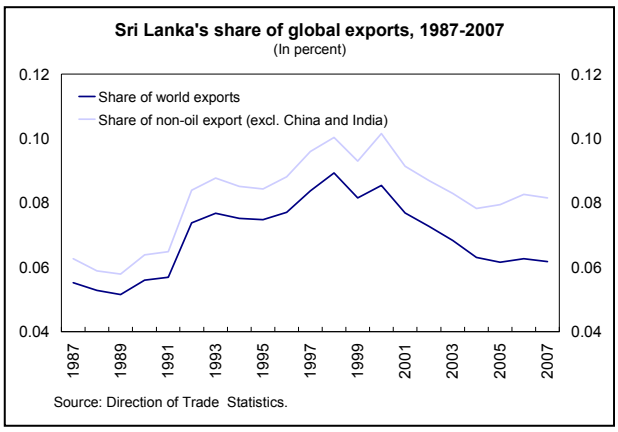
B. Trends in the Current Account and Trade

3. **Sri Lanka's current account is set to worsen substantially in 2008 and beyond:**

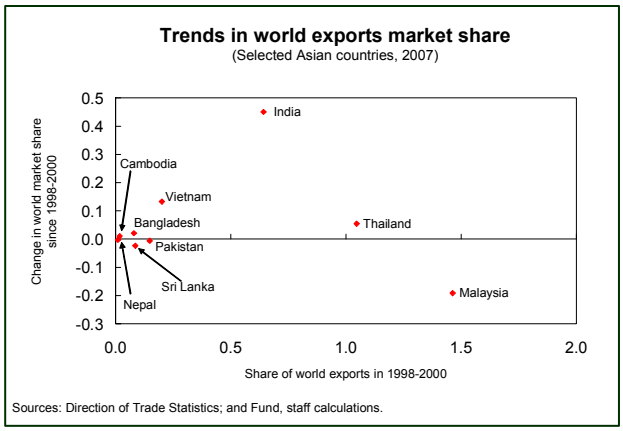
- The oil import bill, which reached a record US$2.5 billion (7.7 percent of GDP) in 2007, is projected to rise by more than 50 percent in 2008 and to remain at around US$4.1 billion per annum over the medium term.

- The non-oil current account is projected to worsen substantially owing to slowing garment exports and booming non-oil imports. The non-oil current account was in surplus during 2001–2007, hovering around 3.3 percent of GDP. However, recent trade data suggest a deterioration to a surplus of 1.5 percent of GDP notwithstanding a sharp increase in remittances inflows. Under current policies, the non-oil current account could turn into deficit over the medium term.

4. **In addition, Sri Lanka's share of global merchandise exports has been on a declining trend since 2000**. Sri Lanka's market share is on the decline even if one excludes exports of the fast-growing economies of India and China and if one excludes the effect of higher oil prices on the U.S. dollar value of global exports.



5. **By contrast, some of Sri Lanka's Asian peers achieved improvements in their global market share**. Cambodia, Bangladesh, Vietnam, India, and Thailand recorded an increase in export market share. Asian countries who, like Sri Lanka, saw their market share decline since 1998-2000 include Nepal, Pakistan, and Malaysia.



6. **Recent trends in garment exports underscore the importance of the renewal of Sri Lanka's eligibility for preferential treatment of exports to the European Union under GSP + when it expires at end-2008**.[2] Sri Lanka has not been able

[2] The European Union's Generalised Scheme of Tariff Preferences (GSP) is an autonomous trade arrangement through which the EU provides non-reciprocal preferential access to the EU market to developing countries. At present, Sri Lanka is among 14 beneficiary countries that have qualified to receive the additional preferences offered under the GSP+ incentive arrangement. These preferences will lapse at the end of 2008. Accordingly,

(continued)

to keep up with the competition in the United States garment market. Exports of garments and textiles to the United States fell by 6.6 percent in 2007 notwithstanding an increase in total United States imports of textiles and garments by 3.4 percent. During the first 4 months of 2008, when total U.S. imports declined by 2.6 percent, Sri Lanka's exports to the United States shrunk by 11 percent compared to the same year-ago period. Meanwhile, as a result of the GSP+ preferences, the U.S. dollar value of Sri Lanka's exports of garments and textiles to the EU increased by 14.7 percent in 2007, causing its EU market share to rise. Accordingly, non-renewal of Sri Lanka's eligibility for the GSP+ arrangement could severely crimp Sri Lanka's garments exports, which presently account for 43 percent of merchandise exports.

