Financial Stability Report

July 2003

Summary and Conclusions

✠ The previous Financial Stability Report showed that solvency had improved not only for credit establishments but also for firms and households, which are the system's main counterparts within the real sector. Specifically, the Report described how the financial system's solvency had recovered and its main clients' financial situations had returned to normal. In this context, institutional conditions were ripe for intensifying credit relations between the financial system and the real sector.

✠ Thus, credit rebounded strongly in the last quarter of 2002 and early 2003.

✠ It is noteworthy that the credit upturn has gone hand in hand with continued improvement in balance-sheet quality for the financial system and its private clients.

✠ The following paragraphs outline the features of the macroeconomic setting most affecting the financial system, the main developments and risks of the system's major clients and its balance-sheet trends and risks.

Macroeconomic Developments

✠ Internationally, the most striking development in recent months has been a better perception of the region at a time when the world economy has weakened. Although the developed economies' poor performance has had a negative impact on Latin American exports, their low interest rates are an advantage to the region's countries for attracting capital flows. The region has also benefited from greater clarity about Brazil's management of economic policy. As a result, Colombia and its neighboring countries now have better prospects of access to sources of external financing (Figure 1). This is a positive development, for in recent years the external environment has been a major determinant of stability in domestic financial markets.

✠ Domestic spending, which affects the nontradables sectors' demand for credit and ability to pay, rose sharply in the second quarter of last year and the first months of this year. As shown by
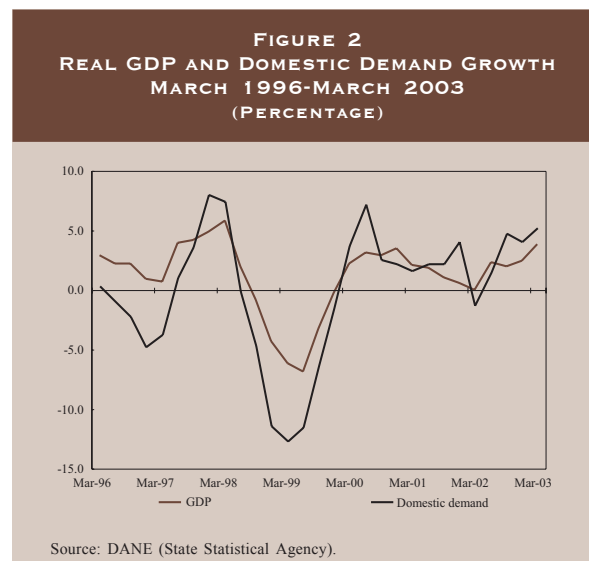
FIGURE 1 **EMBI PLUS SPREAD FOR COLOMBIA** (BASIS POINTS)	**FIGURE 2** **REAL GDP AND DOMESTIC DEMAND GROWTH** **MARCH 1996-MARCH 2003** (PERCENTAGE)

FIGURE 1
EMBI PLUS SPREAD FOR COLOMBIA
(BASIS POINTS)

Source: Bloomberg.

FIGURE 2
REAL GDP AND DOMESTIC DEMAND GROWTH
MARCH 1996-MARCH 2003
(PERCENTAGE)
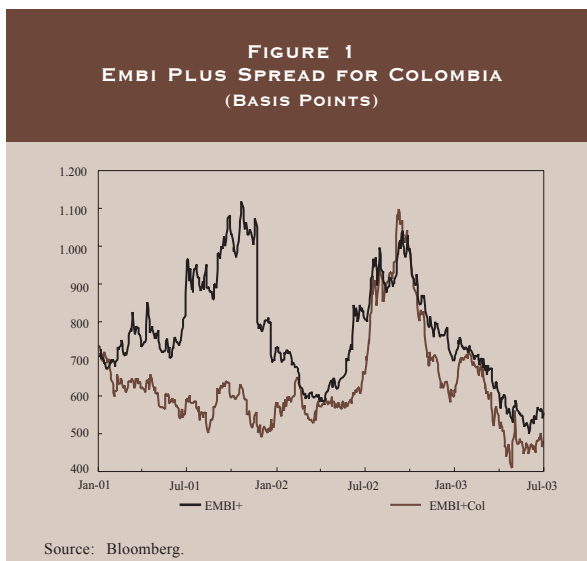
Source: DANE (State Statistical Agency).

Figure 2, domestic demand has grown faster than GDP in recent months. Higher domestic demand has resulted largely from the favorable environment, which has raised confidence, allowing interest rates to be kept low and stable. It has also been boosted by rising urban employment, which increases aggregate consumption. There is currently no reason to expect a reversal of this demand behavior in the near future.

✠   On the fiscal front, the financial system's exposure to public debt has been reduced but it is still high, and financial stability will depend greatly on what happens in this respect. Although market perception of the government's debt has improved, the process of fiscal adjustment must continue in order for this perception to become enhanced.

✠   Lastly, external demand deteriorated in 2002 and over the first quarter of this year, affecting most exports. It is not clear from available figures whether this trend has impaired the performance of companies producing tradable goods, but if it persists the financial system may face risks from these companies' exposure.

Major Debtors' Recent Behavior and the System's Risk Exposure

Private corporate sector

✠   The financial system's exposure to the private corporate sector increased over 2002 and first quarter of 2003, after systematically decreasing from 1997 to 2001.

✠   The increase in the private loan portfolio has coincided with improvement in its quality. The financial system may therefore be expected to show greater readiness to lend in the near future.

✠ The private sector's economic performance outlook has improved systematically, suggesting that demand for credit may continue to rise in the short term.

✠ The findings from the sample of companies reporting to the Securities Superintendency are consistent with greater corporate ability to pay. Profitability and liquidity indicators have improved systematically.

✠ The levels of both financial pressure and borrowing have risen, largely because of the effect of devaluation, suggesting greater exchange-rate exposure. But two points need to be made clear: first, the external borrowing behavior of the private sector as a whole is not consistent with the sample group's; second, in the past six months the sample companies have partly hedged against this risk through foreign-currency investments. On the information available, however, it is not possible to quantify net exposure.

Households

✠ The financial system's exposure to households has remained relatively steady in the past year, as evidenced by the stocks of loans extended to them and their share of the financial system's total assets. Strong growth in consumer loans has coincided with poor expansion in mortgage loans, with the result that, as lenders to households, banks specializing in mortgage loans have lost share to commercial banks and commercial financing firms.

✠ The quality of household debt has continued to improve, prolonging the trend begun at the end of 2000. Some factors that might account for this improvement are: positive wage-income developments in the second half of 2002 and first quarter of 2003, employment recovery in April and May 2003, and an upturn in house prices since January.

✠ Yet, judging by the consumer confidence index, the outlook for household borrowing is still not clear. For there is no definite tendency to purchase such goods as real estate that are usually financed with credit, though some advance was observed in April and May 2003.

Nonfinancial public sector

✠ The financial system's direct exposure to public debt decreased between December 2001 and March 2003, reversing the rising trend started in the mid-1990s. This behavior was common to both commercial banks and banks specializing in mortgage loans.

✠ The recent improvement in the financial conditions of public debt is a positive development. Market perception of the government's solvency has also improved; this is reflected in lower spreads on external public debt and lower rates on domestic public debt, improving the financial entities' results relative to the previous Report.

✠   Though the total stock of nonfinancial public-sector debt continued to rise in the first quarter of 2003, it did so at a slower pace. This behavior is largely attributable to the central government, which is still the biggest debtor in the public sector.

✠   The risk to the financial system from public-sector debt would therefore appear to have decreased in recent months. It remains to be seen how the placement of nonfinancial public-sector debt securities will develop in the coming months. According to the government's domestic financing needs, the above trend may reverse.

✠   Subnational debt declined over 2002 and the first three months of 2003. Exposure has generally been moderate, and debt quality has improved. The Cauca Valley Department's indebtedness is still the biggest risk, despite a pick-up in its revenues/debt ratio.

Recent Financial-System Developments

✠   The financial sector's credit portfolio has begun to show high growth rates not seen since the 1998-1999 crisis. The upturn in credit is more clearly evident in microcredits, consumer loans and commercial loans.

✠   Investments held by the financial sector have recovered strongly from the episode of TES-market stress in July and August 2002. Much of this recovery has come from the purchase of mortgage securities created by home-loan securitizations and a pick-up in TES prices.

✠   The rally in profitability described in the previous Report has gathered pace in recent months, so that the system's profitability is now consistent with periods of relative financial stability. Substantial differences exist however between the performances of Colombian and foreign entities, with the latter's earnings indicators running below the system average. Up to the end of 2002 much of the difference was attributable to foreign banks' more conservative approach to allocating assets, which resulted in lower earnings.

✠   Likewise, credit-risk indicators continued the downward trend displayed last year. In effect, the proportion of overdue balance to gross balance fell to its lowest level since 1998 for all types of credit except home loans, which continued to register a high proportion of overdue balance. As regards portfolio coverage against credit risk, current provision levels furnish historically high coverage, reducing credit establishments' vulnerability in situations where credit risk materializes.

✠   It is of crucial importance to the system that appropriate portfolio allocation be maintained. Hence, new credit allocations in particular will need to be monitored, with special attention to segments presenting high growth in portfolio stock.

✠ All liquidity indicators have registered satisfactory levels this year despite portfolio expansion, which suggests that the financial system should have no liquidity problems in the short term.

✠ Trends are currently beginning to emerge that may affect liquidity in the medium term. Faster credit expansion and the central government's domestic financing needs will require strong deposit growth by the medium term, probably stronger than the growth observed up to May, because otherwise structural liquidity pressures might arise. Such pressures in turn would be reduced to the extent that the incipient inflow of capital and transfers observed in May and June continues.

✠ Given the foregoing, greater buoyancy in credit may be said to have resulted from a strengthening of various factors of supply as well as demand. On the one hand, high liquidity levels together with low credit risk and adequate capital levels have boosted the supply of credit. On the other hand, the incipient economic upturn associated with higher future expectations, particularly among firms, has pushed up demand. It is to be noted that such a combination of factors so favorable to credit expansion has not occurred since before the crisis of 1998-1999.

Board of Directors, Banco de la República

Financial Stability Report
July 2003

Monetary and Reserves Division
José Tolosa Buitrago
Vice President

Financial Stability Department
JuanPablo Zárate Perdomo
Director

Juan Pablo Arango Arango
José Eduardo Gómez González
Michel Janna Gandur
Diana Soledad Leal Jiménez
Jimmy Martínez Correa
Oscar Gonzalo Martínez Amaya
Santiago Muñoz Trujillo
Fernando Pineda García

CONTENTS

I

Gross Debt and Debtors

A. Gross Debt of the Real Sector[1]

The "real" sector of the economy, comprising the government, firms and households, is the counterpart of the domestic financial system. Given that the domestic financial system is a major source of financing for the real sector it is important to monitor movements in the real sector's debt and income levels, to assess the domestic financial system's overall exposure to real-sector debtors.

The real sector's gross debt continued to grow at a brisk pace in 2002, driven mainly by higher domestic borrowing and the price effect of devaluation on external debt. Debt growth became moderate in the first quarter of this year because of slower domestic public borrowing.

Table 1 shows movements in the nonfinancial sector's gross debt from 1998 to March 2003. As may be observed, the real sector's aggregate debt increased substantially over 2002: by 10.6% in real terms, a much higher rate than the 4.5% average real annual growth observed between December 1998 and December 2001.

The strong growth in 2002, as in the preceding years, is attributable to the nonfinancial public sector, which rose by 15.1% in real terms. Both the domestic and the external components of this debt expanded notably in real terms: the domestic component by 16,2%; and the external component by 14%, the net result of a 2.4% fall in dollar debt and higher devaluation.[2]

Nonfinancial private-sector debt expanded by 4.7% in real terms, a notable development given that it had been declining since 1998. Internal debt went up by 1.5% in real terms, while external debt in dollars rose by 9.1% as the net result of devaluation and a 6.7% contraction in dollar debt.

The first quarter of this year saw the nonfinancial sector's aggregate debt grow by an annualized real rate of 2.6%. For the public sector, the debt increase was 2.6%, resulting from a 5.7% fall in domestic debt and a 10.8% rise in external debt, in real terms at annualized rates. The rise in public-sector external debt came from the effect of devaluation[3] and higher debt in dollars.

---

[1] The information contained in this section is of a provisional nature for 1999 and 2000 and preliminary for 2001, 2002 and 2003.

[2] Nominal devaluation between December 2001 and December 2002 was 25%, based on the year-end representative market rate.

[3] As noted earlier, nominal devaluation between December 2001 and December 2002 was 25%, based on the year-end representative market rate.

TABLE 1
REAL SECTOR GROSS DEBT, 1998-2003

Year	Nonfinancial Public Sector				Nonfinancial Private Sector				Total
	Domestic	External	Total	External	Domestic 1/	External 2/	Total	External	External
	Trillions of pesos			$ m	Trillions of pesos			$ m	
1998	23.9	24.4	48.4	15,853.8	51.6	22.6	74.2	14,665.9	122.6
1999	30.6	32.9	63.5	17,547.1	49.0	27.4	76.4	14,624.5	139.9
2000	42.1	42.0	84.1	18,825.4	43.8	31.3	75.2	14,061.5	159.3
2001	50.6	50.8	101.4	22,172.8	44.6	32.7	77.3	14,273.6	178.8
2002	62.9	62.0	124.9	21,630.8	48.5	38.2	86.6	13,428.0	211.5
2003 3/	64.1	65.7	129.9	22,214.8	50.1	40.0	90.1	13,586.1	219.9
As a percentage of GDP									
1998	17.0	17.4	34.4		36.7	16.1	52.8		87.3
1999	20.2	21.7	41.9		32.3	18.1	50.4		92.3
2000	24.1	24.0	48.1		25.1	17.9	43.0		91.1
2001	26.9	27.0	54.0		23.7	17.4	41.1		95.1
2002	31.1	30.6	61.8		24.0	18.9	42.8		104.6
2003 3/	30.6	31.3	61.9		23.9	19.1	43.0		104.9

1/ Gross private loan balance – Loans between financial entities + Stock of bonds on firms' balance sheets.
2/ Including financial leasing.
3/ Information to March 2003 except for private external debt, for which figures are to February valued in pesos at the market exchange rate for end of March 2003.
Sources: Banking Superintendency and Securities Superintendency. Calculations by Banco de la República.

Private-sector debt also expanded by 2.6% in real terms at annualized rate over the first quarter of 2003, with domestic debt remaining steady and foreign debt rising by 5.8%. As in the case of the public sector, the rise in private-sector foreign debt came from both increased borrowing and the effect of devaluation.

In analyzing private indebtedness, it should be remembered that seasonal factors usually cause it to grow less in the first quarter than during the rest of the year. For example, the portfolio decreased by 1.3% in real terms in the first quarter of 2003 and by 3.5% in the first quarter of 2002. But this does not mean that the portfolio lost momentum, for in the 12 months to May 2003 it expanded by 2.8% in real terms, after a real contraction of 5.3% in the previous 12 months, to May 2002 (excluding securitizations in both periods).

The lower half of Table 1 shows movements in the real sector's debt-to-GDP ratio from 1998 to March 2003. This might be a better indicator of potential risk to the domestic financial system than plain movements in aggregate debt, for it presents debt-level behavior in relation to movements in debtors' income. Rapid increases

in the debt-to-GDP ratio could directly or indirectly imply greater levels of risk to the domestic financial system. Directly, insofar as part of the debt is financed with loans from the domestic financial system. Indirectly, because as the ratio rises, debtors become more fragile financially and, faced by potential shocks affecting their solvency or liquidity, may come to present payment difficulties. In principle, increases in overall debt might augment the risk to creditors if all else (including debtors' income) remains unchanged. However, increases in the level of debt may be associated with expansions in economic activity that generate higher future income, which can be used to meet obligations.

As may be observed, the debt/GDP ratio rose by 9.5 percentage points in 2002, up to 104.6% by the end of the year. That is to say, the ratio's upward trend continued and was boosted in 2002 by a 1.7 percentage-point increase in private-sector debt; this increase was significant in that it reversed a decline persisting since 1998. In 2002, after a recession that had taken a heavy toll of its economic activity, the private sector may have felt impelled to expand its liabilities again to finance new investment plans. Yet, the public sector was most accountable for the rise in the debt/GDP ratio, and to a greater extent than in previous years.

Over the first quarter of this year the real sector's debt-to-GDP ratio continued to rise, edging up to 104.9% in March, with both the public and the private sectors showing a slight increase as devaluation pushed up their external debt.
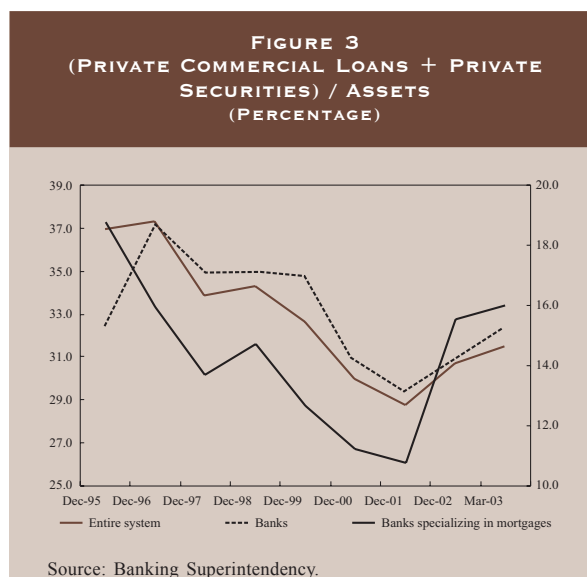
1. Private corporate sector

a. Private corporate sector credit from the financial system

1) Exposure

The sum of private commercial loans, microcredits and private securities shown on the balance sheets of financial entities approximately represents the amount of credit extended to the private corporate sector. The information provided below is from the Banking Superintendency; it does not include the portfolio of second-tier state banks (*Instituciones Oficiales Especiales*).

Figure 3 shows recent movements in the financial system's credit to the private corporate sector as a ratio of the system's assets.

Figure 3
(Private Commercial Loans + Private Securities) / Assets
(Percentage)

Source: Banking Superintendency.

The financial systems' exposure to private corporate debt declined in 1997-2001, from 36.9% to 28.7%, but rose again in 2002 and the first quarter of 2003, ending March at 31.5%, similar to the level of exposure at the end of 1999. In terms of absolute values, credit to the private corporate sector amounted to 28.4 trillion (tr) pesos in March 2003, a real increase of 5.2% on the 24.1 tr pesos registered in December 2001, giving an annualized real growth rate of 4.1%.

The fact that credit to the private sector is rising again as a share of the financial sector's assets suggests that private firms are once more incurring liabilities, a development that may be associated with the quickening pace of productive activity.

As may be seen from Figure 3, the recent rise in credit to the private corporate sector has occurred in both commercial banks ands banks specializing in mortgage loans; both increased their exposure to this sector's debt during 2002 and the first quarter of 2003.[4] In those 15 months, private corporate loans as a share of assets rose notably for banks specializing in mortgages, more than for private banks.

Analyzing the financial system's overall exposure to private corporate debt in terms of public- and private-sector entities (Figure 4) shows higher exposure for private entities: 34.0% in March 2003, compared with 25.5% for public-sector institutions. It is noteworthy that the private financial institutions' exposure to private corporate debt fell appreciably between 1997 and 2001 only

FIGURE 4
(CORPORATE LOANS + PRIVATE SECURITIES) / ASSETS
(PERCENTAGE)

Source: Banking Superintendency.

to rise again thereafter (from 31.5% in December 2001 to 34.0% in March this year).

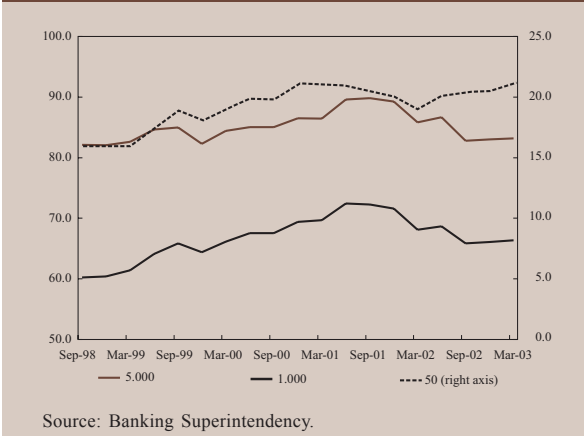*2) Concentration by number and loan quality of major debtors[5]*

In the second half of 2002 and first quarter of 2003, the 5000 major debtors increased their share of private commercial loans from 82.8% in September 2002 to 83.2% in March this year. Though the increase was slight, it came after a period of deconcentration of the private commercial portfolio, and at a time when the portfolio was beginning to recover its pace of growth.

As shown by Figure 5, the 50 biggest debtors also expanded their share of private commercial loans over the same period, from 20.4% to 21.2%, as did the 1000 biggest debtors, from 65.9% to 66.4%.

The increase in the concentration of private commercial loans has occurred at the same time

---

[4]   For commercial banks the ratio of private corporate debt to assets rose from 29.4% in December 2001 to 32.3% in March 2003, while for banks specializing in mortgages it jumped from 10.8% to 16.0%.

[5]   This section and the next discuss the behavior of the private commercial loan portfolio of the 5000 biggest private-sector debtors.

Source: Banking Superintendency.

FIGURE 6
TYPES A AND E LOANS, BY CONCENTRATION OF
MAJOR DEBTORS
(PERCENTAGE)

TYPE- A

TYPE- E

Source: Banking Superintendency.

as an improvement in the major debtors' loan quality. As shown by Figure 6, the major debtors' share of Type A loans has been rising, while their proportion of Type E loans has been falling.[6] This is good news and suggests that as long as the trend lasts, the system's willingness to lend may continue to increase as it has been doing so far.

3) Concentration by economic sector[7]

The manufacturing sector, which continues to concentrate the largest proportion of private commercial loans, gained share in this portfolio over the second half of last year,[8] as shown by Figure 7. Most other sectors kept their respective shares steady during this period. By contrast, the

FIGURE 7
PRIVATE COMMERCIAL LOANS TO 5000 MAJOR
DEBTORS, BY ECONOMIC SECTOR
(PERCENTAGE)

Source: Banking Superintendency.

---

[6] In March 2003, over 80% of the major debtors' loans were Type A, up from about 75% in September last year. At the same time, the Type E loans of the 50 biggest debtors stabilized at 0.2% of total loans, while Type E loans of the 1000 major debtors fell from 1.4% to 1.1%, and those of the 5000 major debtors also dropped, to 2.0% in March this year.
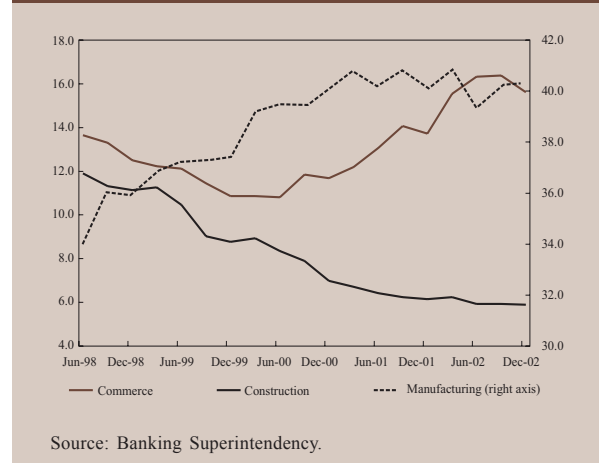
[7] Because of certain information constraints, this section considers only the 5000 biggest private debtors. And the available information goes only up to December 2002.

[8] The manufacturing sector's share of private commercial loans rose from 39.4% in June 2002 to 40.3% in December.

commercial sector lost share slightly but is still the second biggest sector in the private commercial portfolio.

Loan quality continued to improve for most sectors. In particular, Type A loans gained share, while Type E loans lost share for the manufacturing, commercial and construction sectors (Figure 8).

In short, loan-portfolio behavior for the major private debtors is the same as for the major sectors: as the portfolio has increased, its quality has improved.

Figure 8
Types A And E Loans To 5000 Major Debtors, By Economic Sector
(Percentage)

TYPE A

TYPE E

Source: Banking Superintendency.

b. Corporate results

Corporate financial statements are highly determinative of risk to the financial system. High profitability and low indebtedness will preclude companies from failing to pay their debts to the financial system on time. In the face of unexpected shocks that reduce firms' ability to pay, high liquidity will also preclude borrowers from such failure. To identify the risks that real-sector companies may pose to the financial system, this section reviews private companies performance and financial health on the basis of profitability, debt and liquidity ratios.[9]

The analysis presented in the previous Financial Stability Report included information on companies regulated by the Superintendency of Companies and the Securities Superintendency. But, since fresh data on the Superintendency of Companies' sample has not yet been released, the present Report only reviews the financial statements up to March 2003 of firms regulated by the Securities Superintendency.[10]

This information should not be regarded as representing the private company average, for most of the firms considered are large in terms of both sales and assets and may not even represent the average of companies having access to external credit. For this reasons, the behavior of some specific companies may largely determine aggregate results. Since 1998, some 142 firms, on average, report their financial statements on a quarterly basis.

