



FINANCIAL STABILITY REPORT

March 2009



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March 2009

Banco de la República
CENTRAL BANK OF COLOMBIA
Bogotá, D. C., Colombia

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EXECUTIVE SUMMARY

The world economy entered a period of recession during 2008 as a result of the international financial crisis. The outlook for growth in the developed economies during 2009 and 2010 is pessimistic. Fewer exports, fewer remittances and the decline in capital flows to Latin America, including Colombia, will have a negative impact on the productive sector, reflected in low growth rates and higher unemployment. Although the impact of the crisis on Colombia's financial system has been moderate, due to the monetary and exchange measures adopted by the Board of Directors of Banco de la República and owing to the system's limited exposure to toxic assets, the length of the crisis could make intermediaries more vulnerable. However, the country's financial system has shown itself to be sound, particularly the commercial banks. This will help to cushion the negative effects of additional credit risk.

The slowdown in the growth of financial brokerage activities, evident since 2007, was more pronounced during the second half of 2008. By December 2008, the real annual increase in assets in the financial system was 8.2%, compared to 12.5% the year before. This loss of momentum is explained by a smaller growth in the total gross portfolio, which came to 9.4% (20.3% at December 2007). The same was true of the different types of loans. By the end of 2008, the real annual increase in the commercial, consumption and mortgage loan portfolios was 12.9%, 4.1% and 6.1%, respectively, as opposed to 16.3%, 28.1% and 12.8% the year before. The slowdown in total loan portfolio growth was more pronounced for commercial financing companies (CFC) and registered a real annual increase of 2.3% at the close of 2008.

The reduction in loan portfolio growth was accompanied by deterioration in quality and non-performance indicators. As a percentage of the total portfolio, the portfolio at risk (non-A-rated loans) was 8.9% by December 2008. This is 2.3 percentage points more than a year earlier. The quality indicators for commercial and consumption loans exhibited similar, although more pronounced, behavior (11.7% and 7.6%, respectively). This increase in the portfolio at risk applies to loans granted during the second half of 2008; at the start, their portfolio quality indicators are more unfavorable than those of

loans granted during previous half-year periods. Moreover, all the portfolios analyzed showed an increase in the probability of migration from less risky ratings (A and B) to those that imply more risk (C, D and E). This could raise the loan portfolio default index during 2009.

On the other hand, the increase in deposits, which were up by a real annual rate of 9.6%, is consistent with the current dynamics of assets in the system. Basically, this is explained by the increase in term deposits (CDT in Spanish), with 26.4% real annual growth by December (25.5% a year earlier), while savings and checking accounts increased at respective rates of 0.3% and 0.4%, compared to 5.4% and 5.0% a year earlier.

Although assets in the financial system saw less of an increase during 2008 than in previous years, the return on assets (ROA) has remained stable (2.46% at December 2008, which is similar to the average since 2006). Nevertheless, this indicator could deteriorate if the non-performing loans continue to grow.

Government bond holdings have increased since November, raising the system's market risk and lowering its liquidity risk. In a context of lower inflation expectations and added levels of credit risk, there are incentives for institutions in the financial system to continue to increase the share of their assets comprised of securities.

The credit institutions have capital adequacy ratios above the mandatory levels, but they could deteriorate in a less favorable scenario. Therefore, continued and careful monitoring of the risks to the financial system is particularly important, as is the implementation of counter-cyclical policies, which are essential to safeguarding the health of credit institutions.

Board of Directors
Banco de la República

FINANCIAL STABILITY REPORT

Prepared by:
The Financial Stability Department of the Monetary and
Reserve Division

One of the duties of Banco de la República, as stipulated in the Colombian Constitution and in Law 31/1992, is to ensure price stability. Doing so depends largely on maintaining financial stability, which is understood as a situation where the financial system is able to broker financial flows efficiently. Financial stability 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 the Central Bank'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 of all, it makes sure the payment system in 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 country's credit authority, it designs financial regulatory mechanisms to reduce episodes of instability. It does so in conjunction with the Superintendencia Financiera de Colombia. Furthermore, the Central Bank 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 the recent performance of the financial system and its principal borrowers. 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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Miguel Ángel Morales

Paola Morales

David Pérez

Fernando Pineda

Hernán Piñeros

Agustín Saade

(*) This report was prepared with the help of Andrés Rodríguez and Carlos Eduardo Obando. Both are student interns assigned to the Financial Stability Department.

I. THE MACROECONOMIC ENVIRONMENT

In the current scenario, the impact on Colombia's financial system will depend largely on how long the crisis lasts at the international level and how financial intermediaries could react to the various real shocks.

A. BACKGROUND: THE INTERNATIONAL ENVIRONMENT

The world economy entered a period of economic recession during 2008 as a result of the international financial crisis. The outlook for growth in the developed economies during 2009 and 2010 is pessimistic. The adjustments made to spur their recovery will depend essentially on the policies implemented by the developed countries to re-establish financial brokerage activities and to restore confidence in credit and capital markets. As illustrated in Table 1, the prospects for growth in the various economies are not encouraging.¹

Although the crisis has not had a direct impact on Colombia's financial system, given its limited exposure to toxic assets, the length of the crisis could make intermediaries more vulnerable.

One continues to see a great deal of stress in liquidity and credit conditions over the world, despite the measures adopted in recent months by governments in the developed countries. Moreover, the worldwide economic downturn might

¹ Considering the projections by the International Monetary Fund (IMF), world economic growth will increase by only 0.5% in 2009; this would be the lowest increase in the last 65 years.

Table 1
Economic Growth
(Percentage Variation)

	Actual		Current Forecasts		Difference with Forecasts at Nov. 2008	
	2007	2008	2009	2010	2009	2010
World output	5.2	3.4	0.5	3.0	(1.7)	(0.8)
Advanced Economies	2.7	1.0	(2.0)	1.1	(1.7)	(0.5)
United States	2.0	1.1	(1.6)	1.6	(0.9)	0.1
Euro Zone	2.6	1.0	(2.0)	0.2	(1.5)	(0.7)
Japan	2.4	(0.3)	(2.6)	0.6	(2.4)	(0.5)
United Kingdom	3.0	0.7	(2.8)	0.2	(1.5)	(0.9)
Canada	2.7	0.6	(1.2)	1.6	(1.5)	(1.4)
Other Emerging Market Economies and Developing Countries						
America	5.7	4.6	1.1	3.0	(1.4)	(1.0)
Brazil	5.7	5.8	1.8	3.5	(1.2)	(1.0)
Mexico	3.2	1.8	(0.3)	2.1	(1.2)	(1.4)
Developing Asian Countries	10.6	7.8	5.5	6.9	(1.6)	(1.1)
China	13.0	9.0	6.7	8.0	(1.8)	(1.5)
India	9.3	7.3	5.1	6.5	(1.2)	(0.3)
Colombia	7.5	3.2	3.0	4.2		

Sources: International Monetary Fund, "Global Perspectives and Policy Issues" (April 2008) and Banco de la República.

be prolonged more than expected, owing to the possibility that world GDP growth would be only 0.5% in 2009 and 3.0% in 2010.²

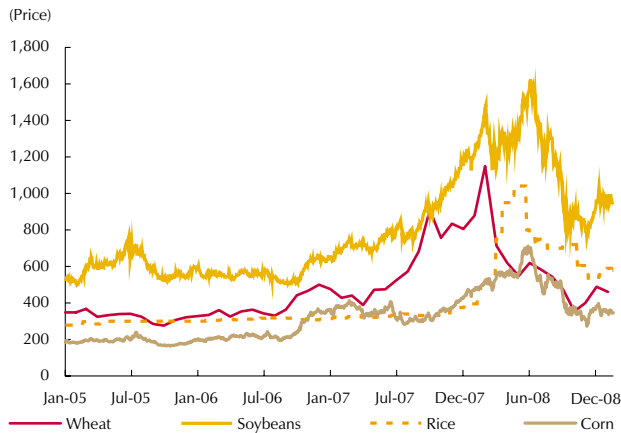
Given this situation, the Latin American economies will also experience a serious impact on their productive sectors, reflected in lower growth rates and higher unemployment, as a result of fewer exports, not only in terms of quantity (due to less external demand), but also because of the impact of lower commodity prices at the international level (Graph 1).

In Colombia, this phenomenon also is evident in less foreign direct investment and less demand for Colombian exports to countries such as Venezuela and Ecuador, which have reduced their trade-flows significantly in recent months. Moreover,

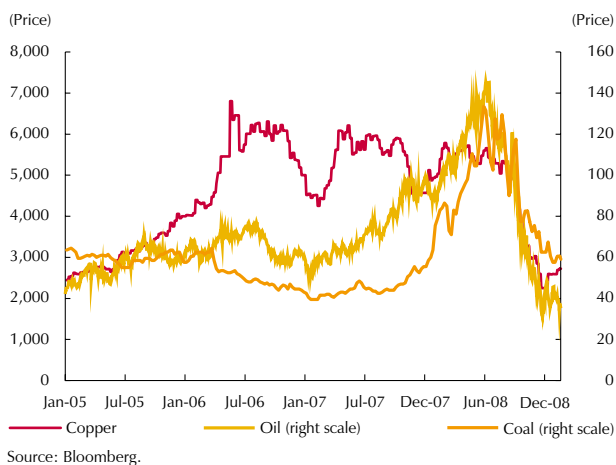
² At present, the projections for growth have been revised downward and some forecast negative growth.

Graph 1
Commodity Prices

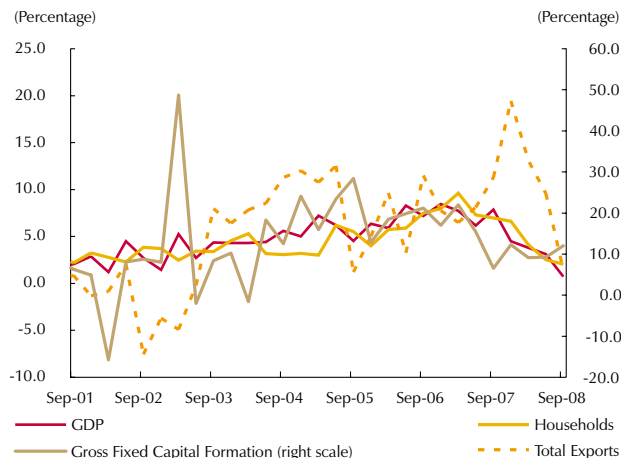
A. Wheat, Soybeans, Rice and Corn



B. Copper, Oil and Coal



Graph 2
Growth in GDP and Its Spending Components



Source: DANE.

the evolution in consumption has undergone a major downward adjustment that will continue throughout the current year.

Accordingly, given the current situation, public policies designed to stimulate internal demand are crucial to taking the edge off the economic slowdown. However, they must be implemented in a context of macro-financial consistency that reduces their negative effects.

B. PRODUCTIVE SECTOR DYNAMICS

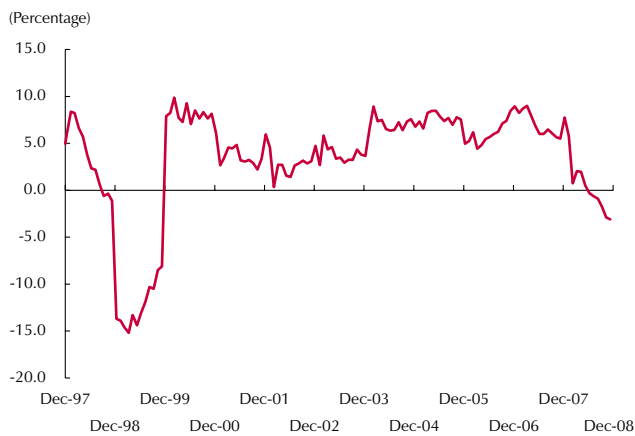
The economy continued to deteriorate during the final quarter of 2008, registering an annual increase of 2.3%, compared to 8.4% the year before. As noted in the last edition of the *Financial Stability Report*, this slowdown began in the first quarter of 2008, when the annual growth rate was 4.1%.

As illustrated in Graph 2, most of the GDP spending components also exhibited smaller growth. For example, export growth fell by 10 percentage points (pp) between September 2007 and September 2008, going from 11.3% to 1.4%. In the case of household consumption, growth continued to weaken, dropping from 7.0% to 2.0% during the same period. However, the increase in gross fixed capital formation was just the opposite, having gone from 6.6% to 12.0% during 2008.

It is important to point out that the increase in this last component during the second half of 2008 can be explained by the momentum in public investment. For instance, municipal and departmental budgets for public works were not spent during the first six months of that year. As shown in Graph 2, the growth rate in September 2008 was equal to the levels observed at the end of 2007.

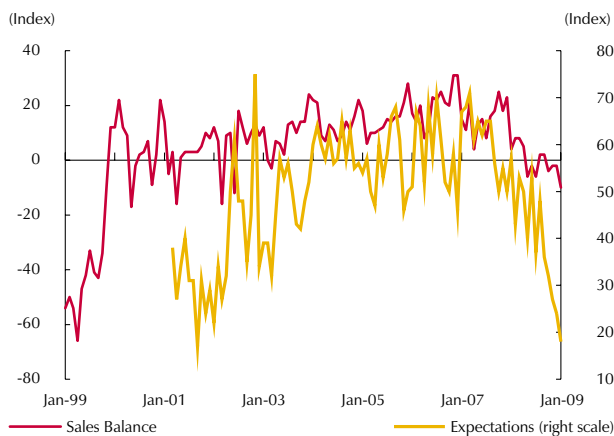
The situation in industry is an additional cause for concern, with textiles, automobiles and certain processed food sectors being jeopardized the most. The National Business Association of Colombian

Graph 3
Annual Growth in Industrial Production



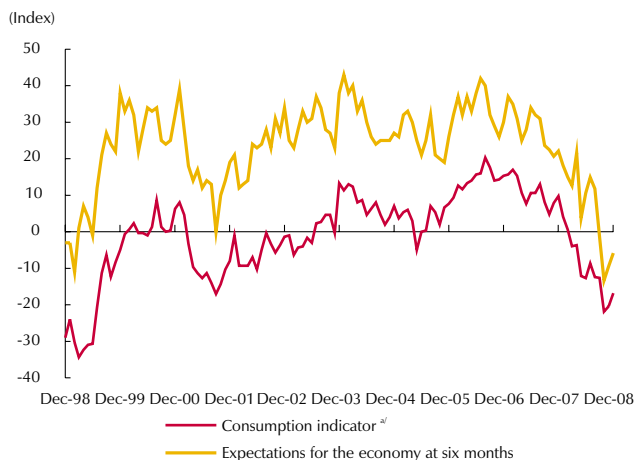
Source: ANDI (Industrial Opinion Survey).

Graph 4
Sales and Expectations at Six Months



Source: Fenalco.

Graph 5
Monthly Consumption Indicator and Expectations for the Economy in Six Months



a/ Fedesarrollo
Source: Fedesarrollo.

(ANDI) says industrial growth was -3.1% in 2008 (Graph 3), which would correspond to nearly -6.0% annual growth by December. In other sectors of the economy, such as commerce, the situation is not good either. According to figures released by the National Federation of Retailers (Fenalco), the sales indicator continued to decline, while expectations of activity in six months are at historically low levels (Graph 4).

Moreover, the change in consumption, despite an improvement in December, reflects considerable deterioration throughout 2008 compared to the 2004-2007 period. Graph 5 shows the results for the consumption indicator, according to the Colombian Business Opinion Survey (EOEC in Spanish) conducted by the Foundation for Higher Education and Development (Fedesarrollo). The indicator has been negative since March 2008. This decline in the index also applies to company expectations for the economy in six months, which have been negative since September 2008.

The trade balance in recent months is not as troubling. However, the drop in external demand could have a negative impact on the trade balance in the short term. The figures observed in November 2008 reflect improvement, having gone from - US\$1,346 million (m) between January and November 2007 to US\$377m a year later. This is explained largely by the increase in the trade surplus with Venezuela and the United States.

Table 2 shows the trade balance by economic zone. According to the figures, the increased trade balance with both countries offsets the decline in trade with other regions. However, the data in November 2008, excluding petroleum exports and imports, shows a higher trade deficit.

Due to the international crisis and the impact of recent developments in the exchange rate, pressure on the current account will depend largely on the balance between exports and imports. According to these figures, if the world economic crisis is prolonged, the

Table 2
Trade Balance, by Country of Origin
January-November
(Figures in Millions of Dollars)

	United States		Venezuela		Others		Total	
	2007	2008	2007	2008	2007	2008	2007	2008
Total Exports	9,347	13,130	4,540	5,430	12,928	16,102	26,815	34,662
Total Imports	7,296	9,903	1,222	1,086	19,643	23,297	28,161	34,286
Trade Balance	2,051	3,227	3,318	4,344	(6,715)	(7,195)	(1,346)	377
Trade Balance without petroleum and petroleum derivatives	(2,513)	(4,220)	3,370	4,296	(7,909)	(9,799)	(7,052)	(9,723)

Source: Banco de la República.

impact on the Colombian economy could be more serious, commodity prices could fall even further, and markets for exports other than raw materials from countries such as Colombia would not recover quickly, making it difficult to avoid a deeper recession.

C. THE FINANCIAL SYSTEM IN 2008

The loan portfolio growth rate continued to decline throughout 2008, partly because of less economic growth and the increase in the portfolio at risk for certain types of loans, particularly consumption lending. At the same time, the Central Bank took a variety of steps to reduce growth in lending by making it more expensive.

Between 2006 and 2008, the Board of Directors of Banco de la República (BDBR) opted for a restrictive monetary policy designed to reduce aggregate demand and to lower the credit growth rate in an effort to bring inflation in line with the target. The intervention interest rate was increased by 400 basis points (bp) during that period, and a variety of measures on reserve requirements were implemented. However, considering the slowdown in economic growth and inflationary pressures, the Bank changed its monetary policy as of 19 December 2008 and began a series of intervention interest rate cuts. It also reduced reserve requirements as of the second half of this year.³

The decline in demand and the slowdown in lending became evident during 2008, when the real rate of growth in the total loan portfolio plunged from 20.3% in December 2007 to 9.4% a year later. Accompanying this drop was a considerable increase in the risky portfolio, but with less than proportional increases in loan-loss provisioning. In fact, the provision/portfolio-at-risk ratio

³ For more information, see Chapter II. It contains details on each of the policy measures.

in December 2008 (52.7%) was less than in December 2007 (58.0%). Aside from the guarantees,⁴ this situation would be reflected in an increase in credit risk for the Colombian financial system.

With less growth in the loan portfolio, institutions in the financial system increased their TES holdings⁵ from COP\$22.19 trillion (t) in June 2008 to COP\$24.0 t six months later. This added investments comes on the heels of a considerable decline during 2007 and the first half of 2008. The increase in outstanding TES has repercussions in terms of risk to the financial system. On the one hand, there is less liquidity risk; however, having a larger exposed balance raises potential market risk.

Credit institutions shifted the composition of their liabilities during 2007 through a considerable increase in the proportion term deposits (CDT), especially longer term ones (over 18 months). The CDT growth rate during 2008 was higher than the growth rate for other deposits, but the speed of the shift was less than in 2007. The momentum in liabilities is explained largely by the reserve requirement policies the Banco de la República adopted as of 2006.

D. THE MACROECONOMIC OUTLOOK

As noted earlier, economic growth in 2009 and the years ahead is expected to remain low and will depend largely on the duration of the international crisis. The longer the recession lasts in the developed countries, the greater the impact on the Colombian economy. Any reduction in growth rates will affect the risks to the financial system, the fiscal situation and employment.

The slowdown in demand, combined with less activity in the productive sector, can lead to a reduction in credit supply. According to the December results of the Central Bank's survey on credit in Colombia,⁶ commercial banks expect a tighter credit supply and higher requirements on lending, especially for consumption and commercial loans.

Less growth in the financial system during 2008 was accompanied by an increase in potential risks, some of which materialized. For example, the increase in the non-performing loan portfolio demonstrates the manifestation of credit risk, while the build-up in the loan portfolio at risk raises the potential risk for 2009.

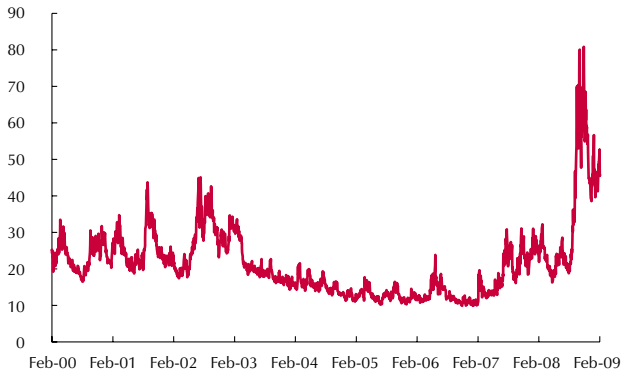
4 The increase in loan-loss provisioning should be proportional to the increase in the risky portfolio. Nevertheless, if the quality of collateral is better, the increase in provisions should be less.

5 Although most institutions added to their government bond holdings, the increase is concentrated largely in two institutions. For details, see Chapter IV, Section A.

6 The credit survey is posted on the Central Bank's website (www.banrep.gov.co), in the section on economic reports and surveys.

The accelerated growth in lending during 2006 allowed more risky borrowers to enter the financial system, especially for consumption lending. This, in turn, raised the loan portfolio quality index and the arrears index.⁷ With respect to the commercial loan portfolio, the slowdown in economic growth explains its indicator deterioration of quality at the end of 2008.

Graph 6
Market Volatility Index (VIX)

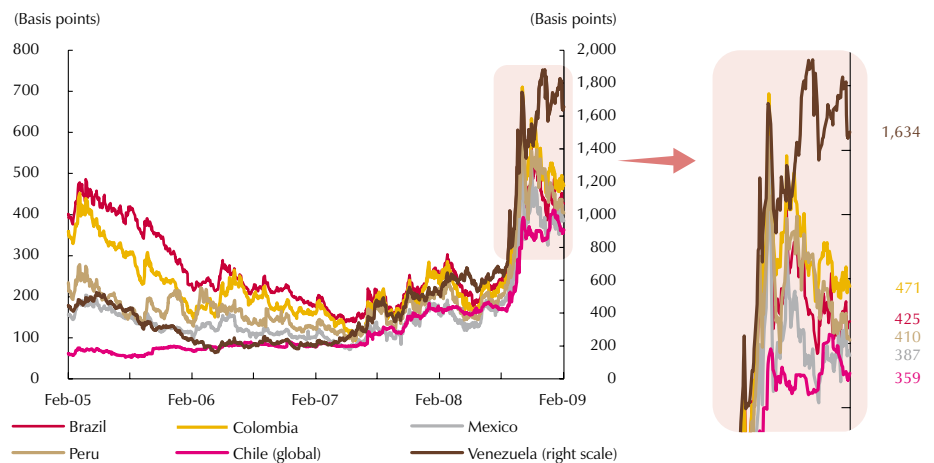


Source: Bloomberg.

As to international liquidity, the crisis in the developed countries has translated into greater risk aversion (Graph 6) and, hence, a reduction in liquidity worldwide, making it harder to obtain short-term financing. As shown in Graph 7, the spreads for most Latin American countries increased, especially during the second half of 2008. On average, they were up by 122.0% during that period; Colombia reported an increase slightly below that level (114.5%).

On the other hand, by the end of the period in question, there were substantial improvements in liquidity risk at the national level. Credit institutions reduced their TES holdings during the third quarter of 2008, thus raising funding liquidity risk. However, this tendency was reversed at the end of year, with the increase in TES as a share of the portfolios of financial institutions. This means they have more liquid assets to cover their current liabilities, which lowers risk of this type. Moreover, institutions now have more funding facilities, thanks to the expansive monetary policy implemented recently, which reduced the auction rate and the reserve requirement. As a result, the interbank market in Colombia has experienced no liquidity problems.