C. Estimates of the Equilibrium Real Effective Exchange Rate

7. **This section assesses if Sri Lanka's REER is in line with macroeconomic fundamentals using three different methodologies**: (i) the purchasing power parity approach (PPP), (ii) the equilibrium real exchange rate (ERER) approach based on a vector error-correction model, and (iii) the external sustainability (ES) approach. It should be noted that estimates of the equilibrium real effective exchange rate (ERER) tend to be quite sensitive to the methodology used and are particularly challenging to apply in developing countries where the data are weak (Dunaway and others (2006) and Di Bella and others (2007)).

Purchasing Power Parity Approach

8. **One way to assess the deviation of a country's real exchange rate from its long-run level is through an international comparison of price levels**. According to the theory of purchasing power parity (PPP), prices of an identical consumption basket should be the same in all countries once expressed in a common currency. However, a comparison of consumer prices across countries needs to account for the presence of nontraded goods and differences in consumption baskets. Empirically, nontradables prices tend to be higher in countries with higher wages and incomes.

9. **The strong correlation between absolute price levels and income is usually attributed to the Balassa-Samuelson (B-S) effect, which relates the long-run real exchange rate to cross-country productivity differentials**. Countries with relatively higher productivity growth in tradables relative to nontradables tend to experience real appreciation (an increase in the relative price of nontradables to tradables). In essence, higher tradables productivity pushes up wages in the tradables sector, which leads to higher wages in the nontradables sector and, consequently, to higher nontradables prices. Since tradables prices

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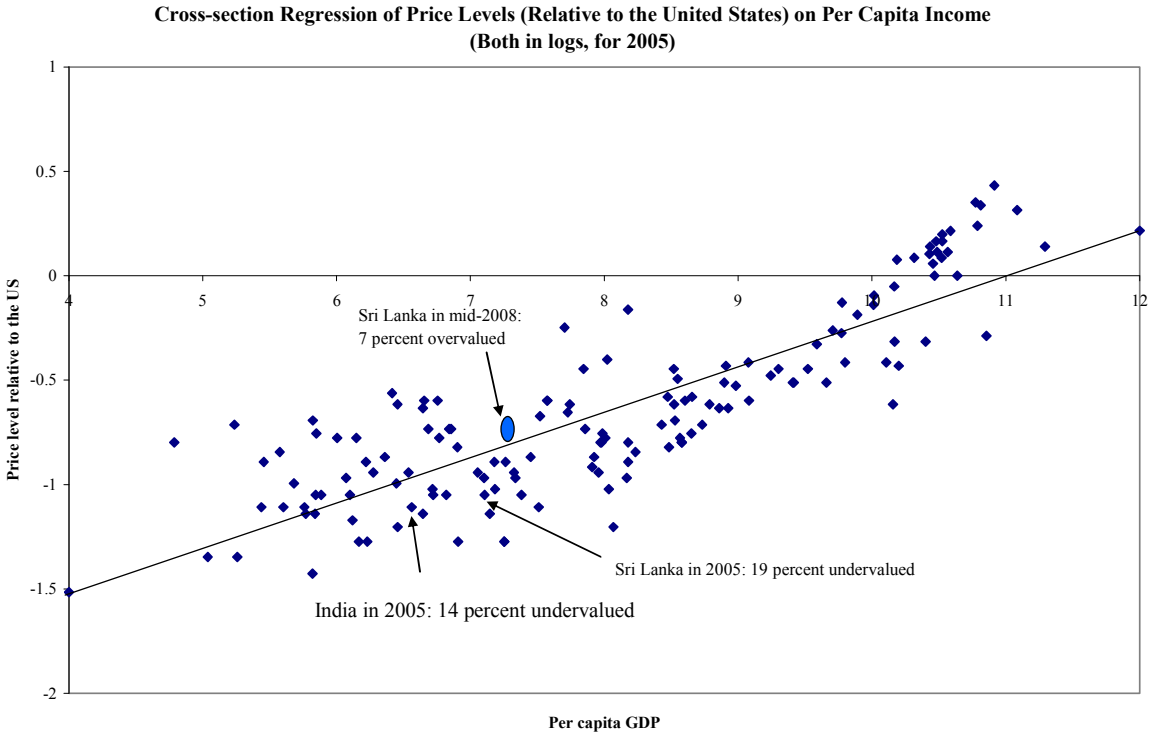
all current GSP+ beneficiaries, along with any other country wishing to apply, will have to submit an application by end-October, if they wish to receive GSP+ preferences from January 2009. Any GSP+ beneficiary country must be both "vulnerable," according to a definition established in the relevant EU regulation, and have ratified and effectively implemented 27 specified international conventions in the fields of human rights, core labour standards, sustainable development and good governance.