---
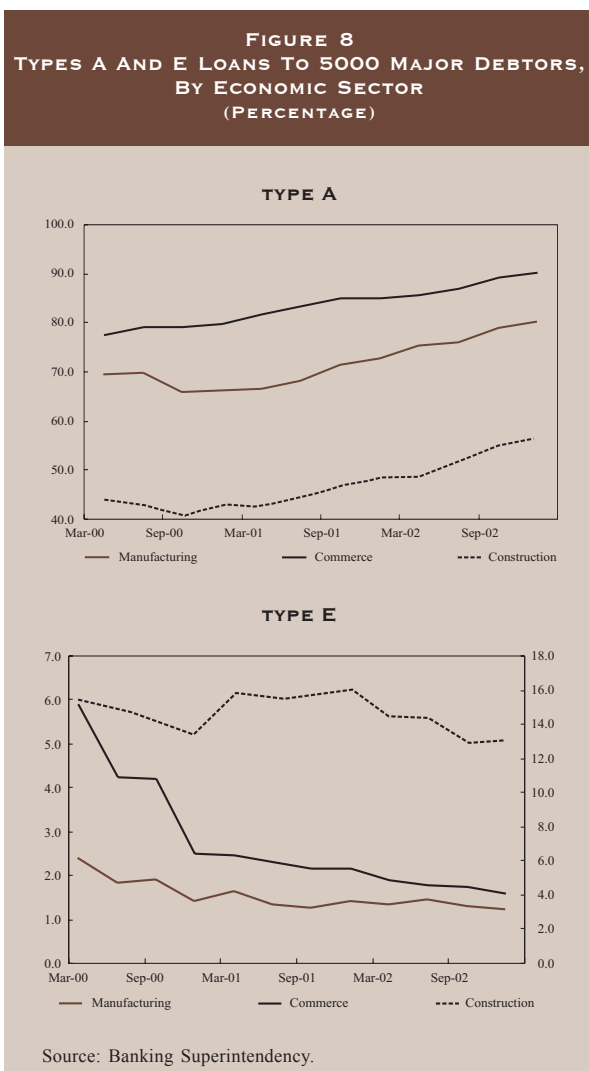
[9] The financial ratios used were chosen not only because they figure in similar studies for other countries, but also because they were based on the main determinants of corporate financial fragility identified for Colombia in 2001 (see "Determinants of Colombian Corporate Fragility" in the section on "Particular Aspects of Financial Stability").

[10] Including real-sector companies listed on the National Securities Register.

The March 2003 analysis was conducted on a sample of 121 companies, 72 of them tradables[11] and 49 nontradables.

1) Profitability indicators

Corporate profitability was quantified by estimating return on assets and profit margins. Return on assets, defined as the ratio of pretax profit[12] to assets, shows how efficiently a firm uses and manages its resources (both those provided by owners, included as capital, and those provided by creditors, included as liabilities). Profit margins were built as the ratio of profit to sales, starting with gross profit, then taking operating profit and ending with pretax profit. It was intended in this way to measure what proportion of income from sales was kept once the different income and expenditure items from the profit and loss statement were taken into account. It was a way of identifying the determinants of higher or lower final profit for the year and seeing how they varied.

Asset profitability has risen continuously since December 1999 to levels reached before the 1999 crisis, rebounding from as low as –2.4% in December 1999 to levels of around 3.7% that had been reached in December 1995; by March 2003 corporate profitability had gone up to 3.9%.[13] Sectorally, the recovery in profitability has occurred

_____

[11] Tradables companies are those engaged in farming, stock raising, hunting, forestry, fishing, mining, quarrying and manufacturing.

[12] In this Report pretax profit means operating profit plus nonoperating income less nonoperating expenses, excluding taxes and adjustments for inflation.

[13] Asset profitability in December of each year from 1995 to 2002 was 3.7%, 2.4%, 2.0%, 0.1%, -2.4%, 0.6%, 2.0% and 3.7%, respectively.

both in companies producing tradable goods (from 0% in March 1999 to 5.5% in March this year), and in companies of the nontradables sector (from as low as –6.4% in December 1999, steadily up to positive rates between September 2002 and March this year) (Figure 9).

Asset profitability can be decomposed into two financial ratios, revealing the source of the companies' higher profitability since 1999. The ratios are the pretax profit margin and asset turnover:

$$\frac{\text{Pretax profit}}{\text{Assets}} = \frac{\text{Pretax profit}}{\text{Sales}} * \frac{\text{Sales}}{\text{Assets}}$$

As shown by Figure 10, both components have helped to increase corporate profitability since 1999. Between December 1999 and March this year, total asset turnover rose by 11% (from 36% to 47%), driven by tradables-producing companies, although asset turnover was higher for nontradables-producing firms than for tradables producers.[14]

_____

[14] Asset turnover may also be regarded as indicating how efficiently available resources are used to generate a given level of sales.

Figure 9
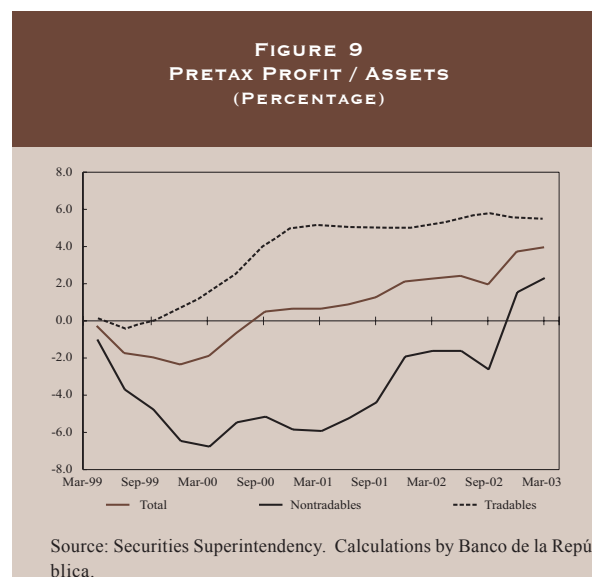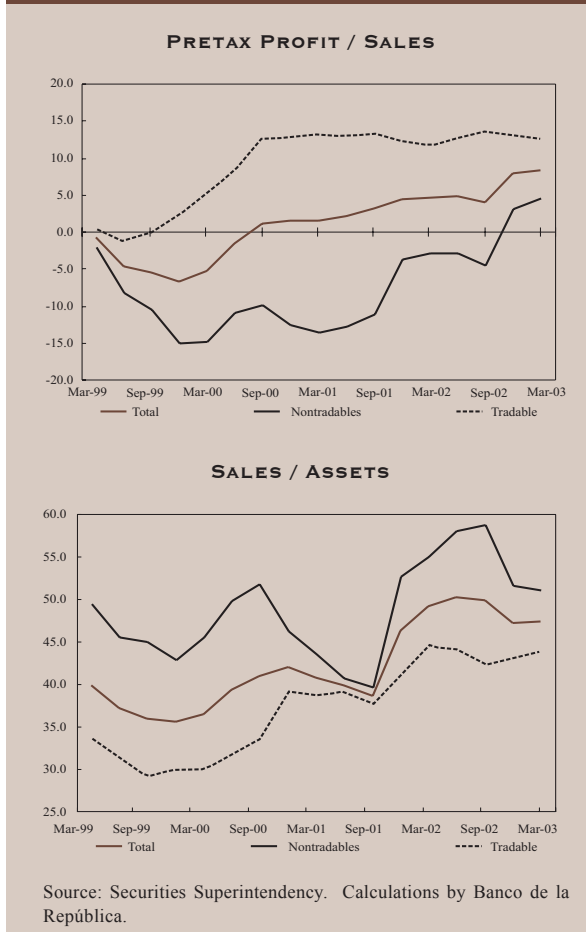**Pretax Profit / Assets**
(Percentage)

Source: Securities Superintendency. Calculations by Banco de la República.

TABLE 2
COMPOSITION OF PROFIT AND LOSS STATEMENT, BY SECTOR (*)
(PERCENTAGE)

	Trillions de pesos				% of sales			
	Dec-01	Sep-02	Dec-02	Mar-03	Dec-01	Sep-02	Dec-02	Mar-03
Total								
A. Gross profit (1 - 2)	6.4	7.7	8.5	8.8	30	33	35	35
1. Sales	21.2	23.5	24.5	25.1	100	100	100	100
2. Sales costs	14.8	15.8	16.0	16.3	70	67	65	65
B. Operating profit (A - 3 - 4)	1.5	2.3	3.0	3.3	7	10	12	13
3. Administrative expenses	2.3	2.5	2.6	2.6	11	11	11	10
4. Sales expenses	2.7	2.9	2.9	2.9	13	12	12	12
C. Pretax profit (B + 5 - 6)	0.9	0.9	1.9	2.1	4	4	8	8
5. Nonoperating income	1.8	4.9	4.8	6.7	9	21	19	27
Financial income	0.6	3.9	3.5	5.4	3	17	14	22
6. Nonoperating expenditure	2.3	6.3	5.9	8.0	11	27	24	32
Financial expenditure	1.6	5.4	4.7	6.8	8	23	19	27
D. Final Profit								
(C + Adjustments for inflation - Taxes)	0.9	0.7	1.7	1.9	4	3	7	8
Nontradables								
A. Gross profit (1 - 2)	3.0	4.0	4.4	4.7	29	32	34	36
1. Sales	10.4	12.6	12.8	13.2	100	100	100	100
2. Sales costs	7.4	8.6	8.4	8.5	71	68	66	64
B. Operating profit (A - 3 - 4)	0.3	0.9	1.2	1.5	3	7	9	11
3. Administrative expenses	1.4	1.6	1.6	1.7	14	13	13	13
4. Sales expenses	1.3	1.5	1.5	1.5	12	12	12	11
C. Pretax profit (B + 5 - 6)	(0.4)	(0.6)	0.4	0.6	(4)	(5)	3	4
5. Nonoperating income	0.7	3.4	3.1	4.9	7	27	24	37
Financial income	0.3	3.0	2.4	4.2	3	24	19	32
6. Nonoperating expenditure	1.3	4.8	3.9	5.7	13	38	30	43
Financial expenditure	1.0	4.3	3.4	5.3	9	34	27	40
D. Final Profit								
(C + Adjustments for inflation - Taxes)	(0.2)	(0.4)	0.5	0.8	(2)	(4)	4	6
Tradables								
A. Gross profit (1 - 2)	3.4	3.7	4.1	4.1	32	34	35	35
1. Sales	10.9	10.9	11.7	11.9	100	100	100	100
2. Sales costs	7.4	7.2	7.6	7.7	68	66	65	65
B. Operating profit (A - 3 - 4)	1.2	1.5	1.8	1.9	11	13	15	16
3. Administrative expenses	0.9	0.9	0.9	0.9	8	8	8	8
4. Sales expenses	1.4	1.3	1.4	1.4	13	12	12	12
C. Pretax profit (B + 5 - 6)	1.3	1.5	1.5	1.5	12	14	13	13
5. Nonoperating income	1.1	1.6	1.7	1.9	10	14	14	16
Financial income	0.2	0.9	1.0	1.2	2	8	9	10
6. Nonoperating expenditure	1.0	1.5	2.0	2.2	9	14	17	19
Financial expenditure	0.6	1.1	1.3	1.4	6	11	11	12
D. Final Profit								
(C + Adjustments for inflation - Taxes)	1.1	1.2	1.2	1.2	10	11	10	10

(*) The figures of the profit and loss statement were annualized using the following formula: $X_{annualized\ month\ i} = X_i + X_{previous\ Dec.} - X_{i-12}$
Source: Securities Superintendency. Calculations by Banco de la República.

Figure 10
Profitability Ratios
(Percentage)

Pretax Profit / Sales

Sales / Assets

The pretax profit margin, however, is the component that has followed the trajectory of asset profitability more closely. While tradables producers have maintained a high, steady margin of 13% since September 2000, nontradables producers have been closing the wide profitability gap between the sectors, which was still as high as 10% in March 2003.

Between September 2002 and March this year nontradables firms have notably obtained positive profitability, after registering losses in their accounting records since March 1999. This improvement is largely attributable to higher sales by investment firms since December 2002. The negative profitability

behavior in communications is to be noted, with balance-sheet losses continuing to be reported.[15]

As may be appreciated by analyzing Table 2, between December 2001 and March 2003 profitability gains for the total of companies stemmed from higher production efficiency, which was chiefly reflected by lower sales costs and, to a lesser extent, by lower administrative and sales expenses. The increase in profitability was no greater, because financial expenditures have grown rapidly. A breakdown by sector shows the improvement in profitability to have been much stronger for nontradables firms, whose buoyant sales have been connected with positive growth in domestic absorption. Tradables firms have managed to maintain steady profit margins in the past 15 months despite a slowdown in exports over this period, which has been reflected in sales.

Although the profitability gap between nontradables and tradables companies has narrowed in recent months, it is still large, because of the nontradables' higher administrative expenses and high indebtedness.

This may be better appreciated by observing that there is no longer any difference between the two sectors' levels of production efficiency (as shown by gross profits to sales, in Figure 11). Differences begin to appear if we include administrative and sales efficiency (as shown by operating profit to sales, in Figure 11), and they become more pronounced on including financial income and expenditures (as shown by

---

[15] The high levels of financial income and expenditure since September 2002 are attributable to a communications firm. Without this firm, financial income and expenditure as a percentage of sales between September 2002 and March 2003 would be no more than 6% and 9% respectively.

GROSS PROFIT / SALES

OPERATING PROFIT / SALES
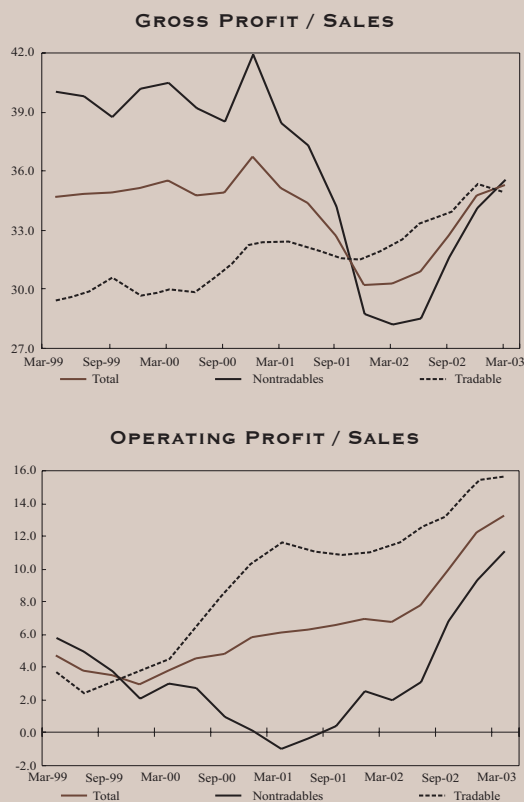
Source: Securities Superintendency. Calculations by Banco de la República.

pretax profit to sales, in Figure 10). This is evidence of the nontradables companies' high sensitivity to price changes in financial products. Between September 2002 and March 2003, variations in financial expenditures were connected more with exchange-rate movements than with interest rates.[16]

2) Liquidity indicators

Companies can temporarily deal with liquidity risk by keeping a higher volume of easily realizable assets as a proportion of short-term obligations or available resources. This shock-absorber, which reflects a company's liquidity, is measured by the cash-to-asset ratio and the current ratio (current assets / current liabilities). The cash-to-asset ratio better reflects a company's degree of immediate liquidity, while the current ratio compares less immediate liquidity with short-term liabilities (where less immediate liquidity includes efficiency changes arising from inventory management, temporary investments and short-term debtors).

Since 1999, while the cash-to-asset ratio has shown no great variations in its overall level nor any significant differences between the tradables and nontradables sectors,[17] the current ratio has exhibited a slightly rising trend and greater liquidity for tradables producers (Figure 12). This difference between the two sectors, which has widened since March 2002, has resulted from the tradables producers' balance sheets showing shorter asset durations (a greater rise in short-term debtors), and greater long-term financing under liabilities.
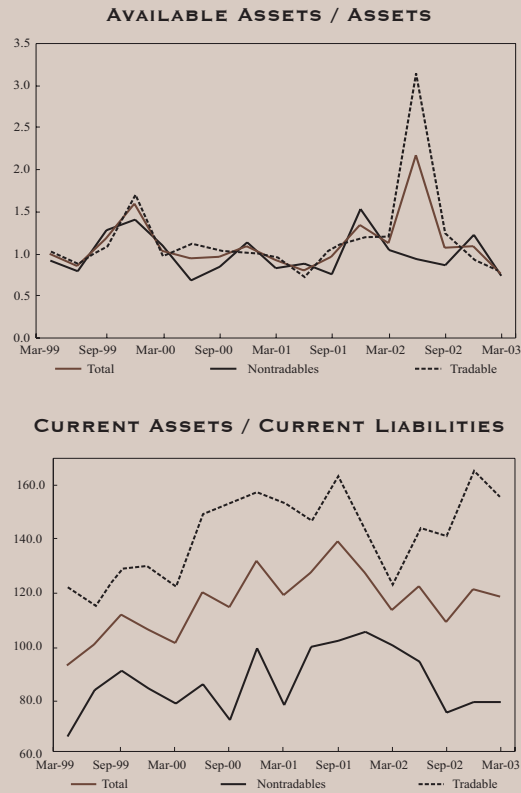
3) Debt indicators

The ratio of financial obligations to assets is used as a measure of indebtedness. This indicator does not capture the effect of the cash flow required to meet interest payments, which may create financial pressures from a higher perceived risk of failure to pay the debt. To capture this effect, the interest burden was calculated as the ratio of financial expenditure to the sum of operating and financial income. It is important to analyze both ratios at the

---

[16] Thus, devaluation in the past six months has caused nontradables firms' financial income and expenditure to rise sharply as a percentage of sales. Financial income rose from 6% in September 2001 to 24% in September 2002 to 32% in March 2003, and financial expenditure from 13% to 34% to 40%.

[17] The atypical situation observed in June 2002 resulted entirely from excess cash held by a beverage company.

Available Assets / Assets

— Total   Nontradables   ----- Tradable

Current Assets / Current Liabilities

— Total   Nontradables   ----- Tradable

Source: Securities Superintendency. Calculations by Banco de la República.

same time to determine whether the financial pressures on a company arise from high interest rates or temporarily low profitability, or from a high stock of debt (in which case it will be more difficult to have access to the financial system for refinancing the amount owed).

Corporate indebtedness[18] has increased over the past two years, from 14% in December 2000 to 19% in March 2003 (Figure 13). Between March 2002 and March 2003, total financial obligations expanded by 42%, on a rising trend driven by tradables companies, whose indebtedness, though

------

[18] Measured as the ratio of financial obligations to assets.

usually lower than the nontradables firms', ran higher than the latter's in the first quarter of 2003.

Analysis of the rise in the debt ratio reveals that a major cause has been a devaluation-related increase in foreign debt valued in pesos since the third quarter of last year (Figure 13). Tradables producers' foreign-currency obligations, specifically long-term ones, rose as a share of liabilities by seven percentage points (or 0.86 tr pesos) between June and September 2002 (Table 3).[19] Nontradables producers for their part exhibited a larger increase in short-term foreign-currency obligations, and for the last quarter both these obligations and the total financial obligations of the nontradables have declined as a share of their liabilities.

Of the 10.2 tr pesos of total financial obligations reported by private firms in March 2003, some 58%

------

[19] A breakdown by type of activity shows that the rise in long-term foreign-currency financial obligations was entirely caused by a beverage company. The same occurred with this company's short-term obligations, which also rose by 0.8 bn pesos. Leaving out this company shows the sector's indebtedness continuing to rise but mucho more slowly.

— Total   Nontradables   ----- Tradables   --- ITCR-IPP-NT* (right axis)
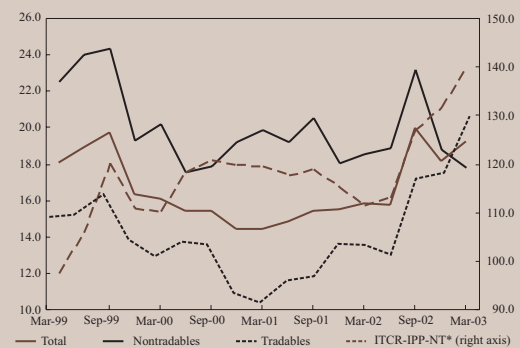
(*)Real exchange-rate index based on producer price index for nontraditional exports'.
Source: Securities Superintendency. Calculations by Banco de la República.

	2001				2002				2003
	Mar.	Jun.	Sep.	Dec.	Mar.	Jun.	Sep.	Dec.	Mar.
Total									
Financial obligations (st)	17.2	18.4	14.2	14.2	15.2	17.2	21.6	18.6	21.3
Local currency	10.0	12.0	11.0	9.6	11.2	11.9	11.1	8.6	8.8
Foreign currency	7.2	6.4	3.2	4.6	4.1	5.3	10.5	10.1	12.5
Financial obligations (lt)	25.2	25.2	29.8	30.9	28.8	26.2	27.6	29.7	28.3
Local currency	12.2	11.5	14.3	15.0	13.7	13.2	10.4	12.6	12.0
Foreign currency	130.0	13.7	15.5	15.8	15.1	13.1	17.2	17.1	16.3
Nontradables									
Financial obligations (st)	19.5	17.3	14.1	11.0	13.2	15.4	28.6	25.1	23.1
Local currency	10.4	12.3	11.2	8.8	11.0	12.3	12.5	9.1	10.0
Foreign currency	9.2	5.0	2.8	2.3	2.1	3.1	16.1	16.0	13.0
Financial obligations (lt)	30.4	32.7	36.4	36.3	35.0	33.4	30.6	29.7	28.2
Local currency	8.3	8.3	12.4	14.1	13.7	14.1	9.8	10.2	9.4
Foreign currency	22.2	24.4	23.9	22.2	21.2	19.3	20.8	19.5	18.8
Tradables									
Financial obligations (st)	15.1	19.4	14.3	17.0	17.1	18.7	16.2	13.6	19.9
Local currency	9.7	11.7	10.7	10.4	11.3	11.5	10.0	8.1	7.8
Foreign currency	5.4	7.7	3.6	6.6	5.8	7.3	6.2	5.5	12.1
Financial obligations (lt)	20.3	18.6	24.0	25.9	23.3	19.8	25.2	29.7	28.3
Local currency	15.9	14.3	15.9	15.9	13.7	12.3	10.8	14.5	14.0
Foreign currency	4.4	4.4	8.2	10.1	9.6	7.5	14.3	15.3	14.3

(st) Short term
(lt) Long term
Source: Securities Superintendency. Calculations by Banco de la República.

was denominated in foreign currency[20] and 42% in pesos, as compared with 57% and 43% respectively a year earlier, indicating an increase in the firms' exchange-rate exposure. Growth in foreign-currency debt over this period resulted both from substantially stronger devaluation and from a higher level of debt incurred in dollars. Thus, foreign-currency debt grew by 90% in terms of pesos and by 45% in terms of dollars.

The external dollar debt of firms regulated by the Securities Superintendency has moved in the opposite direction to private external debt, according to statistics on registered private debt, which continued to decline over this period.

Although credit extended by the domestic financial system to the sample companies has been growing, it has declined as a proportion of the system's total financial obligations, because of a stronger presence of overseas banks as debt-holders.[21] Between March 2002 and March 2003, the domestic financial system's exposure increased by 12%,

---

[20] In this analysis, foreign-currency indebtedness means financial obligations incurred with overseas banks and other overseas financial entities.

from 3.05 tr pesos to 3.43 tr pesos, with domestic banks and financial corporations as the biggest debt-holders (2.75 tr pesos and 0.63 tr pesos respectively). Financial obligations owed to commercial financing companies and banks specializing in mortgages registered the weakest growth and lowest levels: 50 billion (bn) pesos and 10 bn pesos respectively in March 2003. The decrease in the domestic financial system's share of credit relative to other sources occurred mostly in nontradables firms, where credit from the system fell from 1.32 tr pesos in March 2002 to 1.27 tr pesos a year later. In contrast, tradables producers' indebtedness to the system grew by 25% over the same period, but this growth was concentrated in a single company from the beverage sector; excluding this company would reduce the rise to 5%.

From September 2002 to March 2003, the real exchange rate index (ITCR) and financial pressure[22] were at their highest levels since 1999, when domestic interest rates ran particularly high (Figures 15 and 16). Although financial pressure was on the rise for nontradables and tradables firms alike, its effect was reflected more strongly in nontradables firms, reaching 30% in March 2003, compared with 11% for the tradables producers. In the past six months, this high level of financial pressure has been concentrated in the communications sector; excluding this sector would lower the indicator down to 7.8% in March 2003 for tradables and nontradables together.

---

[21] The result is different if beverage and communications companies are set aside, for then the domestic financial system's share of financial obligations would be seen to have risen steadily in the twelve months to March 2003.
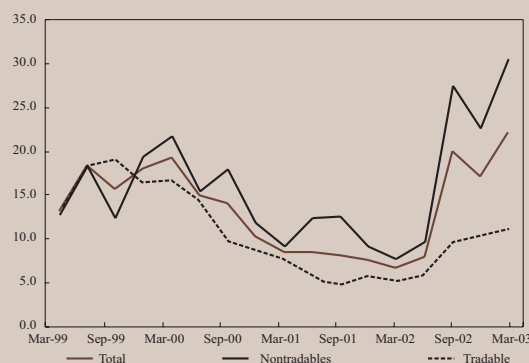
[22] Measured by the interest-burden ratio: the ratio of financial expenditure to the sum of operating and financial income.

