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Assessing Banking Sector Soundness in a
Long-Term Framework:
The Case of Venezuela

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IMF Working Paper

Western Hemisphere Department

**Assessing Banking Sector Soundness in a Long-Term Framework:
The Case of Venezuela**

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Abstract

This Working Paper should not be reported as representing the views of the IMF.

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This paper combines financial soundness indicators (FSIs) and stress-testing methodologies to provide a broad assessment of the soundness of Venezuela's banking sector, based on a diagnosis of its structural and transient shortcomings. While the Venezuelan banking sector appears sound under current favorable economic conditions, it remains significantly vulnerable to cyclical downturns—which have been severe in the past. Banks are particularly exposed to interest rate and credit risks. This suggests that the strong FSIs may be partly the result of a conjunctural credit boom in the context of capital controls and very low real interest rates.

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I. INTRODUCTION

Financial soundness indicators (FSIs) are useful for assessing the current condition of the financial sector, but give limited information about how it would respond to a shock. In particular, in periods of economic bonanza, solid FSIs may not fully reflect the vulnerability of banks to an economic downturn. Hence, supplementary methodologies, such as stress testing, are needed for a forward-looking assessment—to identify vulnerabilities before they become apparent. However, stress testing is only informative if the shocks are modeled realistically. For macro-prudential analysis to be an operational guide for policymakers, it is key that the shocks used for stress testing be derived from an accurate diagnosis of the most likely problems to the banking sector.

Venezuela presents a case where a forward-looking evaluation of bank soundness is particularly important. Its banking sector appears solid today but, since it suffered a deep crisis in 1994 and several episodes of financial fragility over the last decade, the sector's ability to withstand adverse shocks is a core concern in assessing its soundness. At end-2005, FSIs for Venezuelan banks are above prudential requirements and high by international and historical standards. However, a number of structural weaknesses remain unaddressed, including low levels of financial intermediation, large “non-traditional” (off-balance-sheet, and offshore) operations, and high exposure to the public sector. Moreover, recent substantial changes to the regulatory and operating environment are likely to affect the operations of the banking sector.

This paper combines FSIs and stress-testing methodologies to provide a broad assessment of the soundness of Venezuela's banking sector, based on a diagnosis of its structural and transient shortcomings. Long-term trends are extracted from long time series of banking sector development. Recent developments are reviewed in light of their potential impact on banks. The specification of the characteristics of the banking sector creates a foundation for interpreting Venezuela's current FSIs and choosing relevant shocks for informative stress testing through sensitivity analyses and scenarios.

The exercise shows that, while the Venezuelan banking sector appears sound under current favorable economic conditions, it remains significantly vulnerable to cyclical downturns—which have been extremely severe in the past. Moreover, banks are particularly exposed to interest rate and credit risks. This suggests that the strong FSIs may partly be the result of a remarkable credit boom in the context of capital controls and real interest rates that are at or close to negative levels. Under relatively conservative assumptions, stress tests show that a downturn could exhaust a large share of banks' capital and threaten those least capitalized.

The remainder of the paper is organized in three sections. Section II provides a framework for the analysis of banking sector soundness by drawing lessons from long-term trends and recent developments. Section III presents an assessment of banking sector soundness based on FSIs and develops stress-testing sensitivity analyses and scenarios. Section IV takes stock and concludes.

II. THE FRAMEWORK FOR ASSESSING THE BANKING SECTOR: LONG-TERM TRENDS AND SHORT-TERM DEVELOPMENTS

This section first examines banking sector behavior over the last twenty years, to determine stylized facts—the “intrinsic” characteristics of the sector—and then discusses recent changes to the environment in which banks operate. Together these define the foundation for assessing banking soundness, not only currently but also under changes in circumstances.

A. A Long-Term View of the Venezuelan Banking Sector

Within the last fifteen years, Venezuela suffered three episodes of banking crisis and fragility. These demonstrated three core problems of the banking sector: its vulnerability to economic volatility; its susceptibility to swings in monetary conditions; and (presumably consequently) declining financial intermediation. These are the first three stylized facts—since assessing the potential for these problems to persist is important for determining the resilience of the banking sector today.

1. Banks have been vulnerable to the economic volatility resulting from oil price shocks and political instability.

Time series for real money balances and credit suggest that depositor confidence and credit quality fluctuate remarkably with the economic cycle. Boom-and-bust cycles have shaken the banking sector by creating large fluctuations in liquidity conditions and affecting the provision of credit to the private sector.

Real money balances provide a useful proxy for depositor confidence and the liquidity conditions in the banking sector.² As shown in Figure 1, real money demand has followed the economic cycle closely, and has amplified it. Since the cycle has been substantial, fluctuations have been sharp. Episodes of significant decline in real GDP growth have all been associated with a substantial contraction in money demand, followed by episodes of economic recovery and high money growth. The most salient periods are 1989, 1996, and 2002–03, when money demand contracted by as much as 40 percent, 54 percent, and 14 percent, respectively. In 1990, 1997, and 2004, real money demand rebounded by more than 30 percent, 10 percent, and 24 percent, respectively. Commercial bank credit to the private sector followed closely similar trends.

2. Pro-cyclical monetary conditions had a strong impact on banks’ lending behavior.

Co-movements in interest rates and credit suggest that monetary conditions exacerbated volatility in lending. The succession of periods of highly negative and highly positive real interest rates generated lending cycles. Lending booms during periods of easy monetary conditions were followed by sharp contractions of credit (and deterioration in credit quality)

² Long time series of nonperforming loans are not publicly available, precluding an analysis of the cycles of nonperforming loans to assess credit quality. However, partial information is available from past IMF reports. This permits movements in nonperforming loans to be identified during specific periods.

during periods of monetary austerity. The data suggest that monetary policy (at least, lending interest rates) essentially followed the economic cycle rather than anticipating it. The bottom panel of Figure 1 shows the movements in real credit to the private sector and lending rates. Reductions in interest rates (to highly negative levels) predated lending booms—in 1990–91, 1995–96, and 2004–05. Conversely, increases in real lending interest rates came with a lag. Real interest rates then reached very high levels, inducing sharp contractions in credit to the private sector.

3. Low and declining levels of financial intermediation have limited the role of the banking sector in financing the economy.

In light of the volatility, it is not surprising that financial intermediation has declined significantly over the last two decades—particularly after the 1994 financial crisis—and is now very low in Venezuela. The ratio of broad money to GDP declined steadily from 40 percent of GDP in 1985 down to 25 percent in 2005. Over the same period, deposits with commercial banks declined from 60 percent to 25 percent of GDP and domestic credit from 52 percent of GDP to 14 percent (Figure 2).

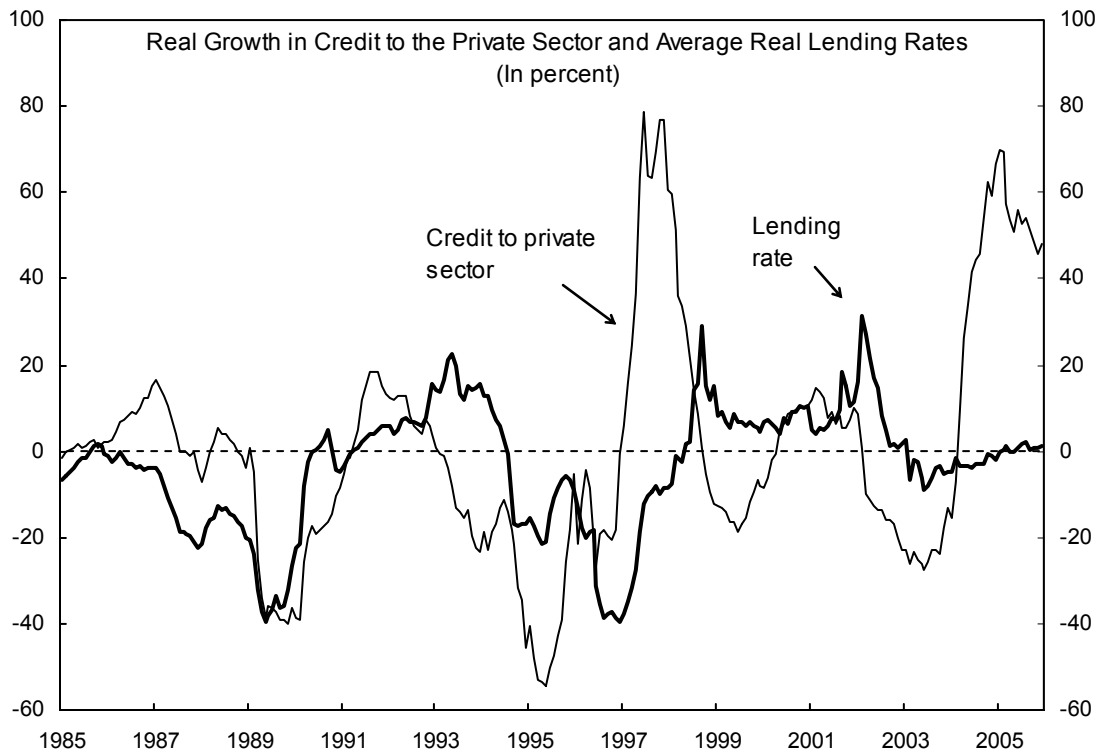
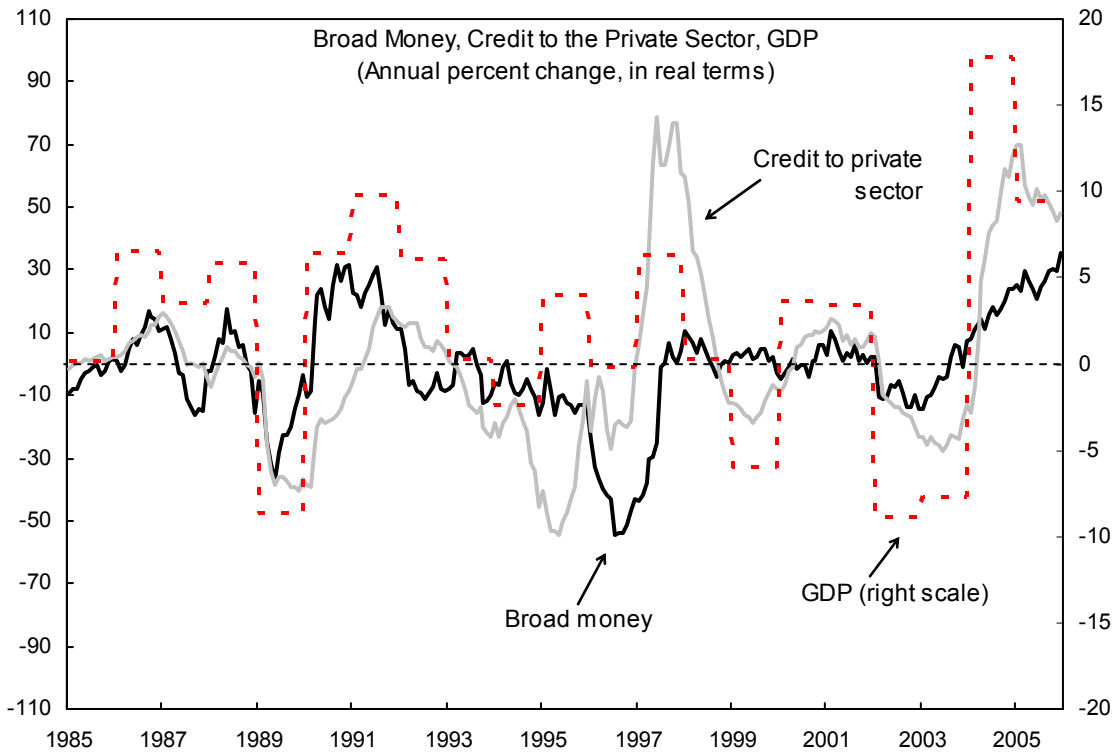
At the regional level, Venezuela has the lowest level of financial intermediation among selected comparator countries, as shown in Table 1. Relative to the size of its economy, Venezuela has the lowest levels of domestic credit, credit to the private sector, deposits, and broad money in the region as of December 2005, with the exception of post-crisis Argentina. Further, the share of M1 in broad money is high compared with other countries. Finally, deposits abroad in percent of GDP are three times as high in Venezuela as in other Latin American countries.