are set in international markets and do not respond to domestic market conditions, the price of nontradables relative to tradables rises. As the overall (consumer) price level is a weighted average of tradables and nontradables prices, the higher price of nontradable goods leads to an increase in the overall CPI. Assuming that real per capita GDP differentials across countries are a reasonable proxy for relative productivity differentials, the B-S effect implies a positive correlation between relative income levels and the real exchange rate. It also suggests that as a country's (relative) income level rises over time, its real exchange rate will appreciate.

10. **A new PPP database suggests that the rupee was undervalued by about 19 percent in 2005**. The new database was published in the December 2007 release of the preliminary report of the 2005 International Comparison Program (ICP).[3] A standard cross section regression of the price level in 146 countries relative to that in the United States on a constant and per capita GDP indicates that for every 1 percent increase in a country's per capita GDP, its price level relative to the United States is higher, and hence its REER is more appreciated, by about 0.22 percent. This database suggests that the price level in Sri Lanka in 2005 was some 19 percent lower than what could be expected based on the level of Sri Lanka's per capita GDP (measured by the vertical distance from the regression line).

11. **A tentative extension of the PPP approach suggests that, as of mid-2008, the rupee is somewhat overvalued**. Reflecting the large inflation differential with the United States and the stability of the nominal U.S. dollar/rupee-exchange rate, by mid-2008, the bilateral real exchange rate vis-à-vis the U.S. dollar had appreciated by some 36 percent compared to the average for 2005. On that basis, Sri Lanka would now be located above the regression line that links countries' price levels to their level of real per capita GDP. Because of Sri Lanka's strong growth of per capita GDP, Sri Lanka has also moved to the right in the graph. In all, the rupee would now be 7 percent overvalued.

[3] The ICP's preliminary global report for 2005 is based on an international effort to collect comparative price data and estimate purchasing power parities (PPPs) for 146 economies, benchmarked to the year 2005. The new PPPs, which are based on national surveys that priced nearly 1,000 products and services, replace previous benchmark estimates, some dating back to the 1980s. Comparative price levels are also included.



Source: *2005 International Comparison Program* , preliminary results. Price levels in each country are proxied by the GDP deflator.

Equilibrium real exchange rate approach

12. **Another commonly used approach is the equilibrium real exchange rate (ERER) approach**. It consists of (i) estimating a vector error-correction model (VECM) for the REER and its determinants (key macroeconomic fundamentals), and (ii) using the cointegrating vectors to infer the equilibrium path of the REER.[4] [5] The results of the VECM confirm the existence of a unique cointegrating relationship between the REER and the specified determinants of Sri Lanka's equilibrium real exchange rate (Table 1).