FIGURE 14
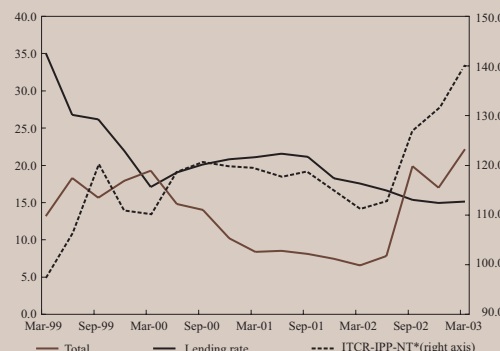SHARE OF FINANCIAL OBLIGATIONS BY ORIGEN
(PERCENTAGE)
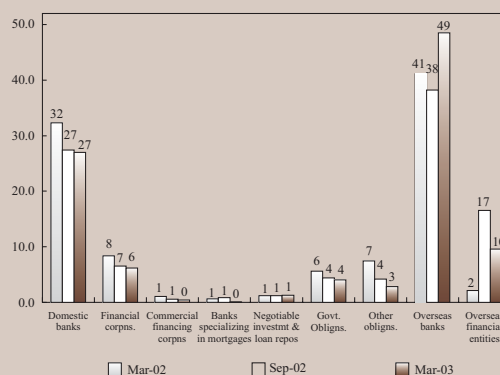
Source: Securities Superintendency. Calculations by Banco de la República.

FIGURE 15
FINANCIAL EXPENDIGURE /
SALES + FINANCIAL INCOME
(PERCENTAGE)

Source: Securities Superintendency. Calculations by Banco de la República.

FIGURE 16
FINANCIAL PRESSURE, LENDING RATE &
REAL EXCHANGE-RATE INDEX
(PERCENTAGE)

(*) Real exchange-rate index based on the producer price index of nontraditional exports.
Source: Securities Superintendency. Calculations by Banco de la República.

Besides making permanent overseas investments, another way in which the real sector hedges against exchange-rate risk is by purchasing currency futures, especially within the financial system. On July 18 this year, the financial sector's net forward sales to the real sector amount to $1,109 m, representing about 8% of the nonfinancial private sector's external debt.

This provides a short-term hedge, as compared with foreign-currency financial obligations incurred by the private real sector. Over 70% of forward exchange purchase transactions have a maturity of less than six months, while the average period of private external-debt incurred in 2002 was 48 months.

With further development of this market and better quantification of the inherent risks of this hedging, the real sector will be better able to hedge against exchange-rate risk.

Decomposing the ratio of financial expenditure to the sum of operating and financial income shows that its growth came largely from an increase in financial expenditure, which surged from 1.5 tr pesos in June 2002 to 5.4 tr pesos in September. Although financial income also increased fourfold, it was not as important in the indicator's denominator, which was dominated by stability in sales. The components that may have generated these effects on the financial-pressure indicator include, notably, interest payments and the exchange-rate differences in corporate financial income as well as expenditure. But it is not clear from the information furnished by the Securities Superintendency what the main source of the observed increase was.[23]

It may be seen from Figure 16 that, in contrast to developments in 1999, no great increments have occurred over the past six months in the lending rate, which has in fact displayed a decreasing trend,

while the real exchange-rate index has followed the upward path of corporate financial pressure, at least from September 2002 to March 2003. This behavior confirms the negative effect that devaluation has had on the level of financial pressure in the sample companies.

As the indicators show, higher external debt would increase exchange-rate exposure. However, there is some evidence of substantial overseas investment by this group of companies, which would lower the exchange risk. Unfortunately, it is not possible with the information provided by the Securities Superintendency to build a more precise and systematic indicator in this connection.

c. Business expectations

The economy performed better than expected in the first quarter of this year. The 3.8% growth in GDP at annual rate was welcomed by analysts, who had foreseen a slower expansion. Construction was the most dynamic sector, growing at a far faster pace

---

[23] A good many of the sample companies do not disaggregate their financial income and expenditure accounts to six digits in the standardized account plan, so only the totals of these accounts are reported.
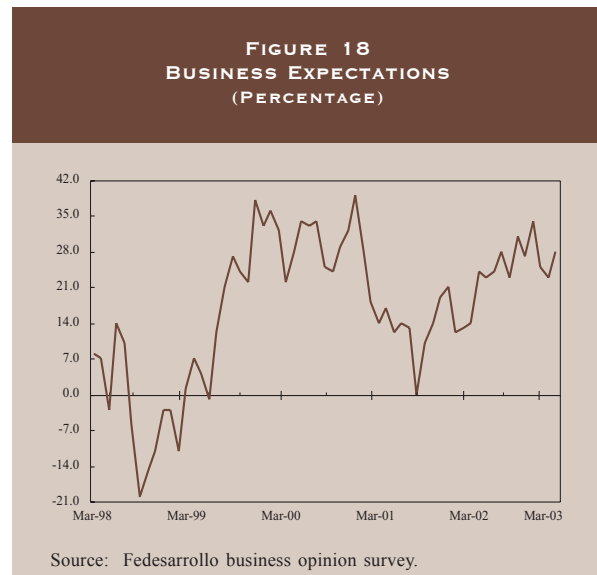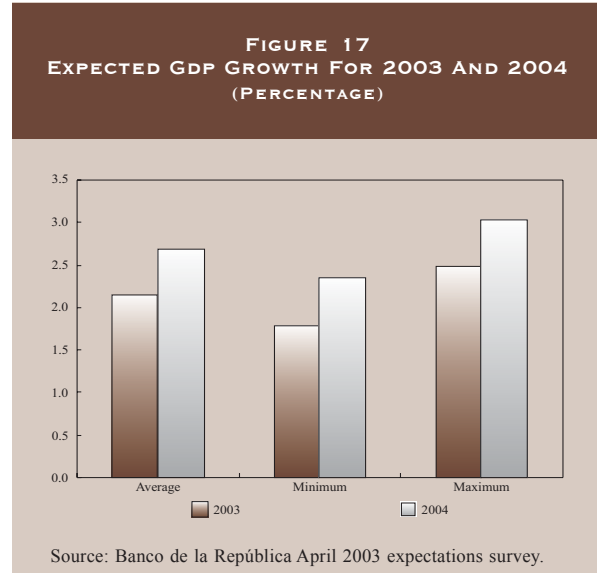
(15.8%) than all the others, followed by manufacturing (8.3%), financial institutions (5.8%) and transport, warehousing and communications (5.3%).

Growth forecasts for the end of the year have been revised up on the strength of the economy's good first-quarter performance. This upward revision should have a positive impact on economic expectations and is likely to be reflected in surveys in the coming months.

The Banco de la República's first-quarter expectations survey reports that respondents foresee an average economic growth of 2.2% for this year and 2.7% for next year (Figure 17). The latest growth results may however lead survey respondents to raise their predictions of aggregate growth rates.

The first quarter saw the productive sector's expectations resuming their rising trend. According to Fedesarrollo's April 2003 business opinion survey, respondents' business expectations went up in February, March and April, having fallen in December and January (Figure 18). As may be seen from the Figure, business expectations have been trending upward since September 2001, with short episodes of reversal.

The National Association of Industrialists' (ANDI) joint industrial opinion survey of April 2003 reports that, with the recent pick-up in manufacturing,[24] the outlook for business investment has improved. Over 50% of

Figure 17
Expected Gdp Growth For 2003 And 2004
(Percentage)

Source: Banco de la República April 2003 expectations survey.

Figure 18
Business Expectations
(Percentage)

Source: Fedesarrollo business opinion survey.

respondents stated that they were implementing or planning to implement investment projects this year, amounting to about one trillion pesos. The investment projects are essentially for modernizing production equipment, remodeling facilities, replacing machinery and diversifying production.

Investment expectations have risen in good measure because of a strong upturn in demand and the perception that the business climate has improved. In March 2003, some 49.9% of ANDI's

---

[24] Despite the National Statistics Agency's (DANE's) reported reduction in industrial production and sales, industrial activity has registered dynamic behavior. Production in the first four months of 2003 was up by 5.3% in real terms relative to the same period last year and sales by 6.1%.

respondents considered that their corporate economic situation was good; a year earlier the percentage had been only 37.7%. At the start of this year, the percentage believing that the situation would improve in the near future was 37.7%, up from less than 30% a year earlier.

Given the recovery in business expectations and the resulting upward revision of a good many investment plans, demand for funds to finance investment projects can be expected to grow in the coming months, which should cause the financial system's loan portfolio to continue its recent expansion.

The Bank's first-quarter expectations survey shows that the general perception of credit availability and liquidity has continued to improve. As may be seen from the following Figure, an ever-increasing percentage of respondents consider the economy's current levels of credit availability and liquidity to be high. Moreover, 85% of respondents believe that credit availability in six-months' time will be good (70% think it will be the same as the current level, while 15% see is as being higher); and 73% think the same about future liquidity (Figure19).

FIGURE 19
PERCEPTION OF CURRENT AND FUTURE LIQUIDITY AND CREDIT
(PERCENTAGE)
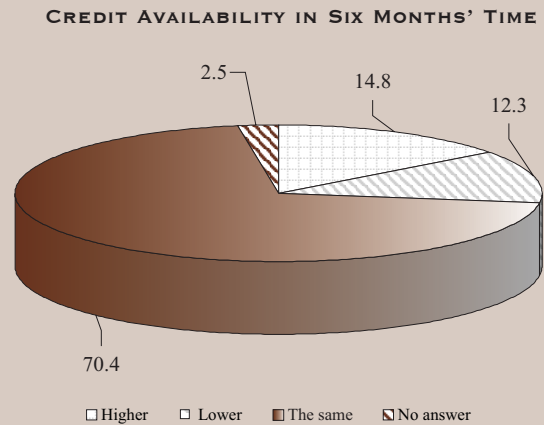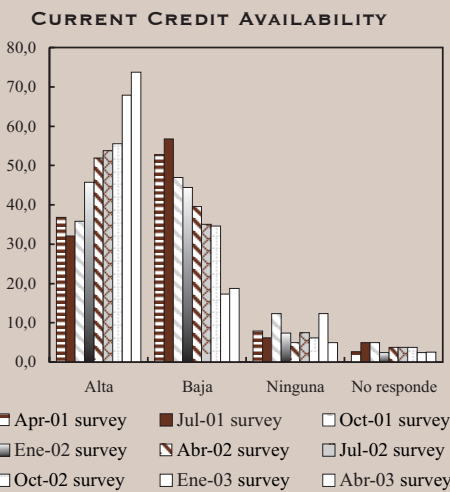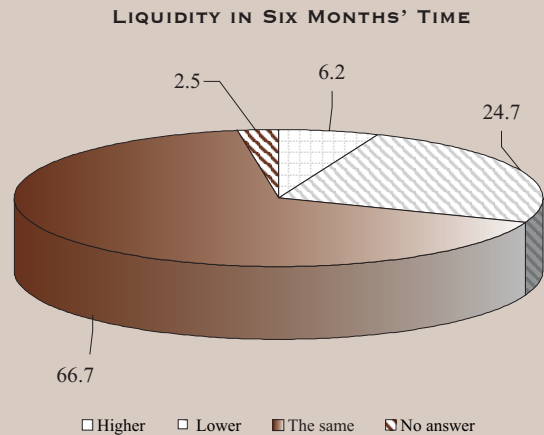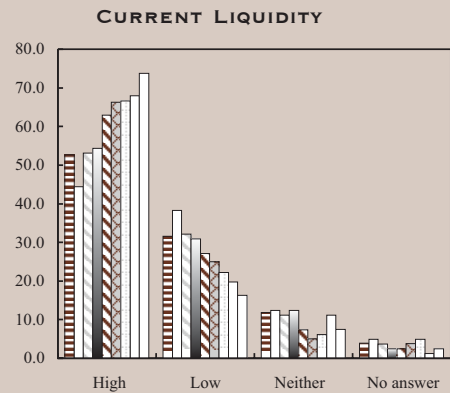
Source: Banco de la República expectations surveys.

This perception of a stable supply of funds for financing productive activity seems to have given businessmen greater confidence at the time of planning their future investments.

d. Conclusions

The financial system's exposure to the private corporate sector increased over 2002 and the first quarter of 2003, having fallen systematically from 1997 to 2001. Commercial banks are the most exposed entities, though banks specializing in mortgages have recently increased their exposure considerably.

The private commercial loan portfolio became concentrated between the end of last year and early this year, as evidenced by the higher share gained by the major private debtors.

Expansion in the private loan portfolio has occurred simultaneously with improvement in loan quality. The improvement has been exhibited both by the major private debtors and by the leading economic sectors (manufacturing, commerce and construction). This not only indicates greater ability to pay on the part of private debtors, but also makes foreseeable greater willingness to lend on the part of the financial system.

Moreover, survey findings show rising expectations of economic performance, which could imply mounting demand for credit and hence a continuation of recent months' growth in the financial system's loan portfolio.

The findings of the sample companies reporting to the Securities Superintendency are generally consistent with the greater corporate ability to pay

described above. In effect, profitability and liquidity indicators have improved systematically.

The levels of financial pressure and debt have gone up, in good measure because of the effect of devaluation, suggesting greater exchange-rate exposure. Two points need to be made, however. First, the external debt of the private sector as a whole has not moved in line with the sample group's. Second, in the past six months the sample companies have hedged against part of the exchange-rate risk by making foreign-currency investments. But it is not possible to quantify net exposure on the information available.

2. Households

a. Exposure

1) Amounts and overall exposure

Household debt is approximated as the total of consumer and mortgage loans, plus mortgage securities held by financial entities. Table 4 shows debt amounts and percentages by type of debt for May 2002 and 2003.

It may be seen that the financial system's exposure to households did not rise in real terms in the twelve months to May 2003, despite a substantial (14%) real growth in consumer loans. The reason was that mortgage loans declined over the same period.

Analysis of the financial system's exposure, defined as household debt as a proportion of the system's total assets, shows this exposure to have remained practically steady so far this year, at a record low (21.9%) for recent years (Figure 20).

Loan type	May 2002		May 2003	
	Trillions of pesos (*)	Percentage (*)	Trillions of pesos (*)	Percentage (*)
Mortgages	12.5	62.8	10.8	54.3
Consumer loans	7.4	37.2	8.4	42.2
Credit cards	1.7	8.5	1.9	9.5
Other	5.7	28.6	6.5	32.7
Mortgage securities	0.0	0.0	0.7	3.5
Total	19.9	100.0	19.9	100.0

(*) Billions of pesos of March 2003.
Source: Banking Superintendency. Calculations by Banco de la República.

FIGURE 20
HOUSEHOLD DEBT AS SHARE OF FINANCIAL SYSTEM'S TOTAL ASSETS
(PERCENTAGE)
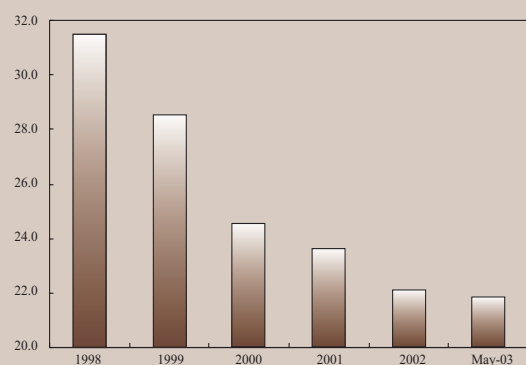
Source: Banking Superintendency. Calculations by Banco de la República.

FIGURE 21
HOUSEHOLD LOANS V. TOTAL LOANS
(BILLIONS OF MARCH 2003 PESOS)
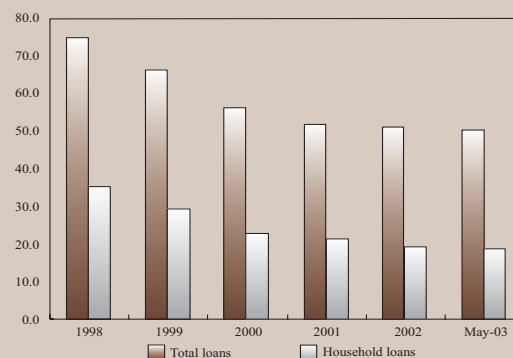
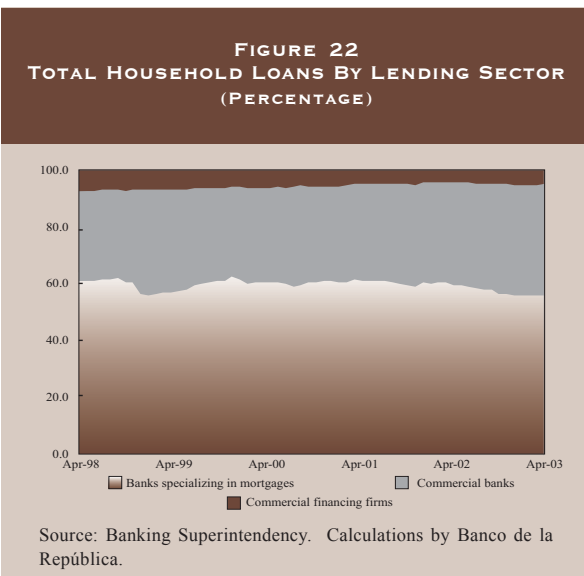Source: Banking Superintendency. Calculations by Banco de la República.

Note however that, as illustrated by Figure 21, loans to households still constitute a considerable part of the credit extended by the financial system: 37% in May 2003, down from 40% a year earlier.

2) Exposure by type of entity

As stated in the previous Report, of all the sectors making up the financial system, banks specializing in mortgages are the one providing the greatest amount of financing to households. But their share of total lending to households fell from 60% in May 2002 to 57% in May 2003; commercial banks and, to a lesser extent, commercial financing corporations have taken up the slack, the former increasing their share by 3.0 percentage points and the latter by 0.4 points between those dates (Figure 22).

The above sectors' exposure is a function not only of the stock of household loans on their

Figure 22
Total Household Loans By Lending Sector
(Percentage)

Source: Banking Superintendency. Calculations by Banco de la República.

balance sheets but also of the ratio of that stock to their overall credit portfolio. Figure 23 shows this ratio by type of entity. From this perspective, too, banks specializing in mortgages are the most exposed to household loans, which account for a very high proportion of their lending, though this proportion has declined strongly in the past twelve months, dropping from 82% in May 2002 to 76% a year later. Commercial financing firms are the second most exposed sector, with household loans representing 42% of their total lending, though their exposure has also decreased in the past twelve
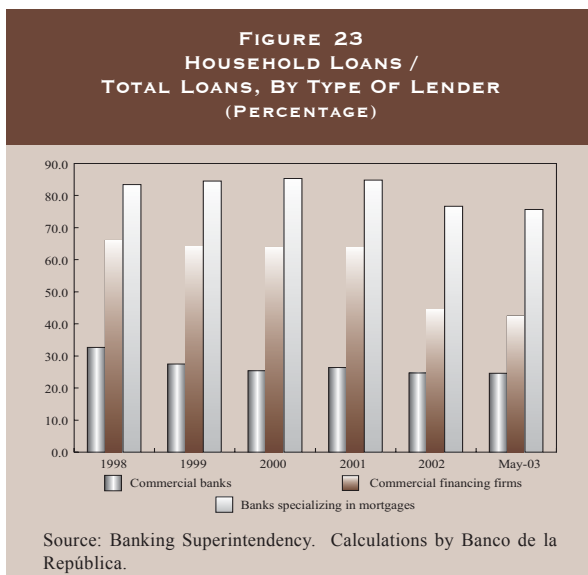
months, by about four percentage points. The commercial banks' their exposure to household debt has remained relatively constant in the past year, at around 25%.
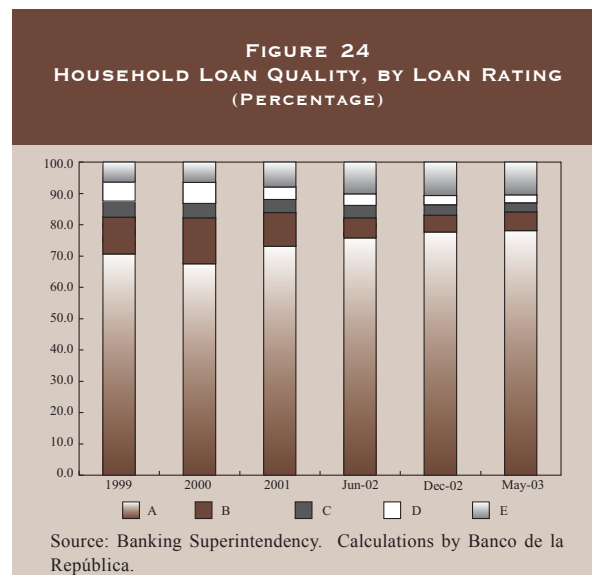
3) Debt quality

The quality of household debt continued to improve in the second half of 2002 and so far this year, relative to previous years. In effect, the combined share of Types A and B loans rose from 82% to 84% between June 2002 and May 2003, while the share of Types D and E loans together dropped from 14% to 13% (Figure 24). This improvement in loan quality has occurred despite the fact that securitization of mortgage loans in November 2002 reduced the part of the mortgage portfolio with good rating.

b. Household ability to pay and outlook

1) Indicators of ability to pay

Households' ability to pay depends on their income flow and also on the value of their assets (which may serve as collateral for their borrowings).

Figure 23
**Household Loans /
Total Loans, By Type Of Lender**
(Percentage)

Source: Banking Superintendency. Calculations by Banco de la República.

Figure 24
Household Loan Quality, by Loan Rating
(Percentage)

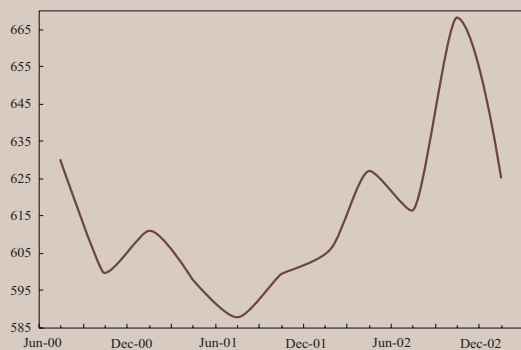Source: Banking Superintendency. Calculations by Banco de la República.

Two indicators have been taken as approximations to household income flows. First, Figure 25 shows that real wages have developed positively since the second half of 2002, running relatively high compared with levels in previous months. In effect, annual growth rates in the last two quarters of 2002 were 12% and 3.3%.

Second, movements in the real manufacturing-wage index have been analyzed, showing that since January 2002 the index has maintained positive annual growth (averaging 2.1%), which may have raised the ability to pay of households with members employed in manufacturing (Figure 26).
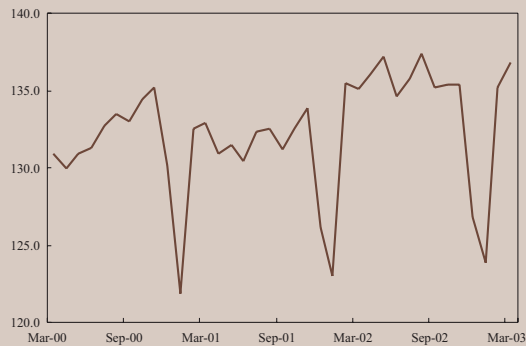
Employment and unemployment rates are fundamental to determining whether the wage rise actually represents an increase in households' ability to pay. Analysis of employment and unemployment rates shows improvements in both relative to recent years (Figure 27). The jobless rate was 17.9% in April this year and 16.7% in May; these levels, though still high, reveal progress with respect to previous years' figures. The employment rate, too, has improved appreciably in the course of this year: in May it was 0.9
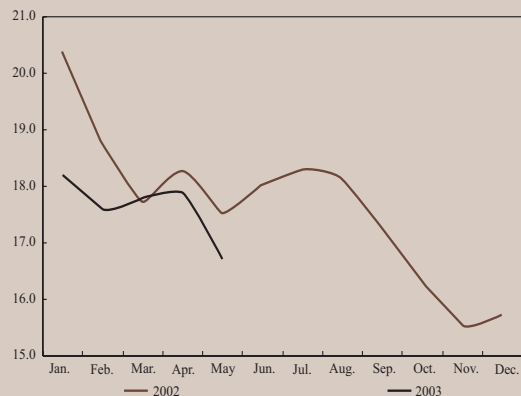
FIGURE 26
REAL MANUFACTURING WAGE INDEX

Source: DANE. Calculations by Banco de la República.

FIGURE 27
EMPLOYMENT AND UNEMPLOYMENT RATES
(PERCENTAGE)

UNEMPLOYMENT

EMPLOYMENT

Source: DANE. Calculations by Banco de la República.

FIGURE 25
REAL WAGES
(THOUSAND PESOS OF MARCH 2003)

Source: DANE's continuous household surveys. Calculations by National Planning Department.
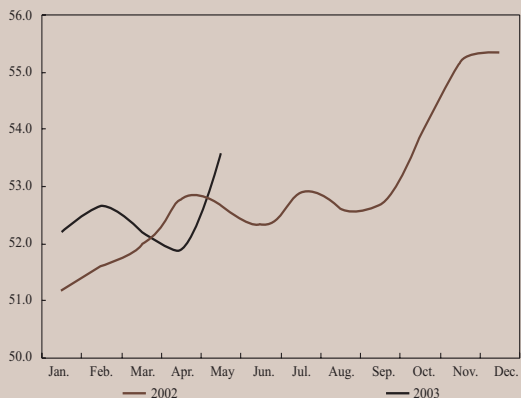
percentage points higher than last year and 2.1 percentage points higher than in 2001. Movements in employment seem therefore to have paralleled the upward trend in household income revealed by the wage indicators, lending support to the view that households' ability to pay has been improving since the second half of 2002.

