Financial Stability Report

March 2008

FINANCIAL STABILITY REPORT

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Banco de la República
Central Bank of Colombia
Bogotá. D, C,. Colombia

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Executive Summary

The increase in financial activity slowed during the second half of 2007, due to the monetary-policy measures adopted by Banco de la República's Board of Directors since 2006 and the effect of new reserve requirements.

The loan portfolio continued to reflect less momentum. In fact, real annual growth in the overall portfolio was 20.1% by December 2007. This is 200 basis points below the rate in June. The slowdown in consumption loan growth was even more pronounced: 28.1% compared to 36.9% growth in June, followed by micro-loan (11.2% compared to 19.9%) and commercial loans (16.3% compared to 17.3%). The mortgage loan portfolio (with securitizations) maintained its momentum, registering an increase of 14.4% by December compared to 12.4% in June. The slowdown in lending contrasts with the increase in the non-performing loans of all types, especially commercial and consumption credit.

There was sustained growth in deposits, with a real increase of 13.3% by December following 12.2% in June. A considerable shift in liabilities from checking and savings accounts to certified deposits was observed. Part of this substitution is explained by the marginal reserve requirements and the changes in ordinary reserve requirements. The investment portfolio held by credit institutions declined by 12.2% in real terms, due to the disposal of government bonds, mainly during the first half of last year.

The profits reported by financial intermediaries rose at a pace similar to the increase in the gross loan portfolio, despite the marginal reserve requirements and the loan-loss provisions made for portfolio deterioration and implementation of the Credit Risk Management System (SARC in Spanish) for the commercial loan portfolio.

Non-bank financial institutions experienced problems due to the drop in prices for government bonds and stocks, particularly during the first six months of 2007.

As a result, several severance pay funds failed to meet the minimum profitability requirement. The situation also prompted some institutions to move part of their portfolio into investments in the banking system, such as certified deposits (known as CDTs in Colombia).

The risks to the financial system in 2008 will depend on the force of the economy, the volatility of international financial markets, the funding required by the government, and the effect of monetary policy measures. The anticipated slowdown in the economy will mean smaller increase in lending.

The household financial burden will influence how the risky loan portfolio behaves, mainly because of the increase in consumption lending and respective interest rates. It is important to point out the tendency among borrowers with first-time consumption loans in 2005 or 2006 to default a year later. This has more than doubled the risky loan indicator for credit of that type.

Exposure to liquidity risk has been on the rise since last year. Liquidity risk will depend on the extent of uncertainty in the international economy, in as much as liquidity in the government bond market is influenced by the external situation. This makes the Liquidity Risk Management System (SARL in Spanish) particularly important. It is scheduled to be up and running by the second half of 2008.

Board of Directors, Banco de la República

FINANCIAL STABILITY REPORT

Prepared by
the Financial Stability Department
of the **Monetary and Reserves Division**

According to the Colombian C and in Law 31/1992, one of Banco de la República's duties is to ensure price stability. This depends largely on maintaining financial stability, which is understood as a situation where the financial system is able to broker financial flows efficiently. This contributes to better resource allocation, which is important to preserving macroeconomic stability. For that reason, financial instability has a direct impact on macroeconomic stability and on Banco de la República's capacity to fulfill its constitutional mandate. In short, monitoring and maintaining financial stability are crucial to that activity.

Banco de la República provides for financial stability in a variety of ways. First, it ensures the payment system of the Colombian economy operates properly. Secondly, it extends liquidity to the financial system through its monetary transactions and by exercising its constitutional faculty as the lender of last resort. Thirdly, being the credit authority, it also designs financial regulatory mechanisms to reduce episodes of instability. It does so in conjunction with the National Office of the Superintendent of Financial Institutions . In addition, Banco de la República carefully monitors economic trends that could threaten the country's financial stability.

The *Financial Stability Report* is part of this last task and accomplishes two objectives. First, it describes how the financial system has performed of late and its principal debtors. This is done so future trends in that performance can be visualized. Secondly, it identifies the major risks to credit institutions. The reason for both these objectives is to inform the public of the trends and risks that affect the financial system as a whole.

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I. The Macroeconomic Environment

The increase in financial activity slowed during the second half of 2007, owing to a combination of macroeconomic elements. The effect of those elements has persisted during 2008, which means the slowdown will continue and risks could materialize.

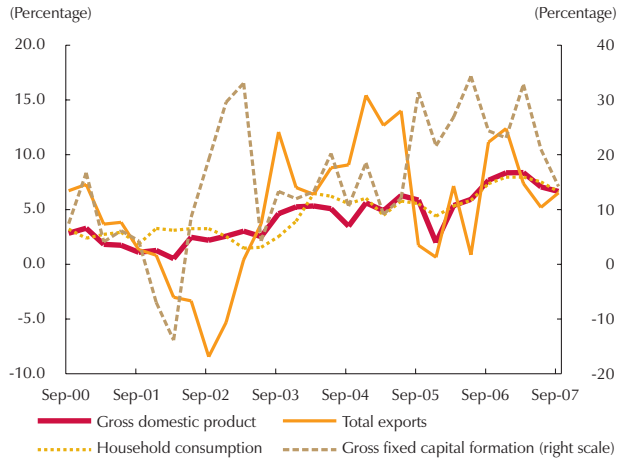
A. BACKGROUND: THE FINANCIAL SYSTEM DURING THE SECOND HALF OF 2007

Colombia's economic performance throughout the second half of 2007 resulted, for the most part, in less of an increase in financial intermediation activities compared to previous periods. First, there was a sharp drop in loan portfolio growth during the last six months of 2007. This was due primarily to loan-supply factors. The decline in demand associated with the slowdown in the Colombian economy was a factor as well, but less so. From the standpoint of supply, the reduction in growth is consistent with the delayed effect of Banco de la República's contractionist monetary policy in recent years, which is intended to lower aggregate demand to a long-term sustainable level and, to a lesser extent, with the new reserve requirements. As to the effect of monetary policy measures, it is important to underscore the impact the marginal reserve requirements have had in terms of making sources of funding in the banking system more expensive and, therefore, reducing borrowing.

Colombia's economic performance throughout the second half of 2007 resulted in less of an increase in financial intermediation activities.

The slight reduction in Colombia's economic growth throughout the year contributed to somewhat less of an increase in loan demand. As illustrated in Graph 1, the increase in gross domestic product (GDP) in Colombia between the third quarter of 2006 and the same quarter in 2007 declined from 7.66% to 6.44%. Total consumption moved in a similar direction (from 7.35% to 6.61% growth), as did investment (from 24.3% to 14.2%).

Graph 1
Growth in GDP and Its Private Spending Components



Source: DANE.

The impact of less economic growth in Colombia on the increase in deposits with credit establishments has not been significant.[1] In this respect, credit institutions as a whole have slowed the pace of investment disaccumulation, especially in government bonds (TES). At any rate, the system reduced its portfolio of investments in assets of this type between December 2006 and December 2007, primarily because it needed to finance the increase in lending with funds from sources other than deposits. The growing likelihood of market risk was also a factor, as will be discussed later.

In any case, recent quarters have seen considerable less of an increase in credit. However, the pace of growth in these activities remains high, which means more exposure to credit risk for institutions.

B. OUTLOOK: THE RELATIONSHIP BETWEEN THE MACROECONOMIC ENVIRONMENT AND RISK TO THE SYSTEM

The macroeconomic situation can affect financial system stability by virtue of its impact on risks to the system through two dimensions. First, it affects institutions' exposure to each type of risk. Secondly, it can alter the likelihood that previously assumed risks might materialize and spill losses for the institution. However, it is important to be clear about the fact that high exposure to any risk does not necessarily mean it is highly likely to occur, or vice versa.

The most important tendencies that lead to less of an increase in financial activity are expected to continue during 2008 and, in some cases, to become more pronounced.

The most important tendencies mentioned already, particularly those leading to less of an increase in intermediation activities, are expected to continue during 2008 and, in some cases, to become more pronounced. Consequently, not only is growth in the system expected to slow, but the risks institutions have assumed in recent years could materialize to some degree.

From the standpoint of credit risk exposure, the counter-cyclical monetary policy Banco de la República has followed for the last few years should continue to cut into the credit supplied by financial institutions.

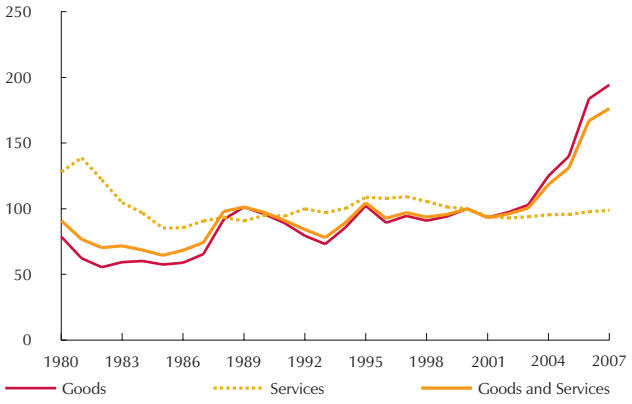
1 The composition of deposits has changed due to the sharp increase in certified deposits (CDT).

Table 1
Economic Growth
(Percentage)

	2006	2007	2008
Colombia	7.66[a/]	6.44[a/]	3.7-5.7
Major Trading Partners			
United States	3.3	2.2	0.8-1.5
Europe	2.7	2.6	1.9
Ecuador	4.5	1.9	2.2
Venezuela	9.8	8.4	6.0
Other Partners			
Japan	2.4	1.8	1.5
China	10.5	11.4	10.5
Peru	7.2	8.1	6.8
Mexico	4.7	3.1	3.2
Chile	4.3	5.3	4.9
Argentina	8.4	8.3	6.2
Brazil	2.8	5.2	4.7
Bolivia	4.1	4.0	4.5
Developed countries	3.1	2.3	2.0
Developing countries	7.0	6.1	5.0

a/ Up to September.
Source: *Inflation Report*, Banco de la República, December 2007.

Graph 2
Terms of Trade for the Colombian Economy



Source: Bloomberg.

In the future, and according to the December 2007 edition of *The Inflation Report* published by Banco de la República, the expectation is that "growth will continue to be curbed by monetary-policy actions". This suggests the possibility of a continued cutback in the increase in credit supply. According to the information presented in Table 1, most growth forecasts for Colombia and its major trading partners point to a downward trend in economic growth.

Particularly evident is the possibility of a slowdown in the United States economy, which is expected to grow by 0.8% to 1.5% in 2008, which is less than half the rate in 2006. There also has been less growth in Venezuela and Ecuador, which are Colombia's second and third most important trading partners. Furthermore, the restrictions levied on trade with Venezuela (particularly the reduction in export quotas for some industrial goods) may have a significant impact on the Colombian economy.

There are, however, factors that suggest the impact of the slowdown in the developed economies will be cushioned for Colombia. According to Table 1, the slight slowdown in the developing economies does not prevent them from maintaining a vigorous growth rate. Consequently, this momentum seems to indicate that commodity prices, which are extremely dependent on demand in the developing economies, will remain relatively high. This is evident when considering how terms of trade for the Colombian economy have developed (Graph 2). The information presented in Graph 2[2] suggests that Colombia's commodity exports continue to have high purchasing power on international markets for goods and services. In fact, that purchasing power is the highest it has been in the last 20 years. As to the future, if the demand for goods of this type remains strong, terms of trade will follow suit, thereby reducing the

2 Broadly speaking, terms of trade are defined as the ratio of international prices for exported goods and/or services to international prices for goods and/or services imported by a particular country. They indicate the purchasing power of a country's exports in terms of goods and services produced abroad. Higher terms of trade represent more economic capacity for the export sector in an economy.

Graph 3
Developments in IGBC, TRM and TES Yield

Source: Bloomberg, Banco de la República's calculations.

impact of less growth among the country's trading partners.

Finally, during the current year, and as a result of the trends mentioned earlier, the increase in the structure of interest rates in the financial system expected is to continue, due to the time it takes changes in monetary policy to work through to the economy. This is consistent with less growth in loan activity and more likelihood that credit risk will materialize, since interest rate hikes may add to the financial burden of borrowers in the economy.

With respect to market risk, recent developments in the annual yield index for the exchange rate (representative market rate, TRM), the Colombian Stock Exchange Index (IGBC) and government bonds maturing in 2013 are shown in Graph 3. As illustrated in the graph, the interest rate on government bonds increased between December 2006 and December 2007, which implies a sustained reduction in their market price. This suggests the market risk to which institutions were exposed materialized during 2007. Insofar as the structure of interest rates in the economy continues to increase, market risk will continue to have a negative impact on the investment portfolio of credit institutions. However, if the size of that portfolio were to decline, these events would not be expected to seriously affect the banking system's stability.[3]

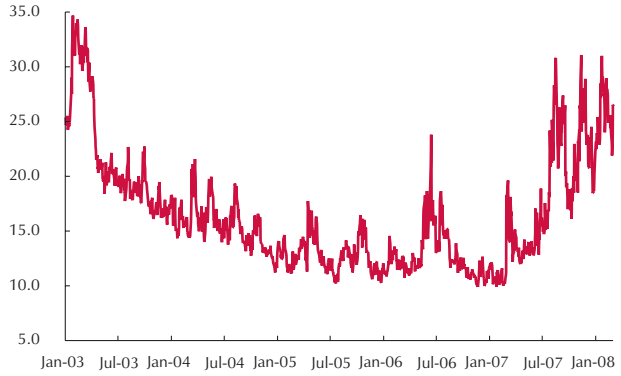
As to non-bank financial institutions (NBFI), the impact of rising interest rates on government bonds could be significantly greater, since those institutions have accumulated a sizeable portfolio of investments in these assets, and probably will continue to do so. Consequently, if market risk were to materialize, it could spell losses for this group of institutions during 2008.

The risks institutions have assumed in recent years could materialize to a greater or lesser extent during 2008.

In a preliminary way, Graph 3 also suggests an important recent macroeconomic trend that may, if it continues, aggravate the losses institutions would suffer if market risk were to materialize. The tendency is the apparent turn around in the correlation between the TRM, stocks and TES prices during

3 However, as mentioned later in this report, the primary offering of treasury bonds (TES) is expected to increase during 2008 because the central government needs financing. The size of the financial system's investment portfolio is expected to grow for the same reason, as it did in January and February 2008.

Graph 4
Market Volatility Index (*VIX*)



Source: Bloomberg.

the final months of 2007. It also suggests that possibilities for diversification within the local market have been limited.

Finally, the possibility of liquidity risk affecting the financial system hinges on how the uncertainty associated with the recent episode of instability on international financial markets develops. In past years, a number of agents assumed an excessive amount of risk concentrated in "opaque" financial assets.[4] Under those conditions, a negative shock to any "opaque" assets could spark a wave of uncertainty in the markets. In practice, the shock that increased the overdue sub-prime mortgage portfolio in the United States[5] helped to generate a great deal of uncertainty in the markets, as illustrated by recent developments in the VIX indicator[6] (Graph 4).

Further uncertainty in the financial markets during the months ahead may eventually have a negative effect on local financial-market liquidity. Although this uncertainty has yet to have more of an impact on the emerging economies, it does embody the potential to fuel episodes of financial instability by aggravating market liquidity risk for those economies. Three elements should be taken into account in this respect. First, expectations of additional cuts in the United States Federal Reserve Bank's benchmark rate increase the expected spread between it and the rates of other economies. This may cause an outflow of capital to the emerging economies and increase their liquidity. However, the possibility of crisis in the United States prompts agents to restructure their portfolios in favor of safer assets (particularly treasury bonds), causing an outflow of capital from the other economies to the US economy, which translates into a liquidity squeeze.

The uncertainty perceived in the developed economies reduces the leeway and the capacity monetary authorities have to deal with episodes that might affect financial stability.

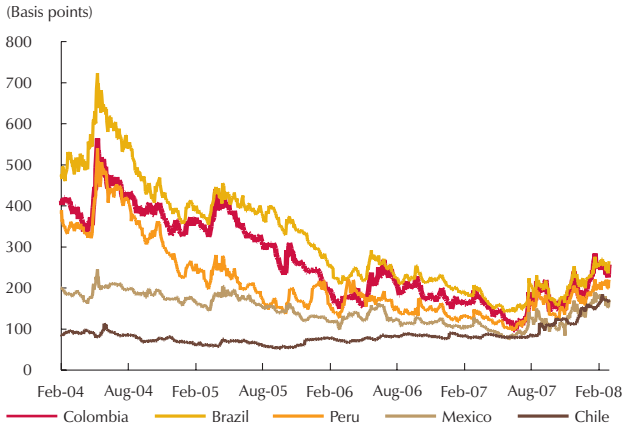
The second element, with respect to the foregoing, is the growing uncertainty about these economies, as illustrated by the recent increase in country-risk premiums on their sovereign bonds (Graph 5). Government bond market liquidity in Colombia depends a great deal on how the stock brokerage firms

4 An "opaque" financial instrument is one where the true extent of risk is hidden.

5 In this case, the increase in the portfolio reached the point where it was impossible to repay the "priority" securities being used as collateral.

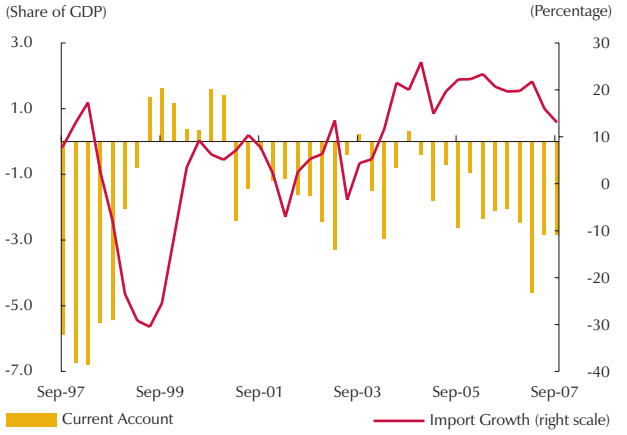
6 The VIX is a risk-aversion indicator that reflects the volatility implicit in options on the S&P 500, which represents volatility expected in the next 30 days.

Graph 5
EMBI+ Spread for Several Latin American Countries



Source: Bloomberg.

Graph 6
Current Account as a Share of GDP and Import Growth



Source: DANE and Banco de la República's calculations.

perform. This could mean that a negative shock to market liquidity might transform quickly into an episode of financial instability.

With respect to the third element, it is important to remember that the Colombian economy has gradually accumulated a current account balance of payments deficit (Graph 6). Although this deficit has been financed largely by the steady increase in foreign direct investment (FDI), this does not mean the economy is not vulnerable to a reversal of capital flows, which would seriously affect the financial system's stability by reducing market liquidity.

In short, some of the trends observed in recent years will become more pronounced during 2008, which may contribute to the slowdown in financial intermediation activities. In other words, 2008 is expected to see somewhat less of an increase in credit institutions' exposure to the various types of risk. However, that scenario increases the chance of risks materializing and causing losses for the financial system, regardless of the level of exposure. Many of these trends are associated with the high degree of uncertainty perceived in the developed economies and in their financial markets, which limits the leeway economic authorities have, as well as their capacity to deal with episodes that might affect the stability of the financial system.

II. The Financial System

2007 was a good year for credit institutions. Their profits rose and the new scheme for commercial loan portfolio provisions took effect. The NBFI growth rate declined as a result of a less favorable situation with respect to local assets and little diversification in NBFI portfolios.

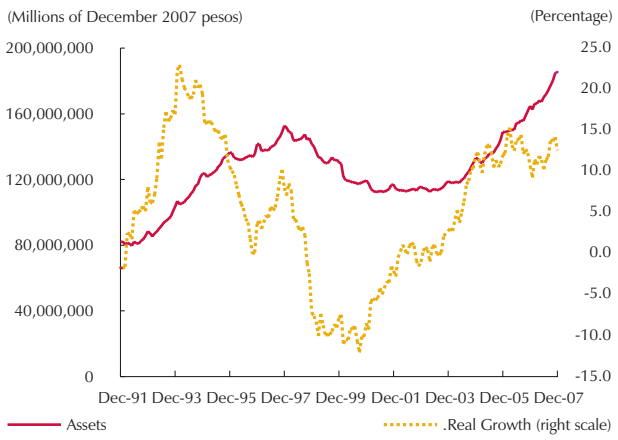
A. CREDIT INSTITUTIONS

1. General Balance Sheet Positions

a. Asset Accounts

Credit institutions reported Col$185.4 trillion (t) in assets at December 2007. This represents a real annual increase of 12.5% (Graph 7). Last year´s growth in assets was practically continuous, which meant that the increase by December was more than it was the year before (10.6%). Despite this additional build-up, the average for 2007 (11.86%) is similar to what it has been for the last three years (12.18%).

Graph 7
The Assets of Credit Institutions

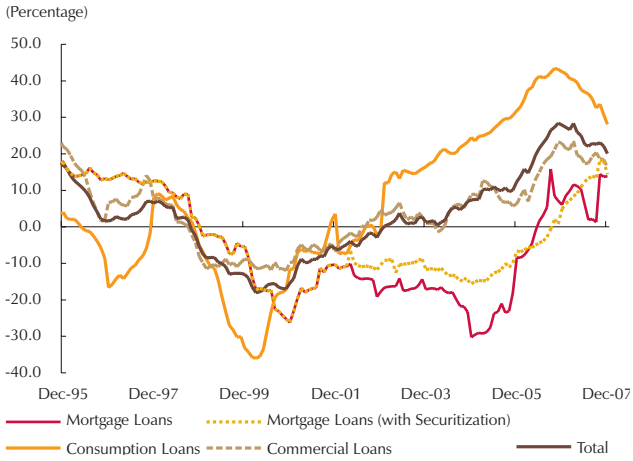


Source: Financial Superintendence of Colombia and Banco de la República's calculations.

The steady rise in assets continues to be explained by the momentum in the loan portfolio. Although 2007 did not see a repeat of the extraordinary loan-portfolio growth rates observed in 2006, the growth that year was still important and, by December 2007, the real annual rate was 20.1%. As illustrated in Graph 8, the upward trend in the gross loan portfolio reversed at the end of 2006 and, since then, its growth has declined almost steadily.

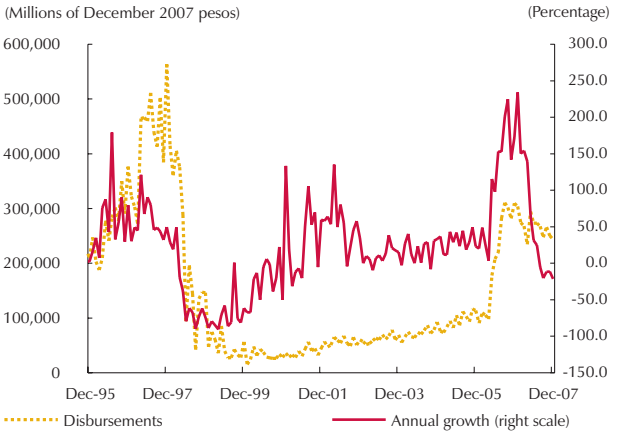
The increase in assets was due to growth in the loan portfolio, although that growth has slowed.

Graph 8
Real Annual Gross Loan Portfolio Growth:
Credit Institutions



Source: Financial Superintendence of Colombia, Banco de la República's calculations

Graph 9
Monthly Disbursements on Home Mortgage Loans



Source: Colombian Institute of Savings and Housing, Banco de la República's calculations.

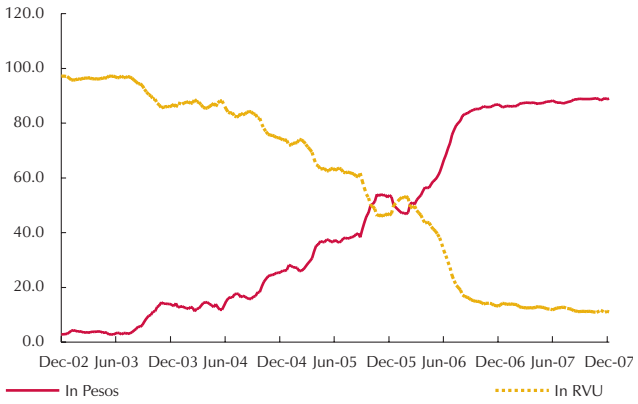
The commercial and consumption loan portfolios explain much of the trend in the total gross portfolio. The increase in consumption loans, which reached its highest point in the last 15 years in October 2006 (43.4%), slowed dramatically in 2007, registering 28.1% real annual growth in December of that year. The commercial loan portfolio maintained a relatively stable growth rate between late 2006 and early 2007 (22.3%), before declining to 16.3% by the end of last year. As indicated in the last edition of this report, the slowdown in commercial and consumption portfolio growth may be the result of several factors, such as Banco de la República's intervention policy and the marginal reserve requirement. Initiation of the credit risk management system (SARC) for the commercial loan portfolio also had an effect, but less so.

The mortgage loan portfolio (with securitizations) has performed quite differently compared to the other types of loans. It returned to positive growth rates as of October 2006 and, since then, its rate of expansion has accelerated sharply. In June 2007, real annual growth in the mortgage loan portfolio was already 12.4%. It continued to expand throughout the second half of the year, registering 18.1% real annual growth in November, then suffered a slight setback. However, it ended the year with 14.4% growth.

The history of the mortgage loan portfolio coincides with the pattern in mortgage loan disbursements (Graph 9). After the crisis and until December 2005, the average real annual increase in mortgage loan disbursements was 30%. They rose sharply as of mid-2006, coinciding with positive rates of growth in the mortgage loan portfolio. These credit flows increased 154%, on average, between May 2006 and May 2007, with a high of 234% in January 2007. As of June 2007, that growth began to slow and continued to decline throughout the entire second half of the year, entering negative terrain once again at the end of the year (-21.3%).

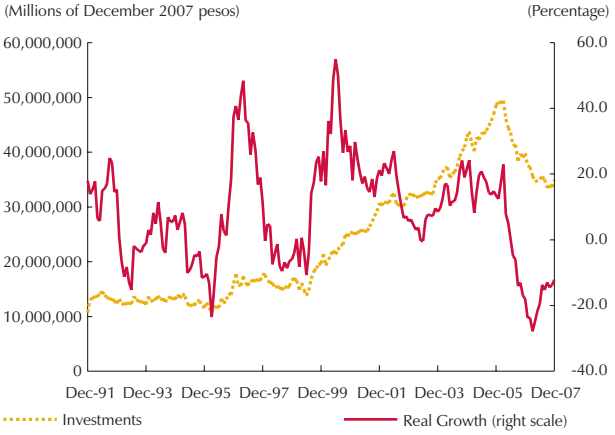
The mortgage loan market has experienced a shift from variable-rate to fixed rate disbursements as of 2003, but particularly as of 2006. Graph 10 shows

Graph 10
Disbursements (Eight-order moving average)



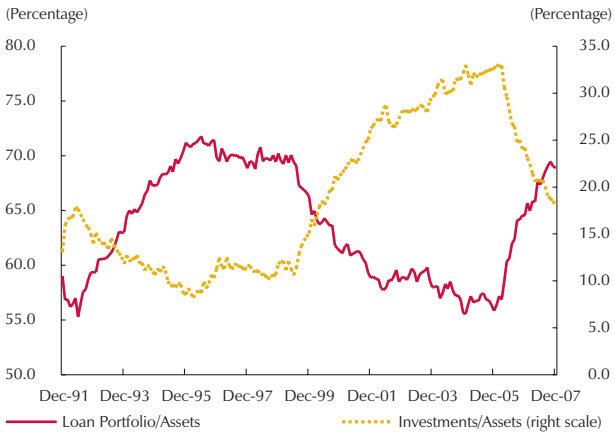
Source: Financial Superintendence of Colombia, Banco de la República's calculations.

Graph 11
Investments by Credit Institutions



Source: Financial Superintendence of Colombia, Banco de la República's calculations.

Graph 12
Investments and the Gross Loan Portfolio as a Percentage of Total Credit Institution Assets



Source: Financial Superintendence of Colombia, Banco de la República's calculations.

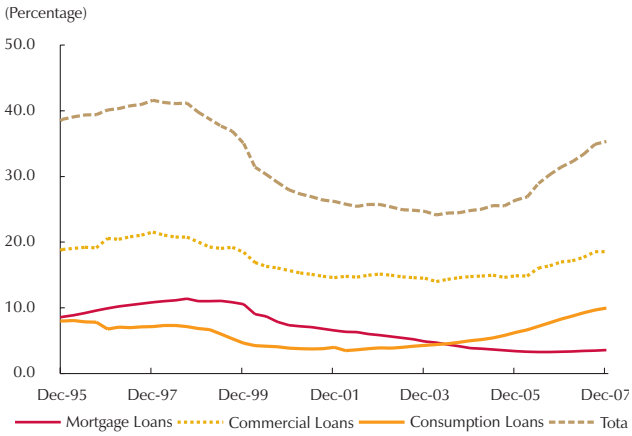
the percentage of disbursements at a variable rate (UVR in Spanish) went from 97% in July 2003 to 53% in January 2006, continued to decline rapidly, and accounted for only 11% by the end of last year. This change in the composition of new loans also produced a change in the outstanding mortgage loan portfolio: the outstanding balance converted at a fixed rate (pesos) went from 2.7% in December 2004 to 6.9% in December 2005; later, it was 18.1% in December 2006 and 30.7% in June 2007.

On the investment side, this performance caused credit institution to change the composition of their assets. As illustrated in Graph 11, there was a reversal in the tendency in the amount being invested, which went from Col$49.4 t in March 2006 to Col$39.8 t in December of that same year and to Col$35 t in December 2007. The growth rate at the peak of investment was equal to 23% (March 2006); from that point on, it was negative and there has yet to be a major change in the investment balance reported by credit institutions. The growth rate in December 2007 was -12.2%.

The situation with the loan portfolio and investments also prompted a shift in the assets of credit institutions. The increase in investments as a share of assets reversed (Graph 12). As of the point when institutions began to dispose of government bonds and the loan portfolio continued to expand, the make-up of assets shifted in favor of loans. This combination of events reduced investments as a share of total assets from 24.2% in December 2006 to 18.9% in December 2007; the share corresponding to the loan portfolio went from 64.5% to 69.8% during the same period.

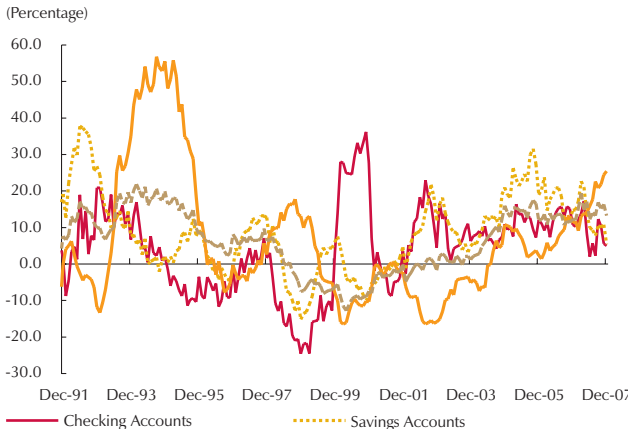
The fact that loans again carry more weight has meant increased financial depth and a continuation of the same trend that was highlighted in the last edition of this report. In December 2007, this indicator was the highest it has been since the end of the crisis in the

Graph 13
Financial Depth (Loan Portfolio/GDP)



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 14
Real Annual Growth in Deposits with Credit Institutions, by Type of Deposit



Source: Financial Superintendence of Colombia, Banco de la República's calculations.

late 1990s (35.3%). For the consumption loan portfolio, this indicator peaked during the period in question and, in the case of the commercial loan portfolio, in December 2007 it was quite close to what it was before the crisis. As for the total loan portfolio, financial depth has yet to reach the levels above 40% registered before and during the financial crisis, despite the increase (Graph 13).

b. Liability Accounts

Although credit institution reported less of an increase in the traditional financial intermediation activities, loan activity continues to register a substantial amount of real growth. During the second half of 2007, much of it was financed by the sharp rise in deposits from the public, which averaged 15.0% real annual growth during 2007, totaling Col$131.5 t, and, to a lesser extent, by the sell-off of investments, which was a fundamental feature of the growth reported during the first half of the year.

As to the principal deposit components, it is important to underscore the major shift among credit institutions from sight deposits to certified deposits (CDT). That substitution was influenced by the marginal reserve requirement that took effect at the beginning of May 2007, which is less for CDTs than for other deposits. Consequently, the average annual increase in savings and checking accounts declined from 17.9% and 12.4% between January and May, 2007 to 9.1% and 6.2%, respectively, between June and December 2007. CDT growth rose by 8.8 percentage points (pp); it went from an average real increase of 12.4% to 21.2% in the same period and accounted for nearly 32% of all deposits by December 2007 (Graph 14).

There was a major shift among credit institutions from sight deposits to CDTs.

Finally, it is important to point out that funding through CDTs has liquidity benefits for credit institutions. Being less volatile than savings and checking accounts, these liabilities provide institutions with more stable resources to finance their intermediation activities and to deal with periods when liquidity is low.

The quality indicator deteriorated primarily due to growth in the risky consumption loan portfolio.

2. Credit Institutions' Exposure to their Major Borrowers

Credit institutions' exposure was Col$139.3 t at December 2007. This represents a real increase of 11.8% compared to December de 2006. The exposed amount, as a percentage of credit institutions' assets, is similar to the levels reported since 2003 (75.1% in December 2007), but is slightly below the amount registered at the end of 2006 (Table 2).

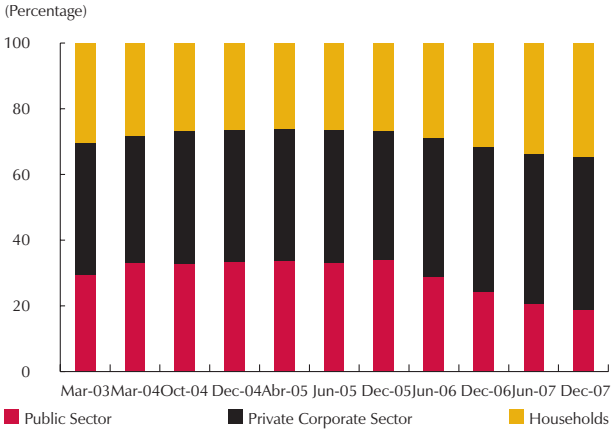
There has been a substantial change in the components of the exposed amount. Colombia's financial system is now more exposed to the private sector and households than to the public sector. Slow growth in the government loan portfolio, coupled with the sell-off of government bonds by the financial system, lowered exposure to the public sector from 24% to 19% last year. The private corporate sector increased its share, but only slightly (from 44.3% to 46.4%) due to commercial loan portfolio growth. As for households, both the consumption and mortgage loan portfolios increased at considerable rates, as did securitizations, although more moderately. This performance, coupled with the household-related items, made the financial system much more exposed to households, which now account for more exposure than the public sector (Graph 15).

