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Lebanon: Selected Issues

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LEBANON

Selected Issues

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Approved by the Middle East and Central Asia Department

April 19, 2006

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I. OVERVIEW

1. **The four papers below helped inform the Article IV consultation discussions** in regard to the evolution of macroeconomic vulnerabilities in Lebanon (first paper), interest rate determination (second paper), the debt sustainability assessment (third paper), and the scope for competitiveness gains to sustain growth throughout the process of fiscal adjustment (fourth paper).[1]

2. **The first paper provides an update of the vulnerability assessment carried out for the 2004 Article IV consultation based on the balance sheet approach.** The main conclusions are that: (i) the solvency of the state and the high mutual exposure between the government and the domestic banking system remain the key vulnerabilities (distress in one of these sectors would rapidly be transmitted to the other one); and (ii) balance sheet risks have generally increased since end-2003.

3. **The second paper explores interest rate determination in Lebanon, and in particular the strength of the link to international interest rates, and thus exposure to international interest rate shocks.** The econometric investigation confirms that the level of gross international reserves, government debt, and liquidity conditions are key determinants of domestic interest rates, all with the expected signs. Domestic interest rates also react to movements in international dollar interest rates. However, the pass through from international interest rates, while significant, is found to be less than unity. Factors dampening the linkage to international interest rates may include changes in investor preferences over the period (not captured by fundamentals) and some form of home-bias, reflecting Lebanon's relatively stable and dedicated investor base.

4. **The third paper summarizes the methodology used to derive confidence intervals around the path of the debt ratio in the staff's adjustment scenario**, as part of the staff's debt sustainability analysis presented in the IMF Country Report No. 06/201. It builds on the observed volatility of interest rates and GDP growth shocks to derive a probability distribution for the debt ratio, given a certain fiscal policy path.

5. **The fourth paper provides an assessment of Lebanon's competitiveness from both a macro and microeconomic perspective, with a view to identifying possible sources of competitiveness gains over the medium term.** The main conclusions are that, while there are no immediate concerns about competitiveness in Lebanon, structural and institutional reforms are key to improving the growth potential of the Lebanese economy and protecting external sustainability over the medium term. Competitiveness indicators based on business surveys show that factors related to governance and the legal and regulatory framework lag behind those of other countries in the region, and there appears to be considerable scope for competitiveness gains from lowering the cost of doing business.

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[1] The papers on competitiveness and interest rate determination were presented to the authorities at a seminar at the Banque du Liban in Beirut on October 27, 2005.

II. Balance Sheet Analysis of Lebanon's Vulnerabilities[2]

6. **This paper uses the balance sheet approach to assess the recent evolution of Lebanon's financial vulnerabilities.** The analysis follows up on the work presented in the selected issues and statistical appendix paper of the 2004 Article IV consultation.

7. **The balance sheet assessment of financial vulnerabilities is based on the construction of a matrix of intersectoral financial claims.** This matrix is then used to assess the currency and maturity positions of each economic sector. The objective is to identify potential systemic risks, including foreign exchange, rollover, and interest-rate risks. For this purpose, the economy is divided into the following four sectors: the *Government*, the *Banque du Liban (BdL)*, the *Private Financial Sector (PFS)*, the *Private Non-Financial Sector (NFS)*, and the *Rest of the World (ROW).*[3] By construction, the sum of the domestic sectoral net positions (government, central bank, financial sector, plus non-financial sector) equals the country's net position vis-à-vis the rest of the world.

8. **The main conclusion from the analysis is that the principal vulnerabilities of the Lebanese economy are the solvency of the state, on the one hand, and the high mutual exposure between the government and the domestic banking system, on the other hand.** This implies that distress in one of these sectors would rapidly be transmitted to the other. The analysis also shows that balance sheet vulnerabilities have generally increased since end-2003.

A. The Balance Sheet of The Public Sector

9. **The size of Lebanon's government debt raises solvency concerns (Figure II.1).** The net debt of the government, at $34.8 billion or 158 percent of GDP in December 2005, remains on an ascending path. The gap between the primary surplus and the debt-stabilizing primary surplus has narrowed in recent years (Figure II.2), mostly on account of a decline in the interest bill, but this is likely to be reversed as zero-interest loans received in the context of Paris II mature in 2006.

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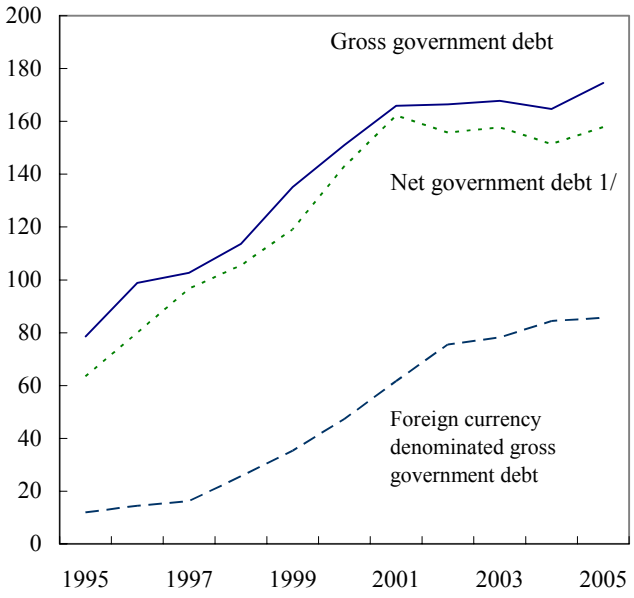
[2] Prepared by Juan Solé, Julian di Giovanni, and Edward Gardner.

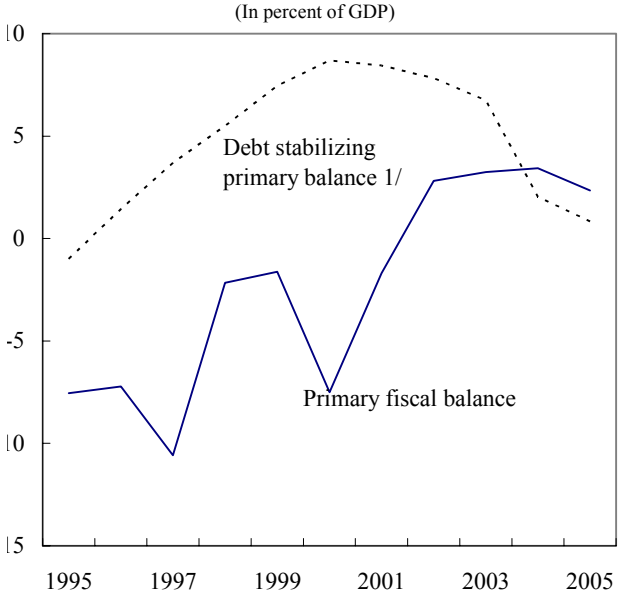
[3] The detailed matrix containing each sector's assets and liabilities for December 2003, December 2004, June 2005, and December 2005 are presented in Tables II.A.1 through II.A.4 respectively.

Figure II.1. Lebanon: Government Debt
(In percent of GDP)



Source: Lebanese authorities.
1/ Gross government debt minus central government deposits.

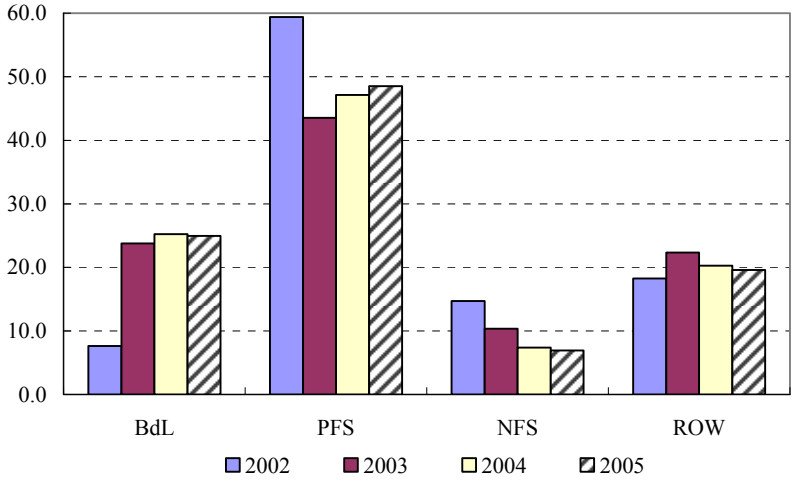
Figure II.2. Lebanon: Primary Fiscal Balance and Debt-Stabilizing Primary Fiscal Balance
(In percent of GDP)



Source: Lebanese authorities; and Fund staff estimates.
1/ Estimated using the implicit interest rate prevailing in that year and a centered five-year moving average of growth and inflation.

10. **A look at the distribution of debt by creditor highlights the high dependence of the government on domestic bank financing, as well as increased reliance on central bank financing since 2002 (Figure II.3).** Out of total government liabilities of $38.5 billion at end-2005, $18.7 billion (48.5 percent of the total) were held by the private financial sector. This share has come down considerably since 2002, at the expense of greater central bank intermediation. The counterpart to the increase in central bank financing has been an even larger increase in commercial bank claims on the central bank, notably in the form of long-term certificates of deposit.

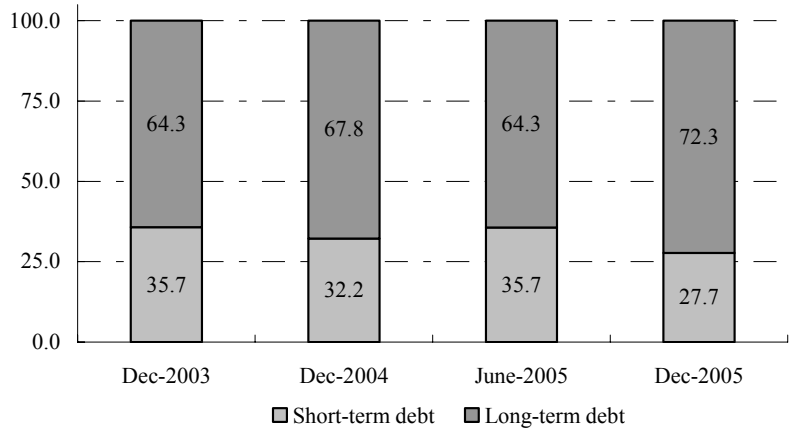
Figure II.3. Lebanon: Government Creditors
(In percent of total debt)



Sources: Lebanese authorities; and Fund staff estimates.

11. **The high dependence on bank financing implies that rollover risk is linked as much to the stability of the deposit base as to the maturity structure of government debt.** The share of short-term debt in total government debt stood at 28 percent (equivalent to 48 percent of GDP) at end-2005 (Figure II.4). With banks holding most of the market-held debt, rollover risk is linked closely to the rollover of the banks' own liabilities (largely in the form of short-term deposit). Nonetheless, the decline in short-term debt has reduced the government's exposure to interest rate risk.

Figure II.4. Lebanon: Maturity Structure of Government Debt
(In percent of total governmnet debt)



Sources: Lebanese authorities; and Fund staff estimates.

12. **The public sector's (government and BdL) net foreign currency position grew increasingly negative in both 2004 and 2005 (see Table II.1).**[4] Financial pressures in the first half of 2005 caused net foreign currency liabilities to rise to $17.0 billion as of June 2005. These liabilities have since declined, but, at $15.2 billion at end-2005, they still stand substantially above the level of end-2003 ($8.6 billion). The deterioration of the public sector's foreign exchange position reflects essentially the domestic non-financial sector's increased preference for dollar assets, i.e., dollar deposits.

13. **Although the public sector's gross liquid foreign exchange reserves have increased since 2003, its net liquid foreign currency position has worsened (see Table II.2)** From a comfortable long net liquidity position of $7.5 billion in December of 2003, the public sector has seen its net liquidity position decline to –$0.7 billion at end-2005. This weakening reflects both a bunching of government dollar maturities in 2006 (which increases U.S. dollar short-term debt at end-2005), and an increase in the short-term dollar liabilities of the central bank.

[4] A comprehensive pre-Paris II analysis is not possible due to the lack of comparable data. Nevertheless, the figures for December 2002 are largely indicative of the situation prior to the November 2002 Paris II conference, given that most of the external official financing disbursements took place in 2003.

Table II.1. Lebanon: Foreign Currency Positions 1/
(In billions of U.S. dollars)

	Public Sector (government + BdL)	Private Financial Sector	Non-Financial Private Sector	ROW
		Position in December 2005		
Assets	14.6	48.0	34.3	20.2
Liabilities	-29.8	-43.9	-15.5	-27.9
Net position	-15.2	4.1	18.8	-7.7
		Position in June 2005		
Assets	12.5	46.2	33.5	19.3
Liabilities	-29.5	-42.0	-15.4	-24.5
Net position	-17.0	4.2	18.1	-5.2
		Position in December 2004		
Assets	13.5	44.4	31.3	20.5
Liabilities	-26.1	-41.0	-15.5	-27.1
Net position	-12.5	3.3	15.8	-6.6
		Position in December 2003		
Assets	14.1	37.6	29.7	20.3
Liabilities	-22.7	-36.5	-17.8	-24.7
Net position	-8.6	1.1	12.0	-4.4
		Position in December 2002		
Assets	8.3	35.3	28.8	13.8
Liabilities	-18.9	-33.7	-15.0	-18.6
Net position	-10.6	1.5	13.8	-4.8

Sources: Banque du Liban, Ministry of Finance; and Fund staff estimates.