The house-price index has been taken as an approximation of movements in household assets (Figure 28). The declining trend exhibited by the overall index from mid-1997 reversed strongly at the end of 2002. While the index for Medellín has remained relatively stable since June 2002, the Bogotá index has risen steeply since December, raising the overall house-price index by 13% between then and May this year.

2) Outlook

In April this year the consumer confidence index began to reverse the declining trend it had been showing since December, going up to far higher levels in April and May than in the same months last year (Figure 29). This improvement is too recent to give a sufficiently consistent picture for reaching a firm conclusion about future household demand for credit, particularly where home financing is concerned (Figure 30).

c. Conclusions

The household loan portfolio and its share of the financial system's total assets have remained practically constant in the past year, so that the system's general exposure in this respect has not increased.
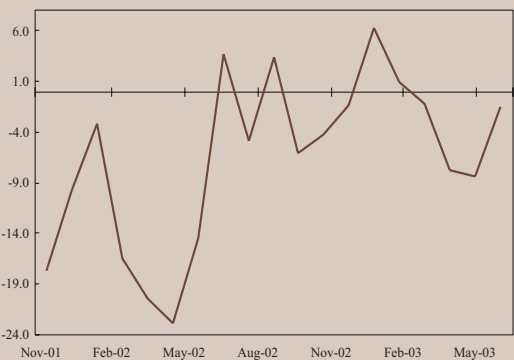
Analysis of the general exposure reveals that commercial banks and commercial financing firms

FIGURE 28
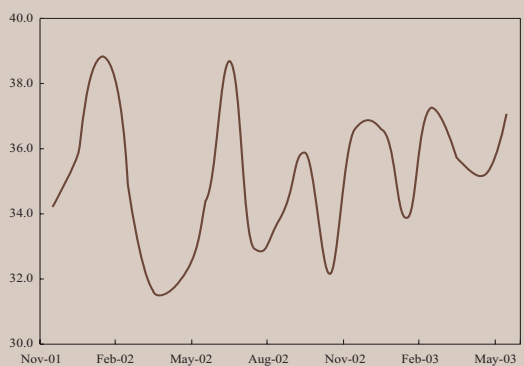**REAL HOUSE PRICE INDEX, DEFLATED BY CPI**
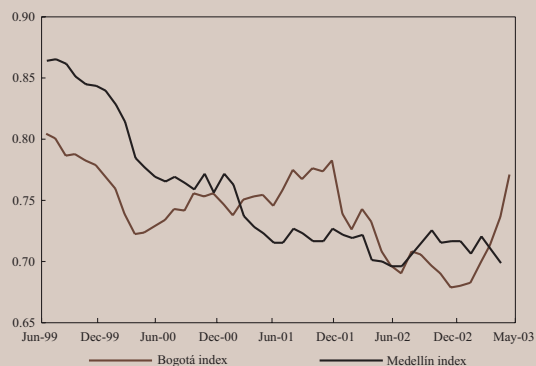
Source: National Planning Department.

FIGURE 29
CONSUMER CONFIDENCE INDEX
(PERCENTAGE)

Source: Fedesarrollo.

FIGURE 30
PERCENTAGE OF HOUSEHOLDS BELIEVING IT IS A GOOD TIME TO BUY A HOUSE, FURNITURE, ELECTRICAL APPLIANCES OR A CAR

Source: Fedesarrollo. Calculations by Banco de la República.

have increased their shares of the total household debt, to the detriment of banks specializing in mortgages. This situation has been influenced by the past year's large expansion in consumer loans and poor growth in mortgage loans.

The quality of household debt may be said to have continued the improvement begun at the end of 2000. Some factors that might account for the improvement are: positive developments in wage income during the second half of 2002 and first quarter of 2003, the slight upturn in employment in March, April and May 2003, and rising home prices since January.

Yet, the outlook for household borrowing is not very clear, as indicated by the consumer-confidence index. A good part of the persisting uncertainty about households arises from the absence so far of any definite tendency to purchase such assets as real estate that are usually financed with credit, though some progress was observed in May.

3. Nonfinancial public sector

a. Financial system's exposure to public debt[25]

1) Variations in exposure

The financial system's holdings of public-debt securities have increased considerably in recent years, making it advisable to monitor the system's exposure to public debt, and also the public sector's overall indebtedness. The first part of this section describes

---

[25] The data presented in this section is from the Banking Superintendency and refers to public capital and securities portfolios reported on the balance sheets of financial entities. The data includes the Nation's payment agreement with the Banco Agrario. The second-tier state banks (*Instituciones Oficiales Especiales*) are not included.
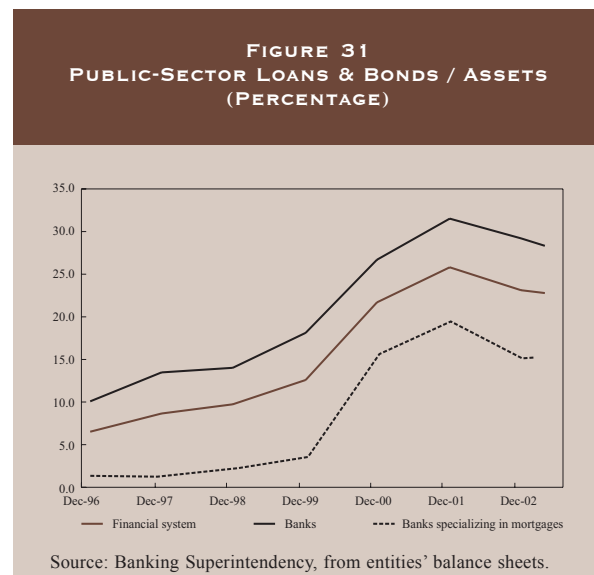
recent variations in the financial system's exposure to public debt, measured as the ratio of public-sector loans and securities on the balance sheets of credit entities, to the entities' assets. In general, a rise in this ratio means greater exposure to public debt but not necessarily higher risk, for that will depend also on public-sector solvency and liquidity.

Bearing that in mind, it may be seen from Figure 31 that the financial system's exposure to public debt, having expanded apace from 1996 to 2001, declined in 2002 and early 2003.[26] The ratio of public loans and bonds to assets fell from 25.7% in December 2001 to 23.1% a year later and down to 22.5% in March this year.

2) Exposure by type of credit entity

Commercial banks continue to be the most exposed directly to public debt, though their exposure has decreased in recent months. Their

---

[26] This result may have been influenced by changes in valuation methods introduced by the Banking Superintendency at the end of last year.

FIGURE 31
PUBLIC-SECTOR LOANS & BONDS / ASSETS
(PERCENTAGE)

Source: Banking Superintendency, from entities' balance sheets.

ratio of public debt to assets, which had risen from 9.9% in 1996 to 31.4% in 2001, was running at 28.1% in March this year, significantly higher than the other financial entities' ratio. Banks specializing in mortgages, which had also strongly expanded their exposure to public-sector debt in 1996-2001, registered a 15.5% ratio in March.

Commercial banks, besides being the most exposed to public debt, are also the group with the largest amount of public debt on their balance sheets, accounting for 77% of the total held by the financial system in March this year, down from 74% in December 2001, as compared with 82% in December 1997. Banks specializing in mortgages have reduced their share of total public debt from 18% in December 2001 to 16% in March. The other entities of the financial system together account for the remaining 7%.

Bonds continue to be the financial system's preferred instrument of public debt, representing 72% of the total public debt held on balance sheets in March 2003, against 28% in loans.[27] This preference is particularly striking in banks specializing in mortgages, with bonds making up 94% of their total public-debt holdings. Commercial banks, too, favor bonds but not so strongly, holding 67% of their public debt in bonds and 33% in loans.

b. Aggregate nonfinancial public sector debt[28]

Gross nonfinancial public sector debt grew rapidly over the past year, from 54.0% of GDP in December 2001 to 61.8% a year later. In real terms, the debt increase was 15.1% and came from a large rise in the issuance of domestic public-debt securities and the effect of devaluation on the balance in pesos of external public debt. Domestic public debt grew by 16.2% in real terms, and external debt by 14.0%.

The upward trend in public debt continued over the first quarter of this year, with a 0.6% overall real growth,[29] which resulted from a 2.6% real increase in external debt valued in pesos and a 1.4% real decrease in domestic debt. Thus, external debt as a share of overall nonfinancial public sector indebtedness edged up from 49.6% in December 2002 to 50.6% in March, leaving the domestic/external composition still very well balanced (Table 5).

Issuance of securities continued to be the main means of public borrowing, and domestic bonds continued to gain share as instruments of domestic debt. The rise in the amount of securities came from an increase in the holdings of agents outside the nonfinancial public sector; this was reflected in a higher net to gross public debt ratio, the ratio rising from 82.4% in December 2001 to 84.4% a year later and to 85.1% in March 2003.

Movements in the central government's debt are reviewed in the following paragraphs. In March, the government's domestic debt represented 86.9% of the nonfinancial public sector's overall domestic debt, while its external debt made up 85.3% of this sector's overall external debt.

---

[27] In this case the portfolio includes the Nation's payment agreement with the Banco Agrario.

[28] The information contained in this section is provisional for 1999 and 2000 and preliminary for 2001, 2002 and 2003.

[29] Nonfinancial public-sector debt grew by 20.0% in real terms between March 2002 and March 2003.

TABLE 5
GROSS NONFINANCIAL PUBLIC SECTOR DEBT

Year	Domestic	External	Total	Domestic	External	Total	Domestic	External	Domestic	External	Total
	(Billions of pesos)			(Percentage of GDP) 1/			(Share)		(Nominal anual growth) 2/		
Dec-95	9,928.6	12,017.8	21,946.4	11.8	14.2	26.0	45.2	54.8	-	-	-
Dec-96	12,679.4	12,926.6	25,606.0	12.6	12.8	25.4	49.3	50.7	27.7	7.6	16.7
Dec-97	18,774.3	17,608.6	36,382.9	15.4	14.5	29.9	51.4	48.6	48.1	36.2	42.1
Dec-98	23,946.4	24,448.4	48,394.8	17.0	17.4	34.4	49.2	50.8	27.5	38.8	33.0
Dec-99	30,604.3	32,879.2	63,483.6	20.2	21.7	41.9	48.0	52.0	27.8	34.5	31.2
Dec-00	42,132.9	41,965.2	84,098.2	24.1	24.0	48.1	50.1	50.0	37.7	27.6	32.5
Dec-01	50,628.6	50,801.8	101,430.4	26.9	27.0	54.0	49.9	50.2	20.2	21.1	20.6
Dec-02	62,942.1	61,967.6	124,909.7	31.1	30.6	61.8	50.4	49.6	24.3	22.0	23.1
Mar-03	64,148.9	65,716.9	129,865.8	30.6	31.3	61.9	49.4	50.6	1.9	6.1	4.0

1/ For quarterly data, the GDP of the past 12 months is used.
2/ Growth for March 2003 is estimated with respect to December 2002.
Source: Banco de la República, Economic Studies Division.

c. Central government debt

The government's debt-to-revenues ratio has continued to rise, going up from 291.7% in December 2001 to 328.7% in March this year (Table 6),[30] as a result of a 19% real increase in debt and a 5% real expansion in revenues over the same period.

1) Central government domestic debt

In 2002, the central government's domestic debt registered a 19.1% real growth, which though high was lower than the 24.9% average for 1995-2001. The first quarter of this year saw a real decline (of 1.0%) in the stock of domestic public debt for the first time in seven years. Despite this decline, which reduces pressure on available domestic resources,

TABLE 6
CENTRAL GOVERNMENT DEBT v. REVENUES

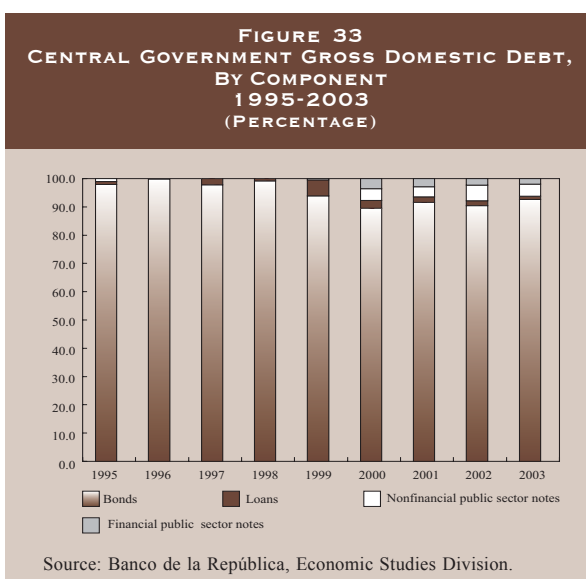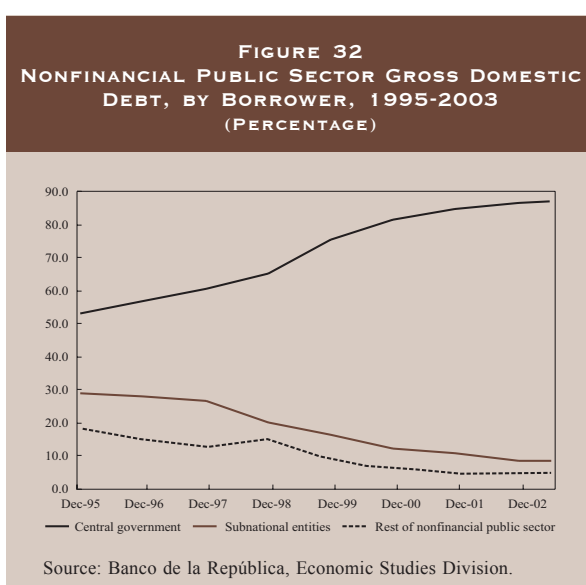| Year	Debt	Revenues	Debt /
	(Billions of pesos)		revenues
1995	11,559.8	9,599.9	120.4
1996	14,452.3	12,140.3	119.0
1997	21,778.2	15,237.5	142.9
1998	31,232.0	16,880.2	185.0
1999	45,591.9	20,164.2	226.1
2000	66,157.1	23,196.7	285.2
2001	84,412.5	28,941.8	291.7
2002	106,054.3	31,459.1	337.1
2003 (*)	111,457.5	33,911.0	328.7

(*) March 2002.
Source: Banco de la República, Economic Studies Division.

the government continued to gain share in the nonfinancial public sector's domestic debt, edging up from 86.5% in December 2002 to 86.9% in March. The reason for this was that both subnational entities and the rest of the nonfinancial public sector considerably reduced their debt in

---

30 Total central government revenues include current and noncurrent revenues. Given that revenues are a flow, while debt is a stock, the data for March 2003 revenues is the annual revenue data.

real terms over the first quarter, by 3.3% and 5.1% respectively (Figure 32).

As stated above, bonds are the government's preferred instruments of domestic debt, representing some 93% of the total, with notes making up another 5% approximately, and loans from the financial system more or less the remaining 2%. This distribution of domestic public-debt instruments is much the same as in previous years, as may be seen from Figure 33.

Figure 32
Nonfinancial Public Sector Gross Domestic Debt, by Borrower, 1995-2003
(Percentage)

Source: Banco de la República, Economic Studies Division.

Figure 33
Central Government Gross Domestic Debt, By Component 1995-2003
(Percentage)

Source: Banco de la República, Economic Studies Division.

TES-B bonds have been a very important instrument of debt, accounting on average for 80% of the government's domestic debt since 1997. For this reason, the financial conditions of TES-B bond placements have played a large part in the amount of interest payments and the size of the deficit. Table 7 shows estimates of the TES-B bonds' implicit rate of return between 1996 and 2002. As may be seen, the rate has tended to fall in recent years. This implies that the domestic debt service has tended to decrease through prices. But, as far as amounts are concerned, the effect has been the opposite.

2) Central government external debt

The government's external installment debt, valued in pesos, grew by 15.7% in real terms last year. This rate of growth, though high, was lower than the 20.8% annual average for 1995 to 2001. Last year's growth resulted entirely from the price effect

able 7
Implicit Rate Of Return On Tes-B Securities 1/

Year	Yield	Balance	Implicit rate of return 2/	
	(Billions of pesos)		Nominal	Real
			(Percentage)	
1995	535.9	3,864.3		
1996	1,160.1	5,897.2	30.0	8.4
1997	1,635.8	9,614.1	27.7	10.1
1998	2,407.4	13,856.1	25.0	8.3
1999	4,098.3	20,100.4	29.6	20.3
2000	4,216.5	26,772.4	21.0	12.2
2001	4,020.9	33,365.3	15.0	7.4
2002	4,673.7	42,643.6	14.0	7.0

Note: The Banco de la República's Trust and Securities Department has revised the TES-B securities' yield payment series from January 2000.
1/ Including TES in pesos, dollars and Real Value Units (UVR).
2/ Calculated as the ratio of realized yield payment in year t to capital balance in year (t-1).
Source: Banco de la República, Economic Studies Division.

of rapid devaluation in the third quarter, for the government's external debt, valued in dollars, decreased by 1.0% in 2002.

The external debt of the rest of the nonfinancial public sector, valued in pesos, also increased in real terms last year, but by a smaller extent than the government's. The subnational entities' external debt grew by 8.6% in real terms, and the rest of the nonfinancial public sector's by 7.3%. Thus, the government gained share in the overall external debt of the nonfinancial public sector, rising from 82.9% in December 2001 to 83.9% a year later.
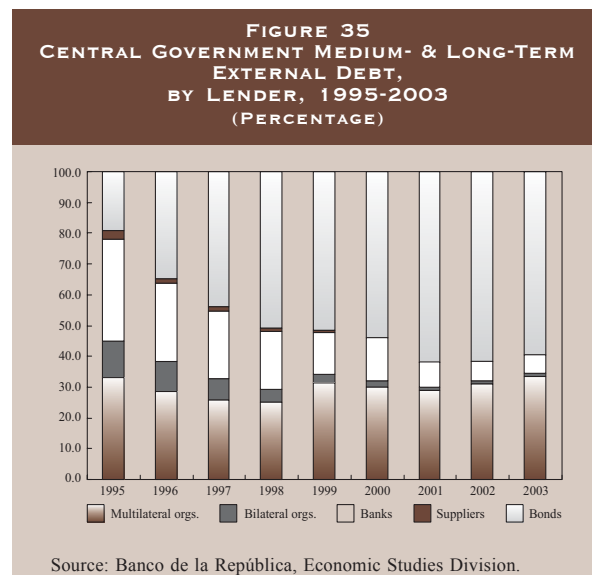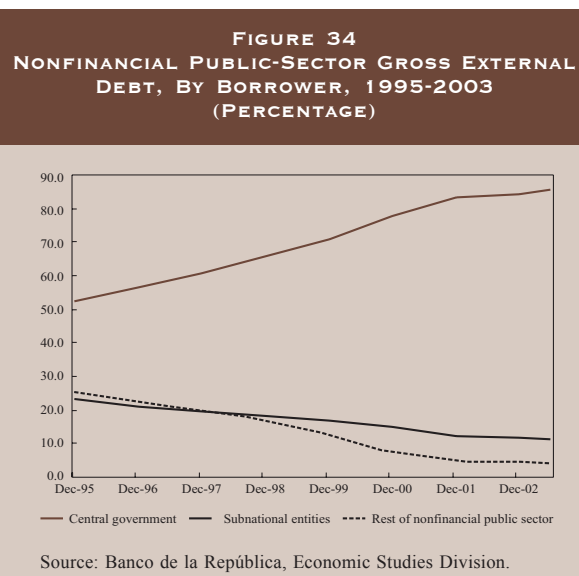
In the first quarter of this year, the government's external debt started rising again in dollars, registering a 4.6% increase relative to December 2002; in pesos, the rise was a nominal 8.0% and a real 4.5%.[31] At the same time, subnational entities and the rest of the nonfinancial public sector both decreased their external debts, in dollars as well as in constant pesos, so that the government's share as debtor within the nonfinancial public sector went up again, reaching 85.3% in March (Figure 34).

The gradual slide in bonds as instruments of external public debt, referred to in the previous Report, continued over the second half of last year and first quarter of this. Bonds as a share of the governments' external debt dropped from 62.2% in December 2001 to 61.8% a year later and to 59.8% in March this year, as shown in Figure 35. The loss of share of government bonds was gained by multilateral organizations, which accounted for

33.6% of the government's external debt in March. The shares of bilateral organizations, commercial banks and suppliers have remained relatively steady in recent years.

Since the debt is largely made up of bonds, it is highly sensitive to variations in market conditions.

Regarding the financial conditions of fresh external loans obtained by the public sector, Table 8 shows that the average nominal interest rate fell appreciably between 2001 and 2002, from 9.4% to 7.8%.

FIGURE 34
NONFINANCIAL PUBLIC-SECTOR GROSS EXTERNAL DEBT, BY BORROWER, 1995-2003
(PERCENTAGE)

Source: Banco de la República, Economic Studies Division.

FIGURE 35
CENTRAL GOVERNMENT MEDIUM- & LONG-TERM EXTERNAL DEBT, BY LENDER, 1995-2003
(PERCENTAGE)

Source: Banco de la República, Economic Studies Division.

---

[31] Inflation rose by more than nominal devaluation in the first quarter of the year. This implies that external debt in dollars increased by more than external debt in constant pesos.

TABLE 8
FINANCIAL CONDITIONS OF FRESH LOANS OBTAINED

Period	Loan amount ($ millions)	Average period		Average interest rate (nominal %)
		Grace (years)	Repayment (years)	
1991	2,507	6.0	12.8	7.5
1992	847	4.2	14.7	7.8
1993	1,526	3.4	12.2	6.9
1994	1,715	4.0	10.9	7.3
1995	1,715	2.7	9.1	6.8
1996	3,489	1.5	8.5	7.8
1997	2,331	1.3	10.6	8.0
1998	3,104	1.2	7.1	8.2
1999	3,861	2.4	8.9	10.0
2000	3,192	1.1	9.5	11.8
2001	6,441	2.1	9.4	9.5
2002	2,042	1.5	7.8	7.8

Source: Banco de la República, Economic Studies Division.

Average grace periods and maturities also decreased, albeit modestly. It is important to point out that the fall in the average nominal interest rate resulted in good part from a substantial decrease last year in the issuance of external bonds by the public sector. Last year, loans were primarily obtained from suppliers, commercial banks and multilateral organizations.

Another positive development has been the markets' perception of an increasingly smaller country risk, as reflected in the spread charged on the country's foreign bonds (Figure 1 in the Summary and Conclusions). This development has in fact been common to emerging economies in general, as evidenced by movements in the Emerging Market Bond Index (EMBI). The process of public-sector adjustment needs to be continued so that the markets' improved perception of the sector will not be reversed.

d. Subnational debt

Subnational debt[32] held by financial entities decreased throughout 2002 and the first three months of 2003, from 3.5 tr pesos in December 2001 to 3.2 tr pesos in March this year, at constant March 2003 prices (Figure 36). In real terms this was a 14% reduction in the debt balance for the past 15 months relative to December 2001, signifying only a slight fall in subnational debt as a share of the financial system's total assets: from 3.7% in December 2002 to 3.6% in March 2003. It is important to point out that in the first quarter subnational debt decreased at an accelerated pace, its 7.3% real decline equal to the rate observed for the whole of 2002.

[32] Estimates of subnational debt include only the debts of departments and circumscribed municipalities. Their enterprises and social security agencies, among others, are not included. Indebtedness refers only to debt incurred with the domestic financial system; it does not include bonds issued by the subnational entities, which amounted to 778 bn pesos in March 2003.

FIGURE 36
SUBNATIONAL DEBT TO FINANCIAL SYSTEM
(BILLIONS OF MARCH 2003 PESOS)
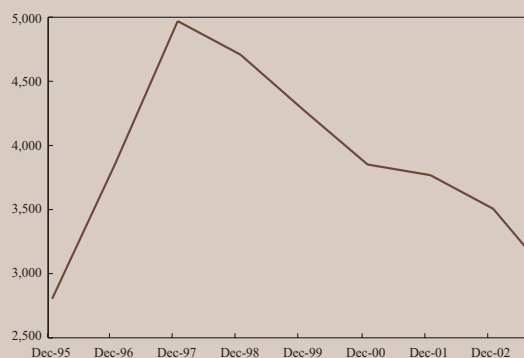
FuSource: Banking Superintendency. Calculations by Banco de la República.

FIGURE 37
SUBNATIONAL LOAN QUALITY
(PERCENTAGE)
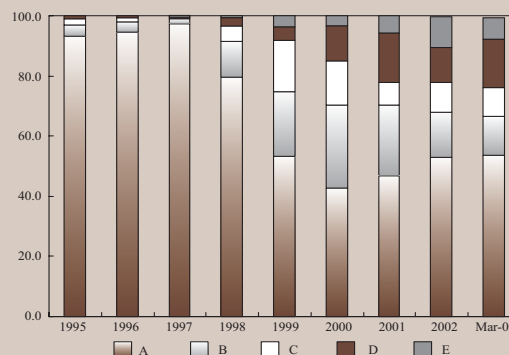
Source: Banking Superintendency. Calculations by Banco de la República.