These three defining elements of banks' experience over the last two decades have doubtless determined how the sector has evolved. Specifically, it has become extremely concentrated; it has skewed its operations toward “non-traditional” transactions; and it has accumulated a high exposure to the public sector. These are the second three stylized facts—important for understanding the sector's current strengths and vulnerabilities.

4. The structure of the banking sector changed substantially in the decade following the financial crisis of 1994–95.

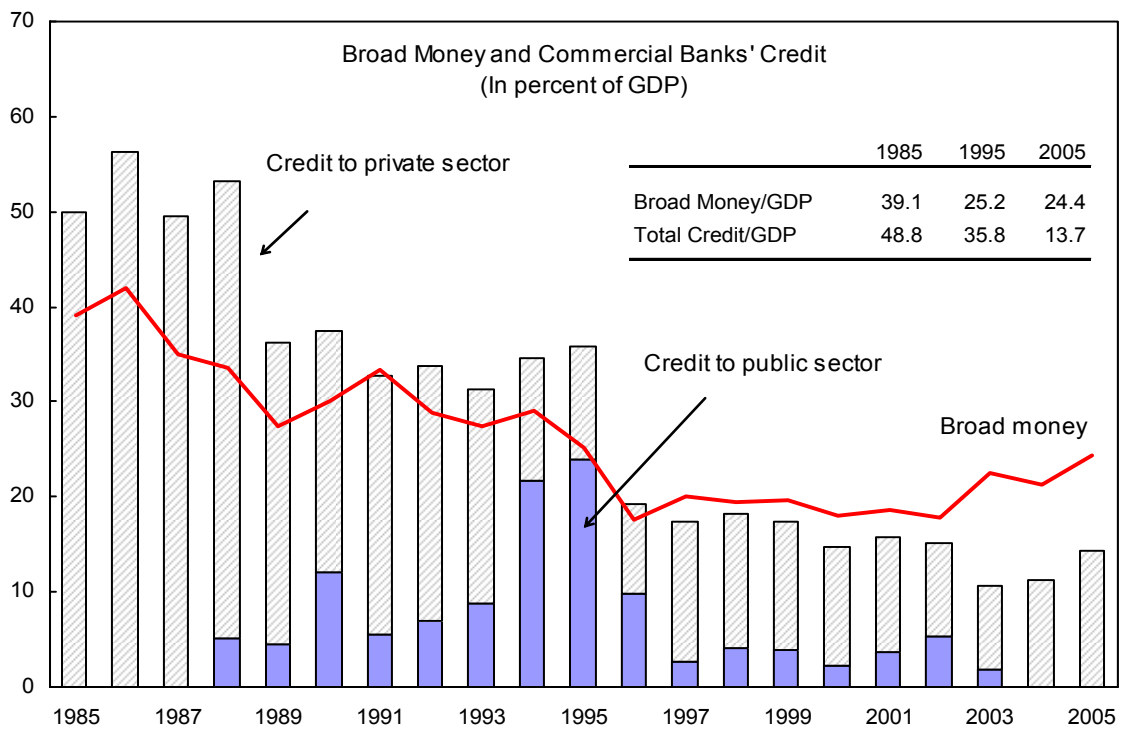
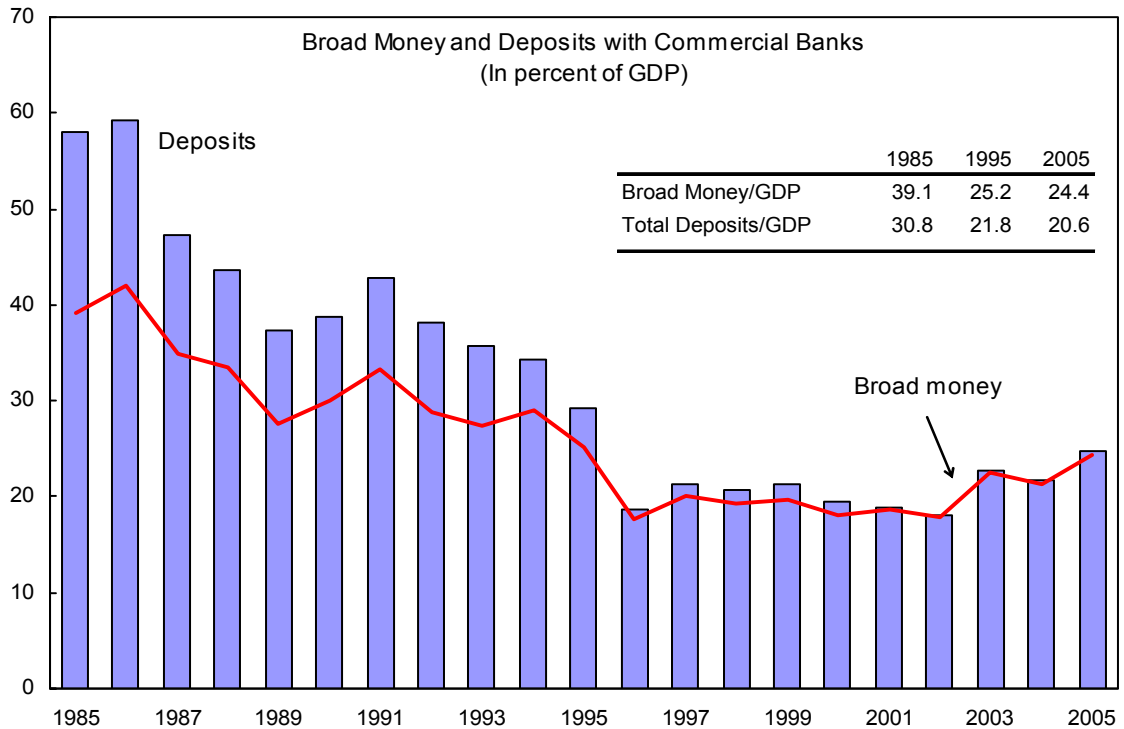
In the aftermath of the 1994–95 crisis, the banking sector underwent a significant consolidation process. Tables 2 and 3 illustrate the trend for 1998–2005. The number of financial institutions decreased by nearly half, to 52 in December 2005. Consolidation was brought about by increased competition and the closure or nationalization of unsound commercial banks. The consolidation process has slowed recently as easy liquidity conditions have supported bank profitability and liquidity, including of weaker banks.

Figure 1. Venezuelan Financial System: Long-Term Trends, 1985-2005



Sources: IMF, International Financial Statistics; and IMF, World Economic Outlook.

Figure 2. Venezuelan Financial System: Long-Term Trends, 1985-2005



Sources: IMF, International Financial Statistics; and IMF, World Economic Outlook.

The introduction of universal banking induced additional changes in the structure of the sector.³ The number of universal banks increased gradually to dominate the sector (see Table 3). The market share of financial institutions other than universal and commercial banks, measured in percent of total assets and in percent of total deposits, declined from more than 12 percent in 1998 to 2 percent in 2005.

The banking sector is even more concentrated than might be suggested by the developments above. It comprises 31 private commercial and universal banks, 3 state-owned banks, and 1 development bank. The five major banks account for more than 55 percent of market share (Table 2). Each of the remaining banks accounts for a very small market share, with a large proportion reaching less than 1 percent of market share.

Table 1. Venezuela and Selected Latin American Countries: Selected Monetary Indicators, December 2005
(In percent of GDP)

	Domestic Credit	Credit to Private Sector	Total Deposits ¹	Money	Quasi Money	M2	Deposits Abroad ²	M1/M2	Deposits Abroad/M2 ²
Venezuela 3/	13.7	14.2	20.6	15.3	9.1	24.4	38.0	62.7	158.4
<u>Selected Latin American Countries:</u>									
Argentina	38.1	11.7	23.1	13.4	18.0	31.4	12.7	42.7	41.6
Brazil	95.1	44.9	28.5	8.2	23.7	31.9	8.2	25.7	20.5
Chile	67.5	66.5	34.0	10.2	26.6	36.8	15.2	27.7	38.0
Colombia	35.1	23.9	26.3	12.0	20.1	32.2	8.7	37.4	26.7
Mexico	37.0	18.5	25.1	10.9	18.2	29.1	7.8	37.5	26.5
Peru 4/	17.8	19.6	23.4	10.2	19.0	29.2	11.2	34.9	40.1

Sources: IFS; WEO; BIS; and Fund staff estimates.

1/ Include demand, time, savings, and foreign currency deposits in the domestic banking system.

2/ External liabilities of banks located in BIS reporting countries.

3/ Domestic credit total includes net credit to central government—net lending in the case of Venezuela and Peru.

Table 2. Venezuela: Concentration of the Banking Sector, December 2005 1/

	In Percent of Total Assets	In Percent of Total Capital	In Percent of Total Deposits	In Percent of Total Credit
Five largest institutions	55.9	55.3	57.2	64.2
Ten largest institutions	74.1	72.1	75.3	80.3
Ten smallest institutions	3.5	4.0	2.3	1.7
Number of banks with market share				
superior to 5 percent	6	5	6	5
between 1 and 5 percent	15	17	16	14
Inferior to 1 percent	14	13	13	16

Source: Sudeban.

1/ The banking system includes all private commercial and universal banks, three public banks and one development bank.

³ Universal banks were introduced as part of the macroeconomic adjustment program started in 1996. A number of specialized institutions, usually belonging to the same corporate entity, were consolidated as universal banks.