Table 2
Credit Institutions' Exposure to Their Major Borrowers

Type	Dec-06		Dec-07		Real Annual Growth (%)
	Dec-06 :Trillions of Dec-07 Pesos	Share (%)	Dec-07: Trillions of Dec-07 Pesos	Share (%)	
Public Sector					
Loans	4.63	3.7	4.70	3.4	1.5
Securities	25.65	20.6	21.74	15.6	(15.3)
Total	**30.29**	**24.3**	**26.44**	**19.0**	**(12.7)**
Private Corporate Sector					
Loans	54.73	43.9	64.22	46.1	17.4
Securities	0.47	0.4	0.34	0.2	(26.6)
Total	55.19	44.3	64.56	46.4	17.0
Household Sector					
Loans	36.11	29.0	45.12	32.4	25.0
Consumption	28.14	22.6	36.05	25.9	28.1
Mortgage	7.97	6.4	9.07	6.5	13.9
Securitization	2.96	2.4	3.15	2.3	6.5
Total	39.07	31.4	48.28	34.7	23.6
Total Amount Exposed	124.55	100.0	139.28	100.0	11.8
Exposed Amount over Assets (%)	75.6		75.1		

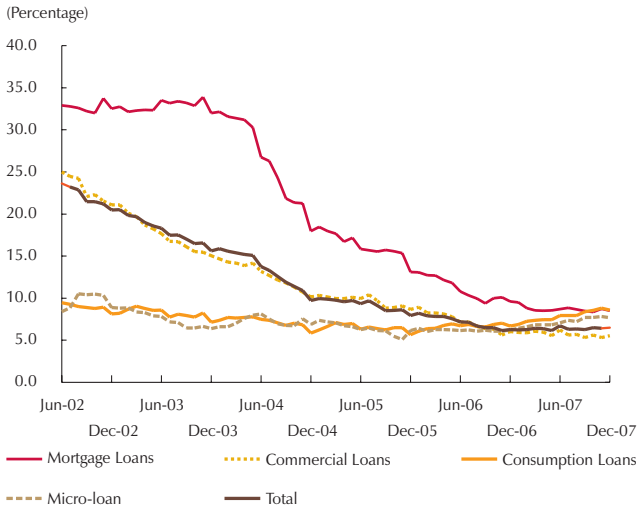
Source: Financial Superintendence of Colombia, Banco de la República's calculations.

Graph 15
Financial System Exposure by Borrowers

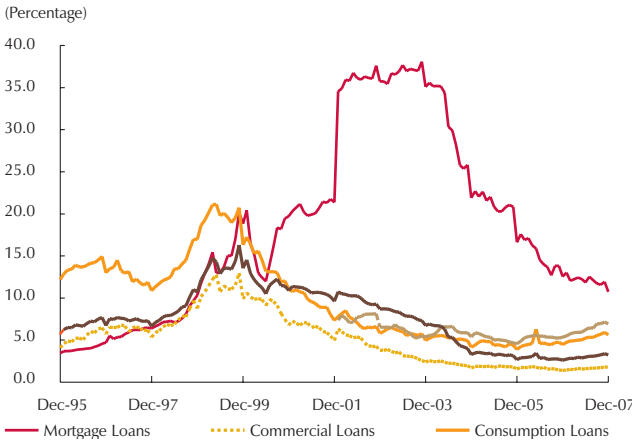


Source: Financial Superintendence of Colombia, Banco de la República's calculations.

Graph 16
A. Loan Portfolio Quality (Risky /Gross Loan Portfolio)



B. Arrears Indicator:
Non-performing /Gross Loan Portfolio



Source: Financial Superintendence of Colombia, Banco de la República's calculations.

3. Loan Portfolio Quality and Loan-loss Provisioning

The quality of the financial system's loan portfolio, assessed as the ratio of risky loans to the gross loan portfolio,[7] remains at historically low levels and was relatively stable throughout 2007. However, there are signs of some deterioration in the loan portfolio quality indicator (QI), primarily due to the risky consumption loan portfolio. As illustrated in Graph 16, Panel A, the QI was 6.5% by December 2007, which is similar not only to the QI at the end of 2006 (6.3%), but also to the average for the year, which ended at 6.4%.

As to the different types of loans, there was a noticeable increase in the quality of the mortgage loan portfolio during the first half of the year, as mentioned in the last edition of the *Financial Stability Report.* This tendency became more pronounced during the second half of the year, and the QI reached one of its lowest percentages in December (8.5%). This downturn also included the commercial loan portfolio; its QI went from 6.2% in June to 5.6% in December 2007. The consumption loan portfolio, as mentioned at the start of this section, continued to deteriorate even more, ending 2007 at 8.6% and accumulating an increase of 188 basis points (bp) during the year to date. This underscores the need to find better ways to monitor and assess consumption loan customers.

The arrears indicator (AI), measured as the ratio of non-performing[8] to total loans was less stable than the QI and exhibited an upward trend throughout the year, going from 2.8% in December 2006 to 3.3% in December 2007. The commercial and consumption portfolios were responsible for the behavior of this indicator with respect to the entire portfolio, having been at 1.8% and 5.6% by the end of 2007. This is 40 and 110 bp above

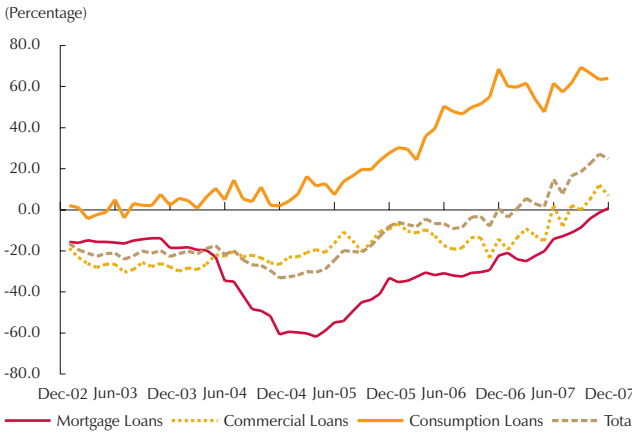
7 The risky portfolio includes all non-A rated loans.

8 The non-performing portfolio is comprised of loans 30 days or more overdue.

their AI at the end of 2006. Once again, the mortgage loan portfolio was the exception; its AI declined by 180 bp during the same period and was 10.7% by the end of 2007 (Graph 16, Panel B).

The decline in loan portfolio quality that gradually became manifest is apparent when considering how the risky and non-performing portfolios have grown. The risky portfolio was up by 24.9% at December, while the non-performing portfolio ended the year with 52.2% growth. Both of these increases were about 24 pp above those registered at the close of 2006. The real annual increase in the risky consumption portfolio reached 63.9% by December 2007, having averaged 60.6% during the year (Graph 17). Real annual growth in the non-performing consumption portfolio was 60.5% by December 2007. The risky commercial portfolio exhibited a similar drift. Despite averaging -4.2% growth during the year, it closed at nearly 7%. This deterioration is even more evident when considering how the non-performing portfolio developed. It was up by 50.8% at December 2007, after averaging 19.2% throughout the year.

Graph 17
Real Annual Risky Loan Portfolio Growth



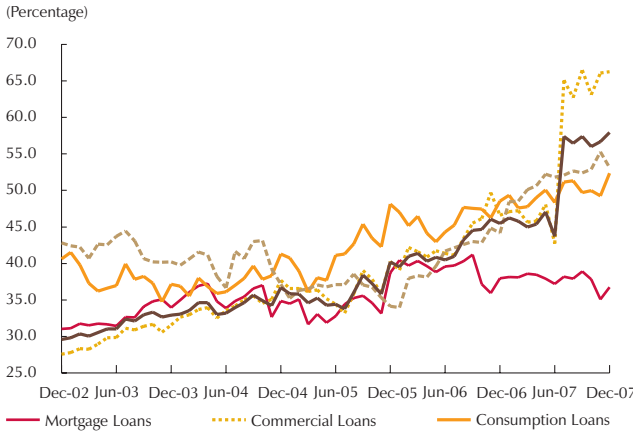
Source: Financial Superintendence of Colombia, Banco de la República's calculations.

This tendency to deteriorate also was true of the risky and non-performing mortgage loan portfolios, although not to the same extent. After exhibiting negative growth since 2002, the risky mortgage portfolio registered its first positive increase in December 2007, with a rise of 0.7%. Although the non-performing mortgage portfolio continues to decline, the reduction has slowed. Between December 2006 and the same month in 2007, the increase in went from -19.9% to -2,7%, respectively. If these trends consolidate, we could see poorer loan portfolio quality indicators in the months ahead.

However, the downturn in portfolio quality for certain types of loans has been accompanied by an increase in loan-loss provisioning. Graph 18 shows the provisioning indicator, measured as the ratio of loan-loss provisioning to the risky portfolio for each type of loan and for loans as a whole. The loan-loss provisioning indicator for the aggregate went from 45.5% to 58.0% between December 2006 and the same month in 2007; in other words, it rose by 12.5 pp. Added provisioning can be attributed to the application of SARC (by the Financial Superintendence of Colombia) to the commercial loan portfolio, which raised the indicator for loans of this type from 42.7% in June 2007 to 65.1% in July and 66.3% at the end of the year.

The good news is that the deterioration in loan portfolio quality is accompanied by more loan-loss provisioning.

Graph 18
Coverage: Provisioning/Risky Portfolio



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Loan-loss provisioning for the consumption portfolio increased a bit midway through 2007 and was 52.3% by December 2007, exceeding the average for the year (49.7%). All of this was the combined result of growth in the risky portfolio and the increase in loan-loss provisioning required for portfolios A and B[9] in preparation for the application of SARC to loans of this type, which is scheduled for 2008.

In the case of the mortgage portfolio, this indicator was 36.8% in December, which is 100 bp below the average registered for the year in question. Coupled with the increase -up in the risky mortgage loan portfolio, this is a risk warning, since the purpose of loan-loss provisioning is cautionary, and the increase in the risky portfolio is an indication that more risk has been assumed.

It is important to be careful about interpreting the increase in loan-loss provisioning, since the indicator for the non-performing portfolio has declined as a result of more growth in that portfolio.[10] Finally, it should be noted that the deterioration in consumption loan-portfolio quality is due to the materialization of previously assumed risk. This underscores the importance of continuing to insist on the need for persistent and responsible follow-up on the development of this portfolio and the potential risk it could pose to the financial system, as well the assessment required prior to extending a loan.

The fact that SARC has already taken effect for the commercial loan portfolio is excellent news for the stability of the financial system. It gives institutions an incentive to develop their own risk models in order to guarantee the provisions required to contend with losses in the future. In this respect, the application of SARC to consumption loans is welcomed with optimism.

4. Earnings, Profitability and Capital Soundness

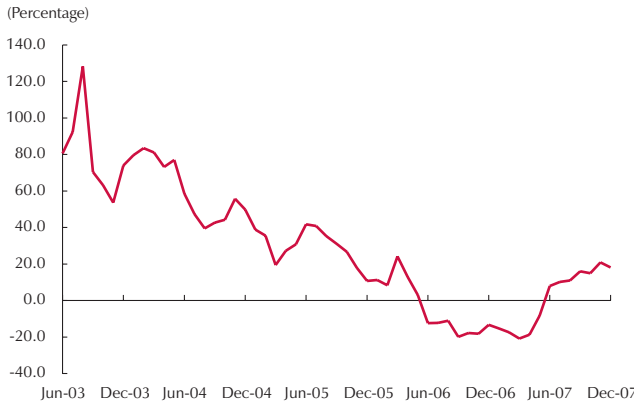
The last edition of this report cited a major increase in profits for credit institutions by mid-2007, following the setback in 2006 when investments plummeted. On

The onset of SARC is good news for financial system stability.

9 The increase in loan-loss provisioning for the type-A portfolio was from 1.1% to 1.7%; provisioning for the type-B portfolio went from 2.2% to 4.0%.

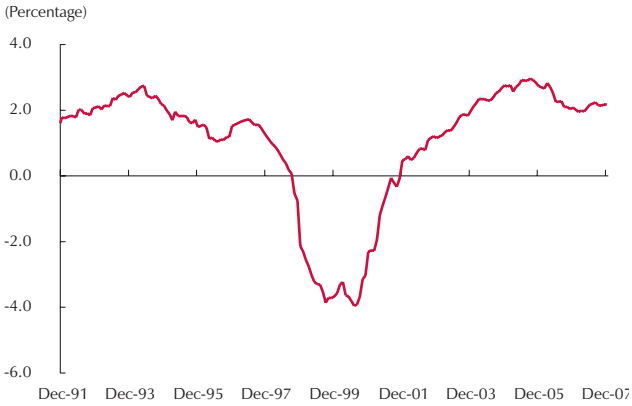
10 The value of this indicator for Colombia and that of its international peers is shown in Box 1 – International Indicators.

Graph 19
Real Annual Profit Growth



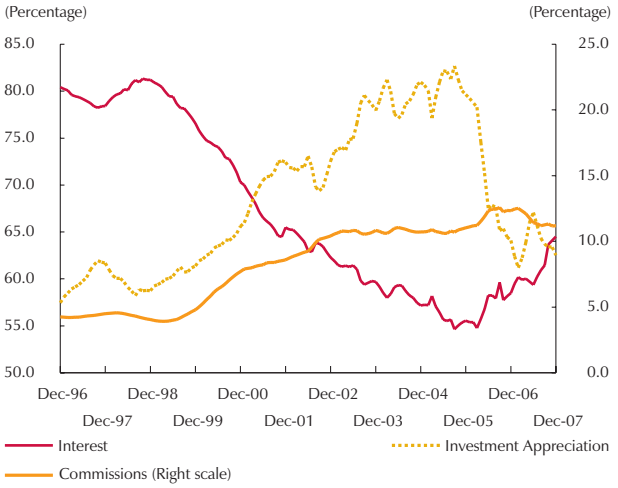
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 20
Return on Assets (ROA)



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 21
Financial Income Components



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

this occasion, it was necessary to isolate the effect of an institution that sold its portfolio at the end of 2006 and reported an exceptional increase in profits, which was not maintained during 2007. When that institution is excluded from the sample, we see the growth in profit returned to positive terrain as of the second half of 2007, although not exceptionally so, and continued to climb. The increase by December 2007 was quite high (equal to 18.1%). The real extent of profits that same month was equal to $3.6 t (Graph 19).

A number of factors were responsible for the substantial increase in profits during the second half of 2007. One was loan portfolio growth; it remains high, but has slowed somewhat. Moreover, larger intermediation spreads meant more financial income for credit institutions. Given the foregoing, the added importance of the loan portfolio to the banking business has enabled credit institution to produce more income, a process that appears to have cushioned the increase in spending on provisions (particularly after SARC took effect in mid-2007 and with more provisioning for the consumption portfolio).

The return on assets (ROA) mirrors this development in profits (Graph 20). After the drop in ROA during 2006, when it plunged 620 bp between January and December of that year (from 2.7% to 2.1%), this indicator was more or less constant up until mid-2007 (May). It began to increase as of that point, although slightly, in line with the trend in profits. In fact, by the end of the year, ROA was 2.2%.

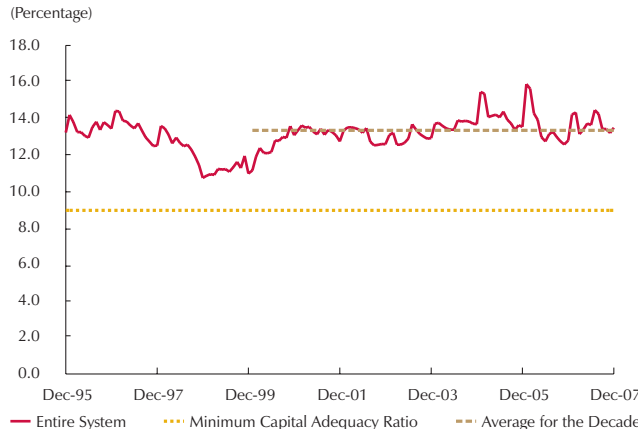
As to the components of financial income, Graph 21 shows the increase in the proportion of investments during the first half of the year reversed during the second. Specifically, the valuation of investments as a component of financial income went from 12.2% in June 2007 to 9% by the end of the year. On the contrary, the share represented by interest earnings continued to increase, having started to climb when the portfolio began to accelerate during early 2006. These

Credit institutions saw their profits increase, thanks to the loan portfolio and wider intermediation spreads.

earnings went from 59.4% to 64.5% during the final six months of 2007. Primarily, this is due to more of an increase in earnings from interest with respect to investment valuation, since both items rose considerably in December 2007. There have been no major changes in income from commissions, which accounted for 11.2% of financial income by December 2007.

Credit institutions saw virtually no change in their capital adequacy ratio between December and June 2007; however, by the end of the year, it was almost 70 bp above the ratio observed 12 months earlier (Graph 22).Equity supporting financial activity, as a percentage of risk-weighted assets, continued to average 13.7% during 2007 which is similar to the average for credit institutions in 2006. The graph shows the ratio has oscillated around the average calculated for the decade and well above the regulatory minimum (9%) set by the Financial Superintendence of Colombia.

Graph 22
Capital Adequacy Ratio of Credit Institutions

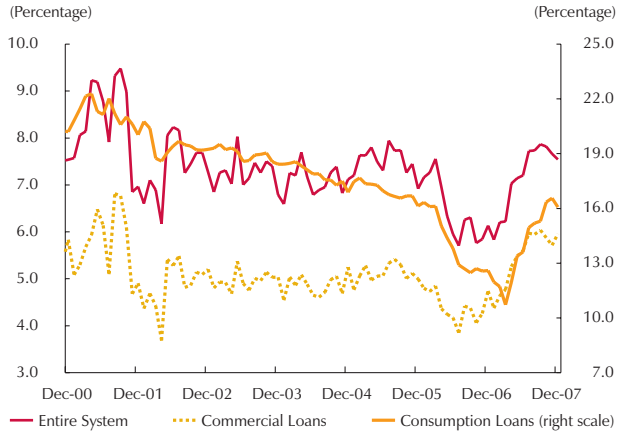


Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

5. Intermediation Spreads

As mentioned in past editions of the *Financial Stability Report,* the increase in lending during 2006 and early 2007 was accompanied by low interest rates and narrower intermediation spreads. However, as of the second quarter of 2007 and due to the set of contractionist monetary- policy measures adopted by Banco de la República, such as the hike in usury rates, there has been an upward trend in lending rates, increasing the *ex ante* intermediation spread[11] once again (Graph 23).

Graph 23
Ex Ante Spread Using the CDT Rate



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

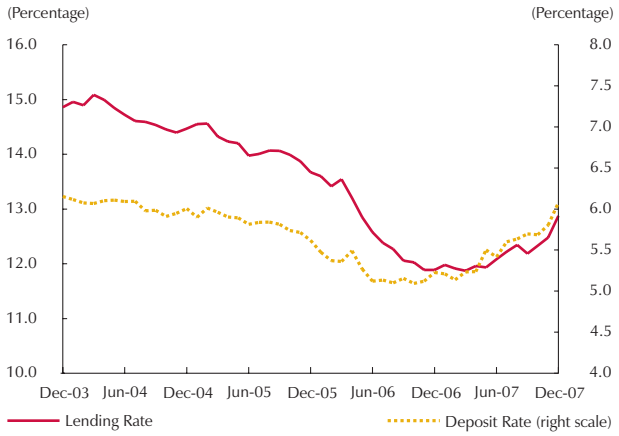
The *ex ante* spread went from 6.1% to 7.5% between December 2006 and December 2007. The difference might have been larger had it not been for the impact of the shift in liabilities towards CDTs, which generated a more than proportional increase in the average deposit rate since October and narrowed the spread from 7.9% to 7.5%. By the same token, it is important to point out that the increase in the spread occurred after the historic lows registered

11 The *ex ante* spread is the difference between the rates charged by intermediaries for the different types of loans and the average rate on certificates of deposit (CD).

Graph 24
Ex post Spread

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 25
Credit Institutions' Implicit Interest Rates



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

in 2006. At present, it is near the levels witnessed during the period from 2002 to 2005.

The *ex post* intermediation spread[12] was relatively stable during 2007 when it averaged 6.6%, which is the lowest it has been in the last fifteen years (Graph 24). The explanation for this situation lies with the increasingly similar behavior of interest earnings and outlays. In the first case, the growth in momentum, coupled with the slowdown in loan portfolio growth, raised the implicit lending rate by 90 bp during 2007. The shift towards more costly sources of funding led to a considerable increase in outlays for interest. The result was an 87 bp rise in the implicit deposit rate (Graph 25).

Finally, it is important to mention that credit institutions can expect even more of an increase in the average deposit rate, if their eventual substitution of deposits continues. The extent to which these instruments work their way through to lending rates will determine not only the profitability of traditional intermediation activities in the future, but also the social cost of access to formal lending.

In general, 2007 was a good year for credit institutions. Traditional intermediation activities continued to strengthen their position within the realm of lending operations, even though credit has slowed in recent months. Loan portfolio growth was accompanied by larger intermediation spreads, which allowed the financial system to earn more profits than in 2006, despite the increase in spending on provisions to meet SARC requirements for the commercial loan portfolio. Nevertheless, the increase in risky and non-performing loans of all types has begun to cause concern about the system's stability if the credit risk inherent in the portfolio expansion period were to materialize.

In general, it was a good year for credit institutions in terms of more profits and better risk coverage.

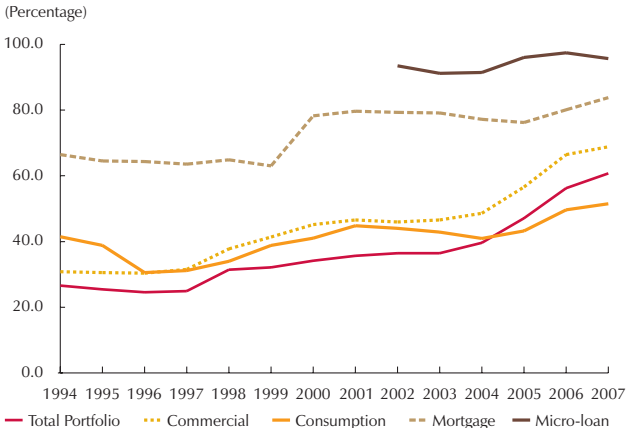
12 The *ex post* spread is calculated as the difference between the implicit lending rate and the implicit deposit rate. The first includes interest earnings, plus indexation as a percentage of the performing portfolio. The latter includes outlays for interest, plus indexation as a percentage of liabilities with cost.

The loan and deposit markets have become more concentrated, particularly as of 2004.

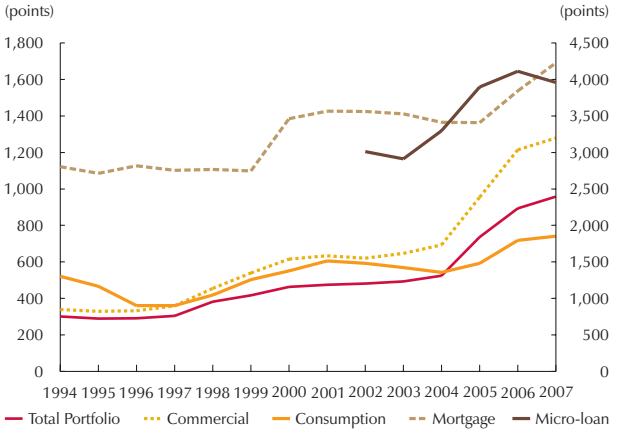
The outcome should not be evaluated solely on the basis of financial results. With respect to risk exposure and financial soundness in the face of a possible imbalance, 2007 also can be regarded as a fundamental year towards consolidating a more modern financial system pursuant to international standards on risk management. It is imperative that this process continue, if we are to ensure that intermediaries understand and effectively recognize the risks they face and the costs implied by those risks. The idea is to avoid excessive exposure to latent risks that are not quantified properly.

Graph 26

A. Portfolio Share of the Top Five Institutions



B. Portfolio HHI



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

6. Analysis of Concentration and Competition

The focus of this section is on issues related to concentration and competition in the financial system. The market share pertaining to the top five intermediaries in the loan and deposit markets is analyzed, and several indicators that provide an idea of the extent of concentration in the financial sector are estimated. It is worth noting that high levels of concentration are not enough, in and of themselves, to claim a system is not competitive. For this reason, several complementary exercises are developer to determine the extent of competition in the different markets.

a. Concentration[13]

In terms of the total portfolio, the top five intermediaries accounted for 31.4% in 1998, 39.5% in 2004 and 60.7% three years later. This illustrates an increase in concentration, particularly as of 2004 (Graph 26, Panel A and Table 3). With respect to types of loans, the consumption and home mortgage loan portfolios experienced less of an average increase in concentration between 1998 and 2007. The top five intermediaries accounted for 33.9% of the consumption loan portfolio in 1998, 40.9% in 2005 and 51.4% in 2007. In spite of low average growth in mortgage portfolio concentra-

13 For more information on the methods, see "Concentration and Competition Measurements" in "Financial Stability Issues" in the March 2008 edition of the *Financial Stability Report* published by Banco de la República.

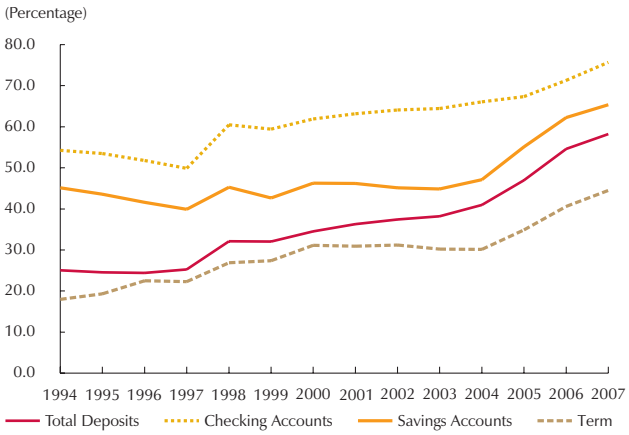
Table 3
Loan Portfolio Concentration Indicators at December 2007

	Total Portfolio	Commercial	Consumption	Mortgage	Micro-loan
Share (%)l					
Top two	33.16	43.82	24.14	44.78	79.63
Top five	60.72	68.8	51.47	83.81	95.71
IHH	957	1,279	741	1,690	3,960

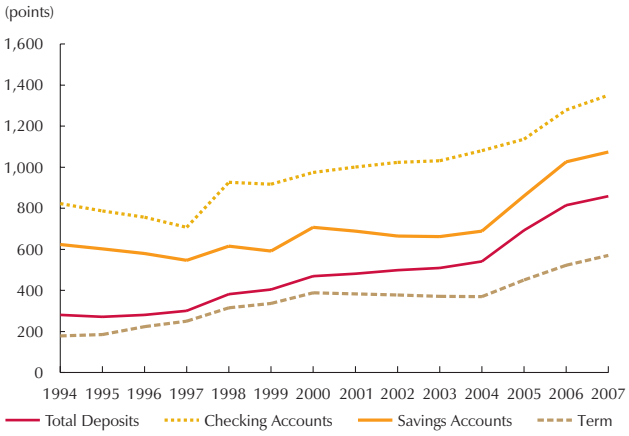
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 27

A. Share of Deposits Pertaining to the Top Five Institutions



B. Deposit HHI



Source: Financial Superintendence of Colombia, Banco de la República's calculations.

tion, it is important to note that the top five institutions held more than 80% of that portfolio by December 2007. The greatest concentration is in micro-loan portfolio, where the top five intermediaries account for nearly 95% and performance has been relatively stable ever since the portfolio was created.

The changes in the Herfindahl-Hirschman indexes (HHI)[14] also reflect a growing trend in loan portfolio concentration within the financial system. (Graph 26, Panel B). Although the portfolio HHI in December 1998 showed low concentration (382 points), by December 2007 it was very close to that of a moderately concentrated system (957 points). On the one hand, the micro-loan portfolio is the most concentrated, with a HHI of nearly 4,000 points, followed by the commercial and mortgage loan portfolios, which register a moderate level of concentration. The consumption portfolio is the least concentrated; its HHI has always been below the 1,000 point barrier.

Concentration in the deposit market is similar to that of the credit market. The top five intermediaries captured 32.11% of the deposits market in 1998, 40.94% in 2004 and 58.21% in 2007 (Table 4 and Graph 27, Panel A).

Checking and savings accounts are the most concentrated, partly because of the regulations that apply to

14 The HHI measures the level of concentration in a market. The range of the indicator is $0 < IHH < 10.000$. An index below 1,000 is considered low concentration, between 1,000 and 1, 800 is average or moderate, and above 1,800 is high concentration.

According to the HHI indicators, concentration in the deposit and loan markets is near levels that are consistent with a moderately concentrated system.

Table 4
Deposit Concentration Indicators at December 2007

	Total Deposits	Checking Accounts	Saving Accounts	Term
Share (%)				
Top two	29.63	41.76	33.25	21.94
Top five	58.21	75.66	65.35	44.52
IHH	858	1,351	1,074	570

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

the financial system.[15] Nearly 61% of the checking accounts in 1998 were concentrated among the top five intermediaries, as opposed to 67% in 2004 and 75.66% three years later. Although the CDT market is less concentrated, it grew considerably between December 1998 and December 2007. In fact, the top five intermediaries in 1998 held nearly 27% of these deposits; by 2007, the portion was close to 45%.

The HHI indicators for deposits reflect a trend towards further concentration, particularly as of late 2004 (Graph 27, Panel B). Although concentration in the deposit market is considered to be low, the HHI indicator was near 1,000 points by the end of 2007. If this pronounced trend continues, the deposit market could become moderately concentrated. The greatest degree of concentration is in checking and saving accounts, which are in the moderate range. This is similar to the result obtained by calculating the share of the top five intermediaries. The CDT market is the least concentrated, which mean it is evenly distributed among the intermediaries in the system.

In short, the financial system has become more concentrated, particularly in the wake of several mergers that occurred during the last three years. Our analysis of concentration shows that both the loan and deposit markets are on the verge of being moderately concentrated, particularly the loan market. The micro-loan and mortgage loan markets were found to be the most concentrated. In the case of deposits, the greatest concentration is in checking accounts. The micro-loan market is concentrated because there is one institution that specializes in loans of this type and it has more than half the market. The concentration in mortgage loans is explained largely by business tradition; before the financial system was deregulated, there were approximately ten institutions specialized in mortgage loans. On the

The amount of competition varies along with the different banking activities.

15 According to regulations, banks are the only institutions authorized to accept checking account deposits. In the case of saving accounts, a minimum amount of capital is required to receive deposits of that type. Some financial companies do not meet the capital requirements and, as such, cannot accept saving deposits.

In the loan and deposit markets, agents have incentives to deviate from Nash equilibrium.

deposit side, the concentration in checking accounts is due to the fact that commercial banks are the only institutions authorized to receive deposits of this type.

b. Competition[16]

Econometric methods are used in this section to identify the structure of competition characterizing the loan and deposit markets in the Colombian financial system. The figures show the deposit market is more competitive than the loan market. The results of each of these methods are presented below.

The first method is the one introduced by Panzar and Rosse,[17] which makes it possible to analyze how a company's income responds to production-factor price changes. The response is measured with an H indicator, which represents the sum of income elasticities with respect to input price changes. Its value identifies the structure characterizing the market.

The results of this analysis show that the intensity of competition varies with the different banking activities. In the case of the commercial and mortgage loan portfolios, the H-statistics show intermediaries' income varies in the same direction and proportion as the change in factor prices,[18] suggesting that perfect competition is the characteristic structure of those markets. The results for the consumption portfolio indicate the income of financial institutions varies in the same direction, on average, but in less proportion than the prices for input, which suggests the characteristic structure of this market is one of monopolistic competition.

For the loan market as a whole, we found the criterion cannot identify its characteristic structure (H = 1.2832).[19] This suggests that segmentation by portfolio type makes it impossible to capture possible price arbitrages done by intermediaries when analyzing the aggregate portfolio.

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16 For more information on methodology, see "Concentration and Competition Measurements" in the section on "Financial Stability Issues" appearing in the March 2008 edition of the *Financial Stability Report* published by Banco de la República.

17 Estimated with pooled OLS. The regression is made for the whole financial system, with annual data from 1994 to 2007.

18 The H-statistics for the commercial and mortgage loan portfolios are 1.0938 and 1.2248. From a statistical standpoint, these values are not significantly different from one.

19 Statistically speaking, the H-statistic is significantly different from one.

Table 5
Relationship between Market Power, Concentration and Risk
Dependent Variable: Lerner Index

Total Financial System	
HHI	0.21563***
	(0.02364)
Loan Portfolio Quality	0.08313***
	(0.00834)

Note: Estimated with pooled OLS. The regression is made for the whole financial system, excluding leasing companies, between May 2003 and December 2007.
*** Indicates statistical significance at one percent.
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Table 6
Conjectural Parameters for the Loan Portfolio and Deposits

γ of the loan portfolio	2.47083***
	(0.22401)
γ of deposits	-0.246199***
	(0.03338)

Estimated with full information maximum likelihood. The regression is made for the whole financial system, with annual data between 1994 and 2007.
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

To round out the results on market structure, a risk-controlled analysis was done to find the relationship between market power and concentration. A Lerner index[20] was used as a proxy of market power and we regress the lerner index on the HH1 and the NPL as a measure of risk. As expected, the results show concentration and risk have a positive relationship with market power. Hence, the suggestion is that the higher the level of concentration, the more intermediaries are able to control the market and the more likelihood of business risks being passed on to the consumer through higher costs of financial services (Table 5).

A conjectural analysis is another way to identify the market structure. In this case, the reaction functions of both the loan and deposit markets are examined. The focus is on the value of the conjectural parameter, which is an indicator of how a company reacts to changes in the competitive terms of rival companies.

The results of this analysis show the loan market operates according to a monopolistic scheme of competition[21] (Table 6). This is interesting, because it complements the result of the H-statistic analysis, where the criterion did not allow for identifying the type of competition that characterizes this market for the entire portfolio. The analysis also indicates that financial intermediaries have incentives to deviate from Nash equilibrium,[22] because they gain more by operating under this scheme.

On the deposits side, the study suggests intermediaries face a situation where competition is greater than with the Nash equilibrium.[23] This may be due to the fact that deposits are a major source of funding for financial intermediaries, who compete heavily to attract as many deposits as possible.

The deposit market operates under a more competitive arrangement than the credit market.

20 Measured as one minus the ratio of the deposit rate to the lending rate for each financial intermediary.

21 The conjectural parameter (γ) is greater than zero.

22 A situation where agents are price takers, but the economic benefits may be greater than zero.

23 γ is less than zero.

In short, the loan market is monopolistic in structure.[24] Yet, two types of structures operate within that market: monopolistic competition for the consumption loan portfolio and perfect competition for the commercial and mortgage portfolios. In contrast, the structure of the deposit market is highly competitive, as indicated by the intense rivalry to secure funding of this type. In addition to the structure operating in each financial instrument, the results with respect to the relationship between market power and concentration suggest that more concentration has a positive impact on intermediaries' market power, which is why it is important to pay attention to changes in concentration, since added market power might translate into less efficiency and, therefore, less well-being for society.

B. NON-BANK FINANCIAL INSTITUTIONS

Good performance by non-bank financial institutions is vital to financial system stability, not only because they manage a large amount of resources from the public (mainly households), but also because they have close ties to financial groups in the capital market. This section looks at the major NBFIs in Colombia, including pension fund managers (PFM), insurance companies, collective portfolios and stock brokerage firms (SBF).

NBFI portfolio growth slowed in recent years, because the markets where NBFI investments were concentrated became less profitable. The total value of the NBFI-managed portfolio at December 2007 accounted for 22.6% of GDP, as opposed to 24.5% two years earlier (Table 7). Mandatory pension funds (MPF) are the only NBFI that have grown more than proportionally in relation to the economy.