13. **The equilibrium REER is found to appreciate as Sri Lanka's relative productivity strengthens, its terms of trade improve and its government expenditure to GDP ratio rises**. These results are in line with similar studies for other countries:

[4] An important advantage over single-equation methods (such as the Engle-Granger method) is that this approach accounts for simultaneity and autocorrelation of the endogenous variables.

[5] As in other applications of VECM models, the first step is to test for the presence of unit roots in the macroeconomic series being examined. Using augmented Dickey-Fuller unit root tests for stationarity, the data series were found to be (i) nonstationary in levels (have unit roots) and (ii) stationary in first differences. On this basis, we could proceed to investigate the long-run cointegrating relationship between the REER, a nonstationary variable, and its determinants, which are also nonstationary variables.

- An increase in the productivity of the tradable sector (relative to Sri Lanka's trading partners; proxied by relative real per capita GDP) would tend to appreciate its real exchange rate (the Balassa-Samuelson effect).

- An improvement in the terms of trade would generally tend to appreciate the real exchange rate if the wealth effect dominates the substitution effect. Higher export prices result in higher wages in both traded and nontraded sectors resulting in higher prices for nontradables and a real appreciation. The wealth effect associated with improved terms of trade will also raise demand for, and the price of, nontradables. On the other hand, higher prices for nontradables may shift demand towards imported goods, depreciating the real exchange rate.

- To the extent that a substantial share of government spending is on nontradables, increased government outlays are associated with a real appreciation.

14. **More specifically, the regression results in Table 1 can be interpreted as follows**:

- A 1 percent improvement in Sri Lanka's relative productivity, proxied by real per capita GDP in Sri Lanka relative to its trading partners, has a more than one-to-one effect on the REER—not unlike in studies for other emerging market economies.[6]

- A 1 percentage point of GDP increase in government expenditure is associated with a 3 percent real appreciation of the REER.

- A 1 percent increase in the terms of trade index is associated with a 0.5 percent real appreciation of the REER.

- Private and official transfers, openness (proxied by the sum of merchandise imports and exports in percent of GDP), and measures of Sri Lanka's net foreign assets were not found to be statistically significant determinants of the equilibrium REER**.**

The cointegrating coefficient implies that it takes about 3½ years to reduce by half any deviation between the actual REER and the equilibrium rate. This is somewhat longer than what is typically found for other emerging-market countries (see for example MacDonald and Ricci (2003), Cashin and others (2002), and Zalduendo (2006)).

[6] Koranchelian (2005), Zalduendo (2006) and Almekinders (2007) find coefficients of 1.4 for Algeria, 1.9 for Venezuela, and 1.2 for Egypt, respectively.

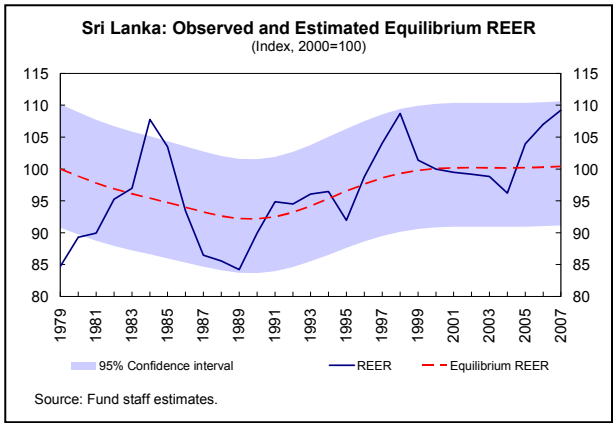
Table 1. Sri Lanka: Results of the VECM

1. Number of cointegrating vectors	
According to trace statistic at 1% significance level	1
According to Maximum eigenvalue statistic at 1% significance level	1
2. Estimates of the cointegrating relationship 1/ 2/	
Log of the REER	1
Log of relative per capita GDP	-1.70
	(-4.76)
Government expenditure to GDP ratio	-2.92
	(-5.60)
Log of terms of trade index	-0.51
	(-5.25)
Constant	-1.48
3. "Speed of adjustment" based on the cointegrating equation for the REER	
CointEq1	-0.17
	(-0.96)
4. Time required to adjust by 50 percent any deviation from the equilibrium REER	
in years	3.7

Source: IMF staff estimates.