1) Indebtedness and debt quality[33]

The quality of subnational debt continued to improve in the first quarter relative to previous years. A-rated debts as a share of total subnational indebtedness rose by four percentage points between September and March, to 54%. And, although the share of D-rated debts also increased, from 12% at the end of last year to 16% in March, the proportion of the worst rated loans shrank. This would suggest that a portion of the worst loans slightly improved their payment behavior (Figure 37).

A major factor behind the improvement in subnational debt quality has been the possibility provided by Laws 550 of 1999 and 617 of 2000 for departments and municipalities to restructure debts to the financial system.[34] The tax reform of 2000 has also had a positive impact on subnational debt quality by allowing one-off withdrawals to be made from the Oil Savings and Stabilization Fund to repay departmental or municipal debt outstanding on December 29, 2000.[35]

The seven territories, including Bogotá, most indebted to the financial system slightly reduced their share of total subnational debt in the first quarter, from 75% in December 2002 to 74% in March (Figure 38).[36] The department of Antioquia was largely responsible for the reduction, while Valle del Cauca is still the department with the greatest concentration of debt, accounting for 28% of total subnational debt.

---

[33] Subnational debt was approximated as the sum of the debt of the departments and the department-circumscribed municipalities. The data is from lending operations reported by financial entities to the Banking Superintendency.

[34] An essential provision of Law 617 of 2000 is that the government shall guarantee 40% of the restructured debt and 100% of fresh loans for fiscal adjustment, provided that subnational entities meet all the conditions stipulated by the law. Law 550 of 1999 provides for debt restructuring under an agreement with creditors without having to seek protection under bankruptcy laws.

[35] Article 133 of the tax reform Law 633 of 2000 allows members of the Oil Savings and Stabilization Fund to make withdrawals from the Fund. Decree 1939 of 2001 laid down regulations for withdrawals and clarified that hydrocarbon-producing departments refers to Arauca and Casanare and producing municipalities to Arauca, Arauquita, Aguazul and Tauramena.

[36] The most indebted subnational entities, in descending order, are: Valle del Cauca, Bogotá, Antioquia, Atlántico, Santander, Cundinamarca and Bolívar. Each entity's debt is the sum of debts incurred by the department and the municipalities circumscribed by it.

Using the Herfindahl index as a measure of debt concentration reveals that in the first quarter subnational debt stopped being concentrated in a few subnational entities, the index becoming stabilized at around 12.5% for the current year (Figure 38). Though the Herfindahl index does indicate a moderate concentration of subnational debt, it is reassuring to see that it has stopped rising and is running steady or even dropping slightly.[37] Calculating the index for the financial entities' shares of subnational debt shows that since 1995 it has at no time exceeded 10%, which means that exposure to the risk of nonpayment of subnational debt is equally distributed between several financial entities.

Commercial banks are still the biggest lenders to subnational entities, accounting for 85% of the funds provided, followed by financial corporations (8.1%) and banks specializing in mortgages (5.1%). Figure 39 shows that commercial banks have systematically reduced

_____

[37] According to international standards, a market with a Herfindahl index higher than 10% but lower than 18% is considered moderately concentrated. Markets with indices over 18% are considered concentrated, and any 1% change in them raises monopoly concerns.

their share of lending to subnational entities since 1999 and are continuing to do so this year. The Figure also reveals that banks specializing in mortgages have been gradually expanding their share since 1997, up to 5.1% in March.

Among the seven biggest subnational debtors, three still stand out for the large size of their indebtedness: Bogotá and the departments of Valle del Cauca and Antioquia.

The biggest subnational debtors reduced their levels of indebtedness to the financial system in 2002 and continued to do so over the first quarter of 2003. In March, Valle del Cauca's stock of debt stood at 909 bn pesos of 2003, down by 8.2% in real terms on December (Figure 40). This reduction resulted largely from the fact that Cali, having increasingly obtained fresh loans from the financial sector since 1998, stopped doing so and also reduced its existing debts by 4.8% in the first quarter. This is evidence that Cali has left behind the high debt rates it registered in 2000 and 2001: 18% and 25% respectively in real terms.

FIGURE 38
CONCENTRATION OF SUBNATIONAL DEBT, BY MAJOR BORROWERS
(PERCENTAGE)

Source: Banking Superintendency. Calculations by Banco de la República.

FIGURE 39
CONCENTRATION OF SUBNATIONAL DEBT, BY TYPE OF LENDER
(PERCENTAGE)

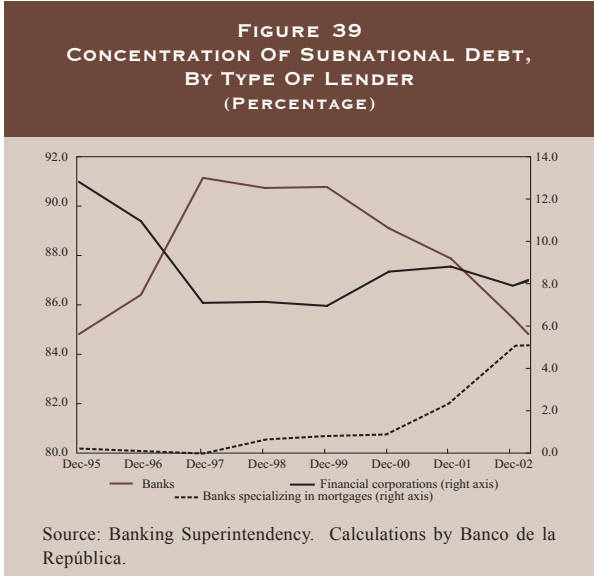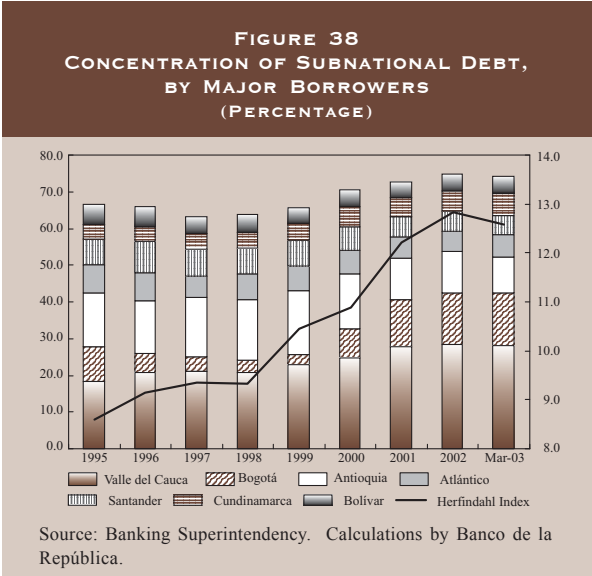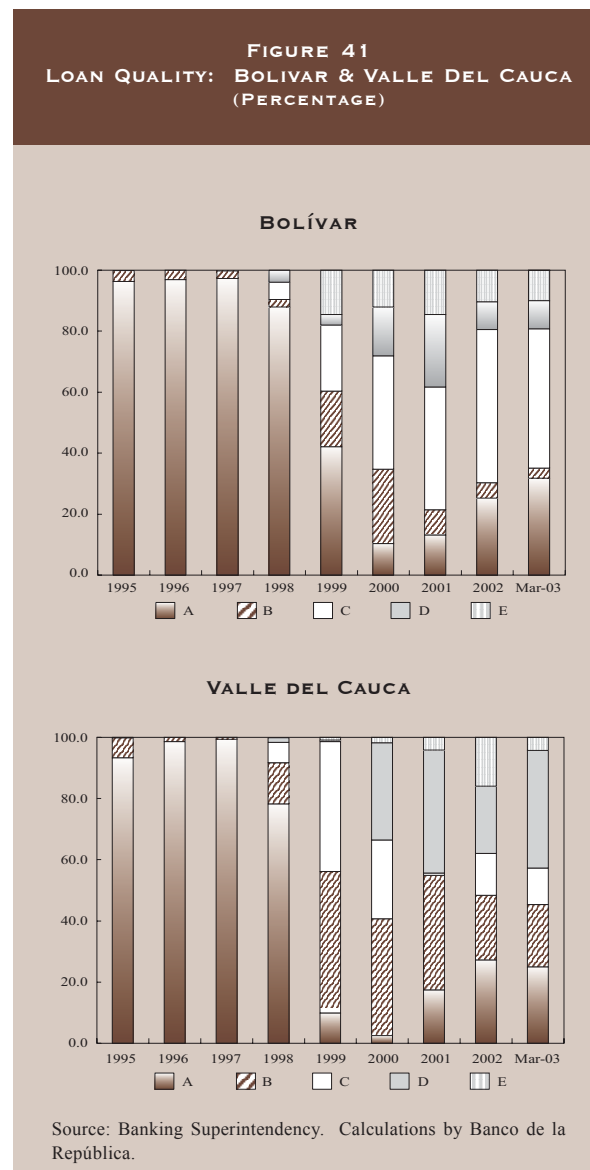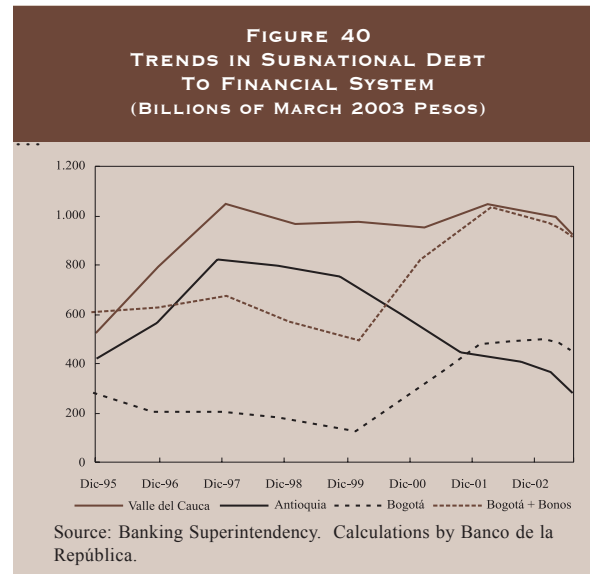Source: Banking Superintendency. Calculations by Banco de la República.

Figure 40 also shows that Antioquia has continued to reduce its debt level and done so this year at a faster pace (18%). Strikingly, Antioquia's debt level at constant 2003 prices was lower at the end of the first quarter this year than in December 1995. Note also that Bogotá's debt reversed its rising trend in the first quarter to decline by 5.7%; including the city's bond debt in the calculation leaves the rate of decrease unchanged.

Among the subnational territories most indebted to the financial system, the departments of Valle del Cauca and Bolívar still exhibit the worst debt-quality indicators. However, Bolívar's debt quality has continued to improve this year, with A-rated loans rising as a share of its overall debt (Figure 41). In contrast, Valle del Cauca's share of A-rated loans has dropped from 27% to 25% this year and, more worryingly, its D-rated loans have soared from 22% in December 2002 to 39% in March. This means that over one third of Valle del Cauca's loans are now considered difficult to collect, posing a significant risk to financial entities (Figure 41). Lastly, it should be noted that all other highly indebted departments have continued to show a slow recovery in debt quality.

2) Debtors' ability to pay

For this Report, as for the previous one, each subnational territory's debt has been estimated as a ratio of its overall revenues.[38] Thus, the higher a territory's ratio, the greater the risk to the financial system in lending to it.

In 2002, the debt-to-revenue ratio decreased for each of the seven subnational territories most indebted to the financial sector. It is particularly

FIGURE 40
TRENDS IN SUBNATIONAL DEBT TO FINANCIAL SYSTEM
(BILLIONS OF MARCH 2003 PESOS)

Source: Banking Superintendency. Calculations by Banco de la República.

FIGURE 41
LOAN QUALITY: BOLIVAR & VALLE DEL CAUCA (PERCENTAGE)

Source: Banking Superintendency. Calculations by Banco de la República.

reassuring to see that the ratio for Valle del Cauca, having badly deteriorated for two years in a row, improved substantially last year, dropping from 72% in December 2001 to 65% in December 2002.[39] But this is still the highest debt-to-revenues ratio for any department of Colombia (Figure 42).

The departments of Antioquia and Bolívar reduced their respective debt-to-revenues ratios slowly last year. Antioquia's fell by three percentage points relative to December 2001, to stand at 18% in December 2002-slightly below the ratio for overall subnational debt-, largely because of a 9% real drop in the department's debt in 2002. Bolívar's debt-to-revenue ratio also declined by three percentage points, thanks to a 3.7% real decrease in the department's indebtedness and an 11% real increase in its revenues.

e. Conclusions

The financial system's public-debt exposure (measured as the ratio of public-sector debt to the system's assets) declined from December 2001 to March 2003, after six years of continuous expansion. This behavior was common to commercial banks and banks specializing in mortgages. Commercial banks are still the entities most exposed directly to nonfinancial public-sector debt.

FIGURE 42
DEBT TO REVENUES FOR MAJOR SUBNATIONAL DEBTORS
(PERCENTAGE)

Source: Banking Superintendency. Calculations by Banco de la República.

_____

[38] A subnational entity's overall revenues are the sum of the executed budget revenues of the department, its capital city and other municipalities. The revenues are made up of tax revenues, nontax revenues and capital income. The source of this information is the Office of the Comptroller General and the latest data are for December 2002.

[39] Improvement in Valle del Cauca's debt-to-revenue ratio resulted largely from a 5.5% real increase in revenues in 2002 and a 5.1% decrease in debt. Breakdown of the revenues shows that in real terms tax revenues rose by more than a quarter in 2002 relative to 2001, reaching 886 bn pesos at March 2003 prices.
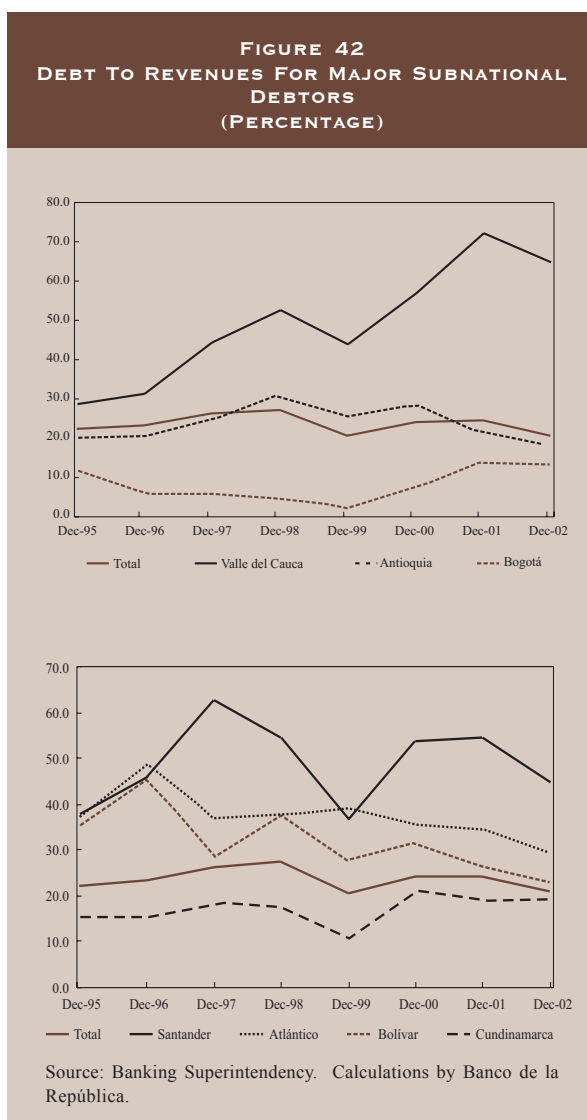
Although nonfinancial public-sector debt has continued to grow, its growth slowed in the first quarter of this year, after accelerating in 2002 because of a rise in domestic bond issues and the strong devaluation that occurred in the second half of the year. The same thing occurred with the rate of increase of the imbalance between government revenues and debt. The government continues to be the major debtor within the public sector.

In a positive development, the financial conditions of public debt have improved recently, in the sense that the real implicit interest rates of TES-B

securities and external debt have come down, as explained earlier. Market perception of the government's solvency has also improved and is evidenced by lower spreads on public debt. The process of public-sector adjustment needs to be continued so that higher market confidence in this sector will not be reversed.

It would appear therefore that the risk posed by public-sector debt to the financial system has declined in recent months. But it remains to be seen how the issuance of nonfinancial public debt within the financial system will develop in the coming months. According to the latest data on fiscal programming, the nonfinancial public sector, including the second-tier state banks, will need to increase its indebtedness to the financial system by some 1.7 tr pesos this year.

Subnational debt decreased in 2002 and continued to do so in the first three months of 2003. In general, exposure has moderated and debt quality has improved. The biggest risk is still the decline in Valle del Cauca's debt quality, though the department's solvency indicators show improvement.

Financial System

This chapter discusses the behavior of the financial system's main variables over the past twelve months, with special attention to the six months from December 2002 to May 2003. Variations in the financial system's stocks of assets and liabilities are reviewed, the system's profitability is analyzed and its exposure to the major risks inherent in its business is measured.

A. Balance-Sheet Developments

1. Asset positions

The financial system's total assets increased marginally in the past year, rising by 0.8% in real terms between May 2002 and May this year (Figure 43).

The system's loan portfolio (Figure 44) showed a real annual growth of 3.8% in May 2003, exhibiting a dynamism not seen since 1997. This was one of the financial system's most significant developments in the past six months.

A more detailed analysis reveals that growth did not occur uniformly across the different types of loans or the different kinds of entities that make up the financial system (Figure 45). In effect,

Figure 43
The System's Overall Assets in Pesos in March 2003
(Billions of Pesos)

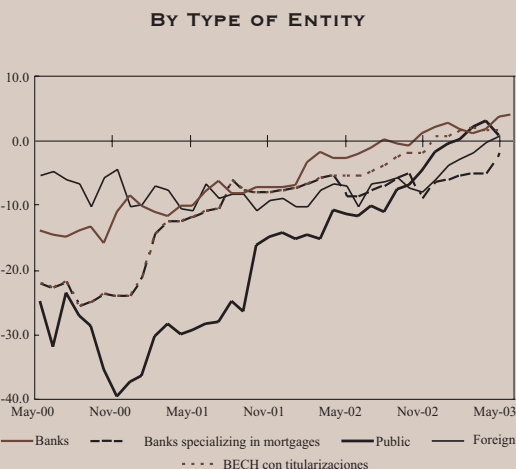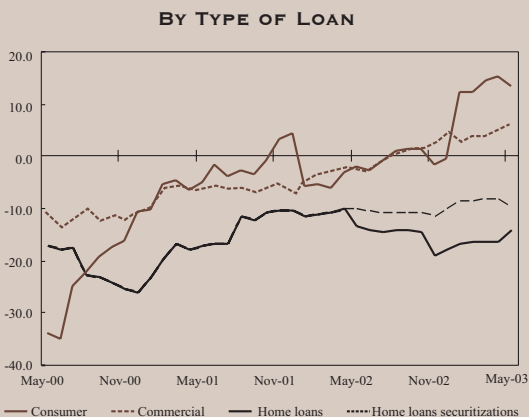Source: Banking Superintendency. Calculations by Banco de la República.

Figure 44
Gross Loan Portfolio Including Securitizations
(Billions of 2003 Pesos)
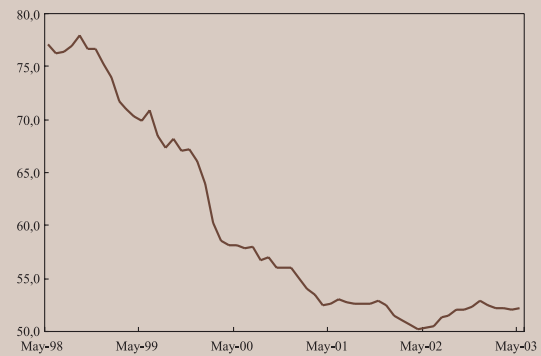
Source: Banking Superintendency. Calculations by Banco de la República.

breakdown of the portfolio's expansion by type of loan reveals microcredits soaring by a real annual rate of 182% in May, while consumer loans increased by 13% and commercial loans by 7%.

Figure 45
Gross Loan Portfolio
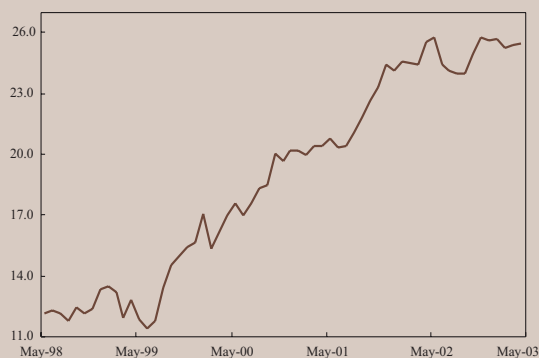#### (Real Annual Percentage Change)

By Type of Loan

Consumer ---- Commercial — Home loans ···· Home loans securitizations

By Type of Entity

— Banks --- Banks specializing in mortgages — Public — Foreign
···· BECH con titularizaciones

Source: Banking Superintendency. Calculations by Banco de la República.

Figure 46
Total System Investments
(Billions Of March 2003 Pesos)

Source: Banking Superintendency. Calculations by Banco de la República.

The only loans exhibiting real negative variations (-14%) are home loans. Their decrease is partly attributable to the mortgage securitizations carried out in 2002, which reduced the home-loan portfolio by about one trillion pesos. But even when this amount is taken into account the portfolio shows real negative growth (-10%).

Analysis of the overall portfolio by type of entity shows a 6% real positive growth in commercial banks. Moreover, in Mary 2003 foreign entities exhibit positive annual growth for the first time since 1998, at a real rate of 1%. As regards the banks specializing in mortgages, their portfolio excluding securitized amounts has still not registered positive growth, despite the headway made since 2000.

Investments picked up noticeably after the TES crisis of July-August 2002, rising by 5% in real terms from then to May 2003 (Figure 46). The causes of this rise were, first, the securitizations of mortgage loans carried out in November and, second, a slight upturn in the prices of public-debt securities.
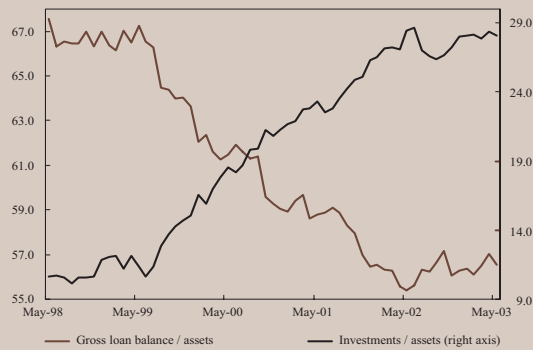
On balance, the above developments lead to the conclusion that the loan portfolio gained share marginally in the system's total assets, accounting for 56.5% of them in May 2003, while investments recovered ground lost in late 2002 and stabilized at around 28% of assets in the first five months of this year (Figure 47). Meanwhile, the rest of the system's assets declined, notably: property received in payment, by a real rate of 20% in the past year; accounts receivable, by 18%; and interbank funds and repurchase agreements, by 13%.

Figure 47
Investments and Gross Loans as Shares of Total Assets
(Percentage)

Source: Banking Superintendency. Calculations by Banco de la República.

Figure 48
Deposits

Billones de pesos de 2003

Crecimento real anual (Porcentaje)

Source: Banking Superintendency. Calculations by Banco de la República.

2. Liability Positions

In the case of liabilities (Figure 48), the level of deposits picked up slightly between May 2002 and May 2003. In effect, real growth has begun to turn positive again, albeit at low rates so far. Hence, the relative stagnation in the financial system's deposits described in the December 2002 Report appears to be gradually ending.

Given the expansion in loans, growth in deposits will need to recover more strongly (as indicated by preliminary results for June). Otherwise, although the financial system has adequate liquidity at the moment, in the medium term the lack of financing sources for loans may cause interest rates to rise. The rise will become even more significant if the high demand for resources from such agents as the nonfinancial public sector continues at its present levels and puts pressure on the rest of the economy's excess liquidity.

3. Leverage

Once variations in the system's assets and liabilities have been analyzed, it is useful to determine the system's leverage so as to capture possible changes in the way in which credit entities are financing their assets. Figure 49 shows that the ratio of assets to equity has remained relatively steady from the last quarter of 2002 to date, fluctuating only between 8.9 and 9.3 pesos of assets for every peso of equity.

Given the relative stagnation of assets in the past six months, the level of equity may therefore be said not to have diminished, thereby keeping the level of leverage free from any big variations.

FIGURE 49
LEVERAGE: ASSETS / EQUITY
(PERCENTAGE)

Source: Banking Superintendency. Calculations by Banco de la República.