Table 3. Venezuelan Financial Institutions: Numbers and Market Distribution, 1998-2005

	Number of Institutions								of which : National public banks in 2005
	1998	1999	2000	2001	2002	2003	2004	2005	
Universal banks	14	15	14	18	16	17	19	21	2
Commercial banks	27	26	24	22	17	16	15	14	1
Special purpose banks	4	4	4	5	4	4	4	4	4
Investment banks	13	11	12	10	6	6	5	5	1
Mortgage banks	5	4	4	3	2	2	2	2	0
Leasing companies	9	5	5	4	2	1	1	1	1
Savings and loans institutions	17	17	12	5	4	3	3	3	0
Money market funds	9	7	6	4	2	2	2	2	0
Total	98	89	81	71	53	51	51	52	9
Asset Distribution, in Percent of Total Assets									
Universal and commercial banks	87.7	86.1	86.4	96.5	97.1	97.7	97.9	98.0	
Savings and loans institutions	8.4	10.1	10.2	1.7	1.9	1.6	1.8	1.8	
Investment banks	2.5	2.9	2.3	1.2	0.7	0.5	0.2	0.1	
Mortgage banks	0.6	0.4	0.4	0.2	0.1	0.0	0.0	0.0	
Money market funds	0.2	0.2	0.4	0.2	0.1	0.1	0.0	0.0	
Leasing companies	0.6	0.3	0.2	0.2	0.1	0.0	0.0	0.0	
Total	100	100	100	100	100	100	100	100	
Deposit Distribution, in Percent of Total Deposits									
Universal and commercial banks	87.8	85.9	86.3	96.9	97.3	97.9	98.0	97.9	
Savings and loans institutions	8.6	10.4	10.4	1.7	2.0	1.6	1.8	1.9	
Investment banks	2.3	2.7	2.2	0.9	0.6	0.4	0.1	0.1	
Mortgage banks	0.6	0.4	0.4	0.2	0.0	0.0	0.0	0.0	
Money market funds	0.2	0.1	0.5	0.1	0.1	0.0	0.0	0.0	
Leasing companies	0.5	0.3	0.2	0.1	0.0	0.0	0.0	0.0	
Total	100	100	100	100	100	100	100	100	

Sources: Superintendency of Banks of Venezuela; and Fund staff estimates.

5. “Non-traditional” bank transactions are large and account for a growing proportion of total assets of the banking sector.

Disintermediation has been accompanied by curtailment of lending operations and a growing share of other types of operations—including cash and checking transactions, off-balance-sheet operations, and offshore operations.

Cash and checking transactions are important, as illustrated by the short maturity of deposits in the banking sector. Checking accounts constituted more than 50 percent of total deposits at end-2005. And about two-thirds of time deposits mature in less than 60 days.

Off-balance-sheet operations are even larger than total deposits.⁴ The lack of a well-defined supervisory framework for off-balance-sheet operations and high unremunerated reserve

⁴ In Venezuela, banks are allowed to book two types of financial operations as off-balance-sheet items: trust funds (*fideicomisos*) and ceded investments (*inversiones cedidas*). Trust funds are investment funds administered by banks. Ceded investments are shares in a specific investment vehicle, where clients receive a claim on a portfolio, mostly government paper. The absence of reserve requirements on off-balance-sheet items is an incentive for banks to expand their off-balance-sheet positions.

requirements for balance sheet items explain this large share of off-balance-sheet operations. Figure 3 shows that off-balance-sheet operations, traditionally large, have begun to rise at an accelerating pace, reaching more than 100 percent of assets and 130 percent of deposits in 2005.

Table 4. Venezuela: Summary Balance Sheet of the Banking Sector, 2001-2005
(In billions of bolivares at current prices and in percent)

Assets	2001	2002	2003	2004	2005	Liabilities	2001	2002	2003	2004	2005
Cash	5,066	4,584	6,867	10,368	15,103	Deposits	16,110	16,805	28,067	44,301	67,821
Public bonds	3,570	6,080	14,152	18,987	24,958	<i>of which:</i> Public deposits					
Gross loans	9,415	9,153	10,197	21,284	37,214	Credit with the BCV	84	36	8	5	9
<i>of which:</i> NPLs	710	921	858	628	472	External credit lines	329	316	161	101	149
Provisions	(656)	(902)	(890)	(818)	(927)	Other financing	1,091	898	862	2,263	3,895
Other assets	3,557	4,461	4,783	5,634	7,255	Other liabilities	973	2,369	1,741	2,573	3,275
						Total Liabilities	18,587	20,424	30,839	49,243	75,149
						Capital	3,020	3,854	5,159	7,030	9,381
Total assets	21,608	24,278	35,998	56,273	84,530	Total capital and liability	21,608	24,278	35,998	56,273	84,530
Memorandum items:											
Off-balance-sheet trust accounts	10,617	16,189	21,918	30,208	83,661						
In percent of total assets	49.1	66.7	60.9	53.7	99.0						
In percent of total deposits	65.9	96.3	78.1	68.2	123.4						

Source: Sudeban.

Capital controls have not prevented offshore operations of Venezuelan residents from being large. Data from BIS reporting countries are reported in Table 5. These data provide a conservative estimate of total Venezuelan assets abroad, as they account for only a subset of offshore operations, that is, those in BIS reporting countries. Based on these data, liabilities of Venezuelan residents abroad have remained stable, at US\$13.4 billion in 2005. On the other hand, assets abroad have increased substantially, reaching US\$51 billion in December 2005, more than doubling over the last two years. As a result, net assets increased from US\$7.3 billion in 1994 to US\$37 billion in 2005. As shown in Table 1 and discussed above, this is high by regional standards, with deposits abroad representing 38 percent of GDP and 158 percent of broad money at end-2005.

Table 5. Venezuela: Assets and Liabilities of Venezuelan Residents Abroad
(In billions of U.S. dollars)

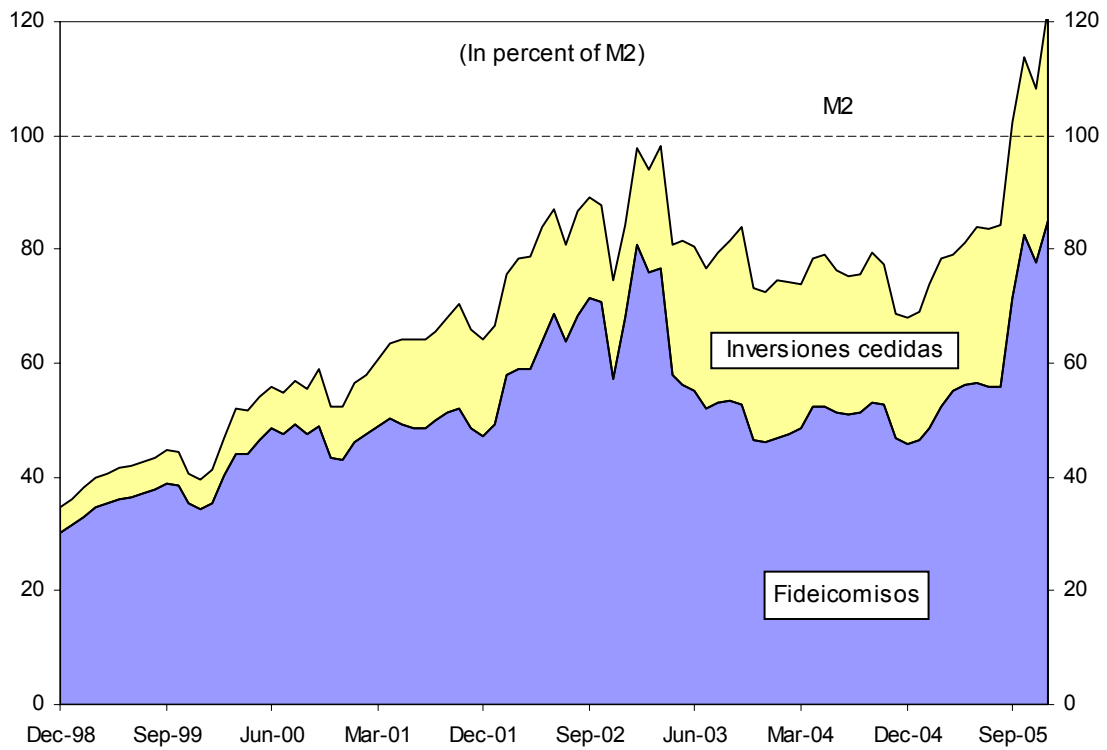
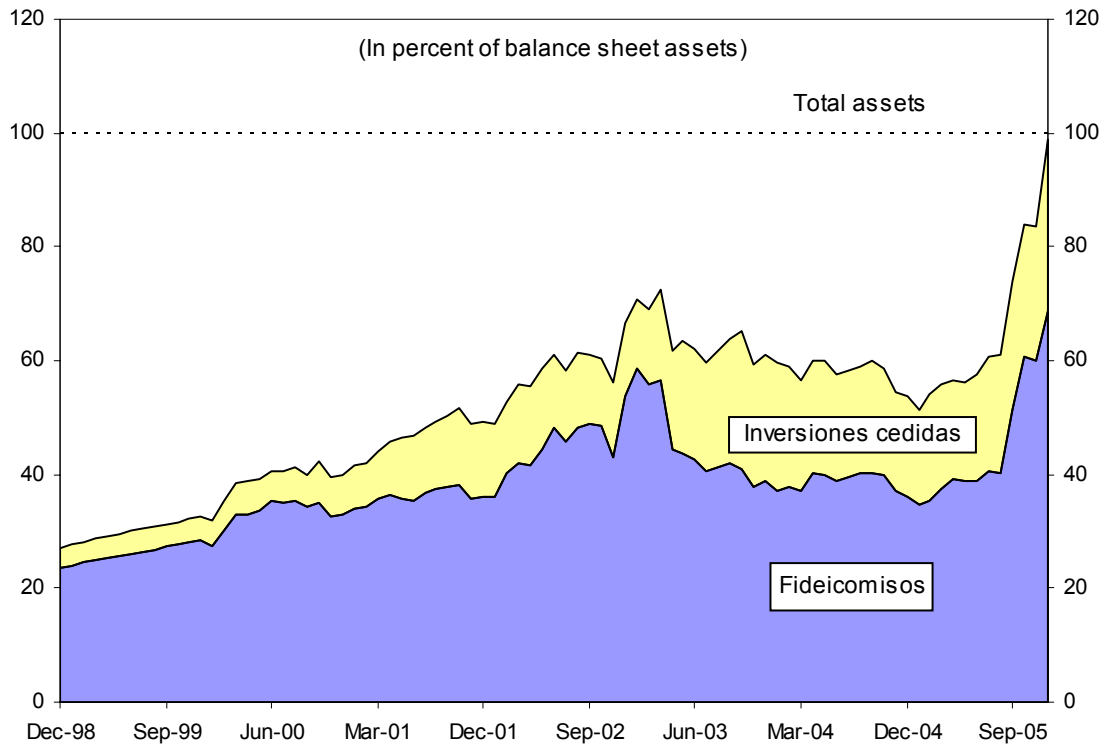
	Assets 1/ (A)	Liabilities 2/ (B)	Net Assets (A-B)
1994	20.7	13.4	7.3
1995	20.5	11.7	8.8
1996	23.8	11.0	12.9
1997	23.7	11.7	12.0
1998	26.4	12.7	13.7
1999	26.4	13.9	12.4
2000	30.0	13.5	16.5
2001	29.8	13.2	16.6
2002	31.4	15.3	16.0
2003	28.7	14.2	14.5
2004	33.7	13.7	20.0
2005	50.5	13.4	37.0

Sources: BIS; and Fund staff estimates.