Portfolios with a high concentration in assets, such as government bonds and local stocks, are a common characteristic of NBFI. This makes them particularly sensitive to any movement in local prices.

The less favorable situation on internal markets, coupled with revaluation and interest rate hikes in the economy, have prompted NBFI to invest more of their assets in financial instruments, particularly time certified deposits (CDT in Spanish).

NBFI portfolio growth slowed in recent years, because the markets where NBFI investments were concentrated became less profitable.

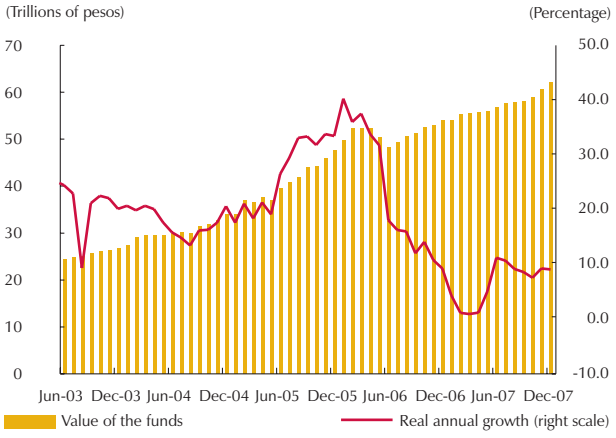
24 This conclusion refers to the result of conjectural analysis, since the H–statistic criterion is not conclusive for this case.

Table 7
Financial Institutions' Investment Portfolio

	2004		2005		2006		2007	
	Trillions of pesos	Percentage of GDP	Trillions of pesos	Percentage of GDP	Trillions of pesos	Percentage of GDP	Trillions of pesos	Percentage of GDP (proj)
Credit Institutions								
Investments	36.93	14.33	43.93	15.40	37.65	11.72	34.95	9.67
Loan portfolio	63.93	24.80	75.31	26.40	100.63	31.34	127.73	35.32
Total: credit institutions	100.86	39.13	119.24	41.79	138.28	43.06	162.68	44.99
Non-bank Financial Institutions								
Mandatory pension funds	26.45	10.26	36.58	12.82	43.17	13.47	51.11	14.14
Voluntary pension funds	4.49	1.74	7.33	2.57	7.15	2.23	7.11	1.97
Severance-pay funds	3.13	1.21	3.71	1.30	3.77	1.17	3.82	1.06
General insurance	2.84	1.10	3.62	1.27	3.35	1.04	3.62	1.00
Life insurance	4.38	1.70	5.82	2.04	6.19	1.93	6.96	1.92
OMF	4.52	1.75	5.33	1.87	3.79	1.18	4.33	1.20
SMF	1.93	0.75	3.12	1.09	1.54	0.48	1.82	0.50
Brokerage firms and investment managers	2.22	0.86	4.23	1.48	3.12	0.97	3.13	0.86
Total: non-bank financial institutions	49.96	19.38	69.75	24.45	72.07	22.48	81.89	22.65
Total	**150.82**	**58.51**	**188.99**	**66.24**	**210.35**	**65.54**	**244.58**	**67.64**

(Proj) Projected.
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 28
Real Pension Fund Value and Growth



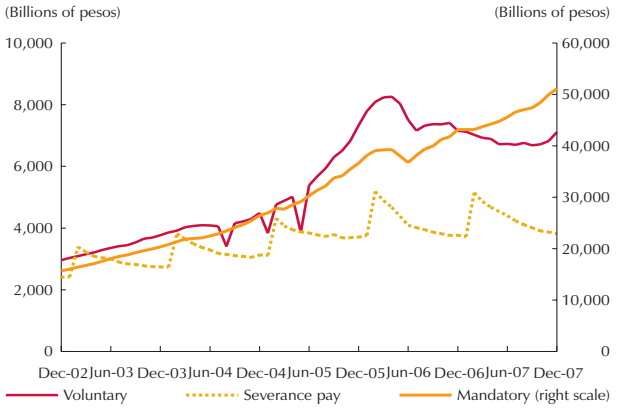
Source: Financial Superintendence of Colombia. Banco de la República's calculations.

1. Pension Fund Managers (PFM)

a. Portfolio Value and Profitability

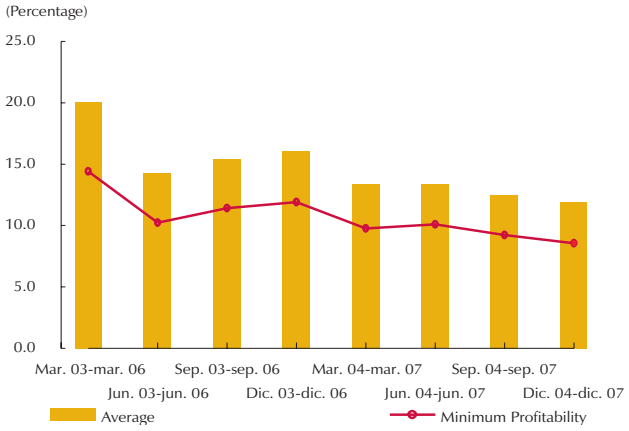
PFM-managed portfolios are the largest and most important of the NBFI portfolios. The amount of resources managed by PFM came to Col$62 t, which represents a real annual growth rate of 8.53%. This is a definite slowdown compared to recent years (Graph 28). The increase has been fueled mainly by MPF, since the value of voluntary pension funds (VPF) and severance-pay funds (SF) has been relatively constant in recent years (Graph 29). This performance is explained by the profitability of these portfolios, which is currently low,

Graph 29
Pension Fund Portfolio Value



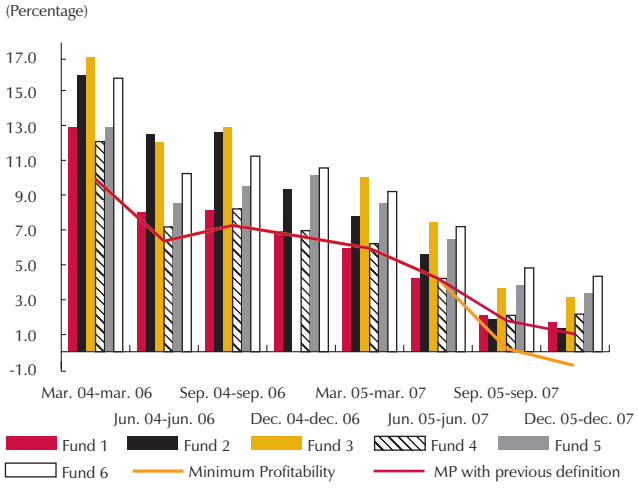
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 30
Average Tri-annual and Minimum PFM Profitability
(Mandatory Pension Funds)



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 31
Bi-annual and Minimum Profitability: Severance-pay Funds



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

coupled with the possibility of making intermediate withdrawals.

Reduced profitability is the main reason for the slowdown in PFM portfolio growth. In the case of MPF, the tri-annual return (the reference period used to calculate the minimum return) fell by nearly 4 pp in 2007 compared to 2006 (Graph 30). The slump was even more evident in the case of SF; their bi-annual average was down by more than 6 pp with respect to 2006 (Graph 31).

However, despite being less profitable, the MPF are still a long way from failing to meet their minimum-profitability requirement. The decline SF yields created a situation where some of these funds failed to meet that requirement [25] and had to use their own capital to cover the difference. As of July 2007, a change in the formula used to calculate the minimum-profitability requirement has made it less restrictive,[26] even placing it at negative levels for SF. Had the formula for calculating required minimum SF profitability not been changed, two funds in December 2007 would have been at least 1% shy of defaulting on that limit (Graph 29).

There are several reasons why the minimum profitability requirement began to be restrictive for SF, before MPF. i) The tendency in SF withdrawals prompts PFM to invest in extremely short-term instruments and to sell-off positions at times that are not necessarily the best. ii) Added concentration in local assets

25 In March, one SF failed to meet the minimum profitability requirement. In June, two SF were in the same situation.

26 Before the change, the required minimum profitability for MPF was 70% of a synthetic portfolio, half of which (50%) was comprised of the average of the funds and the other half (50%) by a local fixed- income index and two variable income components (one local and the other external). Presently, in the case of MPF, the new requirement is defined as the minimum between 70% of the return on the aforementioned synthetic portfolio and the return on the synthetic portfolio minus 260 bp. For the SF, the new requirement is defined as the minimum between 75% of the return on the synthetic portfolio and that return minus 220 bp.

The PFM are concentrated in highly and positively correlated local assets.

means these funds are more exposed to government bonds. In December 2007, 50.46% of the SF portfolio was in government bonds as opposed to 45.5% of the MPF portfolio. iii) The 24-month reference period used to calculate minimum profitability gives more importance to current profitability compared to the reference period for MFP, which is 36 months.

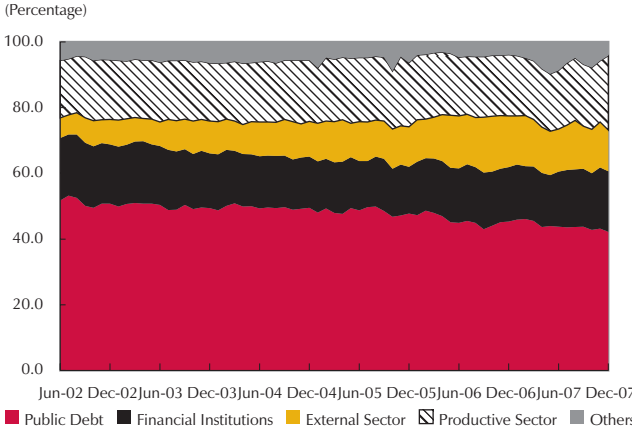
Moreover, the regulatory system offers no incentive for pension funds to raise their profitability beyond the require minimum. A commission system based exclusively on contributions offers no incentive to make these funds more profitable for the sake of future retirees, while a commission system based on yield creates a situation where added profitability can be of tremendous benefit to the MPF and to future pensioners (See Box 3 and "Financial Stability Issues").

Having more diversified portfolios that generate a larger volume of pension savings at less risk, and reflect the diverse range of risk profiles among savers within the system, is both desirable and necessary. A multi-fund scheme, plus substitution of the current commission system for one based on yields (or surplus returns on a reference portfolio), as proposed in the financial reform, are important steps in that direction.

b. Portfolio Composition, by Issuer and Maturity

The PFM are noted for their concentration in highly and positively correlated local assets. This makes them extremely sensitive to changes in interest rates that affect the price of those assets. A look at PFM exposure by type of issuer reflects that concentration, with more than 40 % of the portfolio invested in government bonds (Graph 32).

Graph 32
Pension Fund Portfolio Composition, by Issuer

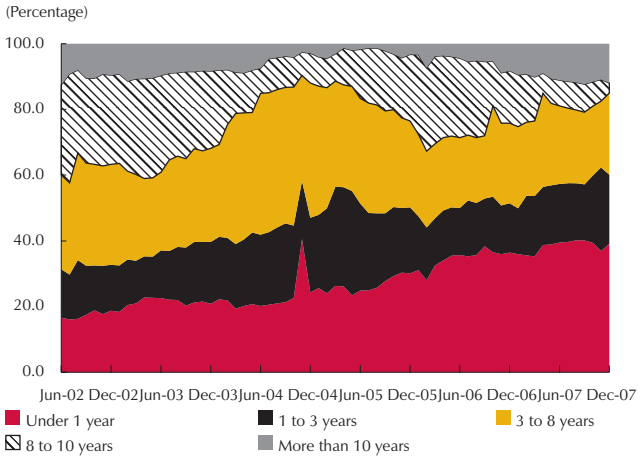


Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Despite being highly exposed to government bonds, there has been a shift in PFM portfolio composition. Government bonds accounted for 45.3% at the end of 2006 and 42.2% in December 2007. Investments with an increasing share of the PFM portfolio were mainly in the productive sector, going from 18.6% to 22.6% during the same period. Added investments in stocks and private capital funds are some of the instruments that explain the change in composition.

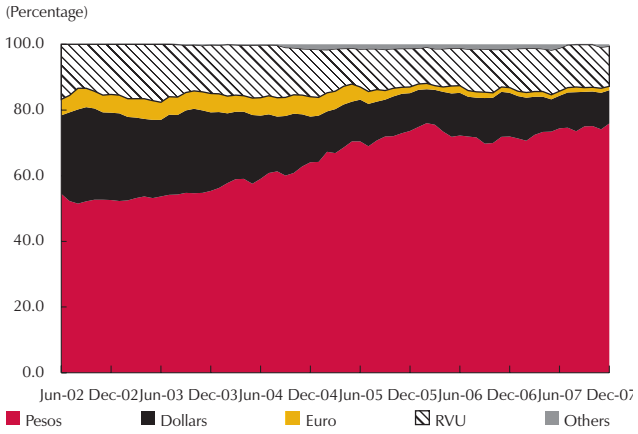
Furthermore, a high percentage of PFM investments are concentrated in short-term instruments (Graph

Graph 33
Pension Fund Portfolio, by Maturity



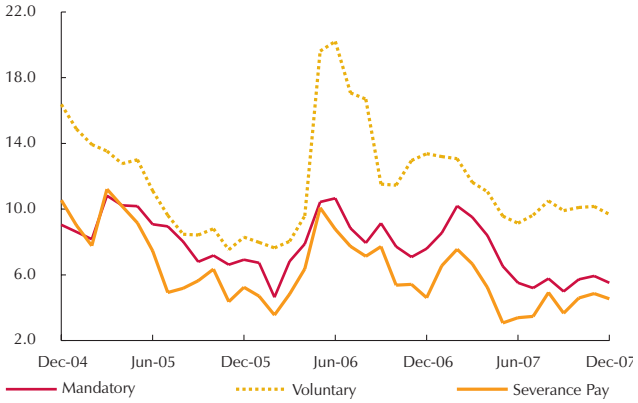
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 34
Pension Fund Portfolio Composition, by Currency



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 35
Percentage of Portfolio Value Denominated in Foreign Currency, without Coverage



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

33); in fact, only 11.9% are in securities that mature in more than 10 years. Given the long-term nature of future pension payments, the make-up of PFM assets should be more in keeping with those obligations. However, the market's limited supply of long-term instruments, coupled with the presence of certain regulatory distortions, offer no incentive for PFM to construct a portfolio that is more consistent with their investment objectives and horizons.

The Financial Superintendence of Colombia modified the investment rules to help implement the multi-fund scheme. The possibility of investing in new instruments outside the country and in the local market, coupled with an increase in the limits on investment abroad[27] (which had begun to be restrictive in the case of three MPF) represent definite progress towards more diversification in their portfolios for the sake of future pensioners.

c. Portfolio Composition by Currency

The composition of the PFM portfolio in terms of currency saw virtually no change during the second half of 2007. Most of the investments are denominated in pesos (75.9% in December). RVU-referenced assets accounted for 12.2% and 10.1% of the portfolio was denominated in dollars (Graph 34).

In terms of exchange exposure, the second half of the year witnessed almost no change in the FPM investment portfolios (Graph 35). The variation in the limit on the uncovered position in foreign currency (from 20% to 30% of the value of the fund) has had no effect on that exposure, which was equivalent to 5.5% in December 2007 in the case of MPF.

When the exchange rate appreciates, the PFM exposure levels would be expected to remain low, which could

27 The limit was increased from 20% to 40% in February 2008.

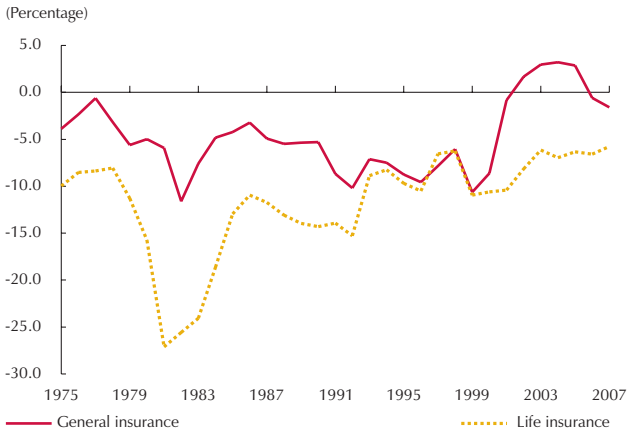
exert more pressure on revaluation. In the event of depreciation in the exchange rate, the PFM could increase their exchange exposure abruptly, which would accelerate peso depreciation. With the current 30% limit on exchange exposure, the MPF could purchase nearly US$6.2 billion (b), based on their registered exposure at December 2007, which clearly would have an immediate impact by raising the exchange rate. The size of these agents, the extent of their growth and their procyclicity in this market may aggravate pressure on the exchange rate.

Moreover, if the reference portfolio were defined exclusively as the average of the system, which would serve to determine the minimum level of profitability and commissions (as currently proposed in the financial reform), the "herd" effect among these portfolios would increase, which would add to their procyclical nature.

2. Life and General Insurance

The portfolio pertaining to the insurance companies came to Col$10.7 t, which barely represents a real annual increase of 5.0%. This limited growth is explained by the poor performance of the assets in which most insurance company investments are concentrated. The technical margin[28] in the insurance industry remains near zero in the case of general insurance companies (GIC), but is negative for life insurance companies (LIC) (-5,8%) (Graph 36). This demonstrates certain problems in the insurance business, particularly in the life insurance branch, since the premiums do not cover the claims the industry must contend with. Issued premiums for LIC were up by 4.77% and settled claims by 11.95% in real terms. However, because there is a considerable difference between the time in which premiums are issued and claims are paid, particularly in this segment of the industry, a slightly negative technical margin is sustainable.

Graph 36
Technical Profit Margin



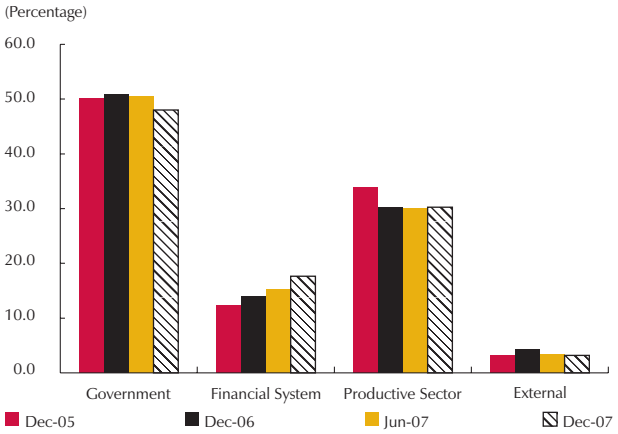
Source: Fasecolda.

The fact that the LIC portfolio is so concentrated on local assets has made the profitability of those companies more volatile compared to GIC portfolio profitability. As illustrated in Graph 37, panels A and B, portfolio diversification among the LIC is less than with the GIC. In the case of the former, 48% of their investments

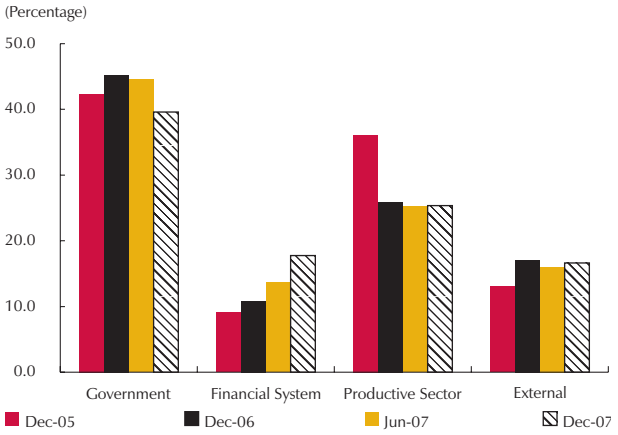
28 The technical margin is the ratio of technical earnings to issued premiums. It reflects the performance of the insurance business.

Graph 37
Investment Portfolio, by Issuer

A. Life Insurance Companies

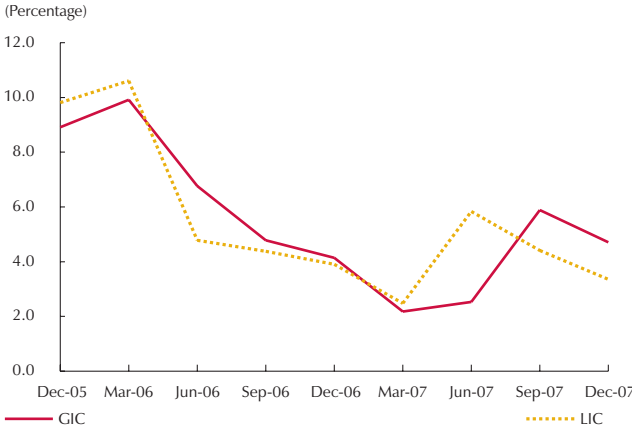


B. General Insurance Companies



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 38
ROA for Life Insurance Companies (LIC) and General Insurance Companies (GIC)



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

are in government bonds as opposed to only 3.2% in foreign paper. In the case of GIC, these same investments account for 39.6% and 16.6%, respectively. The evolution in ROA, by type of insurance company, has declined for LIC as well as GIC, but was more pronounced in the case of LIC (Graph 38).

Within insurance company portfolios, there has been a shift from government bonds and productive sector instruments to investments in the financial sector. At December 2007, they accounted for 17.6% of the LIC portfolios and 17.8% of the GIC portfolios. The increases in the DTF and the less than favorable situation with respect to TES interest rates and stock prices are behind this change.

Although the returns on the investment side are not favorable, the situation with reserve cover – measured as the ratio of investments to technical reserves in the sector –remains acceptable, exceeding 100% for most of the companies. However, this ratio is well below what it was two years ago. In December 2007, it was 113% for LIC and 98.3% for GIC; these same ratios were 132% and 122%, respectively, in December 2005.

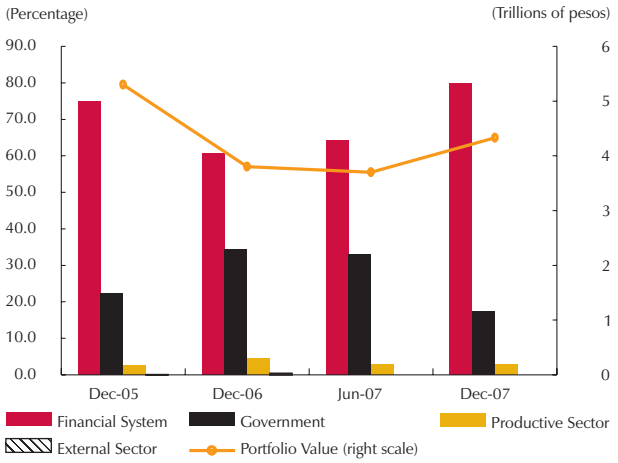
3. Collective Portfolios[29]

Funds that manage third-party resources are about to be subject to new rules and regulations for mutual funds. This new category includes ordinary mutual funds (OMF) and special mutual funds (SMF) managed by trust companies, as well as security and investment funds managed by brokerage firms and financial management companies. The funds managed by trust companies are analyzed in this section.

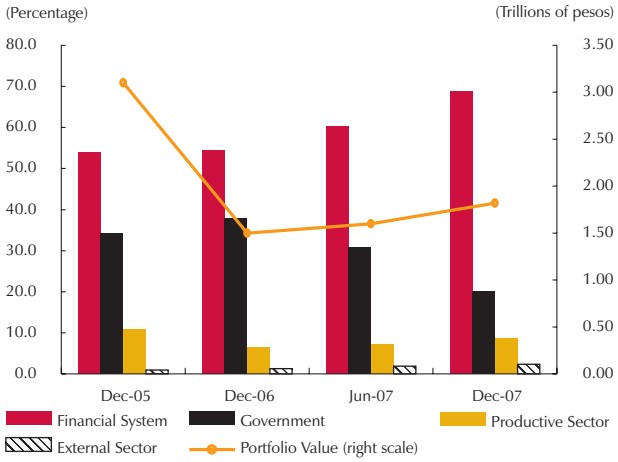
29 As of June 2007, all deposit or money management mechanisms involving funds raised from a group of persons for a common economic purpose are known as collective portfolios (Decree 2175 issued in 2007 by the Ministry of Finance and Public Credit).

Graph 39
Portfolio Value and Components, by Issuer

A. Ordinary Mutual Funds

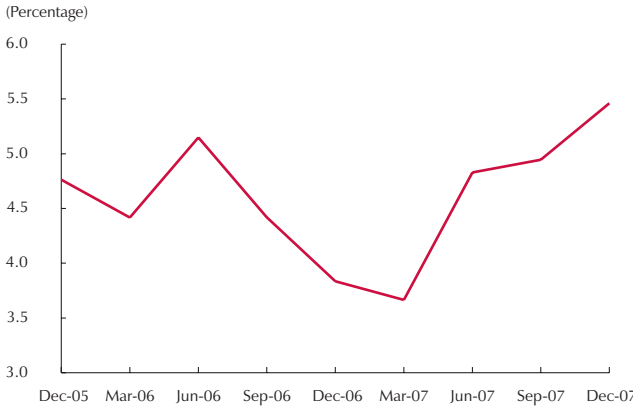


B. Special Mutual Funds



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 40
ROA of OMF



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

The new regulations define the different types of collective portfolios and the guidelines for their management. For example, money market funds, real estate funds, hedge funds, speculative funds and stock funds are categorized as open-ended collective portfolios.[30] As to closed-ended collective portfolios,[31] private capital funds are the most important and, recently, have developed a great deal (there are now eleven private capital funds in operation).

In all, the collective portfolios managed by trust companies were valued at Col$6.1 t, which represents a real annual increase of 9.7%. Most of this portfolio corresponds to the MPF, which accounted for Col$4.3 t, with a variation of 7.7%. Within the NBFIs, these portfolios are highly exposed to instruments in the financial system, primarily certified deposits (CDT in Spanish). The proportion of these instruments increased substantially during the past year and was 79.8% in December 2007 for the OMF, after having been 60.7% in December 2006. This shift in composition was to the detriment of government instruments, which declined sharply from 34.4% to 17.3% of the value of the portfolio during the same period (Graph 39).

The high degree of exposure to financial system securities, coupled with a growing trend in DTF (fixed term deposits rate), has made these portfolios more profitable. ROA was 5.5%, which has been the higthest for the last two years (Graph 40).

4. Brokerage Firms

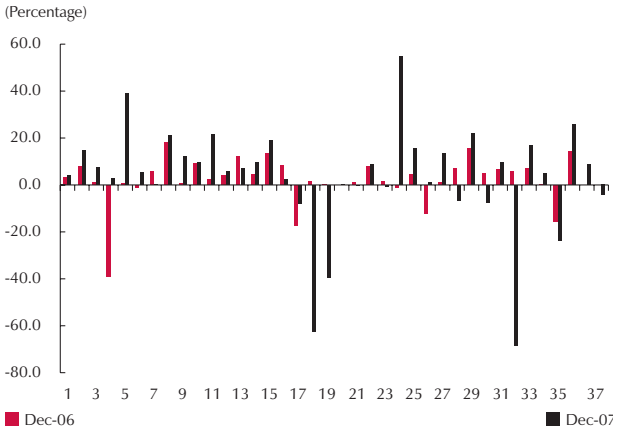
In terms of their own position, the portfolios of brokerage firms (BF) have been affected by financial

30 They are open-ended, because shares may be redeemed at any time.

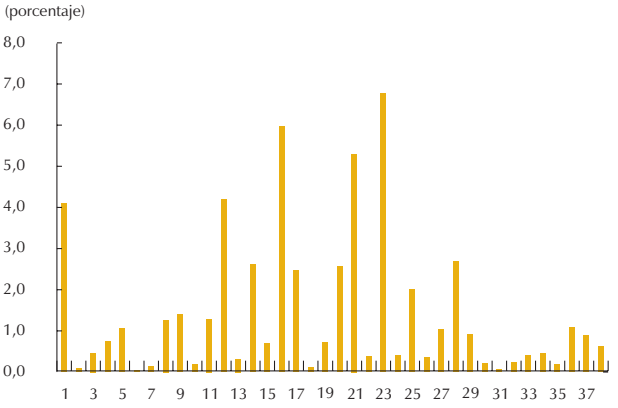
31 They are closed-ended, because shares are redeemable only at the end of a specified period.

Graph 41

A. Brokerage Firms' ROA



B. Brokerage Firms' Investments/Equity (Dec-2007)



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

market volatility. They have investments valued at Col$3.3 t, which represents a real annual decline of 15.2%. However, BF profits performed better than in 2006, having increased by a real annual rate of 27.5% to Col$96.8 b.

At the individual level, ten brokerage firms registered negative returns at year's end. Within that group, four incurred loses equal to more than 10% of their assets (Graph 41, Panel A). Another concern is that the brokerage firms with negative ROA included four of whose investments represent more than 200% of their equity (Graph 41, Panel B). This makes them particularly sensitive to changes in local markets.

In short, 2007 was less favorable for NBFI investments than past years. The limited supply of instruments in the local market, coupled with several regulatory distortions, meant little diversification in their portfolios. Consequently, they are particularly susceptible to negative shocks in local markets, where prices are high and positively correlated. The uncertainty in international markets, revaluation of the exchange rate, the interest rate hikes and a less than favorable situation in the government bond and stock markets prompted most NBFI to shift the composition of their portfolios in favor of financial sector instruments, mainly CDs. Due to less profitability, some severance-pay funds were unable to meet their minimum profitability requirements. This reflects a problem with the incentive scheme used to manage the portfolios of these funds.

Box 1
INTERNATIONAL INDICATORS

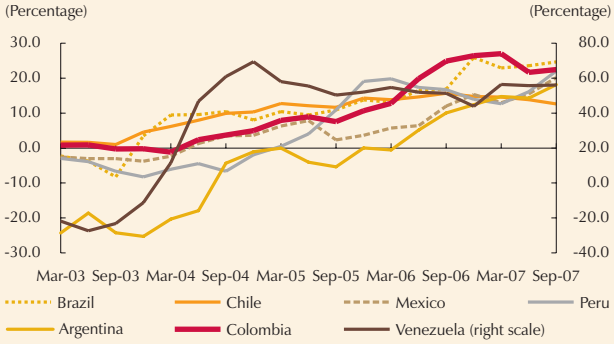
Several major indicators of the banking system in Colombia and other Latin American countries[1] are analyzed in this section. The objective is to compare our system to international standards, with respect to indicators of efficiency, profitability and portfolio quality. There have been no significant changes in the general situation of Latin America's financial systems; however, there are several tendencies that should be pointed out.

Real portfolio growth is increasing again in countries such as Brazil, Argentina, Peru and Mexico (Graph B1.1). The last two experienced the most significant growth in the region with respect to the outcome in March 2007, having reported respective increases of 9.3 and 7.1 percentage points (pp).[2] On the other hand, Venezuela continues to exhibit the highest growth rate in Latin America (56.08%). In the case of Colombia, the portfolio showed a rate close to 22%, which is 4.5 pp less than in March 2007.

In terms of loan-portfolio quality, the indicators are still at the lower levels. As illustrated in Graph B1.2, Chile and Venezuela have the best indicators, with a non-performing portfolio of 0.8% and 1.28%, respectively. Brazil is the country showing the best improvement, having achieved an indicator of 5.95% by September 2007, which is 44 b.p. less than the figure reported in March 2007. The reduction in the non-performing portfolio is primarily responsible for this decline. Colombia continues to exhibit relatively stable behavior; nonetheless, it has the second highest value in the sample.

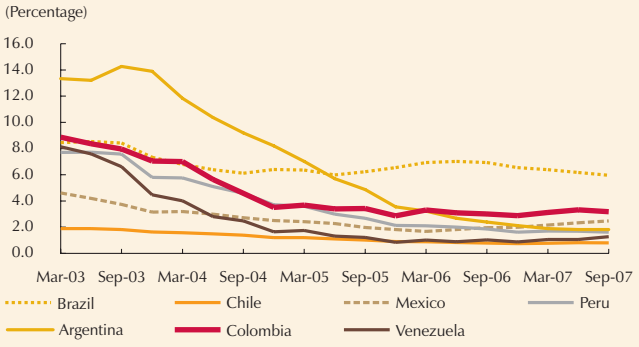
As to coverage, the indicators for Argentina, Mexico and Venezuela declined sharply, particularly for Venezuela, which experienced a reduction of 38.4 pp, having gone from 210.5% in March 2007 to 172% in September of that year. Mexico is the country with the sharpest downturn as of March 2006. Colombia is the only country in the sample to register more non-performing portfolio coverage compared to March (Graph B1.3).

Graph B1.1
Real Annual Gross Loan Portfolio Growth Rate



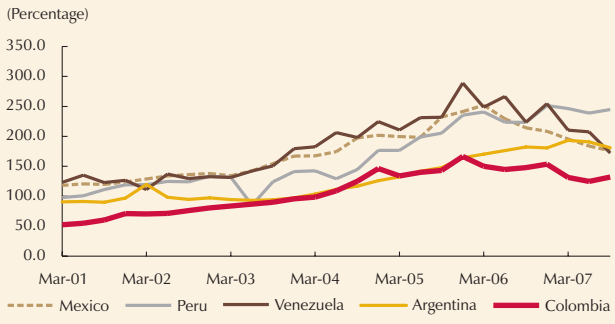
Source: The banking superintendents in each country, Banco Central do Brasil and Banco Central de la República de Argentina, Banco de la República's calculations.

Graph B1.2
Loan Portfolio Quality:
Non-performing Portfolio/Gross Loan Portfolio



Source: The banking superintendents in each country, Banco Central do Brasil and Banco Central de la República de Argentina, Banco de la República's calculations.

Graph B1.3
Coverage: Provisions/Non-performing Portfolio



Source: The banking superintendents in each country, Banco Central do Brasil and Banco Central de la República de Argentina, Banco de la República's calculations.

1 The countries included are Argentina, Brazil, Chile, Mexico, Peru and Venezuela. The figures analyzed are from March 2003 to September 2007.

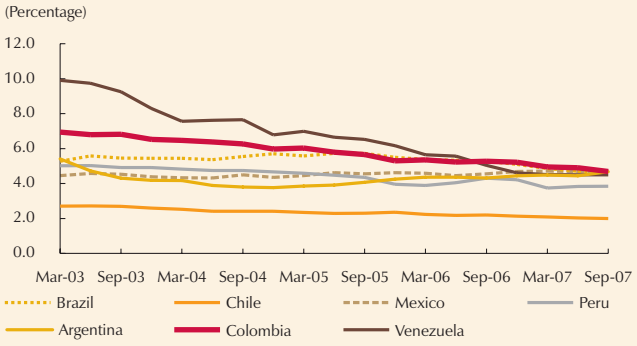
2 Real portfolio growth for these countries in September 2007 came to 22.03% and 20.17%, respectively.

The efficiency indicator remains stable. Peru and Argentina were the only countries to register a slight increase in this indicator with respect to the one registered in March 2007 (Graph B1.4). Unlike the previous six months, efficiency in Peru was down as a result of a more than proportional increase in outlays for management and labor compared to assets. Colombia, on the other hand, improved more than any other country in the group, going from 4.95% in March 2007 to 4.69% in September 2007. Chile, for its part, continued to report the best results in terms of efficiency (2.0%).