FIGURE 50
ASSET PROFITABILITY: PROFIT / AVERAGE ASSETS
(PERCENTAGE)
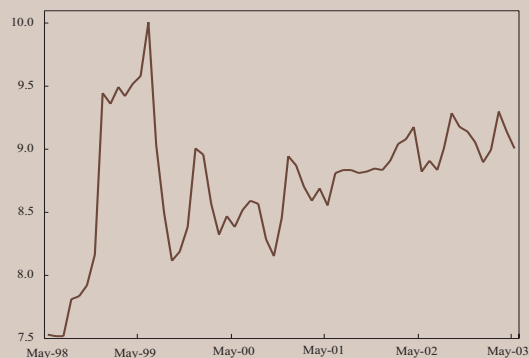
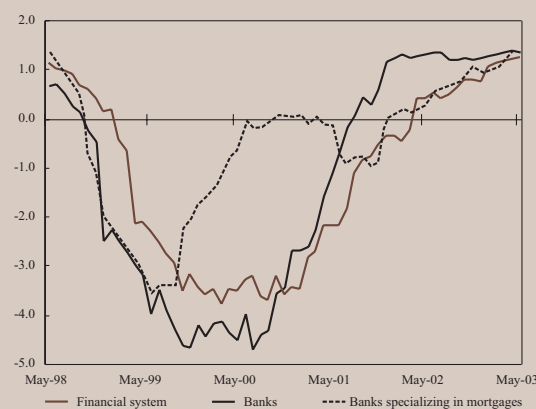Source: Banking Superintendency. Calculations by Banco de la República.
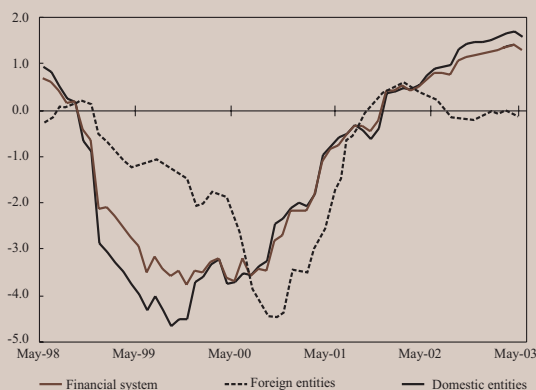
B. PROFITABILITY

The positive trend in the financial system's profitability continued through the last quarter of 2002 and the first five months of 2003. The ratio of annualized profit to average assets (Figure 50) gives an average profitability of 1.28% in May for the financial system as a whole. This figure is not that far off from the 1.39% registered in 1996, two years before the financial crisis.

Domestic entities continued to report much higher profitability than foreign institutions: 1.58% against –0.19%. The profitability gap observed before August 2002 between commercial banks and banks specializing in mortgages was seen to be closing, with the latter showing an asset profitability of 1.42% in May this year, higher than the commercial banks' 1.37% and the system average. This recovery was partly influenced by profits from last year's loan securitizations.

Another indicator for assessing the system's profitability management is connected with the margin obtained from intermediation work. Figure 51 shows variations in the implicit lending rate (defined as the ratio of income from loans to productive loans) and the implicit deposit rate (built as the ratio of the cost of liabilities to liabilities having costs). The multiplicative differential of the two rates (intermediation margin) rose by 0.2 percentage points between December 2002 and May 2003 to 9.5% in May. This slight improvement in the business of financial intermediation is consistent with the asset-profitability indicators discussed above. It shows intermediation work becoming more profitable, which could encourage extension of more credit in future.

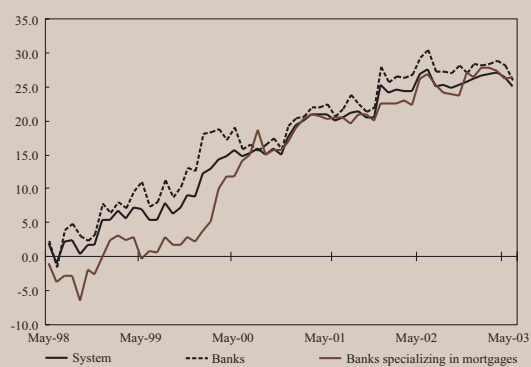Source: Banking Superintendency. Calculations by Banco de la República.
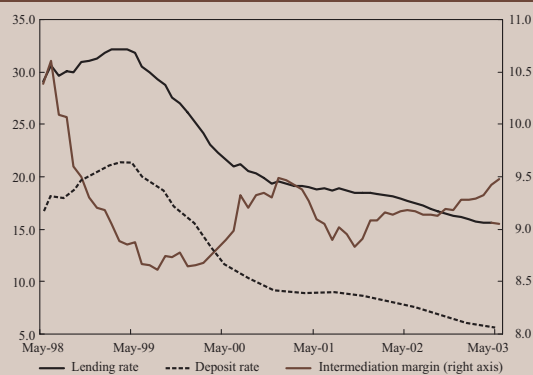
Source: Banking Superintendency. Calculations by Banco de la República.

C. RISK EXPOSURE

1. Liquidity

Given the nature of intermediation work, financial entities are exposed to potential liquidity problems, particularly when their maturity transformation of liabilities to assets is too high, or when there is a major run on the more liquid deposits. To get an idea of the system's overall liquidity situation, an indicator was built as the ratio of liquid assets less volatile liabilities to total deposits. As this ratio rises, financial institutions will have fewer liquidity problems in the event of a sudden withdrawal of deposits. Figure 52 shows that the ratio is now at one of its highest points since 1998, so that no major liquidity difficulties are expected in the short term. In this respect, the progress made by banks specializing in mortgages is noteworthy, for the characteristics of their business makes them vulnerable to liquidity problems. In effect, since June 2000 these banks have closed the gap separating their liquid asset holdings from the system average and are therefore better able to deal with potential liquidity problems.

2. Credit risk

The falling trend in the financial system's overall exposure to credit risk continued over the fourth quarter of 2002 and so far into this year, with the ratio of overdue loans to gross loans dropping from 9.22% to 8.23% between September and May (Figure 53). This trend is exhibited both by commercial banks (a ratio drop of 0.5% over that period) and by banks specializing in mortgages (a drop of 1.75%), though the latter's ratio level of 20.3% in May was still very high.

Analyzing portfolio quality by type of loan shows commercial loans, consumer loans and microcredits presenting decreasing credit risk. In May this year, the ratio of overdue loans to gross loans was running below 6.5%, for each of these three loan types, but for different reasons in each case (Table 9). In effect, for commercial loans the ratio's improvement in the past year has resulted from both a fall in the overdue balance (numerator) and a rise in the gross balance (denominator). In the case of consumer loans, however, the overdue balance did not decrease, so their quality improvement came exclusively from a

BY TYPE OF ENTITY

Financial systems	Banks — — — Banks specializing in mortgages

BY TYPE OF LOAN

Home loans	Consumer · · · · Commercial — — — Microcredits

Fuente: Superintendencia Bancaria, cálculos del Banco de la República.

	Overdue loans	Gross loans
Commercial	(22.0)	15.0
Consumer	(1.0)	22.0
Microcredits	172.5	203.4
Home loans	(5.6)	(8.0)

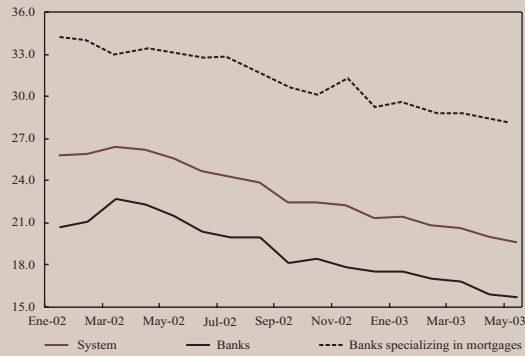Source: Banking Superintendency. Calculations by Banco de la República.

higher gross balance. Something similar happened with microcredits: the gross balance rose by proportionately more than the overdue balance, reducing the ratio.

The home-mortgage portfolio behaved in quite the opposite way: its quality continued to deteriorate over the last quarter of 2002 and the first months of this year, albeit more slowly than in previous years. The quality indicator for home mortgage loans deteriorated by 0.13% between September and May to 24.19%. Its persistence at this level accounts for the fact that the portfolio quality indicator for banks specializing in mortgages has remained at the high levels indicated above. As may be seen from Table 9, deterioration of the home-loan quality indicator has resulted from a decrease in the denominator (gross loans) that was not offset by declines in the numerator (overdue loans).

Another indicator providing important information on the size of credit risk is the ratio of risky loans to gross loans. As shown by Figure 54, the downward trend in this ratio that begun in January 2002 has continued over recent months: between September 2002 and May this year, the ratio fell by 2.8 percentage points for the system as a whole and by 2.5 points each for commercial banks and banks specializing in mortgages. These figures together with the overdue-loans ratios thus confirm that the system's overall exposure to credit risk has declined considerably and now stand at one of its lowest levels in recent years.

To ensure that improvement in portfolio quality becomes sustainable, special attention needs to be given to maintaining an appropriate portfolio allocation. This calls for monitoring movements in new credit allocations especially, and more particularly those segments that substantially increase the portfolio.

FIGURE 54
RISKY LOANS AS A PROPORTION OF GROSS LOANS
(PERCENTAGE)

Source: Banking Superintendency. Calculations by Banco de la República.

FFIGURE 55
LOAN PROVISIONS
(PERCENTAGE)

AGAINST OVERDUE LOANS

AGAINST RISKY LOANS

Source: Banking Superintendency. Calculations by Banco de la República.

Analysis of credit-risk exposure may be supplemented by a review of variations in the coverage provided by firms against credit risk. The ratio of provisions to overdue or risky loans is used for this purpose.

According to Figure 55, portfolio coverage has improved in recent months. For the system as a whole, the ratio of provisions to overdue loans rose by 6.6% between September 2002 and May 2003; it rose by a similar amount for banks specializing in mortgages but by less for commercial banks.
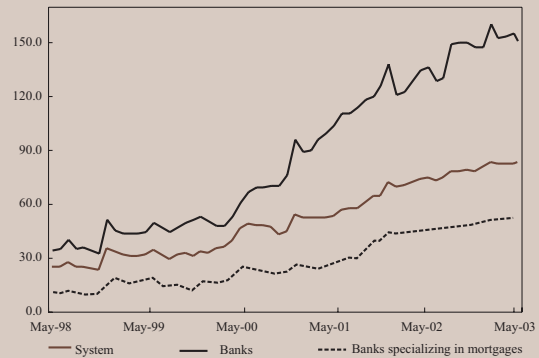
The ratio of provisions to risky loans has also improved for the system as a whole. In this case too, the improvement has been more pronounced for banks specializing in mortgages (13.6 percentage points since September) than for commercial banks (barely 2.5 points).

3. Capital soundness
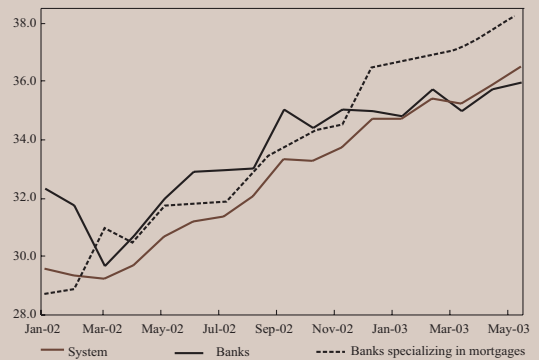
The financial system's solvency has fluctuated widely in recent months, without stability being

FIGURE 56
SOLVENCY RATIO, TOTAL SYSTEM
(PERCENTAGE)

Source: Banking Superintendency. Calculations by Banco de la República.

49
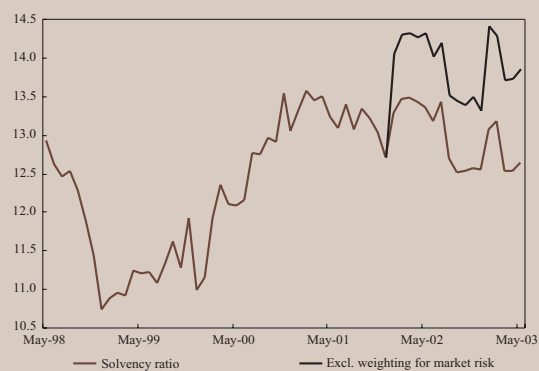
compromised at any time (at its lowest in the past year the solvency ratio was not below 12.5%)(Figure 56). The ratio's rise and subsequent fall of almost one percentage point in September were caused by an accounting modification to certain balance-sheet investments. After September, the solvency ratio remained quite stable until December at approximately 12.5% and returned to around this level in March.[40]

D. Conclusions

The financial system's credit portfolio has begun to grow at rates not seen since before the 1998-1998 crisis. The upturn is most evident in microcredits, consumer loans and commercial loans and constitutes the most significant development in the financial sector over the past six months. It has led to the system's greatest exposure being concentrated in the corporate sector, while consumer loans have increased the system's exposure to households.

Investments held by the financial sector have also recovered substantially since the TES episode of July and August 2002. A good part of the recovery is attributable to the purchase of mortgage securities created by home-loan securitizations. Investments in public-debt securities have fallen off, decreasing the financial system's exposure to the public sector.

These developments in asset components have not been matched by movements in liabilities. In effect, though deposits have been growing at positive rates, the rates have been relatively low. But for the time being the level of liquidity in the system as a whole is considerably higher than in recent years.

Nevertheless, given the greater need for resources to finance credit growth, faster deposit expansion will be required in the medium term. If this fails to occur in the months ahead, interest rates might come under moderate upward pressure. For there are other economic agents, such as the nonfinancial public sector, that have mounting financing needs and might exert further pressure on the economy's excess liquidity.

The trend toward improvement in the financial system's profitability indicators, noted in the previous Report, has continued over the past six months, raising overall profitability in May 2003 to levels observed in periods of relative financial stability. There is however a striking difference in this regard between domestic and foreign institutions, with the latter's profits running below the system average. A good part of the difference may be explained by the foreign institutions' more conservative approach to the business of financial intermediation.

Credit-risk measures, too, have continued to improve, extending last year's declining trend. In effect, the ratio of overdue loans to gross loans has dropped to its lowest level since 1998. This development has been common to all loan types except home loans, which still show a high overdue proportion. As regards portfolio coverage against credit risk, provision levels currently furnish a high

---

[40] The transitory rise in the first two months of this year stemmed largely from an increase in technical capital caused by including under this item 100% of "previous-year earnings," which weighed less in 2002, for they were part of "current-year earnings." Once such earnings were distributed in March, the solvency ratio returned to its December 2002 levels, as shown in Figure 56.

degree of coverage, making credit institutions less vulnerable in the event of credit risk materializing.

To make the improvement in the system's asset quality sustainable, special attention needs to be given to maintaining an appropriate portfolio allocation. This calls for monitoring movements in new credit allocations especially, focusing in particular on the segments that substantially expand the portfolio.

Buoyancy in the financial system has coincided with improvement in the balance sheets of the system's major private clients. In the case of companies, there has been systematic improvement in their ability to pay, as reported by the Banking Superintendency, and also in the profitability and liquidity indicators of firms reporting to the Securities Superintendency. Households, too, have increased their ability to pay, thanks to higher wage income and lower unemployment.

The quality of the financial system's public-sector assets has been rising as a result of lower interest rates on public-debt securities and investors' better perception of fiscal sustainability. It should be noted however that, despite the structural reforms passed at the previous session of Congress, sustainability indicators have as yet to show some improvement. For this reason, it is important that the process of public-sector adjustment be continued, so as to further ameliorate the financial conditions of public-sector debt.

In this satisfactory state of affairs, one aspect that continues to pose a major risk to the financial system is its exposure to the external debt of private firms and exchange-rate volatility, which is still affecting the financial indices–and probably the ability to pay–of the companies for which recent information is available.

When we analyze the potential behavior of the private sector's desired resources demand, the findings of business surveys suggest that this demand is likely to continue expanding. But the outlook provided by the findings of household surveys is not conclusive. The public sector's potential demand for resources is expected to rise in accordance with financial planning.

Given the financial sector's satisfactory behavior reviewed above (better profitability, lower credit risk and high short-term liquidity), the continuance of appropriate levels of capital soundness and solvency, and positive developments in the private sector, risks to the stability of the financial system may now be said to have been substantially reduced.

Accordingly, the upturn in credit growth may be regarded as having resulted from the consolidation of various factors of both demand and supply. On the one hand, higher liquidity together with lower credit risk and appropriate capital levels have boosted credit supply. On the other hand, the apparent economic recovery associated with higher expectations about the future, particularly among companies, has boosted demand. It is to be noted that this is the first time since the 1998-1999 crisis that such a combination of factors so favorable to credit growth have come into play.

CURRENT SITUATION OF THE SECONDARY MARKET IN TES-B SECURITIES

The brief period of stress suffered by the economy in the second half of 2002 caused significant valuation losses in TES-B portfolios, revealing the exposure of economic agents such as stockbrokers, trust companies and the financial sector to the risk posed by these assets. The agents' losses, and the implications of the TES-B market for public finances made evident the importance of monitoring this market. Accordingly, since the last Financial Stability Report the TES-B portfolios of bondholders have been analyzed for concentration and risk exposure and have also been the object of a quantification exercise. The following paragraphs focus mainly on the financial sector, comparing it with the rest of the economy. The valuation methodology used for the purpose is as described in the December 2002 Report[1] and has been applied for January 31 and March 19, 2003.

Table A1 shows that on 19 March this year the financial system's TES-B holdings amounted to 9.3 bn pesos (or 18.7% of the total in the market). This was a slight rise (0.4 bn pesos) on January but a significant increase on the 7.7 bn pesos held on August 31, 2002. Fixed-rate peso bonds made up the bulk (59.1%) of the March 19 balance, followed by bonds in Real Value Units (29.4%), variable-rate bonds (7.4%), and fixed-rate dollar bonds (3,9%). The corresponding figures for August 2002 had been 59%, 28%, 8% and 5%. Thus the March holdings were not significantly different from the August hol-

---

[1] *Financial Stability Report,* December 2002, Footnote 4. The only change made in the methodology was the substitution of the zero-coupon spot-curve estimation technique of Fisher, Nychka and Zevros (1994) by that Nelson and Siegel.

TABLE A1
TES-B BALANCES VALUED AT MARKET PRICES
(MILLIONS OF PESOS)

	Dollars	Pesos	Variable Rate	Real Unit Value	Total
Balance at March19, 2003					
Financial Sector	367,581	5,518,232	696,887	2,748,249	9,330,949
Commercial Banks	323,819	4,551,709	592,556	2,545,908	8,013,993
Commercial Financing Companies	4,592	43,544	0	5,723	53,859
Superior-grade Financial Coops.	0	2,801	0	0	2,801
Savings and Loans Corporations	0	484,744	32,995	98,525	616,263
Financial Corporations	39,171	435,434	71,336	98,093	644,033
Rest of the Economy	2,322,117	17,138,446	11,418,834	9,725,645	40,605,042
Total	2,689,698	22,656,678	12,115,721	12,473,895	49,935,991
Balance at January 31, 2003					
Financial Sector	537,403	6,057,221	721,664	2,384,922	9,701,209
Commercial Banks	461,739	5,193,372	638,835	2,202,529	8,496,475
Commercial Financing Companies	1,546	59,126	0	1,436	62,107
Superior-grade Financial Coops.	613	10,199	1	0	10,813
Savings and Loans Corporations	0	515,745	34,172	53,784	603,701
Financial Corporations	73,505	278,779	48,656	127,173	528,113
Rest of the Economy	2,540,380	17,120,016	11,491,537	8,947,953	40,099,886
Total	3,077,783	23,177,237	12,213,200	11,332,875	49,801,096

Source: Banco de la República.

dings, but compared with the figures for January 31 of this year (62.4%, 24.6%, 7.4% an 5.54%) they point to two interesting developments. As a share of the financial system's overall TES-B portfolio, fixed-term peso bonds decreased by 3.3 percentage points and fixed-term dollar bonds by 1.6 points. The counterpart to this movement was a five- point increase in bonds denominated in Real Value Units. This may be explained by changing inflation expectations, for agents have been shifting to indexed securities, which provide coverage against variations in inflation.

Having analyzed the distribution of the TES-B portfolio by denomination between the financial sector and the rest of the economy, it is highly relevant to the agents' financial risk to see how sensitive the balances are to interest-rate changes. As may be seen from Table A2, on March 19 the maturities of the financial sector's fixed-rate peso bonds and bonds denominated in Real Value Units were longer than the average weighted maturity of the rest of the economy's overall debt, while the weighted average maturity of the financial sector's fixed-rate dollar bonds was shorter than the rest of the economy's. This reveals that the financial system continues to be more sensitive to nominal interest-rate changes, since fixed-rate bonds make up 88% of its overall portfolio.

A 1% parallel change in the different interest rates along the spot curve would change the value of the financial sector's March 2003 holdings of TES-B bonds denominated in Real Value Units by 4.33%, variable-rate peso bonds by 3.29%, fixed-rate peso bonds by 2.00% and dollar bonds by 1.69%. For the rest of the economy the respective changes would be 4.24%, 3.76%, 1.76% and 1.84%. The changes in the financial system's portfolio would amount to 258 bn pesos (Table A3).

TABLE A2
WEIGHTED DURATIONS, BY PORTFOLIO
(YEARS)

	Dollars	Pesos	Variable Rate	Real Unit Value	Total
		Balance at March19, 2003			
Financial Sector	1.69	2.00	3.29	4.33	2.77
Commercial Banks	1.82	1.94	3.27	4.38	1.71
Commercial Financing Companies	3.31	1.32	0.00	3.37	2.26
Superior-grade Financial Coops.	0.00	2.26	0.00	0.00	2.43
Savings and Loans Corporations	0.00	2.13	2.87	3.76	2.69
Financial Corporations	0.47	2.54	3.63	3.57	1.20
Rest of the Economy	1.84	1.76	3.76	4.24	2.92
Total	1.82	1.82	3.73	4.26	2.89
		Balance at January 31, 2003			
Sector financiero	1.92	1.86	3.45	4.06	2.52
Bancos comerciales	2.13	1.82	3.49	4.05	2.54
Compañías de financiamiento comercial	4.83	1.30	0.00	3.57	1.44
Coop. grado Sup. de carácter Financ.	0.56	2.14	4.06	0.00	2.05
Corporaciones de ahorro y vivienda	0.00	2.29	2.92	4.77	2.55
Corporaciones financieras	0.59	1.84	3.32	4.03	2.33
Resto de la economía	1.62	1.72	3.86	4.16	2.87
Total	1.67	1.75	3.83	4.14	2.80

Source: Banco de la República.

The weighted durations of all types of securities held by the financial sector have decreased relative to August 2002, but they increased from January to March of this year except in the case of variable-rate peso bonds and dollar bonds. This bears out the view that the financial system continues to be relatively more sensitive than the rest of the economy to interest-rate changes.

To calculate a possible scenario of results, a quantification exercise was carried on the different sectors' TES-B portfolios, with all valuations made at market prices. It was assumed that between the two dates indicated there was no change either in the stock of these securities or in their distribution between sectors. In this way the effect of interest-rate change on portfolio valuations was isolated. The exercise showed that, with the rate change that occurred between January and March, the economy would have incurred losses of 25 billion pesos, which is quite considerably less than the losses of 956 billion pesos registered in August 2002. This suggests that rate behavior during the exercise period was neutral.

<div align="center">

TABLE A3
TES-B VALUATION GAINS FROM A CHANGE IN THE SPOT CURVE
BETWEEN JANUARY 31 AND MARCH 19, 2002
(MILLIONS OF PESOS)

</div>

|	Dollars	Pesos	Variable Rate	Real Unit Value	Total
Financial Sector	(90.5)	455.2	(111.0)	273.3	527.1
Commercial Banks	(82.3)	377.9	105.0	251.6	652.2
Commercial Financing Companies	0.1	2.4	0.0	0.2	2.8
Superior-grade Financial Coops.	(0.1)	0.9	0.0	0.0	0.9
Savings and Loans Corporations	0.0	53.0	4.2	8.1	65.2
Financial Corporations	(8.3)	21.0	(220.2)	13.5	(193.9)
Rest of the Economy	(445.1)	1,146.3	(28,316.7)	1,177.5	(26,438.0)
Total	(535.5)	1,601.5	(28,427.7)	1,450.9	(25,910.9)

Source: Banco de la República.

The foreign banks' behavior in 2002 was highly distinct, with four of them posting losses and seven the worst performances of all banking institutions. Recent years' movements in their indicators will be reviewed to look into the origins of this behavior.

What the figures since 1997 indicate is that the foreign banks' poor performance is not that recent, as illustrated by movements in profitability relative to assets (profit / average assets). This ratio has been not only negative for a good part of the period but also clearly lower than for domestic private banks (Figure B1).

**Figure B1**
Profit / Assets
(Percentage)
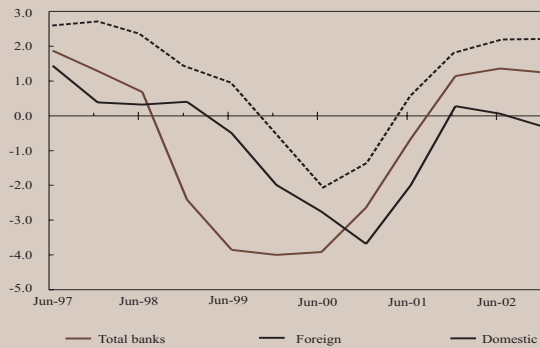
Source: Banking Superintendency. Calculations by Banco de la República.

There are various reasons for the worsening of foreign banks' profitability compared with domestic private banks'. Between 1997 and 1999 it was largely caused by a more conservative provisioning policy, and also by differences between some minor profit-and-loss items, while the main cause in 2001-2001 was a fall in the gross financial margin (defined as the ratio of financial income less financial costs, to average assets).