1/ External liabilities of banks located in BIS reporting countries.

2/ External assets of banks located in BIS reporting countries.

Figure 3. Venezuelan Banking Sector: Off-Balance-Sheet Items
December 1998 - December 2005



Sources: Sudeban; and BCV.

The expansion of these operations, coupled with disintermediation, is likely to put pressure on banking sector soundness. First, the supervisory framework for offshore and off-balance-sheet operations is lacking. Second, the importance of cash transactions and the predominance of short-term deposits may increase banks' vulnerability to liquidity problems. Third, traditional indicators of banking soundness may not reflect the actual situation of the sector, as large operations are excluded from ratios and indicators. In theory, banks are not bound to honor obligations to investment fund shareholders if an off-balance-sheet vehicle goes bankrupt. However, banks honor failed investment funds for reputational reasons and are therefore indirectly exposed to credit risk on their off-balance-sheet assets. The 1994 financial crisis demonstrated the problems associated with this convention. Bank runs and losses were magnified by withdrawal of much larger than expected off-balance-sheet deposits and by evidence that some banks had very large operations with limited asset coverage.

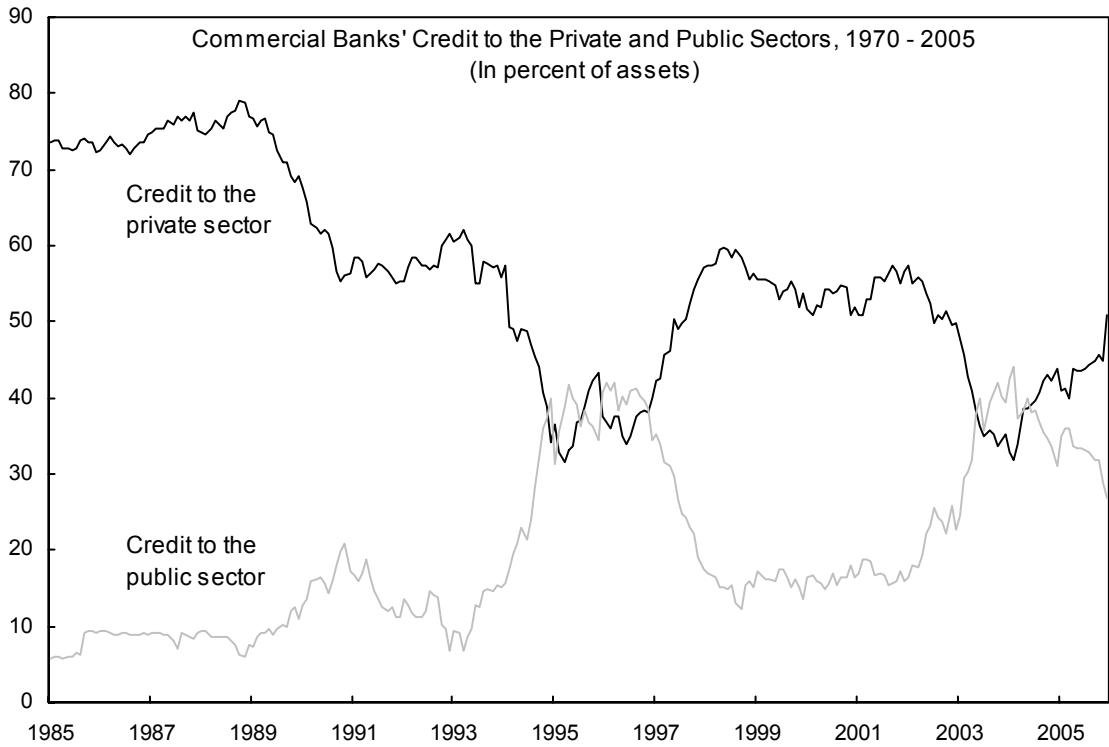
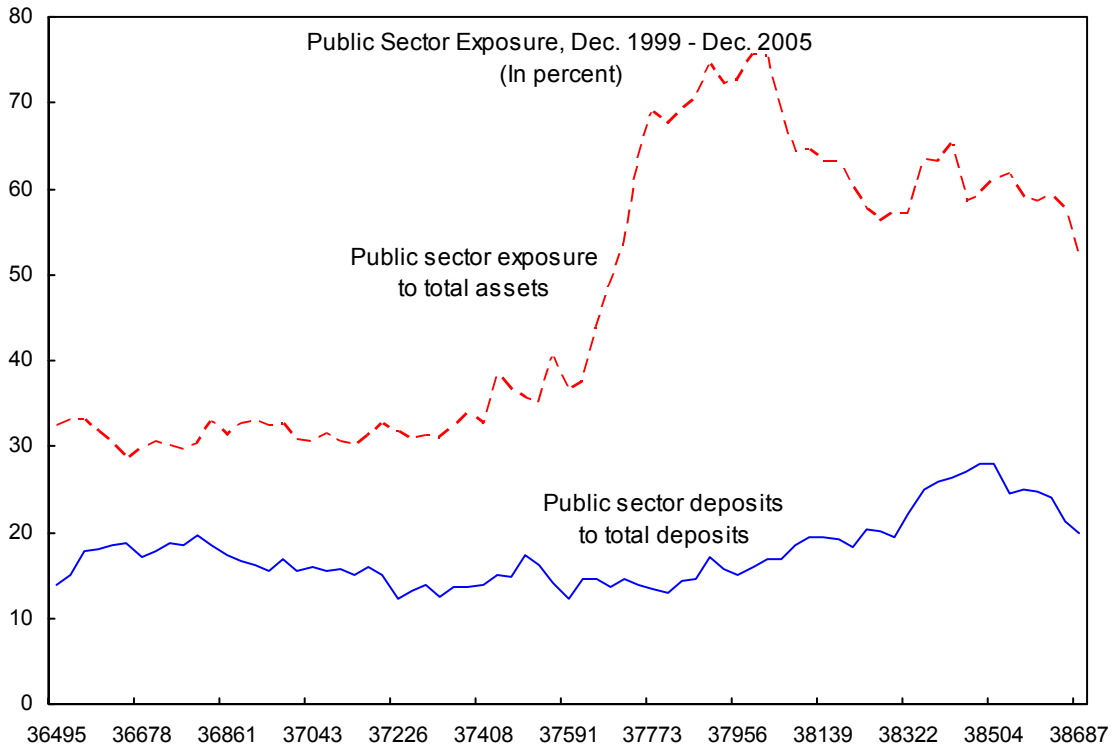
6. The banking sector has high exposure to the public sector, which accounts for a large share of both deposits and total credit.

The disintermediation trend described above has been associated with a gradual move from credit to the private sector towards safer assets, in particular government paper and central bank securities. Figure 4 shows that this has been a persistent trend since 1985, despite short-term variations. Claims to the private sector accounted for about 70 to 80 percent of total assets during the 1970s and 1980s, and declined to about 51 percent of total assets in December 2005. The substitution of credit to the private sector by government-related assets was particularly marked during periods of financial fragility. During the banking crisis of 1994 and more recently in early 2004, claims on the private sector reached a trough of 32 percent, before recovering during periods of lax liquidity conditions to around 40 percent of assets. On the supply side, banks receive an important volume of government deposits, which accounted for 20 percent of total deposits in 2005. They are therefore vulnerable to a drawdown of deposits or a transfer of deposits towards other financial institutions (for example, the newly created Banco del Tesoro).

B. Recent Developments: The New Regulatory Environment

Besides the characteristics above, important recent changes in the regulatory and operating environment must be taken into account when assessing the soundness of Venezuela's banking sector. President Chávez's government is pursuing an active policy of social development and poverty reduction, in part through new measures on lending practices and bank soundness. While some of the new measures reinforce bank regulation and supervision, they also imply increased government intervention in the operations of the banking sector, with a direct impact on banks' income. Four main changes may affect the ability of the banking sector to withstand future downturns or shocks, especially when considered in tandem with the long-term issues identified above.

Figure 4. Venezuelan Banking Sector: Exposure to the Public Sector, 1985-2005



Sources: Sudeban; BCV; IMF, IFS database.

1. Bank legislation and regulation approved in recent years has strengthened the supervisory framework but also has introduced distortions and legal uncertainty.

The legal framework is being extended to cover all financial institutions and transactions more exhaustively, which should strengthen supervision of the banking sector. A banking law was passed in November 2001. The law enhanced the regulatory framework in several aspects; in particular, it defined the different types of financial institutions, modified the sanctions regime, and established regulations on trust funds. In 2005, proposals for a new banking law were presented, incorporating microfinance institutions and cooperatives into the global regulatory framework. Two new laws were specifically dedicated to credit card transactions and foreign exchange operations.

However, the multiplication of changes to the regulatory and supervisory framework has created some legal uncertainty. In addition to the new laws, new measures and regulations are being adopted at a fast pace, including regulation of interest rates, limits on fees and commissions, and new prudential requirements. As a general rule, legal uncertainty tends to cause banks to take risk-averse positions and reduces financial intermediation.

2. Regulations passed in 2005 increase the share of directed credit.

The share of domestic credit set by regulation has gradually been augmented, and since 2005 amounts to about a third of total lending, as follows:

- Agricultural sector. Effective January 2005, Venezuelan banks must devote at least 12½ percent of their loan portfolio to agricultural businesses. The minimum increased to 14½ percent in May and to 16 percent in June 2005.
- Housing sector. A new mortgage regulation passed in February 2005 stipulates a minimum 10 percent share of housing sector loans in the credit portfolio of banks.
- Micro-enterprise sector. Venezuelan banks must lend at least 3 percent of their loan portfolio to micro-businesses. The minimum is to be increased in the future, up to 10 percent.
- Tourism sector. Starting in January 2006,⁵ private banks must allocate a minimum of 2½ percent of their loan portfolio to the tourism sector. For public banks, the minimum is 5 percent.

Directed credit can affect bank soundness in numerous ways. First, interest rate and liquidity risks may increase due to a potential maturity mismatch between deposits that remain essentially short-term and credit that has mostly longer-term maturities. Second, the quality of the banks' portfolio may deteriorate because regulation, rather than market-based

⁵ In fact, the tourism loan quota has not yet been implemented, and is expected to be effective starting in December 31, 2006.

assessment of risk, plays a greater role in credit allocation and because banks may lack the expertise to assess the quality of borrowers in the sectors receiving directed credit. Third, profitability may decline, since most directed credit is at regulated interest rates (see below), reducing the average spread between deposit and lending interest rates. Fourth, banks' ability to manage their balance sheets is reduced, and they may be unable to shift their assets in response to an asymmetric shock in a specific sector that receives directed credit. Finally, banks may prefer to reduce their overall portfolio rather than lend to sectors considered too risky.

3. Interest rate controls, higher reserve requirements, and stricter regulations on fees and commissions are being set.

Ceilings have been established on lending interest rates and floors on deposit interest rates. Effective in May 2005, banks may not charge lending rates above 28 percent nor pay deposit rates below 6½ percent for savings accounts and 10 percent for fixed-term deposits. The penalty surcharge for nonperforming loans was also capped, at 3 percent.