The margin spread has remained stable for all the countries (Graph B1.5). Venezuela saw the biggest rise in this indicator, with an increase of 19 b.p. compared to March 2007. Brazil still has the highest margin in the sample (10.19%) and Colombia, the lowest (6.38%).

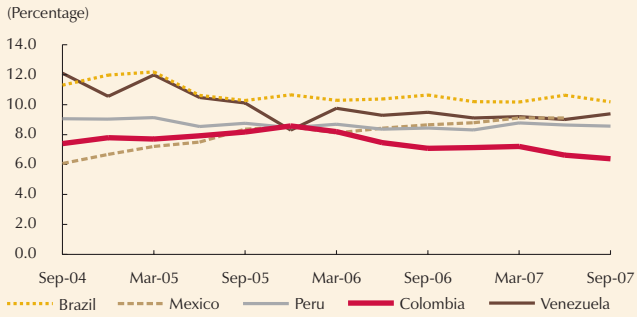
In short, the financial systems in Latin America experienced no major changes during the first three quarters of 2007 and, in general, loan-portfolio-quality levels remained historically low, accompanied by a greater degree of efficiency.

Graph B1.4
Efficiency: GAL/Assets



Source: The banking superintendents in each country, Banco Central do Brasil and Banco Central de la República de Argentina, Banco de la República's calculations.

Graph B1.5
Margin Spread



Source: The banking superintendents in each country, Banco Central do Brasil and Banco Central de la República de Argentina, Banco de la República's calculations.

Box 2
ACCESS TO FORMAL AND INFORMAL FINANCIAL SERVICES IN COLOMBIA

Recently, the subject of access to financial services has become extremely important.[1] A number of studies in Colombia show extremely limited access to formal credit for certain sectors of the population, citing structural shortcomings in financial markets and the difficulty in obtaining information on the creditworthiness of persons with limited access as the main reasons why.

This section examines access to financial services for households and micro-enterprises in the three lowest socio-income brackets. The objective is to analyze the different types of financial services and instruments used by the low-income population, including formal and informal financial services.[2]

The sample used for this study represents 7,171,294 households in the three lowest socio-income brackets, which characteristically average Col$943,867 in monthly expenses. The micro-enterprises represent a population of 1,609,776, have two employees, on average, and nearly 21% have been operating for less than one year.

There are three types of loans: formal commercial, formal financial and informal. Formal commercial loans are granted by companies, suppliers, shopkeepers and commercial establishments. Formal financial loans fall within the realm of credit institutions, particularly banks, cooperatives, family subsidy agencies and foundations or non-governmental organizations (NGO). The main suppliers of informal financial services are pawn shops, loan sharks (usurers), friends, neighbors and relatives. The informal-savings category includes household members, chains of friends, *natilleras* , pyramids and family funds.[3]

According to figures from a bancarisation report published in June 2007 by Asobancaria (Table B2.1), more than 15 million Colombians have access to at least one formal financial product. This amounts to 35.1% bancarisation of the total population. As of July 2006, the number of persons who use such products increased by more than two million, with savings accounts and consumption loans registering the most penetration.

Table B2.1
Bancarisation in Colombia, June 2007

Product	Persons			Percentage of the Population			Companies		
	Jul-06	Jun-07	Growth	Jul-06	Jun-07	Growth	Jul-06	Jun-07	Growth
Savings account	12,296,741	14,905,752	0.21	28.67	34.75	0.21	183,269	243,760	0.52
Checking account	1,340,128	1,462,331	0.09	3.12	3.41	0.09	253,361	268,950	0.06
Total portfolio	3,230,992	4,011,626	0.24	7.53	9.35	0.24	87,867	104,382	0.19
Commercial loan portfolio	290,323	347,264	0.20	0.68	0.81	0.19	75,137	90,623	0.21
Consumption loan portfolio	2,335,399	3,041,909	0.30	5.45	7.09	0.30	15,620	16,687	0.07
Home loan portfolio	543,536	542,380	(0.00)	1.27	1.26	(0.01)	878	817	(0.07)
Micro loan	482,836	586,199	0.21	1.13	1.37	0.21	2,337	2,562	0.10
Credit Card	2,774,361	3,584,526	0.29	6.47	8.36	0.29	42,658	47,015	0.10

Source: Asobancaria, *Reporte de bancarización a junio de 2007*, January 2008.

1 This section is based on *El acceso al crédito informal y a otros servicios financieros informales en Colombia*, a study by Econometría S. A. We appreciate having been given authorization to use the figures and wish to thank Beatriz Marulanda and Mariana Paredes for their comments and suggestions.

2 For the purpose of this analysis, the authors looked at the results of the survey on financial services done by Econometria S.A., which was applied to a random sample of 600 households and 600 micro-enterprises in eight urban and eight rural municipalities.

3 Chains of friends offer high yields for bringing in a specific amount of money and attracting a particular group of investors. *Natilleras* are formed by groups of investors who contribute small weekly installments and invest them in money-making activities to increase their funds and to achieve common objectives. Pyramids promise a high return on money deposited for a specific period of time and, in some cases, necessitate attracting a particular group of investors. Unlike a real investment, payments to current investors depend on the contributions made by new investors.

Credit cards and consumption loans account for a growing share of the bancarisation process. In fact, between July 2006 and June 2007, the number of persons with access to products of this type increased respectively by more than 810,000 and 706,000 (Table B2.2).

However, the situation is very different in the lower income brackets where people rely on a variety of formal and informal sources of funding. Seventy-nine percent of low income households have resorted to informal loans on at least one occasion, mainly loans from friends, neighbors and relatives (in 72.8% of the cases) and, to a lesser extent, funding from money lenders (usurers) and pawn shops (Table B2.3).

The main sources of formal credit, in declining of importance, are commercial loans (62% of households) and formal financing (46% of households). This is evidence of the fact that people tend to combine several types of instruments, although informal loans remain the most predominant.

When analyzing the population by spending quartiles and socio-economic brackets, we find that more than 75% of the households in each spending quartile and socio-economic bracket resort to informal lending. The higher the spending quartile and socio-economic bracket, the more prevalent formal financial lending becomes (Table B2.4). In other words, if the spending level is used as a proxy for income, the higher the income, the more access to formal financial services.

As noted, most households and micro-enterprises that have borrowed money in the past combine formal and informal instruments. The evidence shows that over 55.5% of households used mixed loan portfolios. Relying exclusively on loans from friends is quite common (10.79%) in the lowest three income brackets (1, 2 and 3), which confirms their importance as a source of informal credit (Table B2.5).

Although informal loans predominate among households (35% of the market), the amounts are minimal and account for only 8% of the size of a loan. In the case of micro-enterprises, the distribution is more even: 28% have informal loans, which account for 20% of the total amount (Table B2.6).

When analyzing the reasons why households and micro-enterprises prefer one type of financing or another, we find that banks are considered less costly, but gaining access to loans from friends, neighbors or relatives and commercial establishments is easier. Timeliness is the most important criterion in the case of money lenders and family subsidy agencies (Graphs B2.1 and B2.2).

Table B2.2
Bancarisation Matrix, 2007

Products	Persons		Percentage of the Population	
	Jul-06	Jun-07	Jul-06	Jun-07
1. At least one savings account and nothing else	7,944,339	9,077,732	18.5	21.2
2. At least one checking account and nothing else	86,632	69,53	0.2	0.2
3. At least one loan and nothing else	172,495	171,341	0.4	0.4
4. At least one credit card and nothing else	243,494	243,394	0.6	0.6
5. Checking and savings accounts	220,06	223,346	0.5	0.5
6. Loan and savings account o	1,439,482	1,708,327	3.4	4.0
7. Savings account, checking account and credit card	598,659	760,688	1.4	1.8
8. Credit card and checking accoun	25,078	15,548	0.1	0.0
9. Loan and credit card	39,461	34,879	0.1	0.1
10. Credit card, savings account and checking account	157,685	150,047	0.4	0.4
11. Credit card, savings account and loan	729,197	1,093,003	1.7	2.6
12. Credit card, checking account and loan	31,005	23,378	0.1	0.1
13. Savings account, checking account and loan	188,012	193,707	0.4	0.5
14. Checking account and loan	32,256	25,367	0.1	0.1
15. Savings account and credit cardo	934,47	1,247,857	2.2	2.9
Persons with at least one product	12,842,325	15,038,144	29.9	35.1

Source: Asobancaria, *Reporte de bancarización a junio de 2007*, Janaury 2008.

Table B2.3
Percentage of Households and Micro-Enterprises in the Lowest Two Brackets that Have Resorted to Credit at Some Point, 2007

	Quantity		Percentage	
	Households	Micro-enterprises	Households	Micro-enterprises
Formal Commercial Loan	4,488,894	671,236	62.6	41.7
Company where they work	1,677,980		23.4	0.0
Supplier	604,481	604,481	6.9	37.6
Shopkeeper	2,530,206		35.3	0.0
Commercial establishment	2,048,927	99,862	28.6	6.2
Formal Financial Loan	3,303,332	854,368	46.1	53.1
Family subsidy entity	280,902	30,164	3.9	1.9
Cooperative	1,504,450	220,890	21.0	13.7
Bank	2,037,949	493,410	28.4	30.7
Foundation or NGO	432,490	331,625	6.0	20.6
Informal Loan	5,663,787	947,436	79.0	58.9
Money lender	1,765,864	464,493	24.6	28.9
Pawn shop	1,633,787	77,349	22.8	4.8
Friends, neighbors or relatives	5,218,640	798,092	72.8	49.6
Total	6,882,184	1,341,397	96.0	83.3

Source: Econometría S.A., "El aceso al crédito informal y a otros servicios financieros informales en Colombia," January 2008.

Table B2.4
Percentage of Households in Each Bracket or Quartile that Have Resorted to Credit at Some Point, By Source, 2007

	Spending Quartile				Income Bracket		
	1	2	3	4	1	2	3
Commercial loan (%)	50.7	65.8	66.9	61.7	64.6	60.5	63.5
	(6.6)	(5.8)	(7.1)	(7.2)	(5.9)	(4.3)	(7.0)
Financial loan (%)	26.8	40.7	31.3	63.3	44.3	41.1	50.1
	(5.6)	(6.3)	(6.1)	(6.6)	(6.6)	(4.5)	(6.9)
Informal loan (%)	80.5	76.9	83	76.8	83	76.9	79.2
	(4.3)	(5.2)	(4.6)	(5.5)	(4.2)	(3.7)	(5.0)

Note: Standard error in parenthesis
Source: Econometría S.A., "El aceso al crédito informal y a otros servicios financieros informales en Colombia," January 2008.

Table B2.5
Breakdown of the Portfolio of Financing Sources Used by Households Resorting to Credit at Some Point, 2007

Bracket	Only formal Commercial Loans	Only Formal Financial Credits without NGO	Only NGO	Only Informal Loans without Friends	Only Friends	Combination without Friends	Combination with Friends	None
One	6.88	2.45	1.88	1.84	9.31	12.65	61.48	3.52
	(2.85)	(1.90)	(1.86)	(1.00)	(3.27)	(3.77)	(5.93)	(0.99)
Two	5.20	6.13	0.00	1.75	12.10	10.39	56.72	7.71
	(2.02)	(2.12)	0.00	(0.85)	(3.04)	(2.59)	(4.44)	(2.21)
Three	2.76	8.59	0.82	1.65	10.33	8.40	65.86	1.59
	(1.86)	(3.94)	(0.82)	(1.00)	(4.23)	(2.82)	(6.18)	(0.79)
Total	4.25	6.78	0.70	1.72	10.79	9.76	61.98	4.03
	(1.25)	(2.11)	(0.50)	(0.60)	(2.41)	(1.78)	(3.60)	(0.92)

Note: Standard error in parenthesis.
Source: Econometría S.A., "El aceso al crédito informal y a otros servicios financieros informales en Colombia," January 2008

Clearly, when the need for credit is urgent, the largest percentage of people turn to friends, neighbors, relatives or moneylenders (usurers), even though it is more costly (267.76% average effective annual interest for households that resort to moneylenders). However, for major projects that require large amounts of capital, they prefer banks and credit establishments, given the cost factor (Table B2.7).

Informal savings were found to be the most common, but particularly in the lower spending quartiles (94.61% of those in quartile 1 keep their money at home). As illustrated in Table B2.8 and Graph B2.3, the use of formal deposit-taking services is greater in quartiles 3 and 4. In fact, it increases from 1.12% in quartile 1 to 32.99% and 49.86% in quartiles 3 and 4, respectively.

In short, the low-income population uses formal and informal financial services to meet its deposit and financing needs. Not having access to formal services obliges this segment of the population to resort to informal instruments, which can be very expensive and also quite risky.

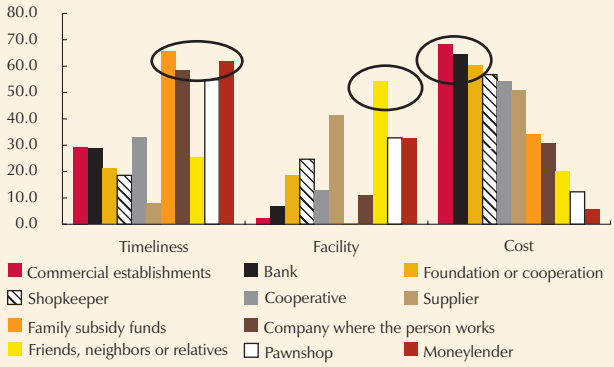
Finally, the intermediation costs charged to this segment of the population far exceed the usury rates that govern financial intermediaries. This makes it difficult for a larger percentage of low-income borrowers to participate in the formal financial system.

Table B2.6
Total Amount and Number of Loans to Households and Micro-enterprises Currently with a Loan, 2007

	Households	Micro-enterprises
Formal commercial loans	1,053,169	1,786,543
Company where they work	1,576,503	
Supplier	718,958	1,830,770
Shopkeeper	68,736	
Commercial establishment	2,260,984	1,317,002
Formal financial loan	5,500,265	6,043,343
Family subsidy entities	3,555,195	6,995,684
Foundation, financial NGOs	1,618,422	3,056,445
Cooperatives	5,220,913	6,547,338
Banks	6,961,529	7,205,844
Informal Loans	486,667	2,722,187
Friends, neighbors or relatives	548,681	3,179,115
Moneylenders	394,135	1,290,110
Pawnshops	393,836	845,198
Total Credit	2,154,645	3,834,037

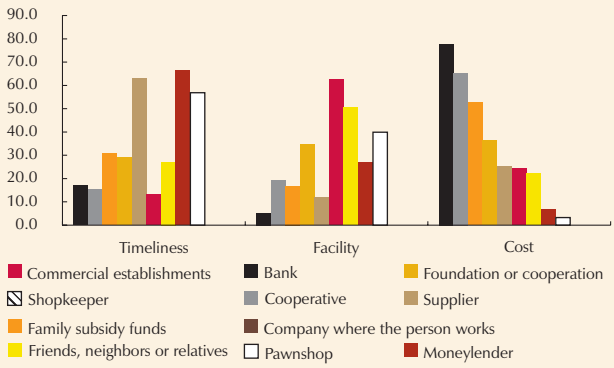
Source: Econometría S.A., "El aceso al crédito informal y a otros servicios financieros informales en Colombia," January 2008.

Graph R2.1
Reason Why Household Prefer One Source of Funding to Another



Source: Econometría S.A., "El aceso al crédito informal y a otros servicios financieros informales en Colombia," January 2008.

Graph B2.2
Reason Why Micro-companies Prefer One Credit Source to Another



Source: Econometría S.A., "El acceso al crédito informal y a otros servicios financieros informales en Colombia," January 2008.

Table B2.7
Effective Average Annual Rate on Households Loans, by Source

Loan Source	Quartile (interest rate)				Income Bracket (interest rate)		
	1 (%)	2 (%)	3 (%)	4 (%)	One (%)	Two (%)	Three (%)
1. Banks	25.90	23.24	18.65	20.64	24.52	24.15	17.35
	(11.11)	(0.51)	(1.33)	(1.72)	(2.00)	(2.24)	(0.94)
2. Cooperatives	16.04	21.84	20.33	23.82	20.96	19.90	23.79
	(2.49)	(0.34)	(0.63)	(0.93)	(0.91)	(1.41)	(0.92)
3. Foundations	19.56	26.39	42.58	16.69	20.72	26.39	15.66
	(0.00)	(0.63)	(0.00)	(0.92)	(2.70)	(0.63)	(0.00)
4. Company where the person Works	-	160.28	44.16	6.59	136.25	105.06	14.29
	-	(41.04)	(18.79)	(4.61)	(67.03)	(35.13)	(6.46)
5. Friends, neighbors or relatives	58.71	56.49	74.15	67.66	62.29	83.01	63.46
	(30.56)	(10.75)	(17.67)	(21.51)	(15.86)	(23.77)	(20.86)
6. Pawnshop	213.84	213.84	213.84	213.84	213.84	213.84	213.84
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
7. Moneylender: "little by little"	241.30	233.51	181.60	414.63	250.94	290.67	281.38
	(78.46)	(18.46)	(41.30)	(163.05)	(70.79)	(107.59)	(112.00)
8. Commercial establishments	-	194.23	213.84	22.26	-	212.14	22.26
	-	(0.00)	(0.00)	(0.21)	-	(2.54)	(0.21)

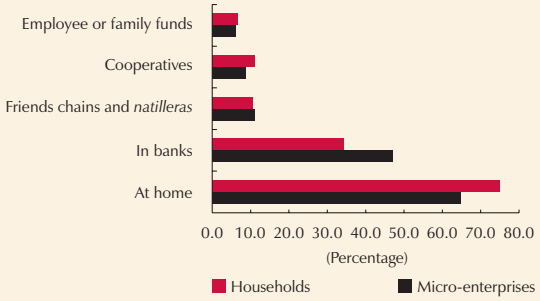
Note: Standard error in parenthesis
Source: Econometría S.A.

Table B2.8
Proportion of Households that Put Money Away, by Site and Quartile

Possible Sites	Quartile			
	1	2	3	4
A. Banks	1.12	27.27	32.99	49.86
B. Cooperatives	0.00	11.48	5.23	18.37
C. Employee or Family Funds	5.39	6.01	6.39	7.71
D. At home	94.61	63.42	89.81	64.70
E. Friends Chains or *natilleras*	4.40	13.13	13.01	10.17

Source: Econometría S.A.

Graph B2.3
Proportion of Micro-enterprises and Households, According to Where Money is Kept



Source: Econometría S.A., "El aceso al crédito informal y a otros servicios financieros informales en Colombia," January 2008.

Box 3
A SIMPLE THEORETICAL MODEL TO ASSESS THE ALTERNATIVE COMMISSION SCHEMES FOR PENSION FUND MANAGEMENT COMPANIES (PFM)

Introduction

The appropriateness of several PFM commission schemes is analyzed in this section from a theoretical standpoint, particularly in terms of how the contribution fee scheme (now in force) and the yield fee scheme (proposed by Martínez and Murcia [2008]) influence PFM profitability. That effect can be interpreted as the impact the fee scheme has on the "well-being" of the pension system affiliate, since greater profitability makes it possible to pay the pensioner a higher replacement rate.

A simple static model was developed to detect PFM optimization problems. According to the results of the exercise, the fee scheme now in force, which is based on contributions, generates the wrong incentives for PFM by encouraging low profitability compared to what they would obtain if fees were calculated on the basis of yield.

The Theoretical Model: The PFM Problem

Maximizing their benefits is the primary objective of Pension Fund Managers in the context of the model presented herein. Those benefits originate with the difference between their earnings and expenses. The model is static, which means benefit maximization is limited to a single time period.

$$\max \Pi = I - C \qquad (1)$$

PFM income originates entirely with the fees charged for managing the fund. Those fees can be calculated as a percentage of the contributions made to the fund by its affiliates (the current system) or as a percentage of the yield on the fund. The assumption in this model is that earnings originate with both types of fees, so that:

$$I = \alpha wL + \beta rF \qquad (2)$$

Where α s the percentage of the fee the average affiliate pays the fund on his/her salary, w is the average salary of the affiliates, and L is the total number of affiliates. Accordingly, the first term on the right side of the equation corresponds to the fee system based on contributions. On the other hand, β represents a percentage of the yields appropriated by the PFM as income, and r is the rate of return on the fund F. Therefore, the second term to the right of (2) means the PFM receives a percentage of the fund's total yield as a fee.

PFM expenditure is given by the following equation:

$$C = CF + V + aL + g(F) + h(r) \qquad (3)$$

where CF includes the fixed costs and V, the sales cost. The other three terms represent the costs assumed by the PFM in direct relation to its operation; namely, those associated with the number of affiliates (in linear form in aL), with the size of the fund (expressed in the function $g(F)$) and with its rate of return (function $h(r)$). Therefore, a PFM may earmark a portion of its expenditure to obtain a better yield, either by contracting well-trained staff members who are experts in finance or through added research on the market or investment alternatives. In any case, activities of this type exhibit declining returns to the extent that PFM are obliged to spend more, if they want better yields. This is expressed as follows:

$$h(r) = cr + dr^2 \qquad c, d > 0 \qquad (4)$$

In this situation, it is possible for a PFM to select the desired level of return with complete certainty. The only barrier to choosing an infinitely large return is that it implies an equally large expense for the PFM. On the other hand, there are economies of scale in the size of the fund, so that:

$$g(F) = bF - eF^2 \qquad b, e > 0 \qquad (5)$$

The size of the fund is determined by its initial size (increased by its returns), plus the contributions from its affiliates:[1]

$$F = F_0(1 + r) + \gamma wL \qquad (6)$$

where γ represents the contribution percentage (net fee). Finally, the number of affiliates in the system as a whole is assumed to be constant; however, the way they are distributed depends on what each PFM spends on sales. Specifically,

1 The fact that there is an initial fund size does not mean the model is dynamic. It simply gives a certain scale to the model and indicates the size of the fund also depends on its yield.

the number of affiliates of a particular PFM is given by the following equation:

$$L = \left(\frac{V}{V+V'}\right)\bar{L}$$

$$\frac{\partial L}{\partial V} > 0; \quad \frac{\partial L}{\partial V'} < 0; \quad \frac{\partial^2 L}{\partial V^2} < 0; \quad \frac{\partial^2 L}{\partial V \partial V'} > 0 \qquad (7)$$

where V' is the sales cost of all the other PFM and L is the total number of affiliates in the system. According to the derivatives, an increase in own (others) spending on sales increases (reduces) the number of affiliates for the PFM in question. As with yield, this sales expense has marginal returns to scale.

Qualitative Results

By substituting equations (2) to (7) in (1), the PFM optimization problem is redefined as:

$$\max \Pi = \left(\frac{V}{V+V'}\right)\bar{L}(\alpha w + a) + \beta r\left(F_0(1+r) + \gamma w\left(\frac{V}{V+V'}\right)\bar{L}\right)$$

$$-CF + V + \left\{b\left[F_0(1+r) + \gamma w\left(\frac{V}{V+V'}\right)\bar{L}\right] - e\left[F_0(1+r) + \gamma w\left(\frac{V}{V+V'}\right)\bar{L}\right]^2\right\} + \left[cr + dr^2\right]$$

where the PFM decision variables are V and r; that is, a PFM selects a sales spending level and a rate of return that maximize its benefits (known respectively as V^* and r^*), which depend on each of the model's parameters. This particular solution is too long to explain at this point; however, it does provide a basis for knowing the qualitative impact each of the two fee schemes (based on contributions or yield) has on profitability and sales spending.

Contribution-based Fees

To evaluate the effect of the contribution-based fee scheme, the assumption is that $\beta = 0$ and we assess the impact of α on PFM control variables. In this particular scenario, it is possible to show that:

$$\frac{\partial V^*}{\partial \alpha} > 0 \qquad \frac{\partial r^*}{\partial \alpha} = 0$$

This means the contribution-based fee scheme causes more spending on sales (to attract more affiliates and, therefore, a larger number of contributions) and has no impact on profitability. The scheme does not offer adequate incentives for a PFM to seek a higher yield and only prompts it to spend on sales activities.

Yield-based Fees

In this case, the assumption is that $\alpha = 0$ and we assess the impact of β on PFM control variables. It is possible to demonstrate that:

$$\frac{\partial V^*}{\partial \beta} < 0 \qquad \frac{\partial r^*}{\partial \beta} > 0$$

The foregoing indicates this scheme negatively affects sales spending (since a PFM no longer concentrates spending on attracting more affiliates) and has a positive impact on profitability. It offers a PFM an incentive to become more profitable, to redirect its efforts towards obtaining a higher yield and, ultimately, to enhance the well being of the affiliates in the system by giving them a higher replacement rate as a result of a higher yield on their savings.

Conclusion

The yield-based fee scheme can increase the well being of the affiliates in the system to the extent that it provides pension fund managers with an incentive to increase profitability. Changing to this scheme would mean a substantial improvement compared to the current one, which is based on commissions. Yet, that depends on whether or not a PFM is capable of selecting the best return, which currently is limited by regulations on maximum exposure. By the same token, it is important to point out that this model includes no risk considerations. However, as mentioned, spending on yield has decreasing returns. In other words, if a PFM wants a high yield, it must assume the higher costs that might be associated with covering high risks, or even, the materialization of those risks. In this sense, the model has an interpretation that is similar to the risk-return analysis. It also assumes the number of affiliates depends solely on sales spending. If other considerations (such as profitability) are included among the factors that determine the number of affiliates, this does nothing more than reinforce the argument presented herein (a PFM would seek greater profitability to increase is direct income, as well as the size of the fund).

III. Current Situation and Outlook for Borrowers from the Financial System

Household exposure is high, primarily due to the increase in consumption loans. The financial situation remains favorable; however, several indicators point to certain vulnerabilities, mostly among new consumption borrowers.

A. HOUSEHOLDS

1. Household Finances

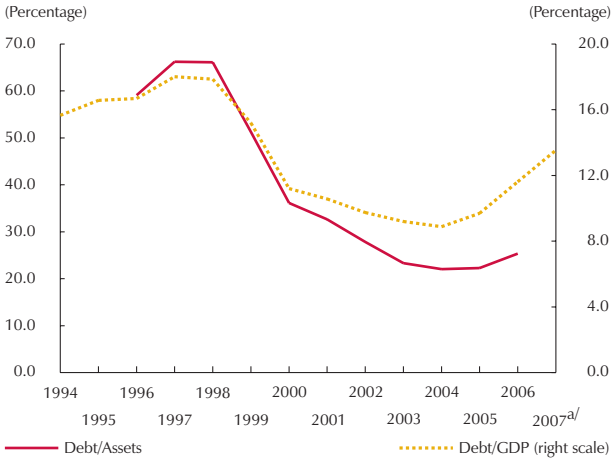
The sharp increase in household borrowing, as represented in consumption and mortgage loans, has raised household exposure for the financial system. The financial situation of these borrowers remains favorable in terms of indebtedness level, financial burden and liquidity. Nonetheless, the trend in several exposure indicators points to certain vulnerabilities, primarily among new consumption loan recipients. The expectations indicate that households will continue to demand loans in the months ahead.

a. Borrowing Level

The increased demand for loan has occasioned substantial growth in the levels of borrowing from the financial system (primarily consumption loans). However, compared to the debt/equity ratio observed during the years prior to the financial crisis, these levels are still low. The household debt[32]/financial

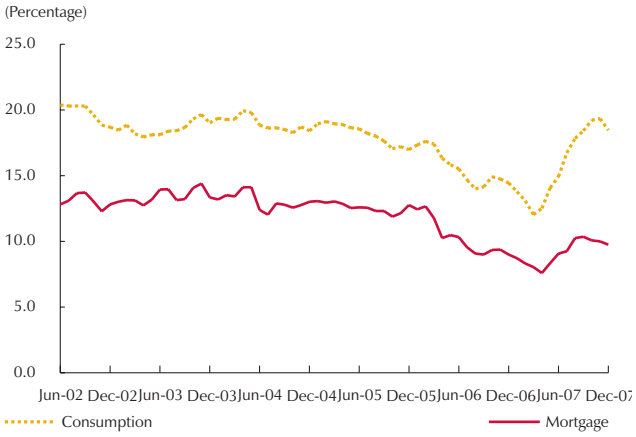
32 Defined as the sum of the amount outstanding on the mortgage and consumption loan portfolios.

Graph 42
Household Borrowing



a/ Projected.
Source: Financial Superintendence of Colombia , DANE and financial accounts, Banco de la República's calculations.

Graph 43
Placement Rates, by Type of Loan



Source: Financial Superintendence of Colombia , Banco de la República's calculations.

equity[33] ratio was 25% in 2006, which represents a change of 3 pp with respect to the ratio in December 2005. This leverage ratio is small compared to what it was during the years prior to the financial crisis (above 60%) (Graph 42). Another measure of household borrowing (the debt/GDP ratio) has increased in recent years and was 14% at the end of 2007, which shows more household financial depth.

Household borrowing is comprised of consumption and mortgage loans. These are two types of credit with very different features. The consumption loan portfolio now accounts for 74% of all household borrowing. Historically, this is the highest percentage on record since 1990 and suggests that household credit risk is linked increasingly to the particular risks posed by consumption loans. Unlike mortgage loans, where the average amount of real collateral is higher and maturity is longer, consumption loans have very little collateral to back them in the event of default.[34] Higher levels with respect to the real average placement rate on the consumption loan portfolio and the increase observed during 2007 (above the mortgage increase rate) reflect a greater perception of risk on the part of the institutions offering consumption loans (Graph 43).[35] Therefore, the largest increase in household credit risk at this point in time is with loans that have less collateral and less duration, which credit institutions currently perceive as the most risky.

33 Based on Banco de la República's financial accounts matrix. The available figures are for December 2006.

34 The consumption loan portfolio includes automobile loans, which are larger in amount and have better collateral than other consumption loans. Nevertheless, approximately 85% of the entire consumption loan portfolio (which includes free-investment loans, revolving credit, overdrafts, portfolio purchase and education loans) lacks good collateral and is low in amount and duration compared to mortgage loans (For a more complete description of consumption loans, see *Financial Stability Report*, September 2007, pp. 67-75).

35 The average rate is undervalued, as it does not include the rates charged on credit card loans (usually high and always near the usury rate). Less reaction in the mortgage rate is associated with regulations on the fixed maximum rate allowed. This is not the case with the consumption usury rate.

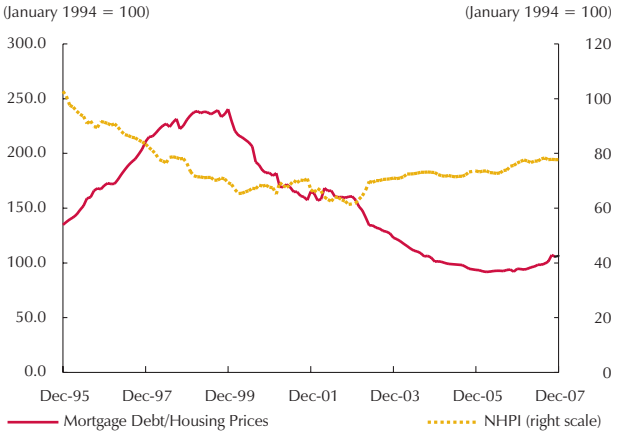
b. Exposure

Considering the mixed-bag of mortgage and consumption loans, the exposure to both types was analyzed separately. As to mortgage loans, the momentum in the economy, the growing share of fixed-rate loans and the tendency in home prices suggest that risks in this segment have not increased. However, the effects of higher interest rates on consumption loan payment have made households in Colombia more vulnerable. The fastest deterioration in this segment is among new borrowers; one year after entering the system, their risk of nonpayment has increased.

1) Mortgage Loan Portfolio

Financial institutions are leaning towards fixed-rate peso-denominated loans to the detriment of loans denominated in real value units (RVU).[36] By December 2007, 63.3% of the total amount of the mortgage loan portfolio was contracted at a variable rate compared to 93.04% two years earlier. Higher inflation is, therefore, one of the risks confronting those who have mortgage loans, because it increases the cost of loans contracted at a variable rate. However, that risk is declining.

Graph 44
Ratio of Mortgage Debt to Housing Prices and NHPI Development in Real Terms

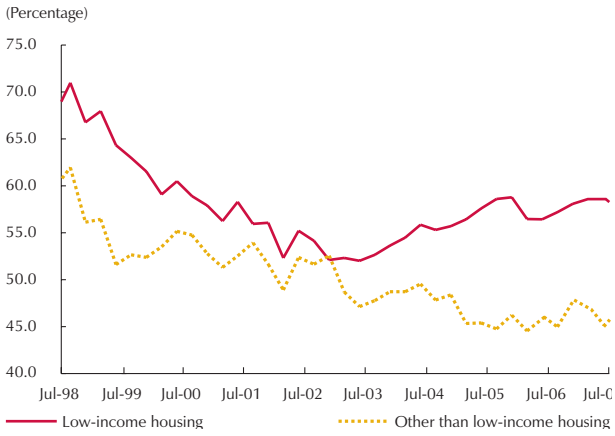


Source: DNP and the Financial Superintendence of Colombia , Banco de la República's calculations.

Household wealth is linked to the trend in housing prices. They remain high, as indicated in the New Housing Price Index (NHPI) calculated by the National Department of Planning (DNP), which shows that real levels are the highest they have been in nine years (Graph 44). This suggests a favorable situation on the side of home equity and mortgage loan collateral, a tendency that is not expected to change in the coming months. Moreover, the value of the mortgage loan portfolio in relation to housing prices is still far less than what it was during the years before and after the financial crisis. Consequently, the likelihood of losses in the value of collateral that would prompt debtors to stop paying their loans is low (Graph 44).

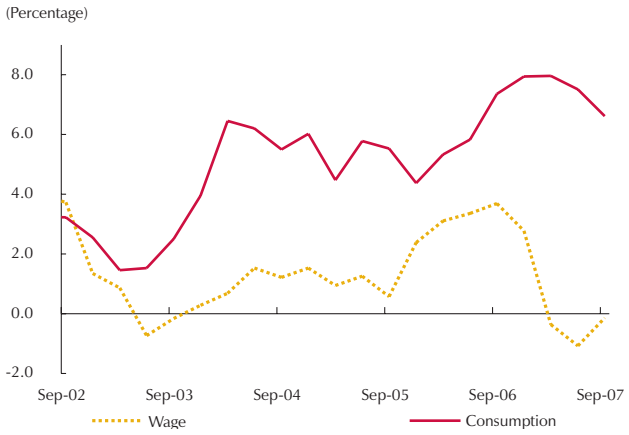
36 The rate on these loans is variable, because it is pegged to inflation.

Graph 45
Mortgage Loan to Value Ratio



Source: Asobancaria, preliminary data.

Graph 46
Real Annual Growth in Wages and Household Consumption



Source: DANE, Banco de la República's calculations.

The recent increase in mortgage loans is characterized by annual growth above 10% during the last few months. This momentum is fueled by disbursements, which rose at a real average annual rate of 60.8% in 2007. As a result, the loan to value (LTV) increased during 2007, having gone from 45.9% in June 2006 to 47.1% in December 2007 for homes other than low-income housing (VIS in Spanish) (Graph 45). This is still less than the values observed prior to the crisis at the end of the nineties, when the ratio was above 55%. A higher LTV at a time when housing prices were rising sharply is a clear sign of major loan growth.