1/ Written as: log REER - α1 log (relative per capita GDP) - α2 (government exp./GDP) - -α3 log (terms of trade index) - α4. Therefore, a negative sign for a coefficient denotes a positive association between the relevant variable and the REER.
2/ t-statistics in parenthesis

15. **The path of the equilibrium REER can be derived from the estimation results**. This is done by applying the coefficient estimates of the cointegrating relationship on the determinants of the equilibrium REER. To eliminate variations that arise from the short-run fluctuations in these determinants, the HP-filtered series of each of these determinants is used to estimate the equilibrium rate.



16. **The real effective exchange rate in 2007 appears to have been about 9 percent more appreciated than the estimated fundamentals-based equilibrium level**. However, the actual REER remains within the 95-percent confidence interval around the estimated equilibrium REER.[7] Therefore, the deviation from the equilibrium REER in 2007 is not statistically significant. The graph of the actual and equilibrium REER indicates that,

[7] The 95-percent confidence interval is derived by adding and substracting 2 times the standard error of the estimated equation.

according to this approach, the rupee was similarly overvalued in 1998. Relatively low inflation in 1999 and 2000 (annual average increases in the CPI of 5 and 6 percent, respectively) along with a 20 percent nominal depreciation of the rupee over 1999–2000 brought the rupee close to its equilibrium value in 2000.

17. **The ERER approach, as applied here, has several potential shortcomings,** and some caution in overly relying on this approach is therefore warranted. First, the implicit assumption of a zero average misalignment over the sample period may not hold. Second, the sample period may include structural breaks, making any long-run cointegrating relationship between the REER and key fundamentals questionable. For example, the prolonged war and the sudden increase in foreign inflows following the tsunami may have had an impact.

The External Sustainability (ES) Approach

18. **The ES approach involves estimating the adjustment in the REER needed to stabilize Sri Lanka's NFA to GDP ratio at a certain benchmark level**. The ES approach complements the ERER methodology by focusing on the relation between the sustainability of a country's external stock position and its flow current account position, trade balance, and real exchange rate. It consists of three steps. The first involves determining the current account balance to GDP ratio that would stabilize the NFA position at a given 'benchmark' value (the ES-norm).[8] The second step compares this ES-norm with the level of a country's underlying current account balance. And the third step consists of assessing the adjustment in the real effective exchange rate that is needed to close the gap between the underlying current account balance and the ES-norm.

19. **The ES approach suggests that a real depreciation of about 16 percent would be needed to stabilize NFA over the medium term.** Extending the database used by the IMF's Research Department (see Lane and Milesi-Ferretti (2006) for the data through 2004), Sri Lanka's NFA in 2007 is put at -51.4 percent of GDP. With the U.S. dollar value of Sri Lanka's GDP projected to grow by 7.6 percent annually, Sri Lanka could run a current account deficit of 3.6 percent of GDP without causing the NFA to GDP ratio to decline further. In staff's baseline scenario, the current account is projected at -7.5 percent of GDP in 2013. Using an elasticity of the current account balance with respect to the real exchange rate of 0.18,[9] the gap between the NFA-stabilizing current account deficit (3.6 percent of GDP) and the projected medium-term current account deficit (7.5 percent of GDP) could be closed by a 16 percent depreciation of REER. The estimated overvaluation of the rupee would be higher if the aim were to strengthen NFA from its present low level.

[8] It is common to take last year's value of the NFA/GDP ratio as the benchmark.
[9] This elasticity is calculated using CGER import and export volume elasticities along with Sri Lanka's 2007 ratios of imports and exports of goods and services to GDP.

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