In addition to general floors and ceilings, preferential interest rates have been set at different levels (and with significant complexity) for some sectors of the economy. For housing, banks may only charge a fraction of the average lending rate, capped at 18 percent when the average rate exceeds 40 percent.⁶ The tourism sector also benefits from a preferential rate, 12.96 percent for general projects and 11.52 percent for projects in designated zones. For agricultural loans, banks cannot charge more than 80 percent of the commercial loan rate. The central bank also lowered the rate paid on certificates of deposit (CDs), its main monetary policy instrument, and shortened their maturity. Effective February 1, 2006, the central bank pays 10 percent for a 28-day CD and 9¼ percent for a 14-day CD. Previously, it issued 56-day CDs yielding 11¾ percent and the rate on 28-day CDs was 11½ percent. The combined effect of lower yields and shorter maturities could significantly reduce banks' earnings on central bank securities.

Additional regulations include the imposition of reserve requirements on ceded investments. In February 2006, the central bank established a new reserve requirement of 5 percent on such funds. The 5 percent reserve requirement increases by ½ percentage point every 4 weeks up to 15 percent in September 2007 (bringing the requirement in line with that on checking, savings, and term deposits). This measure is a welcome step towards limiting the risks associated with large off-balance-sheet operations. However, it is also likely to have a negative impact on bank profits.

Finally, regulations on fees and commissions are becoming more strict. Regulations concerning fees and commissions were issued in 2003. In June 2005, the central bank set

⁶ If the average lending rate (as calculated by the central bank) is below 20 percent, banks may charge up to 65 percent of the average for housing sector loans. The discount increases as the reference lending rate increases. In addition, low-income households may be eligible for subsidized interest rates at 5.16 percent and 7.31 percent depending on their income level.

new restrictions on these, including a 5 percent cap on fees for cash advances on credit cards and a 3 percent cap on fees for factoring or leasing operations. The authorities are working on new regulations to reduce fees and commissions to the actual cost of providing the service. While this may facilitate access to financial services, as the authorities intend, it will also put additional pressure on banks' profit.

In sum, the new regulations listed above introduce relative price distortions to the banking sector that are likely to affect the income structure and soundness of banks. The overall reduction in lending rates reduces the profitability of lending activities and encourages banks to pursue non-traditional (that is, non-interest-based) sources of revenues such as investment income. The tightening of the spread between deposit and lending rates when unremunerated reserve requirements are high may prevent banks from generating sufficient interest margins to intermediate credit profitably. Other measures, in particular, the extension of reserve requirements and the restrictions on fees and commissions, limit banks' earning capacity further. Moreover, by disassociating the pricing of loans from the borrower's actual risk, regulated interest rates may be a source of moral hazard—raising the overall risk in the sector. Finally, since banks react to limit an erosion of their soundness, such regulations may eventually be associated with lower financial intermediation and reduced access to credit.

4. The public banking sector is increasing considerably in size and breadth.

Public banks are expanding rapidly. Existing banks have strengthened their balance sheets through recapitalization (Banco Industrial de Venezuela (BIV) and Banfoandes) and an extension of their activities. But new public financial institutions also have been created. Besides the potentially very large Banco del Tesoro, which has a wide array of competencies—from being the fiscal agent of the government and managing all its treasury functions, to universal banking—several specialized banks have been set up (for example, for women and the army).

The expansion of public banks is intended to serve a number of national priorities:

- Fostering social development. In particular, financing small and medium-size enterprises and microfinance are central to the lending policies of public banks. According to analysts' reports, in 2005, the largest public bank, BIV, allocated 46 percent of its loans to small enterprises, 38 percent to micro credits, and 4 percent to cooperatives.
- Extending international cooperation. For example, the government contributed to the capital of BIV to support its expansion in Cuba in February 2006. Venezuelan public financial institutions also expanded into Bolivia and Uruguay in 2006.

The dilution of focus on financial performance in order to meet these competing goals increases the risk in the Venezuelan banking sector. Specifically, public banks may be more vulnerable to credit and market risks given the additional operating constraints and obligations they face.

III. ASSESSING THE SOUNDNESS OF THE BANKING SECTOR

Venezuela's banking sector is central to sustaining the high growth of the last several years. Studies show that bank behavior may actually amplify economic cycles (see for example Borio, Furfine, and Lowe, 2001). Thus, macroprudential analysis—assessing how banks contribute to vulnerabilities—should be seen as a key policy tool. Banks have three main channels of transmission of procyclical effects: capital, credit, and provisions (see Cortavarría and others, 2000). In this section, the potential for transmission through these channels is examined in two steps.

- First, FSIs are analyzed to assess the current condition of the banking sector. These permit linking domestic banks' soundness to macroeconomic, external, and capital account developments (Evans and others, 2000; Sundararajan and others, 2002).
- Second, stress testing is used to provide a necessary forward-looking complement, since FSI analysis gives limited information about the potential impact of shocks.

A. Using Financial Soundness Indicators

Table 6 presents key financial soundness indicators for the Venezuelan banking sector. They show that after a period of financial fragility in 2002, the banking sector has recovered well; FSIs are strong as of December 2005. The banking sector has benefited from the resumption of growth, especially in the non-oil sector. It also benefited from a large injection of liquidity into the economy, as the accumulation of net international reserves, a loosening of BCV credit policies, and the imposition of capital controls sharply increased the money supply. Broad money rose by more than 20 percent in real terms in 2003, 2004, and 2005. Real lending and deposit rates were negative and real credit to the private sector increased by 66 percent in 2004 and 50 percent in 2005, after contracting in 2002 and 2003.

Capital adequacy

While the banks' balance sheets are strong, further expansion of their operations may, however, require a capital injection. Capital adequacy indicators illustrate this situation.

- The average capital-to-risk-weighted-assets ratio stood above 15 percent in December 2005, while the capital-assets ratio was above 11 percent. Those levels are above the minimum requirements set by Sudeban, the superintendency of banks—a risk-weighted capital-assets ratio of 12 percent and a capital-to-asset ratio of 10 percent. The capital-assets ratio is particularly relevant in Venezuela given the large exposure of banks to government assets.

Table 6. Venezuela: Selected Vulnerability Indicators of the Banking Sector, 2000-2005 1/

(In percent)

	2000	2001	2002	2003	2004	2005
Capital Adequacy						
Capital to risk-weighted assets	16.8	17.7	20.5	25.1	19.2	15.5
Capital net of provisioning gap (NPLs - provisions) to risk-weighted assets	16.9	17.4	20.4	25.3	19.7	15.9
Capital to assets	12.6	14.0	15.9	14.3	12.5	11.1
Capital to (assets+off balance sheet items)	9.4	9.4	9.5	8.9	8.1	5.6
Retained earnings to capital	43.6	40.1	33.0	39.8	47.2	49.0
Uncollected interest to capital	12.2	16.0	15.6	13.7	9.8	10.4
Asset Quality						
NPLs to total gross loans	7.0	8.1	11.2	9.2	3.1	1.3
NPLs to total gross loans (definition of the authorities)	4.7	5.1	6.8	4.5	1.6	0.8
Provisions in percent of NPLs	101.2	92.4	97.9	103.7	130.2	196.3
Provisions in percent of NPLs (definition of the authorities)	132.9	126.7	132.6	179.5	224.5	289.1
Provisions to total gross loans	6.2	6.5	9.0	8.0	3.7	2.4
Unproductive assets to total assets	25.6	27.7	25.3	24.7	26.9	25.1
Public Sector Exposure						
Public sector exposure to assets	33.1	32.1	36.9	73.1	57.1	51.7
Publ. sect exp excl BCV's papers to assets	33.1	32.1	35.4	52.4	45.1	39.3
Publ. sect exp excl. leg. Res. to assets	14.1	13.5	19.6	35.7	28.9	24.3
Public sector deposits to total deposits	15.6	12.3	12.1	14.8	22.1	19.7
Earnings and Profitability						
Return on average assets	2.9	2.8	5.3	6.2	5.9	3.7
Return on equity	23.1	20.3	35.6	44.0	45.2	32.6
Net interest income to gross income	n.a.	n.a.	n.a.	74.1	72.7	61.1
Interest income on loans to total loan	29.2	25.7	36.9	31.3	22.1	18.2
Interest income on portfolio investment to average portfolio investment	22.2	20.5	29.4	27.5	18.5	13.7
Interest expenses to remunerated deposits	10.6	8.8	18.5	11.6	7.7	8.3
Gross financial margin to assets	12.2	10.9	13.4	13.6	10.5	7.4
Exceptional income to assets	0.4	0.1	0.1	0.1	0.0	0.0
Personal expenses to deposits	6.7	5.8	7.0	5.7	4.6	3.8
Net non-interest income to gross income	n.a.	n.a.	n.a.	25.9	27.3	38.9
Personal expenses to non-interest expenses	n.a.	n.a.	n.a.	39.5	41.1	41.5
Liquidity						
Cash to short-term liabilities	31.3	31.4	27.3	24.5	23.4	22.3
Liquid assets to total assets (core liquid asset ratio)	24.3	23.4	18.9	19.1	18.4	17.9
Liquid assets to total assets (broad liquid asset ratio)	43.3	40.0	43.9	58.4	52.2	47.3
Liquid assets to short-term liabilities	n.a.	n.a.	27.7	24.9	24.0	23.0
Liquid assets to total deposits	31.3	31.4	27.3	24.5	23.4	22.3
Transaction-related deposits to total deposits	48.3	50.4	46.2	56.2	53.2	56.5
Loans to assets	41.9	43.6	37.7	28.3	37.8	44.0
Sensitivity to market risk						
Duration of assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Duration of liabilities	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net open forex position (in percent of capital)	1.6	1.5	1.4	0.7	1.1	0.9
FX deposits held by residents to total deposits	0.1	0.2	0.2	0.2	0.1	0.2
FX loans to total loans	0.6	0.7	0.8	0.7	0.6	0.5
Credit to private sector (percent change)	25.5	23.5	0.9	10.5	98.8	69.4
Credit to GDP (annual percent change)	-6.5	10.6	-16.7	-11.3	28.5	25.4
Average lending rate	25.5	24.2	38.3	25.7	18.1	16.6
Average deposit rate	16.3	15.5	29.0	17.2	12.6	11.6
Interest rate spread	9.2	8.7	9.3	8.5	5.5	5.0

Sources: Sudeban; BCV; IMF, staff estimates.

1/ Banking sector includes universal and commercial banks.

- However, the average ratios do not capture the pressure on some banks. The very dynamic expansion in banking activities in 2004 and 2005 has meant that banks now appear to be stretching their capital to the regulatory limit. Capital adequacy ratios declined from end-2003 to end-2005 due to a rapid increase in assets. At end-2005, seven banks did not comply with the capital-to-assets minimum requirement, and five banks did not meet the minimum capital to risk-weighted assets ratio. Thus, further expansion in banking activity may require the recapitalization of a number of banks to ensure their soundness going forward.
- The interpretation of capital adequacy ratios is complicated by the presence of extremely large off-balance-sheet items. Their inclusion within balance sheet assets would reduce relative levels of capital. If trust funds and investment funds are included in total assets, the capital-assets ratio falls to about 5½ percent. As discussed above, off-balance-sheet assets are an indirect source of vulnerability for the banking-sector because of the banks' implicit commitment to honor investment funds.