2) Consumption Loan Portfolio

In terms of the consumption loan portfolio, a higher interest rate is the main shock that could reduce household capacity to pay. On the one hand, a negative shock to demand, generated by an increase in rates, would have a negative effect on future household income. For example, the real annual increase in wages slowed in the wake of the contractionist monetary policy applied during the past 18 months, as did household consumption throughout 2007 (Graph 46), even though both indicators remained relatively high.

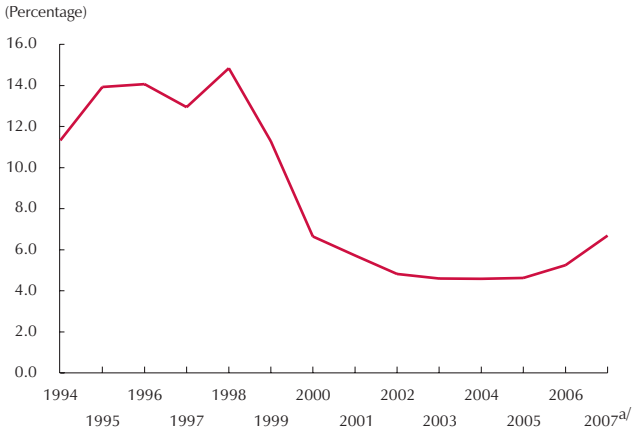
On the other hand, higher interest rates on consumption loans mean more of a financial burden for households.[37] The past year saw household interest payments increase quickly, having gone from 5.2% of household income in 2006 to 6.7% in 2007 (Graph 47, Panel A). However, the recent increase in household exposure is concentrated in interest payments on consumption loans, not on mortgages (Graph 47, Panel B).[38]

37 The household financial burden is defined as the interest payments on the consumption and mortgage loan portfolios out of the compensation paid to wage earners. The increases in the real industrial manufacturing wage index were used to project compensation for 2006 and 2007.

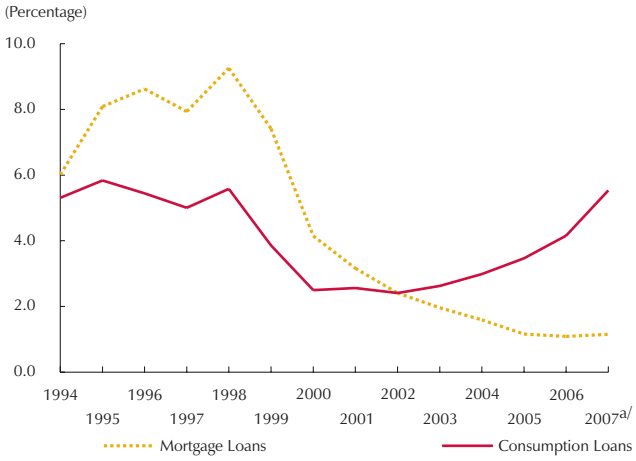
38 The financial burden indicator should be interpreted carefully, as it is calculated in nominal terms. This means the downward trend in inflation could explain much of its reduction.

Graph 47
Household Financial Burden

A. Total

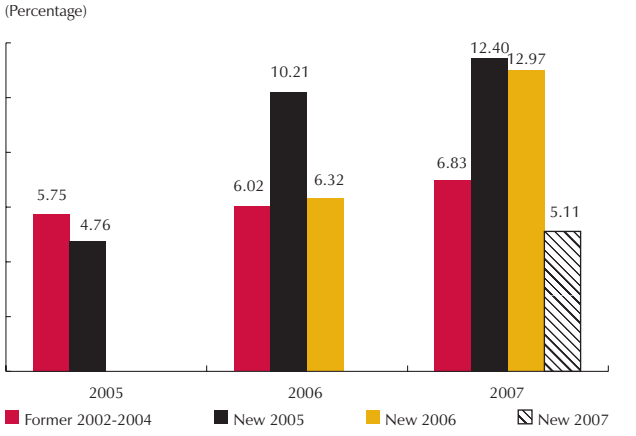


B. By Type of Loan



a/ Projected.
Source: Financial Superintendence of Colombia and DANE. Banco de la República's calculations.

Graph 48
Loan Portfolio Quality (Risky Portfolio/Gross Portfolio)



Source: Financial Superintendence of Colombia , Banco de la República's calculations.

The indicator of financial burden associated with the consumption loan portfolio has risen steadily in recent years. By December 2007, it was at levels similar to those reported during the period from 1995 to 1998. This added household exposure is consistent with several factors; namely, i) the policy rate hikes adopted recently and more reaction from consumption loan interest rates than from mortgage interest rates; and ii) the momentum in the consumption loan portfolio which slowed during 2007 but continues to exhibit real growth rates that are high. The mortgage financial burden is low at present, and the slight rise during 2007 was the result of smaller interest rate hikes and an expansion in loans of this type. Consequently, at December 2007, the increase in consumption loan payment reflects the added vulnerability to which households in Colombia are exposed.

With an accelerated build-up in loans, assessment standards become more lax. This exposes the credit system to an influx of new borrowers whose profile poses more of a risk.[39] The loan-portfolio quality indicator was calculated for four groups of borrowers to determine if the current increase in credit risk stemming from the consumption loan portfolio originates with new borrowers. The four groups include: i) former borrowers, defined as those who took out a consumption loan between 2002 and 2004; ii) new borrowers during 2005, or those who were granted a loan for the first time that year; iii) new borrowers during 2006; and iv) new borrowers during 2007. The loan-portfolio quality for borrowers who have been in the system since 2005 (when the real annual increase in the consumption portfolio exceeded 25 %) was compared to a control group comprised of borrowers who had access to consumption loans prior to December 2004.

Loan-portfolio quality for the group of new borrowers tends to deteriorate sharply one year after they have

39 See, among others, Minsky (1963), "Can It Happen Again?," Carson (Ed.) *Banking and Monetary Studies*.

entered the system (Graph 48). For example, the borrowers who entered the system during 2005 exhibited better quality indicators in December of that year (4.8%) than the borrowers from the past (5.8%). However, one year later (in December 2006), the quality indicator for this same group had deteriorated to 10.2%, while the indicator for the group of borrowers from the past was 6%. Two years after entering the system, those who were new borrowers in 2005 continued to exhibit a sharp deterioration in portfolio quality (12.4%). A similar situation occurred in December 2007 with the new borrowers during 2006; one year after entering the system, their loan-portfolio quality ratio had deteriorated to 13%.

In short, a rapid build-up in the consumption loan portfolio since 2005 has allowed new borrowers into the system who have raised its loan-risk levels (with a one-year lag). Although the downturn in consumption loan-portfolio quality in recent years also includes the group of borrowers from the past (whose quality indicator went from 5.8% in 2005 to 6.8% in 2007), the fastest decline was among new borrowers; one year after entering the system, they raised the nonpayment risk.

To avoid the increase in credit risk that originates with new borrowers, credit institutions will have to do a better job of gauging their risk exposure by discriminating among consumption loan borrowers. At present, loan price ceilings, such as the usury rate, do not allow for adequate risk differentiation. Those who pose more credit risk than is recognized by the usury rate are sidelined form the formal credit system and end up resorting to excessively costly[40] and risky informal sources of funding. However, in most cases, households with access to loans face the same rates, due to a set of minimum conditions. If met, those conditions end up grouping them into the same risk profile. To steer clear of deterioration in the quality of future new borrowers, credit institutions must promote better household-credit-risk measurements that are reflected in a differentiation among rates, which would make it possible to assume risks that are consistent with their costs. In this sense, the usury rate places a restriction on access for borrowers who are considered more of a risk to the formal system and encourages institutions to adhere to a ceiling based on that rate, without differentiating among agents with access to loans.

2. Ability to Pay and the Outlook

Despite the recent increase in loans, household ability to pay was more favorable during 2006 than it was before or during the financial crisis.[41] The ratio of liquid

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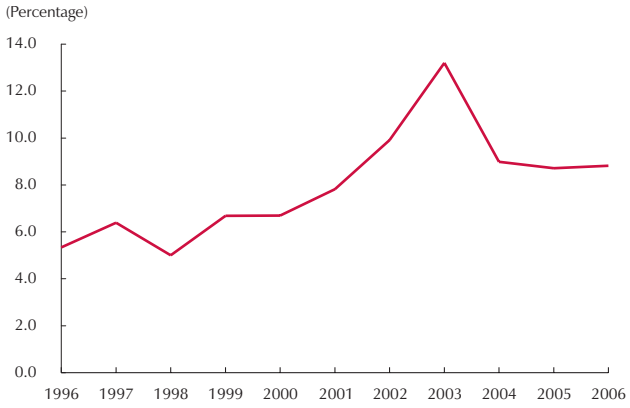
40 With effective annual rates of up to 400%. See Box 2, Table B2.7 in this report, which offers an analysis of access for formal and informal financial services in Colombia.

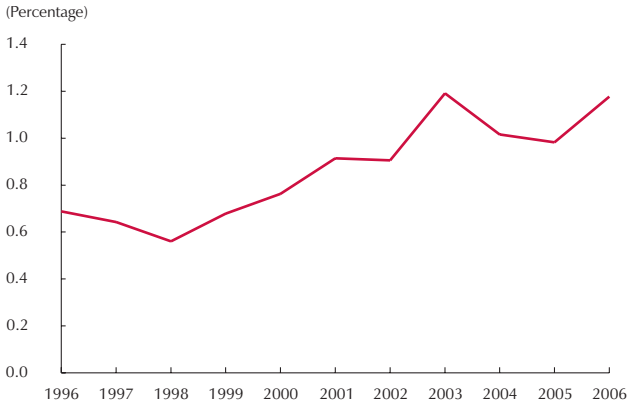
41 Figures on Banco de la República's financial accounts are available up to December.

Graph 49

A. Liquid Assets /Current Liabilities



B. Household Liquidity Ratio



Source: Banco de la República's financial accounts.

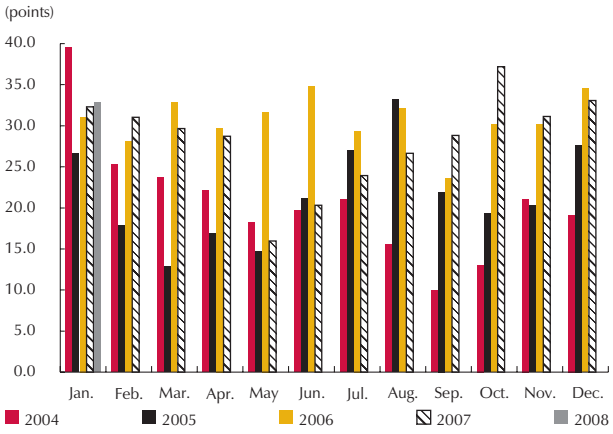
assets[42] to short-term liabilities was 8.8 at December 2006, as opposed to 5.3 in 1996 (Graph 49, Panel A). Although this is below the levels reported at the end of 2003 (13.2), mainly because of the increase in short-term liabilities in recent years, household liquidity remains high. Similarly, the liquidity ratio (LR), defined as the quotient between liquid assets minus current liabilities and total liabilities (Graph 49, Panel B), suggests a better situation with respect to household liquidity. By December 2006, the LR was 1.17, which represents a high point in the last few years and is comparable only to the level in 2003, when the LR was 1.19. Therefore, despite more exposure, the household balance showed a more liquid structure in 2006 than during the pre-crisis period (1996-97): a structure that could absorb the effects of a negative shock on asset prices, inflation or interest rates.

As to the outlook for households, the Fedesarrollo opinion survey in January 2008 shows the consumer confidence and expectation indicators and the economic conditions index are at levels similar to those reported in January 2007. Although these indicators remain high, the amount of growth observed during 2005 and 2006 was not evident in January 2008. While the consumer expectation and confidence indicators show a slight improvement in relation to January 2007, the indicator of economic conditions declined (Graph 50); therefore, household expectations are consistent with a scenario characterized by a slowdown in the demand for loans.

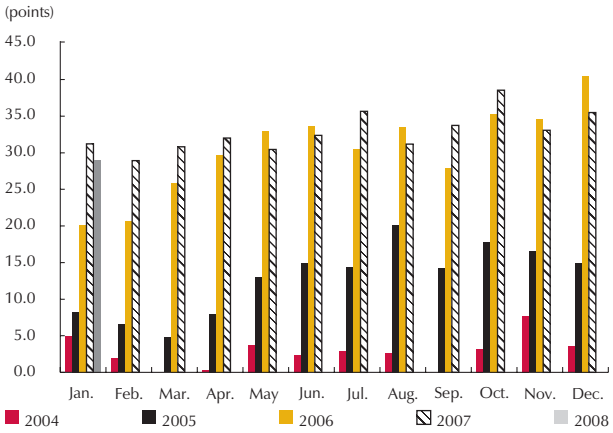
In short, household exposure and financial burden have increased compared to recent years. However, they are still a long ways from the levels witnessed prior to the financial crisis. The main source of vulnerability for these borrowers is concentrated in the consumption loan portfolio, primarily among borrowers who are new to the system. Despite the increase in risk, household liquidity is high in comparison to the nineties. This means households will be better prepared to

42 The following are defined as liquid assets: legal tender and monetary deposits, other deposits and household accounts receivable. Illiquid assets include stocks and other equity ownership, contributions to pension and severance-pay funds, securities and loans. The short-term loan classification applied to Banco de la República's financial accounts is used for short-term liabilities, which include loans in local and foreign currency.

Graph 50
A. Consumer Expectation Index



B. Economic Conditions Index



Source: Fedesarrollo, Banco de la República's calculations.

deal with an adverse macroeconomic shock. Finally, consumer expectations indicate that households will continue to demand resources from the financial sector in the months ahead, but at less of a pace than they have up to now.

B. NON FINANCIAL PUBLIC SECTOR (NFPS)

1. NFPS Aggregate Debt

Carrying on with the reduction observed since 2002, NFPS gross borrowing during 2007 came to Col$173 t, which is equivalent to 49% of GDP (Table 8). In a more pronounced way, NFPS net borrowing, which discounts the value of national central government (NCG) liabilities with the rest of the public sector, continued to decline and came to Col$134 t during 2007(38% of GDP). In both cases, exposure to the debt denominated in foreign currency has declined and the shift towards internal borrowing so far during the cur-

Table 8
NFPS Gross Debt

	Internal[a/]	External	Total	Internal	External	Total	Internal	External	Internal	External	Total
	(Billions of pesos)			(percentage of GDP) [b/]			(share (%))		(nominal annual growth (%))		
Dec-95	9,929	12,018	21,946	11.8	14.2	26.0	45.2	54.8			
Dec-97	18,774	17,609	36,383	15.4	14.5	29.9	51.6	48.4	48.1	36.2	42.1
Dec-99	32,928	32,879	65,808	21.7	21.7	43.4	50.0	50.0	37.5	34.5	36.0
Dec-01	54,905	50,796	105,701	29.1	26.9	56.1	51.9	48.1	17.7	21.0	19.3
Dec-03	75,078	65,883	140,961	33.0	28.9	61.9	53.3	46.7	10.7	6.3	8.6
Dec-04	84,322	59,779	144,101	32.8	23.7	56.6	58.5	41.5	12.3	(9.3)	2.2
Dec-05	102,408	53,339	155,747	36.4	18.7	55.0	65.8	34.2	21.4	(10.8)	8.1
Dec-06	106,911	57,961	164,872	33.3	18.0	51.3	64.8	35.2	4.4	8.7	5.9
Mar-07	109,333	58,959	168,292	32.9	17.8	50.7	65.0	35.0	4.4	14.4	7.7
Jun-07	111,551	53,697	165,248	32.8	15.8	48.6	67.5	32.5	6.0	(7.4)	1.2
Sep-07	112,725	55,361	168,085	32.5	15.9	48.4	67.1	32.9	9.8	(6.7)	3.7
Dec-07	116,519	56,259	172,778	32.8	15.8	48.6	67.4	32.6	9.0	(2.9)	4.8

a/ Government-owned bank capitalization bonds are included in the national government's domestic debt.
b/ GDP in the last twelve months.
Source: Banco de la República, Ministry of Finance and Public Credit.

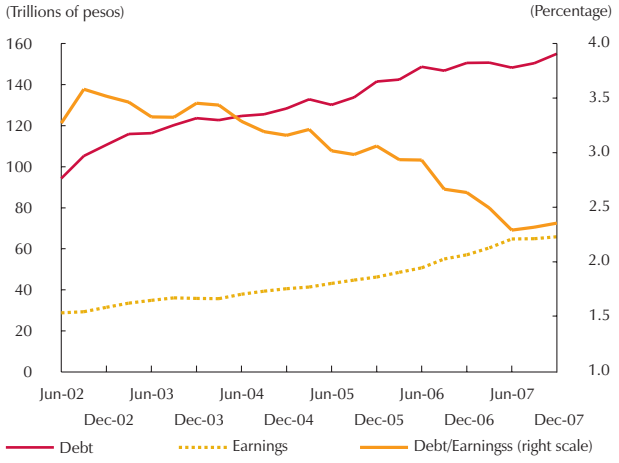
rent decade continues.[43] By December 2007, exposure to the debt denominated in foreign currency came to 33% of the gross debt and 42% of the net debt. Taking global TES placement into account, which the NCG has been doing since December 2004 (approximately Col $5.7 t), it is possible to say that exchange exposure is even less (29% of the gross debt and 38% of the net).[44]

Less of an increase in the debt during 2007 comes in response to less need for financing on the part of the NCG, which continues to account for almost 90% of NFPS borrowing. Thanks to added tax revenue and less spending on interest payments (as a portion of GDP), the deficit was reduced to Col$12.9 t, which is equivalent to 3.7% of GDP. Debt placement during 2007, required to finance the deficit and amortization payments, was much less than in past years. This is because the NCG received revenue that year from privatizations and a portion was pre-financed during 2006. The result was a debt rollover ratio of 71%, which signals an improvement in this sustainability indicator. During 2003-2005, it was over 100%.[45]

2. Creditworthiness

The central government's creditworthiness has improved compared to the debt/revenue ratios witnessed between December 2006 and December 2007. This is due to an annual increase of 3% in the debt and 15% in revenue. The positive tendency exhibited by this indicator during the last two quarters of 2007 responds to less revenue received in the second half of the year compared to the first. The sharp rise in revenue on June 2007 (nearly annual 30%) allowed for the most pronounced drop in the indicator since 2002 (Graph 51).

Graph 51
NCG Creditworthiness



Source: Ministry of Finance and Public Credit and Banco de la República.

3. Outlook

The central government plans to sell Col$22.6 t in long-term TES during 2008 (Col$3.5 t more than in

43 Despite a negative increase in pesos of the debt denominated in foreign currency, the amounts in US dollars registered 4% positive growth in 2007.

44 A global TES is structured the same as a TES B, which means its flows are denominated in pesos. However, they are paid in dollars at the representative market rate of exchange (TRM). If the pesos devaluates, amortization of these securities represents fewer dollars for the central government. This offsets higher amortization from Yankees (external bonds denominated in dollars) when the pesos loses value against the dollar (more exchange coverage).

45 The sustainability indicator was 113% in 2003, 107% in 2004 and 167% in 2005.

2007) to finance a projected deficit of Col $13.7 t (equivalent to 3.6% of GDP).[46] Unlike the situation in 2007, a larger portion of this deficit and debt amortization will be financed through bond issuing (both internal and external), inasmuch as the central government will receive Col$4.4 t less from privatizations. Col$12 t in TES will be auctioned in 2008, which is Col$5.5 t more than in 2007. With respect to financing in foreign currency, the NCG will require US$173 m on the local market (spot), taking into account debt service and the military imports scheduled for 2008. This will avoid revaluation pressure on the exchange rate.[47]

Although the size of the NCG deficit is the same as in 2007, some of the revenue and spending planned for 2008 will be temporary. For example, i) the tax reform bill passed in 2006 will reduce income and stamp tax revenue as of 2008. This will be offset by payment of a temporary wealth tax and with resources from the Petroleum Savings and Stabilization Fund (FAEP in Spanish).[48] ii) The reduction in spending for interest on the debt will be offset by an increase in temporary investment spending of Col$3.5 t.[49] Consequently, a stable forecast for revenue in 2008 and the increased borrowing mentioned earlier may halt the drop in NCG creditworthiness indicators.

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46 Revised Financial Plan for 2008 (February 2008), Ministry of Finance and Public Credit

47 Revised Financial Plan for 2008 (February 2008), Ministry of Finance and Public Credit

48 Sixty percent (60%) of the balance accumulated by Ecopetrol will be withdrawn from the fund. This will reduce the surplus in the decentralized sector of the NFPS.

49 Includes 80% of the Col$2.9 t in military spending scheduled for 2008.

IV. Potential Risks

Credit institutions are now more exposed to liquidity, credit and market risk. The extent of market risk remains relatively low, whereas credit and liquidity risk may constitute future vulnerabilities for the system.

The analysis of potential risk provided in this edition of the *Financial Stability Report* suggests that, during 2008, it is highly likely the set of risks will materialize and generate losses for financial institutions. Credit risk, in particular, is the main cause for concern. It has begun to materialize already and should continue to do so, given the macroeconomic outlook. Consequently, this risk and the tendencies that might affect it will have to be monitored closely.

Although macroeconomic factors reflect certain tendencies that might result in credit institutions becoming more exposed to market risk, and could even be conducive to its appearance in 2008, that risk is still relatively low when considering how it has evolved since February 2002.

A. MARKET RISKS

1. TES B Market Exposure for the Financial System

Securities were appraised with the same method used for previous editions of this report. It consists of appraising each security at the average price at which the issue was traded on the market.[50]

Outstanding TES B valued at market prices have increased slightly during the period from August 2007 to February 2008.

50 See the December 2005 edition of the *Financial Stability Report* for further details on the method used.

All outstanding TES B at market prices are shown in Table 9.[51] Credit institutions held Col$21.92 t in TES B at February 28, 2008. This is slightly more (4.29%) than the amount registered on August 31, 2007. The amount held by commercial banks continues to account for the bulk of outstanding TES B: 90.81% of the total (which is almost the same as the proportion observed during the last six-month period: 90.83%).

Table 9
Outstanding TES B Valued at Market Prices: Credit Institutions
(Millions of pesos)

	In Pesos	At Variable Rat	In RVU	Total
Outstanding at August 31, 2007				
Commercial banks	16,398,984	606,352	2,087,932	19,093,267
Commercial finance companies	92,104	2,219	4,571	98,894
Upper-grade financial cooperatives	1,851	0	0	1,851
Financial corporations	1,594,316	1,112	232,112	1,827,540
Total Credit Institutions	**18,087,254**	**609,683**	**2,324,615**	**21,021,552**
Outstanding at February 29, 2008				
Commercial banks	17,228,674	573,627	2,105,231	19,907,532
Commercial finance companies	84,248	2,308	0	86,556
Upper-grade financial cooperatives	31,128	0	1,090	32,219
Financial corporations	1,653,632	2,888	239,488	1,896,008
Total Credit Institutions	**18,997,683**	**578,823**	**2,345,809**	**21,922,314**

Source: Banco de la República.

The TES B portfolio of non-bank financial institutions (NBFI)[52] came to Col$40.4 t, which is slightly higher than the figure reported on August 31, 2007 (Table 10). Pension fund managers (PFM), as part of NBFI, hold the largest quantity of TES B and account for 73.7% of the total. There was virtually no change in that amount between the two dates used for comparison.

The slight increase in TES B held by credit institutions (4.28%) is explained by the growth in holdings comprised of securities denominated in pesos and RVU. The amount of outstanding variable-rate TES continues to decline as they expire and leave circulation. The most representative of these three movements was the increase in peso-denominated TES, with a variation of 5% for the six months.

51 The valuation exercise includes all TES B held by agents (tradable, available for sale and at maturity).

52 As part of the NBFI considered in this section, trust companies include mutual investment funds.

Table 10
Outstanding TES B Valued at Market Prices: Non-bank Financial System
(Millions of pesos)

	In pesos	At Variable Rate	In UVR	Total
Outstanding at August 31, 2007				
Brokerage firms	247,721	1,244	60,933	309,898
Insurance and investment companies	1,853,188	184,661	1,509,132	3,546,981
Pension fund managers (PFM)	22,651,709	706,376	6,414,926	29,773,011
Trust companies	5,505,374	142,837	1,050,692	6,698,903
Total: Non-bank Financial Sector	**30,257,992**	**1,035,119**	**9,035,682**	**40,328,793**
Outstanding at February 29, 2008				
Brokerage firms	481,500	22,241	101,977	605,718
Insurance and investment companies	1,753,250	217,699	1,640,905	3,611,854
Pension fund managers (PFM)	22,160,936	758,295	6,873,050	29,792,282
Trust companies	5,618,634	84,285	703,806	6,406,725
Total: Non-bank Financial Sector	**30,014,321**	**1,082,520**	**9,319,738**	**40,416,579**

Source: Banco de la República.

In the case of the NBFI, exposure remained virtually unchanged; however, there has been a shift from peso-denominated TES to TES-RVU. The increase in outstanding variable-rate TES valued at market prices is due to the combined effects of quantity and price. The latter is attributed to valuation of some of these securities during the period under consideration.

A breakdown of the variation in TES B holdings by quantity and price is provided in Table 11. The price variation is the result of a shift towards securities with

The variations TES-B held by institutions in Colombia's financial system were positive, more because of the effect in terms of quantity than price, which was negative during the period.

Table 11
Variations in TES B Holdings [a/]
(Millions of pesos)

	Variation in Quantity	Variation in Price	Total Variation
Total: Credit Institutions	**1,140,971**	**(240,209)**	**900,763**
Commercial banks	987,531	(173,266)	814,265
Commercial finance companies	(5,224)	(7,114)	(12,338)
Upper-grade financial cooperatives	25,448	4,920	30,368
Financial corporations	133,216	(64,749)	68,467
Total: Non-bank Financial Sector	**1,239,949**	**(1,152,163)**	**87,786**
Brokerage firms	220,277	75,542	295,819
Insurance and investment companies	122,597	(57,724)	64,874
Pension fund managers (PFM)	1,041,101	(1,021,830)	19,271
Trust companies	(144,027)	(148,151)	(292,178)

a/ Variations between August 31, 2007 and February 29, 2008.
Source: Banco de la República.

prices that rose or fell during the period in question and is calculated as the residue between the total variation and the variation in quantity.

Most financial institutions increased their TES B holdings. The commercial finance companies in the credit-institution group and the trust companies in the NBFI group were the only exceptions.

As indicated, the total variation in outstanding TES valued at market prices was positive, but small, for credit institutions and the NBFI. It is possible to see this effect was due to an increase in the quantity of TES B held by market agents, which surpassed the negative impact originating with their change in price. That negative impact remained close to the rise in reference rates on the fixed-income securities market, particularly during the first two months of 2008. Brokerage houses and upper-grade financial cooperatives were the only financial institutions to escape valuation losses caused by the drop in prices; a large share of their portfolios is in long-term RVU-denominated government bonds, which experienced a price increase during the period in question.

In the case of commercial banks, quantity had more of an impact than price, prompting them to increase their balance in TES at market prices by Col $900.7 billion (b). As to pension fund managers (PFM), this effect was positive as well, but considerably less (Col$87 b), since the effects of quantity and price were similar in magnitude but with opposite signs.

2. Sensitivity to TES B Rate Increases

The valuation losses that would occur with a 200 bp change in the zero-coupon yield curve for fixed-rate TES[53] and RVU-denominated TES,[54] at all maturities, was calculated to measure how portfolio value would respond to changes in interest rates. As with the exercises done in the past, only the trading book positions of these securities were included.[55, 56]

With a 200 bp shock, the hypothetical losses credit institutions and PFM would incur, as a percentage of their profits and the value of their portfolios, respectively, continue to decline.

53 This is the shock suggested by the Basel Committee on Banking Supervision for countries other than the G-10.

54 It is assumed there is an increase in the real spread on the RVU reference rate for TES-RVU. Higher expectations of inflation would result in losses only on fixed-rate TES, since there would be no change in the real return on TES-RVU.

55 The trading book is the portfolio of financial instruments each bank holds for the benefits to be derived from their short-term purchase and sale. In the Colombian case, it includes the positions in tradable securities available for sale.

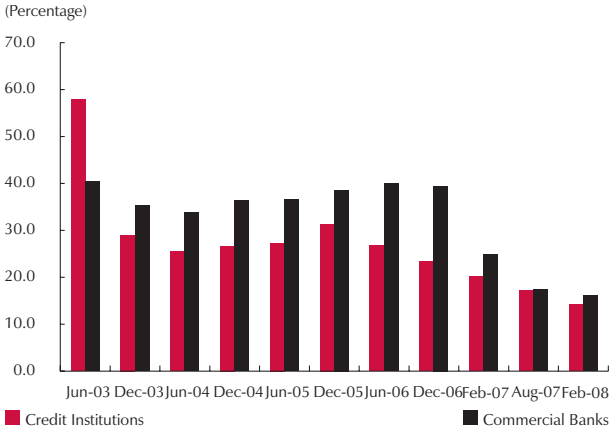
56 The Risk Metrics method was used to calculate the change in portfolio value. See the December 2005 edition of the Financial Stability Report for a more detailed explanation.

Table 12
Valuation Losses with a 200 bp Shock
(Millions of pesos)

	In pesos	In RVU	Total	Annualized Loss/Profits (Dec.) (%)
Total Credit Institutions	**(399,925)**	**(171,364)**	**(571,289)**	**16.00**
Commercial banks	(377,722)	(150,436)	(528,158)	16.17
Commercial finance companies	(1,035)	0	(1,035)	1.29
Finance corporations	(21,168)	(20,928)	(42,096)	18.78
PFM (*)	**(1,881,413)**	**(751,390)**	**(2,632,803)**	**5.26 (*)**

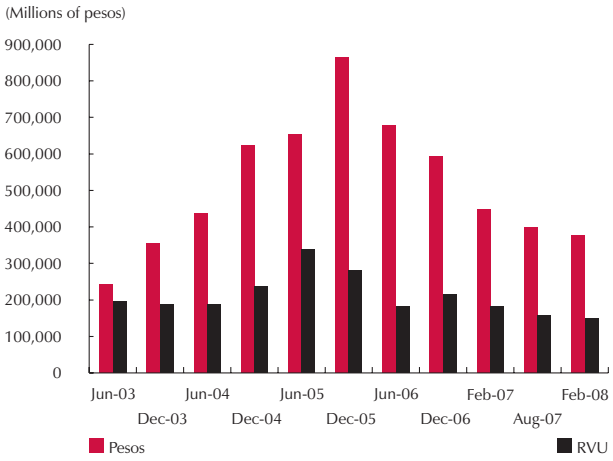
(*) Loss as a percentage of total portfolio value at December 2007.
Source: Banco de la República.

Graph 52
Valuation Losses as a Percentage of Annualized Profits, with a 200 bp Shock



Source: Banco de la República.

Graph 53
Valuation Losses for Commercial Banks



Source: Banco de la República.

Valuation losses were estimated with the portfolio at February 29, 2008 and are presented in Table 12. The losses credit institutions would incur, with a hypothetical interest rate hike, came to Col $571.2 b. This is equivalent to 16% of annualized profits at December 2007. In the case of commercial banks, the amount was Col$528.1 b and represents 16.17% of profits during the same period.

In Graph 52, this outcome is compared to that of previous periods.[57] The valuation losses credit institutions and commercial banks as a whole would incur with the February portfolio are the lowest for the entire period under consideration and are similar to those at August 2007. This is due to the combined effect of increased annualized profits and a relatively stable portfolio, with similar percentages of securities exposed to market risk in those six months.

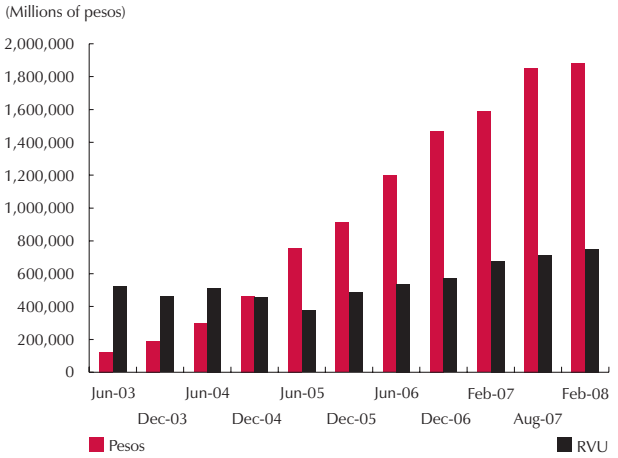
To isolate the effect profit performance has on the outcome for commercial banks, the valuation losses incurred by those institutions are shown in Graph 53 (in millions of pesos). As illustrated, valuation losses on securities denominated in pesos

57 The exercises were done for the portfolio registered on the last working day of June and December of each year during 2003-2006. The latest figures correspond to February 16 and August 31, 2007 and, finally, to February 29, 2008.

Graph 54
PFM Valuation Losses as a Percentage of Portfolio Value, with a 200 bp Shock

a/ Percentage of the portfolio at December 2008.
Source: Banco de la República.

Graph 55
PFM Valuation Losses



Source: Banco de la República.

have declined steadily since December 2005 and, in the case of TES-RVU, since December 2006. As to the latter, the losses expected for February 2008 and August 2007 are quite similar.

The PFM valuation losses[58] in the same hypothetical case involving an increase in interest rates would come to Col$2.6 t and represent 5.26% of the portfolio value at December 2007 (Table 12). As Graph 54 illustrates, estimated PFM losses rose gradually between December 2004 and August 2007, only to decline again during this last period up to February 2008. That decline is due to the fact that value of the PFM portfolio has increased more than the losses projected in millions (Graph 55).

The PFM valuation losses are shown in Graph 55 (in millions of pesos). Although the hypothetical losses for the period have declined as a percentage of the total portfolio, the same cannot be said of those assessed in millions of pesos for fixed-rate TES, which continue to climb, as they have since June 2003, increasing by 1.52% between August 2007 and February 2008. This reported increase is the lowest during the period in question (with an average variation of 36.4%). On the other hand, the losses on TES-RVU are up by 5%, which is quite close to the average increase for the sample as a whole (4.58%).

3. Value at Risk for Commercial Banks

An additional measure - daily value at risk (VaR) to the system between February 2003 and February 2008 - is included in this edition of the *Financial Stability Report* for a more rigorous estimate of the exposure of commercial banks in Colombia to market risk over time.