1/ By construction, net positions sum to zero.

14. **Increased deposit dollarization has been a source of risk for the public sector's balance sheet.** In periods of uncertainty, depositors tend to convert their Lebanese pound (LL) deposits into dollar deposits, putting pressure on banks to cover the resulting foreign exchange mismatch by liquidating government LL securities and acquiring dollar assets. Since the government cannot accommodate this changed currency preference instantaneously, the central bank typically intervenes by swapping LL government paper for U.S. dollar deposits at the central bank. This operation helps contain capital outflows by banks who would otherwise place U.S. dollar assets abroad. The net effect is a deterioration in the net foreign exchange position of the sovereign. Such was the experience, for instance, in the first half of 2005.

Table II.2. Lebanon: Foreign Currency Liquidity 1/
(In billions of U.S. dollars)

	Public Sector (government + BdL)	Private Financial Sector	Non-Financial Private Sector	ROW
		Position in December 2005		
Liquid assets	14.6	24.9	35.5	14.2
Short-term liabilities	-15.3	-43.8	-2.1	-27.9
Net position 2/	-0.7	-18.9	33.4	-13.7
		Position in June 2005		
Liquid assets	12.5	22.8	33.4	13.4
Short-term liabilities	-13.5	-41.9	-2.2	-24.5
Net position 2/	-1.0	-19.1	31.2	-11.1
		Position in December 2004		
Liquid assets	13.5	21.9	30.6	14.7
Short-term liabilities	-10.3	-40.9	-2.4	-27.1
Net position 2/	3.2	-19.0	28.2	-12.4
		Position in December 2003		
Liquid assets	14.1	15.4	29.1	10.6
Short-term liabilities	-6.5	-36.5	-1.4	-24.7
Net position 2/	7.5	-21.1	27.7	-14.1
		Position in December 2002		
Liquid assets	8.3	12.9	27.7	8.7
Short-term liabilities	-4.7	-33.6	-1.4	-18.6
Net position 2/	3.6	-20.7	26.4	-9.9

Sources: Banque du Liban, Ministry of Finance; and Fund staff estimates.

1/ Net foreign currency liquidity is defined as the difference between short-term foreign currency assets and short-term foreingn currency liabilities from Tables II.A.1-II.A.4.

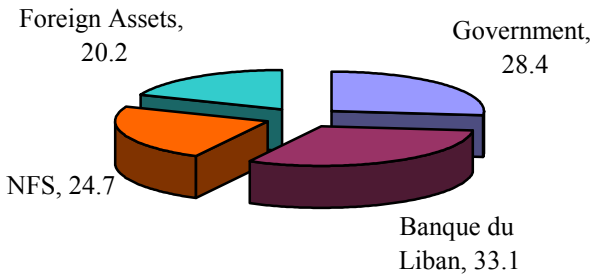
2/ By construction, net positions sum to zero.

B. The Balance Sheet of the Private Financial Sector

15. **The principal source of risk for the private financial sector stems from its high exposure to the sovereign (see Figure II.5).** Commercial banks display a high concentration of sovereign assets (government and central bank) in their portfolio. In December 2005, the total exposure of banks to the sovereign was 61.6 percent of total assets (28.4 percent in government debt and 33.1 percent in claims on the BdL, including certificates of deposits). Some market participants see exposure to the central bank as being less risky than exposure to the government: whereas claims on the government carry an outright risk of default, claims on the central bank in domestic currency can always be honored (albeit at the cost of

inflation), and claims in foreign exchange are backed by the central bank's own international reserves. In a systemic sense, however, the distinction between central bank risk and government risk is less clear. Particularly in a situation of stress, the government might exercise a claim on central bank international reserves ahead of the banks, and the central bank might resort to inflation to erode the value of government domestic currency liabilities to avoid an outright default. While the prominent role played by the banking sector in providing financing to the government (see above) creates vulnerabilities for banks, it also creates strong incentives for the banks to roll over government debt in order not to jeopardize the financial viability of their main debtor. In this sense, the risks of a government debt-cum-banking crisis are tightly interwoven.

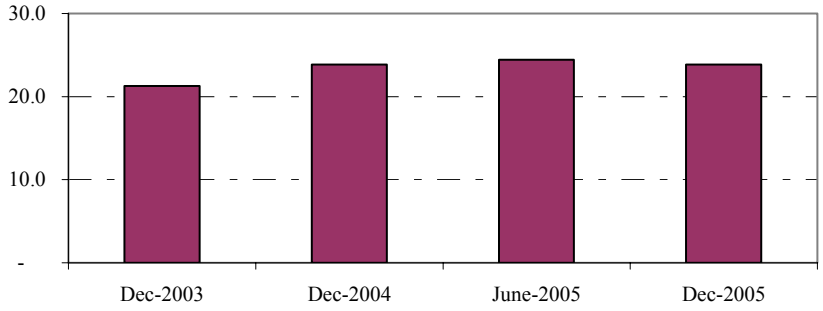
Figure II.5. Lebanon: Composition of Assets of Commercial Banks
(In Percent of Total Assets, End December 2005)



Sources: Lebanese authorities; and Fund staff estimates.

16. **Since 2003, the financial sector has strengthened its net foreign currency position (see Table II.1).** The sector's net position improved from $1.1 billion in 2003 to $4.1 billion by December 2005, as the increase in foreign currency denominated assets (by $10.4 billion) outpaced the increase in foreign currency liabilities. Of this increase, $4.3 billion was in the form of higher deposits in correspondent banks abroad, while the rest was mostly accounted for by higher dollar claims on the government and the central bank. As a result, the share of claims on the sovereign in total foreign currency assets has increased from 21.3 percent of total foreign currency denominated assets in December 2003 to 23.9 percent in December 2005 (Figure II.6). The long foreign currency position of the financial sector reduces its direct exposure to exchange rate risk, but indirect exposure remains substantial in the form of credit risk to the unhedged domestic private sector which has borrowed heavily in foreign currency.

Figure II.6. Lebanon: Banks' Foreign-Currency Exposure
to the Sovereign
(In Percent of Total Foreign-Currency Assets)



Sources: Lebanese authorities; and Fund staff estimates.

17. **The net liquid foreign currency position of the private financial sector has improved slightly, thus improving the sector's foreign currency maturity mismatch.**[5] Still, the existing maturity mismatch continues to represent a risk that could be transmitted to the public sector through contingent claims on reserves (Table II.2). Compared with 2003, the financial sector has reduced its maturity mismatch in foreign currency from a net position of –$21.1 billion in December of 2003 to –$18.3 billion in December 2005. The liquidity coverage of foreign exchange deposits, which at 58.3 percent is relatively high by international standards, constitutes a key element of confidence in the banking sector. Liquid foreign currency assets are held at the central bank ($9.9 billion) and in correspondent banks abroad ($10.5 billion). Bank decisions as to whether to use foreign assets or central bank deposits as a first line of defense in the event of deposit withdrawals is an important determinant of the behavior of gross international reserves. During the financial pressures of early 2005, banks initially reacted to deposit withdrawals by liquidating government paper, while continuing to increase (albeit marginally) their foreign exchange holdings abroad. Starting in April, banks moved a part of these foreign exchange holdings to the central bank to take advantage of higher rates of remuneration.

C. The Balance Sheet of the Private Non-Financial Sector

18. **The foreign currency position of the private non-financial sector has improved since the end of 2003.** Its long foreign currency position increased from $12.0 billion in 2003 to $18.7 billion in December 2005. Similarly, the short-term long position also widened, during the same period, from $27.7 billion to $32.7 billion.

19. **Despite its overall long position in foreign exchange, subgroups of the private non-financial sector face large currency mismatches, the cost of which could be transmitted to the public sector in the event of a depreciation of the Lebanese pound.** The heterogeneous nature of the sector means that foreign exchange assets and liabilities are distributed very unevenly across households and enterprises. The 2001 Financial System Stability Assessment indicated that individual borrowers, as well as sub-sectors that rely on

[5] The foreign currency maturity mismatch is measured by the net foreign currency liquidity position.

local currency revenues, such as construction, trading, and services, face considerable exposure to exchange rate risk, and that a large depreciation could force some of these businesses and households into bankruptcy. The adverse impact on output would compound the problem. A large amount of corporate defaults, in turn, would weaken the balance sheet of banks and create pressures on the government for a financial bail-out.

D. Conclusions and Policy Implications

20. **The analysis presented in this paper confirms that the main vulnerability for the Lebanese economy stems from the combination of two factors**: first, the high level of public debt, which raises solvency concerns, and second, the high codependence between the government and the banking system. This, in turn, implies that a key source of vulnerability lies in the rollover (and continued growth) of the deposit base, which is largely unrelated to whether depositors are residents or non-residents.[6]

21. **The funding base of the government is predominantly concentrated in the domestic banking system, which means that the government is ultimately exposed to the rollover risk of the deposit base.** The government could reduce this risk by developing and pursuing alternative sources of financing. The development of well functioning secondary markets would be an important element of this strategy.

22. **The banking system, in turn, is highly exposed to sovereign risk.** Public debt represents a high share of banks' total assets, and changes in public confidence in the government's ability to repay (or even service) its debt could create problems for the banks. A reduction in the government's borrowing requirement is a prerequisite to reducing this exposure, but the process will take time. The adoption of tighter prudential rules on sovereign exposure could also create incentives for greater diversification, and would help internalize the systemic costs of sovereign risk. As noted above, there might be a perception that banking sector vulnerabilities have been reduced by switching their asset composition from government paper to central bank CDs, but such a perception is not very meaningful in a systemic sense.

23. **By most standards, the banking system maintains a high level of liquidity, which serves to enhance the confidence of depositors and the stability of the system.** The main risk for the system lies in a large scale and rapid withdrawal of deposits. The relevant liquidity buffer against such a risk is the international reserve position of the entire banking sector, including the central bank. By this standard, vulnerability to a deposit shock has increased only slightly, with the ratio of banking sector foreign exchange reserves to total deposits going from 38.9 percent in 2003 to 35.5 percent in December 2005.

24. **The severity of currency mismatches in the private sector cannot be appropriately assessed without more data**, and efforts in this direction could improve monitoring of banking sector risks.

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[6] The residency concept is very loosely defined. Moreover, there does not appear to be much behavioral difference between these two groups.

Table II.A.1. Lebanon: Sectoral Balance Sheet Matrix, December 2003

Holder of liability (Creditor)	*Govt.*	*BdL*	*PFS*	*NFS*	*ROW*	*Total*
(As of end-Dec 2003)	(In millions of U.S. dollars)					
Issuer of liability (Debtor)						
Government						
Total Liability		**7,937**	**14,526**	**3,676**	**7,270**	**33,410**
Short-term 1/		510	7,574	2,450	1,400	11,935
In local currency		510	6,618	2,321	858	10,307
In foreign currency		-	956	129	543	1,628
Medium-Long term		7,427	6,951	1,226	5,870	21,475
In local currency		5,418	1,543	616	77	7,653
In foreign currency		2,009	5,409	610	5,794	13,821
Banque du Liban (BdL)						
Total Liability	**2,193**		**20,550**	**2,176**	**135**	**25,053**
Short-term	195		10,428	2,173	135	12,931
In local currency	195		5,860	1,959	-	8,014
In foreign currency	-		4,568	214	135	4,917
Medium-Long term	1,997		10,122	3	-	12,122
In local currency	1,997		5,816	-	-	7,813
In foreign currency	-		4,306	3	-	4,309
Private Financial Sector (PFS)						
Total liabilities	**-**	-		**49,762**	**9,304**	**59,066**
Deposits & other short-term	-	-		49,724	9,304	59,028
in local currency	-	-		21,725	806	22,531
in foreign currency	-	-		27,999	8,498	36,496
Medium & Long-term	-	-		39	-	39
in local currency	-	-		-	-	-
in foreign currency	-	-		39	-	39
Equity	-	-		**3,605**	-	**3,605**
Private Non-financial Sector (PNFS)						
Total liabilities	-	-	**14,935**		**2,853**	**17,788**
Short-term	-	-	-		1,427	1,427
in local currency	-	-	-		-	-
In foreign currency	-	-	-		1,427	1,427
Medium and long-term	-	-	14,935		1,427	16,361
in local currency	-	-	2,463		1,427	-
in foreign currency	-	-	12,472		-	16,361
Equity (capital)	-	-	-		-	849
Rest of the World (ROW)						
Total liabilities	**-**	**14,051**	**9,910**	**746**		**24,707**
Direct investment	-	-	-	-		-
Official reserves	-	14,035	-	-		14,035
Debt securities	-	15	-	263		278
Equity securities	-	-	-	483		483
Other investments (loans)	-	-	9,910	-		9,910
Total	2,193	21,988	59,920	56,360	19,563	

Sources: Banque du Liban, Ministry of Finance; and Fund staff estimates.