The level of profit-and-loss provisions (net of recovery) as a proportion of assets is shown in Figure B2. As may be seen from the Figure, the foreign banks' provisioning exceeded the domestic private banks' up to mid-2001, when the situation reversed.

Figure B2
Net Provisions / Assets
(Percentage)

Source: Banking Superintendency. Calculations by Banco de la República.

55
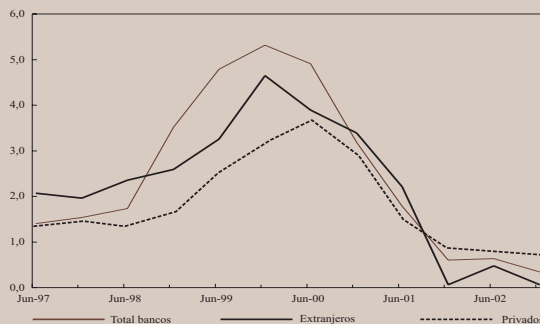
Movements in provisions depend on credit risk, loan quality and on how entities behave in the face of credit risk. This last point, the attitude of entities in provisioning is quantified using the ratio of provisions to gross overdue loans plus property received in payment. Movements in the ratio (Figure B3) clearly show the foreign banks' conservative behavior, which led them to make greater provisions against deteriorated assets than did the domestic private banks, though the difference dwindled toward the end of 2002.

Figure B3
Provisions / Gross Overdue Loans + Property Received In Payment
(Percentage)
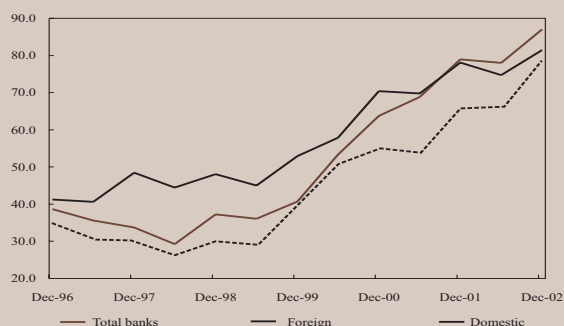
Source: Banking Superintendency. Calculations by Banco de la República.

This more conservative behavior has affected the foreign banks' results and provides an explanation for the profitability difference between them and domestic banks. To find out whether more conservative provisioning was determinative of the profitability difference, an exercise was carried out to estimate what the difference would have been if the ratio of provisions to overdue loans had been the same for both groups of banks.[1]

The results of this extreme exercise[2] are presented in Table B1 and show two things clearly: first, that the difference in provisioning between foreign and domestic banks does not wholly explain the difference in

[1] To compare the effect of provisioning differences on the profit-to-assets ratio, the procedure is as follows: In 2001, for example, the ratio of provisions to gross overdue loans (GOL) plus property received in payment (PRP) was higher for foreign banks than for domestic private banks by 79% - 64.4% = 13.6%. That is to say, foreign banks had $13.6 more in provisions for every $1000 of GOL+PRP. Given that GOL+PRP weighs 4% in total assets, the difference of 13.6% (of GOL+PRP) is equal to 13.6%*4% = 0.54% of assets. This overprovision is a stock that has accumulated over several years. Suppose this 0.54% is disaccumulated in a single year (2001) through a lower profit-and-loss provision in this same amount, then that the 2001 profits of 0.3% of assets would increase to 0.3% + 0.54% = 0.84% (without considering the effect of taxes).

2 The exercise is extreme in that the change in risk behavior is assumed to have been made by reversing the entire balance of extra provisions in a single year.

Cuadro B1
**Utilidad / Activos comparativo: efecto de las sobreprovisiones**
(Porcentaje)

	1997	1998	1999	2000	2001	2002
a. Privados nacionales	2,7	1,3	(0,5)	(1,4)	1,8	2,2
b. Extranjeros	0,4	0,4	(2,0)	(3,7)	0,3	(0,3)
c. Extranjeros sin sobreprovisión	1,2	1,5	(1,1)	(2,9)	0,8	(0,2)
(a) - (b)	2,3	0,9	1,4	2,3	1,6	2,5
(a) - (c)	1,5	(0,1)	0,6	1,5	1,1	2,4

Fuente: Superintendencia Bancaria, Cálculos Banco de la República.

their profitability; and, second, that the effect of the provisioning difference has diminished with time. The exercise has led to the conclusion that further factors account for the performance differential between foreign and domestic private banks. Between 1997 and 1999, the differential stemmed from various developments such as lower operating income, higher labor and administrative costs (discussed below) and higher adjustments for inflation.

Between 2001 and 2002, the performance differential between the two groups was mainly caused by gross financial margins, with foreign banks lagging far behind domestic private banks in this respect (Figure B4).
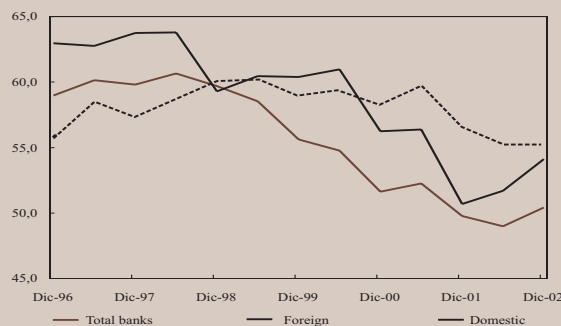
FIGURE B4
GROSS FINANCIAL MARGIN / ASSETS
(PERCENTAGE)
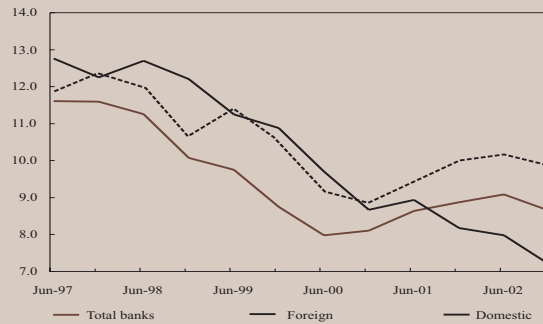
Source: Banking Superintendency. Calculations by Banco de la República.

This lag in gross financial margins was in turn caused by at least two factors. First, loans–the most profitable type of investment–as a share of foreign banks' assets declined from 2001 and only recovered at the end of 2002 (Figure B5).

FIGURE B5
LOANS / ASSETS
**(PERCENTAGE)**

Source: Banking Superintendency. Calculations by Banco de la República.

Second, in 2001 the foreign banks' implicit loan rates also began to deviate from the private domestic banks' (Figure B6). It is very likely that after the foreign banks' process of loan contraction clients with a lower-risk profile remained selected, which would explain the reduction in implicit rates.

Given the foreign banks' more conservative behavior in allocating credit, they would be expected to register lower credit-risk rates, in line with the lower implicit rates that recognize their clients' soundness.

FIGURE B6
IMPLICIT (REAL) LOAN RATE
(PERCENTAGE)
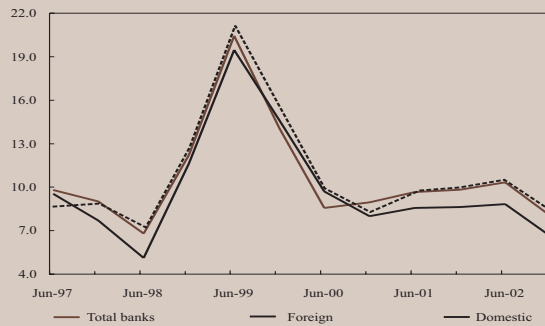
Source: Banking Superintendency. Calculations by Banco de la República.

The expectation is confirmed by the ratio of gross overdue loans plus property received in payment, to gross loans plus property received in payments; that is, for every peso lent (including goods received in payment, which were originally loans), how many pesos deteriorated–in the form of gross overdue balance or property received in payment–regardless of provisions. This measure of loan management shows foreign banks registering lower credit risk throughout the series (Figure B7). The estimates for this Figure do not include a foreign bank exhibiting an atypical behavior, for its nonperforming rates are so high that they bias the whole.

FIGURE B7
GROSS OVERDUE LOANS + PROPERTY RECEIVED IN PAYMENT /
GROSS LOANS + PROPERTY RECEIVED IN PAYMENTS
**(PERCENTAGE)**
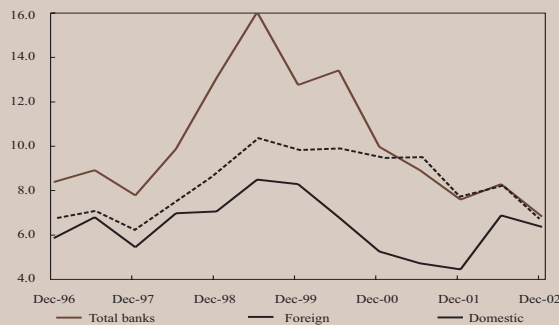
Source: Banking Superintendency. Calculations by Banco de la República.

It follows from the foregoing that the financial performance of foreign banks as a group has been inferior to that of domestic private banks, largely because their conservative policy (lower implicit rates and lower loan exposure) has translated into a lower gross financial margin that did not provide sufficient gains in terms of the effect of lower credit risk on provisioning.

Another concept to be reviewed is efficiency, defined as the ratio of labor and administrative costs to average assets. Comparing the average for private domestic banks with the average for foreign banks shows the latter to have been less efficient than the former. But it should be explained that the series is driven by a single foreign bank, since excluding it (as in Figure B8) reveals the rest as having been more efficient than domestic private banks.
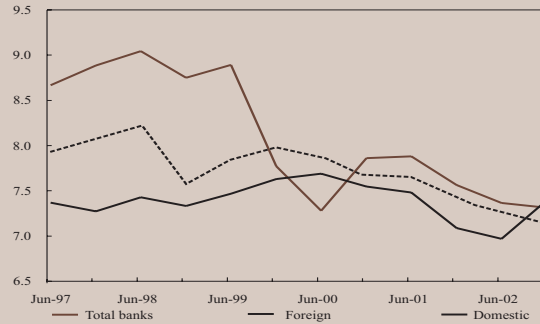
Source: Banking Superintendency. Calculations by Banco de la República.

Nevertheless, the foreign banks' lower labor and administrative costs did not offset differences in gross financial margins.

To sum up, since 1997 foreign banks as a group have performed less well financially than domestic private banks. Although as regards efficiency and portfolio quality there are certain ungeneralized developments peculiar to some foreign bank, in other respects foreign intermediaries display a more generalized behavior, for various reasons:

First, they applied a more conservative provisioning policy. This factor waned in importance with time, to the point of disappearing by the end of 2002. Moreover, it is to be noted that at least from 1997 on it was not the only factor accountable for differences between domestic private banks and foreign banks.

Second, from 2001 foreign banks adopted more conservative policies (lower implicit rates and lower loan exposure), which caused their gross financial margins to shrink, without providing sufficient gains in terms of lower provisioning. In contrast, domestic private banks have followed a policy of greater risk, which *ex poste* has proved to be more profitable.

Particular Aspects of Financial Stability

Determinants of Corporate Fragility in Colombia

By Oscar Martínez A.[*]

One of the biggest threats to any company is that of becoming insolvent. A threat of this kind to corporate financial stability is of relevance not only to investors and employees but also to financial-sector lenders, auditors and regulators, among others. Hence the importance of a model that helps to determine significant variables for forecasting financial stress or fragility in Colombian firms, to serve as a tool for taking preventive or corrective measures or simply monitoring the private corporate sector's credit risk.

The downside of Colombia's economic cycle, in the second half of the 1990s, was accompanied by recession in the real sector and big losses in the financial sector.[1] Corporate solvency was not proof against this difficult state of affairs, as evidenced by financial indicators between 1995 and 2002.[2] Balance sheets in general deteriorated, as indebtedness increased, asset prices fell and financing rates rose.[3]

This study aims to identify the determinants of corporate insolvency in 2001 on the basis of financial statements for 2000 reported by individual companies.[4] Given the heterogeneity of institutional structures, accounting practices and movements in macroeconomic variables over time, it is not possible to generalize from the findings of other countries. For Colombia, only Rosillo (2002) has developed a corporate bankruptcy prediction model, using discriminant analysis techniques with a limited sample size.

To estimate a suitable fragility model for Colombian companies in 2001, financial ratios will be used to detect periods of operating and financial difficulties.[5] In his pioneering study, Beaver (1966) carried out an analysis to determine corporate failure on the basis of financial ratios by using univariate models. Altman (1968) conducted a similar exercise but using multivariate models (also on the basis of discriminant analysis), which provide a clearer interpretation of the effect of each variable in the model. However, most studies that apply this discriminant-analysis technique do not meet the assumptions required by the maximum plausibility

[1] Both developments have been widely documented in recent years. Among others, Villar and Rincón (2001) describe the main factors that affected the Colombian cycle in the 1990s. For more information on the macroeconomic environment and credit behavior see Echeverry and Salazar (1999), Urrutia (1999) and Urrutia and Zárate (2000).

[2] Banco de la República (2002).

[3] Echeverry (2001) and Fedesarrollo (2003).

[4] The year 2000 was chosen because the cycle at that point presented a large number of fragile companies and also because from 2001 the available information was about a smaller group of companies.

[5] Using financial ratios makes it possible to control for company size and level of activity in the indicators analyzed.

estimation used.[6] Olson (1980), in his study, was the first to apply techniques with fewer assumptions about the distribution of explicative variables and the first to take a representative population sample for estimation.

Like the pioneering studies of Beaver (1966) and Altman (1968) in this field, the present study has analyzed the financial ratios reported every year in company balance sheets. But unlike studies undertaken in other countries it did not use the technique of discriminant multivariate analysis, because of the large number of assumptions this technique involves, which are moreover difficult to meet in practice.[7] Instead, the analysis was done by probit regression. This technique, like logit models (originally used by Ohlson (1980)), requires fewer assumptions. Estimation included heteroskedasticity testing to avoid problems of parameter specification and inconsistency (Greene, 2000).

I. Sample and Data

The information used was drawn from the financial statements at December 31, 2000 of companies regulated by the Superintendency of Companies and the Securities Superintendency. Some 9000

companies were included in the sample to reflect the population as closely as possible[8] and thereby avoid a balanced sample that transmits a selection bias to estimated parameters.[9]

This study's definition of fragility is connected with the company's legal status. As an independent variable, financial stress or fragility was deemed to exist in any company that had entered into a payment-restructuring agreement (Law 550 of 1999) or been placed under compulsory liquidation by the Superintendency of Companies in 2001.[10] One or other of these two legal situations was encountered in 171 companies, or about 2% of the total sample. Table 1 shows the fragility/nonfragility classification of sample companies by economic activity. The model's parameters were estimated by means of heteroskedastic probit regression analysis.

II. Selection of Variables

If each company is regarded as a reserve of liquid assets subject to positive and negative cash shocks (as in Beaver, 1996), its solvency will depend on its debt level, ability to generate new assets and current level of liquidity. Accordingly, the set of variables used in this study covers three aspects generally

---

[6] The distribution of X (matrix of explicative variables), given the dependent variable (Y), should be normal multivariate (($X \mid Y)\sim N$ in $Y=f(X)$), with a common variance-covariance matrix (Lo, 1986). The randomness assumption is violated by working with balanced samples of companies (similar proportions of healthy and fragile companies).

[7] Most of these models have been created in developed countries, where corporate information is generally more complete. For a summary on corporate bankruptcy models in developed countries, see Altman and Narayanan (1997).

[8] Only companies with positive operating income were taken into account and classified in some group of economic activity. A small

group of companies with incongruent records (eg, negative values of financial income or expenditure or financial obligations) were excluded.

[9] Greene (2000). Platt and Platt (2002) criticize the use of balanced samples in previous studies. The authors empirically demonstrate the existence of this bias by means of simulations with different proportions of the sample composition.

[10] Law 550 of 1999 established a regime intended to promote and facilitate corporate reactivation through agreements between creditors and debtors. It responded to reduced financing possibilities for the productive sector and the pressure of debt incurred in previous years (in a climate of low demand growth, high interest and high devaluation), which affected the ability to pay and job creation.

accepted in the literature as determining corporate fragility: debt, profitability and liquidity.[11]

Most studies show that the higher the level of debt, the greater the fragility and the risk of insolvency; in contrast, higher levels of liquid assets that cushion against unexpected situations and higher profitability reduce the risk of insolvency. Moreover, given that the fragility index varies according to the type of industry the company is engaged in and its size, dummy variables were included for economic activity (D_i)[12] and size $(D_a$ and $D_s)$[13].

The debt ratios analyzed were liabilities / assets, financial obligations / assets, and financial expenditure / (operating income + financial income). The first two measure the company's degree of leverage, which, if high, compromises its ability to make payments to debtors in the event of unexpected negative shocks. The third ratio captures the effect of the cash flows needed to meet interest payments, which may give rise to financial pressure.

The profitability ratios analyzed were: operating income / assets, pretax profit / assets, and pretax profit / operating income. The first ratio measures the amount of income that each asset unit is capable of generating, while the other two measure the

---

[11] Banco de la República (2002), IMF (2001) and Higgins (2000). Initially, efficiency variables (such as administrative and sales costs as a ratio of assets and of operating income) were also analyzed but made no contribution to the estimation.

[12] The classification was made on the basis of the nine groups of economic activity defined in Table 1; the control group was "teaching, health care and other services." Platt and Platt (1991) were the first to propose models including this differentiation, with each of the financial ratios adjusted for industry-related indicators.

[13] The sample companies were classified as large, medium or small, according to their asset level (D_a) and sales level (D_s). The critical values used for classification were: for assets 6.33 bn pesos and 1.99 bn pesos asset, for sales 5.22 bn pesos and 0.99 bn pesos.

business's profitability once debt service and operating expenses have been paid.

Lastly, the liquidity ratios analyzed were: current assets / current liabilities, available assets / current liabilities, (current assets – current liabilities) / assets, and available assets / assets. These ratios capture the relation between easily realizable assets and short-term debt, and the level of liquidity in relation to assets, for each company. To the extent that there is a liquidity cushion that allows the company's operation to continue without affecting payment to debtors, the farther the company will be from potential insolvency.

III. Statistical Description of Data

Table 2 presents descriptive statistics–mean and standard deviation–for the variables used, discriminated by fragile and nonfragile companies.[14]

The nil hypothesis, indicating no significant difference between the means values of fragile and nonfragile companies, is rejected for all financial ratios analyzed. Hence all variables appear to be individually useful in discriminating between companies.[15] Fragile companies exhibit higher debt and lower profitability and liquidity levels than do nonfragile companies. Moreover, as in Ohlson (1980), ratio variances for fragile companies are much higher than for nonfragiles.

IV. Estimation

Models 1 and 3 reported in Table 3 provide the final probit estimates. The initial selection of

[14] The transformation Ln(1+w) was applied to each one of the financial ratios (w) analyzed in this study.

[15] This does not ensure that their contribution is greater than that of other variables and that therefore they must all figure in the multivariate model.

Variables	Nonfragil Companies		Fragil Companies		Statistic *t* 2/
	Mean	Standard Deviation	Mean	Standard Deviation	
Financial obligations / assets	0.11	0.0010	0.27	0.0140	(15.29)
Financial expenditure / (financial income + operating income)	0.09	0.0030	0.23	0.0400	(5.17)
Operating income / assets	0.62	0.0050	0.50	0.0260	3.41
Pretax profit / assets	0.01	0.0020	(0.28)	0.0330	17.84
Pretax profit / operating income	0.06	0.0060	(0.43)	0.0560	10.64
Current assets / current liabilities	1.14	0.0090	0.60	0.0260	8.12
(Current assets – current liabilities) / assets	0.13	0.0030	(0.26)	0.0500	15.46
Available assets / assets	0.04	0.0007	0.01	0.0010	5.67
Available assets / current liabilities	0.19	0.0050	0.02	0.0030	4.96

TABLE 2
FINANCIAL RATIOS OF FRAGILE AND NONFRAGILE COMPANIES 1/
BY ECONOMIC ACTIVITY

1/ All analyzed values are for Ln(1+w); see footnote 14.
2/ Statistic associated with the nil hypothesis (mean of fragile firms – mean of nonfragile firms = 0).
Source: Author's calculations.

	Model 1	Model 2	Model 3	Model 4
Constant	-17.806	-18.279	-16.529	-17.283
	(-11.39)	(-10.43)	(-10.23)	(-9.60)
Pretax profit / assets	-0.7517	-0.578	-0.6865	-0.5873
	(-8.90)	(-1.67)	(-8.00)	(-1.85)
Financial obligations / assets	1.7981	1.6690	1.6703	1.5608
	(8.93)	(6.72)	(8.09)	(6.22)
Available assets / assets	-10.9154	-11.2470		
	(-5.39)	(-4.94)		
Available assets / current liabilities			-55.690	-52.022
			(-6.10)	(-5.37)
D_1	-0.7237	-0.8114	-0.7291	-0.7957
	(-3.51)	(-3.38)	(-3.44)	(-3.26)
D_2	-0.2657	-0.3637	-0.2817	-0.3647
	(-0.93)	(-1.03)	(-0.96)	(-1.02)
D_3	-0.2569	-0.2531	-0.2861	-0.2734
	(-1.59)	(-1.34)	(-1.72)	(-1.47)
D_4	-0.464	-0.4082	-0.4875	-0.426
	(-2.48)	(-1.97)	(-2.55)	(-2.02)
D_5	-0.428	-0.4441	-0.4955	-0.5011
	(-2.54)	(-2.33)	(-2.87)	(-2.59)
D_6	-0.5943	-0.6889	-0.6035	-0.6865
	(-2.60)	(-2.50)	(-2,58)	(-2.47)
D_7	-10,707	-11,753	-10,373	-11,199
	(-3.87)	(-3.58)	(-3.64)	(-3.35)
D_8	-1.0678	-1.2029	-1.0709	-1.1857
	(-4.48)	(-4.24)	(-4.36)	(-4.11)
Heteroskedasticity				
Pretax profit / assets	-1.0814		-0,9972	
	(-4.94)		(-4,69)	
Maximum plausibility (log L)	-678.79	-645,02	-666,03	-637,44
LRI (%)	19.87	23,86	21,35	24,73

Note: Statistic z shown in brackets.

Source: Author's calculations.

predictors was made by using backward and forward elimination methods. The final selection of these models was based on the statistical significance of the estimated ratios, their sign and sample classification.[16]

Statistical testing determined that in both cases the nil hypothesis of homoskedasticity was rejected, which led to estimation of the heteroskedastic probit Models 2 and 4. The LR statistic associated with the nil hypothesis of homoskedasticity was 67.54 for Model 1, and 57.18 for Model 3. The significance of the pretax profit / asset ratio in the heteroskedastic part confirms that this financial variable was the cause of the nonconstant error variance in Models 1 and 3.

The results for all the estimated models show that a company is more prone to becoming fragile when it presents low levels of profitability and liquidity and a high level of debt in its past-year's results. As may be seen from Table 3, the coefficients estimated for the financial ratios are significant in all the models. Among the indicators analyzed, pretax profit to assets (in the case of profitability), financial obligations to assets (in the case of debt), and the ratios containing available assets (in the case of liquidity) were the best predictors of corporate fragility.

The results obtained with regard to the liquidity variable are not surprising, considering that it is the more liquid resources (in this case available assets) that are the first to begin to become depleted just before a company reaches the state of fragility. But the ability to generate earnings and the level of financial obligations were also effective financial indicators for early identification of the companies that saw their legal status deteriorating in 2001. This confirms the importance already given to these indicators at the time of analyzing the health of companies.[17]

The dummy variables that discriminate by economic sector were also jointly relevant in the four models.[18] The companies less prone to becoming fragile in 2001 (regardless of their financial indicators) were engaged in auxiliary financial intermediation, real estate, enterprise, and leasing activities. In contrast, given the negative coefficient of all dummies in the regression, the companies more pone to becoming fragile belonged to the sector of "teaching, health care and other services" (control dummy). Analysis of the data on companies engaged in mining and quarrying and manufacturing does not provide any conclusive results. This is not surprising where manufacturing is concerned, given the heterogeneity of the companies included in this large group.

In previous modeling trials size did not appear to be a determinant of corporate fragility, given the low significance of the variables D_a and D_s. Despite the importance of the size variable in differentiating Colombian firms' ease of access to credit and their capital structure (Tenjo and García (1998)), and despite the potential problem of moral hazard in large companies, size was not useful for identifying a worsening of the companies' legal status.

Table 3 also reports values for the maximum plausibility function (L) and the Likelihood Ratio

---

[16] The estimations were made by using the Stata 6.0 software, which automatically eliminates variables that cause multicolinearity problems in probit estimations.

[7] Banco de la República (2002).

[18] Statistic associated with Ho: $D_1 = … = D_8 = 0$ LR of 67.76 (Model 1), 64.18 (Model 2), 60.35 (Model 3) and 57.24 (Model 4).

Index (LRI) as the model's measure of adjustment. The Likelihood Ratio Index compares the complete model and the model that includes just one constant; it is calculated as $LRI = 1 - \frac{\log L}{\log L_0}$, where L_0 is the value of the plausibility function when the model is restricted to including just one constant. The LRI presented shows us the superiority of the heteroskedastic probit models over Models 1 and 3.