VaR is a more exact measure of the market risk to which commercial banks are exposed, as it allows a better estimate of the maximum loss the system could incur

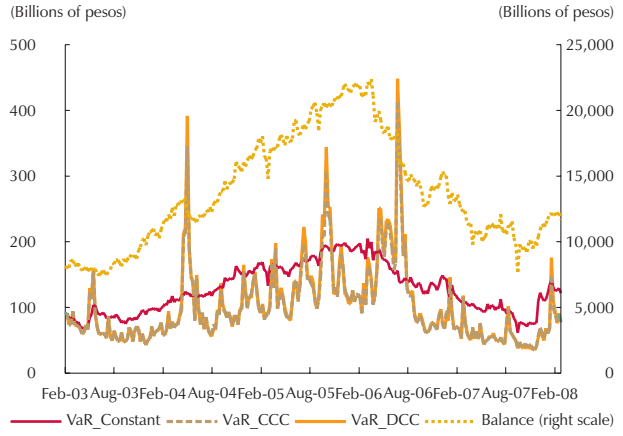
58 In this edition of the *Financial Stability Report,* only mandatory pension funds were considered to calculate hypothetical losses.

with a particular investment portfolio at a specific point in time. Fundamentally, VaR was calculated for each of the commercial banks, using the exposed portfolios on Friday of each week during the study period. The VaR for the system is the aggregate of individual VaRs.[59]

The VaRs were calculated daily, with 99% confidence, assuming normality and using the mapping technique suggested by Risk Metrics.[60] Three methods were employed to calculate the correlations and return variances for each of the risk factors (returns on TES in pesos, TES- RVU and an additional exchange exposure factor, given the movement in the representative market rate). The methods used to calculate the matrix of the correlations and the return variances, which are required to calculate VaR, were: historical correlations and variances, constant conditional correlations and dynamic conditional variances (CCC models), and both dynamic conditional correlations and variances (DCC models).

Graph 56 shows the changes in VaR calculated with each of these methods and the exposed balance in the system's trading book during the period in question. According to the series constructed with the CCC and DCC models, the points with maximum exposure to market risk occurred on June 30, 2006, October 7, 2005 and May 7, 2004.[61] The series of static correlations and variances is not as sensitive to changes in the agents' positions, precisely because of its historical nature, but it does show a clearer tendency, which begins with a rise in risk exposure levels from the onset of the sample in February 2003 up to the early months of 2006, with levels near Col$200 b, followed by decline from that period up to February 2008, when the exercise ends and the DCC and CCC VaR levels are around Col $50 b. At February 29, 2008, when the last VaR calculation is reported, the difference between the estimates with the CCC or DCC models and

Graph 56
Total VaR of Commercial Banks and Total Exposed Balance: 2002-2008



Source: Banco de la República.

59 For details on the method, see Martínez and Uribe (2008), "Una aproximación dinámica a la medición del riesgo de mercado en el sistema financiero colombiano," Financial Stability Issues, *Financial Stability Report*, April 2008.

60 Risk Metrics, 1996, *Technical Document,* J.P. Morgan/Reuters, Fourth Edition, December 1996.

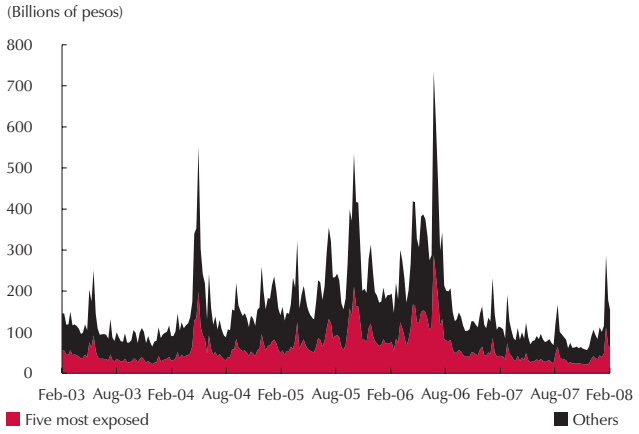
61 This is a recognized extreme scenario, since the rates on TES maturing in January 2012, April 2012 and February 2009 increased by almost 250 bp between April and March 2004.

The VaR of commercial banks was relatively low in February 2008, even though it has increased since August 2007.

the VaR of static variances and correlations is considerable (approximately Col$43.7 b).

Two factors are responsible for this reduction in market risk. One is the shift from tradable securities available for sale towards securities to maturity (the sum of tradable securities available for sale went from an average of 82% for the system as a whole in January 2006 to 66% in February 2008). The second is the reduction in return variance levels, which can be seen in an underlying way by considering the difference, at the end of the sample, between VaR calculated with static variances and correlations and VaR calculated with dynamic variances and correlations.

Graph 57
Share of Total VaR for the Five Most Exposed Institutions



Source: Banco de la República,

Finally, Graph 57 shows what portion of the value at risk to the system is explained by the share of risk represented by the five most exposed institutions at each point in time. The percentage is highly representative and the behavior of this series closely follows that of the total. The percentage explained by the VaR of the five banks with the most exposure was 60.6% on February 29, 2008; this is close to the average for the sample as whole (60.2%). The high point of this participation was on March 10, 2006 and the highly unusual minimum (34.2%), on March 18, 2005; however, with the exception of this last figure, all the others are between 50% and 70%.

The market risk measurements presented in this section indicate that the current situation of credit institutions, particularly commercial banks, is not especially fragile, given their relative low levels of exposure.

B. CREDIT RISKS

1. Credit Institutions

As summarized earlier, loan activity has slowed since 2006. This has been accompanied by a decline in the loan-portfolio quality indicator, primarily due to deterioration in the quality of the consumption loan portfolio and a high degree of loan-loss provisioning. Even so, it still does not appear that credit risk will be a source of instability for the financial system in the near future (this risk is evaluated with the capital adequacy indicator, which was 12.84% in December 2007).

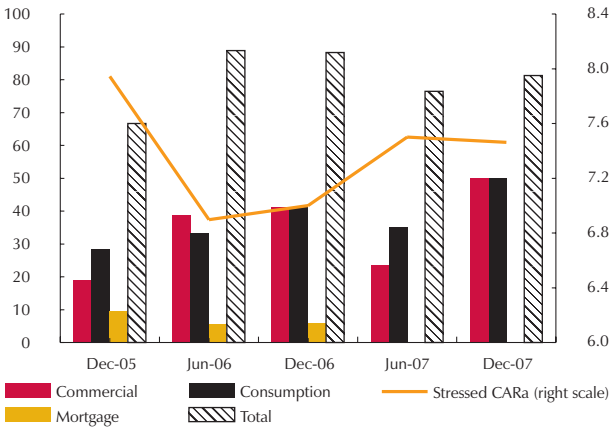
Several exercises were done for extreme but probable scenarios in the macro environment to gauge how an adverse macroeconomic situation would affect the

Table 13
Number of Banks Where the Capital Adequacy Ratio Would Fall Below the Minimum (12 Months)

	Shock 1[a/]	Shock 2[b/]	Shock 3[c/]
Commercial	0	8	8
Consumption	1	2	8
Mortgage	0	0	0
Total	3	12	13
Current Capital Adequacy Ratio (%)	12.84	12.84	12.84
Stressed Capital Adequacy Ratio – Dec-07 (%)	11.51	8.78	7.46
Stressed Capital Adequacy Ratio – Jun-07 (%)	11.59	8.87	7.53

a/ Interest rates (on consumption and commercial loans) or housing prices (mortgages).
b/ GDP (consumption and mortgage) or sales (commercial).
c/ Combination.
Source: Banco de la República.

Graph 58
Percentage of Banks Where the Ratio would Fall below the Required Minimum Capital Adequacy Margin



Source: Banco de la República.

soundness of financial institutions.[62] In this stress-testing exercise, the solvency of credit institutions is assessed on the basis of their capital adequacy ratio, which is the indicator that measures their capacity to absorb unexpected losses.

The results, shown in Table 13 are for a sample of 16 financial institutions.[63] They show how major variations in the interest rate, the output growth rate and home prices affect their capital adequacy ratio.[64] These shocks increase the non-performing portfolio for the different types of loans. This, in turn, lowers profits as a result of more spending on loan-loss provisioning and less income from interest due to a larger non-performing portfolio.

A sharp rise in interest rates and a dramatic decline in economic activity would place the capital adequacy ratio of 13 banks below the mandatory minimum (9%). At the aggregate level, the capital adequacy ratio would go from 12.8% to 7.5% (Table 13). It is important to point out that 13 banks would see their capital adequacy margin decline, even below 8%. Consequently, the exercise suggests that credit risk would be a serious problem for the financial system if the macroeconomic situation were to deteriorate sharply, as it did at the end of the nineties.

When comparing the aggregate stressed capital adequacy ratio from this exercise over time, one sees it increased in June and stayed constant in December of that year (7.5%)(Graph 58). The percentage of banks with a capital adequacy ratio below the mandatory minimum declined in June 2006 and increased again at the end of 2007, although only slightly.

62 For a detailed explanation of these exercises, see "Financial Stability Issues" in the December 2005 edition of the *Financial Stability Report*.

63 Various editions of the *Financial Stability Report* include a sample of 17 banks. The change is due to the merger of GranBanco and Davivienda.

64 The exercises for the Consumption and mortgage loan portfolios assume a 6.8% decline in economic activity, which did occur in the second quarter of 1999. They also assume a 450 bp interest rate hike (as happened between May and June 1998), and an 8% drop in housing prices, which is equivalent to the average decline during 1996-2000. In the case of commercial loans, the exercise is based on a 9% sales reduction, as registered during 1999.

2. Analysis of Loan Portfolio Concentration and Credit Risk

a. Commercial Loan Portfolio

Because the commercial loan portfolio is one of the main sources of financing for Colombian companies and accounted for 58.97% of the total loan portfolio by December 2007, an analysis of its characteristics and the agents involved is relevant to determining the different risk factors.

The analysis outlined in this section is based on individual commercial loan data taken from Form 341 filed with the Financial Superintendence of Colombia in Colombia. Contrary to the analysis presented in the previous edition of the *Financial Stability Report*, loans in Colombian pesos are taken into account, as well as those in foreign currency. There are also quarterly figures for the period from March 2000 to December 2007. However, for this year, the only information available is for the final quarter of 2007.

A look at how the total amount on loan changed throughout the period in question shows steady growth in the commercial loan portfolio during the entire time. This may be due to the increase in the amount loaned, as well as the number of loan operations. As can be seen in Table 14, the number of operations increased 2.79 times between June 2000 and December 2007; the real portfolio balance increased 2.03 times during that period.

The figures in Table 14 also point to an increase in the variety of loans during the different periods. A look at the difference between the upper quartile and the lower quartile shows the latter has increased significantly. This indicates the individual

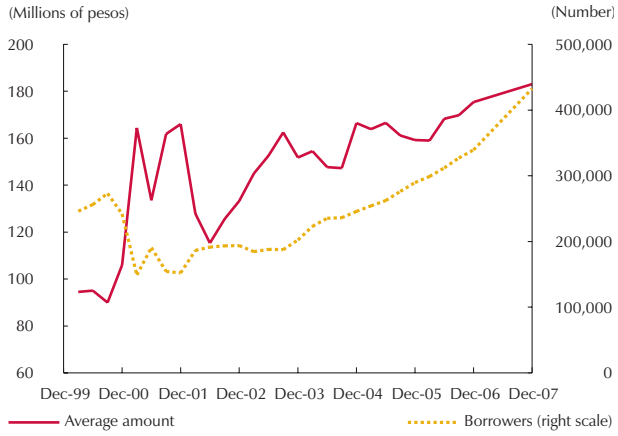
Table 14
Capital in Local and Foreign Currency

Date	Portfolio Balance [a/]	No. of Transactions	Distribution of amounts per user [b/]				
			Percentile 5	Quartile	Median	Upper Quartile	95 Percentile
Dec-00	39,587,047	335,204	1,410,901	2,943,660	5,634,924	14,548,824	239,026,278
Dec-01	38,032,871	259,366	1,191,388	3,131,559	8,084,086	31,384,588	441,552,066
Dec-02	41,631,278	431,416	221,892	1,632,517	7,545,109	26,017,109	267,093,364
Dec-03	44,698,192	472,018	359,050	2,874,821	10,542,798	33,059,503	305,391,585
Dec-04	52,687,763	620,119	586,783	4,270,886	11,579,050	35,316,103	307,602,336
Dec-05	54,678,925	727,980	552,153	4,166,382	11,642,519	35,261,779	275,959,894
Dec-06	67,280,802	872,444	528,682	4,227,818	12,724,052	39,001,621	271,374,531
Dec-07	79,198,152	1,024,949	601,107	4,861,111	14,054,145	41,914,300	275,410,760

a/ Figures in millions of real 2007 pesos.
b/ Figures in real 2007 pesos.
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

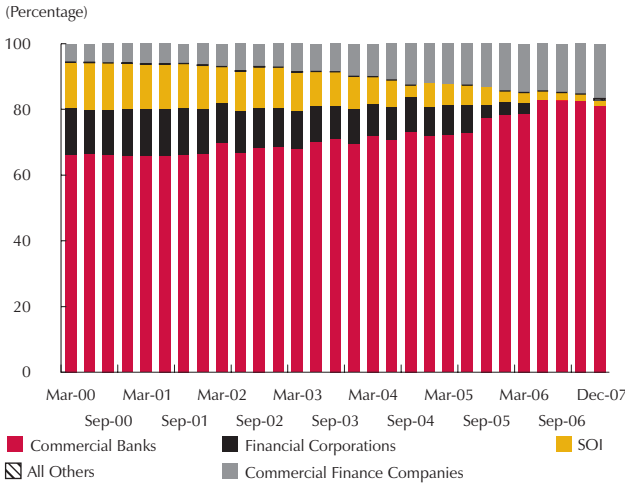
amounts of loans that are between 25% and 75% of the distribution are increasingly less uniform.

Graph 59
Average Amount and Total Number of Borrowers in the Commercial Loan Portfolio



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 60
Commercial Loan Portfolio Concentration by Type of Institution



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Another possible reason for the positive growth in the total amount of the portfolio is the increase in the number of borrowers within the system. As illustrated in Graph 59, the increase in borrowers has surpassed the increase in average amounts on loan. The same graph allows us to conclude that the increase in the commercial loan portfolio is due largely to the fact that the total number of borrowers has grown.

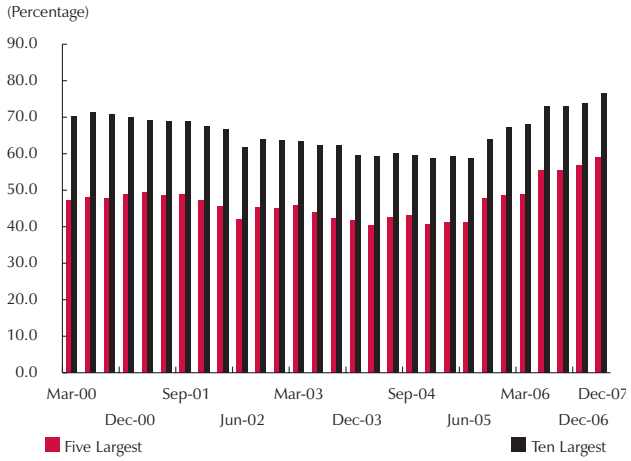
i) Commercial Loan Portfolio Concentration by Institutions

When analyzing the commercial loan portfolio it is important to examine the behavior and participation of borrowers, as well as the financial institutions involved. Banks accounted for the bulk of the portfolio: 81.07% of the total at December 2007. Their share has increased, as is also the case of commercial finance companies (CFC). The CFC share went from 5.64% to 16.71% between March 2000 and December 2007. This increase contrasts with the declining participation of special and official institutions (SOI) and financial corporations (FC)[65] (Graph 60).

A look at the portion of the portfolio held by the five and ten largest institutions during each time period shows the portfolio became increasingly concentrated in this group as of September 2005. In June 2005, the five largest institutions accounted for 41.22% of the portfolio; by December 2007, their share was 58.7% (Graph 61). This upward trend is also evident in the group comprised of the ten largest institutions; its share went from 58.87% to 76.45% during the same period.

65 Initially, financial corporations lost participation due to mergers and bankruptcy. However, by December 2007, they had no share of commercial loan portfolio.

Graph 61
Commercial Loan Portfolio Concentration in the Largest Institutions



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 62
Percentage of Borrowers with 40% of the Portfolio

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

ii) Commercial Loan Portfolio Concentration by Borrower: The Largest Borrowers that Account for 40% of the Commercial Loan Portfolio Each Quarter

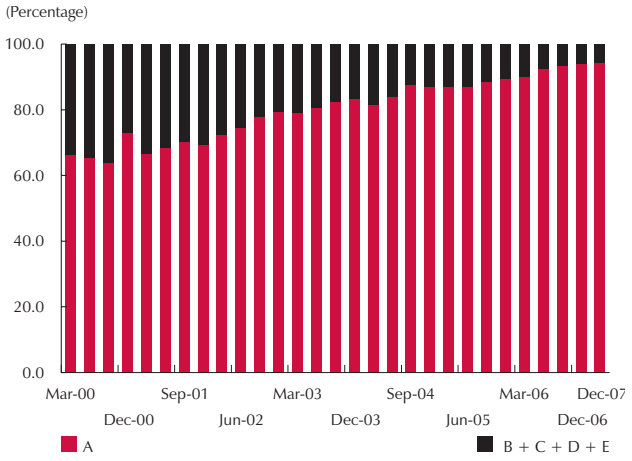
A representative sample of borrowers whose debts are among the largest was used for this analysis. The borrowers were organized each quarter, in declining order with respect to the amount owed, and the largest ones; that is, the borrowers who account for 40% of the portfolio, were selected. They represent less than 0.1% of all commercial loan borrowers. Graph 62 shows their participation in the portfolio remains small, but is growing. By December 2007, these large borrowers comprised only 0.08% of the total number of borrowers.[66]

After obtaining the sample of these large borrowers over time, it is important to analyze the quality of their loans, based on the way they are rated (from A to E). An analysis of ratings is appropriate in the case of these borrowers; because their loans are among the largest, they should be better rated. Moreover, the borrowers in this category should have a minimal number of low-rated loans. As Graph 63 illustrates, most are A-rated loans, but there are a few in the other categories. At the start of the period in question, the share of risky loans was larger than expected (33.5%); nonetheless, there has been an upward trend in the proportion of better rated loans, which amounted to 95.48% by December 2007.

A look at the loans in the risky portfolio shows the reduction is due primarily to a substantially smaller share of B-rated loans. As illustrated in Graph 64, B-rated loans accounted for 21.11% by March 2001 and only 1.32% by December 2007. This risky portfolio rate among the largest borrowers (4.5%) is slightly better than the rate for the commercial loan portfolio as a whole (5.6%), as noted in earlier sections of this report. It demonstrates the largest

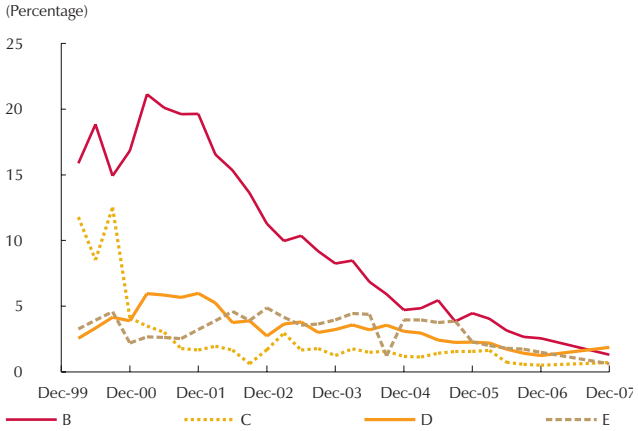
66 There were 432,643 commercial loan borrowers at December 2007; 3,039 account for 40% of the portfolio. Although the number of borrowers in this group is small, there is a major difference between the amounts they owe: the largest borrower at December 2007 had Col$2 t in loans; the smallest had Col$30 b.

Graph 63
Portfolio Discriminated by Ratings



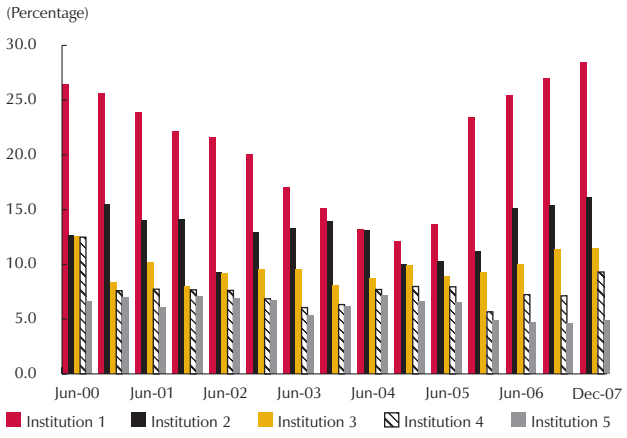
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 64
Share of the Risky Portfolio, by Ratings



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 65
Share of the five Largest Institutions in the 40% of the Commercial Loan Portfolio



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

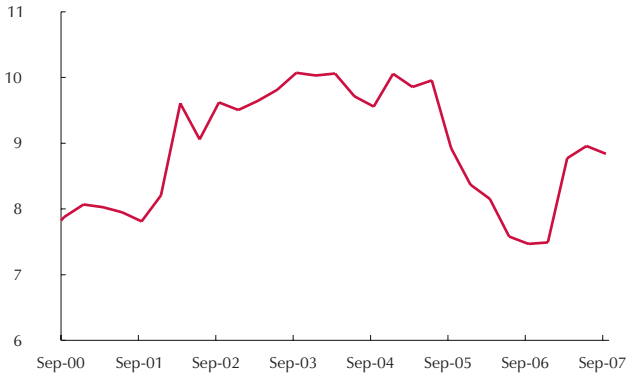
borrowers have a better rating than the smallest ones.

The next step is to analyze how this 40% of the portfolio is concentrated over time, according to the type of institution. Broadly speaking, the results show the portfolio is concentrated in five institutions, with only a slight variation over time. Their shares range from 46.57% to 70.36%, but the percentage pertaining to each of them is becoming more and more dispersed. As illustrated in Graph 65, the first institution has increased its share considerably since 2005, marking a major difference compared to the other four (by June 2005, its share was 2.11 times larger than that of the fifth institution and six times larger by December 2007). The differences between the second institution and the others have increased as well.

Although the first institution accounts for most of the portfolio, borrowers do not concentrate all their debt in that institution. The average number of institutions with which borrowers have loans varies from approximately seven to ten counterparts (Graph 66). It is important to emphasize the tendency in the number of counterparts during 2005 and the first half of 2006: it dropped from ten in June 2005 to 7.5 a year later. Part of this phenomenon is explained by mergers and dissolutions within the system. However, the first half of 2007 witnessed a considerable increase in the number of counterparts, which went from 7.4 in December 2006 to nine in June 2007.

An analysis of the average number of counterparts is relevant when looking at the borrowers who have loans from the institution with the largest share. During the period from March 2000 to June 2005, the borrowers with loans from the first institution had 78.8%, on average, with others. During the period from September 2005 to December 2007, that average was 68.45%. There was a major

Graph 66
Average Number of Counterparts per Debtor



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 67
Share of the Total Amount in Other Institutions and Average Number of Counterparts

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

change in tendency as of September 2005 (Graph 67); since then, the borrowers' share of their total portfolio declined.

Graph 67 also shows the average number of counterparts with which borrowers from the first institution have loans, and the share of the amount in other institutions. The average number of counterparts declined as of September 2005, but increased substantially during the last quarter analyzed. The average number of counterparts can be used to calculate the average amount in institutions other than the first one. In other words, while in the first institution, the borrowers have between 18% and 34% of its total portfolio, they have 9%, on average, in each of the other institutions with which they have loans.

In conclusion, a look at the largest borrowers who account for 40% of the portfolio shows this percentage is concentrated in just a few. For the most part, their loans are grouped in five institutions within the financial system. Given this information, it is interesting to analyze the vulnerability of these intermediaries with respect to this portfolio. The commercial loan portfolio, as a percentage of the assets of each of the five largest institutions at December 2007, was calculated for that purpose; it showed the sample portfolio accounts for 13.84% to 27.20% of their total assets.

b. Consumption Loan Portfolio

Unlike the commercial, housing or micro-loan portfolios, there are three types of consumption loans: automobile, credit card and others.[67] Each has different characteristics, such as amount, collateral and number of operations per type. The purpose of this section is to describe the characteristics of consumption credit lines in order to assess their credit risk profile and the aggregate for the consumption loan portfolio, in addition to analyzing the actual tendencies in the concentration

67 The "others" include free investment, revolving credit, overdrafts, loan portfolio purchase and education loans.

indicators. A database with all consumption credit transactions reported quarterly by credit institutions to the Financial Superintendence of Colombia is available for this exercise. It contains approximately 120 million transactions registered during the period from March 2002 to December 2006.[68]

1) Amount and Number of Loans by Issuer and Type

Commercial banks are the major consumption loan creditors and accounted for nearly 88.4% at December 2007, followed by commercial finance companies (CFC) with 9.8%. Compared to the situation one year earlier, commercial banks marginally reduced their share of the consumption loan portfolio, which was 90% of the amount on loan at that time, while the CFC increased theirs (which was 8% at December 2006). A look at the share represented by the banks with more consumption loans shows a gradual increase among the ten largest banks during the period from December 2004 to December 2007, when their proportion went from 65% to nearly 79% in the last period of the sample. It should be noted that the increase in the share represented by these institutions during 2007 was slight, although it is 2% more if December 2007 is compared to December 2006. On that same date, the five banks with the largest amount of consumption loans accounted for 52% of the market, which is a larger share compared to the year before (48%) and has been increasing since December 2004 (42%).

The disparity among the different types of loans becomes clearer when considering the number of consumption loans and the amounts per type. As illustrated in Graph 68 (Panel A), two-thirds of all consumption loans in December 2007 were classified as "Others", nearly 22% were credit card loans and 12% were automobile loans. These percentages remained relatively stable throughout the sample. A breakdown of Col$35.6 t in total consumption loans reported at the end of 2007 shows Col $7.8 t were credit card loans, Col$4.3 t were automobile loans and Col$23.5 t were classified as "other" consumption loans. The respective real annual growth rates for these three types were 34%, 29% and 19%.

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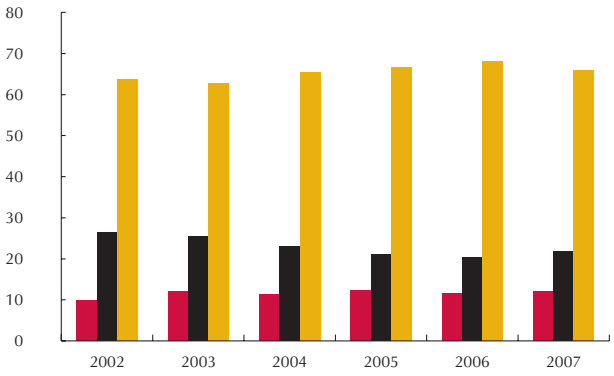
68 As with the commercial loan portfolio, the data used in these exercises come from FSC Form 341. Several institutions did not report figures for 2002 and 2003. This creates a discrepancy between the real total consumption loan portfolio and the database. For example, the database shows 10% fewer consumption loans for 2002 and 2003, compared to actual consumption. As of 2004, the discrepancy is under 7% in each quarter, except the third quarter of 2007, when the difference was close to 10%. As noted in the September 2007 edition of the Financial Stability Report, the discrepancy leads to overestimating real annual growth in the consumption loan portfolio for 2003 and 2006.

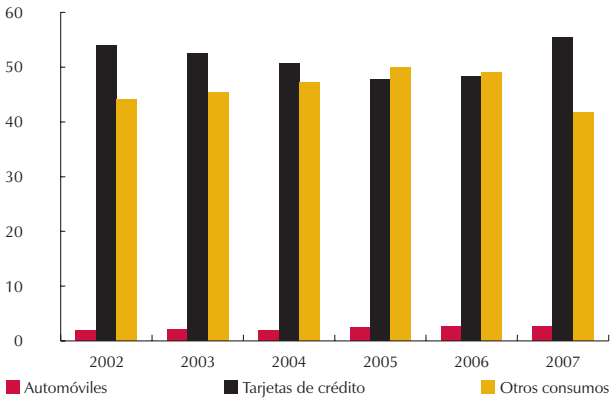
Out of nearly 12 million transactions in December 2007, 55.,5% were credit card loans and 41.8% were other consumption loans, while 2.7% were loans to purchase an automobile (Panel B, Graph 68). The average amount of each transaction differs by type: Col$13.6 m for automobiles, Col$1.2 m for credit cards and Col$4.8 m for other consumption loans. These differences are explained by the distinct nature of consumption associated with these lines of credit (Table 15). The real annual increase in the average amount per type in 2007 was 6.34%, 0.62% and 22.76% for automobile, credit card and "other" consumption loans, respectively. Given the vigorous real increase in credit card loans and the fact that the real increase in the average amount per card was limited, it is possible to conclude that larger the portfolio is due to the increase in the number of credit card loans (31.4%).

Graph 68

A. Percentage of the Consumption Loan Portfolio Amount, by Type



B. Percentage of the Number of Consumption Loan Portfolio Transactions, by Type



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

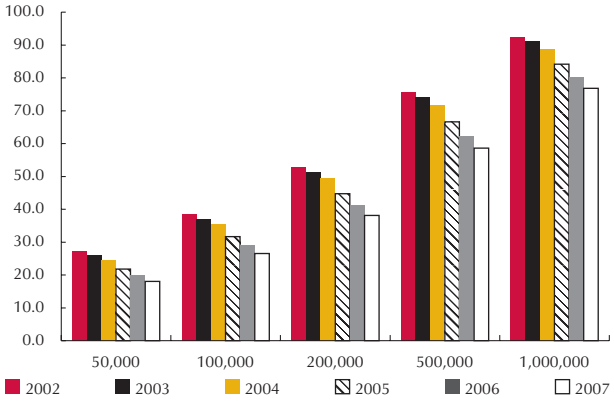
Table 15
Average Amount Borrowed per Type of Loan
(Millions of Pesos)

Date	Automobile	Credit Card	Other Consumption Loans	Total Consumption Loans
2002	9.59	0.90	2.64	1.83
2003	10.97	0.95	2.71	1.96
2004	13.07	1.04	3.16	2.28
2005	12.82	1.10	3.33	2.50
2006	12.16	1.13	3.75	2.70
2007	13.62	1.20	4.81	3.05

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 69
Share (%) of the Consumption Loan Portfolio

A. For the Number of Major Borrowers



B. For 25% and 50% of the Major Borrowers

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

2) Concentration and Amount by Borrowers and Consumption Credit Lines

The vigorous growth in the consumption loan portfolio during the sample years was accompanied by a sustained increase in the number of borrowers. In fact, 4.6 million persons had consumption loans from the formal financial system in December 2007. This is slightly more than 10% of the Colombian population to date. For the sample years, the average annual increase in the number of borrowers was around 18%, having peaked in 2006 (30% annual increase). During 2007, the number of consumption loan borrowers rose by 12.5%, which is less than the rate during the three previous years, but consistent with the slowdown in consumption loan portfolio growth described in the chapter of this report that deals with the financial system.

However, more customers do not necessarily mean a less concentrated consumption loan portfolio. The share of the largest borrowers in the system was calculated for that reason. Panel A, Graph 69 shows the percentage of the consumption loan portfolio that pertains to the 50 thousand, 100 thousand, 200 thousand, 500 thousand and one million largest borrowers. According to that classification, the share corresponding to these groups has declined steadily since 2002, which suggests less concentration. By December 2007, the one million largest borrowers accounted for 77% of the amount of money in consumption loans, the 500 thousand largest borrowers accounted for 59%, the 200 thousand, 38%, the 100 thousand, 27% and the 50 thousand, 18%.

Panel B in Graph 69 illustrates the share for the upper 25% and 50% of consumption loan borrowers. Between 2002 and 2006, their proportion rose sharply. However, that tendency reversed during 2007, since the concentration in the upper 50% of borrowers increased by only 0.04%, accounting for 94.6% of the loans. For the upper 25% of borrowers, their share declined by 0.31%, accounting for 80.7% of all consumption loans.

The distribution of the consumption loan portfolio between 2002 and 2007, by debtor, is shown in Table 16. During 2007, the median for the borrowers in that portfolio declined by 13.6% in real terms with respect to 2006 and was around

Table 16
Consumption Loan Distribution, by Borrower
(Millions of pesos)

	Percentile 5	Lower Quartile	Median	Upper Quartile	Percentil 95
IV Qtr. 02	0.10	0.48	1.24	3.06	10.06
IV Qtr. 03	0.11	0.50	1.28	3.36	11.37
IV Qtr. 04	0.13	0.55	1.44	3.86	14.11
IV Qtr. 05	0.15	0.60	1.54	4.28	16.51
IV Qtr. 06	0.16	0.59	1.41	4.31	19.22
IV Qtr. 07	0.05	0.54	1.30	3.92	17.08

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Col$1.3 m. Ninety percent of the consumption loan portfolio falls within a range of Col$0.05 m to Col$17.1 m. The width of this range declined at a real annual rate of 16.3% with respect to the year before. In addition, the concentration of 50% of the consumption loan portfolio among the lower and upper quartiles is in a range of Col$0.5 m to Col$3.9 m.

In short, the consumption loan portfolio includes three types of credit with very different features. The automobile loan portfolio is characterized by larger average amounts per person, compared to the other lines of credit, but has fewer transactions. The opposite is true of credit card loans, which are numerous but their amount is low. The line of credit known as "other consumption loans" combines these characteristics: the average loan is larger than the average credit card loan, but less than the average automobile loan. However, the number of transactions is similar to the number registered for credit card loans. Information on the consumption loan portfolio by 2007 shows less dispersion in loan value. This decline has been accompanied by a reduction in the size of the average consumption loan portfolio in 2007. Portfolio growth for the different lines of credit was vigorous, with the leading consumption loan institutions (banks and CFC) contributing to that expansion. This allowed for a considerable increase in the number of borrowers. Apparently, the added coverage was reflected a bit in less portfolio concentration for 2007 (measured as the share represented by the upper 25% and 50% of borrowers).

Table 17
Number of Large Borrowers Who Account for 20% of the Consumption Loan Portfolio, by Type

	Credit Cards	Automobiles	Other Consumption Loans
2002	23,548	9,351	25,628
2003	27,937	12,322	29,137
2004	31,447	13,375	32,876
2005	39,476	17,746	41,281
2006	47,633	20,179	49,288
2007	57,024	25,000	59,096

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

The larger borrowers who account for 20% of the portfolio

Given the consumption loan concentration described in the previous section, it is important to take a close look at the characteristics of the debt concentrated among the large borrowers. A sub-sample of each pe-

riod, equivalent to 20% of the portfolio for each type of loan, was taken for the following analysis. As illustrated in Table 17, 57 thousand persons had credit card loans at December 2007, 25 thousand customers in the system had automobile loans, and 59 thousand had "other" consumption loans.

At December of last year, 23% of the borrowers in the financial system had only one credit card, 30.6% had two, 23.8% had three, 13.3% had four and 9.25% had five or more. Since 2003, there is evidence of an increase in the proportions of large borrowers with three or more cards; the annual variation in this share is 2.4% for those years, while the number of borrowers with two cards or less has declined. As to automobile loans, 85.5% of the largest borrowers with credit of this type have only one loan to purchase a vehicle, 13% have two loans and 1.5% have three or more. As to other consumption loans, the percentage of large borrowers with one or two was 52% at December 2007; the other 48% have three or more. The average number of credit cards is 2.6. The average number of loans to purchase an automobile is 1.16 and 2.6 for other consumption loans in 2007. Since 2003, there is evidence of a steady increase in the average number of loans (Table 18).