1/ Based on remaining maturity that only includes amortization.

Table II.A.2. Lebanon: Sectoral Balance Sheet Matrix, December 2004

Holder of liability (Creditor)	*Govt.*	*BdL*	*PFS*	*NFS*	*ROW*	*Total*
(As of end-Dec 2004)	(In millions of U.S. dollars)					
Issuer of liability (Debtor)						
Government						
Total Liability		**9,052**	**16,898**	**2,641**	**7,270**	**35,861**
Short-term 1/		2,958	4,682	1,471	2,432	11,542
In local currency		2,958	3,491	1,274	1,367	9,091
In foreign currency		-	1,190	196	1,065	2,452
Medium-Long term		6,094	12,216	1,170	4,838	24,319
In local currency		4,108	4,614	597	(916)	8,402
In foreign currency		1,986	7,602	574	5,755	15,917
Banque du Liban (BdL)						
Total Liability	**2,835**		**20,242**	**2,446**	**129**	**25,652**
Short-term	545		13,712	2,446	129	16,832
In local currency	545		6,578	1,834	-	8,957
In foreign currency	-		7,134	612	129	7,875
Medium-Long term	2,290		6,530	-	-	8,820
In local currency	2,290		4,733	-	-	7,023
In foreign currency	-		1,798	-	-	1,798
Private Financial Sector (PFS)						
Total liabilities	**509**	-		**51,310**	**12,092**	**63,911**
Deposits & other short-term	509	-		51,210	12,092	63,812
in local currency	509	-		21,421	961	22,891
in foreign currency	-	-		29,789	11,132	40,920
Medium & Long-term	-	-		100	-	100
in local currency	-	-		-	-	-
in foreign currency	-	-		100	-	100
Equity	-	-		**3,603**	-	**3,603**
Private Non-financial Sector (PNFS)						
Total liabilities			**15,929**		**3,634**	**19,563**
Short-term	-	-	-		2,389	2,389
in local currency	-	-	-		-	-
In foreign currency	-	-	-		2,389	2,389
Medium and long-term	-	-	15,929		1,245	17,174
in local currency	-	-	2,830		1,245	4,076
in foreign currency	-	-	13,098		-	13,098
Equity (capital)	-	-	-		-	-
Rest of the World (ROW)						
Total liabilities	-	**13,537**	**13,548**	-		**27,085**
Direct investment	-	-	-	-		-
Official reserves	-	13,519	-	-		13,519
Debt securities	-	18	-	-		18
Equity securities	-	-	-	-		-
Other investments (loans)	-	-	13,548	-		13,548
Total	3,345	22,589	66,617	56,397	23,126	

Sources: Banque du Liban, Ministry of Finance; and Fund staff estimates.

1/ Based on remaining maturity that only includes amortization.

Table II.A.3. Lebanon: Sectoral Balance Sheet Matrix, June 2005

Holder of liability (Creditor)	*Govt.*	*BdL*	*PFS*	*NFS*	*ROW*	*Total*
(As of end-June 2005)	(In millions of U.S. dollars)					
Issuer of liability (Debtor)						
Government						
Total Liability		**10,603**	**15,444**	**2,910**	**7,103**	**36,060**
Short-term 1/		4,170	4,911	1,991	1,783	12,855
In local currency		4,170	3,739	929	758	9,596
In foreign currency		-	1,171	1,063	1,025	3,259
Medium-Long term		6,432	10,533	918	5,628	23,204
In local currency		4,554	3,240	621	(266)	8,148
In foreign currency		1,879	7,294	(11)	5,894	15,056
Banque du Liban (BdL)						
Total Liability	**2,647**		**22,121**	**2,509**	**113**	**27,390**
Short-term	225		15,205	2,509	113	18,051
In local currency	225		5,611	1,993	-	7,829
In foreign currency	-		9,593	516	113	10,222
Medium-Long term	2,422		6,917	-	-	9,339
In local currency	2,422		4,088	-	-	6,510
In foreign currency	-		2,829	-	-	2,829
Private Financial Sector (PFS)						
Total liabilities	**585**	-		**51,115**	**10,736**	**62,436**
Deposits & other short-term	585	-		51,010	10,736	62,331
in local currency	585	-		19,171	662	20,419
in foreign currency	-	-		31,839	10,073	41,912
Medium & Long-term	-	-		104	-	104
in local currency	-	-		-	-	-
in foreign currency	-	-		104	-	104
Equity	-	-		**3,568**	-	**3,568**
Private Non-financial Sector (PNFS)						
Total liabilities			**16,070**		**3,295**	**19,365**
Short-term	-	-	-		2,186	2,186
in local currency	-	-	-		-	-
In foreign currency	-	-	-		2,186	2,186
Medium and long-term	-	-	16,070		1,109	17,179
in local currency	-	-	2,822		1,109	3,930
in foreign currency	-	-	13,248		-	13,248
Equity (capital)	-	-	-		-	-
Rest of the World (ROW)						
Total liabilities	-	**12,455**	**12,055**	**-**		**24,509**
Direct investment	-	-	-	-		-
Official reserves	-	12,439	-	-		12,439
Debt securities	-	16	-	-		16
Equity securities	-	-	-	-		-
Other investments (loans)	-	-	12,055	-		12,055
Total	3,232	23,057	65,690	56,533	21,247	

Sources: Banque du Liban, Ministry of Finance; and Fund staff estimates.

1/ Based on remaining maturity that only includes amortization.

Table II.A.4. Lebanon: Sectoral Balance Sheet Matrix, December 2005

Holder of liability (Creditor)	*Govt.*	*BdL*	*PFS*	*NFS*	*ROW*	*Total*
(As of end-December 2005)	(In millions of U.S. dollars)					
Issuer of liability (Debtor)						
Government						
Total Liability		**9,606**	**18,680**	**2,669**	**7,552**	**38,507**
Short-term 1/		3,302	4,154	2,086	1,134	10,676
In local currency		3,302	2,434	92	149	5,977
In foreign currency		-	1,720	1,994	985	4,699
Medium-Long term		6,304	14,526	583	6,418	27,831
In local currency		4,450	6,939	1,859	384	13,632
In foreign currency		1,855	7,587	(1,276)	6,034	14,199
Banque du Liban (BdL)						
Total Liability	**4,141**		**21,768**	**2,455**	**107**	**28,470**
Short-term	1,176		15,659	2,455	107	19,396
In local currency	1,176		5,740	1,865	-	8,780
In foreign currency	-		9,919	590	107	10,615
Medium-Long term	2,965		6,109	-	-	9,074
In local currency	2,965		3,958	-	-	6,923
In foreign currency	-		2,151	-	-	2,151
Private Financial Sector (PFS)						
Total liabilities	**679**	-		**53,742**	**11,630**	**66,050**
Deposits & other short-term	679	-		53,684	11,630	65,992
in local currency	679	-		20,799	688	22,166
in foreign currency	-	-		32,884	10,941	43,826
Medium & Long-term	-	-		59	-	59
in local currency	-	-		-	-	-
in foreign currency	-	-		59	-	59
Equity	-	-		**4,019**	-	**4,019**
Private Non-financial Sector (PNFS)						
Total liabilities 2/			**16,225**		**3,119**	**19,344**
Short-term	-	-	-		2,117	2,117
in local currency	-	-	-		-	-
In foreign currency	-	-	-		2,117	2,117
Medium and long-term	-	-	16,225		1,002	17,226
in local currency	-	-	2,855		1,002	3,857
in foreign currency	-	-	13,369		-	13,369
Equity (capital)	-	-	-		-	-
Rest of the World (ROW)						
Total liabilities	-	**14,596**	**13,274**	**-**		**27,871**
Direct investment	-	-	-	-		-
Official reserves	-	14,589	-	-		14,589
Debt securities	-	7	-	-		7
Equity securities	-	-	-	-		-
Other investments (loans)	-	-	13,274	-		13,274
Total	4,819	24,203	69,947	58,866	22,407	

Sources: Banque du Liban, Ministry of Finance; and Fund staff estimates.

1/ Based on remaining maturity that only includes amortization.

III. Interest Rate Determination in Lebanon[7]

A. Introduction

25. **Since the end of the civil war in 1990, Lebanon has rapidly returned to its role as a preeminent regional banking center, successfully tapping into the pool of regional investors and the Lebanese diaspora.** As of end-2005, bank deposits stood at $57 billion (259 percent of GDP). The attractiveness of Lebanon's banking sector derives from its long tradition of safe banking backed by bank secrecy laws which have protected depositors from the risks of confiscation, and by an uninterrupted track record of the government and the central bank to honor their financial obligations. The tendency for regional capital to be intermediated through regional institutions after the attacks of September 11, combined with ample regional liquidity, are likely to have given the Lebanese banks a further boost.

26. **The open capital account, and the fact that depositors face alternative investment opportunities abroad, would suggest a close alignment of Lebanese interest rates to international rates, adjusted for risk, and thus a full pass through of external interest rate changes into domestic rates.** This paper provides empirical evidence of how in fact dollar and Lebanese pound (LL) interest rates are formed in Lebanon. The paper focuses on the three key interest rates in Lebanon—the rate on dollar-denominated sovereign paper (Eurobonds); the rate on foreign-currency deposits offered generally at a premium over LIBOR; and the rate on local currency deposits.

27. **One of the main objectives of the monetary authorities in Lebanon has been to maintain the exchange rate peg of the Lebanese pound to the U.S. dollar.** The Banque du Liban (BdL) conducts its monetary policy by defining two operational targets. First, the spread between foreign-currency deposit rates and those on international markets, which attracts capital to the country to finance the current account deficit. Second, the spread between local currency interest rates and dollar interest rates in Lebanon, to promote deposits in Lebanese pounds. These two spreads essentially measure banking sector risk and currency risk respectively, while the rate on sovereign paper measures sovereign risk.

28. **The empirical results show that the degree of pass-through from international benchmark rates to interest rates in Lebanon is substantial, but less than unity.** This suggests that other factors have influenced interest rates, such as unobserved changes in the risk premium and investor preferences as well as a 'home bias.' The paper also finds confirmation that government debt and gross reserves of the central bank have a statistically significant effect on interest rates, as does the availability of liquidity in the system.

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[7] Prepared by Tushar Poddar. This chapter is based on the IMF Working Paper 06/94 on "Interest Rate Determination in Lebanon," by Messrs. Poddar, Goswami, Solé, and Echévarria-Icaza.

29. **The rest of the paper is organized as follows.** Section B provides the theoretical background to understanding interest rate determination in Lebanon. Section C outlines the empirical strategy and discusses the variables used in the analysis. Section D looks at trends in interest rates in Lebanon over the last decade. Section E presents the main results, and Section F concludes.

B. Theoretical Background

30. **The theoretical literature on interest rate determination in emerging markets is based on the concept of arbitrage across financial assets, the trade-off between risk and return of an asset, and the effects of market liquidity on the return of an asset:**

- The concept of arbitrage across financial assets is captured by linking Lebanese interest rates to benchmark international rates such as the LIBOR or the U.S. T-bill rate. These (risk free) interest rates provide an anchor upon which other elements that affect interest rates (such as liquidity and default risk) can be incorporated into a particular econometric specification (see e.g., Kamin and Kleist, 1999; and Arora and Cerisola, 2001).

- Investors trading off risk and return will require a risk premium on account of default risk (by the sovereign or by banks) and exchange rate risk. These risks relate to the government's ability to service its growing debt and the central bank's ability to maintain the exchange rate peg. The two concepts are closely linked and are introduced through some of their fundamental determinants, namely the levels of government debt and of central bank international reserves.

- In addition, changes in liquidity conditions in a particular market can also affect interest rates. Increases in liquidity in a particular asset class can arise from a number of factors such as relatively cheap availability of global credit, increased risk in other foreign markets, and changes in the risk appetite of international investors among others. The degree to which changes in liquidity conditions affect interest rates depends, to a large extent, on the central bank's own policy response. Under a fixed exchange rate, as in Lebanon, an increase in the desired holdings of Lebanese assets is likely to lead to an easing of interest rate policy. A measure of liquidity conditions to capture these effects is proposed below.

C. Empirical Strategy

31. **Based on the discussion above, we consider regressions of the form,**

$$i_t = \alpha\left(i_t^*\right) + \beta Z_t + \varepsilon_t, \qquad \text{(III.1)}$$

where fluctuations in the interest rate on sovereign bonds/deposit rates is a function of the yield on comparable international rates, i_t^*, and macroeconomic variables, Z_t, that capture exchange rate risk, default risk, and liquidity effects.