Asset quality

Asset quality has improved since 2002 against the backdrop of a strong recovery in the non-oil economy and rapid credit growth. Indicators of asset quality throw further light on this.

- Reported nonperforming loans as a share of total loans declined from an average of 11¼ percent in 2002 to 1¼ percent at end-2005. Furthermore, banks are over-provisioning for nonperforming loans: at end-2005, provisions accounted for 196 percent of nonperforming loans.
- The strong provisioning position is, however, due solely to a drastic reduction in nonperforming loans. The ratio of provisions to total loans has declined substantially, from 9 percent in 2002 to 2½ percent in 2005.

The provisions-to-loans indicator illustrates the importance of credit growth in reducing nonperforming loan ratios. As nonperforming loans typically materialize with a lag, increased provisioning is likely to be warranted in periods of large credit expansion. While banks appear safely provisioned given current nonperforming loan levels, they might need to increase provisions considerably if credit quality deteriorated during an economic downturn.

Public sector exposure

The exposure of the banking sector to the public sector has declined from the levels reached after the 2002 crisis but remains high.

- At end-2005, public sector exposure as a percent of total assets stood at 52 percent, including holdings of central bank sterilization bills and monetary reserves. This represents a substantial decline since the 73 percent ratio of end-2003. However, it remains well above levels prevailing before the 2002 crisis, when public sector exposure accounted for only about one third of total assets.

- The share of public sector deposits in total deposits increased to about 20 percent in December 2005.

In the current economic environment, risks associated with high exposure to the public sector seem limited. However, downside risks are real, notably a potential transfer of public deposits to the new treasury bank—which would affect banks' balance sheets substantially.

Bank income

Earnings and profitability remain strong despite a marked deterioration since 2003 because of the interest rate decline and the new banking sector regulations. The return on assets and return on equity were 3¾ percent and 32½ percent, respectively, at end-2005, down from 6¼ percent and 44 percent at end-2003. A number of factors explain the reduction in profitability.

- First, the decline in lending rates reduced the ratio of interest income on loans to total loans while the interest expense to remunerated deposits ratio increased. These efficiency indicators suggest that the measures taken by the government in 2005, which resulted in a reduction in the overall level of interest rates and in the interest rate spread, are affecting the structure of banks' profits as predicted above (see Table 6).⁷
- Second, the ratio of interest income on portfolio investment to average portfolio investment diminished from 29 percent in 2002 to 13¾ percent in 2005. This reduction also reflects the downward trend in interest rates.

Liquidity

Finally, banks appear very liquid, despite a gradual increase in the proportion of liquid liabilities to liquid assets. Core liquid assets were 18 percent of total assets and 23 percent of short-term liabilities at end-2005. If liquid assets are extended to include investment securities and government paper, the liquid asset ratio reached 47¼ percent at end-2005. The comfortable liquidity situation of banks is consistent with relatively limited intermediation of long-term loans and the predominance of short-term operations.

In sum, banking sector indicators present a sound picture at end-2005 but appear especially dependent on a specific macroeconomic environment. Capital adequacy is high and banks have sound credit portfolios and liquid balance sheets. Earnings and profitability are also high. However, the strong indicators are partly due to the propitious economic setting, in particular, high growth and excess liquidity in the economy. In this environment, banks appear to be expanding their operations to the limits of their balance sheet capacity, notably with a dramatic increase in credit to the private sector. Nonperforming loans may be

⁷ Banks compensated for interest rate controls and directed credit by increasing the share of fees and commissions in their total earnings. Fees and commissions accounted for 67 percent of average bank profits in 2005, up from 55 percent in 2004.

expected to materialize with a lag. Further, the impact of new regulations on the banking sector is already materializing in the form of reductions in profitability. Finally, there are signs that long-term structural problems in the banking sector, identified above, have not been resolved: financial intermediation and banking competition continue to be limited; exposure to the public sector and to economic cycles remains high; and “non-traditional” banking activities remain important. In this type of environment, the question of how the banking sector would react to a change in circumstances becomes particularly important—a question stress tests are needed to answer.

B. Stress Testing the Banking Sector

Stress testing generates indicators of the likely impact of exceptional but plausible shocks to the banking sector, thereby allowing financial vulnerabilities to be identified before they become apparent. “Plausible” shocks are selected based on past trends and events that affected the banking sector, and are applied to the sector in its current environment—that is, taking the regulatory system and recent developments into consideration.

For Venezuela, drawing on the analysis above, four main potential shocks seem relevant: (1) a fall in the international price of oil, which in the past has had the sharpest impact on the growth of the economy and government solvency; (2) a deterioration in credit quality—the lagged impact of the recent sharp increase in credit to the private sector and the multiplication of lending requirements; (3) an interest rate shock, which proxies both a tightening of the policy stance and the impact of the new regulations mentioned above; and (4) a loss of confidence in the banking sector, which could result from bankruptcies in the banking sector, political uncertainty and crisis, or erosion in the effectiveness of the foreign exchange controls. The materialization of these shocks would result in increased credit, market, and liquidity risks, as discussed below.

Sensitivity Analyses

The impact on credit risk, interest rate risk, and liquidity risk is assessed for each potential shock, by measuring the impact of a shock on a single variable at a time for example, the ratio of nonperforming loans to total loans or a linear change in the interest rate. Two scenario analyses are presented to reflect the fact that interrelated shocks may reinforce each other. The first models a cyclical downturn, in which key variables are assumed to return to their historic averages. The second is a crisis scenario showing the impact of an overall deterioration in the macroeconomic environment.

The impact of the various shocks is calculated for a specific date, in this case end-2005, to assess whether the current structures and sizes of banks’ balance sheets are adequate to weather such shocks. The tests identify whether additional provisions would be required and what the impact on capital adequacy and income would be. The tests have the limitation of being static in nature and not including second-round effects. In particular, there is no change in portfolio behavior, no realignment of the portfolio structure in response to a change in risk factors, and no change in earnings other than those generated by the shocks.

The tests use a bottom-up approach, based on bank-by-bank data. Tests are conducted on individual banks and aggregated to provide an assessment of sector-wide vulnerability. Also, the more vulnerable institutions are identified and analyzed separately. The data, published periodically by the Venezuelan Superintendency of Banks (Sudeban, www.sudeban.gob.ve), include detailed balance sheets and income statements for individual financial institutions. In particular, breakdowns of loans between performing and nonperforming loans (and their various subcategories) are extracted to assess exposures to credit risk. Maturity buckets (groupings by maturities) are constructed based on breakdowns of assets and liabilities according to their time-sensitivity.

The unavailability of some data constrains the scope of the stress testing exercise:

- Sectoral analyses and analyses of the risks associated with loan concentration are impeded by the absence of a sectoral breakdown of data on loans (performing and nonperforming) and on loan concentration. To address this, the study assumes that sectors are symmetrically affected by shocks—this is, partially corroborated by the correlation between changes in oil and non-oil GDP.
- The vulnerability of banks to foreign exchange rate shocks is not tested, as net open foreign exchange positions for individual banks are not available. However, as shown in Table 6, the average net open foreign exchange position of the banking sector is not high. At end-2005, foreign exchange deposits held by residents accounted for 0.2 percent of total deposits and foreign exchange loans for 0.5 percent of total loans.
- Without published data on interbank loans, the study does not test for contagion risk. This appears again to be a minimal flaw in the analysis as the interbank market is embryonic in Venezuela.

The results presented below may be adjusted by correcting the post-shock ratios for off-balance-sheet assets—on the premise that banks' capital is partially exposed to off-balance-sheet activities. Off-balance-sheet assets are not included in the computations, despite their large size compared to total banking sector assets. Consistency with the prudential indicators used by the Venezuelan authorities motivates this choice. Their inclusion in the calculation of capital adequacy ratios could reduce capital coverage by as much as 8 percentage points, on average, for the banking sector, as suggested in Table 7. This would bring the capital adequacy ratio for the average of all banks down to 7.6 percent, requiring a recapitalization equivalent to 4.1 percent of 2005 GDP. This also provides a measure of how much new capital will be required as off-balance sheet items are included in the new definition of prudential ratios by the superintendency of banks (see Section II. B. 3).

Finally, the absence of long time series for banking sector indicators and balance sheet and income statement data at the bank-by-bank level prevents the use of macroeconomic models for defining the nature and magnitude of shocks. Also, substantial changes in the macroeconomic and financial environment limit the comparability of past experience with the current situation. Thus, in this paper, the magnitude of shocks and the design of scenarios are based on a qualitative analysis based on history and recent developments affecting the banking sector, as described in Section II above.

Credit risk

The credit risk analysis illustrates how banks' capital would withstand either a rise in nonperforming loans or tighter prudential standards. By assumption, banks fully provision. An addition to provisions from either higher nonperforming loans or tighter prudential standards reduces their capital. The size of the impact on capital adequacy indicates the sector's vulnerability to credit risk. The assumed shocks are calibrated based on their past levels. The 'historic average' for nonperforming loans in the banking sector (based on the average for the five years from 1999 to 2003) was 7.6 percent. This predates the large injection of liquidity and the surge in credit to the private sector that took place in the last few years. The "crisis level" of nonperforming loans is set at 15 percent, based on levels reached during the 1994–5 crisis.