Table 18
Average Number of Loans per Person and Standard Deviation for the Large Borrowers who Account for 20% of the Consumption Loan Portfolios

	Credit Cards:		Automobile Loans:		Other Consumption Loans:	
	Average	Deviation	Average	Deviation	Average	Deviation
IV trim, 02	2.35	1.29	1.09	0.31	2.10	1.18
IV trim, 03	2.31	1.26	1.11	0.34	2.13	1.17
IV trim, 04	2.37	1.29	1.12	0.35	2.29	1.24
IV trim, 05	2.38	1.28	1.15	0.40	2.40	1.27
IV trim, 06	2.48	1.28	1.13	0.38	2.57	1.30
IV trim, 07	2.60	1.37	1.16	0.41	2.59	1.26

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Table 19
Average Outstanding Debt per Person and Standard Deviation (Millions of Pesos) for the Large Borrowers who Account for 20% of the Consumption Loan Portfolios

	Credit Cards:		Automobile Loans:		Other Consumption Loans:	
	Average	Deviation	Average	Deviation	Average	Deviation
IV trim, 02	10.38	12.79	25.99	22.69	36.86	62.10
IV trim, 03	10.88	17.35	27.20	18.32	37.20	45.09
IV trim, 04	12.24	15.52	31.54	20.92	49.75	66.21
IV trim, 05	14.35	17.82	35.87	34.44	58.60	80.72
IV trim, 06	16.91	19.12	43.83	32.36	77.67	102.97
IV trim, 07	18.89	24.76	41.13	29.94	84.15	88.49

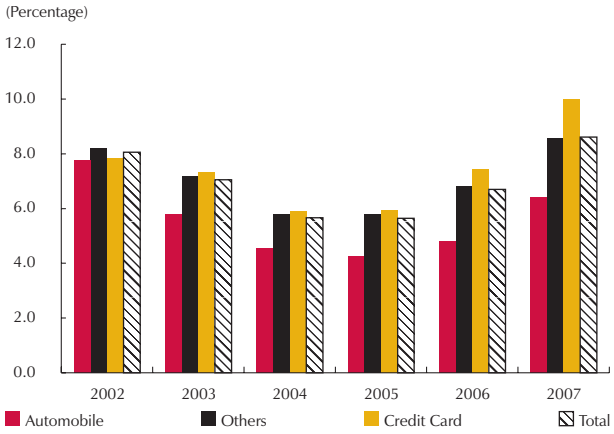
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Table 19 describes the average principle per type of loan owed by the large borrowers from the financial system. By December 2007, the average debt in credit cards was nearly Col$19 m, automobile loans, Col$41 m, and other loans, Col $84.15 m.

3) Credit Risk and Loan Portfolio Quality

As mentioned in the section on the financial sector, the *ex ante* margin spread has increased, particularly on consumption loans. The larger margin may be due, in part, to deterioration in the quality of the consumption loan portfolio, which is evident for all three lines but especially for credit cards. The quality indicator for the credit card loan portfolio went from 7.4% in 2006 to 10.0% in 2007 (Graph 70). In the case of automobile loans, the deterioration was not as great; this has helped to keep quality above that of the rest of the consumption loan portfolio. The deterioration in 2007 placed the quality indicator at its worst level since 2002, due to credit cards and other consumption loans.

Graph 70
Loan Portfolio Quality Indicator by Type of Consumption Loan (Risky/Gross Portfolio)



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Calculating transition matrices provides a better estimate of how credit risk in the consumption loan portfolio has evolved. Quarterly transition matrices were calculated in discrete time for the entire portfolio and for each of the three credit lines.[69] In the case of the consumption loan portfolio as a whole, the matrix for the average corresponding to 2002-2007 and the average matrix for 2007 are

Table 20
Total Consumption Loan Portfolio Transition Matrices
(Percentage)

	a. Average 2002-2007						b. Average 2007				
	A	B	C	D	E		A	B	C	D	E
A	95.6	2.7	1.0	0.6	0.2	A	93.3	3.4	1.3	1.0	0.9
B	49.7	24.1	7.6	17.9	0.7	B	48.6	17.1	9.8	20.9	3.6
C	28.8	11.0	12.5	46.4	1.3	C	24.4	11.5	10.8	51.9	1.4
D	16.1	5.2	4.3	23.2	51.2	D	12.9	5.8	2.8	21.4	57.1
E	6.2	1.4	1.0	2.1	89.2	E	9.9	3.0	0.6	3.1	83.5

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

69 These matrices are constructed pursuant to the method described in the last edition of the *Financial Stability Report*, specifically in the section on commercial loans. For the consumption loan portfolio, entries with amounts below one thousand pesos were eliminated, and approximately 85 million quarterly entries between 2002 and 2006 were used.

shown in Table 20: position 3.4 indicates that, between 2002 and 2007 on average, 46.4% of the loans classified as C migrated to D one quarter later.

The transition matrix for 2002-2007 shows a high persistence of A-rated and E-rated loans (96% and 89%, respectively). High probabilities in the upper part of the diagonal of the matrix are symptomatic of a period when the portfolio migrates towards lower ratings (a downward quality cycle). A comparison between this matrix and the average for 2007 (Table 20, Panel B) shows probabilities that are quite similar, but generally higher in the upper part of the matrix. In other words, the likelihood of migration to a worse rating is greater compared to the average matrix for 2002-2007; this corroborates the general deterioration in the quality indicator for the consumption loan portfolio.

According to Table 21, the differences in the quarterly transition matrices for the different credit lines are not ostensibly broad, neither for the 2002-2007 average, nor for 2007. In general, one sees a transition to poorer ratings in credit card, automobile and other consumption loans. Automobile loans are more likely to remain A-rated that the other types of consumption loans (95% versus 94.1%).

Table 21
Consumption Loan Portfolio Transition Matrices, by Type
(Percentage)

	a. Average 2002-2007						b. Average 2007				
1. Credit Card											
	A	**B**	**C**	**D**	**E**		**A**	**B**	**C**	**D**	**E**
A	94.6	3.1	1.0	0.9	0.5	**A**	93.8	3.4	1.1	1.0	0.7
B	53.5	18.3	8.1	16.6	3.5	**B**	48.7	17.6	9.3	20.0	4.4
C	37.9	10.7	9.2	40.5	1.8	**C**	26.9	10.4	10.4	50.8	1.6
D	15.6	10.6	7.8	19.2	46.8	**D**	12.6	5.0	2.4	21.0	59.1
E	8.2	2.1	0.6	10.4	78.7	**E**	10.1	2.4	0.4	3.3	83.8
2. Automobile											
	A	**B**	**C**	**D**	**E**		**A**	**B**	**C**	**D**	**E**
A	95.6	3.1	0.8	0.3	0.1	**A**	95.0	3.4	0.9	0.4	0.2
B	65.1	21.6	4.7	5.7	2.9	**B**	62.9	20.4	5.0	7.9	3.8
C	44.5	24.5	16.0	13.4	1.5	**C**	42.3	22.0	14.8	19.3	1.6
D	19.1	22.0	21.1	24.4	13.4	**D**	18.9	19.6	17.8	22.7	21.0
E	2.8	0.7	0.4	21.6	74.4	**E**	4.1	0.9	0.4	19.2	75.5
3. Others											
	A	**B**	**C**	**D**	**E**		**A**	**B**	**C**	**D**	**E**
A	95.1	3.1	0.9	0.6	0.3	**A**	94.4	3.4	1.0	0.7	0.4
B	59.5	19.7	6.4	11.2	3.2	**B**	55.8	19.0	7.1	14.0	4.1
C	41.6	17.1	12.5	27.0	1.7	**C**	34.6	16.2	12.6	35.1	1.6
D	17.9	16.3	14.3	21.4	30.1	**D**	15.7	12.3	10.1	21.8	40.1
E	5.5	1.4	0.6	16.3	76.2	**E**	7.1	1.7	0.4	11.2	79.7

Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Although small, this difference explains the lesser proportion of "other" consumption and credit card loans with an A rating. These lines of credit account for more than 90% of the portfolio. This is confirmed by analyzing the average likelihood of transition to a worse rating, with credit cards, other consumption and automobile loans registering 15.1, 10.8 and 6.4, in that order. In other words, credit card and other consumption loans are more likely to migrate towards a lower rating than automobile loans.

In conclusion, the automobile loan portfolio exhibits less risk than the other types of consumption loans, as it is backed by proper collateral and, historically, its quality indicators have been lower. The other types of consumption loans are regarded as more risky because of their limited collateral. This is reflected in the interest rates charged for those loans. Moreover, the matrices for 2007, with respect to the 2002-2007 period, are characterized by an increase in transition to worse ratings, basically due to credit cards and other consumption lines of credit, after registering historically low levels in 2005.

An analysis of the sub-sample comprised of the large borrowers who account for 20% of each type of consumption loan reveals a sharp decline in portfolio quality for 2007. Graph 71 shows the percentage of the portfolio, by type, according to the quality rating. At the end of 2007, that indicator was 9.3% for these large borrowers, which is higher than the indicator for the total consumption loan portfolio (8.6%). The deterioration during 2007 was considerable (2.9%), mainly because of the decline in the quality of credit card loans. Their quality indicator went from 7% in 2006 to 10.2% in 2007. Panels B, C and D show the quality of all types of consumption loans has declined since 2005; the most deterioration occurred in 2007 (3.14% in credit cards, 2.6% for automobiles and 2.8% for other consumption loans).

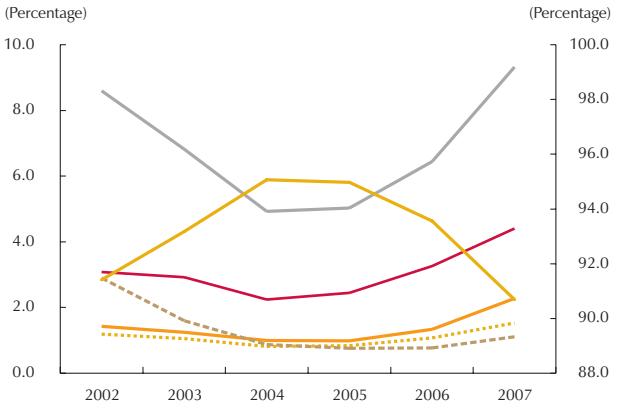
C. LIQUIDITY RISKS

Traditionally, academic literature has identified two notions (or dimensions) of liquidity risk. On the one hand, some authors associate this risk with an entity's ability to honor its liquid liabilities (*funding* liquidity risk). On the other, given a potential need for resources, liquidity risk is associated with the capacity to liquidate assets at a sufficient price and at the right time (*market* liquidity risk).

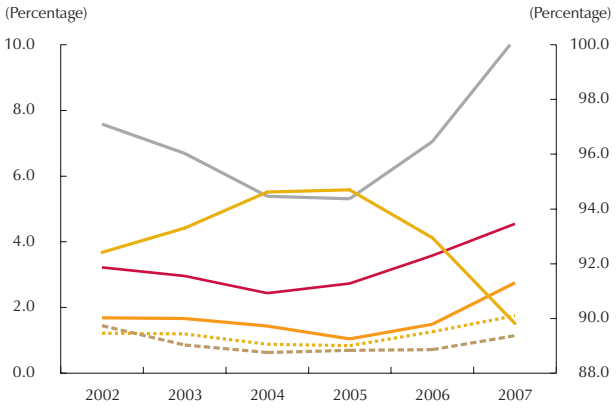
A more precise calculation of the effect of liquidity risk on the financial system requires an assessment of how sensitive institutions are to a liquidity shock transmitted though the inter-bank domestic government bond market. Several exercises to measure the liquidity risk associated with each of these risk dimensions are presented in this section.

Graph 71
Percentage, by Rating, of the 20% of the Portfolio Assigned to the Major Borrowers

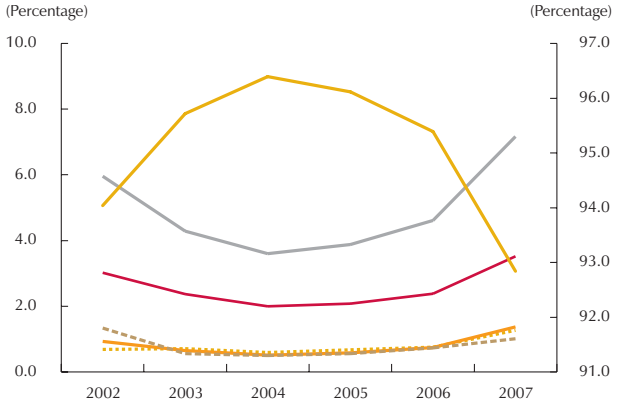
A. Total Consumption Loans



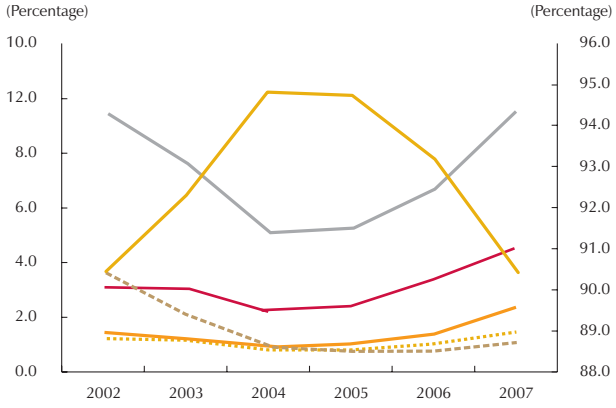
B. Credit Cards



C. Automobile

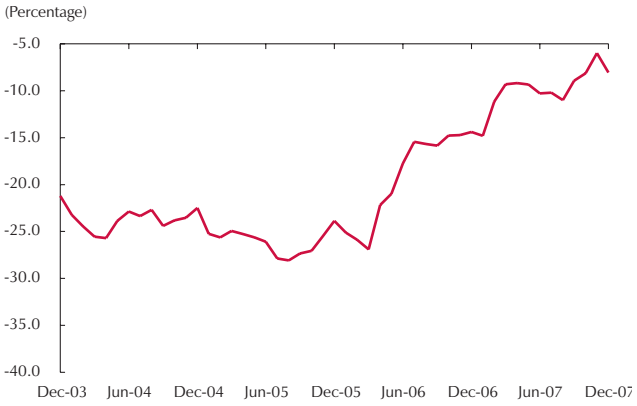


D. Others



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 72
ULR of Credit Institutions



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

1. Uncovered Liabilities Ratio (ULR): Funding Risk Liquidity Indicator [70]

a. Evolution

The recent changes in the ULR indicator are shown in Graph 72. Exposure to funding liquidity risk increased between December 2006 and December 2007. During that period, the ULR went from -14.4% to -8.06%.

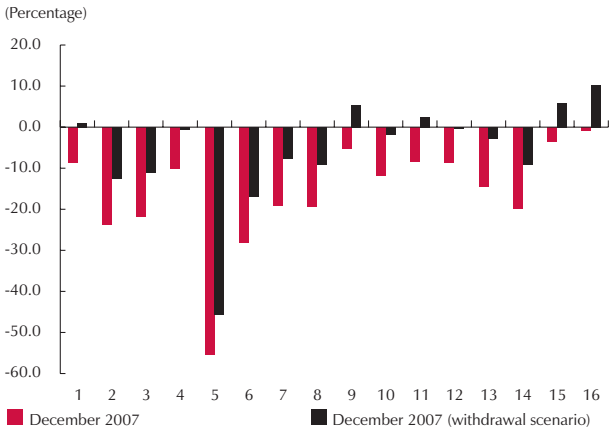
70 For details on the basic idea and the method used to calculate the ULR, see the March 2007 edition of the *Financial Stability Report*.

However, risk did not evolve evenly throughout the year. Exposure to funding liquidity risk increased sharply during the first half of the year, then stabilized and even declined slightly during the months from June to August. Afterwards, there was an additional increase in liquidity risk up to November 2007, when exposure peaked at -6.01% before declining throughout December.

Although liquidity risk remains low, it has increased steadily during the last two years. This underscores the importance of the Liquidity Risk Management System (SARL in Spanish), which was designed by Banco de la República in conjunction with the Financial Superintendence of Colombia. It is expected to be operating by the second half of 2008.

b. Stress Testing

Graph 73
Sensitivity Analysis: ULR of Credit Institutions



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

The uncovered liabilities ratio (ULR) can be used to assess the system's soundness in terms of its capacity to deal with an extreme but probable liquidity situation. Graph 73 shows a stress testing exercise that simulates how the ULR of institutions in the banking system would be affected by a mass withdrawal equivalent to 12% of all their deposits.[71]

The graph shows that no institution had a positive ULR at December 2007. This contrasts with the information registered in the last edition of the *Financial Stability Report,* which indicated one institution had a positive ULR. Because, as mentioned earlier, the system's ULR increased throughout the year, it is possible to say that, during 2007, institutions with a better liquidity position in January saw their situation worsen during 2007 compared to those with a high liquidity risk, even though they maintained a negative indicator.

Moreover, in an extreme situation such as the one suggested earlier, five institutions would register a positive indicator, which means high funding liquidity risk exposure. This number of "extremely sensitive" institutions is less (eight) than the number registered in June 2007. Their ULR would be 5.05%, on average, which means they would be obliged to liquidate nearly 5% of their illiquid assets if faced with a mass withdrawal of deposits. These five institutions account for 39% of the

71 The simulated withdrawal is equal in size to the simple average of the largest monthly decline in deposit volume experienced by financial intermediaries during the period from 1994 to 2007.

Table 22
Correction Percentage:
February 28, 2008

Institutions		Volatility Scenario
1	5.13	18.86
2	12.53	41.40
3	8.28	34.38
4	3.92	24.00
5	3.81	26.21
6	13.95	50.55
7	10.68	35.51
8	28.00	51.39
9	6.08	31.88
10	3.79	28.02
11	7.81	27.39
12	15.18	39.55
13	23.34	53.05
14	13.67	27.91
Total	**9.73**	**37.58**

Source: Banco de la República's calculations.

assets in the system. Therefore, a situation such as the one suggested is quite likely to affect the stability of the financial system.[72]

2. Liquidity-adjusted Value at Risk (VaR-L): Market Liquidity Risk Indicador[73]

The VaR-L calculates the percentage by which the traditional VaR would have to be increased to take market liquidity risk into account. Clearly, the larger the percentage, the greater the market liquidity risk, given that the necessary VaR correction is greater.[74]

Table 22 shows the correction percentage for each of the credit institutions at February 28 of this year, calculated exclusively for their TES portfolio. As illustrated (Table 22), the market liquidity risk implies the VaR for these institutions as a whole should be 9.73% greater. This is slightly above the percentage registered in the September 2007 edition of this report (8.8%). In other words, during the second half of 2007, the banking system experienced a slight increase its exposure to market liquidity risk. Within the system, one sees – as the historical records show – a great deal of dispersion in the correction percentages, which range from 3.79% to 57.27%. It is important to point out that the standard deviation of these percentages (13.44%) was slightly higher than in September 2007 (12.6%). In short, market liquidity risk for this set of institutions is not only greater, but also is more dispersed throughout the system.

To assess how sensitive this percentage is to an extreme but probable situation with respect to financial market liquidity, the VaR-L was calculated again, assuming the markets behave as they did during the second quarter of 2006, which is regarded as an extremely volatile period. The results of the exercise are shown in Table 22: market liquidity risk in this scenario would be 3.86 times greater and

72 At any rate, the system's resistance to a shock of this nature has increased, inasmuch as the sensitive institutions at June accounted for 53% of all bank assets.

73 For details on the basic idea and the method used to calculate VaR-L, see Juanita González and Daniel Osorio (2007), "Liquidity Adjusted Value-at-Risk (L-VaR) in Colombia," *Financial Stability Report*, Banco de la República, March 2007.

74 Due to the information restrictions on the bid-ask spreads of government bonds, it is important to point out that the VaR calculated in this exercise differs from the one presented in the section on market risk.

the correction percentage would increase to 37.58%. However, this is less than the amount calculated for August 2007. In other words, although market liquidity risk has increased, so has the system's resistance to a situation such as the one observed during that period. In any case, this resistance is quite low; hence, the importance of carefully monitoring tendencies that might prompt a sudden reduction in market liquidity. Some of those tendencies are mentioned in this report in the chapter on the macroeconomic environment.

3. Inter-bank Market and Contagion

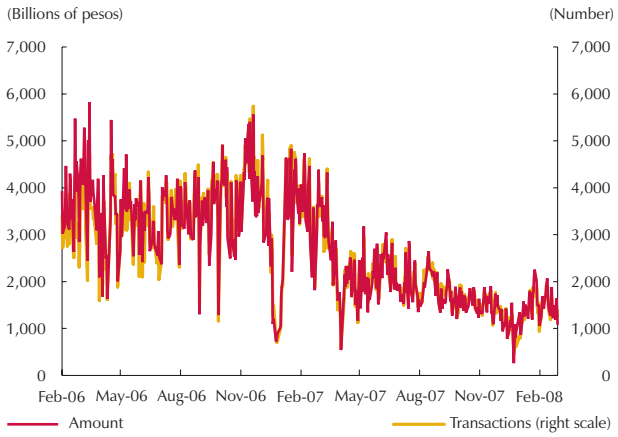
a. The Inter-bank Domestic Government Bond Market

At present, financial institutions manage liquidity mostly through government bond repo transactions. These transactions can be negotiated through two trading system: the Colombian Electronic Market (MEC in Spanish) managed by the Colombian Stock Exchange, or the Electronic Trading System (SEN in Spanish) managed by Banco de la República. The most important characteristics of the daily transactions conduced through these two systems during the period from January 2006 to January 2008 are analyzed in this section.

b. MEC Transactions

Although, in recent years, MEC has expanded its share of the inter-bank domestic government bond market, both the number of daily transactions and the total amount traded declined during 2007. As illustrated in Graph 74, the total amount has evolved in a way that closely resembles the movement in the number of daily transactions, which suggests the decline in amounts traded through MEC is due to less demand for operations of this type and not a reduction in the average amount of each transaction.

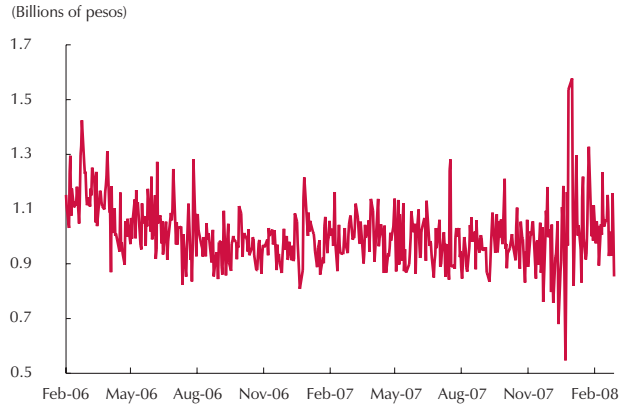
Graph 74
Amount and Number of Daily SEN Transactions



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

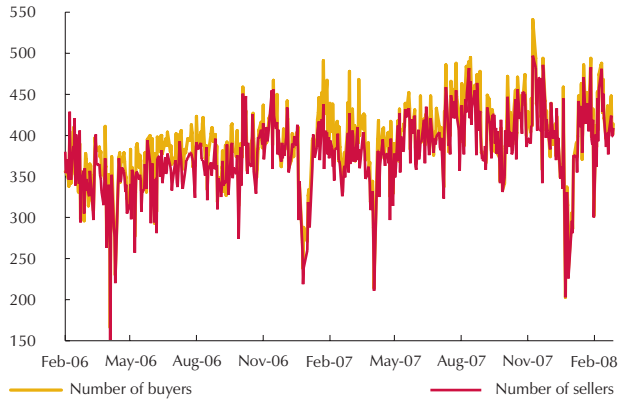
The average amount of a transaction is still within a range of Col$0.7 b to Col$1.3 b (Graph 75); however, these average amounts are accompanied by high standard deviations, which suggest the transactions on this market are highly diverse. This finding is in keeping with the assortment of liquidity requirements institutions face.

Graph 75
Average Amount per MEC Transaction



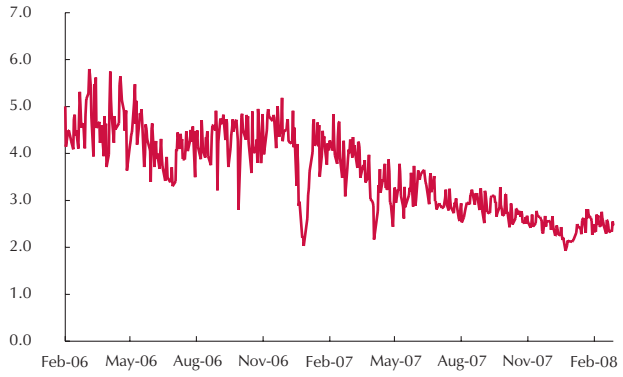
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 76
Number of MEC Investors Buying and Selling



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 77
Average Number of Counterparts for a MEC Buyer



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

It is interesting to consider how the number of MEC participants has evolved.[75] Graph 76 shows the number of debtors, differentiated by purchase and sale transactions. It also reflects a slight upward tendency in the number of participating investors. This suggests an increase in the number of brokerage firms that participating in MEC, as the number of participating banks has declined due to mergers and takeovers in recent years. The same graph shows the number of buyers is close to the number of sellers, which might indicate most institutions conduct both purchase and sale transactions during the day, depending on the liquidity pressures they face.

The period in question saw a decline in the average number of counterparts an institution has throughout the day, which is now between two and three. This number can be used as an indicator of the level of connectivity among institutions. For the most part, the suggestion in literature is that more connectivity in the systems means much more diversified risk (Graph 77).

To analyze the role banks play in the current structure of the government bond market managed by MEC, the structure of that market on Friday, February 29, 2008 was examined with a sample in which at least one of the counterparts in each transaction was a bank (the transactions in which both counterparts were brokerage firms were not considered).

On that particular day, banks covered 16.6% of their demand for liquidity with liquidity supplied by other banks and 83.3% with liquidity offered by brokerage firms. As to the total amount of liquidity supplied by banks, 93.6% was absorbed by brokerage firms. The matrix in Graph 78 represents the

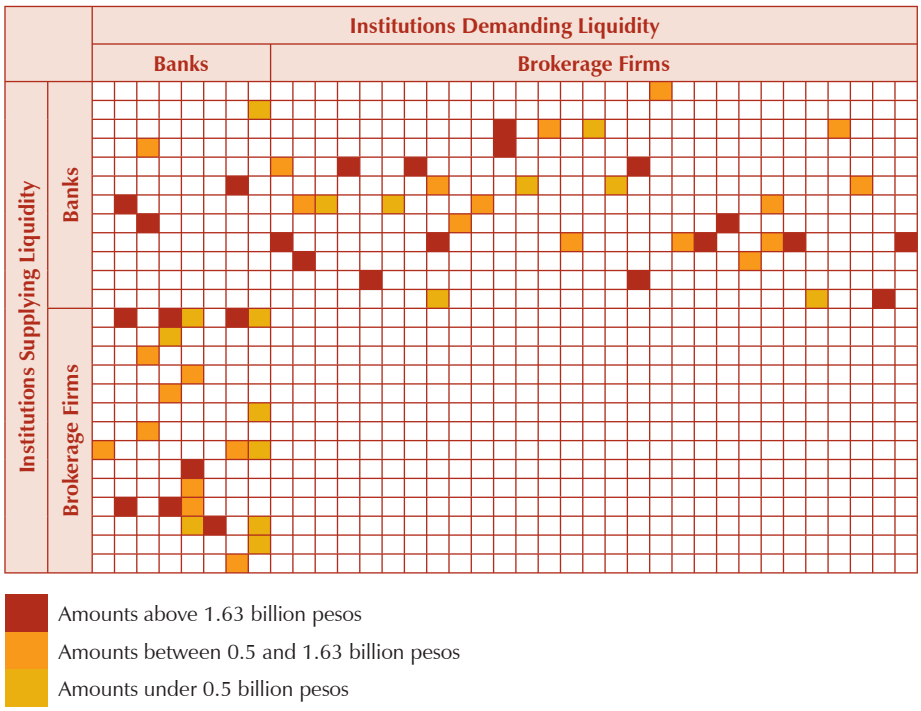
75 Only banks and brokerage firms were taken into account for this analysis.

On February 29, 2008, banks covered 16.6% of their demand for liquidity with liquidity offered by other banks.

connections or supply lines that existed that day among the participating banks and brokerage firms. As illustrated, the structure of the market is quite disconnected; each institution conducted transactions with a limited number of counterparts. The graph also shows that brokerage firms covered most of the demand for liquidity on the part of banks.

The structure of the inter-bank market can be represented by a network of nodes (banks) and arches (transactions among institutions). This representation is useful in that it allows us to take advantage of the results of empirical studies, such as the one by Allen and Gale (2000),[76] who claim the inter-bank market's resistance to liquidity shocks depends on its structure. In other words, complete inter-bank markets[77] are more robust and allow for a more efficient distribution of risk among depositors and banks than markets with an incomplete structure. Graph 79 shows the structure of the MEC-managed government bond market on February 29, 2008: the color of the arches

Graph 78
Government Bond Market Matrix for MEC Trading on February 29, 2008

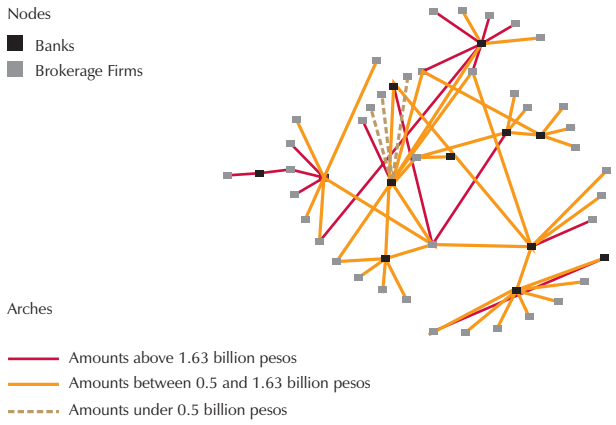


Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

76 F. Allen and D. Gale, 2000, "Financial Contagion," *Journal of Political Economy*, Vol. 108, pp. 1-33.

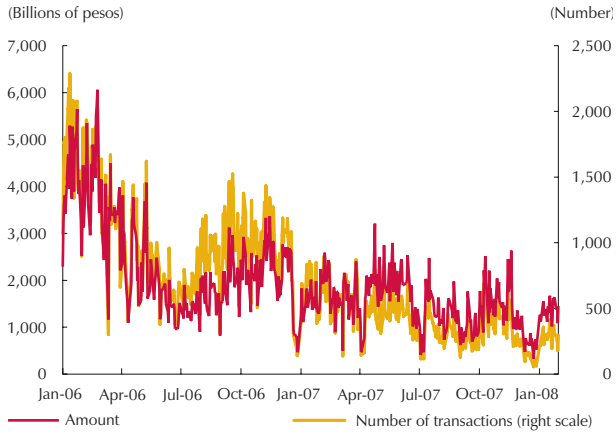
77 A complete structure is one where each bank is symmetrically connected to all the others.

Graph 79
MEC Structure on February 29, 2008



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 80
Amount and Number of Daily Transactions via SEN



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

represents the range in value of the transactions conducted by each pair of institutions, while the color of the nodes differs according to the type of institution.

The structure on that particular day is similar to one with monetary centers, where there are several central institutions with connections to many other institutions that are not connected to one another. According to Freixas *et al.* (2000),[78] with a structure of this type, the failure of a bank that is connected to the monetary center will not cause the monetary center to fail; however, if the monetary center fails, the banks connected to it may be in trouble.

c. SEN Transactions

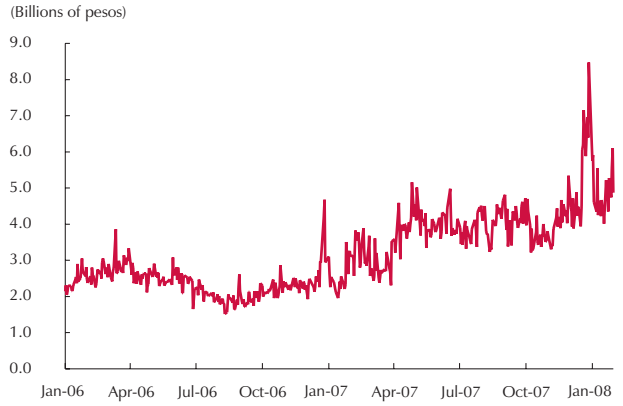
As with MEC, there has been a decline in the total amount traded on SEN and the number of transactions (Graph 80). The average number of daily transactions was 1,522 in January 2006 and only 284 in February 2008. Part of this downturn can be explained by the decline in SEN's share of the government bond market. There was also a reduction in the total amount traded, which went from Col$2.9 b in January 2005 to Col $1.35 b in January 2008.

A comparison between Graph 74 and Graph 80 shows MEC leads with respect to the total amount traded and the number of transactions. A look at the average amount of a transaction conducted through SEN (Graph 81) shows an increase, which is explained by the more than proportional drop in the number of transactions with respect to the total amount traded.

The average number of counterparts per institution per day declined from 14 in January 2006 to six in January 2008. It is important to point out that SEN has a much larger average number of counterparts than MEC.

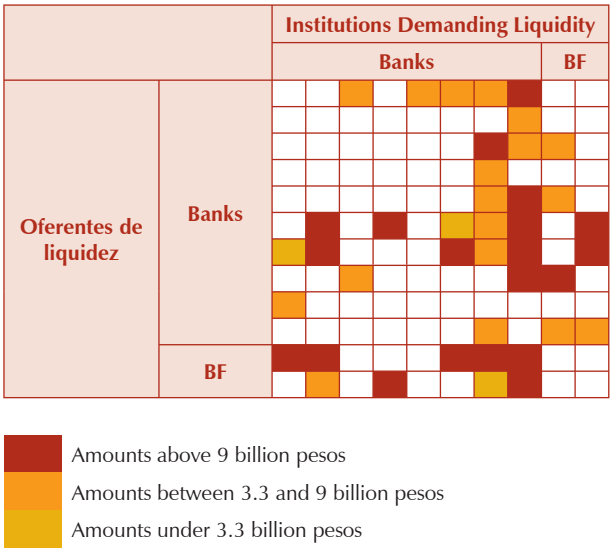
78 X. Freixas, L. Parigi and J. C. Rochet, 2000, "Systemic Risk, Interbank Relations and Liquidity Provision by the Central Bank," in Journal of Money, Credit and Banking, Vol. 32.

Graph 81
Average Amount per Transaction via SEN



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 82
Government Bond Market Matrix for SEN Trading on February 29, 2008



Amounts above 9 billion pesos
Amounts between 3.3 and 9 billion pesos
Amounts under 3.3 billion pesos

BF: Brokerage firms.
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

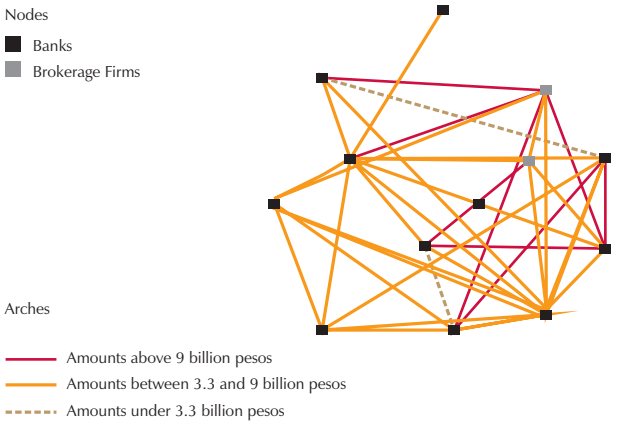
Finally, an analysis of the structure of the market for government bonds traded via SEN on February 29, 2008 shows that banks covered 66.5% of their demand for liquidity with liquidity supplied by other banks. This is much higher than the percentage for MEC. On the supply side, we see that almost 51% of the liquidity supplied by banks was absorbed by other banks. In the case of SEN, this suggests there were strong connections between banks on the day in question. It also should be noted that SEN had only 13 participants, while MEC had 51 (Graph 82).