Interest rates on Eurobonds

32. **Since 1995, the Lebanese government has been issuing dollar-denominated Eurobonds to cover part of its financing needs, and the interest rate spread between these bonds and U.S. treasury securities should reflect sovereign default risk.** We use two variables to capture the effect of sovereign risk on Eurobond interest rates—the level of public debt and gross official foreign exchange reserves. In the Lebanese context, a high level of reserves provides assurances that the government can service its debt in the short run in the event of liquidity constraints. [8]

Domestic foreign-currency deposit rates

33. **The spread between the interest rate on foreign-currency deposits (FCDs) and a benchmark rate such as LIBOR reflects banking sector risk.** Given the banking sector's high exposure to the sovereign and the systemic risks arising from sovereign risk, the same factors (public debt and international reserves) are expected to be key determinants of the interest rate spread. We also include other variables to measure risk factors. For country and banking system specific risks, we use the net foreign assets of the banking system, debt denominated in foreign currency relative to GDP, and the external current account balance. To measure liquidity factors, we use excess banking sector reserves held at the central bank, the deviation from trend of foreign-currency deposits, and the deviation from trend of broad money (M5).[9] Since a majority of short term deposits in foreign currency are under one month (about 65 percent of FCDs as of end-2004), we consider the one-month interest rate as the dependent variable.[10] For the benchmark, we use the one-month LIBOR rate to assess the pass-through from international rates to foreign-currency deposit rates in Lebanon. The independent variables are lagged one period to alleviate simultaneity problems.

Domestic local-currency deposit rates

34. **The spread between interest rates on local currency deposits and those on foreign-currency deposits reflects exchange rate risk.** Risk perceptions should, in turn, be affected by reserve adequacy indicators and other monetary and fiscal policy variables. Other things equal, a higher level of foreign currency reserves at the central bank should reinforce

[8] To capture changes in the global demand for emerging market paper, we also include the Emerging Market Bond Index (EMBI), but this variable turned out to be insignificant.

[9] Our measure of broad money, M5, includes non-resident deposits which account for about 15 percent of total deposits.

[10] About 90 percent of FCDs are under three months. We also used three-month rates with very similar results.

confidence that the exchange rate peg will hold under stress. However, one should be careful about making inferences on the direction of causality between international reserves and interest rates, since the central bank is likely to adjust interest rate policy in response to changes in the level of reserves, in which case causality would run from interest rates to reserves.

35. **Exchange rate risk is also affected by sovereign risk since concerns about the government's solvency can cause a shortfall in financing which increases the risks of an exchange rate depreciation.** To measure sovereign risk, we use as independent variables the debt to GDP ratio, and the debt in foreign currency to GDP ratio. As other risk factors, we also include the external current account balance, net foreign assets of the banking system, and dollarization. Causality between the degree of dollarization and the exchange rate premium can go in either direction. A high spread vis-à-vis FCDs can encourage de-dollarization, but a high degree of dollarization may also reflect market perceptions about exchange rate risk which, in turn, require higher domestic currency interest rates. We lag independent variables one period to alleviate the endogeneity problem.

36. **We use various indicators of liquidity conditions:** deviation from trend of total deposits, the deviation from trend of LL deposits,[11] excess reserves at the central bank, and the spread between one-month FCDs and LIBOR.

D. Trends in Interest Rates

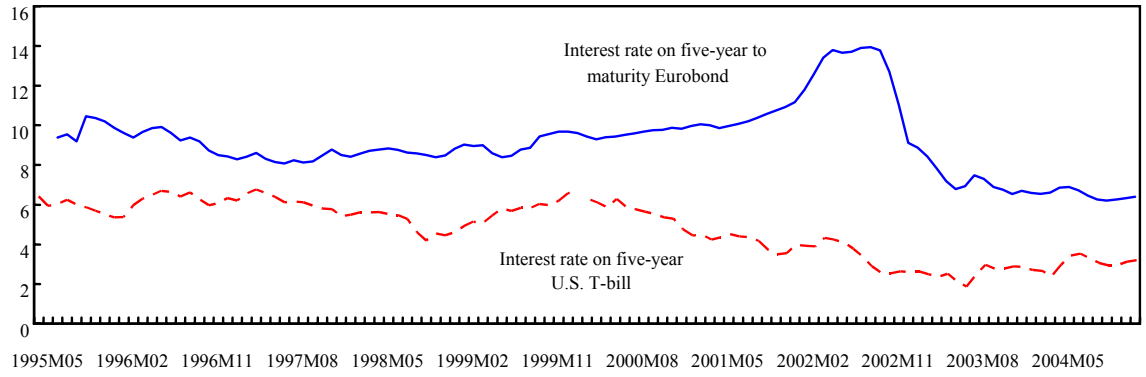
37. **Figure III.1 Panel A plots the yield on five-year Lebanese Eurobonds[12] and that on (nearly risk-free) five-year U.S. paper.** As mentioned above, the differential can be taken as a measure of sovereign risk. As such, sovereign risk fluctuated in the 2–5 percentage point range in 1995–99. In 2000, while rates on five-year U.S. treasuries started falling, the Eurobond rate kept rising. The spread increased sharply starting from mid-2001, peaking at 10.9 percentage points in September 2002. During this period, the government was finding it difficult to finance its deficit as deposit inflows turned negative, and gross international reserves declined (Figure III.2). The unsustainable situation was reversed by the Paris II donors conference in November 2002 The promised support to the government brought sovereign risk down sharply in the last quarter of 2002. Since then, spreads have come down to under 200 basis points, partly reflecting the overall decline in emerging market bond spreads.

[11] We also tried various measures to capture global liquidity, including the EMBI spread, but found them to be insignificant in explaining any variation in Lebanese interest rates.

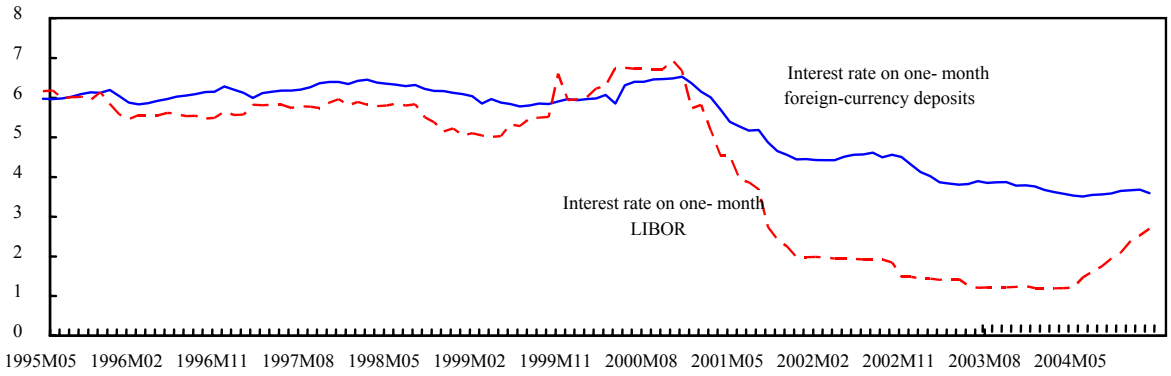
[12] A series for the period 1995–2003 was constructed by splicing various five-year issues.

Figure III.1. Lebanon: Interest Rates, May 1995–January 2005

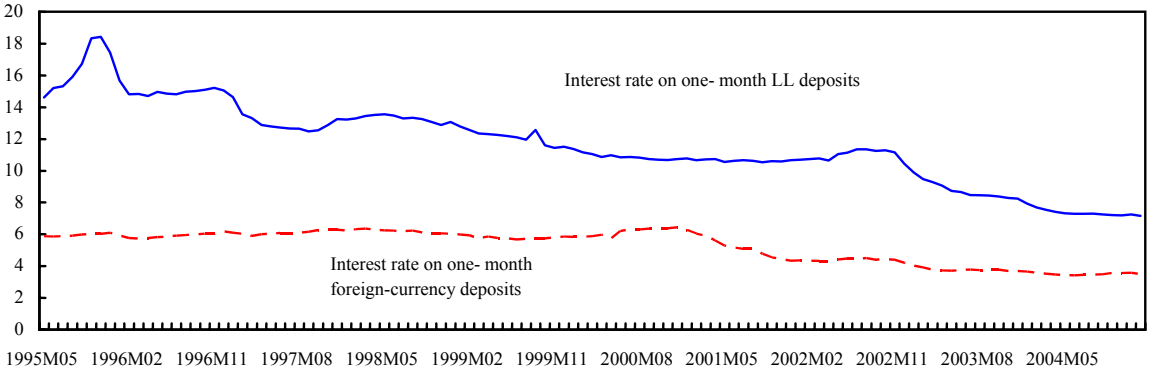
A. Interest Rate on Five-Year to Maturity Eurobond and Five-Year U.S. T-Bill



B. Interest Rate on One-Month Foreign-Currency Deposits and One-Month LIBOR



C. Interest Rate on One-Month Lebanese Pound Deposits and One-Month Foreign Currency Deposits



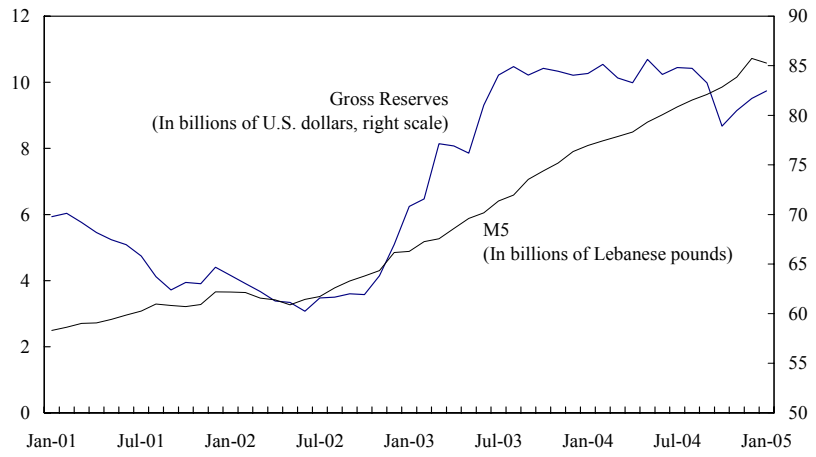
Sources: Banque du Liban, Financial Forecast Center.

38. **The factors that could have potentially contributed to the increase in the spread in the period leading up to the Paris II conference are:** a weakening of underlying macroeconomic fundamentals in Lebanon, a shortage of available liquidity, a lagged reaction of Lebanese interest rates to the drop in U.S. interest rates, or a less-than-complete pass-through of U.S. interest rate changes. The latter could reflect a number of factors, including "home bias" and changes in investor preferences not captured by our measures of fundamental and liquidity factors.

39. **Figure III.1 Panel B, shows the spread between one-month U.S. dollar deposits and LIBOR of a corresponding maturity.**[13] As one might expect, the FCD rate exceeds the LIBOR rate throughout, except for a brief period in 2000, when LIBOR rose rapidly. The spread began rising in 2001, as international dollar interest rates fell faster than domestic dollar rates. This observation does not imply that the widening of the spread has caused the faster dollar interest rate reduction, as underlying risk factors may have been increasing at the same time.

40. **The spread between pound-denominated deposits and FCDs, a measure of exchange rate risk, is plotted in Figure III.1 Panel C.** This risk fluctuated substantially over 1995–2003. A spike was recorded in late 1995, reflecting a period of heightened political tension related to the extension/renewal of the president's term. Excluding this episode, exchange rate risk recorded a trend decrease until late 2000 (4.3 percent for one-month deposits). It then crept up again to 6.9 percent in mid-2002, decreasing again thereafter. The pattern since end-2000, follows that of sovereign risk and is likely to reflect the fact that public finance dynamics constitute a dominant factor for the credibility of the exchange rate anchor.