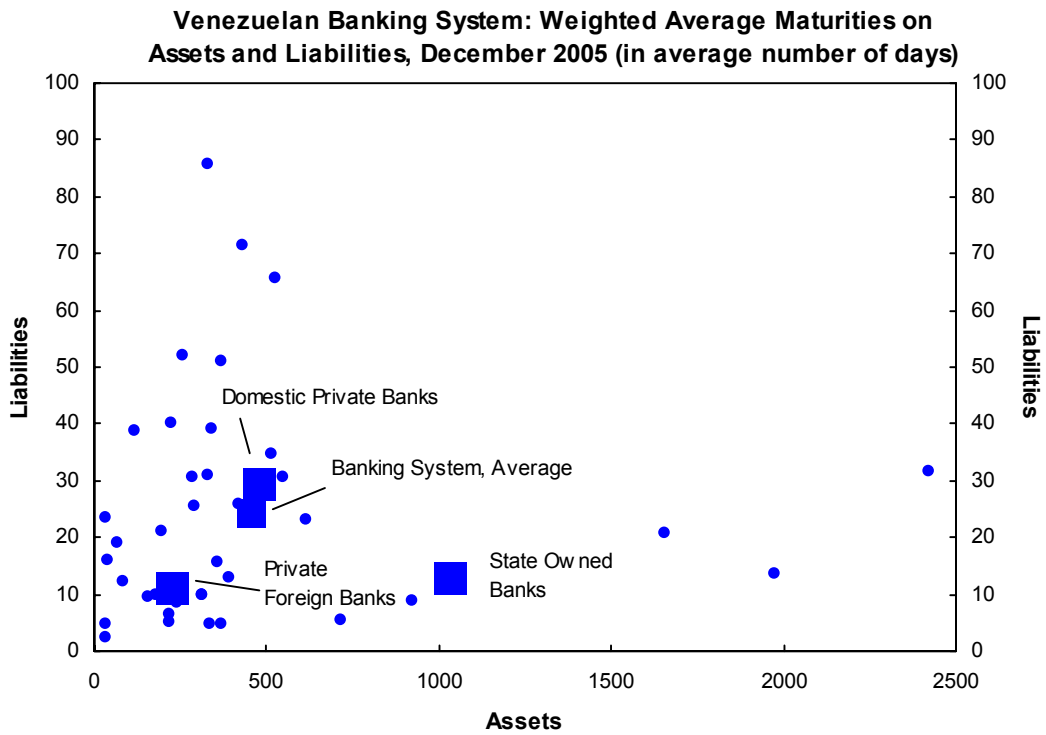
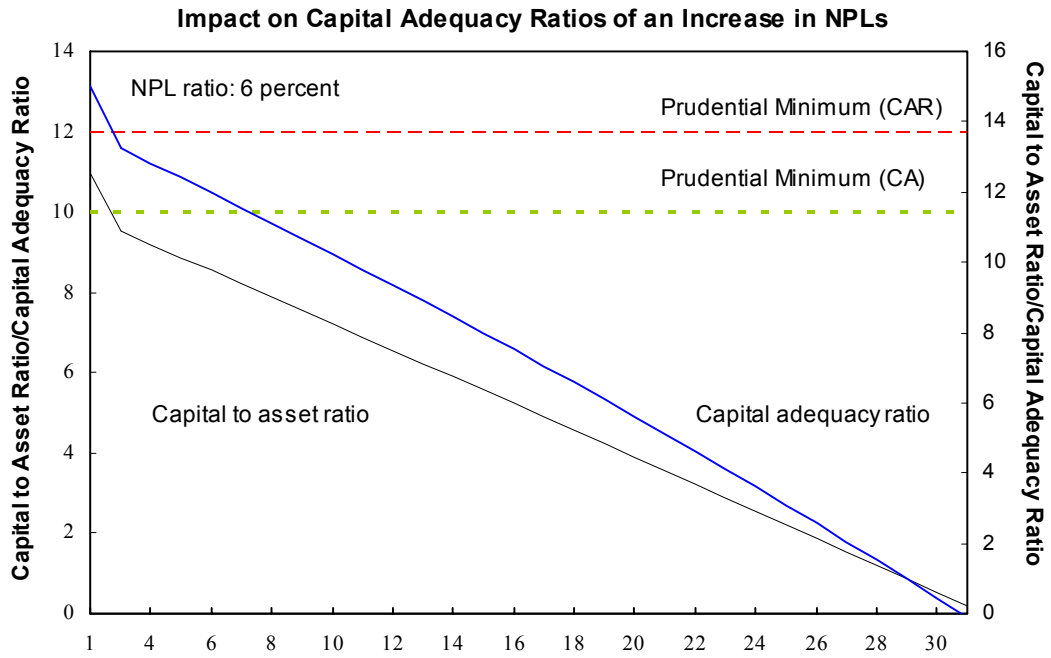
The results are presented in Table 7 and in Figure 5:

- The aggregate system could withstand a 6 percent increase in the nonperforming loan ratio without the capital adequacy ratio falling below the 12 percent minimum requirement.
- The average level of capital appears adequate also for levels of nonperforming loans close to historic averages.
- If credit quality were to deteriorate to levels experienced during the 1994 banking crisis, the banking sector, at an aggregate level, would become undercapitalized by about 4 percent of risk-weighted assets.⁸

At the aggregate level, vulnerability to a general deterioration in nonperforming loans appears limited. However, public banks and a small number of least-capitalized banks appear more vulnerable to a deterioration in credit quality. At end-2005, the largest public bank was undercapitalized with a capital adequacy ratio of 4 percent and nonperforming loans of 27 percent of total loans. The least capitalized banks currently have capital adequacy ratios just around the 12 percent prudential requirement. A return of the nonperforming loan ratio to its historic average would severely weaken those banks, with a post-shock capital adequacy ratio close to 6 percent. A more substantial deterioration of credit quality, to crisis levels, would exhaust their capital almost completely. The largest banks (in terms of assets) appear more resilient to credit quality shocks. Finally, domestic banks are more vulnerable to

⁸ Much larger increases in nonperforming loans would be required to exhaust capital in the system—with nonperforming loans reaching about 31 percent of total loans. In practice, banks could use current-year profits, retained earnings, and fair-value reserves as a buffer against the deterioration of loan quality instead of drawing down regulatory capital. This would provide an additional cushion to absorb potential shocks to an increase in nonperforming loans and would further improve the outcomes of the credit risk sensitivity analyses given the relatively high profitability of Venezuelan banks in recent years. Table 7 shows that, as of December 2005, the cushion is on average 1.7 percent of capital for the banking sector.

Figure 5. Venezuelan Banking Sector: Credit and Interest Risks, December 2005



Source: Author's estimates.

credit risk than foreign banks, as they are less capitalized and have higher nonperforming loan ratios.

The impact of a default on government paper is also assessed, with two distinct shocks:

- A government default on 50 percent of its debt obligations would reduce the average capital adequacy ratio by about 2 percentage points.
- The impact would be 3.7 percentage points if the government were to default on 75 percent of its obligations.

Thus, the banking sector appears well capitalized against a partial default on government paper.

Interest rate risk

Interest rate risk refers to the sensitivity of banks' assets and liabilities to changes in interest rates in the presence of maturity mismatches. The sensitivity analysis here uses a maturity mismatch model, a common framework for measuring interest rate risk, which requires a breakdown of assets and liabilities by buckets according to maturity.⁹ Banks' assets and liabilities are sorted into six maturity buckets, using data from Sudeban. The gap (or mismatch) for each time band is computed. The impact of a change in interest rates is assessed by calculating the changes in interest income and interest expenses resulting from the gap between the flows of interest on the holdings of assets and liabilities in each bucket.¹⁰

The impact of three types of interest rate shocks is estimated:

- A linear increase in interest rates. An increase of 10 percentage points would reduce by almost half the average capital adequacy ratio for Venezuelan banks, while an increase of 20 percentage points would exhaust all their capital. Two banks would not

⁹ A weakness of the maturity mismatch model is that the risk measurement is limited to the cash flow impact of interest rate shocks (see Blaschke and others, 2004 for a discussion of shortcomings of the repricing gap model). A duration model is often used as a complement to the maturity mismatch model in order to measure the interest rate impact on the value of banks' net worth. Data on the duration of the financial instruments in the trading portfolio of banks are not available. Therefore, the impact of changes in the interest rates on the duration and on the market value of the trading portfolio is not assessed.

¹⁰ Due to data restrictions, the following assumptions are necessary. First, two categories of time-sensitive assets and liabilities on the banks' balance sheets are considered: loans to the private sector and deposits from the public on the one hand, and holdings of government paper on the other hand. Second, for government paper (central government treasury bills and bonds and central bank sterilization bills), it is assumed that their maturity is less than or equal to three months. Third, the share of government paper in individual banks' trading books is considered equivalent to its share in total investment securities for the banking sector as a whole. This assumption is necessary in the absence of bank-by-bank data on holdings of government paper. It should also be noted that the data for maturity buckets come from a different source file than data on total loans and deposits, and small discrepancies are evident.

be able to withstand a 10 percentage point increase in interest rates, and nine banks would have insufficient capital to withstand a 15 percentage point increase.

- A narrowing of the spread between deposit and lending rates and a flattening of the yield curve. Other things being equal, a 2 percentage point narrowing of the interest rate spread would lower the capital adequacy ratio by 1½ percentage points, while a 4 percent narrowing would lower it by 2.8 percentage points. A flattening of the yield curve—that is, a 5 percentage point increase in short-term rates while long-term rates remain unchanged—would reduce the average capital adequacy ratio by 4 percentage points.
- A shock combining all of the above (increase in interest rate levels, narrowing of the spread, flattening of the yield curve). An increase in nominal interest rates of 10 percent would reduce the average capital adequacy ratio to 5½ percent.

The tests show that the Venezuelan banking sector appears vulnerable to increases in interest rates because of a large maturity mismatch. Interest rate shocks would particularly affect public and domestic private banks, while foreign private banks appear more resilient. The capital base of the least capitalized banks would be insufficient to cover the losses incurred. As illustrated in Figure 5, the maturity mismatch is greater for state-owned banks, and, to a lesser extent, for domestic private banks. A 15 percentage point increase in nominal interest rates would bring the capital adequacy ratios of the ten least capitalized banks to negative levels, especially if it is combined with a reduction in the interest rate spread and a flattening of the yield curve. An increase in interest rates of 10 percentage points would bring the capital of state-owned banks to zero and an increase of 20 percentage points would do so for domestic private banks. Foreign private banks appear more resilient, due to a smaller maturity mismatch. Nonetheless, an interest rate shock would severely reduce their capital.

Liquidity Risk

Vulnerability to liquidity risk is assessed by estimating the impact of a reduction in liquid assets on liquid asset ratios. Two shocks are considered: a run on deposits, and a 50 percent withdrawal of government paper from liquid assets.

- A run on deposits affecting 25 percent of total deposits would reduce liquid assets to 27 percent of total assets. Liquid assets would remain, on average, a comfortable 45 percent of short-term liabilities and 30 percent of short-term liabilities and trust funds. A run of 73 percent of total deposits would be needed to exhaust liquid assets, on average.
- A 50 percent withdrawal of government paper would substantially reduce liquid assets, as banks' portfolios include large amounts of government securities. Nonetheless, the liquidity ratio would remain at a relatively high level, declining from 47 percent to 32 percent of total assets.

In sum, the high levels of liquidity in the banking sector, combined with relatively low loan-to-deposit ratios, temper liquidity risks. In effect, liquid assets accounted for almost

50 percent of total assets in December 2005. Banks also appear resilient to a withdrawal of government paper from liquid assets. However, state-owned banks and, to a lesser extent, foreign private banks, are more vulnerable to liquidity risks.

Scenarios—Cyclical downturn and economic crisis

Since the shocks assessed above cannot be counted on to occur separately, two scenarios are presented to assess their compounded effect. The results are presented in Table 7.

- The first scenario models a cyclical downturn in the economic environment. Less favorable external conditions, with a slowdown in global growth, result in a deterioration in the terms of trade, in Venezuela's external position, and in government revenue. Tighter liquidity conditions are accompanied by a 10 percentage points increase in nominal interest rates. Also, the slowdown in growth causes credit quality to worsen: nonperforming loans return to their historic average, estimated at 7.5 percent of total loans.
- The second scenario is based on a more drastic deterioration of the economic environment, replicating a crisis situation. The crisis could come externally, through a large deterioration in the terms of trade and/or global economic slowdown, or domestically, with a sharp rise in interest rates following a period of lax liquidity conditions and accompanied by a marked slowdown in economic growth. The main parameters in this scenario are a 20 percentage point increase in nominal interest rates and a worsening in credit quality. Nonperforming loans reach crisis levels, i.e., levels comparable to those reached during the 1994-95 crisis—estimated at 15 percent of total loans.