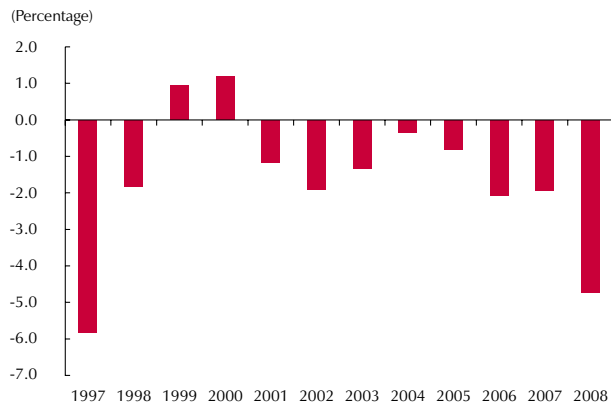
Graph 7
EMBI+ Spread for Several Latin American Countries



Source: Bloomberg.

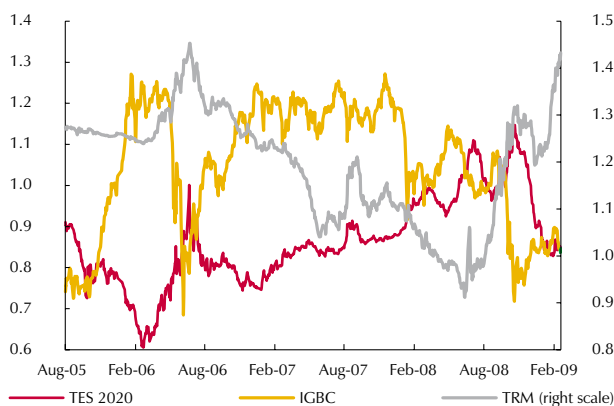
7 See Chapter II, Section A for a definition of these indicators and details on how they have changed.

Graph 8
Current Account as a Share of GDP



Source: DANE, calculations by Banco de la República.

Graph 9
Developments in the IGBC, TRM and TES 2020 Yield Index



Source: Bloomberg

Liquidity risk also is affected by the country's increased exposure to a reduction in capital flows. As Graph 8 illustrates, the current account deficit in the balance of payments during second half of the year, as a share of GDP, increased considerably, having gone from -1,9% in June 2008 to -4,7% six months later. This is the highest deficit since the crisis at the end of the Nineties. The deterioration in the balance of payments makes the economy more sensitive to a reduction in liquidity on international markets.

As to market risk, the fact that financial institutions have increased their TES holding means their exposed balance heightens that risk. When accompanied by more volatility in such investments, this situation translates into greater potential risk for the financial system. At the same time, expectations of low inflation and a expansive monetary policy raise the possibility of TES valuation (aside from changes in risk aversion). As illustrated in Graph 9, the interest rate on bonds has declined considerably since the end of October 2008. This spells an increase in market price and, consequently, portfolio valuation. As such, there is expected to be no decline in outstanding TES balances, and the market risk will continue during 2009.

The same graph shows a sharp drop in the general index for the Colombian Stock Exchange (IGBC in Spanish) towards the end of 2008. This translated into a portfolio valuation loss for some financial institutions.⁸ Nonetheless, the deterioration is not distributed equally among those institutions, since the impact is far greater for brokerage firms.

On the other hand, recent developments in the exchange rate (TRM in Spanish) can affect all institutions equally, in view of the fact that its tendency to devalue since the end of 2008 can generate valuation gains on positions in dollars. However, this tendency is not sustainable in the medium term.

From this standpoint, the impact on the Colombian financial system will depend largely on the duration of the crisis at the international level and on how financial intermediaries could react to real shocks. For instance, they will have

8 Not all financial institutions are allowed to acquire assets of this type. For example, the Law does not permit commercial banks to purchase securities from the productive sector.

to deal with the effects of further pressure on unemployment, which influences the household financial burden, and with the pressure posed by an adverse financial position for Colombian companies. Together, these pressures spell an increase in credit risk and significantly less profitability for the sector. The profitability indicators for the financial system and its capital adequacy ratio are currently positive, due to the expansive phase of recent years. However, if the adverse scenario we now face were to be prolonged, those indicators could deteriorate quickly.

II. THE FINANCIAL SYSTEM

In 2008, the financial system saw solid profit and solvency margins and balance sheet growth. The loan portfolio growth rate declined, as did the increase in deposits while the sharp deterioration in the indicators of loan portfolio quality and default caused an increase in credit risk and its materialization.

A. CREDIT INSTITUTIONS

Loan portfolio growth slowed considerably during the second half of 2008 compared to earlier periods, specially the consumption loan portfolio. On the other hand, investments increased and, consequently, so did their share of credit institution assets.

The increase in the risky portfolio, particularly the risky commercial loan portfolio, and a larger non-performing portfolio as a share of the total portfolio, coupled with a lower coverage indicator, suggest possible vulnerabilities in the system. It is important to continue to monitor credit risk in an effort to avoid any deterioration in the solid financial ratios reported by credit institutions in December 2008.

1. General Balance Sheet Positions

a. Asset Accounts

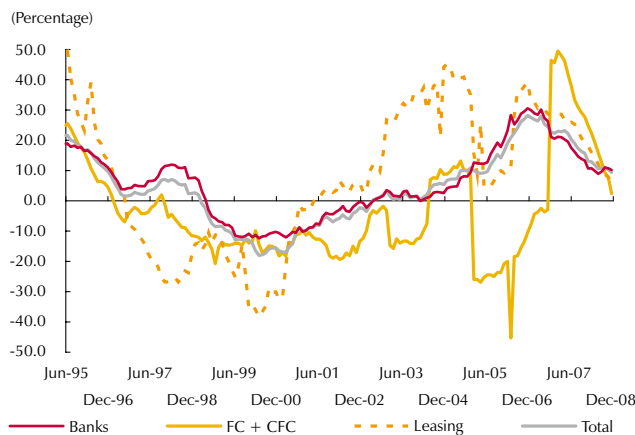
Credit institutions reported COP\$216 t in assets at December 2008. This figure represents 8.2% real annual growth (Graph 10) and is a historic high for the series. However, the slowdown in growth is particularly obvious, since the

Graph 10
Assets of Credit Institution



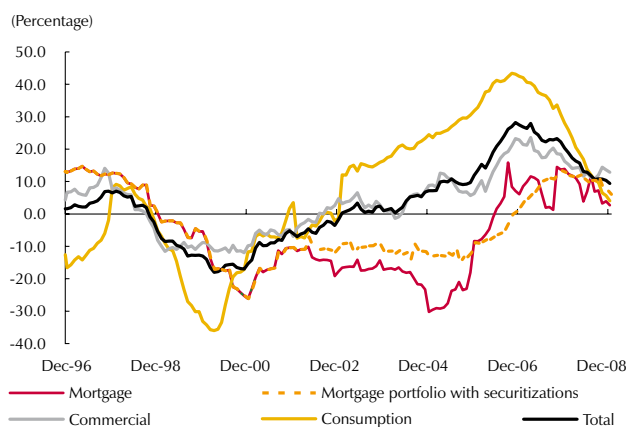
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 11
Real Annual Loan Portfolio Growth, by Intermediary Group



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 12
Real Annual Gross Loan Portfolio Growth of Credit Institutions



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

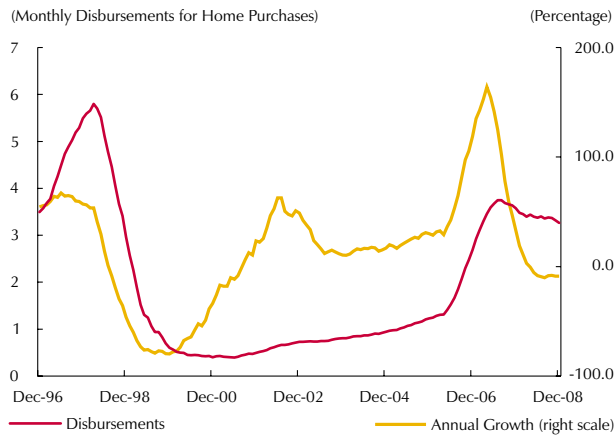
annual rate went from an average of 13.1% in 2006 and 11.9% in 2007 to 9.2% in 2008. The increase in assets and the lower growth rate are explained primarily by the performance of the gross loan portfolio, which exhibited a real annual increase of 9.4% by December 2008. This figure is much lower than the one registered in December 2007 (20.3%). It is important to point out that gross portfolio growth has declined almost steadily since November 2006, when the real annual increase was near 30%, which is the highest rate in the current decade (Graph 11).

A look at the total portfolio, by credit-institution group, shows the slowdown during 2008 was far more pronounced among financial corporations (FC) and commercial financing companies (CFC) than among commercial banks. In June of that year, the FC and CFC gross portfolio had grown by a real annual rate of 22.4%. In December 2008, the increase was 2.4%. As noted, the slowdown was not as pronounced for commercial banks; their annual increases ranged from 10.8% to 10.2% during the same period.

If the growth in each loan portfolio is analyzed separately, one sees a slowdown compared to what was noted in past editions of the *Financial Stability Report*. This explains the momentum in the total portfolio. The consumption loan portfolio registered 4.1% real annual growth by December 2008, following a 28.1% increase a year earlier. Less than 10% real growth in the consumption loan portfolio had not been seen since 2002. The slowdown also applies to commercial loan portfolio and to the mortgage loan portfolio with securitization, which registered 12.9% and 6.1% real annual growth, respectively, compared to 16.3% and 12.8% a year earlier (Graph 12).

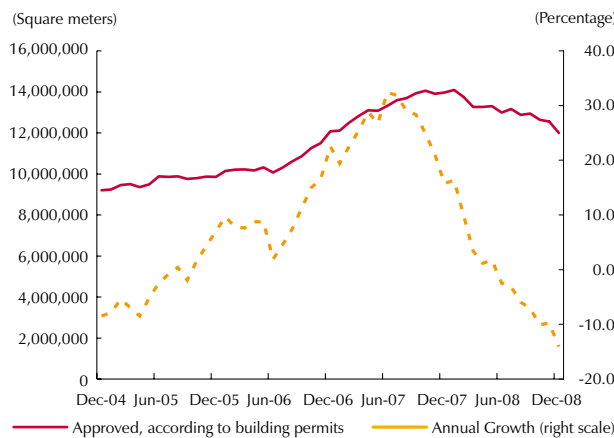
The slowdown in loan portfolio growth was due to several factors; namely, the impact of the monetary policy applied by the Central Bank during previous periods (via interest rate hikes and the marginal reserve requirement), coupled with less GDP growth during the past year. However, in the last

Graph 13
Monthly Disbursements for Home Purchases



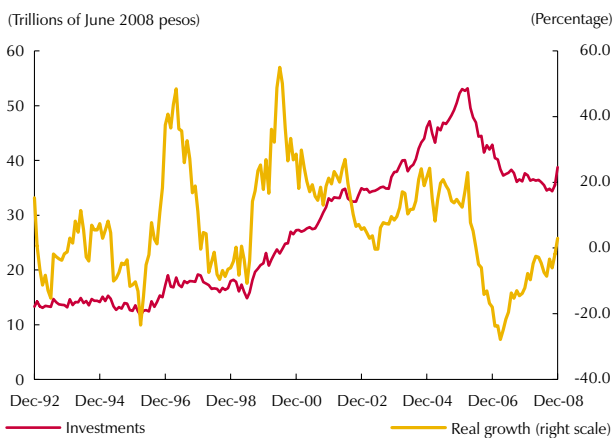
Source: ICAV; calculations by Banco de la República.

Graph 14
Area Approved for Home Construction, according to Building Permits



Source: DANE; calculations by Banco de la República.

Graph 15
Investments of Credit Institutions



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

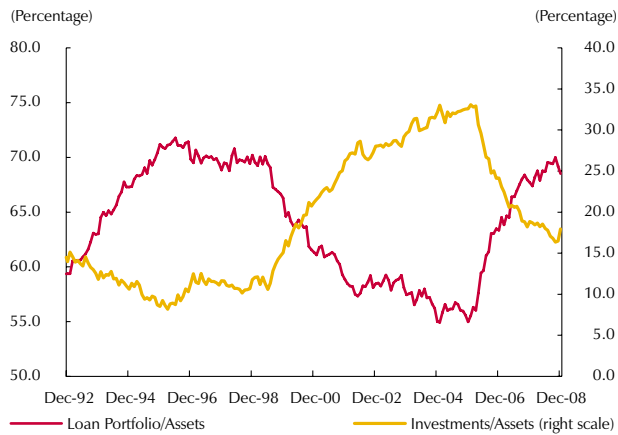
six months of 2008, the commercial loan portfolio behaved differently compared to the others; it was the only one with a marginal increase in growth compared to the rate reported in June 2008 (12.7%). This is consistent with the results of the December 2008 *Report on Credit in Colombia*, since the demand for loans of this type had increased at even higher rates than those registered in the previous report, while the demand for other types of loans declined. Furthermore, as illustrated later, the result was a more than proportional increase in the rate at which commercial loans were granted during the semester before, compared to the deposit rate.

On the other hand, the slowdown in the mortgage loan portfolio, with securitization, is linked to monthly disbursements for home purchases, as registered by the Colombian Savings and Home Loan Institute (ICAV). The reduction in this annualized number since May 2007 is consistent with the performance of the portfolio. In fact, by December 2008, the real annual increase in annualized disbursements was -8,8% (Graph 13). Similarly, and in keeping with the tendency reported in the first half of last year, the area approved for new homes (measured via the permits issued) was down by 14.1% in December (Graph 14).

Disbursement in pesos, as a share of total mortgage loan disbursements, continued to grow and was 92.5% in the last week of 2008 (highest percentage for the sample). A year earlier, it was 88.3%.

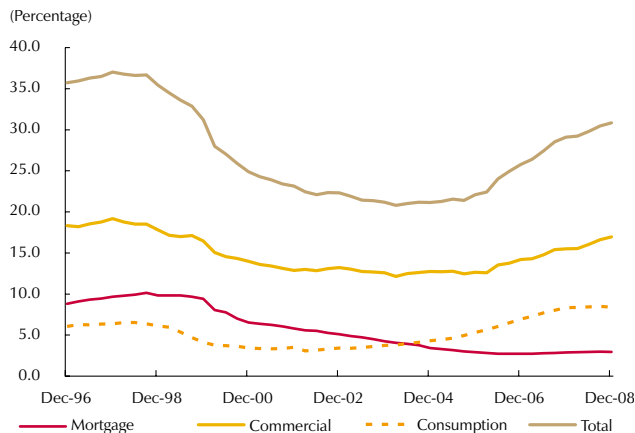
The investments made by credit institutions showed a change in tendency compared to the information published in past editions of the *Financial Stability Report*. For example, there was a positive real increase of 3.0% in December 2008, the first since June 2006, with COP\$38.8 t in holdings (Graph 15). A year earlier, investments fell by a real annual rate of 12.2% to COP\$37.6 t in December 2008. This is consistent with two phenomena. On the one hand, the slowdown in the loan portfolio may have resulted in asset substitution; on the other, the decline in inflation expectations due to less aggregate demand,

Graph 16
Investments and the Gross Loan Portfolio as a Share of Total Credit Institutions Assets



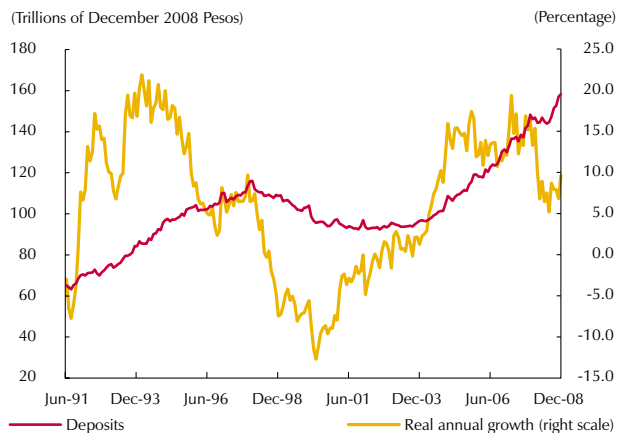
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 17
Financial Depth (Loan Portfolio/GDP)



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 18
Deposit Taking by Credit Institutions



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

coupled with the prospect of a more expansive monetary policy, are indicative of a scenario for potential valuation in government securities, which constitute a good portion of the investments made by credit institutions. This is a possibility, provided risk aversion does not change.

During the most recent period in the sample, the increase in investments, coupled with less loan portfolio growth, raised investments as a share of assets. This represents a change in tendency. As shown in Graph 16, investments accounted for 17.9% of assets by December 2008, which is 1.5 pp more than the month before. This is a variation in the momentum observed since the first half of 2006, when investments as a share of assets were at a high point (almost 33%). Afterwards, this percentage began to decline. By December 2008, the loan portfolio accounted for 68.5% of assets. It is important to point out that the change in tendency with respect to investments as a share of assets can translate into an increase in market risk (See Chapter IV).

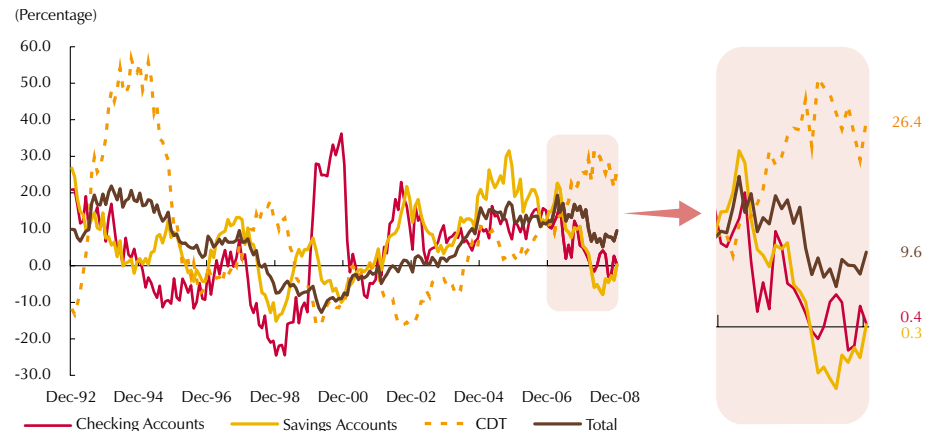
Even considering the obvious slowdown in the loan portfolio, the reduction in GDP growth was greater in 2008, which meant the index of financial depth, measured as the portfolio/GDP ratio, continued to increase. It reached 30.8% in December 2008. For the commercial and consumption loan portfolios, the indicators were 17.0% and 8.4%, respectively. This is the highest they have been since the financial crisis at the end of the Nineties (Graph 17).

b. Liability Accounts

Credit institutions reported a slowdown in the increase of liabilities, consistent with less expansion on the asset side of the balance sheet, as described earlier. By December 2008, deposits had reached COP\$155.2 t, with a real annual increase of 9.6%. Although this amount is a historic high, it is the lowest growth on record since 2004 (Graph 18). The increase in deposits is attributed to term deposits (CDT), which were up 26.4% (real annual rate) at

December 2008 (25.5% a year earlier), while current and savings accounts were up 0.4% and 0.3% respectively (Graph 19). Compared to respective increases of 5.0% and 5.4% at December 2007, this reflects a slowdown during 2008. It is important to note that these deposits showed a positive increase again in December, after several months of decline during 2008.

Graph 19
Real Annual Growth in Deposits with Credit Institutions, by Type of Deposit



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

The gradual dismantling of the prevailing marginal reserve requirement as of September 2008⁹ created incentives to change the composition of liability accounts in favor of checking and savings deposits, since the marginal reserve requirement instituted in May 2007 was higher for current and savings accounts. However, the reserve-requirement measures adopted since the last quarter of 2008 could imply no decline in CDT as a share of liabilities,¹⁰ which was on the order of 36.7% by December, compared to 31.8% a year earlier.

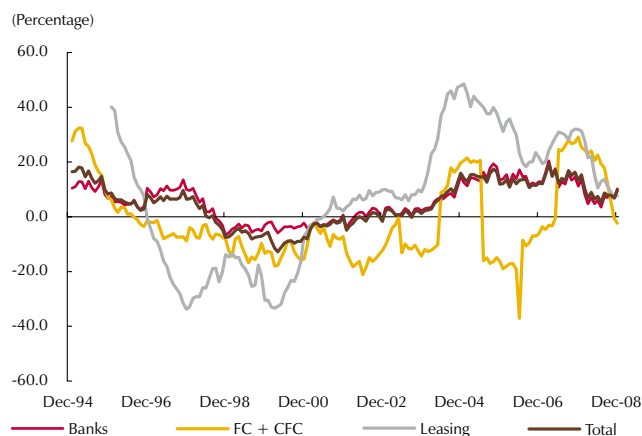
The fact that credit institutions regard term deposits as an important source of funding has positive implications for liquidity. Because these liabilities are less volatile than demand deposits, the funding liquidity risk for credit institutions declines to the extent that intermediation activities are financed with term deposits.

A look at deposits, by intermediary group, showed negative real annual growth in deposits with FC and CFC at December 2008 (-2.4%). This slowdown has been evident since the end of 2007. On the other hand, bank deposits rose by

9 BDBR External Resolution 05 of 2008.

10 In December 2008, there was a more-than-proportion reduction in the ordinary reserve requirement for certificates of deposit (CDT) compared to the requirement for sight deposits (BDBR External Resolution 11 of 2008). Moreover, interest on the reserve for the letter deposits was eliminated in February 2009 (BDBR External Resolution 02 of 2009).

Graph 20
Real Growth in Deposits, by Intermediary Group



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

10.2% in real annual terms, which is 4.2 pp more than six months earlier and more than the increase in the total for the system (Graph 20).

2. Credit Institution Exposure to their Major Debtors

In December 2008, credit institutions' exposure came to COP\$162.8 t, which represents an increase of 8.6% compared to the year before. As a percentage of assets, the exposed amount is still similar to the levels reported since 2003 (75.4% in December 2008), but is up slightly with respect to the amount exposed the year before (Table 3).

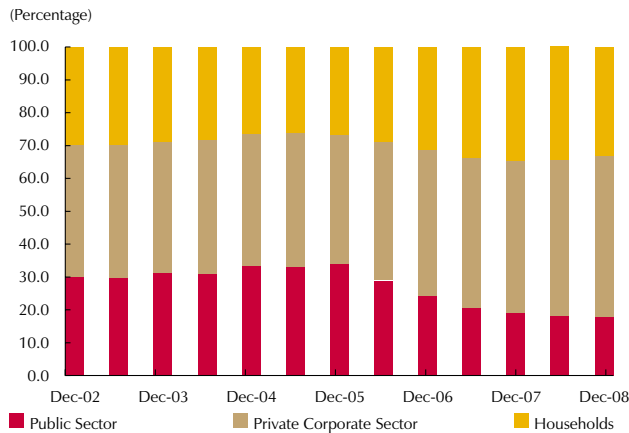
As to the composition of the financial system's exposure, the decline in exposure to the public sector as of December 2005 continues, while exposure to the private corporate sector is growing (Graph 21). However, last year, government bond holdings and loans to the public sector were up by 4.0% and 2.4% respectively. Despite the increase in household-related items, the financial system's exposure to these items declined by 1.5 pp in 2008. On the

Table 3
Credit Institution Exposure to their Major Debtors

Type	Dec-07		Dec-08		Real Annual Growth (%)
	Trillions of Dec. 2008 pesos	Share (%)	Trillions of Dec. 2008 pesos	Share (%)	
Public sector					
Loan Portfolio	5.0	3.4%	5.2	3.2%	4.0%
Securities	23.4	15.6%	23.9	14.7%	2.4%
Total	28.4	19.0%	29.2	18.0%	2.7%
Private corporate sector					
Loan Portfolio	69.1	46.1%	79.1	48.6%	14.5%
Securities	0.3	0.2%	0.3	0.2%	(11.4)%
Total	69.5	46.4%	79.5	48.8%	14.4%
Household sector					
Loan Portfolio	48.5	32.4%	50.4	31.0%	3.8%
Consumption	38.8	25.9%	40.4	24.8%	4.1%
Mortgage	9.7	6.5%	10.0	6.2%	2.7%
Securitizations	3.4	2.3%	3.6	2.2%	7.6%
Total	51.9	34.7%	54.0	33.2%	4.0%
Total Exposed Amount	149.9	100.0%	162.8	100.0%	8.6%
Exposed Amount over Assets (%)	75,1		75,4		

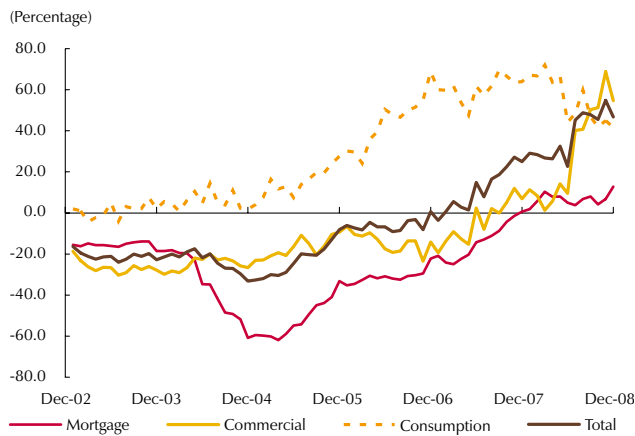
Sources: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 21
Financial System Exposure by Debtors



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 22
Annual Growth in the Loan Portfolio at Risk



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

other hand, exposure to the private corporate sector rose by 2.4 pp during the same period.