Figure III.2. Lebanon: Gross Foreign Exchange Reserves and M5, May 1995–January 2005



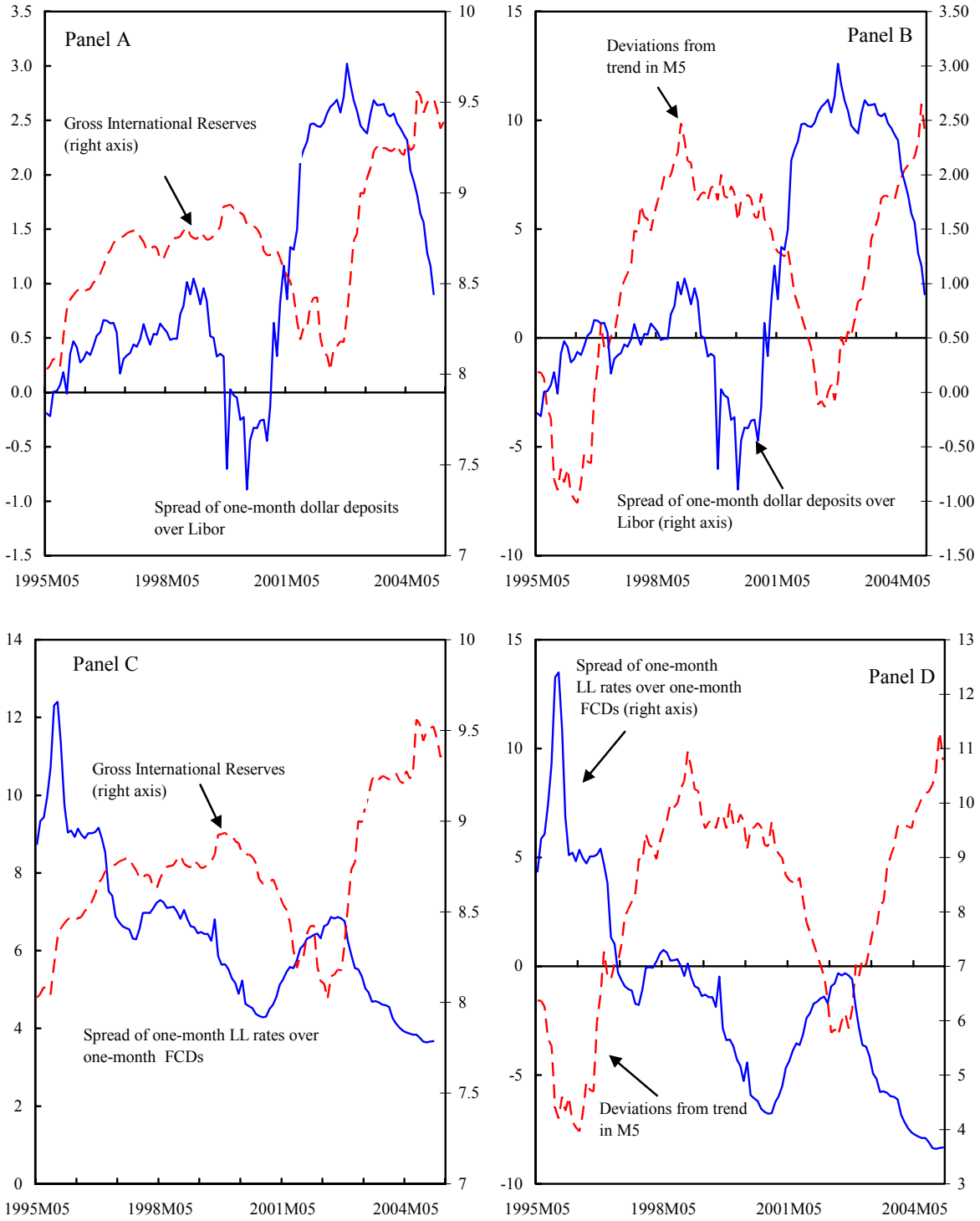
Source: Lebanese authorities; and Fund staff calculations.

[13] A comparison of three-month and six-month rates yields qualitatively similar results. We show one-month rates because most FCDs in Lebanon have a maturity of less than one month.

41. **Figure III.3 plots spreads on dollar deposits over LIBOR and LL deposits over dollar deposits against gross reserves and deviations from trend in broad money.** In 1995–96, broad money was below trend due to the tensions regarding the renewal of the president's term, and dollar deposit spreads were rising (Panel B). Then, money growth picked up but no discernible pattern was seen in spreads. Starting from late 2000, increasing financial market stress led to rising FCD rates and spreads, and a slowing down of money growth. In addition, liquidity conditions in world markets became tight in 2001, after the technology bust in the United States and Europe. The more relaxed monetary conditions in the United States and Europe starting from 2001, followed by an easing of domestic financial tensions after Paris II, led to declines in spreads. Deposit growth resumed in late 2001 inspired by the confidence effects of Paris II. Since then, broad money growth has been sustained, while spreads have fallen. The figure, therefore, suggests that deviations from trend in broad money can be taken as a good indicator of the availability of liquidity, and that there is a negative relationship with spreads, more discernibly since late 2000.

42. **Figure III.3 Panel C plots spreads on LL deposit rates over dollar deposits, and gross international reserves.** Until mid-2001, gross reserves were generally increasing while spreads were falling. Financial stress in 2001–02 led to falling reserves, while spreads increased. Since Paris II, foreign exchange reserves have risen markedly, while spreads have come down considerably. A similar pattern is observed in Panel D with respect to broad money. Thus, the panels suggests a negative relationship between reserves and deviations from trend in broad money on the one hand, and spreads on LL deposits on the other.

Figure III.3. Lebanon: Interest Rate, Deviations from Trend of M5 (in percent) and Gross International Reserves (in logs), May 1995–January 2005



Sources: Lebanese authorities; and Fund staff estimates.

E. Results[14]

Eurobond yields

43. **We ran equation (1) as a Vector Error Correction model** to determine the long-run relationship between Eurobond yields, a benchmark rate proxied by the interest rate on five-year U.S. T-bills, and sovereign risk captured by foreign exchange reserves and foreign-currency debt. We used monthly data from May 1995 to January 2005. The long-run relationship is given by

$$\underset{}{i_t^{eb}} = \underset{(0.2)}{0.7\, i_t^{ust5y}} - \underset{(0.3)}{6.5\, gir} + \underset{(0.2)}{1.4\, fcpvtdebt} + 49.1 \qquad \text{(III.2)}$$

where i_t^{eb} is the yield on five-year Eurobonds, i_t^{ust5y} is the interest rate on five-year U.S. T-bills (both in percent), *gir* is the logarithm of official foreign exchange reserves in millions of U.S. dollars; and *fcpvtdebt* is the logarithm of privately held foreign currency debt in millions of U.S. dollars. Standard errors are presented below the coefficients.

44. **The results suggest that an increase of 100 basis points in the U.S. T-Bill rate would result in an increase of 70 basis points in Eurobond yields**. At the same time, a one percent increase in the foreign currency debt (about $75 million based on the average value over the period) would increase yields by 1.4 basis points, while a one percent increase in international reserves (about $65 million based on the average value over the period) would reduce Eurobond yields by 6.5 basis points.

Foreign-currency deposit rates

45. **Using the same estimation technique, the long-run determinants of foreign-currency deposit rates are estimated as follows**:

$$\underset{}{i_t^{fcd1m}} = \underset{(0.01)}{0.4\, i_t^{lib1m}} - \underset{(0.006)}{0.1\, devM5(-1)} - \underset{(0.1)}{0.6\, gir(-1)} - \underset{(0.74)}{7.7\, dzn\,(-1)} + 41.8, \qquad \text{(III.3)}$$

where i_t^{fcd1m} is the interest rate on one-month dollar deposits, i_t^{lib1m} is the one-month dollar LIBOR, *devM5* is the deviation from trend of broad money (M5), *gir* is gross international reserves, and *dzn* is the dollarization ratio, i.e., the ratio of foreign currency deposits to total deposits. The sample period is November 2000 to January 2005, as a structural break was observed in the data in October 2000.

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[14] See the accompanying working paper, Poddar and others (2006), for details on estimation strategy, diagnostic tests, VECM results, and a discussion of econometric issues. We employed the Johansen co-integration technique to check for co-integration and found only one co-integrating vector for each VEC model. The adjusted R-squared for equation (III.2) was 0.42, for equation (III.3) was 0.59, and for equation (III.4) was 0.41.

46. **Overall, our results suggest that there was a pass-through of about 40 percent from LIBOR to FCDs over the period November 2000 to January 2005.** An increase in M5 from trend by one percent leads to a reduction in FCD rates by 0.1 basis points. A one percent increase in international reserves leads to a decrease of 0.6 basis points, while an increase of 1 percentage point in the dollarization ratio decreased FCD rates by 7.7 basis points. All other variables related to banking sector risk and liquidity were not significant, and are not reported here.

Domestic currency interest rates

47. **The dependent variable is taken to be the rates on 1-month deposits in Lebanese pounds**, as a majority of deposits are under 1 month. In this case, the benchmark rate is taken to be the equivalent FCD rate. For consistency with the previous equation, the estimates are based on the same sample period of November 2000 to January 2005.

48. The VEC model yields the following long-term relationship:

$$i_t^{lld1m} = \underset{(0.02)}{0.9}\, i_t^{fcd1m}(-1) - \underset{(0.009)}{0.2}\, devM5(-1) - \underset{(0.09)}{1.0}\, gir(-1) + 15.4 \qquad \text{(III.4)}$$

49. **This relationship can be interpreted as reflecting a combination of market arbitrage and the central bank's reaction function.** Higher reserves and higher liquidity are associated with lower pound deposit rates, while an increase in the FCD rate has a positive impact on pound deposit rates, albeit less than one. Because an increase in dollar interest rates has a large adverse effect on public finances, one would expect that it would also undermine confidence in the exchange rate peg, with a resulting increase in the exchange rate risk premium. We find, however, that controlling for the effects of gross reserves and deviations from trend of broad money, a unit increase in FCD rates causes a less than unit increase in local currency rates.

F. Conclusions

50. **This study shows that, although global benchmark interest rates are an important element in the determination of interest rates in Lebanon, the pass-through is lower than unity, which is at odds with the findings in some studies for other emerging markets.** For example, Arora and Cerisola (2001) find that for nearly all emerging markets in their sample, a unit change in long-term U.S. rates causes a higher than unit increase in sovereign bond rates. Given the openness of the capital account and the presumed sophistication of large depositors, the degree of pass through is surprisingly low—0.7 for Eurobond rates, 0.4 for FCD rates, and slightly less than unity for LL deposits. This result could be driven by unobserved changes in risk premia and investor preferences over this

period that are not captured by our data on fundamental risk factors.[15] It could also be attributed to a home-bias effect resulting from a dedicated Lebanese investor base which does not trade actively across asset classes. This explanation seems to be validated by the fact that the pass-through is greater for Eurobonds than for FCDs: although market Eurobonds are for the most part held by domestic banks, they are also traded on international markets, and are more likely to be held by non-Lebanese investors. One would therefore expect arbitrage on Eurobonds to be more active than on FCDs.

51. **Despite the absence of a full pass-through in the period under consideration, the impact of changes in international interest rates on the government's borrowing costs remains substantial.** Given the relatively short average maturity of the debt, an upward shift in the U.S. yield curve would have a relatively quick and substantial negative impact on the budget

52. **This study also confirms that interest rates in Lebanon are affected, as one would expect, by market liquidity conditions, as well as measures of government solvency and central bank liquidity.** The negative relationship between international reserves and interest rates can help shed some light into the debate about the optimal level of international reserves, which depends on balancing the holding cost of reserves against the benefits deriving from lower exposure to shocks (as reflected in lower spreads).

[15] See also Obstfeld and others (2005) and Shambaugh (2004).

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IV. A Stochastic Approach to Debt Sustainability[16]

53. **There is agreement that debt sustainability should be the guiding principle of any fiscal adjustment strategy for Lebanon, but what this means at an operational level remains somewhat elusive.** For years now, Lebanon has been able to sustain a government debt-to-GDP ratio which is well beyond levels generally deemed sustainable. The key enabling factor has been the ability of the domestic commercial banks to tap into a vast pool of expatriate and regional investors. The rollover and buildup of their deposits in Lebanese banks has enabled the banks to meet the government's large gross financing requirements—$14.4 billion in 2005, or 65 percent of GDP. However, the fact that the market has absorbed—and may continue to absorb—increases in debt does not make debt sustainable over the medium and long run.

54. **There is no simple definition of debt sustainability.**[17] In the theoretical literature, debt sustainability is often defined by the government's ability to pursue its fiscal policy stance into the distant future without threatening solvency.[18] In more formal terms, debt may be deemed sustainable as long the government operates within its intertemporal budget constraint. The difficulty in turning this principle into an operational guideline stems from the fact that the intertemporal budget constraint depends to a large extent on factors that are difficult to quantify, such as future capacity to tax or cut spending. A common practical approach is to define debt sustainability in terms of the fiscal policy stance that keeps the debt-to-GDP ratio on a stable (or declining) path over the medium term. This is, for example, the criterion underlying the debt sustainability analysis (DSA) carried out in Fund surveillance. Another approach defines debt sustainability based on thresholds beyond which countries are prone to suffer debt crises (e.g., Reinhart and others, 2003; and Manasse and Roubini, 2005). This approach anchors policies to specific debt-to-GDP targets. Such targets have been proposed as part of some policy frameworks, such as the EU's Stability and Growth Pact, and several fiscal responsibility laws.

55. **Lebanon will have to reduce its very high debt-to-GDP ratio, but there is a question of speed and target level.** Lebanon's debt-to-GDP ratio appears unsustainable by most definitions. As such, the key objective of fiscal policy should be bring about a decline in the debt-to-GDP ratio, a process that the government intends to pursue in its forthcoming reform strategy. Still, a projected decline in the debt-to GDP ratio is a necessary but not sufficient condition for debt sustainability on at least two counts:

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[16] Prepared by Julian di Giovanni and Edward Gardner.

[17] For example, Chalk and Hemming (2000).

[18] Solvency is typically defined as the absence of outright default or coercive restructuring, but does not necessarily exclude the option of inflating away government debt (cf. Celasun and others, 2006). This option is, of course, limited in Lebanon by extensive dollarization of debt.

- Even if debt is declining, **a high *level* of debt and its rollover create a risk that a liquidity shock can unravel into a debt crisis.** Given the difficulty of measuring the probability distribution of liquidity shocks, it is impossible to assign a probability to this risk. Until now, liquidity shocks have been "small enough" to be absorbed by Lebanon's international reserve buffer, but past performance may not be a good predictor of the future in this area. The degree to which a country is exposed to liquidity shocks also depends on the nature of its investor base. While Lebanon's investor base has been relatively stable in the face of shocks, the fact that debt is essentially backed by short term deposits creates a large potential rollover risk.