As illustrated in Graph 83, SEN had a more compact structure on this particular day, with much more connectivity among the institutions than was the case with the structure found for MEC. When unifying the transactions conducted through both trading systems, it is possible to see a far more compact structure than the one found for MEC. However, we continue to see monetary centers connected to many institutions that are not connected to one another. This could be a risk factor within the system, since a large number of institutions could be affected if a monetary center fails (Graph 84).

d. Risk of Contagion in the Inter-bank Domestic Government Bond Market

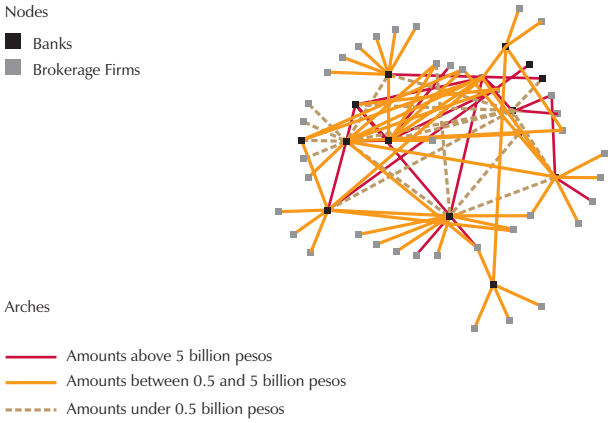
The inter-bank market plays an important role in redistributing liquid resources. Institutions use the inter-bank market to sell or purchase new positions in government bonds (selling when they need liquidity and buying when they have liquidity to offer). Consequently, proper operation of this market is crucial to liquidity-risk management for each institution.

Graph 83
SEN Structure at February 29, 2008



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 84
Government Bond Market Structure



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

The results of the model proposed by Estrada and Morales (2008)[79] used to simulate how flows through the arches might be affected by an unexpected liquidity shock to the nodes in the network are presented in this section. The model allows us to assess how robust the government bond market is during a particular time period.

In this model, risk of contagion is defined as the risk an institution faces when its liquidity demand is not satisfied on the inter-bank market, because the institutions disposed to supply liquidity are affected by unexpected shocks. Given this definition, institutions with a smaller liquidity gap will be more exposed to the risk of contagion. In other words, they will depend less on positive flows coming from the inter-bank market.

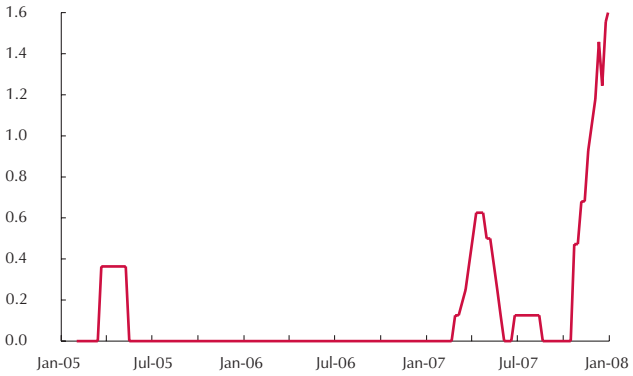
This is why it is important that institutions are able to gauge their probability of finding liquid resources on the inter-bank market. In other words, they should have an idea of how strong that market is under stressed conditions.

Two of the measurements proposed by Estrada and Morales are: i) the number of institutions whose liquidity demand is not satisfied entirely due to shocks affecting the other institutions; and ii) the number of institutions that reduce the amount of liquidity they are prepared to offer, when faced with unexpected shocks.

The following are the results of the model based on a stress scenario in which the highest percentage of savings and current account withdrawals in the history of each bank are used as the initial shocks. The graphs below were obtained by calculating the median of a total of 1,000 simulations for each week in the period under analysis. It is important to point out that this exercise was replicated using only information from currently existing banks.

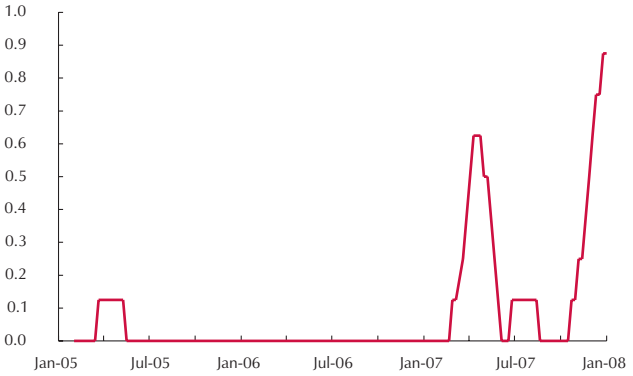
79 "Inter-bank Market and Risk of Contagion in Colombia," in "Financial Stability Issues," *Financial Stability Report,* March 2008.

Graph 85
Average Number of Institutions with Unsatisfied Liquidity Demands after the Shocks



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph 86
Average Number of Institutions Supplying Less Liquidity than in a Shock-free Situation



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

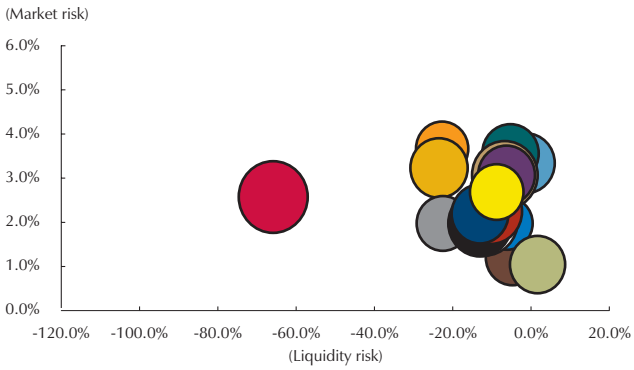
The average number of institutions unable to satisfy their liquidity demand entirely, due to shocks passed on through a liquidity supply reduction, is shown in Graph 85. As illustrated, the average number of institutions affected by that contagion began to be positive as of early 2007. This suggests the risk of contagion has increased slightly as of 2007, since an institution is now more likely not to be able to meet its liquidity demand on the interbank market, due to shocks that have reduced the supply of liquidity.

The number of institutions that cease to offer all or part of the liquidity they would supply in the absence of shocks is shown in Graph 86. Here again, the number has increased as of last year, although less so than in the case of unsatisfied demand. Hence, the conclusion is that institutions that are unable to absorb the shock have more than one counterpart, on average.

D. COMBINED DESCRIPTION OF THE RISKS

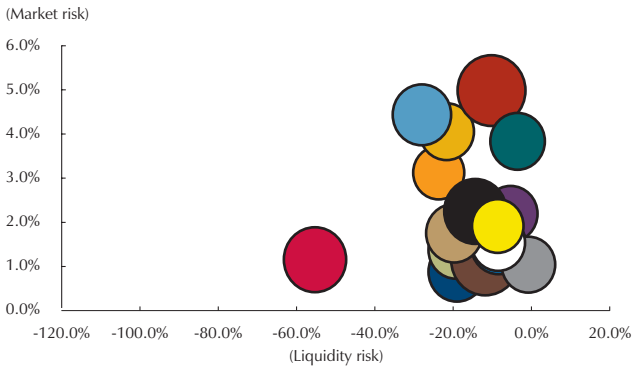
Three risk measurements (liquidity, market and credit) are presented simultaneously in graphs 87 through 90. The ordinate scale shows the DCC-

Graph 87
Set of Risks at June 2007 with Non-stressed Ratios



Nota 1: The size of the bubbles is determined by the capital adequacy ratio.
Note 2: The graph shows the stressed ULR and the stressed capital adequacy ratio.
Source: Banco de la República.

Graph 88
Set of Risks at December 2007 with Non-stressed Ratios



Source: Banco de la República.

VaR of commercial banks at thirty days, as a percentage of the balance exposed to market risk. The ULR as a measure of liquidity risk is shown on the abscissa scale. The size of the bubbles is determined by the capital adequacy ratio of commercial banks, as an estimate of credit risk. The graphs are for two different dates (June and December 2007), with non-stressed (Graphs 87 and 88) and stressed (89 and 90) credit and liquidity risk measurements.

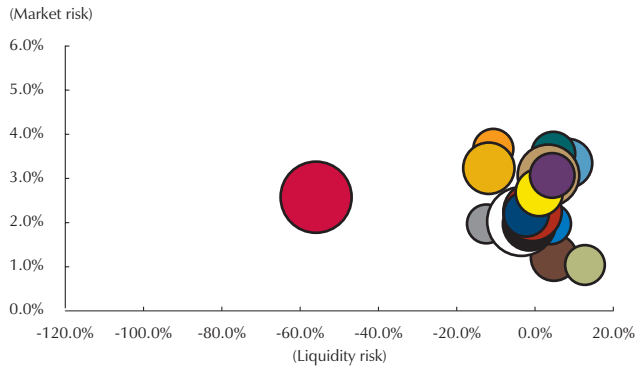
The graphs are intended to characterize the overall risk to the system and how it has developed during the course of time. There is no attempt to measure systemic risk, and risk dependency modeling is not taken into account.

With graphs of this type, a comparison between two different periods will show that relatively smaller-sized bubbles indicate an increase in credit risk. A shift to the right represents an increase in liquidity risk; an upward movement is equivalent to an increase in market risk. Therefore, when comparing one date to another, if the bubbles are smaller and tend to move towards the upper right-hand portion of the graph, the general risk situation is deteriorating. If the movement is in the opposite direction, the risk situation will improve.

As illustrated, the general tendency of these risks is slightly negative, but not particularly alarming. The movement of the bubbles is, for the most part, towards the upper right quadrant of the graph, with bubbles for December being smaller than those for June, on average.

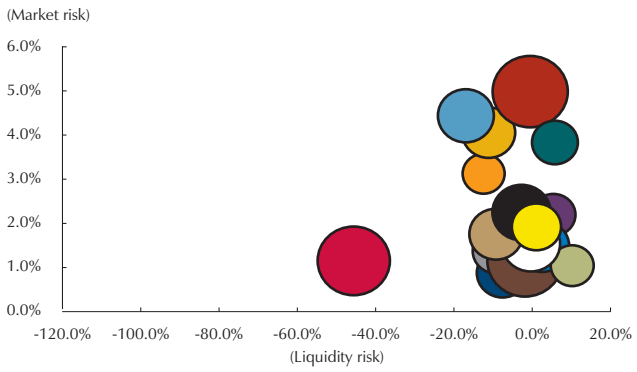
Specifically, the situation in terms of liquidity risk deteriorated during the second half of 2007. Most of the institutions have gone from an interval between 0 and -30% to an interval between 0 and -25%. The market risk situa-

Graph 89
Set of Risks at June 2007 with Stressed Ratios



Source: Banco de la República.

Graph 90
Set of Risks at December 2007 with Stressed Ratios



Source: Banco de la República.

tion is not as clear; the bubbles are obviously more scattered. One group has increased its exposure to relative risk, while another has reduced it. Credit risk is quite stable during the period of comparison, with a slight surge reflected in bubbles that are smaller, on average, for December than for June.

For the most part, it is possible to speak of more exposure to market, credit and liquidity risk, but there is no dramatic increase in any of the measurements. The analysis of stressed measurements is consistent with the foregoing analysis: the size of the bubbles declined between June and December, indicating more credit risk, and they have shifted to the right (although, in this case, less so than before). In general and as expected, a comparison between Graphs 87-88 and Graphs 89-90 shows the bubbles are smaller and oriented more towards the right.

Box 4
ASSET OVERVALUATION

The volatility of asset and loan price cycles is regarded as a primary source of economic and financial stability, as long as the imbalance in these variables occurs *jointly*.[1] Therefore, it is essential to monitor the combined performance of asset and loan price cycles to determine if possible asset price hikes are reflected in added indebtedness (or vice versa), which could jeopardize borrowers' creditworthiness if there is a setback in the actual situation. The focus of this section is on finding evidence of asset price overvaluation on the mortgage and securities markets in Colombia, while analyzing the increase in loans using the loan/GDP ratio.[2]

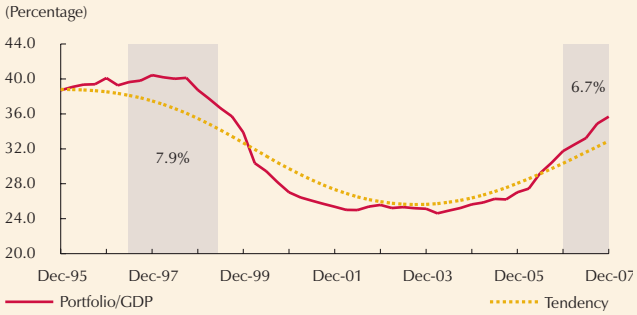
1. Loans

A Hodrick and Prescott filter is employed to analyze the real pattern in total loans, the consumption and mortgage loan portfolios, and mortgage loan disbursements. It estimates the smoothed tendency of these series,[3] which is compared to the current indicator in order to calculate the extent to which each series deviates from its tendency.

Throughout 2007, the total and consumption loan portfolios, as a percentage of GDP, were 6.7% and 8.1% over their tendency (Graphs B4.1 and B4.2). This acounts to a respective decline of 2.7 and 4.3 percentage points in the indicator for both portfolios compared to the average registered in the first half of 2007. The drop in those indicators was forecasted in the last edition of the *Financial Stability Report*, given the slowdown in those portfolios since March 2007.

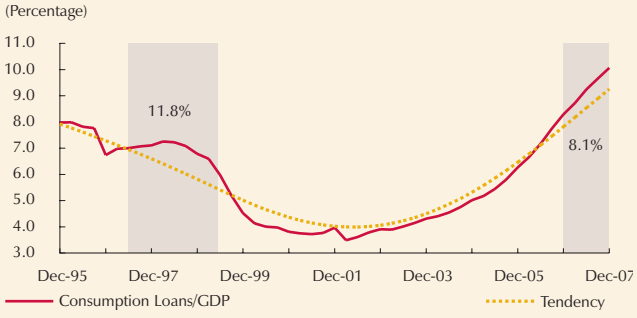
Graph B4.3 shows an average deviation of 32% in the tendency of the mortgage loan portfolio during the past year, which is even more than in 1998-1999 (9%). This indicator is high and should be analyzed in light of the recent recovery in that portfolio (since mid-2006), following a five-year period of sharp disintermediation. Consequently, it is no surprise that the tendency calculated here is biased towards a lower level than might be expected in the months ahead, when the recovery consolidates. The growth in this indicator was as-

Graph B4.1
Total Loan Portfolio/GDP and Its Tendency



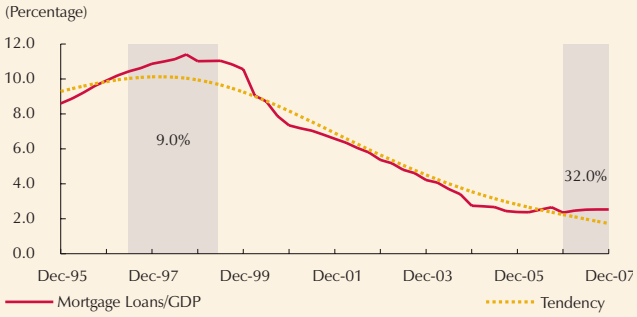
Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph B4.2
Consumption Loan Portfolio /GDP and Its Tendency



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph B4.3
Mortgage Loan Portfolio/GDP and Its Tendency



Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

1 For details on how these financial variables can affect market stability, see the September 2007 edition of the *Financial Stability Report* and specialized literature on the topic.

2 An analysis of the price of government bonds (TES) is not included, as they account for only a small share of household and corporate wealth. This is contrary to the situation with housing and stocks.

3 The series for the total and consumption loan portfolios, as a percentage of GDP from December 1994 to December 2007, were used. GDP was projected assuming 12.69% annual nominal growth (7% real growth) for the fourth quarter of 2007.

sociated with the momentum in disbursements, which were almost 22.3% (for 2007) above their tendency. Although this rate is high, it is still a long way from the levels observed prior to the crisis, which were around 100% during several quarters (Graph R4.4).

2. Mortgage Loan Market

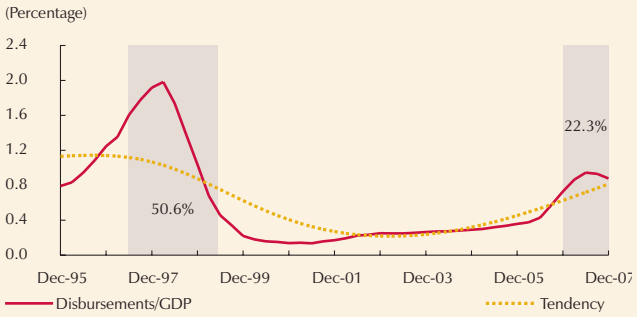
The New Housing Price Index (NHPI) calculated by the National Department of Planning (DNP)[4] was used to determine if the mortgage loan market is overvaluated. Although the NHPI focuses only on new home prices, which gives it a bias towards lower levels than those for the final consumer,[5] it has the advantage of being a monthly indicator and has less of a lag than the UHPI, which is quarterly.

Two overvaluation indicators are constructed with the NHPI. The first is the ratio of the NHPI to the rent index (RI) calculated by Banco de la República,[6] which compares the asset price to the fundamental price that determines it, in this case, rent. In addition, a Hodrick and Prescott filter decomposition is applied to the new housing price series to evaluate the deviations from its tendency. This constitutes the second indicator.

The first of these indicators does not show a pattern that is much different from what was noted in the last edition of the *Financial Stability Report*, with overvaluation staying at about 7.5% throughout 2007 (Graph B4.5). This tendency should come as no surprise considering the momentum in mortgage loans during the last few months and how it has affected housing prices. Nevertheless, this is not an alarming level compared to those registered between 1994 and 1995 (near 24%). It is important to be careful when analyzing these results, since the ratio is constructed with aggregate figures.

Graph B4.6 offers a comparison between the actual NHPI and its smoothed tendency. It shows the NHPI is near its tendency (1.0% below in December 2007), as it was throughout the year, with 1.0% average overvaluation. Interestingly, both indicators coincide in terms of the high housing prices during 1994-1997 and the slight deviations from those levels observed in recent years.

Graph B4.4
Disbursements/GDP and Its Tendency

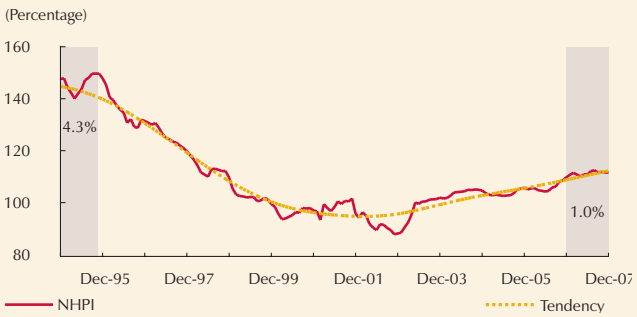


Source: Financial Superintendence of Colombia, Banco de la República´s calculations.

Graph B4.5
Razón de precios de vivienda nueva a arrendamientos (IPVN)
(promedio 1994-2007 = 100)

Source: DNP and Banco de la República, Banco de la República's calculations.

Graph B4.6
NHPI and Its Tendency
(December 1999 = 100)



Source: DNP, Banco de la República's calculations.

4 There are two other indicators: the Real Estate Registration Index (IRI) compiled by Fedelonjas-ICAV and the Used Housing Price Index (UHPI) compiled by Banco de la República. The UHPI was not analyzed in this section, as there is no information other than what was used in the last edition of the *Financial Stability Report* (September 2007). The IRI series is normalized to the average for 1998-2007, which means it cannot be analyzed the same way as the other indexes used in this report. See ANIF, "Comentario Económico del Día," August 28, 2007 for the recent pattern in this indicator.

5 Due to under-registration of the end price for housing.

6 The rent index is the housing component of the CPI.

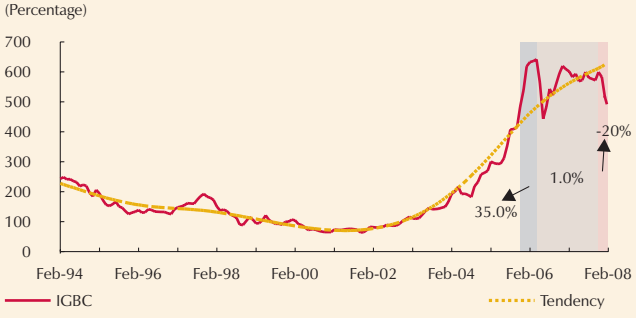
3. Stock Market

The recent performance of the stock market can be understood better if broken down into three periods. During the first period, between 2005 and the first quarter of 2006, the capital market was characterized by a sizeable increase in asset prices and in the amounts and number of stocks traded. This tendency completely reversed during the second quarter of 2006, when the Colombian Stock Market Index (IGBC) plummeted as a result of the volatility on international financial markets. The third and final period extends from mid-2006 through all of 2007 and the first two months of 2008. It was characterized by IGBC recovery and stability, particularly during the past year, when the index seems to have achieved a relatively balanced level.

A Hodrick and Prescott filter was applied to the IGBC to verify the possible degree of overvaluation during each of those periods, the idea being to analyze the deviations from its tendency. The results for the first period show 6% average overvaluation. However, if the first four months of 2006 are analyzed separately, the figure is 35% (Graph B4.7). The indicator reversed during the second period, reflecting approximately 1% overvaluation, which is the same amount, on average, observed from mid-2006 to February 2008.

Although this confirms the stability mentioned earlier, there are two important elements to consider. To begin with, the reason why this indicator was so low in 2007 is the dynamic way prices have increased since 2005, which creates an upward bias (even taking the crisis in mid-2006 into account), while the actual prices exhibited gradual increases as of the second half of 2006 and relative stability up to the start of 2008. Secondly, and most important, in term of how this index will perform in the future, is the fact that 2008 has been marked by sharp downturns in the IGBC (16% between December 2007 and February 2008). These have widened the gap between its tendency and actual levels by about 20%. The possible increase in aversion to risk, created by the current situation on international markets, and particularly the United States market, could widen that gap, as long as prices react faster than their tendency.

Graph B4.7
IGBC and Its Tendency
(December 1999 = 100)



Source: Colombian Stock Market Index (IGBC), Banco de la República's calculations.

4. Conclusions

In short, the results suggest that prices on the mortgage market are apparently beginning to ease. The extent of overvaluation in both indicators is low and stable, after an upward trend during the first months of 2007. Nevertheless, it is important to keep a close eye on home prices. If the current pace of mortgage loan portfolio growth continues, home prices could exceed the fundamental value of housing, which would aggravate the risk position of financial intermediaries.

The stock market indicator shows the prices of these assets appear to have stabilized near their tendency, following a period of overvaluation between 2005 and the first quarter of 2006. However, the drop in stock prices during the early months of 2008 underscores the importance of carefully monitoring the local securities market. Possible undervaluation as a result of added aversion to risk caused by more volatility on international markets (rather than changes in the fundamentals) is not desirable either.

Even though all the portfolio indicators reflected a considerable amount of deviation from the tendency in 2006 and 2007, this corroborates what was said in this report about the sharp increase in the loan portfolio and the need to watch this tendency closely. In the case of the consumption and total loan portfolios, this gap has been closing since the second half of 2007. However, if the portfolio indicators continue to reflect major deviations and asset prices do the same, these markets will have to be monitored even more carefully to avoid possible imbalances in the current stability of the system.

Box 5
PROBABLE FINANCIAL STABILITY SCENARIOS IN 2008: SIMULATIONS FROM A GENERAL EQUILIBRIUM MODEL OF THE FINANCIAL SYSTEM

The basic outline of a general equilibrium model of the financial system was presented in the March 2006 edition of the *Financial Stability Report* in an article entitled "An Equilibrium Approach to Financial Stability Analysis: The Colombian Case". The results of simulations from the model for 2008 are presented in this section, based on different but probable monetary-policy scenarios. The simulations are quarterly and use the situation of the banking system in December 2007 as a starting point. Probable patterns for different variables of the financial system such as the loan portfolio, deposits, loan portfolio quality and interest rates are simulated with each scenario.

It is important to remember that the tendencies outlined in this section should not be interpreted as forecasts on financial variables or as an official opinion from the Financial Stability Department at Banco de la República as to what the near future holds for the financial system. They are merely simulation exercises based on hypothetical monetary-policy scenarios.

See Saade, Osorio and Estrada (2007)[1] for the details on calibration, implementation, solution strategies, objective functions and markets where the agents in this model interact. In addition to the information provided herein, a new calibration of the parameters of the reduced forms of household demand for loans was done for this exercise to better reflect the differentiation in the financial sector.[2]

Scenario 1: A Constant Intervention Interest Rate in 2008

The assumption in this scenario is that Banco de la República will hold its intervention interest rate constant at 9.75%, which is the rate set on February 22, 2008 by its Board of Directors. Based on that assumption, the model predicts less momentum in the loan portfolio, which would be valued at approximately Col$101.3 t[3] by December 2008, with very little real growth (0.23%) compared to December 2007. The model also suggests that deposits with the system will remain virtually constant this year.

In this context, the slowdown in the loan portfolio is accompanied by an improvement in the loan-portfolio quality indicator, which is the non-performing loans as a percentage of the total portfolio. According to the model, at December 2008, this proportion would be 2.8% less than at December 2007.

Finally, the banks in this scenario would more than meet the minimum capital adequacy ratio (9%).

Scenario 2: Intervention Interest Rate Hikes during 2008

This context assumes there will be two intervention interest rate hikes of 25 bp each during the year. Given that assumption, the slowdown in the loan portfolio would be more pronounced than what was suggested in the constant-rate scenario. Accordingly to the model, the loan portfolio in the system would amount to Col$99.6 t at December 2008, which is 1.5% less in real terms than the value at December 2007. In this context, interest rates on loans would be higher compared to the simulations in Scenario 1. The model also suggests that deposits in the system would not be affected significantly by the increasing-policy-rate scenario, compared to Scenario 1. The loan-portfolio quality indicator would improve, as in the first case.

However, the probability of repayment by banks at December 2008 would be less in this context than in Scenario 1, although very near 100%. This variable is associated with the probability that a bank will cover its liabilities on time. In other words, given the higher cost of funding on the inter-bank market as a result of the intervention rate hikes, the model suggests funding risk will increase, but remain low in any case.

Finally, in this scenario, all the banks will more than comply with their minimum capital adequacy ratio. de los bancos en diciembre de 2008 si se compara con el escenario 1.

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1 Saade, Osorio y Estrada, 2007, "An Equilibrium Approach to Financial Stability Analysis: The Colombian Case," in *Annals of Finance*, Vol. 3, No. 1, pp. 75-106. For the effects of simulation, there are three optimizing agents that pertain to groups of banks: mortgage loan banks (BECH), non-BECH national banks and non-BECH foreign banks.

2 Readers may request the parameters by contacting asaadeos@banrep.gov.co.

3 The model only includes commercial banks.

Financial Stability Issues

The full text of these articles is available at:
http://www.banrep.gov.co/publicaciones/pub_es_fin.htm

Medidas de concentración y competencia
Concentration and Competition Measures
Javier Gutiérrez Rueda
Nancy Zamudio Gómez

La estructura del mercado interbancario y del riesgo de contagio en Colombia
Interbank market and risk of contagion in Colombia
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Una aproximación dinámica a la medición del riesgo de mercado para los bancos comerciales en Colombia
A dynamic approach for measuring market risk in Colombian commercial banks
Óscar Martínez
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El problema de incentivos entre las AFP y los afiliados al sistema privado de pensiones
The Incentives Problem In The Private Pension System
Yanneth Rocío Betancourt G,

Sistema de comisiones de las administradoras de fondos de pensiones en colombia
Fee Scheme of Pension Fund Managers in Colombia
Óscar Martínez
Andrés Murcia

MEDIDAS DE CONCENTRACIÓN Y COMPETENCIA

JAVIER GUTIÉRREZ RUEDA
NANCY ZAMUDIO GÓMEZ

En este documento se presentan algunas metodologías mediante las cuales se determinan los niveles de concentración y la estructura de competencia del mercado financiero colombiano, Los resultados del estudio muestran que tanto el mercado de crédito como el de depósitos se encuentran cerca de niveles de concentración moderada, Adicionalmente. se encontró que la estructura que caracteriza el mercado de crédito es el de competencia monopolística; sin embargo. esta estructura varía a lo largo de las modalidades de crédito, Por el lado del mercado de depósitos. se encontró que es altamente competitivo y que los bancos tienen incentivos a desviarse del equilibrio de Nash,

CONCENTRATION AND COMPETITION MEASURES

In this paper we present some measures of concentration and competition, The results showed that the concentration levels for the loan's market and deposit's market are close to those of a moderate concentrated market, Moreover. the results give evidence that the loan's market faces a monopolistic competition structure. however. this structure changes across segments of the loan portfolio, In addition. we found that the deposit's market is highly competitive and banks have incentives to deviate from the Nash equilibrium,

LA ESTRUCTURA DEL MERCADO INTERBANCARIO Y DEL RIESGO DE CONTAGIO EN COLOMBIA

DAIRO ESTRADA
PAOLA MORALES

El mercado interbancario desempeña un papel muy importante como distribuidor de recursos líquidos; no obstante. si muchas entidades enfrentan simultáneamente problemas de liquidez. la oferta agregada de liquidez será menor que la demanda. y los bancos estarán obligadas a acudir al banco central en busca de recursos líquidos a un costo más elevado, Este documento examina la estructura del mercado interbancario en Colombia y. a partir de un modelo de simulación. se analiza el comportamiento del riesgo de contagio durante 2005-2007, El riesgo de contagio es definido como el riesgo que enfrenta una entidad de no satisfacer su demanda de liquidez en el mercado interbancario a causa de choques de liquidez en las demás entidades, Para el período de análisis se encuentra un incremento en el riesgo de contagio,

INTERBANK MARKET AND RISK OF CONTAGION IN COLOMBIA

The interbank market plays a fundamental role as distributor of liquid resources, Nonetheless. if many intermediaries face liquidity problems simultaneously. the interbank market's supply of liquidity will be insufficient. and financial intermediaries will be forced to seek such resources from the lender of last resort. at substantially higher costs, This paper examines the structure of Colombia's interbank market and. following a simulation model. analyses the behavior of contagion risk for the period comprised between 2005-2007; where contagion risk is defined as the risk faced by a financial institution of being unable to satisfy his demand for liquidity due to liquidity shocks suffered by other institutions, For the period under study we find an increase in contagion risk. mainly as a result of a lower absorption capacity by financial intermediaries,

UNA APROXIMACIÓN DINÁMICA A LA MEDICIÓN DEL RIESGO DE MERCADO PARA LOS BANCOS COMERCIALES EN COLOMBIA

ÓSCAR MARTÍNEZ
JORGE MARIO URIBE

En este artículo se describe la metodología utilizada para la medición del riesgo de mercado. llevada a cabo en el *Reporte de Estabilidad Financiera*. mediante el uso de técnicas dinámicas no sólo en la modelación de volatilidades sino también de correlaciones, La medida de valor en riesgo (VeR) se calculó individualmente para los bancos comerciales con periodicidad semanal entre febrero de 2003 y febrero de 2008, Los cálculos de los VeR estáticos y dinámicos muestran diferencias cuantitativas significativas en períodos de turbulencia. lo que resalta la importancia de las nuevas medidas de riesgo propuestas,

A DYNAMIC APPROACH FOR MEASURING MARKET RISK IN COLOMBIAN COMMERCIAL BANKS

This article describes new methodologies for market risk measures used in the Financial Stability Report. where not only variances but correlations dynamic techniques are used, The Value at Risk (VaR) measure was calculated for each of the commercial banks. weekly. from February 2003 to February 2008, Results show quantitative large differences between static and dynamic VaR's measures during turbulent periods. which highlight the importance of the new market risk measures proposed here,

EL PROBLEMA DE INCENTIVOS ENTRE LAS AFP Y LOS AFILIADOS AL SISTEMA PRIVADO DE PENSIONES

YANNETH ROCÍO BETANCOURT G,

Los afiliados al sistema de ahorro individual delegan el manejo de sus ahorros a una administradora privada esperando de ella una buena gestión y un rendimiento que le garantice la maximización de sus ingresos futuros. en contraprestación de una comisión, Aunque el afiliado espera que tal ente haga el esfuerzo necesario para que sus ahorros sean invertidos eficientemente. existe un problema de riesgo moral que no le permite verificar directamente el desempeño de la administradora. por lo que se puede presentar un comportamiento oportunista por parte de ésta, El objetivo. entonces. es determinar el contrato óptimo con información incompleta. que haga compatibles los incentivos de la AFP con los del afiliado. para luego compararlo con el contrato vigente actualmente en Colombia. y determinar si el esquema de comisiones es el correcto en tales términos de incentivos,

THE PROBLEM OF INCENTIVES IN THE PRIVATE PENSION SYSTEM

In the fully funded system each member delegates the management of his savings to a private manager looking for high returns that maximize his future income, Although. it is expected that the manager exerts some effort to invest efficiently the member's contributions. there is a moral hazard problem. which implies that the manager's actions are no observable, This information problem generates opportunistic behavior from the manager. thus an optimal contract needs to be established. in which the incentives of both participants will be compatible, This incomplete information optimal contract will be compare with the current Colombian contract in order to determine if the payments structure aligns the incentives of the manager with those of the system's members,

SISTEMA DE COMISIONES DE LAS ADMINISTRADORAS DE FONDOS DE PENSIONES EN COLOMBIA

ÓSCAR MARTÍNEZ
ANDRÉS MURCIA

El actual sistema de comisiones en Colombia no genera los incentivos necesarios para que las administradoras de fondos de pensiones (AFP) incrementen la rentabilidad de los fondos de pensiones, Dado que la mesada pensional futura de los afiliados depende principalmente de la capitalización de los aportes. es necesario generar un esquema en el cual las AFP estén incentivadas a incrementar los rendimientos de los fondos, Por medio de un modelo en que se calcula el saldo de capital de un afiliado. en este documento se muestran las ventajas de un esquema de comisiones por rendimientos. y cómo este esquema puede ser combinado con un esquema de comisiones sobre aportes como el actual, Finalmente. se señalan algunos aspectos a tener en cuenta a la hora de implementar un esquema en esta dirección,

FEE SCHEME OF PENSION FUND MANAGERS IN COLOMBIA

The actual fee scheme of pension fund managers does not generate incentives for obtaining higher returns, Since future pension payments depend mainly on the investment of present contributions. it is important to develop a fee scheme that generates the incentives for obtaining higher returns for the affiliates, Using a model which calculates the future outstanding pension amount of a contributor. this document shows the advantages of a fees scheme based on returns and the way that this scheme can be combined with a scheme based on contributions, Finally. it states some guidelines for implementing this kind of mechanism,