3. Loan Portfolio Quality and Loan-loss Provisioning

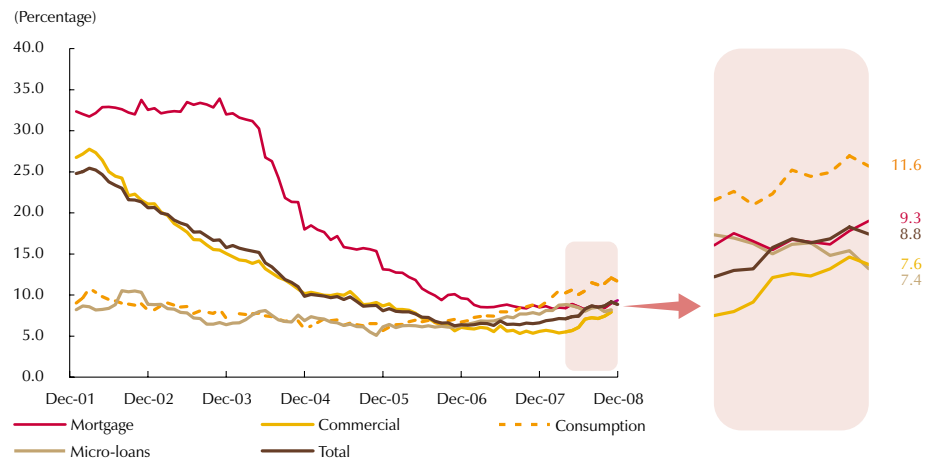
In the second half of 2008, the risky portfolio¹¹ increased more than at any other time during the last five years. As illustrated in Graph 22, real annual growth at December was 46.7%, as opposed to 22.6% six months earlier. This momentum is explained by significant growth in the risky commercial loan portfolio, which went from an increase of 9.5% at June, in real annual terms, to 54.7% by the end of 2008. Similarly, the risky mortgage loan portfolio experienced a more than 7.7 pp real annual real increase by December, compared to six months before; this amounts to 12.7% growth. The real annual rise in the risky consumption loan portfolio was 41.6% by the end of the second half of 2008. Although high, this is 2.5 pp less than the increase reported six months earlier.

Given the added growth in the risky loan portfolio, compared to the expansion in the gross portfolio, the loan portfolio quality indicator (QI), measured as the ratio of the first to the second, worsen sharply compared to the QI six months earlier. In December 2008, it was 8.9% for the portfolio as a whole; by June of that year, it was 7.4%. The QI has deteriorated steadily since the second half of 2007 (Graph 23).

This tendency is explained by increases in the quality indicators for the commercial and consumption loan portfolios, which had climbed to 7.6% and 11.7%, respectively, by December 2008. This is 1.6 pp more than six months earlier (6.0% and 10.1%, respectively). Consumption loan quality had been declining since early 2007, as was emphasized in past editions of this report. With respect to the commercial loan portfolio, it is important to emphasize the recent build-up in the QI as a result of the sharp rise in consumption loans. The QI for the mortgage loan portfolio rose slightly from 8.6% in June to 9.3% in December. The deterioration in loan portfolio quality highlights the

11 Defined as all non-A-rated loans.

Graph 23
Loan Portfolio Quality, by Type of Loan:
Risky Portfolio/Gross Portfolio

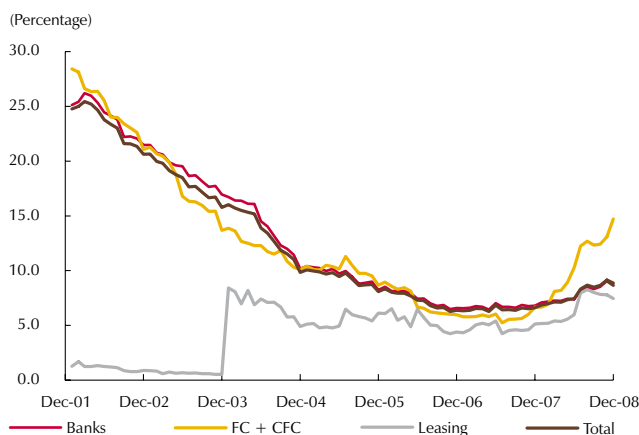


Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

need to continue to improve monitoring and to provide for a more thorough assessment of borrowers, especially for commercial and consumption loans.

The increase in QI is significantly greater for FC and CFC. It was 14.7% by December 2008, which is 4.5 pp more than in June of that year. Banks also have seen their QI deteriorate, but not as much. In their case, it intensified from 7.4% in June 2008 to 8.7% in December of that year (Graph 24).

Graph 24
Loan Portfolio Quality, by Intermediary Group

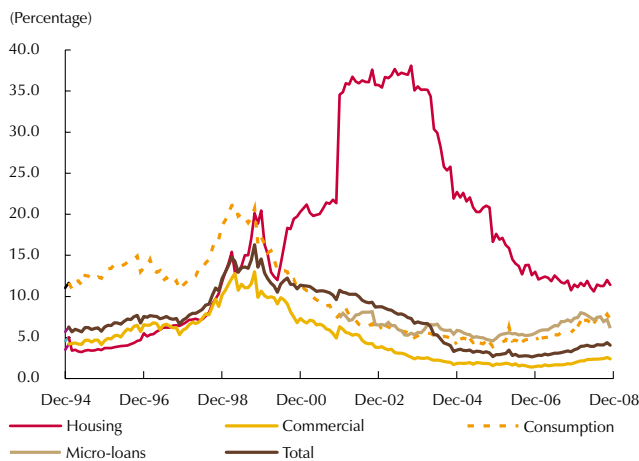


Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

On the other hand, the arrears indicator (AI), which is measured as the ratio of the non-performing to the gross loan portfolio,¹² was worse in general, with the micro-loan portfolio being the only exception. Its AI went from 7.4% in June to 6.1% in December of last year, given the increase in the gross micro-loan portfolio and the fact that two banks specializing in credit of this type joined the system during the second semester of 2008. The AI for the entire portfolio was 4.1% at the end of 2008, having been 3.9% six months earlier. A look at the arrears indicator for each type of loan portfolio shows consumption loans experienced the largest increase in AI: 7.2% by December compared to 6.8% six months earlier. The AI for the commercial loan portfolio was 2.4%, having increased by 0.1 pp during the last half of the year (Graph 25).

12 The non-performing portfolio is comprised of loans that are 30 days or more overdue.

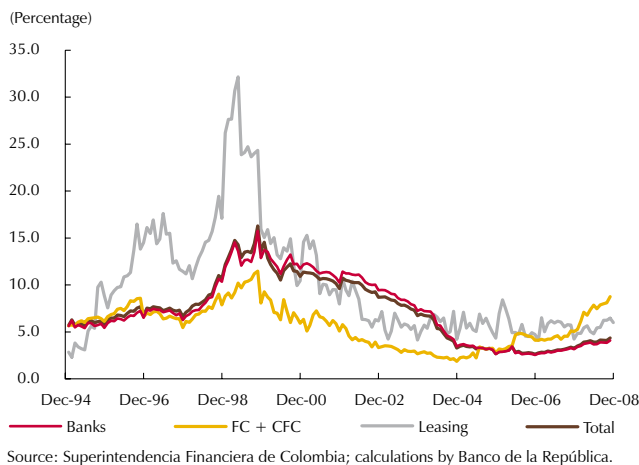
Graph 25
Arrears Indicator: Non-performing/Gross Loan Portfolio



As with the QI, the AI for FC and CFC in December 2008 was higher than the indicator for the system (8.9%), having risen 1.0 pp with respect to the figure reported six months earlier. The AI for banks was 3.8% in December, as opposed to 3.7% in June 2008 (Graph 26).

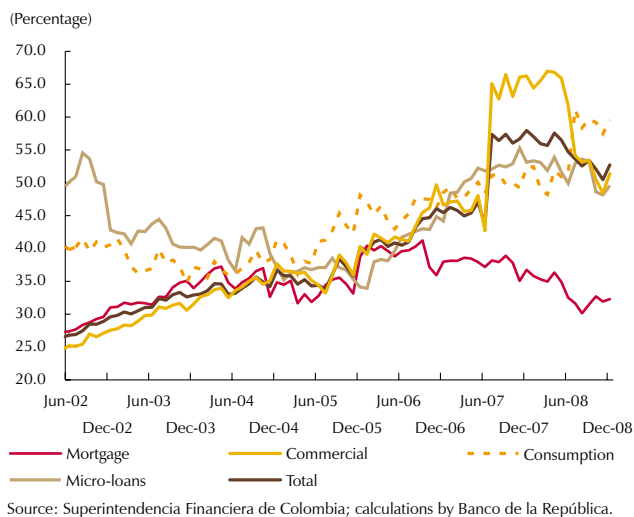
The deterioration in AI, particularly with respect to the consumption loan portfolio, is consistent with the increased manifestation of credit risk assumed in the past. In an economic slowdown cycle, coupled with the reported increases in QI, the upward tendency in AI is expected to continue during the coming months, which is why the changes in these indicators must be monitored carefully.

Graph 26
Arrears Indicator, by Intermediary Group



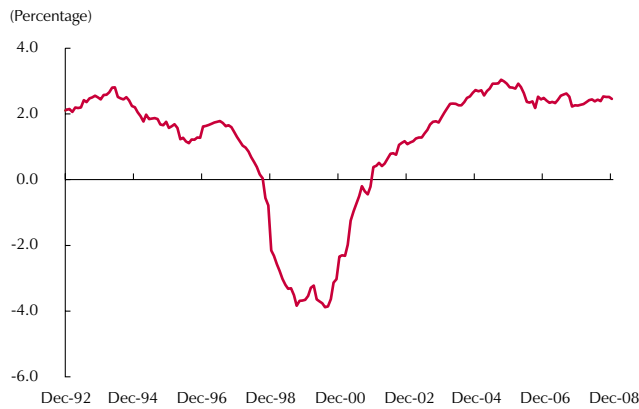
In line with the information published in the last edition of this report, loan-loss provisioning as a percentage of the loan risky portfolio (coverage indicator) continues to decline. This was more evident during the second half of 2008, when the proportion was 52.7%, which is 2.0 pp less than in the first half of 2008 (Graph 27). The reduction was due to the growth in the risky commercial loan portfolio, which was not accompanied by proportional increases in loan-loss provisioning and sparked a decline to 51.4% in the respective coverage indicator, as opposed to 61.8% in June 2008. This is similar to the level reported before the credit risk management system (SARC in Spanish) took effect for commercial loans, which occurred in mid-2007.

Graph 27
Coverage Indicator: Provisioning/Risky Loan Portfolio



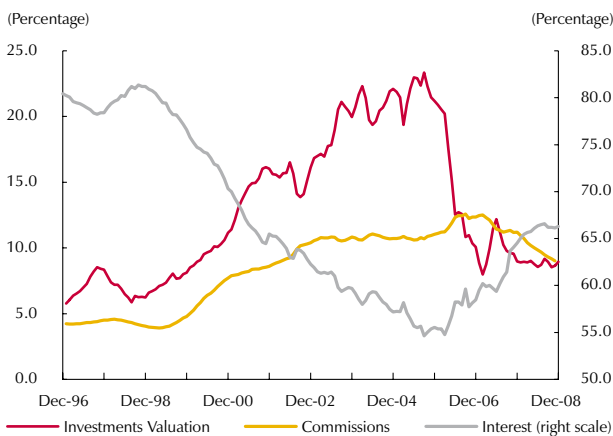
On the other hand, the coverage indicators for micro-loans and mortgage loans remained relatively constant compared to those registered six months earlier (32.1% and 49.6%, respectively, as opposed to 32.5% and 49.9%). In line with what happened to provisions for the risky commercial portfolio when SARC took effect, the coverage indicator for the consumption loan portfolio increased by 8.1 pp during the last half of 2008, reaching 59.5% in December, which is consistent with the application of SARC for consumption lending as of July 2008.

Graph 28
Return on Assets (ROA)



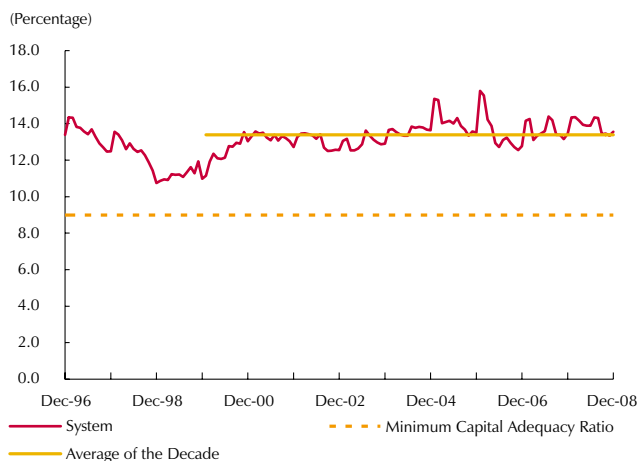
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 29
Financial Income Components



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 30
Capital Adequacy Ratio of Credit Institutions



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

4. Earnings, Profitability and Capital Soundness

The financial system reported an 18.2% real annual rise in profits to COP\$4.9 t at December 2008. This was more than the increase reported six months earlier, which was 2.7% in real annual terms. The growth in profits is consistent with the income from interest, especially on the commercial loan portfolio, and with a wider spread. The expansion in investments during the last two months, coupled with the valuation in government bond portfolios, also meant additional income.

The foregoing raised the return on assets (ROA) to 2.46% in December 2008. This is eight (8) bp more than the ROA six months earlier (Graph 28). Even so, as of 2006, the ROA for credit institutions has been relatively stable at around 2.4%, due to an increase in assets that is similar to the rise in profits during the last two years.

Income from interest is still the main source of financial income, having accounted for 66.3% by December 2008. This is comparable to the figure registered six months earlier (66.4%). On the other hand, income from commissions continued to lose ground as a share of financial income, and was down in real terms compared to the level in June 2008. Recent figures show income from commissions accounted for 8.8% of the total. This reduction offset the growth in financial income from investment valuations, which made up 9.0% of financial income, following 8.6% during the previous six-month period (Graph 29).

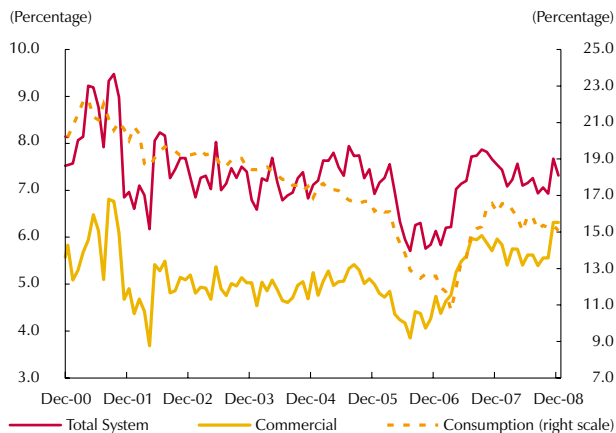
Throughout most of 2008, the capital adequacy ratio remained above the average for the decade (13.4%) and was 13.6% in December of that year. This is well above the 9% regulatory minimum (Graph 30). However, the figure for the end of the year is 0.3 pp less than the one in June.

5. Intermediation Spreads

The slowdown in loan portfolio growth during 2008 was accompanied by stable intermediation spreads and higher interest rates on lending. As noted in the last edition of this report, the low lending rates witnessed during the period of credit growth in 2006 and early 2007 disappeared with the tight credit market in 2008, partly due to contractive monetary policy measures. Given the structure of the credit market (which is not perfectly competitive) (Box 1, page 43), 2008 saw

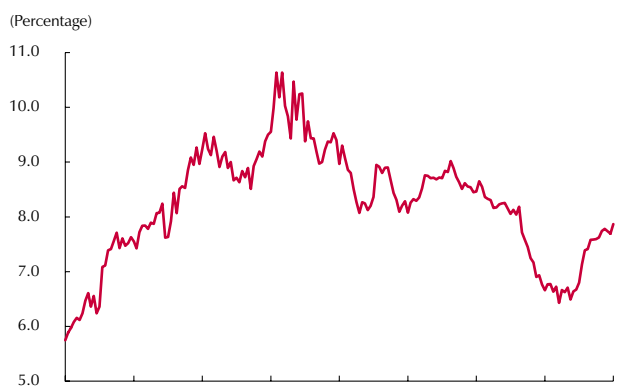
increases in implicit lending rates that more than offset the rise in the implicit deposit rates offered by credit institutions. The result was wider spreads for the system.

Graph 31
Ex ante Spread, Using the Term Deposit Rate (CDT)



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 32
Ex Post Spread



Source: Office of Financial Superintendent; calculations by Banco de la República.

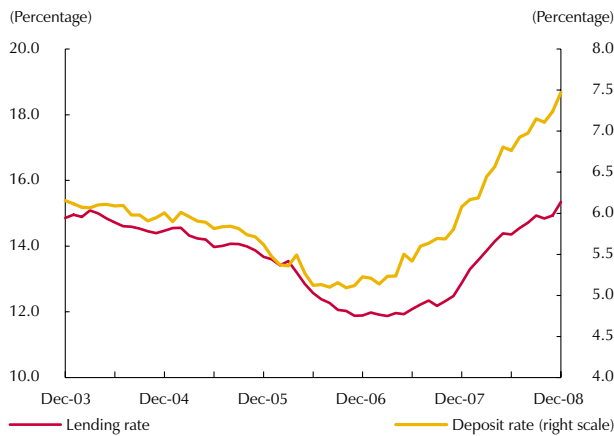
The spread ex ante¹³ was 7.3% in December 2008, which is below the figure reported a year earlier (7.5%). Now is at levels similar to those of 2002-2005, and above what it was during the period of loan growth in 2006 and 2007. Last year, the spread was relatively stable. Although the spread on consumption lending narrowed a bit during that period, the commercial loan spread widened, especially during the latest quarter. This increase in the final months of 2008 is consistent with the added demand for commercial loans mentioned in the December edition of the RSCC. By that time, the spread on consumption loans was 15.1%, having been 16.1% a year earlier, while the spread on the commercial loan portfolio was 6.3%, which represents an increase of 30 bp compared to December 2007 (Graph 31).

The ex post¹⁴ intermediation spread remained on the upward course observed since the final quarter of 2007. It was 7.9% in December 2008, which is 1.1pp more than the year before (Graph 32). As illustrated in Graph 33, this was due to increases in the implicit lending rate, which were higher than the increases in the deposit rate. In December 2007,

13 The ex ante spread is the difference between the rates charged by intermediaries for the different types of loans and the average rate on term deposits (CDT).

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

Graph 33
Implicit Interest Rates of Credit Institutions



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

the implicit lending and deposit rates were 12.9% and 6.1%, respectively, as opposed to 15.3% and 7.5% by the end of 2008.

Considering the nature of the loan market, which is not perfectly competitive, if monetary policy remains expansive, intermediation spreads should continue to decline. Consequently, reductions in these figures are to be expected this year.

In short, the financial system in 2008 reported solid spreads and capital adequacy ratios, balance sheet growth and poorer indicators of loan portfolio quality and arrears. Investments increased as a share of assets, thanks to a scenario that made it advantageous for institutions in the financial system to shift their portfolios

towards government securities. Loan portfolio growth slowed, particularly in the case of consumption loans. However, the commercial loan portfolio continues to expand at hefty rates, and its risky portfolio has increased more than any other. Also, the coverage indicator for risky commercial loans returned to levels similar to those observed before SARC took effect.

In the midst of a global economic slowdown, the financial ratios of credit institutions that showed no deterioration in 2008 could take a turn for the worse. The various risks the system faces must continue to be monitored closely, especially credit risk, which is particularly sensitive to an economic slowdown. In fact, credit risk already is beginning to materialize and, if significant, it could seriously cut into the system's profitability, as happened during the crisis at the end of the Nineties.

B. NON-BANK FINANCIAL INSTITUTIONS

An analysis of non-bank financial institutions (NBFI) is crucial to this report, considering how they can affect financial stability. On the one hand, they are savings vehicles for households and the general public, because of the portfolios they manage. On the other hand, they are linked closely to other financial agents, either as counterparts in their market transactions or because they are part of a financial group. As a result, non-bank financial institutions can serve as systemic agents in certain contingencies. The NBFI analyzed in this section are the pension and severance fund managers (PFM), the life and general insurance companies (LIC and GIC), the collective portfolio managers, the brokerage firms (BF) and the investment management companies (IMC).

Continuing the tendency observed in earlier periods, the investment portfolio held by financial institutions registered a 17.6% increase during the past year,

closing at COP\$284.6 t. This growth was fueled largely by the expansion in the NBFi investment portfolio and, to a lesser extent, by the change in the portfolio of credit institutions. The former raised the value of their portfolio by 19.6%; the latter did so by 16.5%

The increase in the NBFi investment portfolio was motivated by a great deal of growth in the LIC portfolio and in ordinary mutual funds (OMF). The LIC expanded their investments by 71.5% to COP\$11.90 t, while the OMF raised theirs by 74.1% to COP\$7.52 t. This is in sharp contrast to the momentum registered by the BF and the IMC. They reduced their portfolios by COP\$750 b, which amounts to a decline of 22.5% (Table 4).