V. Precision in Classification

Since Y_i is a dichotomous variable and $F(I_i)$ continuous they cannot be compared directly. One way of examining the precision of the model's forecasting is by sample classification. In this process two types of correct classification arise, when $Y_i = 1$ and $F(I_i) = Y^*$, and when $Y_i = 0$ and $F(I_i) < Y^*$. The proportion of correctly classified fragile companies is known as *sensitivity*, while the proportion of correctly classified nonfragile companies is termed *specificity*. As in all probit models, classification depends entirely on the limiting value at which fragility $Y^{*[19]}$ is considered to exist. The criterion used in this study established as appropriate the value of Y^* at which the

correctly classified proportion of both populations is maximized, that is, the point at which specificity $\cong$ sensitivity $\cong$ proportion correctly classified by the model.[20] These proportions are reported in Table 4.

Models 2 and 4 exhibit greater in-sample forecasting ability. In both models 82% of the companies, whether fragile or nonfragile, are correctly identified. Models 1 and 3 register lower classification rates, which confirms how in this case correction of the problems of nonconstant error variance increased in-sample forecasting power.

VI. Marginal Effects of Coefficients

Given the difficulty of interpreting probit coefficients, the marginal effects of the three variables were

---

[19] The higher (lower) the value of Y^*, the larger the number of companies that the model will classify as nonfragile (fragile) and the lower the correctly classified percentage of fragile (nonfragile) companies.

[20] In studies in which Y^* is not simply selected as 0.5 (as in Neophytou, Charitou and Charalmabous (2000)), this limiting value is selected on the basis of Type I errors (fragile company classified as nonfragile) and Type II errors (nonfragile company classified as fragile), as is done in Lin Lin and Piesse (2001) or Tirapat and Nittayagasetwat (1999).

Table 4
Proportioin of Correctly Classified Companies
(Percentage)

	Model 1	Model 2	Model 3	Model 4
Nonfragile (*specificity*)	80.50	82.48	79.61	81.85
Fragile (*sensitivity*)	80.12	81.87	78.95	81.29
Total Classification	80.49	82.47	79.60	81.84

Note: Y^* was 0.025 for Models 1, 2 and 4, and 0.026 for Model 3.
Source: Author's calculations.

calculated for Models 2 and 4.[21] Marginal effects are to be understood as the change in $F(I_i)$ arising from a 1% variation in the financial ratio for the average sample company. Thus, a 1% rise in the average company's pretax profit to assets ratio caused Model 2's $F(I_i)$ to decrease by 0.000302.[22] For the dichotomous variables D_i the marginal effect is to be interpreted as the variation in the average company's $F(I_i)$ when $D_i = 0$ changes to $D_i = 1$.

However, the magnitude of the marginal effect is unintuitive, given the small variation in the ratio. To better understand the effect of the variables in determining whether a company is fragile or not, in Model 2 a calculation was made of what the average company's ratio value should be in order for $F(I_i)$ to reach 0.025 (that is to say, in order for the firm to become fragile). Our average sample company presented a 2.25% profitability level, 13.6% debt level and 4.39% liquidity level (available assets / assets), from which $F(I_i)^{av}$ was estimated to be 0.002966. It was calculated that for a company of these characteristics to reach the state fragility, its profitability should have fallen to –20.97% in 2000. Likewise, the average company will come to have an $F(I_i)$ of 0.025 if its debt level rises to 79.6% while its profitability and average liquidity remain at the levels indicated above.[23]

As regards liquidity, it may be stated that the average company does not become fragile by reducing its ratio of available assets to assets (even to zero). Hence, a company with profitability and debt ratios similar to the average company's should not present any sign of fragility. Vulnerable companies whose legal status worsened in 2001 displayed lower-than-average profitability and debt ratios. Once these ratios deteriorated, the liquidity indicator became increasingly important in determining corporate fragility, as explained above regarding the findings of Table 3. This result helps in understanding the difference between illiquidity and insolvency, since an illiquid company is not necessarily insolvent, as in the hypothetical case of the average company.

VII. Validation by the Lachenbruch Jackknife Method

This technique is widely accepted for validating how precisely a model classifies out of sample. A number of companies representing 90% of the sample were randomly selected for estimating Models 2 and 4 anew. The purpose of this technique is to validate the model's forecasting ability artificially by classifying the 10% remaining companies excluded in the estimation. Table 5

---

[21] Calculations were made assuming a 1% variation in each ratio. Taking into account that work was done with $x_j = \ln(1+ w_j)$, where w_j is the financial ratio j, the marginal effects were calculated on the average of w_j, not on x_j.

[22] If variable x_j is in the heteroskedastic part of the model, the rate of offset between variables i and j at which the fragility index Y does not vary will depend on indicator levels. Bernhardsen (2001), using the following numerical example from Laitinen and Laitinen (2000), explains how, when $\left. \frac{\partial x_i}{\partial x_j} \right|_{dY=0} = -\frac{\beta_i}{\beta_i}$ as in the case of a probit, a constant rate of offset does not seem reasonable. If $\left. \frac{\partial \,(\text{Util.antes impuestos / activo})}{\partial \,(\text{Disponible / activo})} \right|_{dY^*=0} = -\frac{2}{5}$ and both indicators

---

for the company are 5%, the company will continue to be fragile if the liquidity indicator gets to be 3% and the profitability indicator 10%. But this also means that for a firm with a high initial level of liquidity (50%) and the same 5% profitability, if liquidity falls to 48%, profitability will have to rise to 10% in order for the risk level to remain the same. In our case, the rate of offset between profitability and any other indicator that will keep the risk level constant will depend on the levels of the indicators.

[23] For 479 sample companies the profitability ratio was less than -20.97%, while 84 had a debt ratio greater than 79.6% (which does not indicate a priori that they were fragile).

Test Number	Model 2			Model 4		
	Nonfragile (Specificity)	Fragile (Sensitivity)	Total Classification	Nonfragile (Specificity)	Fragile (Sensitivity)	Total Classification
1	85.13	88.89	85.20	81.43	75.00	81.30
2	81.13	70.00	80.80	82.56	56.00	81.90
3	80.97	69.70	80.60	80.59	87.50	80.70
4	83.69	80.00	83.60	82.47	70.00	82.10
5	82.49	91.67	82.60	82.26	76.00	82.10
6	84.29	85.00	84.30	81.65	78.95	81.60
7	81.46	92.31	81.60	80.35	82.61	80.40
8	82.24	85.00	82.30	84.15	62.50	83.80
9	81.00	66.67	80.70	82.65	80.00	82.60
10	85.06	75.00	84.90	82.84	100.00	83.10
Average	**82.75**	**80.42**	**82.66**	**82.10**	**76.86**	**81.96**

Source: Author's calculations.

presents the classification power on the 10% of companies not used in the estimation, on the basis of 10 Lachenbruch Jackknife tests (with $Y^* = 0.025$).

The power of classifying the excluded sample of each one of the ten tests is very close to the classification power obtained in Table 5. The stability in the forecasting results and estimated coefficients shows how robust both estimations are to sample variations. As in Table 4, Model 2 is slightly better than Model 4 in forecasting corporate fragility.

VIII. CLASSIFICATION OF FRAGILE COMPANIES TWO YEARS AHEAD

The aim of this final section is to investigate how good Models 2 and 4 are at forecasting fragility two years ahead. About 18% of the nonfragile companies were wrongly classified as fragile by Models 2 and 4; on the basis of this 18% it was

determined what proportion of this population was under restructuring or compulsory liquidation in 2002. That is to say, what percentage of the 18% companies wrongly classified as fragile in 2001 were fragile in 2002.[24]

Model 2 was capable of correctly forecasting as fragile 69 of the 102 companies reported to be under restructuring or compulsory liquidation in 2002, that is to say, 68% of those classified as fragile.[25] Model 4 in turn identified 67 of the 102, giving a 66% degree of specificity.

It may be concluded that the variables included in Models 2 and 4 made it possible not only to

---

[24] Of the 277 companies identified as fragile in 2002 (for being under either restructuring or compulsory liquidation), accounting information was available for 116 in 2000, of which 14 were not taken into account because they were under compulsory liquidation in 2002 after restructuring in 2001.

[25] $Y^* = 0.025$ was used again for classification in both models.

differentiate healthy companies from fragile ones one year ahead but also to identify two out of every three fragile companies two years in advance. That is to say, of the 18% companies that were classified as fragile but were healthy in 2001, it was possible to correctly identify 68% as fragile in 2002. As expected, the proportion of correctly classified fragile companies was smaller when identified two years ahead than only one year ahead (the correct classification of fragile companies fell from 82% in 2001 to 68% in 2002).

IX. Conclusions

The aim of this study was to develop a statistical model for forecasting corporate fragility in 2001. Though plenty of studies have developed such models in other countries of the world, the present study has sought to make up for the absence of estimations for Colombia by using a representative sample of the corporate population and applying probit techniques.

The broad sample used comprised accounting information on 9000 companies, for which estimates were made of the profitability, debt, liquidity and efficiency ratios frequently employed in financial analyses. Using a heteroskedastic probit model the following financial ratios were identified as relevant: pretax profit to assets, financial obligations to assets, and available assets to assets. With these three financial ratios and dummy variables for economic sectors it was possible to identify correctly 82% of fragile companies and an equal proportion of nonfragile ones.

Model 2's marginal analysis of the financial ratios led to the assertion that a company with profitability and debt ratios similar to the average company's should not present any sign of fragility, regardless of its level of liquidity. But if either of these two ratios deteriorates liquidity becomes increasingly important in determining corporate fragility. Further testing on the model confirmed both the stability of the findings in the face of sample variations and the model's ability to identify two years ahead two out of every three fragile companies in 2002. Though the size variable has been important in studies on access to credit in Colombia, it is not useful for identifying the worsening of the companies' legal status.

This study makes it possible to identify the relevant financial ratios for forecasting deterioration in the legal status of companies. However, the model used is cross-sectional and the results are not suitable for making an intertemporal analysis. Variables such as company age and market value, relevant in previous studies, were not included for lack of availability. Future work in this area will show whether the financial ratios presented here continue to be determinants despite macroeconomic changes in the country's economy.

References

Altman, Edward (1968). "Financial ratios, discriminant analisys and the prediction of corporate bankruptcy", *Journal of Finance*, No. 4.

_____; Narayanan, Paul (1997). "An international survey of business failure classification models", *Financial markets, institutions and instruments*, Vol. 6, No. 2.

Banco de la República (2002). *Reporte de Estabilidad Financiera*.

Beaver, William (1966). "Financial ratios as predictors of failure", *Journal of Accounting Research*, No. 4.

Bernhardsen, Eivind (2001). "A model of bankruptcy prediction", Working Papers, *Norges Bank*, 2001/10.

Echeverry, Juan Carlos; Salazar, Natalia (1999). "¿Hay un estancamiento en la oferta de crédito?", Archivos de Macroeconomía, *Departamento Nacional de Planeación*, No.118.

Echeverry, Juan Carlos (2001). "Memorias de la recesión de fin de siglo en Colombia: flujos, balances y política anticíclica", Boletines de Divulgación Económica, *Departamento Nacional de Planeación*, No. 7.

Fedesarrollo (2003). *Encuesta de opinión empresarial sector industrial: resultados del módulo especial sobre estructura de financiamiento de las empresas y situación actual del crédito*.

Greene (2000). *Econometric Analysis*, Prentice Hall (4a. edición).

Higgins, Robert (2000). *Analysis for Financial Management.*

International Monetary Fund (2001). *Macroprudential analysis: selected aspects*.

Laitinen, Erkki y Tejia Laitinen (2000). "Bankruptcy prediction application of the Taylor's expansión in logistic regresión", *Internacional Review of Financial Analysis*, Vol. 9, No. 4.

Lennox, Clive (1999). "Identifying failing companies: a reevaluation of the logit, *probit* and DA approaches", *Journal of Economics and Business*, Vol. 51, No. 4.

Lin, Lin; Piesse, Jenifer (2001). "The identification of corporate distress: a conditional probability analysis approach", *Department of Management* Working Paper Series, Birkbeck College, *University of London*, 01/03.

Lo, Andrew (1986). "Logit versus discriminant analysis", *Journal of Econometrics*, No. 31.

Neophytou, Evridiki, Andreas Charitou; Charalambous, Chris (2000). "Predicting corporate failure: empirical evidence for the UK", Working paper series, *University of Southampton*, No. 01-173.

Ohlson, J. (1980), "Financial Ratios and the Probabilistic Prediction of Bankruptcy", *Journal of Accounting Research*, No. 18.

Platt, Harlan; Platt, Marjorie (1991). "A note on the use of industry-relative ratios in bankruptcy prediction", *Journal of Banking and Finance*, No. 15.

_____; _____ (2002). "Predicting corporate financial distress: reflections on choice based sample bias", *Journal of Economics and Finance*, Vol. 26, No. 2.

Rosillo, Jorge (2002). "Modelo de predicción de quiebras de las empresas colombianas", *Revista Innovar*, Facultad de Ciencias Económicas de la Universidad Nacional, No. 19.

Tenjo, Fernando; García, Guillermo (1998). "Desarrollo financiero y estructura de capital de las empresas", en *El ahorro en Colombia*, Departamento Nacional de Planeación, Tercer Mundo Editores.

Tirapat, Sunti; Nittayagasetwat, Aekkachai (1999). "An investigation of Thai listed firms financial distress using macro and micro variables", *Multinational Finance Journal*, Vol. 3, No. 2.

Urrutia, Miguel (1999). "Crédito y reactivación económica", *Revista del Banco de la República*, No. 860.

_____; Zárate, Juan Pablo (2000). "La crisis financiera de fin de siglo", Mimeo, Banco de la República.

Villar, Leonardo; Rincón, Hernán (2001). "Flujos de capital y regímenes cambiarios en la década de los 90", *Ensayos Sobre Política Económica*, Banco de la República, No. 39.

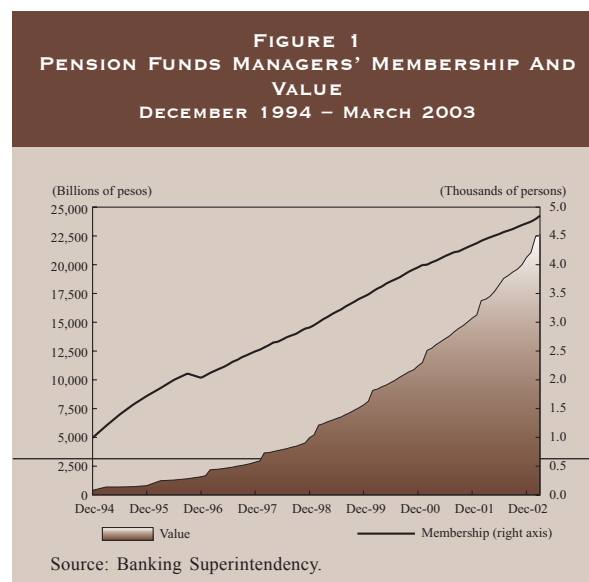# Financial Movements in Pension Fund Managers

By : Juan Pablo Arango A.

Santiago Muñoz T.[*]

The present Report includes a small, purely descriptive section on other financial-market agents in Colombia that have become important in recent years, providing a review of movements in the private pension funds' main financial variables.

I. Portfolio Growth

The value of funds administered by the *Administradoras de Fondos de Pensiones* (Pension Fund Managers–PFM) has increased dramatically since the creation of these entities in 1993. In March 2003, the investment portfolio of managers of pension and severance-pay funds amounted to 22.6 bn pesos (or 11% of GDP), of which 16.7 bn pesos represented compulsory pensions (Figure 1). Moreover, the PFM's portfolio made up 25.13% of the financial system's assets in March 2003.

The growth in portfolio value has proceeded at much the same pace as expansion in the number of pension-fund members. Membership to March

Figure 1
Pension Funds Managers' Membership And Value
December 1994 – March 2003

Source: Banking Superintendency.

2003 was 4.8 million, with approximately half this number being active members, that is, persons making periodic contributions to the funds. This membership size is a major achievement for the system of individual capitalization, representing as it does 46% of all people covered by Colombia's general pension system. The other 54% come under the Social Security system, characterized by average contributions and defined benefits.

Moreover, the pension funds have also become increasingly important as a proportion of private savings in the economy. Thus, savings channeled through the PFM represented 5% of private savings in 1996, rising to 20% six years later.

II. Pension Fund Managers' Portfolio Composition

a. Classification by type of asset and counterpart

The composition of the fund managers' portfolio may be analyzed using various classifications employed by the Banking Superintendency that are relevant to this part of the Report. Assets are first decomposed into fixed- income (89%) and variable-income (10%) investments (Figure 2).

Public-debt paper makes up the biggest share of fixed-income investments (57%), followed by investments in the financial system (18%) and investments in institutions not regulated by the Banking Superintendency (17%) (Figure 3).

Figure 4 details the composition of public-debt investments in the Pension Fund Managers' portfolio. In March 2003 such investments amounted to 11.8 bn pesos, representing 9.06% of nonfinancial public-sector debt.

As shown by Figure 4, Treasury securities (TES) accounted for the biggest share (48%) of the portfolio's public-debt investments, followed by external-debt securities issued by the Nation (40%). The 5.71 bn pesos of TES held by the pension funds in March represented 11.4% of the total in the market and 29.5% of those held by the nonfinancial private sector. The PFM's share of Colombian external-debt bonds was 14.4%.
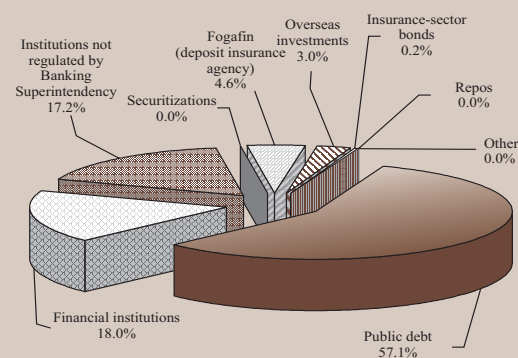
Table 1 shows the composition of the Pension Fund Managers' fixed-income investments with the

FIGURE 2
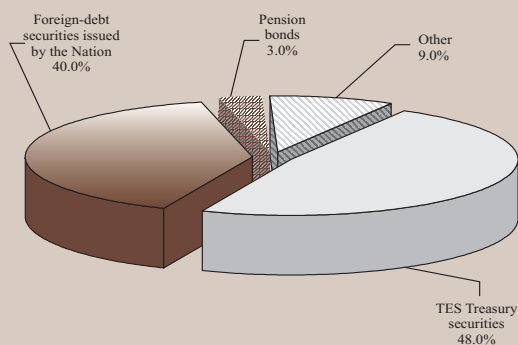**PFM'S PORTFOLIO COMPOSITION: FIXED- & VARIABLE-INCOME INVESTMENTS (MARCH 2003)**

Total variable-income investments 9.7%
Sight deposits 1.1%
Total fixed-income investments 89.2%
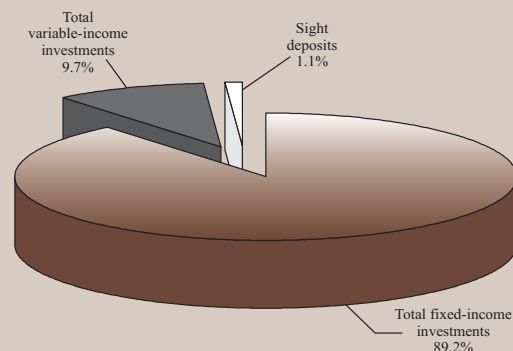
Source: Banking Superintendency.

FIGURE 3
PFM'S FIXED-INCOME INVESTMENTS (% OF TOTAL FIXED-INCOME)

Institutions not regulated by Banking Superintendency 17.2%
Securitizations 0.0%
Fogafin (deposit insurance agency) 4.6%
Overseas investments 3.0%
Insurance-sector bonds 0.2%
Repos 0.0%
Other 0.0%
Financial institutions 18.0%
Public debt 57.1%

Source: Banking Superintendency.

FIGURE 4
PFM'S PUBLIC DEBT INVESTMENTS, MARCH 2003 (% OF FIXED-INCOME INVESTMENTS)

Foreign-debt securities issued by the Nation 40.0%
Pension bonds 3.0%
Other 9.0%
TES Treasury securities 48.0%

Source: Banking Superintendency.

	Millions of pesos	Percentage
Certificates of deposit	2,125,954	10.31
Bonds	1,017,312	4.93
Credit securities from mortgage-loan securitizations	213,208	1.03
Investment certificates	134,446	0.65
FEN savings securities	79,384	0.39
Credit securities from securitizations of other-than-mortgage assets constituting ineligible investments	60,963	0.30
Credit securities from securitizations of other-than-mortgage assets constituting eligible investments	38,439	0.19
Mortgage bonds	25,423	0.12
Securities backed or guaranteed by Fogafin	11,193	0.05

Source: Banking Superintendency

TABLE 2
PFM'S FIXED-INCOME INVESTMENTS OTHER THAN PUBLIC DEBT AND
FINANCIAL SECTOR, MARCH 2003
(AMOUNT AND AS % OF TOTAL FIXED-INCOME)

	Millions de pesos	Percentage
Institutions not regulated by Banking Superintendency	3.546.349	17,20
Bonds	3.282.620	15,92
Credit securities from mortgage-loan securitizations	251.724	1,22
Bonds backed, accepted or guaranteed by financial institutions	8.965	0,04
Commercial paper	3.039	0,01
Fogafin bonds	941.939	4,57
Investments in securities issued by overseas entities	591.735	2,87
Bonds issued by multilateral credit organizations	286.672	1,39
Fixed-income securities issued by overseas banks	179.528	0,87
Fixed-income securities issued by foreign governments	75.902	0,37
Fixed-income securities backed, guaranteed or accepted by overseas banks	14.791	0,07
Fixed-income securities issued by overseas central banks	34.842	0,17
Insurance-sector bonds	45.936	0,22
Total investments other than public debt and financial system	5.125.959	24,87

Source: Banking Superintendency

financial system. CDs stand out with 10.3% of the PFM's overall fixed-income investments, while mortgage securities made up a surprisingly low percentage.

As detailed in Table 2, some 25% of the PFM's total fixed-income investments were with other domestic agents and overseas entities.

Bonds issued by such agents or entities represented 16% of total fixed-income holdings, while the share of mortgages securities was once again surprisingly low.

As regards variable-income holdings, they were concentrated in overseas investments (48%), followed by investments with the financial system (27%) and institutions not regulated by the Banking Superintendency (25%) (Figure 5).

B. Classification by financial conditions

The composition of the pension fund managers' portfolio may be analyzed by the currency and/or unit of account of assets. Assets denominated in pesos made up the biggest portion of the portfolio(56%), followed by assets denominated in dollars (24%) and investments denominated in Real Value Units (20%).
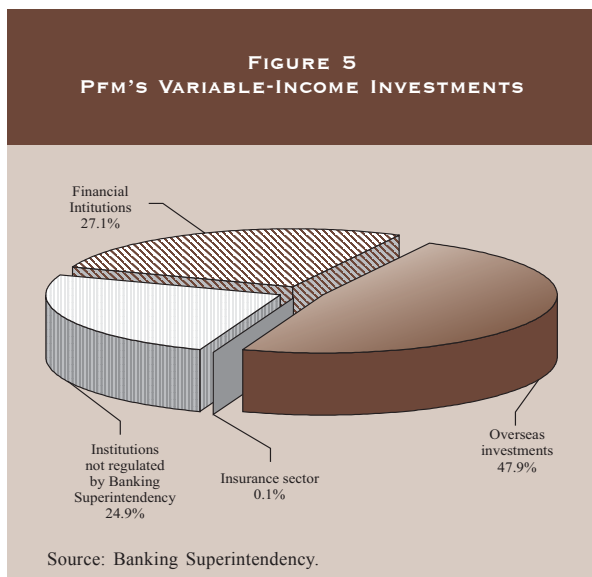
Further analysis of the portfolio's composition shows that instruments indexed to inflation account for a very moderate share of it, despite the fact the Pension Fund Managers' liabilities are tied to movements in inflation. In effect, the sum of the instruments denominated in Real Value Units and CPI comes to 39.8% of the portfolio. Hence there is an enormous growth potential for financial instruments indexed to the Real Value Unit, considering the indexation nature of the PFM's liabilities.

Breakdown of the PFM's portfolio into fixed- and variable-rate instruments shows fixed-rate investments accounting for 50.3% of the portfolio and variable-rate investments for 44%.

C. Breakdown by maturity

Lastly, decomposing the Pension Fund Managers' portfolio by maturity reveals that 90.27% of their assets mature in less than 10 years, while the remaining 9.73% have maturities of over 10 years.

In this connection, attention is drawn to the contrast between the age composition of fund members and the maturity composition indicated above. In effect, while assets are concentrated in relatively short maturities, 43% of fund members are between 25 and 34 years old, indicating a misalignment between the maturities and durations of assets and expirations of liabilities.

**Figure 5
Pfm's Variable-Income Investments**

Financial Intitutions
27.1%

Institutions not regulated by Banking Superintendency
24.9%

Insurance sector
0.1%

Overseas investments
47.9%

Source: Banking Superintendency.

Although the above-described maturity composition of the PFM's assets is characteristic of less developed capital markets, it has been improving in line with the development of longer-term (mainly public-debt) financial instruments. Moreover, it is important to point out the growth potential of longer-term financial instruments issued by the private sector as well as the and public sector, which should produce a better alignment between the Pension Fund Managers' liabilities and assets.