- **The conditions under which the debt-to-GDP ratio declines over time are not deterministic but stochastic.** The government has control over its policy setting, but the effect of these policies depends on factors beyond its immediate control. In particular, the government is exposed to stochastic shocks to the interest rate on its outstanding debt, as well as real growth in any given year. We explicitly address these factors by analyzing Lebanon's debt sustainability in a stochastic environment, in an approach akin to that of Celasun and others (2006). The model is outlined below, and the results are also discussed in the country report.

56. **The exercise described below addresses the second bullet point above, by adding a stochastic dimension to the standard analysis of debt dynamics**, but does not propose a measure of sustainability based on the level of the debt.

A. The Model [19]

57. **The stochastic approach to debt sustainability uses Monte Carlo techniques to construct confidence intervals around the projected debt path of the staff's illustrative adjustment scenario described in the IMF Country Report No. 06/201.** The starting point is the simple debt dynamics equation

$$d_t = (1 + r_t - g_t)\, d_{t-1} - p_t - priv_t \ , \qquad \text{(IV.1)}$$

where d is debt (in percent of GDP), p is the primary balance (in percent of GDP), r is the effective real interest rate on debt, g is real GDP growth, and $priv$ is annual value of privatization receipts (in percent of GDP).[20] In the equation, the debt ratio in period t (d_t) increases due to debt service ($r_t\, d_{t-1}$) and declines on account of output growth ($g_t\, d_{t-1}$), the primary surplus and privatization receipts.

[19] For details see di Giovanni and Gardner (2006).

[20] Privatization has a one-time effect on the level of debt, but no significant impact on debt dynamics because the loss in revenue from the privatized entities is broadly offset by the reduction in interest costs.

58. **Past volatility in interest and growth rates is used to make inferences about the probability distribution of the debt ratio under the adjustment scenario.** The first step is to use historical data to calculate a variance-covariance matrix of shocks to *g* and to the marginal Eurobond and T-bill rates, which feed into *r*, with monthly data over the 1998–2005 period.[21] Based on this matrix, 10,000 sets of shocks are drawn and used to project values of *g*, *r*, and *p* (the value of *priv* is taken to be known with certainty in the scenario). The path of the primary balance is aligned to that of the adjustment scenario and is not directly subject to policy shocks, but is indirectly affected by shocks to growth due to built-in (albeit small) automatic stabilizers. The projected values of *g*, *r*, and *p* are then fed through the debt dynamics equation to obtain the distribution of the debt ratio over the forecast horizon, where the initial value of *d* corresponds to end-2005. This distribution can then be used to make inferences on the probability of observing a better or worse debt outcome given exposure to stochastic shocks to the real interest rate and real growth.

59. **Two sets of confidence intervals are constructed to assess how sensitive the projected debt trajectory is to stochastic shocks.** The first set of confidence intervals (Figure IV.1) is constructed by assuming that individual shocks to the marginal interest rates (for local currency and dollar debt) and the growth rate are one-off events that have no cumulative effect on the level of the marginal interest rates or the growth rate in the next year. In this case, the highest (and the lowest) real interest rate *r* observed in a single year is 16 percent (–2 percent), while the average projected interest rate in the staff's scenario is 5 percent.[22] Likewise, the highest (and the lowest) growth rate *g* observed in a single year is 13 percent (–5 percent), while the average projected growth rate in the staff's scenario is 3.7 percent. The second set of confidence intervals (Figure IV.2) is constructed by assuming that shocks to the marginal interest rates are cumulative, while growth shocks remain one-off events that are not cumulated. By implication, the real interest rate *r* observed in the last projection year can be significantly higher in the case of cumulated shocks, and, in fact, the highest interest rate observed in 2011 is 42 percent. In both figures, 50 percent of the observations fall within the dark-shaded areas, and 40 percent in the light-shaded areas.

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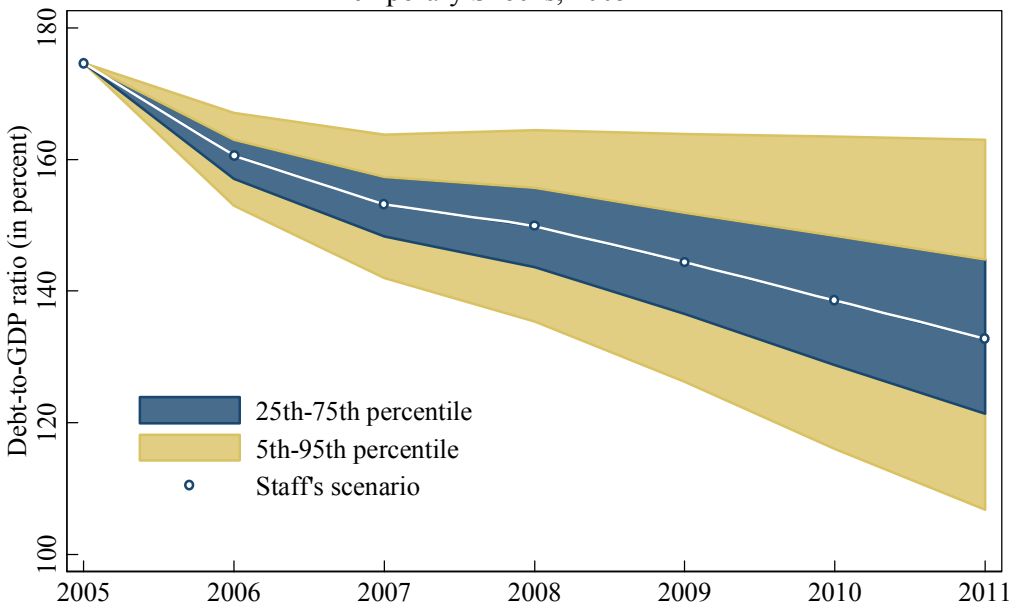
[21] GDP growth is proxied by the monthly coincident indicator produced by the Banque du Liban, which is based on a number of production and demand indicators as well as surveys, and has been shown to track closely annual GDP.

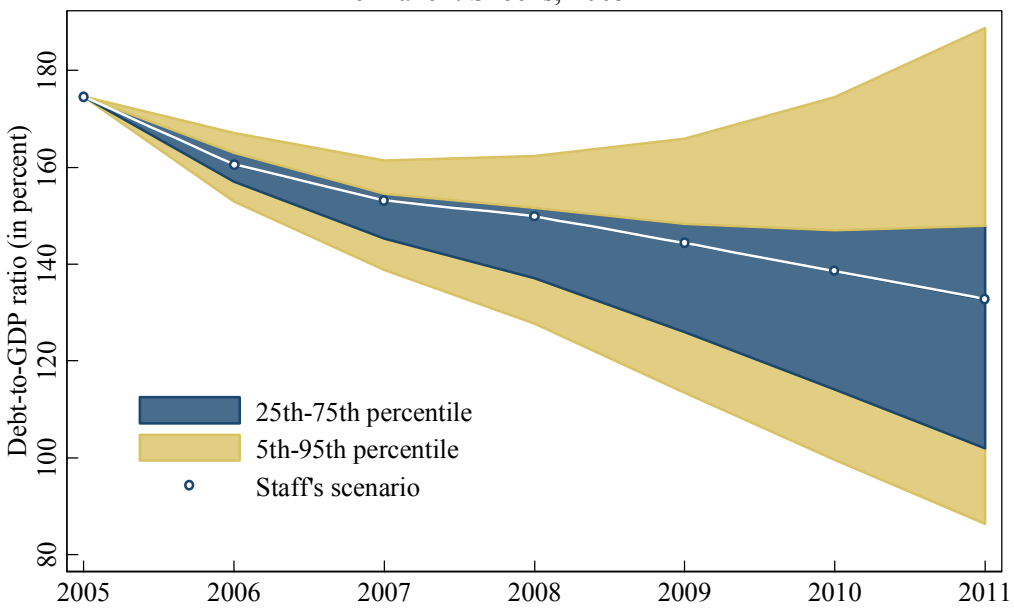
[22] Shocks to the real interest are constraint by a lower bound of –2 percent, since the nominal interest rate cannot become negative, and inflation is assumed to be 2 percent over the forecast horizon. Shocks are measured as first differences in the monthly interest rate and growth variables. Time series analysis suggests that indeed first differences are white noise.

Figure IV.1. Lebanon: Adjustment Scenario's Debt-to-GDP Confidence Intervals: Temporary Shocks, 2005-11



Source: Staff estimates.

Figure IV.2. Lebanon: Adjustment Scenario's Debt-to-GDP Confidence Intervals: Permanent Shocks, 2005-11



Source: Staff estimates.

B. Conclusions

60. **Debt sustainability cannot easily be reduced to a threshold issue, and in this exercise we focus on debt sustainability through a probabilistic approach to debt dynamics.** By emerging market standards, Lebanon has shown considerable resilience in the face of liquidity shocks. Nonetheless, even with substantial fiscal adjustment, the debt ratio would remain in the high risk area well into the medium term. A precondition to debt sustainability should be to place the debt-to-GDP ratio on a rapid downward path. Having achieved this, the probability of adverse liquidity shocks triggering a debt crisis should decline as the debt ratio is reduced. Although there is no obvious threshold debt level below which this risk is fully eliminated, an interim target for the debt ratio (say 100 percent) can be a useful anchor for fiscal policy.

61. With this qualification in mind, **an adjustment strategy could be deemed sustainable if it carries a sufficient probability of keeping the debt ratio on a clear downward path (or of reaching a debt target by a certain date), even if interest rate and growth developments turn out to be less favorable than anticipated.**[23] The exercise above addresses this issue by providing a sense of how likely it is that the adjustment strategy, *if fully implemented*, can achieve its target given the probability distribution of underlying shocks to interest rates and output growth. The results (based on the more stringent assumption that interest rate shocks are permanent) put at 25 percent the probability that the fiscal policy path of the adjustment scenario will fail to keep the debt ratio on a downward path by 2011. Of course, fiscal policy could be adjusted to counteract adverse shocks, provided the additional efforts are politically feasible. We do not integrate this endogenous policy response in this exercise, nor do we model explicitly the additional risks that come from possible deviations in the fiscal policy strategy due to political factors, implementation shortfalls, or other reasons.

62. In sum, this exercise suggests that **a strategy of fiscal adjustment (at least as ambitious as the one embedded in the above scenario) has a reasonable chance of placing the debt ratio on a path toward debt sustainability**, but that the risks are not negligible. Concessional financing would improve the odds of success and accelerate convergence toward less risky debt levels.

[23] In the illustrative adjustment scenario (and in the absence of any concessional financial assistance, or adverse shocks) the government debt ratio would dip below 100 percent in 2017.

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V. Macro and Microeconomic Aspects of Competitiveness in Lebanon[24]

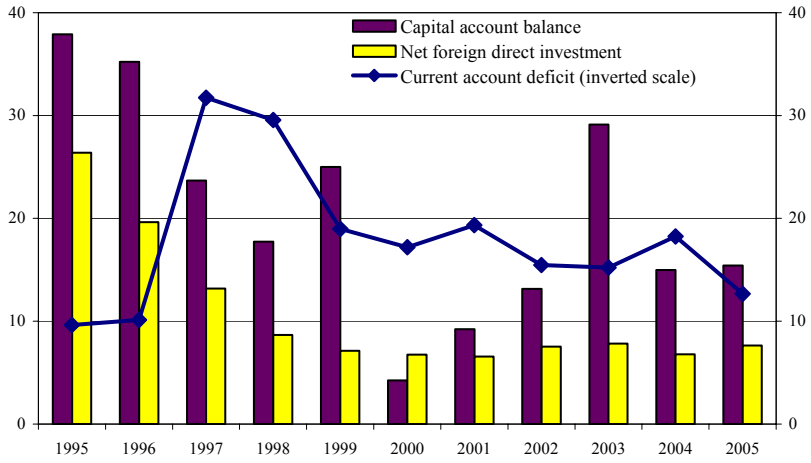
63. **This paper assesses the macro- and micro-economic aspects of competitiveness[25] in Lebanon.** Available macroeconomic indicators seem to suggest that competitiveness is presently not an immediate concern. However, as Lebanon addresses its large fiscal imbalance, improvements in competitiveness and increases in the economy's flexibility will be important to sustain growth and take up the slack left by fiscal adjustment.

64. **Microeconomic aspects of competitiveness indicate that there is considerable scope for gains from structural and institutional reforms.** Indicators based on business surveys and cross-country comparisons show factors related to the business climate are lagging those of other countries in the region. Tapping into this source of productivity gains should be an important policy objective.

A. Competitiveness and External Sustainability

65. **Concerns about Lebanon's competitiveness arise from the sustainability of the country's external position**. Lebanon's external current account deficit averaged 18 percent of GDP during 1995–2005, despite remittances estimated at about 9 percent of GDP annually. The current account deficit has been financed mostly by foreign direct investment and deposit inflows into the banking system (Figure V.1). An important exception was the period 2000–02, when a slowdown in capital inflows resulted in a significant drain on the international reserves of the central bank and a near public debt crisis. Soft loans from bilateral creditors under Paris II reversed this trend in 2003–04, leading to a restoration of investor confidence. The political crisis in early 2005 triggered significant financial turmoil, but the BdL successfully restored stability by mid-year, through a number of operations designed to counter financial pressures.