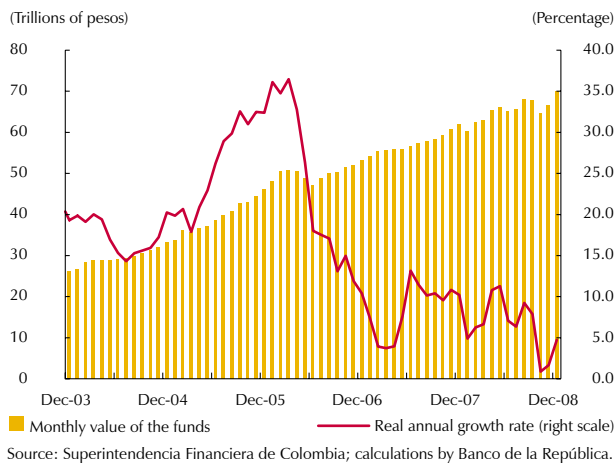
Table 4
Investment Portfolio of Financial Institutions

	2005		2006		2007		2008	
	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 Establishments								
Investments	43.94	15.40	37.65	11.72	34.95	9.78	38.75	9.70
Portfolio	73.46	25.75	97.86	30.47	125.10	35.00	147.79	36.98
Total: Credit Establishments	117.39	41.15	135.51	42.20	160.06	44.78	186.54	46.68
Non-bank Financial Institutions								
Mandatory Pensions	36.59	12.82	43.31	13.49	51.12	14.30	58.38	14.61
Voluntary Pensions	5.88	2.06	6.16	1.92	7.06	1.98	7.52	1.88
Severance Pay	3.67	1.29	3.74	1.16	3.80	1.06	4.01	1.00
General Insurance	3.50	1.23	3.31	1.03	3.59	1.01	3.96	0.99
Life Insurance	5.81	2.04	6.19	1.93	6.94	1.94	11.90	2.98
Ordinary Mutual Funds	5.33	1.87	3.79	1.18	4.33	1.21	7.53	1.89
Special Mutual Funds	3.12	1.09	1.54	0.48	1.82	0.51	2.21	0.55
Brokerage Firms and Investment Management Companies	4.23	1.48	3.80	1.18	3.35	0.94	2.60	0.65
Total Non-bank Financial Institutions	68.13	23.88	71.85	22.38	82.01	22.95	98.10	24.55
Total	185.53	65.03	207.36	64.57	242.07	67.73	284.64	71.23

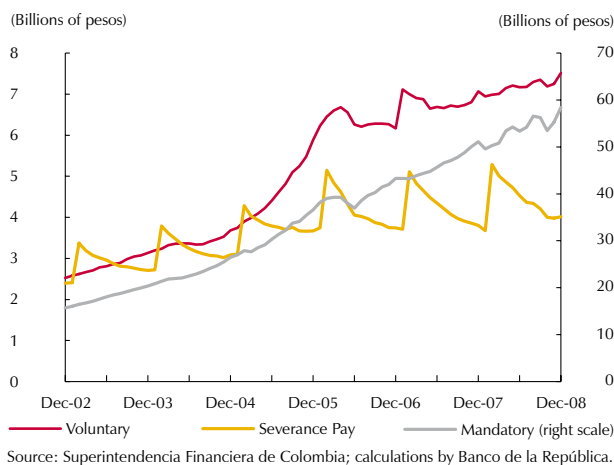
(Proj) Projected

PFM-managed funds are concentrated heavily in local assets. Within this category, the emphasis is on government securities. The portfolio strategy implemented recently by the PFM is intended to reduce their exposure to the uncertainty and volatility found on international markets.

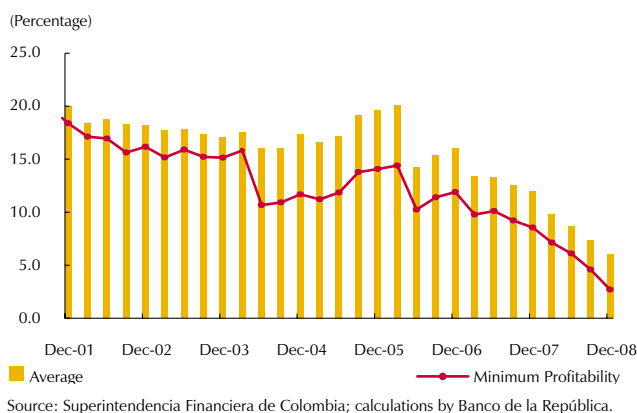
Graph 34
Pension Fund Value and Real Growth



Graph 35
Pension Fund Portfolio Value



Graph 36
Average Tri-annual Profitability of PFM (Mandatory) and Minimum Profitability



This strategy, coupled with the increase in affiliates¹⁵ and their contributions, the valuation in government securities and peso devaluation during the final quarter of the year, contributed to PFM portfolio valuation and growth portfolio during 2008, despite a temporary decline in October.

1. Pension and Severance Fund Managers (PFM)

a. Portfolio Value and Return

In 2008, the portfolio value of PFM-managed funds was characterized by a continuation in the upward trend registered during earlier periods, but with a slightly lower growth rate. By December 2008, it was valued at COP\$69.9 t, which is 12.8% more than the year before (Graph 34).

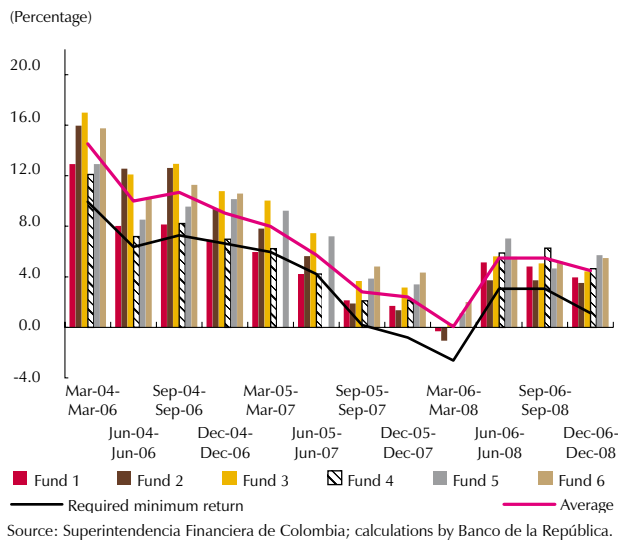
The growth in total PFM-managed resources corresponds to the increase in the portfolio of mandatory pension funds (MPF), which off-set the reduction in the portfolio of voluntary pension funds (VPF) and severance funds (SF). Last year, the MPF registered a real increase of 6.1% in the value of their portfolio, while the VPF and SF reported respective reductions of 1.1% and 2.0% (Graph 35).

Moreover, the reduced profitability of MPF portfolios is the main reason for the slowdown observed during the second half of 2008 in the total value of MPF-managed resources (Graph 36). In December, the tri-annual return on the MPF-managed portfolios was 5.9 pp less than the return reported in December 2007.

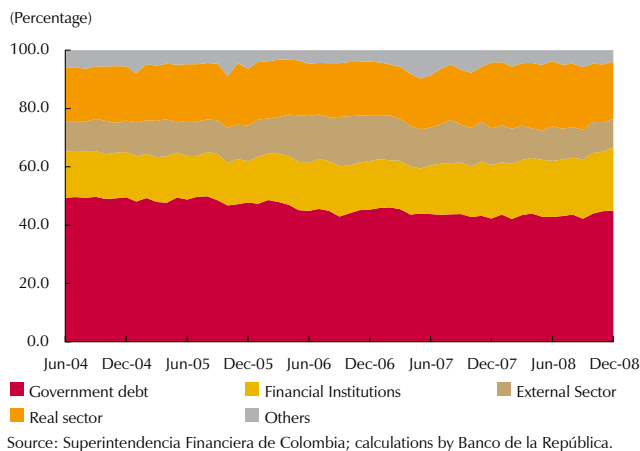
Severance-fund performance was similar to that registered by the mandatory pension funds in the second half of 2008. Although the downward trend observed in 2007 reversed somewhat during the first half of the year, SF bi-annual profitability dropped

15 The number of affiliates rose by 1.27 m in 2008, which represents an increase of 10.4%.

Graph 37
Bi-annual Profitability of Severance Funds and Minimum Profitability



Graph 38
Pension Fund Portfolio Composition, by Issuer



again and, by December, had reached levels slightly above those registered a year earlier (Graph 37). In December, average SF bi-annual profitability was 4.5%, which is 2.1 pp more than at the close of 2007, but 1.0 pp less than in June 2008. This downward performance was duplicated by bi-annual minimum profitability, which declined by 1.93 pp during the second half of 2008 and ended the year at 1.13%. However, it is important to point out that none of the funds failed to comply with the required minimum return.¹⁶

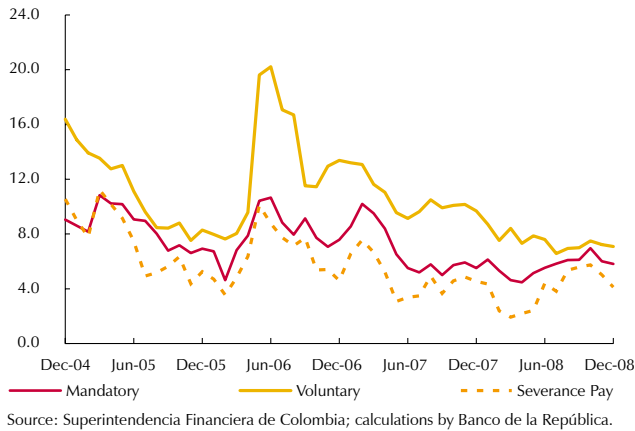
b. Portfolio Components by Issuer, Term and Currency

There were no major changes in the composition of the PFM-managed portfolio during 2008. It remained concentrated in government securities, which accounted for 44.9% at the end of December. This component registered a marginal increase between September and December 2008 due to a shift in the make-up of the portfolio, with investments in the real sector being replaced by government securities (Graph 38). This is part of a portfolio strategy intended to obtain valuation benefits, primarily from TES generated after the Central Bank cut its benchmark rate, since the decline in discount rates on government securities implies an increase in their price. The increase in stock market volatility and in the risk associated with securities traded on the stock market means fewer benefits from valuation and, hence, the preference for government securities over variable income securities.

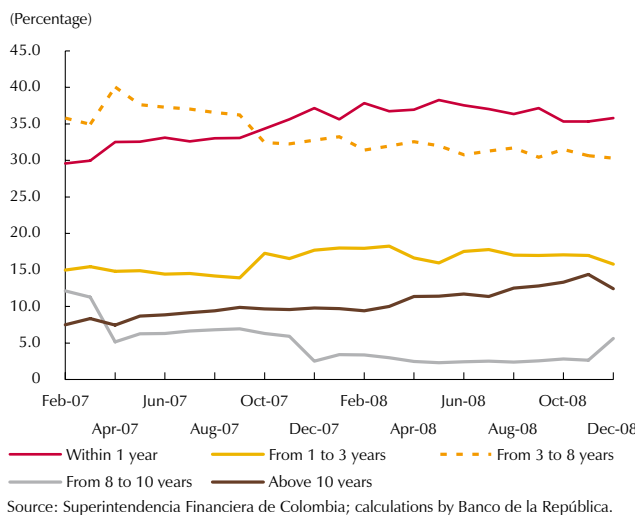
On the other hand, the PFM continue to substitute external sector assets for securities in the financial sector, as has been the case since 2006. This shift in the make-up of the portfolio is motivated by the uncertainty on international markets, which has raised the risk of investing in external sector assets. This, in turn, has fueled the growth in positions in local assets. As a result, the share of external sector assets went from 16.9% to 9.7% between September of 2006 and December 2008, while the share of financial-system assets went from 17.25% to 21.9% during the same period.

¹⁶ In the case of ordinary pension funds (OPF), the reference period for calculating minimum profitability is three years. It is two years for severance funds (SF).

Graph 39
Percentage of Foreign-currency Denominated Portfolio Value, without Coverage



Graph 40
Pension Fund Portfolios, by Maturity

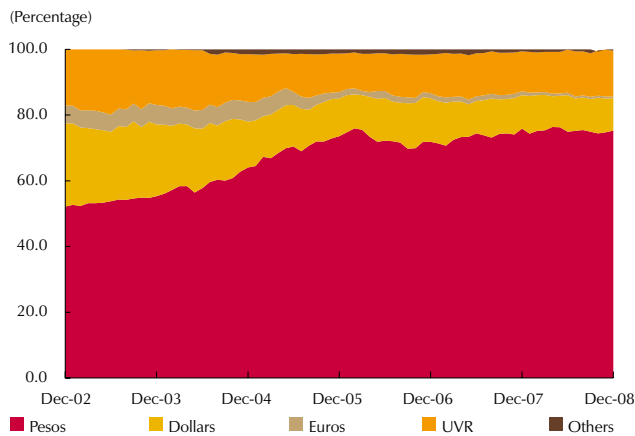


Although the portion of external sector assets continued to decline during 2008, the percentage of portfolio value denominated in foreign currency, without coverage, saw no major changes and ended the year at levels similar to those observed at the close of 2007. For example, the MPF and the SF reduced their uncovered foreign currency positions in the first quarter, then corrected them during the remainder of the year, ending with respective annual variations of 31 and -41 bp. On the other hand, the voluntary pension funds (VPF) reduced their uncovered positions in foreign currency by 2,6 pp and finished the year at 7,1%. This is well below the 30% limit on uncovered positions in foreign currency and shows these funds have a preference for local assets (Graph 39).

The high concentration of local assets in the portfolio of PFM-managed funds is accompanied by a high concentration in short-term assets (Graph 40). At December 2008, these assets, with maturities under a year, accounted for 35.8% of the portfolio, while securities maturing in more than 10 years represented 12.5%. During 2008, pension fund managers continued to apply investment strategies similar to those observed at the end of 2007. As a result, an annual comparison shows no major variations in portfolio composition from the standpoint of maturities. Nevertheless, one does see a shift in assets that increases the average maturity of the portfolio. This is evident in the 5.7 pp reduction in the share of assets that mature within eight (8) years and the similar increase in the percentage of assets with maturities above eight (8) years.

Considering the particular characteristics of pension and severance funds, with liabilities that are mostly long-term, the nature of their business suggests the portfolio should be concentrated in assets with similar long-term maturities. Nevertheless, a considerable share of the PFM-managed portfolio is comprised of assets with maturities under a year. This is explained by the limited supply of securities for investment in the local market. On the other hand, the government-security investment strategies have changed of late; the focus now is on a build-up in positions in short-term instruments. The idea, in this respect, is to obtain valuation benefits in a scenario where interest rates are being cut. Coupled with the market's expectations of inflation, this has fueled the purchase of short-term investments and, in doing so, has continued the tendency observed for the last the two years.

Graph 41
Pension Fund Portfolio Composition, by Currency



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

As to composition by denomination, a large percentage of the PFM-managed portfolio is made up of assets denominated in pesos. This is consistent with a policy aimed at concentration in local assets. By the end of the year, investments in pesos accounted for 75.3%, while securities in U.S. dollars and Euros represented 9.9% and 0.6% respectively. Although the results were similar to those at December 2007, there was a substitution of assets denominated in U.S. dollars and Euros for securities denominated in real value units (UVR in Spanish) equivalent to 1.8% of the value of the portfolio (Graph 41).

2. Life and General Insurance

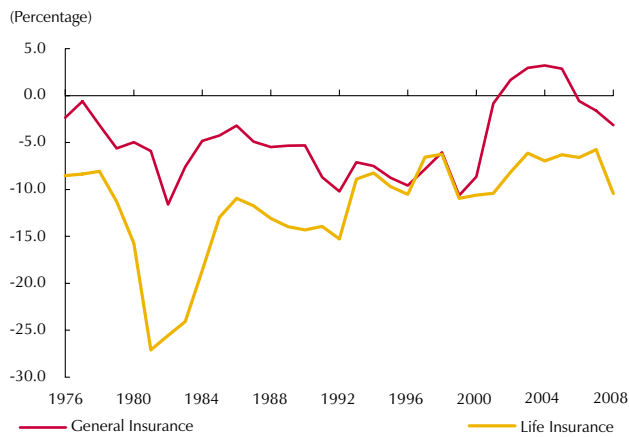
By the end of 2008, the investment portfolios of general insurance and life insurance companies were valued respectively at COP\$3.96 t and COP\$11.90 t. Compared to the year before, these amounts represent increases of 10.1% and 71.5%. The growth in life insurance companies (LIC) is explained primarily by liquidation of the Social Security Institute and the transfer of all its assets, liabilities and professional risk management contracts to Compañía de Seguros La Previsora Vida S.A. (and later to Positiva Compañía de Seguros S.A.). This transfer of investments came to COP\$3.1 t.

The considerable increase in LIC also is due, but less so, to an increase in issued premiums for life annuities (195%). These accounts are for life insurance issued to cover monthly allowances paid to retirees who prefer to transfer their savings to an insurance company in order to receive a fixed monthly payment. These annuities are based on an individual savings scheme. Considering how volatile financial markets have become, there would appear to be more of a preference for such pension plans, as opposed to the scheduled retirement system. With the scheduled retirement system, monthly allowances depend on the balance in the individual account, which is administered by pension fund managers (PFM) and, therefore, remains exposed to financial market performance.

The technical profit margin, defined as the ratio of technical profit to issued premiums,¹⁷ continued to decline in 2008, as it has during the last two years for both LIC and GIC. This indicator, which was -3,2% and -10,4%, respectively, dropped by 1.6 and 5.8 pp compared to the end of 2007 (Graph 42).

¹⁷ The technical margin represents the operating profit earned by insurance companies. It includes insurance and reinsurance income, minus outlays for these same items, commissions and general expenses. Accordingly, the technical margin establishes the proportional surplus or deficit of insurance companies with respect to their business. A margin near zero is a sign of competitive and efficient insurance systems.

Graph 42
Technical Profit Margin



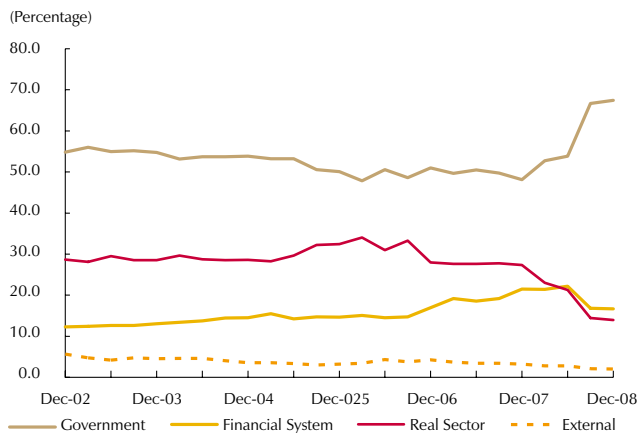
Source: Fasescolda.

The technical margin, as an operational profit for insurance companies, is an indicator of surplus or deficit in operation of the business. A technical margin near zero is a sign of efficiency in the system. Therefore, positive or negative indicators point to possible anomalies.

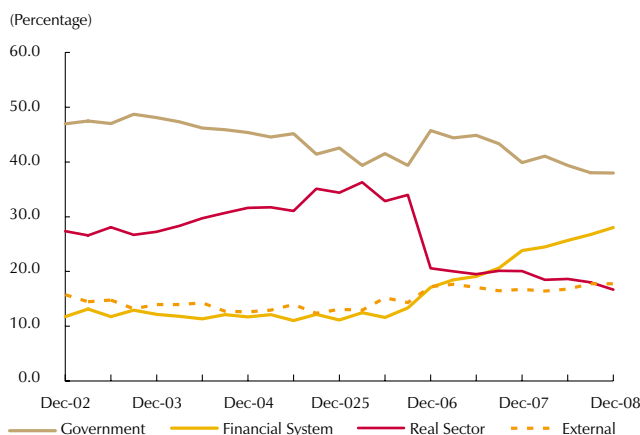
A negative technical margin is indicative of a situation where the customer risk level is underestimated. In this case, deficient actuarial calculations estimate a lesser value for potential claims payable with respect to issued premiums. In other words, it suggests the projections on accounts payable, should the insured contingencies occur, are less than what is required. In contrast, a positive technical margin can suggest a lack of competition among insurers. It is indicative of a situation involving market power, where the premiums charged are higher than the ones suggested by the risk associated with the customer.

Graph 43
Investment Portfolio, by Issuer

A. Life Insurance Companies



B. General Insurance Companies



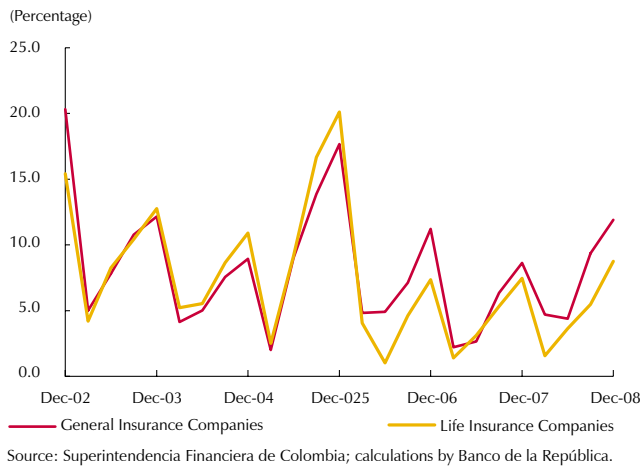
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Inasmuch as the technical margin for both general and life insurance companies was negative, this could suggest the system has a high potential for undervaluing the risk posed by its customers. Nevertheless, the outcome for life insurance companies is similar to the results in the last the fifteen years. For general insurance companies, it is comparatively better than those observed during the same period.

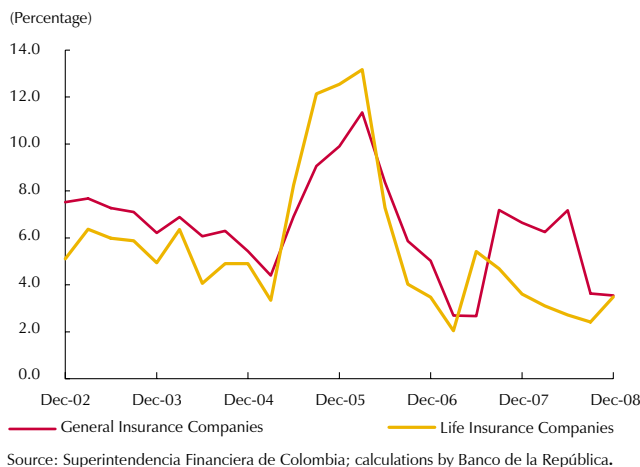
As illustrated in Graph 43, Panel A, the LIC investment portfolio has more local assets than the GIC portfolio. Moreover, LIC investments are highly concentrated in government securities, which accounted for 67.4% in December 2008 (48.2% in December 2007). This added concentration in government securities is the result of a shift in assets from the productive sector and the financial system to government securities in the second half of 2008, motivated by the valuation in TES during that period.

The GIC portfolio, like the LIC portfolio, is concentrated mainly in government securities, but the share of external sector assets is larger. Government securities accounted for 38% of the GIC portfolio at December 2008, whereas external

Graph 44
Return on Insurance Company Investments



Graph 45
ROA: Life Insurance Companies (LIC) and General Insurance Companies (GIC)



sector-assets represented 7.7%. The largest variation in share of investments pertains primarily to the substitution of real sector assets for financial-system securities. This raised the proportion of investments in the financial system by 4.2 pp; they closed out the year at 28% (Graph 43, panel B).

Less diversification in the LIC portfolio may explain the increased volatility in the return on LIC investments compared to the GLC portfolio (Graph 44). Moreover, the sizeable valuation in TES and the high concentration of these securities in the portfolios, explain the upward tendency in return on investment in 2008. In fact, at December, the return on the GIC and LIC portfolios was up by 11.9% and 8.7%, respectively.

Despite more of a return on investments, insurance companies saw their return on assets drop during 2008 (Graph 45). In the case of life insurance companies, the downward tendency registered during the first three quarters of the year was partly offset during the final quarter and these firms closed out the year with an ROA of 3.5%, which is 13 bp less than the year before. As for the general insurance companies, the increase in ROA during the first quarter was outdone by the downward tendency observed during the remainder of the year. As a result, the GIC saw their ROA drop by 3.1 pp to 3.54% by the end of 2008.

The sector reported good coverage levels, which are estimated as technical reserves over investments. By December 2008, this indicator was 97.5% for the GIC and 94.6% for the LIC. These results represent respective annual variations of -4.3 and 6.4 pp.