Cyclical downturn

Under the cyclical scenario, a downturn reduces the average capital adequacy ratio in the banking sector (excluding state-owned banks) to 2.6 percent, from an initial 15.5 percent.¹¹ Domestic private banks appear more vulnerable than foreign banks. The capital of the former would, on average, be almost entirely exhausted by the necessary increase in provisions and the losses associated with the interest rate shock. The post-shock capital adequacy ratio is 1 percent. Finally, the ten least capitalized banks are the most vulnerable and would be unable to weather the downturn, with capital adequacy ratios turning negative on the impact of the cyclical downturn.

¹¹ This result does not include state-owned banks. Their nonperforming loan ratios are, on average, already higher than the envisaged crisis scenario. Their inclusion would worsen the results drastically due to their low capital base.

Table 7. Venezuelan Banking System: Sensitivity Analyses and Scenario Stress Tests

	Banking System Average	State owned Banks	Domestic Private Banks	Foreign Private Banks	Five Largest Banks	Ten Largest Banks	Five Least Capitalized Banks	Ten Least Capitalized Banks
MAIN PRUDENTIAL RATIOS, PRE-SHOCK, DECEMBER 2005								
Capital adequacy ratio	15.5	10.1	15.0	16.4	14.7	16.1	11.6	12.3
Liquid Assets to Total Assets	47.3	82.4	43.0	44.4	41.5	45.2	40.5	41.0
Liquid Assets to Short-Term Liabilities	58.9	99.8	54.2	54.5	53.0	55.6	49.5	56.5
Liquid Assets to ST Liabilities and Trust Funds	42.8	95.1	36.0	43.2	35.3	45.2	38.8	44.3
Loan to deposit ratio	56.3	11.2	61.5	61.2	64.1	60.4	65.0	68.7
SENSITIVITY ANALYSES (Capital Adequacy Ratio, in percent)								
Credit Risk (Impact of Credit Deterioration) 1/								
Post-shock, Historic Average NPLs 2/	11.5	-	10.5	13.1	10.7	12.2	6.4	7.4
Post-shock, Crisis Level NPLs 3/	7.8	-	6.4	10.4	7.1	8.8	1.2	2.6
Government Partial Default								
On 50 percent of its debt obligations	13.5	3.1	13.9	15.2	13.5	15.0	10.9	11.6
On 75 percent of its debt obligations	11.6	1.2	12.2	13.2	11.5	13.0	9.6	10.4
Interest Rate Risk 4/								
Impact of an Increase in Interest Rates								
+10 percentage points	8.3	-4.1	8.3	11.2	8.8	11.7	1.7	4.7
+15 percentage points	4.8	-8.9	4.6	8.4	5.5	5.5	-3.1	0.9
+20 percentage points	1.0	-14.1	0.6	5.4	2.0	-6.3	-8.5	-3.4
Impact of a Narrowing of the Interest Rate Spread								
-2 percentage points	13.4	2.6	13.7	15.4	13.6	13.9	8.5	10.1
-4 percentage points	12.2	1.0	12.4	14.4	12.4	12.6	6.9	8.8
Impact of a Flattening of the Yield Curve								
	10.9	0.4	11.2	13.0	11.0	11.4	6.0	7.9
Combined Impact								
+10 percentage points	5.5	-8.3	5.7	8.7	6.4	5.3	-2.2	2.1
+15 percentage points	2.0	-14.1	2.1	5.9	3.4	1.0	-7.8	-1.8
+20 percentage points	-0.9	-19.4	-0.9	3.5	1.0	-3.0	-13.1	-5.3
SCENARIOS (Capital Adequacy Ratio, in percent)								
Cyclical downturn								
Capital injection needed to reach CAR 12 percent (in percent of GDP)	2.6	-	1.0	5.4	2.3	2.2	-4.3	-2.1
	2.2	-	1.7	0.6	0.3	0.2	0.1	0.1
Crisis								
Capital injection needed to reach CAR 12 percent (in percent of GDP)	-8.3	-	-11.2	-3.2	-7.7	-11.5	-21.4	-16.2
	4.3	-	3.1	1.2	0.5	0.3	0.1	0.1
Memorandum items:								
Impact of off-balance sheet items								
CAR after inclusion of off-balance sheet items	7.6	3.5	7.3	10.3	7.6	8.0	8.1	7.1
Impact	-7.9	-6.6	-7.7	-6.1	-7.1	-8.0	-3.5	-5.2
Use of profits as cushion to shock								
CAR after inclusion of profit cushion	17.2	10.6	17.2	19.0	17.1	17.2	13.6	13.8
Impact	1.7	0.5	2.3	2.6	2.4	1.2	2.0	1.6
LIQUIDITY RISK (Liquidity Ratios, in percent)								
Removal of government papers from liquid assets								
Liquid Assets to Total Assets	32.2	41.4	34.5	25.5	31.3	33.7	36.2	37.0
Liquid Assets to Short-Term Liabilities	40.1	50.1	43.6	31.2	40.6	41.7	44.2	51.2
Liquid Assets to ST Liabilities and Trust Funds	29.1	47.8	28.9	24.7	25.7	32.9	34.8	39.8
Run on deposits (25 percent of deposits affected)								
Liquid Assets to Total Assets	27.3	61.8	23.1	24.1	21.6	24.8	20.3	22.1
Liquid Assets to Short-Term Liabilities	45.2	99.7	38.9	39.4	37.4	40.8	32.7	42.0
Liquid Assets to ST Liabilities and Trust Funds	30.1	93.6	23.3	29.1	22.0	33.0	24.9	32.6
Deposit run exhausting liquid assets	72.8	99.3	73.4	64.6	53.0	55.6	49.5	56.5

1/ Public banks are excluded because, on average, their NPL ratios are currently above the post-shock levels.

2/ The historic average is defined as the average for the 1999-2003 period, predating the large injection of liquidity in the economy. During that period, nonperforming loans amounted to 7.6 percent of total loans.

3/ The crisis level is defined as the level reached during the 1994 banking crisis in Venezuela. During the crisis, nonperforming loans reached about 15 percent of total loans.

4/ It is assumed that the government suspends the payment of interest on 50 percent of current government paper.

Crisis

Under the crisis scenario, the average capital adequacy ratio in the banking sector would reach negative levels, -8 percent. As above, the results are presented excluding state-owned banks. Domestic private banks would be more affected, with capital adequacy declining to -11 percent. This scenario would be particularly costly for the banking sector because it would exhaust, on average, the capital of the ten largest Venezuelan banks, bringing their capital adequacy ratio to -11½ percent. The overall cost of recapitalizing the banks to bring them to the minimum ratio of 12 percent would be greater than 4 percent of GDP.

To summarize, the stress-testing results identify interest and credit risks as the main threats to banking sector soundness. Banks are particularly vulnerable to interest rate shocks because of a large maturity mismatch between assets and liabilities. While credit risk does not seem to be an immediate concern, a deterioration in credit quality to levels similar to those experienced historically would expose a number of banks. Banks appear well capitalized to face a default on government securities, despite a large exposure to the government. Finally, liquidity risks are limited as banks typically lend short-term, are liquid, and have a fairly low loan-to-deposit ratio.¹² In spite of high pre-shock capital adequacy ratios, banks appear very vulnerable to a cyclical downturn. The capital of the banking sector would not withstand such a sharp deterioration in the macroeconomic environment.

IV. SUMMARY AND CONCLUSION

In an environment of high growth and expansionary macroeconomic policies, the paper identifies two key sets of determinants of the sustainability of the Venezuelan banking sector. First, a number of long-term issues need to be resolved. These include improving banks' resilience to external shocks and policy volatility and deepening financial intermediation by reducing the share of non-lending activities and exposure to the public sector. Second, new regulations are effectively creating a more constrained operating environment for Venezuelan banks with substantial implications for their financial soundness.

With these issues defining the framework for the banking sector, the paper uses macroprudential analysis (FSIs and stress testing) to assess the sector's sustainability. While noting that FSIs are currently strong, the paper finds that banks may be vulnerable to a deterioration in credit quality and to interest rate shocks. Further, banks appear very

¹² The stress testing exercise presented here does not take second-round effects into account. These would magnify the estimated impact of the various shocks. First, the weakening of an individual bank could cause a decline in confidence, and increase liquidity risk for the whole banking sector. Second, the negative impact of bank fragility on growth would have a negative feedback effect on banks. Finally, the failure of one or a few banks could have a domino effect on the financial system, triggering a more generalized banking crisis, through interbank contagion risk.

vulnerable to a cyclical downturn that would affect the main macroeconomic and financial variables. While the materialization of such shocks seems unlikely, the balance of risks appears to be on the downside, in particular as the fast expansion in lending activities is stretching the capital base of many banks to the regulatory limit. The large liquidity injection into the banking sector is likely to have concealed any solvency problems remaining in the sector, particularly given the presence of capital controls—and such underlying problems need to be taken into account for a thorough analysis of the soundness of the sector. This is apparent from an analysis of long-term trends in the banking sector and of the growing role of the government:

- The Venezuelan banking sector has historically been exposed to high volatility in growth, liquidity conditions, and interest rate movements. This has resulted in a highly cyclical pattern in credit to the private sector and credit quality. The current economic upswing is unsurprisingly associated with strong prudential indicators for the banking sector. However, the paper's long-term analysis shows that drastic shifts in interest rates are frequent, especially following lending booms. Further, nonperforming loans typically materialize with a lag. Credit quality, especially for mortgage and consumer credit, can deteriorate rapidly when its expansion has taken place in the context of negative real interest rates and excess liquidity in the sector.
- Increasing government intervention in the banking sector increases risks to banking sector soundness. The extension, among other things, of directed credit requirements, regulated interest rates, non-market driven activities by public banks induces non-market based assessments of lending risks and moral hazard. This may affect the quality of credit. Further, an increasingly constrained operating environment reduces the ability of banks to manage balance sheet risks.

The stress tests in the paper show that even a relatively modest economic downturn could threaten the banking sector, based on current levels of capitalization and balance sheet structures—suggesting that the current soundness of the banking sector should not lead to complacency. A crisis scenario shows much more severe consequences, with a sharp deterioration in key variables.

In terms of policy implications, the findings send a clear message that public intervention and regulation must bear in mind the potential downside risks faced by the banking sector. In this connection, the improvement of supervision is a welcome step. Addressing deficiencies in the supervisory framework could help to mitigate the risks. These include the absence of established procedures for the consolidated supervision of financial groups, off-balance-sheet items, offshore operations of Venezuelan banks, and for the monitoring of connected lending. Ensuring that banks operate in a competitive environment in which they can mitigate risks as they arise is key for the long-term sustainability of the sector. This would eventually allow for a deepening in financial intermediation, necessary for broadening access to banking services for a large share of the population—and, hence, securing sustainable growth and poverty reduction.

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