Figure V.1. Lebanon: Current Account and Capital Account Balances, 1995–2005
(In percent of GDP)



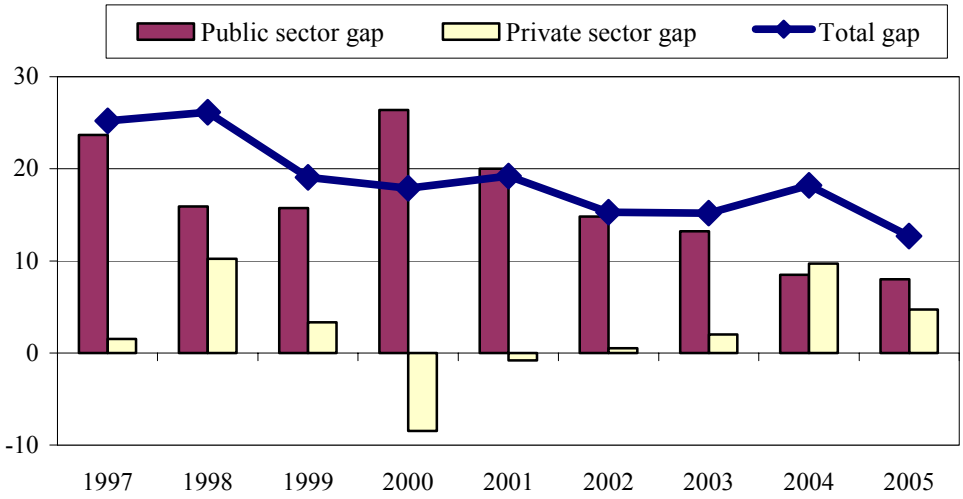
Sources: Banque du Liban; and Fund staff estimates.

[24] Prepared by Joannes Mongardini.

[25] Competitiveness is defined here broadly along the lines used by the OECD (1992) as: "the degree to which a country can, under free trade and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long term." For a useful discussion of the definitions of competitiveness, see also Boltho (1996).

66. **The large external current account deficits during the last ten years mostly reflect public dissaving**. The public sector saving-investment gap, which has declined in recent years, averaged 16 percent of GDP annually over 1997–2005, while the private sector was nearly in balance during the same period (Figure V.2). As such, the external imbalance has a clear fiscal root, but improvements in competitiveness and productive capacity would facilitate the resource reallocation associated with the needed fiscal adjustment.

Figure V.2. Lebanon: Saving-Investment Gap, 1997–2005
(In percent of GDP)



Source: Lebanese authorities; and Fund staff estimates.

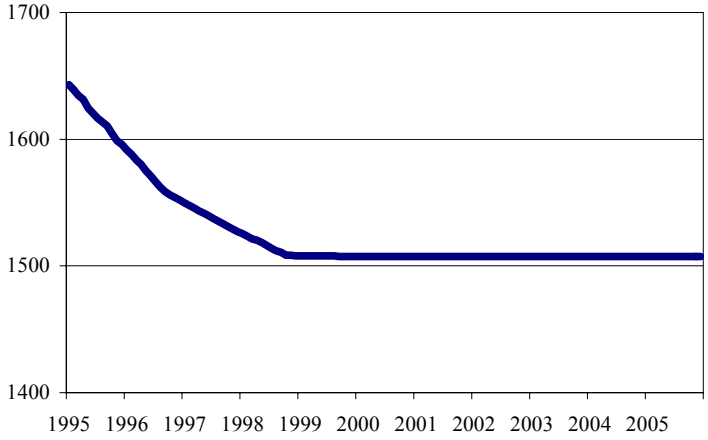
B. Macroeconomic Aspects of Competitiveness

67. **A comprehensive assessment of the macroeconomic aspects of competitiveness in Lebanon is hampered by data availability.** In particular, the lack of detailed national account statistics, consumer and producer prices, terms of trade data, foreign direct investment statistics, and labor market data make it impossible to estimate an equilibrium real exchange rate, as has been done for other countries in the region.[26] Therefore, a macroeconomic assessment of competitiveness has to rely primarily on export performance and real exchange rate developments.

[26] See for example Domaç and Shabsigh (1999), Kramarenko (2006), and Mongardini (1997).

68. **At a macroeconomic level, external competitiveness has been mainly influenced by the exchange rate based stabilization policy pursued since the early 1990s, and the exchange rate parity vis-à-vis the U.S. dollar maintained since 1999.** The Lebanese pound (LL) appreciated gradually from January 1995 to October 1999 against the major currencies, and has since been kept fixed against the U.S. dollar (Figure V.3). Such a close link to the dollar has helped consolidate macroeconomic stability, following the high inflation Lebanon experienced in the early 1990s. However, it has also tied competitiveness to movements in the Euro/dollar exchange rate, given that about 20 percent of Lebanese exports and 50 percent of imports are destined to or originate in the European Union.

Figure V.3. Lebanon: LL/USD Exchange Rate, 1995–2005

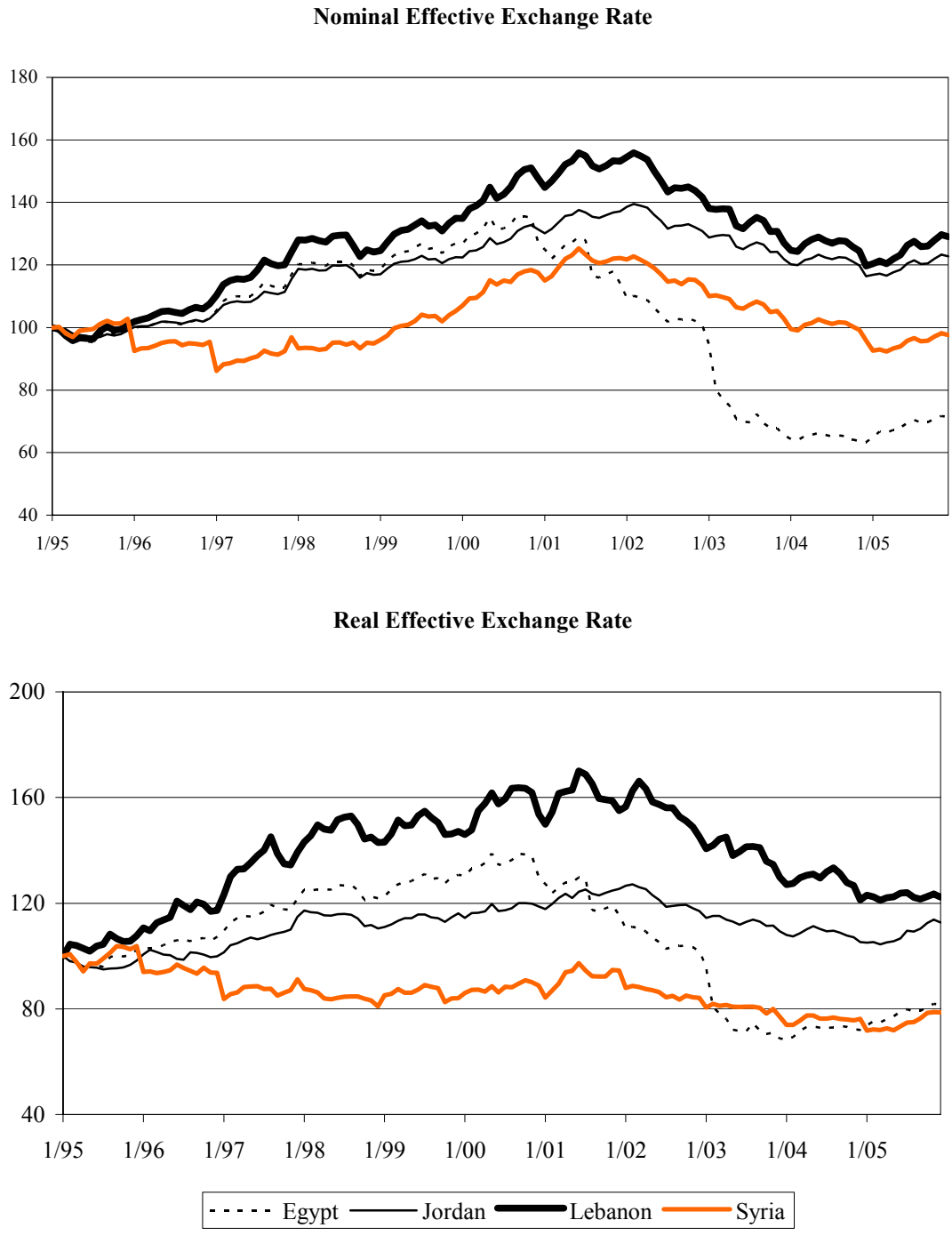


Source: International Finance Statistics.

Developments through 2001

69. **In line with the strengthening of the U.S. dollar, the Lebanese real effective exchange rate (REER) appreciated significantly through 2001 and into early 2002 (Figure V.4).** The cumulative appreciation in the seven years from January 1995 to January 2002 was 60 percent, driven mostly by the strengthening of the U.S. dollar against other major currencies. While REER appreciation during this period was a common phenomenon in the Mashreq region—as all other countries were also more or less pegged to the dollar—Lebanon was the country that experienced the highest real appreciation, reflecting the nominal appreciation that had taken place prior to October 1999. The large real exchange rate appreciation gave rise to significant concerns about the competitiveness of the Lebanese economy, particularly in a context of low GDP and export growth.

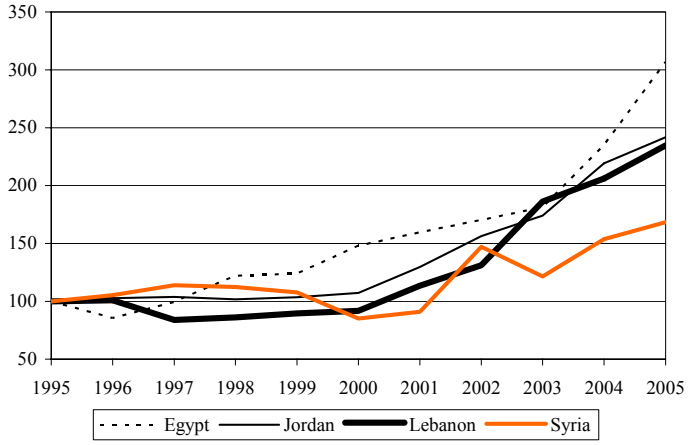
Figure V.4. Mashreq Region: Nominal and Real Effective Exchange Rates, January 1995–December 2005
(Index; January 1995 = 100)



Source: INS database.

70. **Export performance was very weak in the period 1995–2000 (Figure V.5).** The cumulative growth in exports was negative through 2000, but a recovery began in 2001. The appreciation of the REER is likely to have played a role in Lebanon's weaker performance relative to other emerging market economies, which taken as a group experienced some real exchange rate depreciation over the same period. However, Lebanon's export performance was also weaker than that of other countries in the Mashreq region whose currencies were also pegged to the U.S. dollar.

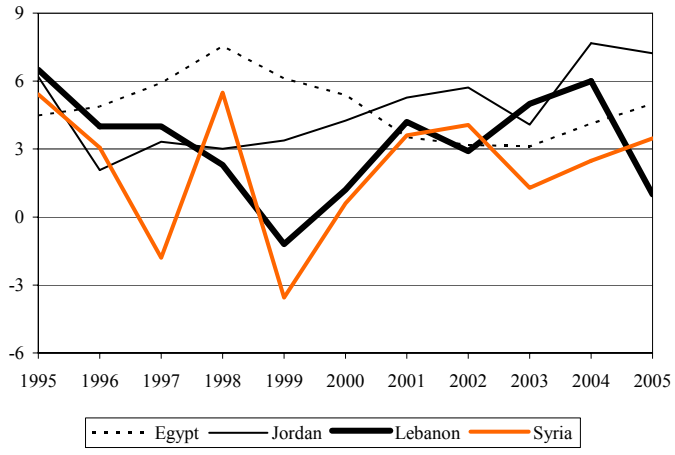
Figure V.5. Mashreq Region: Non-Oil Export Performance, 1995–2005
(Index of merchandise exports in dollar terms, 1995 = 100)



Source: MCD Regional Economic Outlook Database.

71. **The stagnation of exports coincided with a significant slowdown in economic activity (Figure V.6).** Real GDP growth[27] in Lebanon slowed from over 6 percent in 1995 to –1.2 percent in 1999. While part of the slowdown could be attributed to high real interest rates and a significant fiscal adjustment in 1999–2000 in light of the very large debt burden, it also reflected the export stagnation referred to above. The slowdown worsened the country's debt sustainability, leading to a near debt and balance of payments crisis in 2001-02, and the need for soft lending from domestic banks and bilateral creditors under Paris II.

Figure V.6. Mashreq Region: Real GDP Growth, 1995–2005
(Annual percentage change)



Source: MCD Regional Economic Outlook Database.