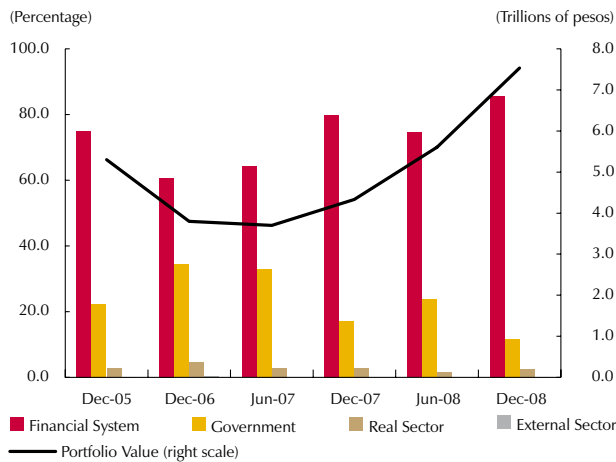
3. Mutual Portfolios¹⁸

An analysis of mutual portfolios refers to the changes in the value of funds managed by trust companies; that is, ordinary mutual funds (OMF) and special mutual funds (SMF). At December 2008, these companies reported an investment

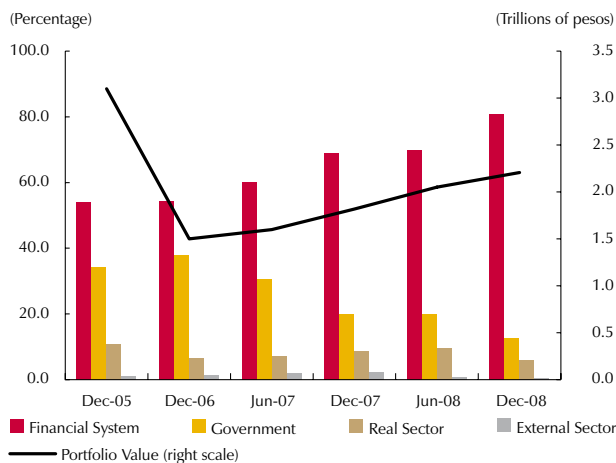
¹⁸ As of June 2007, any mechanism or vehicle designed to receive deposits or to manage the money of a group of persons for the purpose of obtaining common economic returns is known as a mutual portfolio (Decree 2175 issued by the Ministry of Finance and Public Credit).

Graph 46
Portfolio Value and Composition, by Issuer

A. Ordinary Mutual Funds



B. Special Mutual Funds



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

portfolio of COP\$9.7 t. This amount represents 58.5% annual growth and is comprised mostly of OMF resources (77.4%, which are equivalent to COP\$7.53 t.).

The value of the OMF portfolio rose throughout 2008 and was 74.1% higher by the end of the year than at the close of 2007. This growth is the direct result of a COP\$3.3 t increase in contributions (38.5%). The transfer of available resources (COP\$200 b) was a factor as well, but less so (Graph 46, panel A).

The SMF portfolio showed upward movement until September 2008. Its value remained constant during the last quarter, with 21.4% accumulated growth reported at the end of the year. The SMF portfolio had accumulated COP\$2.2 t. by December. As with OMF, this increase was motivated by contributions. The rise in contributions reported by these organizations came to 5.2% (Graph 46, Panel B).

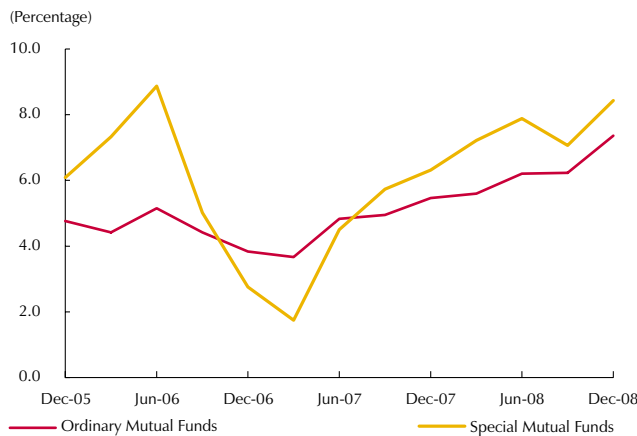
A look at the make-up of the OMF investment portfolio shows it still is highly concentrated in financial-system assets, mainly term deposits. Despite the shift towards government securities during the first half of 2008, the situation was reversed entirely during the second quarter. As a result, the share of financial-sector securities increased by 11.2 pp between June and December 2008. It was 85.7% at the end of the year, which is 5.9 pp more than in December 2007.

As a result of this shift in composition, the percentage invested in government and real sector securities declined during the year by 5.6 pp and 0.3 pp, respectively, ending 2008 at 11.7% and 2.4%.

The SMF portfolio at December also was concentrated in financial-sector assets (80.8%). The share of those investments grew by 11.9 pp in 2008, while the share invested in government, real sector and external sector securities declined by 7.5 pp, 2.7 pp and 1.8 pp, respectively. By December, they accounted for 12.6%, 6.1% and 0.5% of the portfolio. This signals a continuation of the process begun in late 2006 to substitute investments in government securities with investments in financial-sector securities (Graph 46, Panel B).

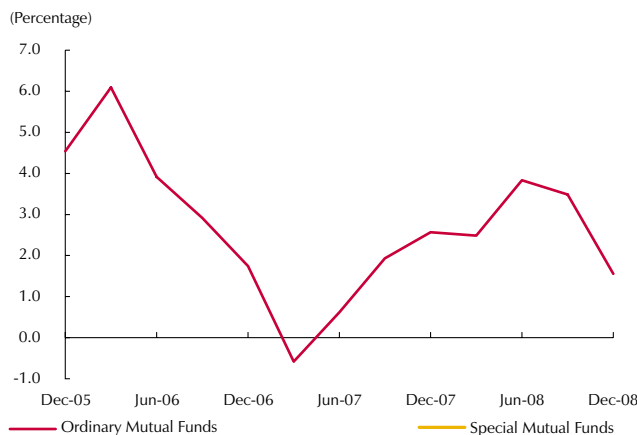
In keeping with the increase in portfolio value, the return on these funds has been growing since March 2007. As illustrated in Graph 47, both the OMF and

Graph 47
ROA of Mutual Fund Portfolios



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 48
ROA of BF and IMC



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

the SMF register high yields for the sample in question, and their ROA at the close of 2008 was 7.4% and 8.4%, respectively.

4. Brokerage Firms and Investment Management Companies

The investment portfolio of brokerage firms and investment management companies declined 22.4% in value during 2008, reaching COP\$2.6 t at the close of the year. This outcome reflects a continuation of the downward tendency in portfolio value observed since 2005, and is consistent with the reduction in return on assets and the increase in uncertainty on financial markets.

The return on assets (ROA) during the second half of 2008 corrected most of the upward tendency registered since March 2007, closing out the first six months of 2008 at 3.8%. With this correction, ROA ended the year at 1.6%, reflecting the performance of a business determined by financial market volatility (Graph 48).

Nevertheless, when analyzing how these institutions performed individually, one sees a group tendency last year in which the return on assets gradually converged towards zero. Graph 49 shows this momentum for 41 institutions whose returns increase

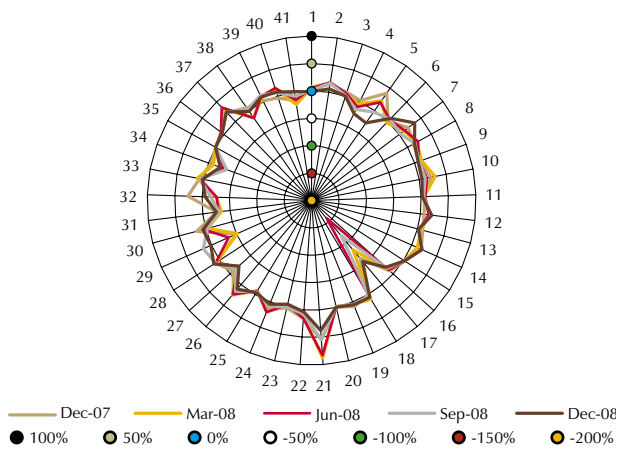
in value in proportion to the distance from the center of the circumference. As illustrated, 54% of the institutions reported fewer returns in December 2008 compared to the previous year.

As indicated in the last edition of the *Financial Stability Report*, institutions with a highly negative ROA are not highly leveraged. In fact, their investment/equity ratio is below average for the sector, which was 2.8 at December 2008 (in June 2008, it was 2.6).

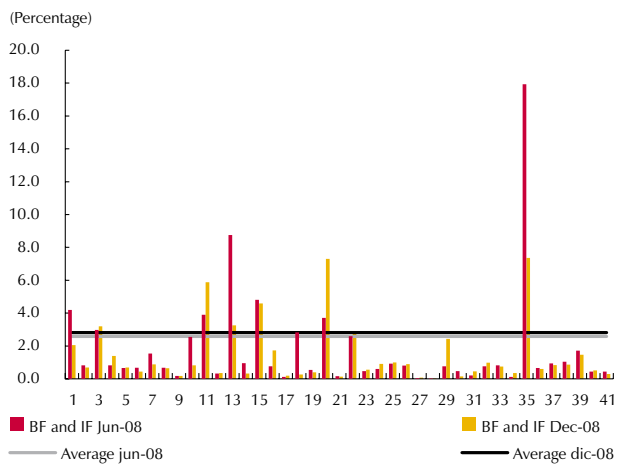
In summary, 2008 was characterized by a great deal of market volatility and fewer returns for the system compared to 2007. The tendency in the second half of year reversed the positive ROA performance during the first six months and took the indicators to levels similar to those registered at the close of 2007. Moreover, the investment portfolio growth rate surpassed that of the economy; consequently its share of GDP increased.

Graph 49

A. ROA of Brokerage Firms and Investment Funds



B. Investments/Net Worth of Brokerage Firms and Investment Funds



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

The transfer of international market volatility was mitigated, in part, by the fact that portfolios were heavily concentrated in local assets, thanks to a gradual process substitution involving investments in the external sector. Coupled with the valuation in domestic government securities during the second half of 2008, this situation explains the growth in investment portfolios. Nevertheless, high exposure to local investments makes these portfolios much more susceptible to changes in the local market. Also, considering the economic outlook for 2009 and the uncertainty in financial markets, non-bank financial institutions (especially brokerage firms and mutual portfolios) face the prospect of becoming more vulnerable, which could jeopardize their performance this year.

Box 1 ANALYSIS OF CONCENTRATION AND COMPETITION

Issues concerning the concentration and competitiveness of financial intermediaries are analyzed in this box. The first measurement of concentration uses the market share of the five largest intermediaries in the loan and deposit markets, supplemented with the Herfindahl-Hirschman index (HHI),² which makes it possible to quantify the level of concentration in each of these markets. Because high concentration levels do not imply that a market is not competitive, several additional methods are used to determine the competitive structure that characterizes these markets.¹

1. Concentration

The share of the credit market corresponding to the five largest intermediaries (RC5) remained stable throughout the second half of 2008 (Graph B1.1, Panel A, and Table B1.1). In terms of the total portfolio, these institutions registered an increase of almost 50 bp in their market share (from 60.9% to 61.4%) compared to June 2008. As to the types of loans, the most representative change was in the microcredit portfolio. Compared to the first half of 2008, the market share of the two largest institutions went from 76.9% to 67.4%, while that of the five largest went from 92.5% to 89.5%. For the most part, this is explained by the entry of two specialized banks into the financial system (Bancamía and Procredit) and by the change in regulations that apply to micro-loans.³³ In the case of the consumer and mortgage loan portfolios, the two largest and the five largest institutions saw their market share increase slightly during the last half of 2008.

The change in the HHI during the second half of 2008 was similar to that of the RC5 in the loan market (Graph B1.1, Panel B). During that period, the total portfolio index increased by 29 points (from 952 to 972 points), placing it close to a moderately concentrated market. The most important change was in the microcredit portfolio index, which went from 3,568 points in June 2008 to 2,870 points in December of the same year. However, this portfolio continues to show a higher level of concentration and is regarded as a highly concentrated market.

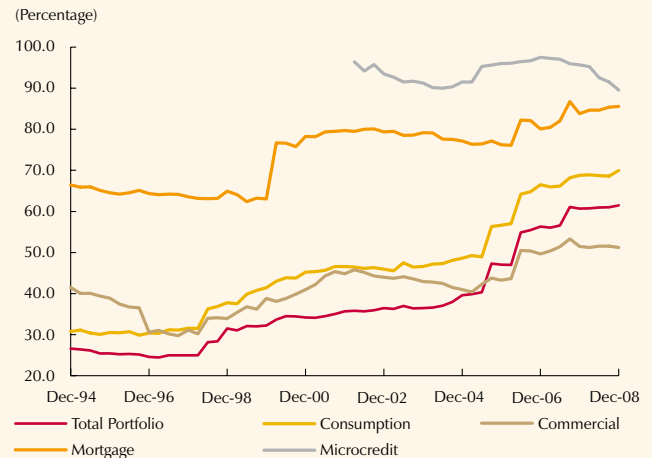
1 For more information on the methods used, see “Concentration and Competition Measurements” in “Financial Stability Issues,” *Financial Stability Report*, Banco de la República, March 2008.

2 The HHI measures the market concentration level. The indicator is in the $0 \leq \text{HHI} \leq 10,000$ range. A number below 1,000 indicates low concentration, a number between 1,000 and 1,800 is considered indicative of average or moderate concentration, and an index above 1,800 signals a highly concentrated market.

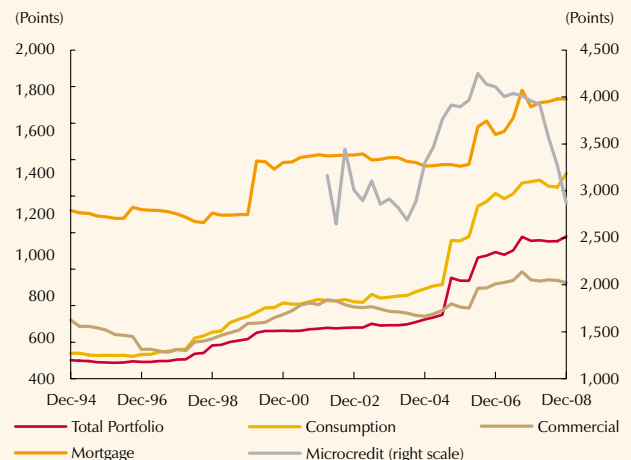
3 As of March 2008, some of the loans entered on the books as part of the consumption and commercial loan portfolio came to be regarded as micro-loans.

Graph B1.1
Investment Portfolio by Issuer

A. Portfolio Share of the Five Largest Institutions



B. HHI of the loan Portfolio



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

The share of the deposit market pertaining to the five largest intermediaries remained relatively stable during the second half of 2008 (Graph B1.2, Panel A, and Table B1.2). During that period, these intermediaries expanded their share of total deposits by nearly 100 bp (from 57.4% to 58.4%). This increase more than offset the drop observed during the first half of 2008 (76 bp). As to the different types of deposits, the share of checking accounts registered the largest increase (1.54 pp), followed closely by the share pertaining to term deposits (TD) (1.11 pp). In the case of savings accounts, the share represented by these institutions remained virtually unaltered.

The HHI showed an increase in concentration levels for total deposits and types of deposit-taking during the last six

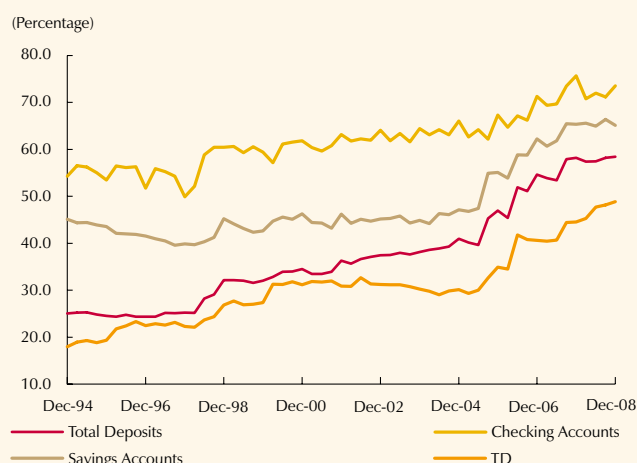
Table B1.1
Loan Portfolio Concentration Indicators at December 2008

	Total Loan Portfolio	Consumption	Commercial	Mortgage	Microcredit
Share (%)					
Two largest	34,12	44,64	24,38	47,45	67,49
Five Largest	61,45	69,93	51,23	85,56	89,56
HHI	979	1.324	726	1.733	2.870

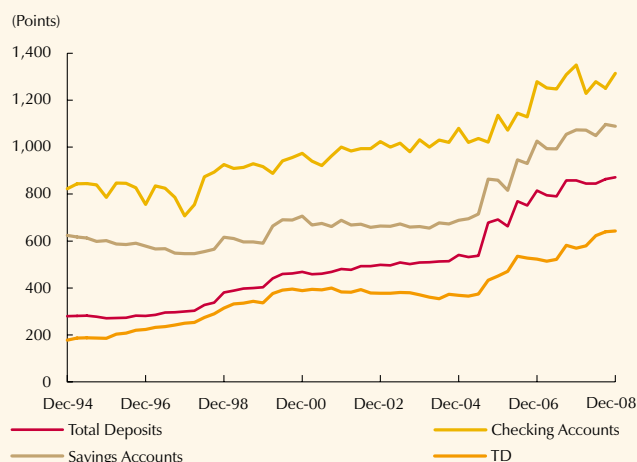
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph B1.2

A. Five Largest Institutions' Share of Deposits



B. HHI for Deposits



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

months of 2008 (Graph B1.2, Panel B). During that period, the total deposit index rose from 844 to 872 points, placing the HHI close to that of a moderately concentrated market. The HHI for term deposits (TD) continues to exhibit the upward tendency that began in June 2007. By the end of

Table B1.2
Deposit Concentration Indicators at December 2008

	Total Deposits	Checking Accounts	Savings Accounts	TD
Share (%)				
Two largest	30.63	41.39	34.03	23.18
Five largest	58.42	73.53	65.15	48.84
HHI	872	1,314	1,089	643

Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

2008, the TD index reached 643 points, which is the lowest for the three types of deposits and indicates a low level of concentration.

To conclude, the change in the loan and deposit market indicators during the second half of 2008 shows relative stability in concentration of the financial system. The behavior of the microcredit and TD indicators is worth noting. The reduction in microcredit concentration levels suggests that intermediaries are becoming more interested in this segment of the market. This growing interest might translate eventually into a greater degree of competition, which would benefit microcredit customers. As for term deposits, the change in the indicators continues to show that intermediaries prefer deposits of this type, especially the largest, since TDs are much less volatile and financially less costly than other types of deposit-taking.

2. Competition

As to market structure, the results of the competition models showed no significant variations with respect to the results published in the last edition of the *Financial Stability Report*. The outcome of these exercises is presented below.

The *H* statistics, obtained with the Panzar and Rosse method, indicate the intensity of competition varies from one type of loan to another. However, the structure of the loan markets is

one of free-entry monopolistic competition (Table B1.3). The results for the types of loans indicate competition is greatest in the mortgage loan market, while the consumption loan portfolio tends to reflect a monopolistic balance.

Table B1.3
H Statistics by Portfolio Type

Portfolio	H
Total	0.28084
Consumption	0.19667
Portfolio	0.40745
Mortgage	0.51061

Note: Imbalanced panel estimation. The exercise was done for the entire financial system, excluding leasing institutions, with quarterly data from March 1995 to December 2008. Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

The Panzar and Rosse method is supplemented with an analysis designed to determine the relationship between market power, concentration and risk. The results of the exercise show a positive correlation between market power and the levels of concentration and risk in the system (Table B1.4). This suggests that financial intermediaries have a better chance of passing on the costs of business risk to their clients when the market is more concentrated.

Table B1.4
Relationship between Market Power, Concentration and Risk
Dependent Variable: Lerner Index

Financial System	
HHI	0.1620*** (0.0238)
Loan Portfolio Quality	0.1314*** (0.0167)

Note: Estimated with imbalanced grouped square minimums. The exercise was done for the financial system as a whole, excluding leasing institutions. The period was from May 2002 to December 2008. *** Indicates statistical significance at one percent. Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

As an alternative, a conjectural analysis is used to determine the market structure by examining how credit institutions react to changes in the terms on which their rivals compete. The results for the loan portfolio suggest the loan market has a monopolistic competitive structure in which competition is below Nash equilibrium⁴⁴ (Table B1.5). The results for deposits indicate the structure characterizing the deposit market is more competitive than one of Nash equilibrium. This is because price is the main competitive factor in that market.

Table B1.5
Conjectural Parameters for the Loan Portfolio and Deposits

γ of the loan portfolio	2.607E + 08*** (1.84E + 07)
γ of deposits	-0.1141*** (6.937E - 03)

Note: The reduced forms are estimated by the full information maximum likelihood method. The exercise was done for the financial system as a whole, excluding leasing institutions. Quarterly data from March 1995 to December 2008 was used. Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

In short, the last half of 2008 saw no significant changes in competition levels. The loan market remains dominated by a monopolistic competitive structure, which applies to all types of loans. On the other hand, the structure of the deposit market remains highly competitive, which may be indicative of considerable rivalry to attract different types of deposits.

4 This is a situation where the agents are price takers, but the economic benefits may be above zero.

Box 2 INTERNATIONAL INDICATORS

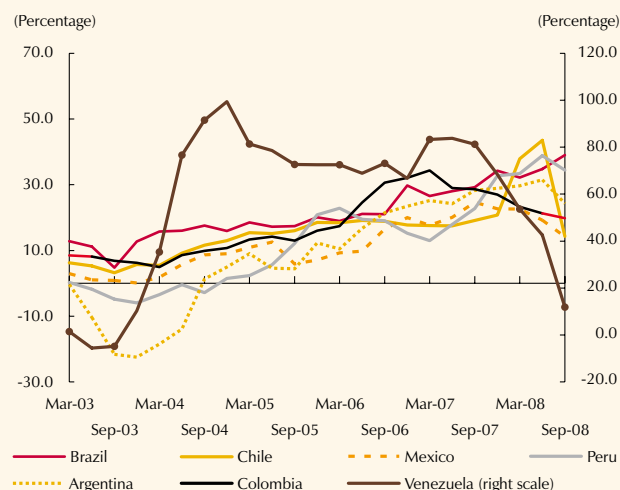
The international financial crisis has changed the outlook for growth worldwide. Expectations of economic growth in the developed countries have declined considerably as a result. Furthermore, the increased uncertainty on financial markets has generated a more pessimistic environment for the Latin American economies.

The main indicators of the financial system are analyzed in this box to examine the behavior of variables such as yield, efficiency and risk in Colombia's financial system. The idea is to compare our situation to that of several other Latin American countries.¹

The indicators at September 2008 show deterioration in the main variables; namely, rate of real growth in the total portfolio, yield, efficiency, portfolio quality, coverage and intermediation spreads in the financial system. The indication is that credit institutions in the region have become more vulnerable.

When analyzing the rate of real growth in the total portfolio of the financial system compared to the data observed a year ago (Graph B2.1), one sees considerable deterioration in the majority of countries. The great deterioration is in Venezuela, where the growth rate declined by 69.3 pp between September 2007 and September 2008. Countries such as Colombia, Chile, Mexico and Argentina also show a decline in this indicator. Brazil and Peru are the only countries that are growing at higher rates, which increased by around 9.8 pp and 11.6 pp, respectively.

Graph B2.1
Real Gross Loan Portfolio Growth

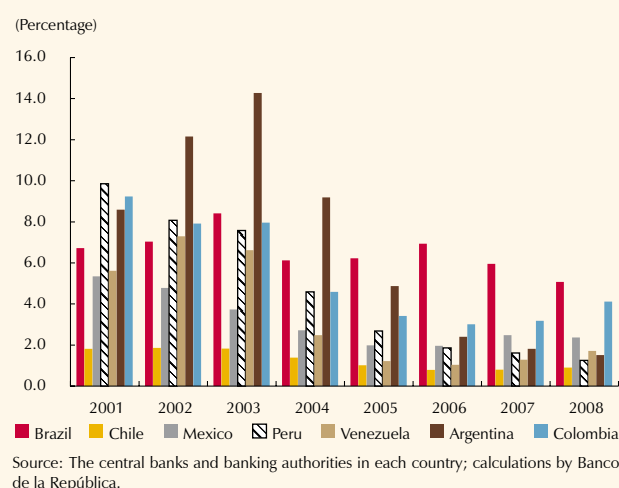


Source: The central banks and banking authorities in each country; calculations by Banco de la República.

1 The countries analyzed are Argentina, Brazil, Chile, Mexico, Peru and Venezuela, with data at September 2008.

A look at the loan portfolio quality indicator² (Graph R2. 2) shows its evolution has been unfavorable for a year in countries such as Chile, Colombia and Venezuela, where this indicator has deteriorated. However, deterioration in the portfolio is not generalized for all the countries in the sample. Brazil and Peru show an improvement in their indicators. The most deterioration in the loan portfolio quality indicator is in Colombia, with an increase of 0.94 pp. The most notable recovery is in Brazil, where the indicator declined by 0.87 pp.

Graph B2.2
Loan Portfolio Quality: Non-performing/Gross Portfolio



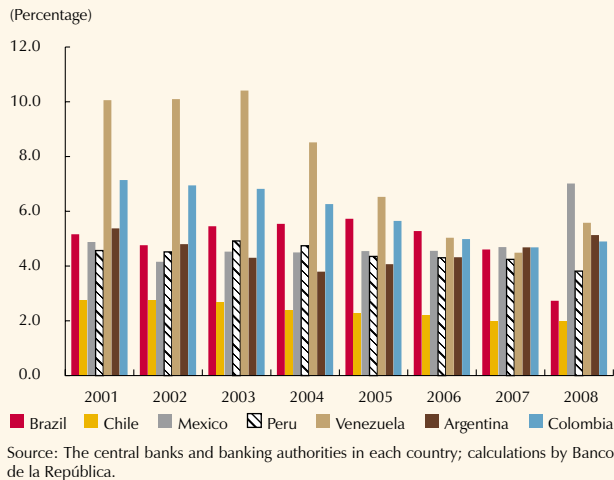
Source: The central banks and banking authorities in each country; calculations by Banco de la República.

As to the coverage indicator,³ Graph B2.3 reflects the policy to accumulate provisions, which has been underway in most of the countries since 2001. Nevertheless, as of 2007, the indicator has declined for every country in the sample, with the exception of Peru. The case of Venezuela is worth noting; its indicator was down 31.8 pp by September 2008 compared to the same month the year before. In Colombia and Mexico, the reductions were 16.4 pp and 5.11 pp, respectively. Peru, on the contrary, was unique; its indicator registered an increase (9.9 pp).

2 The loan portfolio quality indicator used in this section is calculated as the non-performing/ gross loan portfolio ratio. Hereinafter, it shall be referred to as the arrears index.

3 The loan portfolio coverage indicator used in this section is calculated as the ratio of loan-loss provisioning to the non-performing portfolio. Hereinafter it will be referred to as the provisions/gross portfolio ratio.

Graph B2.3
Efficiency: Administrative and Labor Costs/Assets



Graph B2.4 shows the countries have improved their efficiency indicator⁴ in recent years. However, the indicators for Mexico, Argentina and Venezuela were not as good in September 2008, due their increase. There was a significant change for Mexico, which has had the worst indicator since March 2001 (7.2%). On the other hand, the indicators for Brazil, Chile and Peru have improved. The best variation is in Brazil; its indicator went from 4.86% in March 2007 to 2.73% in September 2008. Colombia is at its best moment since 2001, with an efficiency indicator of 4.9%.

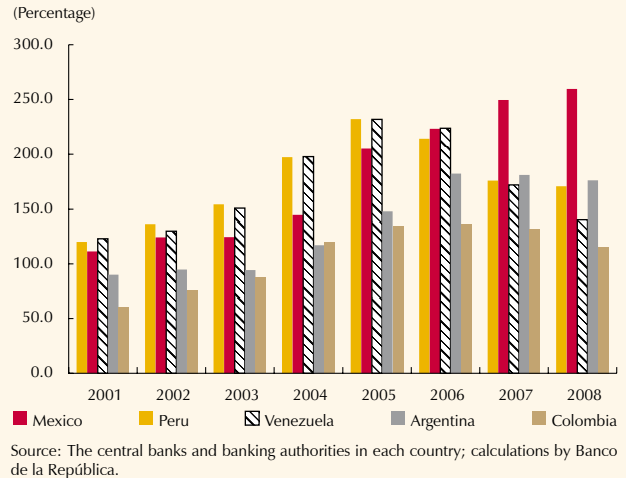
Finally, a look at the indicator for the ex post intermediation spread (Graphic B2.5) shows that countries such as Colombia registered an increase of 9.6% by September 2008. Mexico increased its margin to 9.5%. On the other hand, Peru declined to the 7.2% level.

In conclusion, the new outlook created by the international financial crisis has affected every country in the region. Credit institutions will see their exposure determined by the depth and duration of the crisis in the developed countries. Accordingly, the impact on economic growth and employment will have a direct effect on intermediation

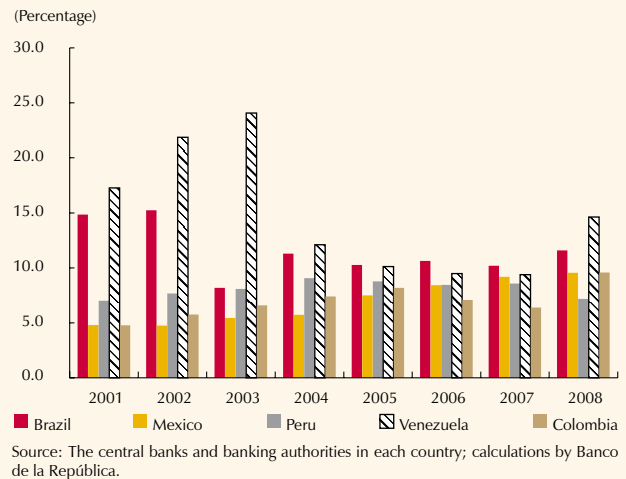
4 The efficiency indicator used in this section represents the ratio of administrative and labor costs to total assets.

activities, bringing pressure to bear on the liquidity and credit risks of financial intermediaries.

Graph B2.4
Coverage: Provisions/Non-performing Portfolio



Graph B2.5
Ex Post Intermediation Spread



In summary, the financial system in the Latin American countries, as in Colombia, is contending with considerable liquidity pressure from international financial markets, coupled with the pressure generated by lower growth rates and less employment. This makes them more vulnerable to the manifestation of credit risk, with higher levels of portfolio deterioration, in addition to internal liquidity pressure.

A DIVERSIFICATION-PROFITABILITY ANALYSIS OF THE COLOMBIAN FINANCIAL SYSTEM

A model that can be used to assess the effects of portfolio diversification on the return for commercial banks is presented in this section. Optimal asset allocation and how it relates to profitability is one of the principal questions in banking literature, which can be divided into two approaches: Corporate finance and Portfolio theory. The first approach maintains there is a negative relationship between diversification and profitability, while the second claims the relationship is positive.

1. Model

The model presented below is based on Holmström and Tirole (1993)² and Carletti et al. (2007).³ It can be used to detect the effects of diversification on expected returns, using monitoring as one of the main explanatory factors.

In this specification, commercial banks attempt to optimize their expected return function, which is determined by the income they obtain from financing one or two projects⁴ and by the costs generated by the rate of interest they pay to depositors, the opportunity cost of their capital and the cost of monitoring, which improves the likelihood of success and reduces the moral risk⁵ to which borrowers are subject. The structure of the model is resolved first for individual loans and then for multiple loans. The results are compared to the return expected from each project (evaluated at the optimal monitoring level). They also are used to determine under what conditions diversification can generate more benefit.

1 For more information on the results of this study, see Estrada, Dario; Gonzalez, Angela; Gutierrez, Javier. "The Effects of Diversification on Bank's Expected Returns" in Borradores de Economía, No. 524, Banco de la República.

2 Holmström, Bengt; Tirole, Jean. "Market Liquidity and Performance Monitoring", *Journal of Political Economy*, No. 101, pp. 678-709, 1993.

3 Carletti, Elena; Cersasi, Vittoria; Daltung, Sonja. "Multiple-Bank Lending: Diversification and Free-Riding in Monitoring", Milan, Università degli Studi, July 2007.

4 When two projects are financed, the return is distributed among the banks in equal parts.

5 Moral risk is an asymmetric information problem in which an agent has private information about its performance, after having signed the contract with the bank, and has incentives to use that information for its benefit.

2. Individual Loans

The banks maximize their expected return function by obtaining the optimal monitoring effort, which is given by:

$$m^* = \frac{\Delta p(R - rD)}{c} \quad (1)$$

Where m^* is the optimal monitoring level; Δp is the difference between the probability of success when the entrepreneur makes a major effort and when little effort is made; R is the expected return on the project; r is the rate the bank pays on deposits D , and c is the monitoring cost.

An increase in the rate of return or the probability of the project's success raises the monitoring effort, *ceteris paribus*. Under the same circumstances, an increase in the deposit rate reduces the monitoring effort, since banks attempt to keep their expected return stable; otherwise, the projects would not be feasible. Finally, an increase in cost of monitoring reduces the effort invested in monitoring, inasmuch as the expected return declines.

3. Multiple Loans

When banks finance more than one project, the monitoring effort is chosen in a static way and not cooperatively. However, there is a duplication of effort when both banks monitor simultaneously. When this happens, the optimal level is determined by:

$$m_{i,j}^* = \frac{\Delta p \left(\frac{R}{2} - rD \right)}{c + \Delta p \left(\frac{R}{2} - rD \right)} \quad (2)$$

Where $m_{i,j}$ is the effort exerted by bank j to monitor project i . The banks choose to diversify only if the return on the project is sufficiently high; in other words, if $R \geq 2rD$. Otherwise, there will be two Nash equilibriums in which only one of the banks monitors. In this case, the optimal monitoring level is higher and is determined by:

$$m_{i,j}^* = \frac{\Delta p \left(\frac{R}{2} - rD \right)}{c} \quad (3)$$

In comparing the expected return when the monitoring effort is determined by equations (2) and (3), we see the banks prefer the strategy of monitoring only one project, because its expected return is greater.

4. Empirical Results

Following Hayden et al. (2006),⁶ the next benefit function was estimated to determine the relationship that exists between a bank's diversification, risk and expected return:

$$RCA_i = \beta_0 + \beta_1 IHH - L_i + \beta_2 IHH - R_i + \beta_3 IHH - S_i + \beta_4 riesgo_i + \sum_{i=1}^7 \beta_i x_i + \varepsilon_i \quad (4)$$

Where *RCA* is the margin of return on the average asset-weighted portfolio and *IHH* are the Herfindahl-Hirschman concentration indexes, by portfolio type (*l*), region (*r*) and productive sector of the economy (*s*). The variable risk is constructed using Altman's *Z-score* method (1968) and *XI* is the set of control variables, which include a crisis dummy, a size variable and one for personnel.

The results of equation (4) under different specifications are presented in Table B3.1. They show the regional index is not statistically significant, while the *IHH-L* is highly significant

and has a negative effect on banks' returns. The estimates allow for the following conclusions: i) concentration by portfolio type, on average, reduces the return on the loan portfolio; II) concentration by sector, on average, increases the return on the portfolio; however, it has decreasing marginal returns; and III) risk has a positive impact on return. This is consistent with the portfolio theory and Markovitz's theory of average-variance.

5. An Stress Test Exercise

A sensitivity exercise was conducted with the results of the model to determine how a change in concentration levels would impact the individual return for commercial banks. For this analysis, the portfolio concentration indexes were subjected to one-standard deviation shocks (σ), with different combinations of the same.

An upward standard deviation and a downward standard deviation were used for the first two shocks. On average, it

Table B3.1
Benefit Function Estimate

	1	2	3	4	5	6
<i>d.IHH-L</i>	-0.0385***	-0.0373***				-0.0404***
	-0.0068	-0.0068				-0.0067
<i>d.IHH-S</i>	0.0302**		0.0253*			0.0273*
	-0.0109		-0.0111			-0.0112
<i>d.IHH-S</i> ²	-0.0259*		-0.0214*			-0.0243*
	-0.0105		-0.0108			-0.0108
<i>d.IHH-R</i>	-0.0027			-0.0032		-0.0021
	-0.0031			-0.0031		-0.0032
<i>d.Z_3</i>	0.0004***	0.0004***	0.0005***	0.0005***	0.0005***	
	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	
<i>d.Personnel</i>	0.1964*	0.2060*	0.2244*	0.2363**	0.2337**	0.2092*
	-0.0858	-0.086	-0.0877	-0.0879	-0.0879	-0.088
<i>d.E/A</i>	0.1230***	0.1200***	0.1177***	0.1124***	0.1140***	0.0608***
	-0.0169	-0.0168	-0.0172	-0.0173	-0.0172	-0.0158
<i>Crisis</i>	-0.0009*	-0.0009*	-0.0012**	-0.0012**	-0.0012**	-0.0010*
	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
<i>Constant</i>	0.0004	0.0004	0.0007*	0.0007*	0.0007*	0.0004
	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
<i>Observations</i>	631	631	631	631	631	631

Note 1: Estimates done with pooled squares.

Note 2: *, **, *** indicate the level of significant to 0.05; 0.01 and 0.001, respectively

Source: Authors' calculations

6 Hayden, Evelyn, Daniel Porath and Natalja von Westernhagen (2006). "Does Diversification Improve the Performance of German Banks? Evidence from Individual Bank Loan Portfolios," Deutsche Bundesbank, Discussion Paper Series 2, *Banking and Financial Studies*, No. 05/2006, 2006.

was found that (σ) increases in concentration, by portfolio type, improve the return for the banks by 0.72%, whereas a contraction in the index increases the return by 0.89%. This result shows, on average, that banks can benefit from this type of diversification.

Deviations in the sector index were used in the next two shocks. The results suggest that banks benefit more from concentration with this strategy. The increase in the concentration of the index by a quantity (σ) generates returns that are 0.95% higher, whereas the opposite strategy increases them by 0.76%. However, two of the banks in the sample obtained a greater benefit when diversifying by sector.

Finally, four more shocks were implemented as follows: I) plus (σ) to the portfolio index and the sector index; II) plus (σ) to the portfolio index and minus (σ) to the sector index; III) minus (σ) to the portfolio index and plus (σ) to the sector index, and IV) minus (σ) to both the portfolio index and the sector index. The results of these four shocks indicate that an increase in diversification by portfolio type and in concentration by sector type is the strategy that produces the largest increase in return.⁷ With this option, the banks increase their return by approximately 1%.

If the results are analyzed individually, one sees that Bank 1 benefits only when it decides to increase diversification by portfolio type, and obtains the best results when combining this strategy with sector concentration, whereas the majority of the banks always obtain positive results, superior to the ones observed with the optimal strategy (Graph B3.1). In addition, for two of the banks, any strategy diminishes their expected returns, but the strategy that does so the least is the increase in portfolio concentration and diversification by sector.

6. Final Comments

A theoretical model was presented in the previous sections to analyze the effects of concentration on expected returns for the banks in the sample. It was found that, once the banks

⁷ Nevertheless, with this strategy, there are two banks that obtain negative returns, since their assets are not structured like those of the other intermediaries.

Graph B3.1
Shocks 5 through 8



have chosen their optimal monitoring level, the expected return due to the effect of diversification is always less than when the banks decide to concentrate. Moreover, the incentives to monitor are positively dependent on the rate of return on the project and the capital invested by the bank, while the interest rate on deposits, the cost of monitoring and the monitoring effort of the other bank tend to have a negative effect on the expected return.

According to the empirical evidence, the results show the banks can use diversification by portfolio type to their advantage in order to increase their expected returns. Nevertheless, this benefit can be balanced through diversification by productive sector, since the gains from this strategy are more than those obtained by diversifying the portfolio. Moreover, the estimates confirm the positive relationship between risk and return, as stipulated by the portfolio theory. With the results of the sensitivity analysis, it is possible to conclude that the banks benefit from the strategy described by shock 7, because is when the increases in their return are largest.

III. THE CURRENT SITUATION AND THE OUTLOOK FOR BORROWERS IN THE FINANCIAL SYSTEM

The profitability indicators for companies declined, while total indebtedness levels increased. The result for financial institutions was more exposure to the corporate sector.

A. THE PRIVATE CORPORATE SECTOR

A sample of companies that report accounting information to the Superintendencia de Sociedades de Colombia in Colombia was used to analyze the situation in the private corporate sector.¹⁹ By December 2008, the total assets represented by the sample accounted for 22.5% of the total assets of the companies that reported information to the Superintendencia Financiera de Colombia. However, in number, the companies in the sample accounted for only 0.8%. For this reason, the study presented herein focuses on the main indicators for the companies with greater assets. The financial indicators were analyzed for all the companies in the sample, as a whole, and for producers of tradable²⁰ and non-tradable goods, separately. The indicators in question are those identified as determinants of the financial fragility of Colombian companies²¹ (Table 5).

19 Two samples were used. The first includes companies that reported information during the 1995-2008 period. The second is a homogeneous sample constructed with companies that, together, possess information for the period from 2004 to 2008.

20 The companies producing tradable goods are those involved in agriculture, cattle-raising, hunting, fishing, mining, quarrying and industrial manufacturing. Those producing non-tradable goods pertain to the other sectors.

21 Oscar Martinez (2003). "Determining of Fragility of Colombian Companies", in *Borradores de Economía*, No. 259, Banco de la República.

Table 5
Income Statement: Private Corporate Sector

	Trillions of December 2008 Pesos:				Growth Rate (%):		
	2005	2006	2007	2008	2006	2007	2008
Total							
Sales	37.8	41.4	43.7	33.0	0.1	0.1	(0.2)
Costs	23.7	26.1	26.6	19.4	0.1	0.0	(0.3)
Gross Profit	14.2	15.2	17.1	13.5	0.1	0.1	(0.2)
Administrative Expenses	3.7	4.0	4.6	3.5	0.1	0.2	(0.3)
Sales Costs	4.6	4.8	5.3	4.0	0.1	0.1	(0.3)
Operating Profit	5.9	6.4	7.1	6.1	0.1	0.1	(0.1)
Non-operating Income	2.8	2.8	3.9	4.0	0.0	0.4	0.0
Non-operating Expenses	3.9	4.0	4.9	4.6	0.0	0.2	(0.1)
Profit before Taxes	4.8	5.2	6.2	5.5	0.1	0.2	(0.1)
Adjustments for Inflation	0.6	0.6	0.0	0.0	(0.0)	(1.0)	-
Taxes	0.7	0.9	0.9	1.0	0.3	(0.1)	0.2
End Profit	4.6	4.8	5.3	4.5	0.0	0.1	(0.2)
Tradables							
Sales	16.0	17.7	18.2	14.2	0.1	0.0	(0.2)
Costs	10.6	11.6	11.3	8.9	0.1	(0.0)	(0.2)
Gross Profit	5.4	6.1	7.0	5.3	0.1	0.1	(0.2)
Administrative Expenses	1.1	1.3	1.4	1.1	0.1	0.1	(0.2)
Sales Costs	1.9	2.1	2.5	1.9	0.1	0.2	(0.3)
Operating Profit	2.3	2.7	3.0	2.4	0.2	0.1	(0.2)
Non-operating Income	1.8	2.0	2.4	1.9	0.1	0.2	(0.2)
Non-operating Expenses	2.4	2.6	2.4	2.1	0.1	(0.1)	(0.1)
Profit before Taxes	1.7	2.1	3.0	2.2	0.2	0.5	(0.3)
Adjustments for Inflation	0.2	0.2	0.0	0.0	(0.0)	(1.0)	-
Taxes	0.4	0.6	0.5	0.5	0.5	(0.2)	(0.0)
End Profit	1.5	1.6	2.5	1.6	0.1	0.5	(0.3)
Non-tradables							
Sales	21.9	23.7	25.5	18.7	0.1	0.1	(0.3)
Costs	13.1	14.5	15.4	10.5	0.1	0.1	(0.3)
Gross Profit	8.8	9.2	10.1	8.2	0.0	0.1	(0.2)
Administrative Expenses	2.6	2.7	3.2	2.4	0.1	0.2	(0.3)
Sales Costs	2.7	2.7	2.8	2.1	0.0	0.0	(0.2)
Operating Profit	3.6	3.7	4.1	3.7	0.0	0.1	(0.1)
Non-operating Income	0.9	0.9	1.5	2.1	(0.0)	0.7	0.4
Non-operating Expenses	1.4	1.5	2.5	2.5	0.0	0.7	0.0
Profit before Taxes	3.1	3.1	3.1	3.3	0.0	(0.0)	0.1
Adjustments for Inflation	0.4	0.3	0.0	0.0	(0.0)	(1.0)	-
Taxes	0.3	0.3	0.3	0.5	(0.0)	0.1	0.6
End Profit	3.1	3.2	2.8	2.8	0.0	(0.1)	0.0

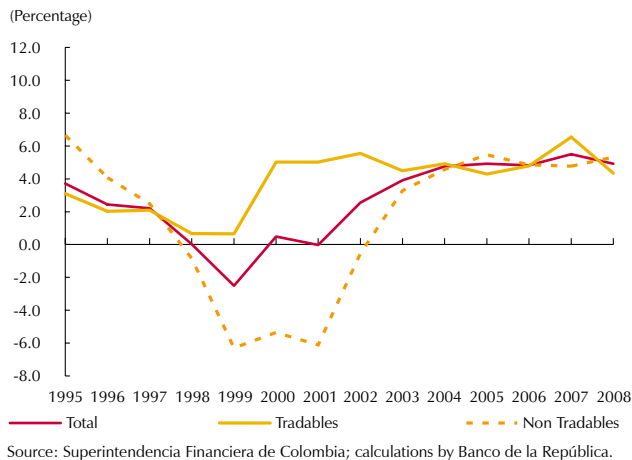
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

1. Return

The return on assets (ROA), defined as profit on total assets before taxes, declined from 5.5% to 4.9% between December 2007 and December 2008 (Graph 50), largely due to the 25.6% decline in real annual sales. The profit at the end of the period for the companies in the sample, as a whole, came to COP\$4.5 t at December 2008, which is COP\$0.8 t less than the figure reported a year earlier.

In terms of the different sectors, the return for companies producing tradable goods went from 6.5% to 4.3% between December 2007 and December 2008. Within this group, the companies in the manufacturing sector experienced an even larger drop in their returns (3.1 pp). On the other hand, the returns for companies producing non-tradable goods rose during the period in question, from 4.8% to 5.3%; mainly because of increasing returns (4.4 pp) in the transport and telecommunications sector.

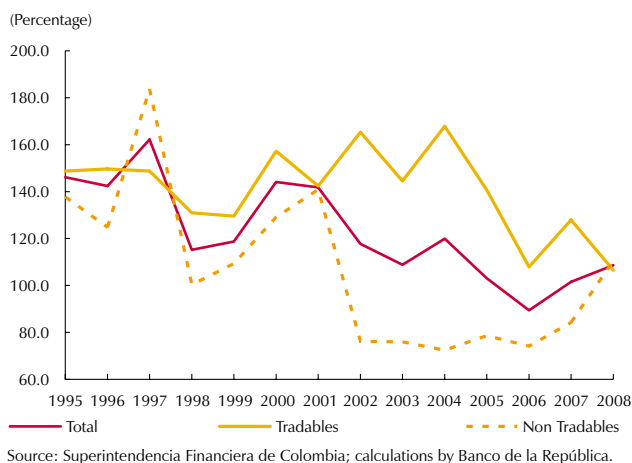
Graph 50
ROA (Return Before Taxes/Total Assets)



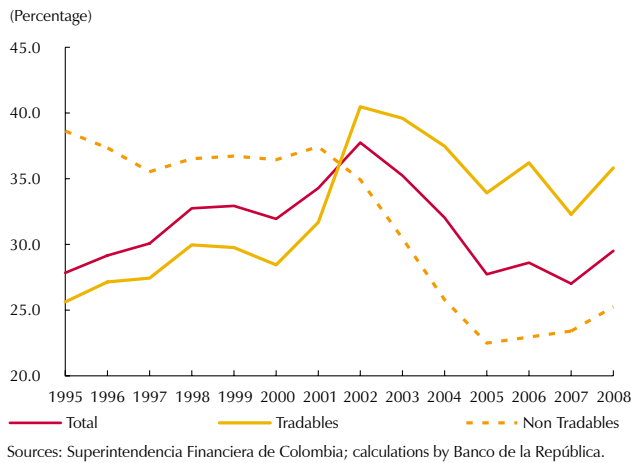
2. Liquidity

The liquidity indicator, measured as the ratio of current assets to current liabilities, is at acceptable levels. By December 2008, it was equal to 108.6% (in other words, current assets were 1.08 times greater than current liabilities). This indicates the companies analyzed are able to cover their short-term liabilities with their more liquid assets (Graph 51). The indicator rose by 7.0 pp between December 2007 and the same month in 2008, due to fewer financial liabilities, accounts payable and debts to suppliers, coupled with more investments, inventories and accounts receivable.