[27] Based on the authorities' new national income accounts, published in September 2005.

Developments since 2002

72. **Since early 2002, price competitiveness has improved significantly**. In line with a reversal of the earlier appreciation of the U.S. dollar against other major currencies, the Lebanese REER depreciated by a cumulative 21 percent from end-2001 to December 2005. The associated improvement in competitiveness has likely been a factor in the doubling of export receipts between 2001 and 2004, along with more buoyant external demand, particularly from Iraq since the end of the war in 2003. The boom of tourism and foreign direct investment from Arab countries—following the events of September 11, 2001, and the subsequent oil price increase—also contributed to a strengthening of economic growth, which reached 6 percent in 2004, before falling to 1 percent in 2005 as a result of the political crisis. However, in the absence of productivity gains and capacity investments, it is unclear whether this favorable performance can be sustained over the medium term. The discussion below focuses on potential improvements in some microeconomic aspects of competitiveness that would help sustain growth.

C. Microeconomic Aspects of Competitiveness

73. **By microeconomic aspects of competitiveness we refer to the structural and institutional factors that affect the cost of doing business, and thus ultimately the flexibility and growth potential of the economy.** These include business regulations, perceptions of risk, the legal framework, the degree of transparency, the contestability of product and service markets, and the flexibility of the labor market

74. **A recent study shows that Lebanese markets are characterized by high concentration ratios and the prevalence of monopolistic practices.** A study by the Consultation Research Institute (2003) that analyzed VAT enterprise data from 2002 found that 58 percent of Lebanese markets had a concentration ratio in excess of 40 percent, which is high by international standards.[28] The study attributed these high concentration ratios to a number of factors, including the small size of domestic markets, high barriers to entry, the high cost of capital, and low labor productivity. In a separate study, World Bank staff estimated that these high concentration ratios result in rents from monopolistic practices in excess of 15 percent of GDP. Such results indicate that, notwithstanding low external trade protection, the Lebanese economy lacks the degree of competition that can stimulate productivity and competitiveness gains.

[28] The concentration ratio in the study was defined by the share of sales by the three largest enterprises in each market.

75. **A cross-country comparison of business survey indicators shows Lebanon trailing significantly behind other countries in the region**. According to the Growth Competitiveness Index[29] of the World Economic Forum (2005), Lebanon ranks 11th amongst 12 countries in the region (Table V.1). This low score originates from an Executive Opinion Survey included in the same publication, where Lebanon ranked at the bottom in most categories related to the quality of public institutions, including the reliability of electricity supply, efficiency of the legal framework, wastefulness of government spending, and irregularities in public contracts. While, admittedly, survey results need to be read with caution, the overall picture that emerges is one of underperformance within the region.

Table V.1. Growth Competitiveness Index, 2005

	Rank	Score
Qatar	1	5.38
United Arab Emirates	2	5.22
Bahrain	3	4.91
Oman	4	4.83
Jordan	5	4.57
Tunisia	6	4.51
Saudi Arabia	7	4.39
Morocco	8	4.07
Egypt	9	3.89
Algeria	10	3.67
Lebanon	11	3.52
Yemen	12	3.15

Source: World Economic Forum (2005), page 159.

76. **Perceptions of high economic and political risks may also play a role in hindering investment and growth**. According to the latest risk ratings by Business Monitor International (2005), which comprise both short- and long-term political stability indicators as well as the indicators on overall business environment and investment climate, Lebanon is ranked lowest in the MENA region, except for Iraq (Table V.2). This reflects the poor performance on the subindeces on short- and long-term political risk, and short-term economic risk; the scores are moderately higher for the quality of the business environment. Overall, investment in Lebanon is regarded as one of the more risky options in the region.

Table V.2. BMI Composite Risk Scores and Rankings

	Score	MENA Ranking	Global Ranking 1/
United Arab Emirates	88.0	1	1
Qatar	83.2	2	3
Oman	78.9	3	8
Kuwait	78.5	4	9
Saudi Arabia	77.9	5	10
Bahrain	76.9	6	13
Egypt	66.0	7	42
Turkey	64.5	8	46
Jordan	62.4	9	54
Iran	59.0	10	69
Lebanon	**47.3**	**11**	**97**
Iraq	40.5	12	105

Source: Business Monitor International (2005).
1/ The global sample includes 130 countries.

[29] The Growth Competitiveness Index (GCI) is a composite statistics comprising three pillars, that are considered critical for the growth process: the macroeconomic environment, the quality of public institutions, and the state and usage of technology. For a full description of the methodology used in calculating the GCI, see World Economic Forum (2005), Chapter 13.

77. **A business cost survey by the World Bank confirms such underperformance**. According to the Doing Business database of the World Bank (2005), Lebanon ranks below regional and OECD averages in most categories (Tables V.3). For example, the cost of starting a business in Lebanon is estimated at 111 percent of gross national income per capita, compared with 64 percent for the region and 7 percent for the OECD (Table V.4). The average time needed to get a license in Lebanon is 275 days, compared with 216 days in the region, and 150 days in OECD countries. The documents, signatures, and time for trading across borders are significantly above OECD averages. More importantly, the cost and time required to enforce contracts in Lebanon are almost twice those in the Arab world and three times those in the OECD. Finally, the cost of closing a business is about twice the regional average and almost three times the average for OECD countries.

Table V.3. Lebanon: Ranking in World Bank Doing Business Survey, 2005

	Rank 1/
Doing business (overall rank)	95
Starting a business	99
Dealing with licenses	90
Hiring and firing	49
Registering property	85
Getting credit	66
Protecting investors	102
Paying taxes	43
Trading across borders	94
Enforcing contracts	142
Closing a business	98

Source: World Bank (2005).
1/ Relative ranking out of 155 countries surveyed.

78. **A similar picture arises from cross-country indicators of transparency**. According to Transparency International (2004), Lebanon scored 2.7 out of 10 in its Corruption Perceptions Index, significantly below Oman, the U.A.E., Jordan, and Tunisia. Similarly, a global survey published biannually by the World Bank, based on of all available governance surveys or polls, shows that all six governance indicators covered by the survey have deteriorated steadily since 1996 (Table V.5).[30] Overall, the lack of institutional transparency shown in these surveys adds significantly to the cost of doing business.

[30] Kaufmann, Kraay, and Mastruzzi (2005).

Table V.4. Lebanon: World Bank Doing Business Survey, 2005

Indicator	Lebanon	MENA Average	OECD Average
A. Starting a Business			
Number of procedures	6	10	6
Time (days)	46	45	19
Cost (% of income per capita)	111	64	7
Min. capital (% of income per capita)	69	859	29
B. Dealing with Licenses			
Procedures (number)	16	19	14
Time (days)	275	216	150
Cost (% of income per capita)	215	470	68
C. Hiring and Firing Workers			
Difficulty of hiring index	33	31	30
Rigidity of hours index	0	55	50
Difficulty of firing index	40	35	27
Rigidity of employment index	24	40	36
Firing costs (weeks of wages)	17	62	33
D. Registering Property			
Number of procedures	8	6	4
Time (days)	25	52	33
Cost (% of property per capita)	6	7	5
E. Getting Credit			
Legal rights index	4	4	6
Credit information index	4	2	5
Public credit registry coverage (% adults)	4	2	8
Private bureau coverage (% adults)	0	2	58
E. Protecting Investors			
Disclosure index	8	6	6
Director liability indiex	1	5	5
Shareholder suits index	4	4	7
Investor protection index	4	5	6
F. Paying Taxes			
Payments (number)	33	27	16
Time (hours)	208	241	192
Total tax payable (% of gross profit)	30	35	46
G. Trading across borders			
Documents for export (number)	6	7	5
Signatures for export (number)	15	14	3
Time for export (days)	22	33	12
Documents for import (number)	12	10	6
Signatures for import (number)	35	21	3
Time for import (days)	34	41	14
H. Enforcing Contracts			
Number of procedures	39	39	19
Time (days)	721	437	232
Cost (% of debt)	27	18	11
I. Closing a Business			
Time (years)	4	4	2
Cost (% of estate)	22	13	8
Recovery rate (cents on the dollar)	19	29	74

Source: World Bank (2005).

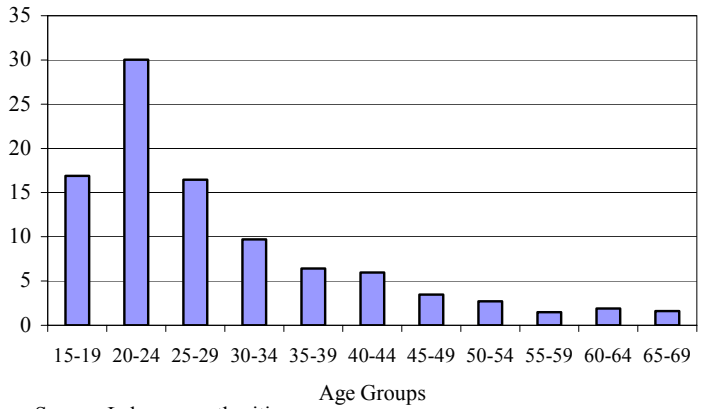
Table V.5. Lebanon: Governance Indicators, 1996–2004

Governance indicator	Year	Percentile Rank (0-100)	Estimate (-2.5 to + 2.5)	Standard Deviation	Number of surveys/polls
Voice and accountability	2004	25.7	-0.81	0.15	7
	1996	36.6	-0.43	0.21	4
Political stability	2004	23.3	-0.83	0.22	7
	1996	32.3	-0.37	0.32	4
Government effectiveness	2004	42.3	-0.33	0.19	8
	1996	53.1	-0.18	0.24	4
Regulatory quality	2004	31.0	-0.49	0.20	8
	1996	60.8	0.22	0.27	5
Rule of law	2004	43.5	-0.32	0.14	10
	1996	45.2	-0.27	0.18	6
Control of corruption	2004	39.9	-0.51	0.16	7
	1996	51.3	-0.18	0.24	4

Sources: Kaufmann D., A. Kraay, and M. Mastruzzi (2005).

79. **Labor market rigidities may also affect competitiveness adversely, although the presence of an informal labor market moderates the macroeconomic impact of labor market regulations.** As in most countries in the region, unemployment in Lebanon is concentrated among the young (Figure V.7). This suggests the presence of impediments to labor market entry by those seeking employment in the formal sector, but also reflects search unemployment originating in the matching process between labor market entrants and employers. In particular, rigidities in hiring and firing regulations are likely to slow the insertion of new entrants into the formal labor market Taken together, labor market rigidities cause efficiency losses, but, given the presence of an active informal labor market, it is unclear to what extent labor market regulations are a binding constraint on output and employment growth at the current juncture.

Figure V.7: Unemployment Distribution by Age, 2004
(In percent of labor force by age group)



Source: Lebanese authorities.

80. **Lack of wage data does not permit a full analysis of wage competitiveness.** However, a comparison of minimum wages across countries in the region suggests that Lebanon's minimum wage, at about $200 per month, is relatively high (Table V.6). This may reduce competitiveness, particularly in low-skill labor-intensive manufacturing activities, like textiles and apparel, which have recently contributed to significant export and employment growth in other countries in the region (e.g., Egypt and Turkey). However, concerns are mitigated when the minimum wage is scaled by per capita income (a rough measure of average labor productivity). Indeed, Lebanon's minimum monthly wage is equivalent to about half of the monthly per capita income, one the lowest in the group of six emerging markets under considerations, with the exception of Mexico.

Table V.6. Minimum Wages and Per Capita GDP in Emerging Markets, 2002

	Minimum wage (1)	Per capita GDP (2)	Ratio (1)/(2)
	(In U.S. dollars per month)		
Lebanon	199	401	50%
Syria	173	100	173%
Turkey	135	231	58%
Mexico	116	535	22%
Jordan	113	148	76%
Paraguay	110	82	135%

Sources: ILO online database, Lebanese authorities; and IMF estimates.

D. Policy Conclusions

81. **The evidence presented in this paper suggests that Lebanon's competitiveness is not an immediate concern**. Riding on the strength of external demand and the substantial depreciation of the REER since 2002, export growth has been strong. Tourism and FDI inflows have been equally buoyant, particularly following the events of September 11, 2001. The economic disruption associated with former Prime Minister Hariri's assassination was temporary in nature. On this basis, there does not seem to be a need for a relative price correction in the near term.

82. **However, over the medium term, there is a need to enhance competitiveness and improve the economy's flexibility and growth potential to offset the effects of fiscal consolidation. Substantial fiscal consolidation is required to return Lebanon's public debt to sustainable levels.** This consolidation will initially have an adverse effect on aggregate demand, but real GDP growth can be sustained (or even boosted) if, on the supply side, the economy is able to reallocate resources towards the tradable goods and services sector. Several factors can facilitate this reallocation, such as the relative price adjustment associated with the fiscal effort, and improvements in the business and investment climate. With indicators such as the effectiveness of business regulations, the legal framework, and the degree of transparency, showing Lebanon to lag behind other countries in the region, significant competitiveness gains seem feasible from improvements in the business environment.

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