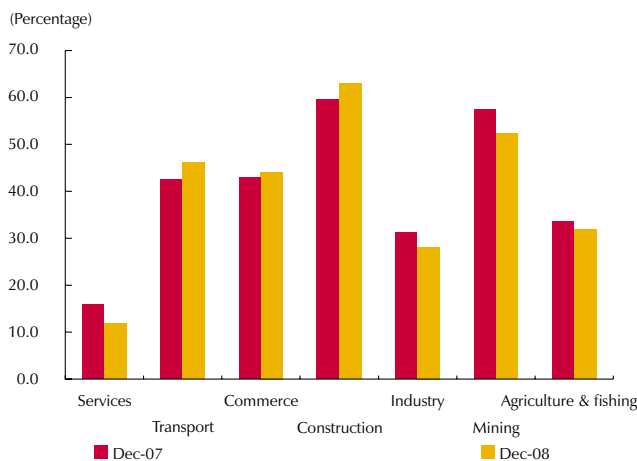
Graph 51
Current Liquidity (Current Assets/Current Liabilities)



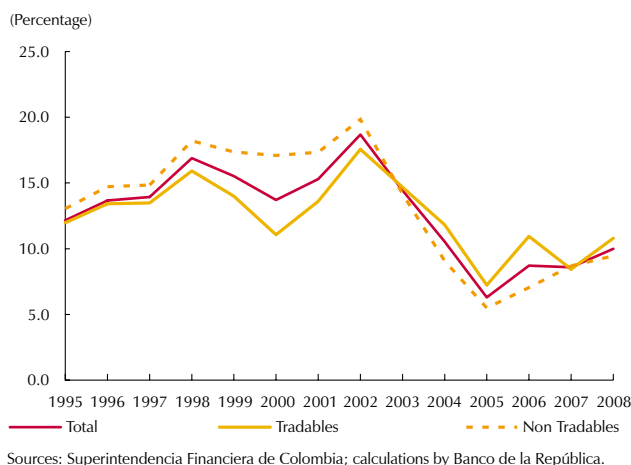
Graph 52
Total Indebtedness
 (Total Liabilities / Total Assets)



Graph 53
Total Indebtedness



Graph 54
Financial Indebtedness
 (Financial Liabilities/Total Assets)



3. Indebtedness

The total indebtedness ratio (defined as the ratio of liabilities to total assets) rose from 27.0% to 29.5% between December 2007 and December 2008, owing to a 5.0% reduction in total assets and an increase in financial liabilities, such as long-term accounts payable.

As to the different sectors, companies producing tradable goods have shown higher levels of indebtedness since late 2002, compared to firms in the non-tradable sector. The former raised their indebtedness level by 3.5 pp, from 32.3% in December 2007 to 35.8% a year later, while the latter increased theirs by 1.8 pp to 25.3% in December 2008 (Graph 52).

Between December 2007 and the same month in 2008, the agriculture, mining, industrial and service sectors raised their total indebtedness ratios, while the construction, commerce and transport sectors lowered theirs. Only mining, construction and transport experienced an increase in their profitability indicators: this suggests an expansion in the risk inherent in the companies in the sample, insofar as indebtedness levels have increased and profitability indicators have declined (Graph 53).

The rise in financial liabilities for the companies in the sample raised the indicator of financial indebtedness, which went from 8.6% to 10.0% in 2008 (Graph 54). This indicator increased by 2.36 pp during the last year for the companies producing tradable goods and was 10.8% by December 2008, whereas the producers of non-tradable goods saw a 77 bp increase in their indicator of financial indebtedness, which was 9.5% in December 2008.

The results for the financial indebtedness indicator show the companies in question continue to include an important amount of financial debt in their capital structure. In particular, it is important to point out that long-term financial liabilities rose considerably during 2008 (33.0% real increase) (Table 6).

As for the composition of these financial liabilities, by maturity and currency, the share of liabilities contracted at more than one year increased during the period in question and accounted for 65.6% by December 2008. This is consistent with the extent of available liquid assets in the sample. As to financial liabilities in foreign currency, the debt to organizations outside the country lost some of its share during 2008, mainly because of fewer short-term liabilities in foreign currency. This can be considered a reaction to the high volatility in the exchange rate.

Table 6
General Balance Sheet: Private Corporate Sector

	Trillions of December 2008 Pesos				Growth Rate (%)			Share (%)	
	2005	2006	2007	2008	2006	2007	2008	2006	2007
Assets									
Current Assets	14.2	14.2	15.5	16.6	(0.0)	0.1	0.1	14.4	16.1
Available Funds	1.2	1.2	1.1	0.7	0.0	(0.0)	(0.4)	1.1	0.7
Investments	3.4	2.4	2.4	2.7	(0.3)	(0.0)	0.1	2.2	2.6
Debtors	5.7	6.3	7.5	8.7	0.1	0.2	0.2	6.9	8.4
Inventories	3.6	3.9	4.0	4.0	0.1	0.0	0.0	3.7	3.9
Other assets	0.3	0.3	0.4	0.5	(0.0)	0.3	0.1	0.4	0.5
Deferred Assets	0.0	0.0	0.0	0.1	6.0	(0.6)	2.0	0.0	0.1
Non-current Assets	86.6	93.3	92.2	86.2	0.1	(0.0)	(0.1)	85.6	83.9
Investments	33.6	37.9	35.7	34.4	0.1	(0.1)	(0.0)	33.2	33.4
Debtors	1.0	0.9	1.9	2.6	(0.1)	1.1	0.4	1.8	2.6
Property, Plant and Equipment	13.8	15.9	16.1	15.9	0.2	0.0	(0.0)	15.0	15.4
Intangibles	8.1	7.7	7.3	6.1	(0.1)	(0.0)	(0.2)	6.8	5.9
Deferred	1.4	1.5	1.4	1.3	0.0	(0.0)	(0.1)	1.3	1.3
Other Assets	0.4	0.3	0.1	0.1	(0.4)	(0.4)	(0.1)	0.1	0.1
Valuations	28.3	29.2	29.6	25.8	0.0	0.0	(0.1)	27.5	25.1
Total Assets	100.9	107.4	107.6	102.8	0.1	0.0	(0.0)	100.0	100.0
Liabilities									
Current Liabilities	14.1	16.3	15.3	15.5	0.2	(0.1)	0.0	53.8	51.7
Financial Liabilities	3.5	4.5	4.0	3.5	0.3	(0.1)	(0.1)	14.1	11.7
Suppliers	3.7	3.2	3.3	3.2	(0.1)	0.0	(0.0)	11.5	10.5
Accounts Payable	3.7	4.5	3.8	3.8	0.2	(0.2)	(0.0)	13.5	12.7
Taxes	0.7	0.9	1.2	0.9	0.4	0.3	(0.3)	4.3	3.0
Labor Obligations	0.3	0.3	0.3	0.2	0.1	0.0	(0.3)	1.2	0.8
Estimated Liabilities and Provisions	1.1	1.2	1.3	2.5	0.1	0.1	0.9	4.7	8.4
Deferred	0.3	0.5	0.4	0.5	0.8	(0.2)	0.2	1.4	1.6
Other Liabilities	0.2	0.3	0.3	0.4	0.7	(0.0)	0.3	1.1	1.3
Bonds and Commercial Paper	0.7	0.8	0.6	0.5	0.1	(0.3)	(0.1)	1.9	1.7

Table 6 (continue)
General Balance Sheet: Private Corporate Sector

	Trillions of December 2007 Pesos:				Growth Rate (%)			Share (%)	
	2005	2006	2007	2008	2006	2007	2008	2006	2007
Non-current Liabilities	13.1	13.9	13.1	14.4	0.1	(0.1)	0.1	46.2	48.3
Financial Liabilities	2.4	4.6	5.0	6.6	0.9	0.1	0.3	17.5	22.1
Suppliers	0.1	0.1	0.0	0.0	(0.0)	(0.7)	0.4	0.1	0.2
Accounts Payable	1.5	1.6	1.0	1.3	0.1	(0.4)	0.4	3.5	4.5
Taxes	0.0	0.0	0.0	0.0	(0.2)	0.1	0.7	0.0	0.1
Labor Obligations	1.6	1.5	1.4	1.1	(0.1)	(0.1)	(0.2)	4.9	3.8
Estimated Liabilities and Provisions	0.5	0.4	0.4	0.4	(0.2)	(0.0)	(0.1)	1.4	1.2
Deferred	0.0	0.0	0.0	0.0	8.2	(0.0)	(0.0)	0.1	0.0
Other Liabilities	6.9	5.6	5.3	4.9	(0.2)	(0.1)	(0.1)	18.5	16.2
Bonds and Commercial Paper	0.1	0.1	0.1	0.1	(0.3)	(0.2)	0.1	0.2	0.2
Total Liabilities	27.2	30.1	28.4	29.9	0.1	(0.1)	0.1	100.0	100.0
Total Equity	73.6	77.3	79.3	72.8	0.1	0.0	(0.1)	100.0	100.0
Equity – Capital Stock	0.4	(0.0)	(0.6)	(0.8)	(1.1)	13.3	0.4	(0.7)	(1.1)
Surplus Capital I	24.1	23.5	23.5	20.9	(0.0)	0.0	(0.1)	29.7	28.7
Reserves	7.4	9.3	10.3	11.6	0.2	0.1	0.1	13.0	15.9
Equity Revaluation	11.4	12.5	12.0	10.8	0.1	(0.0)	(0.1)	15.2	14.9
Dividends	0.0	0.0	0.0	0.0	(0.0)	0.3	(0.1)	0.0	0.0
Profit from the Accounting Period	4.4	4.5	5.0	3.9	0.0	0.1	(0.2)	6.3	5.3
Profits from Previous Accounting Periods	(2.5)	(1.6)	(0.6)	0.6	(0.4)	(0.6)	(2.0)	(0.8)	0.8
Valuation Surplus	28.3	29.2	29.6	25.8	0.0	0.0	(0.1)	37.3	35.4

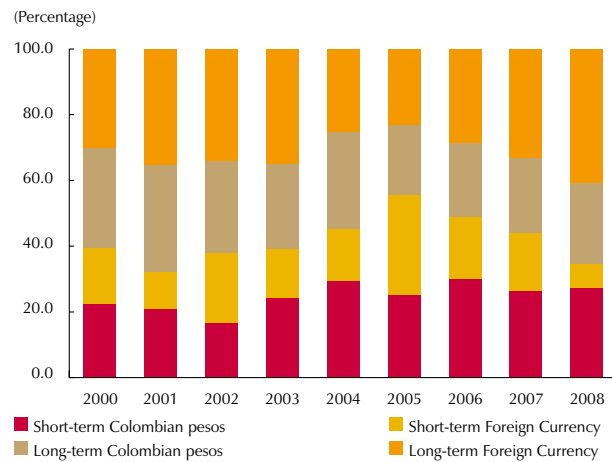
Sources: Superintendencia Financiera de Colombia; calculations by Banco de la República.

This performance is replicated by the companies in the tradable sector, where the share of borrowing in foreign currency declined by nearly 5 pp between 2007 and 2008, amounting to 33.3% of the total debt (Graph 55, Panel B). Nevertheless, the percentage of foreign borrowing in the non-tradable sector remained stable, at around 59%. However, the past year saw evidence of a shift towards long-term borrowing, both in domestic and foreign currency (Graph 55, Panel C).

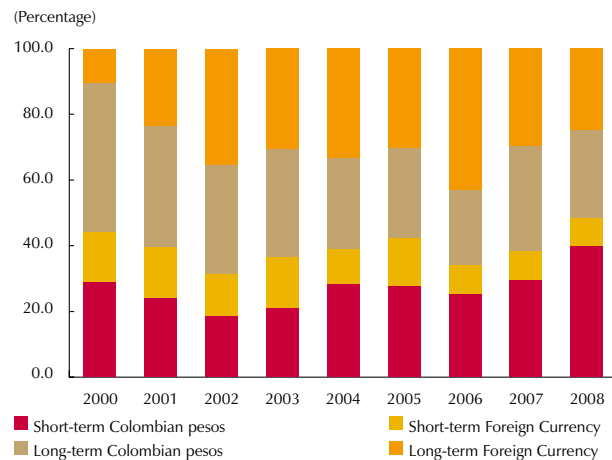
In conclusion, the private corporate sector experienced a sharp drop in sales last year, which meant less profitability. Moreover, there was an increase in total indebtedness, fueled largely by added financial liabilities, especially those

Graph 55
Indebtedness by Currency and Loan Maturity

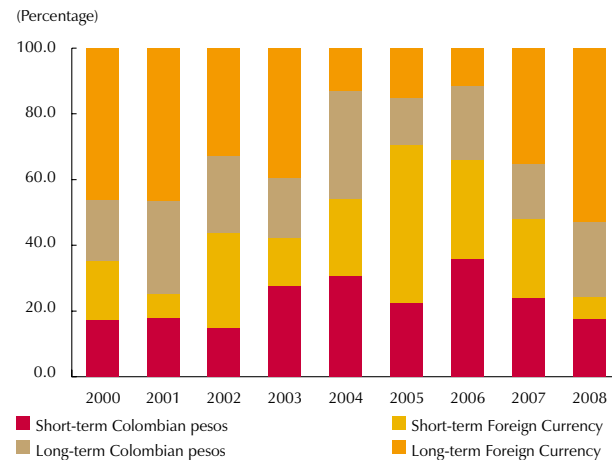
A. Indebtedness by Currency and Loan Maturity



B. Indebtedness by Currency and Loan Maturity for Companies in the Tradable Sector



C. Indebtedness by Currency and Loan Maturity for Companies in the Non-tradable Sector



Sources: Superintendencia Financiera de Colombia; calculations by Banco de la República.

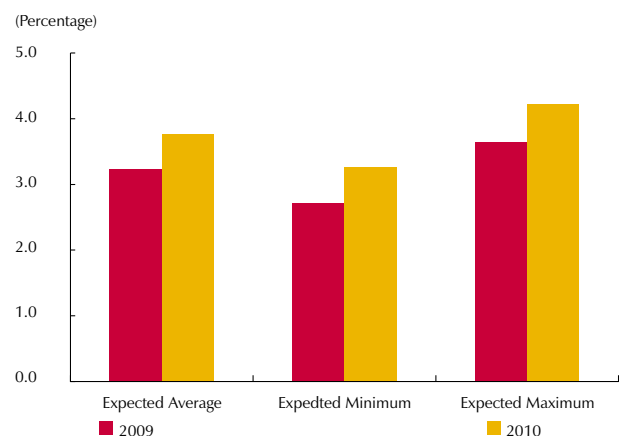
contracted in long term and in local currency. The companies producing tradables saw less profitability and borrowed more, while those producing non-tradables increased their profits and borrowed less.

4. Economic Expectations in the Business Community

A survey of business expectations conducted by Banco de la República in January 2009 showed businessmen expect the economy to grow from 2.7% to 3.6% this year, which is less than what was anticipated in the four surveys carried out in 2008. Transport and communications are the most optimistic sectors with respect to economic growth in Colombia, whereas industry, mining and financial intermediation are the most negative. As for 2010, those surveyed expect around 3.8% growth within a range of 3.3% to 4.2% (Graph 56).

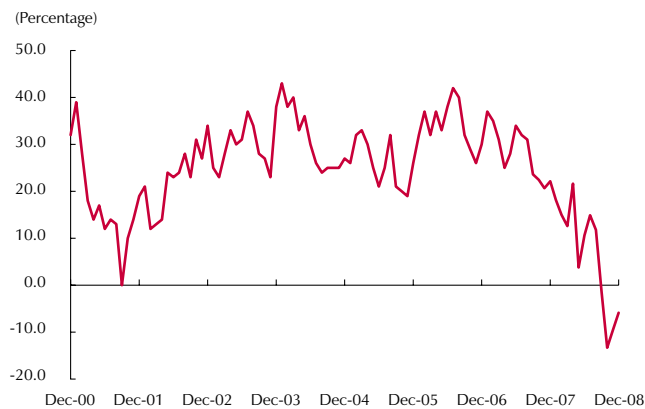
In the December 2008 edition of the Fedesarrollo Business Opinion Survey (EOE in Spanish), the balance of the replies on how companies see their economic situation in the next six months is coherent with economic growth expectations. Graph 57 shows the downward tendency in this perception since mid-2006; in October 2008, it was the lowest it has been in the last eight years (this indicates the number of businessmen with positive

Graph 56
Expected GDP Growth



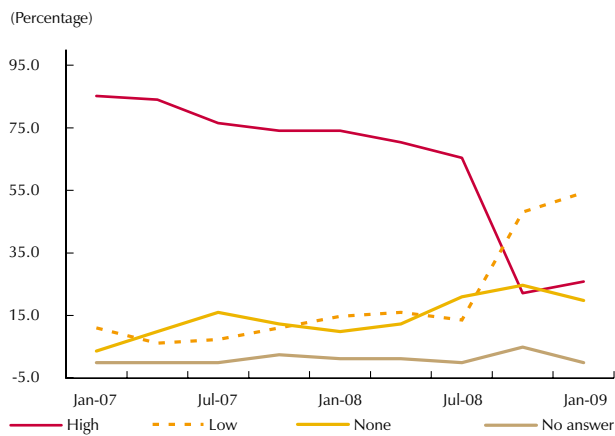
Source: Banco de la República.

Graph 57
Economic Expectations in the Business Community

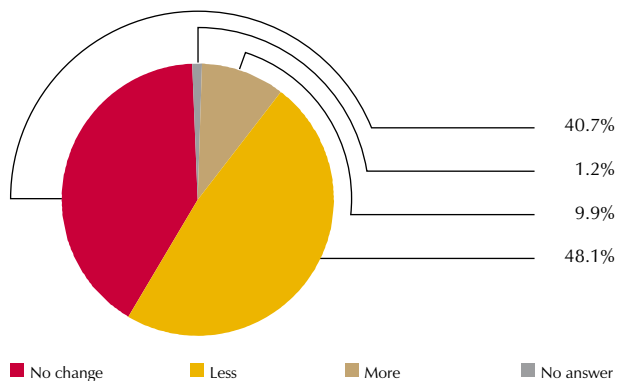


Source: Fedesarrollo (Business Opinion Survey, June 2008).

Graph 58
A. Current Perception of Liquidity in the Economy



B. Changes in Liquidity in the Next Six Months



Source: Banco de la República.

expectations had declined with respect to those who are pessimistic).

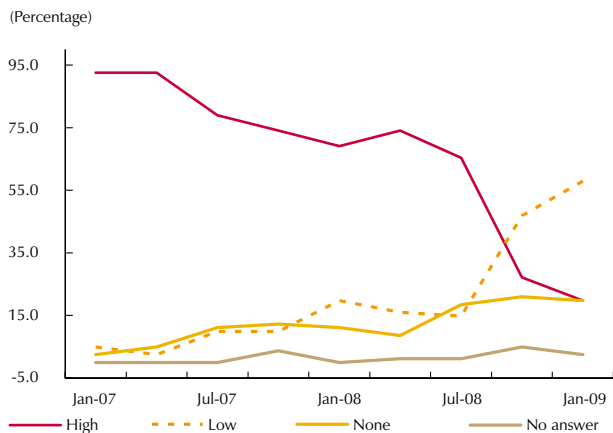
According to the Combined Industrial Opinion Survey (EOIC) done by the Business Association of Colombia (ANDI), the annual growth in manufacturing activity during the period between 2004 and 2007 was above 5%, but declined to 3% in 2008. Most sectors reported setbacks in production and sales, particularly the automobile sector. Use of installed capacity was down as well; in this case, the indicator dropped by 5.8 pp between December 2007 and the same month in 2008, reaching 75.0%, which is below the historic average for the EOIC (76.5%).

The difficulties businessmen faced in 2008 are summarized in the results pertaining to the business climate indicators. For example, the percentage of businessmen who described their situation as good declined by 21.5 pp to 49.8% between December 2007 and December 2008. Moreover, only 22.6% of those surveyed expect the situation to improve in the immediate future. This is significantly less than the percentage reported last year (40.3%). Lower demand, higher costs for raw materials and the behavior of the exchange rate were cited as the primary hurdles businessmen faced at the end of 2008 in terms of the normal development of their activities.

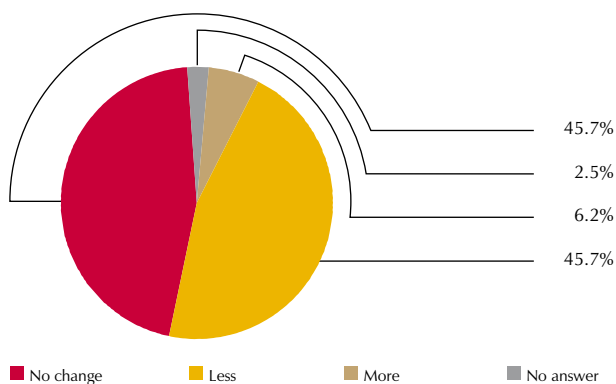
Going back to the Central Bank survey, the proportion of those questioned who believe liquidity levels are high (25.9% in January 2009) exhibited a recovery of 3.7 pp with respect to the final survey conducted in 2008. However, as illustrated in Graph 58, Panel A, the percentage is much smaller than the figures reported two years earlier. In fact, it is 71.6 pp below the highest percentage obtained for this variable (97.5% in April 2006). Also, the group of businessmen who believe liquidity in the economy is low (54.3%) increased 6.2 pp with respect to October 2008.

As for liquidity during the next six months, the balance shown in Graph 58, Panel B suggests expectations are focused on a decline in liquidity. The

Graph 59
A. Current Perception on the Availability of Credit in the Economy

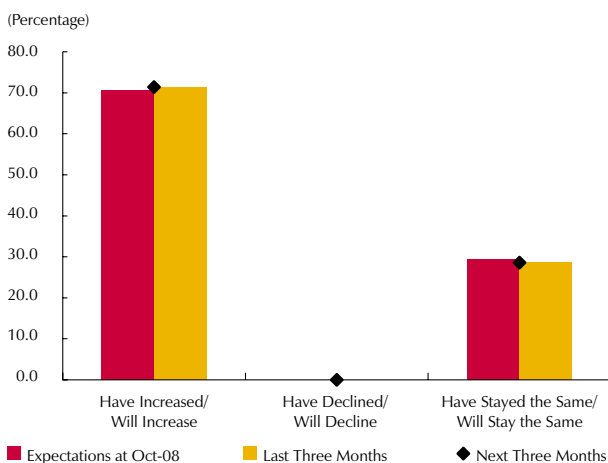


B. Changes in Credit Availability during the Next Six Months



Source: Banco de la República.

Graph 60
Changes in Policies on Extending New Commercial Loans



Source: Banco de la República.

sector with the largest proportion of those surveyed who consider liquidity to be limited is industry and mining (54.3%), followed by transport and communication (53.6%).

Finally, the average perception that credit is readily available continued to decline, as it has since April 2007. In fact, the results of the survey in January 2009 show that only 19.8% of the businessmen interviewed regard credit as highly available. On the other hand, the proportion of those who believe credit is tight increased substantially to 46.9%, which is the highest this indicator has been since the start of the survey (Graph 59, Panel A).

Also, expectations concerning the availability of loans during the next six months centered on a decline in credit. As illustrated in Graph 59, Panel B, the percentage that expects no change in this sense is equal to the proportion that believes credit will be less available (46%), whereas only a 6.2% of those surveyed believe credit will become more available.

In keeping with what businessmen expect with regard to the availability of credit, the December 2008 survey of the credit situation shows financial institutions raised their requirements on new loans, and expect to continue to do so (Graph 60). The banks indicate these increases are primarily the result of a less favorable outlook for the economy, the deterioration in company balance sheet positions, and higher risk aversion.

In conclusion, although profitability indicators declined, the total indebtedness levels for the sample of companies taken into account increased during 2008. This suggests the level of risk to which the financial system and suppliers are exposed was greater during 2008. Moreover, current perceptions and expectations for the future suggest the business community faces a difficult period that has manifest itself in the form of a reduction in the use of installed capacity and an increase in accumulated inventory. The situation with respect to demand, liquidity and the availability of credit is expected to get worse.

B. HOUSEHOLDS

A look at the household financial situation is vital to understanding the effect households have on Colombia's financial sector. This can be done by analyzing the change in household consumption and creditworthiness, taking into account household wage increases, the unemployment rate and the household financial burden. The indexes of expectation, economic confidence, economic conditions and the perception of home and durable goods purchases can help to understand what is to be expected in terms of financial stability.

1. Debt Level

Total household indebtedness (mortgage and consumption loans from the financial sector as a percentage of GDP) stabilized at around 11.5% last year

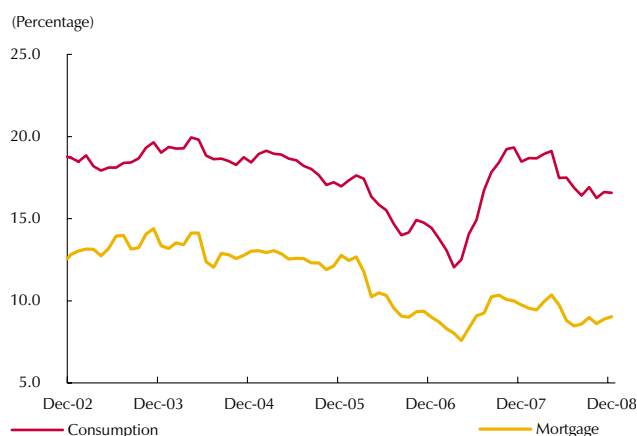
(Graph 61), following a significant rebound between March 2005 and December 2007 (having increased from 7.7% to 11.2%, respectively). In this sense, the monetary policy measures adopted by the Banco de la República as of mid-2006 helped to slow the accelerated rise in the financial system's exposure to households. In fact, real annual growth in the combined portfolio (mortgage and consumption loans) declined systematically from 29.0% in March 2007 to 4.6% in December 2008.

Graph 61
Mortgage and Consumption Loan Portfolio/GDP



Sources: DANE and the Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 62
Real Lending Rates



Sources: Superintendencia Financiera de Colombia; calculations by Banco de la República.

2. Household Exposure

Nevertheless, it is important to analyze mortgage and consumption lending separately, as each has its own characteristics and different levels of exposure to risk. Consumption lending, as a share of household indebtedness, became extremely important, having risen from 30.0% in December 1999 to 74.0% in December 2008. Therefore, one can say that the financial system's exposure to household credit risk is greater, considering this portfolio has less suitable collateral, in addition to the accelerated contraction in liquidity that would originate due to its average short-term maturity (in the event of default). In any case, the interest rates on consumption lending (Graphic 62) are higher than those for other loans. Accordingly, they not only cover the increased perception of risk to the

system, but also the higher cost of administration and monitoring generated by the small individual amounts of such loans. Undoubtedly, in an economic situation such as the one at present, where aggregate demand has begun to decline, household creditworthiness or ability to pay could begin to weaken.

a. Mortgage Loan Portfolio

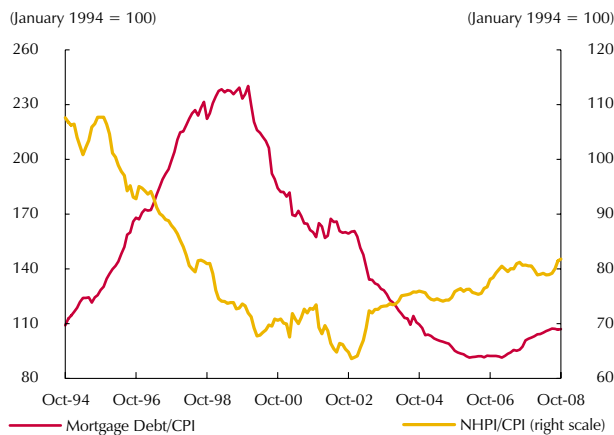
As illustrated in Graph 63, the ratio of the mortgage debt growth index to the new home price index (NHPI), which had declined systematically since the financial crisis at the end of the Nineties, has begun a renewed but restrained increase (from 92.3% in October 2005 to 110.0% in December 2008), compared to the rapid growth observed prior to that crisis. Likewise,

the NHPI/CPI ratio reversed its downward trend as of early 2003 (with a historic low of 64.1% in January of that year) and began to grow steadily as of that date (in December 2008, it was 81.8%). Although the performance of this last indicator is favorable, since it improves household wealth and strengthens the price of collateral for mortgage loans, the upward trend in the first indicator can create incentives for mortgage loan borrowers to default on their payments, insofar as the value of the mortgage is above (and moving away from) the price of the home.

Nevertheless, and reiterating what was noted in the last edition of the *Financial Stability Report*, whereas mortgage liabilities are tied to inflation or to a fixed rate, and as long as housing prices (NHPI) remain stable or at least increase on par with the CPI, a major difference between the value of the mortgage debt and home prices, as occurred in the last financial crisis, is unlikely. This is corroborated by the performance of the loan-to-value ratio (LTV), especially for non-low-income housing (Graph 64), which has remained below the standards reached at the end of the Nineties, despite a bit of a rebound since 2007 (possibly due to the rise in interest rates).

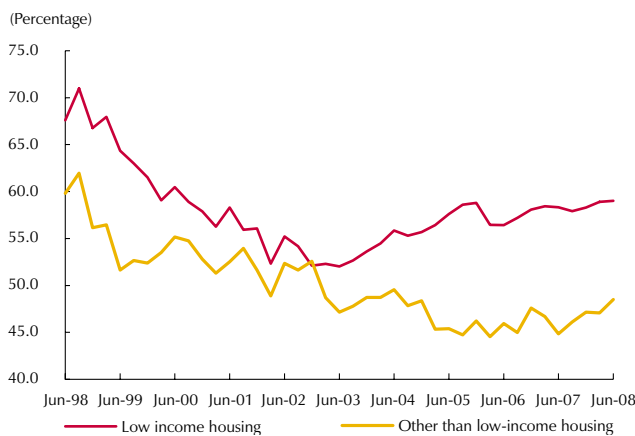
In summary, although the indicators that relate mortgage debt to home values have grown steadily since 2007, the effect this could have on increasing the probability of mortgage loan default

Graph 63
Ratio of the Mortgage Debt Growth Index to the NHPI and
NHPI Evolution in Real Terms



Sources: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 64
Mortgage Loan to Value



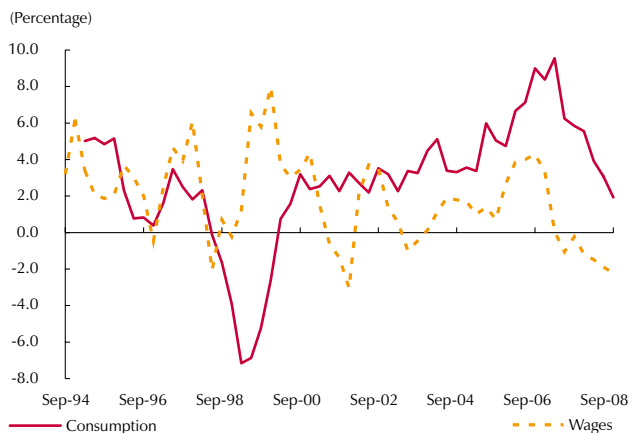
Source: Asobancaria (preliminary data).

is practically zero, because home prices have remained stable, with a certain tendency to increase. In addition to the reduction in household borrowing, this shows mortgage credit risk exposure continues to be relatively low, and there are no signs of major changes in the next few months

b. Consumption Loan Portfolio

Consumption loans were among the portfolios that grew the most up until mid-2007 (around 50.0%), accompanied by a subsequent deterioration in quality. Actually, consumption lending implies the higher risk exposure. The risky consumption loan portfolio, as a percentage of the gross portfolio, rose sharply in 2008, from 8.6% to 11.7%, while the percentage for the mortgage loan portfolio remained stable in 2008 (at about 6.3%).

Graph 65
Real Annual Growth in Wages and Household Consumption



Source: DANE; calculations by Banco de la República.

Graph 66
Seasonally Adjusted Rate of Unemployment for Thirteen Cities, with Their Metropolitan Areas



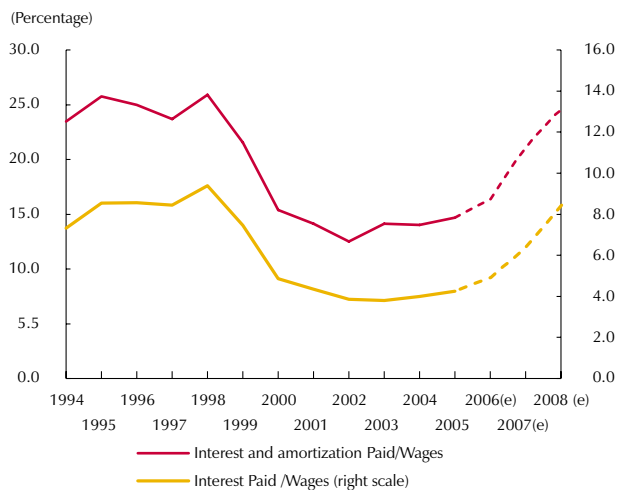
Source: DANE; calculations by Banco de la República.

Although the quality of the consumption loan portfolio has shown no improvement, the increase in loans of this type has slowed considerably, thanks to the monetary policy measures applied during the last two years and because average consumption lending is short-term. The result was a quick adjustment in the demand for credit, which led to a decline in consumption lending. In fact, the upward trend in the real annual rate of growth in household consumption (reported by DANE) ended in March 2007 (at a high of 9.5%). It has fallen since then, reaching levels similar to those witnessed in the post-crisis period (1.9% in September 2008).

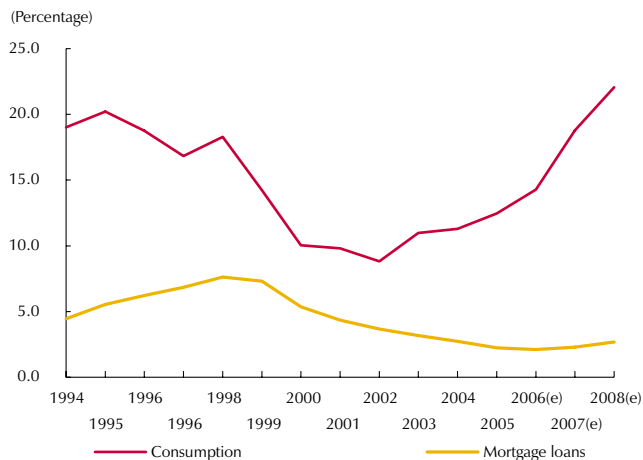
The steady decline in consumption has curbed aggregate demand, resulting in negative ramifications for the flow of companies income. This, in turn, has jeopardized real income for a good many of the country's wage earners (Graph 65) and has been detrimental to the unemployment rate. As illustrated in Graph 66, the seasonally adjusted rate of unemployment shows an upward tendency during 2008, in contrast to the systematic reduction observed during the early years of the current decade.

This being the case, household creditworthiness has been weakened and its prospects, for the near future, could be troubling, since real wages continue to deteriorate and aggregate demand has been affected by the downturn in both internal and

Graph 67
A. Household Financial Burden



B. Household Financial Burden (including amortization)



C. Household Financial Burden: Real Component of Interests/Wages



(e) Estimated
Sources: Superintendencia Financiera de Colombia and DANE; calculations by Banco de la República.

external consumption (considering the international situation). In addition, the job market began to show unfavorable performance.

3. Household Financial Burden

The indicator of household financial burden²² continues to climb (Graph 67, Panel A). It was 24.7% in 2008, exceeding the 23.5% observed in 1994. The same is true when amortization is excluded from the numerator, leaving only interest payments (without monetary correction). As illustrated, amortization is nearly triple the interest payment; consequently, interest rate hikes are not that relevant for this indicator, particularly since nearly 85% of all consumption lending is at a fixed rate.

The household financial burden is already at the pre-crisis debt levels and the ratio of the gross non-performing loan portfolio to the gross consumption and mortgage loan portfolios in 2008 (6.6%) was close to what it was in 1994 (7.4%) and 1995 (7.7%). These numbers demonstrate the financial frailty of households in terms of being able to cover their debts, and clearly reflect the importance of rigorous risk selection on the part of financial institutions.

When separating the components of the financial burden in the consumption and mortgage loan portfolio, one sees consumption lending accounts for most of the burden. It is more than eight times what households pay for their mortgages (Graph 67, Panel B).

The household financial burden also can be measured from another standpoint:

22 For the purpose of the present report, this indicator is defined as payment of interest (without monetary correction) and payment of amortization associated with the consumption and mortgage portfolios, divided by the remuneration employees receive. The wage for 2006, 2007 and 2008 is projected using the increases in the real wage index for the manufacturing industry.

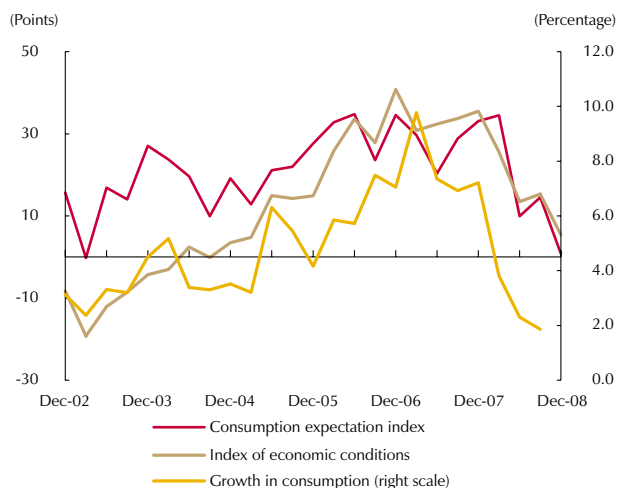
Financial burden = real component of interest paid/wages

The numerator reflects the cost of interest, but only for its real component. It does not include the inflationary component of interest, which is not a cost but a “payment” on capital to compensate for the loss in value of the nominal amount outstanding over time. The “payment” reduces the debt in real terms, leaving household wealth unchanged. For this same reason, amortizations are not included. Consequently, this indicator measures the portion of household financial cost that reduces household wealth.

With this indicator, one also sees the household debt burden in 2008 reached levels equal to those observed prior to the financial crisis at the end of the Nineties (Graph 67, Panel C). This emphasizes the delicate situation in which households now find themselves and the uncertainty as how their creditworthiness will evolve in the future.

From standpoint of the banks, the December 2008 edition of the *Report on Credit in Colombia* (RSCC in Spanish) says the main factor that prevents, or could prevent a larger volume of lending to the private sector is the creditworthiness of existing clients. Therefore, if the downturn in wages and the rise in unemployment continue, the loan supply could tighten even further and credit risk exposure could increase.

Graph 68
Growth in Household Consumption and Indexes of Consumption Expectations, Confidence and Economic Conditions



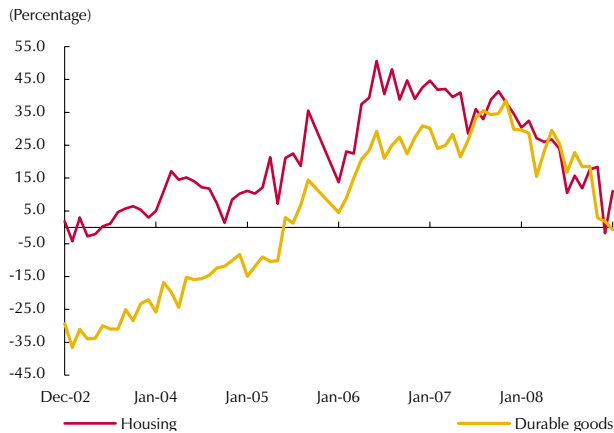
Source: Fedesarrollo, DANE; calculations by Banco de la República.

4. Outlook

The expectations of households concerning their economic situation and that of the country have deteriorated considerably. The Fedesarrollo Consumption Expectation Index (CEI) (Graph 68) shows a decline since March 2008, from 34.5 points to 0.8 points in December of that year. This is the most negative outlook since 2003. The tendency in the indicator of economic conditions (IEC) is similar; its levels have dropped sharply. These expectations are consistent with the slowdown in the growth of household consumption; it went from a high point in March 2007 (9.8%) to an annual increase of 1.9% in September 2008, which is the lowest it has been during the current decade. This consumption cycle rounds out a year and a half of continuous decline, which is likely to continue, at least in the short term.

The perception indicators with respect to the purchase of homes and durable goods also remain on the downward phase of the cycle. Home purchase perception fell

Graph 69
Home and Durable Goods Purchase Perception Index ^{a/}
(Balance)



a/ Households (%) that believe it is a good time to buy a home and durables goods, minus the percentage that does not.
Source: Fedesarrollo; calculations by Banco de la República.

to the level observed at the start of the decade (Graph 69), while the durable goods index fell into negative terrain. In the case of automobiles, this decline was mirrored in a 16.3% real annual reduction in sales by November 2008, with respect to the same period the year before.

Finally, as indicated in the December 2008 edition of the RSCC, the banks hope to maintain the requirements for new mortgage loans and to increase the requirements for consumption lending. Therefore, given the expectations, economic situation and creditworthiness of households, coupled with the outlook for banks in terms of lending, the first half of 2009 is likely to see no change in the current downturn in consumption and mortgage loans.

In conclusion, given household economic expectations and the sharp slowdown in consumption, the prospects for household borrowing this year are less than favorable. The increased financial burden, accompanied by worse economic conditions for consumptions and the situation on the job market, paints an uncertain picture in terms of adequate household debt service. For that reason, as emphasized throughout this report, it is important that the momentum in loans leads to additional monitoring that effectively measures credit risk and encourages a better selection of new borrowers.

C. NON-FINANCIAL PUBLIC SECTOR (NFPS)

The analysis usually presented in this section is based on the Financial Plan published annually by CONFIS (an agency that reports to the Ministry of Finance and Public Credit). However, given the changes in expectations for the local economy and intensification of the crisis worldwide, the plan for 2009 was modified substantially. A comparative analysis of both documents with respect to 2008 is presented below.

In the initial financial plan, the balance sheet results were explained by several shocks. To begin with, the debt-reduction and re-composition strategy helped to lower interest payments, while higher oil prices would mean more income for 2009. However, the increase in inflation during the final quarter of 2008, coupled with external conditions and the drop in oil prices, meant the expected balance had to be adjusted.

The figures available at the end of 2008²³ show the NFPS balance was positive, with a surplus equal to 0.1% of GDP, which is more than expected. The estimate in the 2008 Financial Plan was for a 1.1% deficit. The better-than-expected outcome for this sector was primarily the result of a 2.4% surplus in the decentralized sector, which is 0.7 pp more than expected, and a smaller deficit for the central government (CG), which came to 2.3% of GDP compared to an estimated 2.6%. The deficit is expected to increase to 2% in 2009, mainly due a lower surplus in the decentralized sector (Table 7).

Table 7
Non-financial Public Sector Fiscal Balance

Balance by Period	Billions of Pesos			(Percentage of GDP)		
	2008	2009	modified 2009 ^{a/}	2008	2009	modified 2009 ^{a/}
1. Non-financial Public Sector	331	(7,551)	(10,217)	0.1	(1.5)	(2.0)
1.1 Central Government of Colombia	(11,067)	(13,267)	(16,299)	(2.3)	(2.6)	(3.2)
1.2 Decentralized Sector	11,399	5,716	6,081	2.4	1.1	1.2

a/ These figures are from the revision done in February 2009.
Source: CONFIS, Ministry of Finance and Public Credit.

A look at the CG balance shows an increase of COP\$8.4 trillion in income compared to 2008, largely because of more tax revenue and capital resources (Table 8). Spending was up by COP\$12.4 t due to larger outlays for investment and operations. The final readjustments in the plan showed a shortfall of nearly COP\$5.5 t with respect to the Mid-term Fiscal Framework. Accordingly, the government decided to assume COP\$3.0 t in additional deficit and to postpone COP \$2.5 t in spending.

Table 8
Central Government Balance

	Billions of Pesos			(Percentage of GDP)		
	2008	2009	modified 2009 ^{a/}	2008	2009	modified 2009 ^{a/}
Total Income	74,689	87,985	83,137	18.7	17.1	16.1
1. Tax	66,608	75,052	70,697	16.7	14.6	13.7
2. Non-tax	247	384	384	0.1	0.1	0.1
3. Other	7,835	12,549	12,056	2.0	2.5	2.4
Total Expenditure	86,986	101,252	99,436	21.8	19.7	19.3
1. Interest	15,224	14,918	15,997	3.8	2.9	3.1
2. Operations	61,711	75,191	72,653	15.5	14.6	14.1
3. Investment	9,725	10,800	10,375	2.4	2.1	2.0
4. Net Loan	326	343	411	0.1	0.1	0.1

a/ Modification in the initial Financial Plan for 2009.
Source: CONFIS, Ministry of Finance and Public Credit.

23 The Consolidated Balance of the Public Sector at the end of 2008, Official Press Bulletin No. 016, Ministry of Public Finance and Credit.

Table 9
Gross NFPS Debt

	Internal ^{a/}	External	Total	Internal	External	Total	Internal	External	Internal	External	Total
	(Billions of pesos)			(Percentage of GDP) ^{b/}			(share-%)		(Percentage Nominal Annual Growth)		
Dec-95	9,929	12,018	21,946	10.3	12.5	22.8	45.2	54.8			
Dec-96	12,679	12,927	25,606	10.9	11.1	22.0	49.5	50.5	27.7	7.6	16.7
Dec-97	18,774	17,609	36,383	13.4	12.6	26.0	51.6	48.4	48.1	36.2	42.1
Dec-98	23,946	24,448	48,395	15.0	15.3	30.3	49.5	50.5	27.5	38.8	33.0
Dec-99	32,928	32,879	65,808	17.2	17.1	34.3	50.0	50.0	37.5	34.5	36.0
Dec-00	46,653	41,965	88,618	23.8	21.4	45.1	52.6	47.4	41.7	27.6	34.7
Dec-01	54,905	50,796	105,701	25.7	23.8	49.5	51.9	48.1	17.7	21.0	19.3
Dec-02	67,838	61,975	129,813	29.1	26.6	55.7	52.3	47.7	23.6	22.0	22.8
Dec-03	75,078	65,883	140,961	28.5	25.0	53.4	53.3	46.7	10.7	6.3	8.6
Dec-04	84,322	59,779	144,101	28.2	20.0	48.2	58.5	41.5	12.3	-9.3	2.2
Dec-05	102,408	53,339	155,747	30.5	15.9	46.4	65.8	34.2	21.4	-10.8	8.1
Dec-06	106,911	57,961	164,872	27.9	15.1	43.0	64.8	35.2	4.4	8.7	5.9
Jun-07	111,560	53,697	165,257	27.4	13.2	40.5	67.5	32.5	6.0	-7.4	1.2
Dec-07	116,519	56,259	172,778	27.0	13.0	40.0	67.4	32.6	9.0	-2.9	4.8
Jun-08	117,885	54,252	172,138	25.9	11.9	37.9	68.5	31.5	5.7	1.0	4.2
Dec-08	125,040	63,831	188,872	26.2	13.4	39.5	66.2	33.8	7.3	13.5	9.3

a/ The Central Government's internal debt includes public bank capitalization bonds.

b/ GDP in the twelve months prior to the observation.

Source: Banco de la República, Ministerio de Hacienda y Crédito Público.

The extra financing required by the central government in 2009 will be covered by: i) the increase in projected profits for the Central Bank (from COP\$100 b to COP\$800b); ii) the successful sale of a ten-year global bond for US\$1 billion in January 2009; and iii) US\$2.411 m in external loans that were secured by the Colombian government before the international crisis began. Further spending on wages and pensions was projected as well, and on payments for interest on the debt (internal and external) as a result of higher inflation and the changes in the international situation.

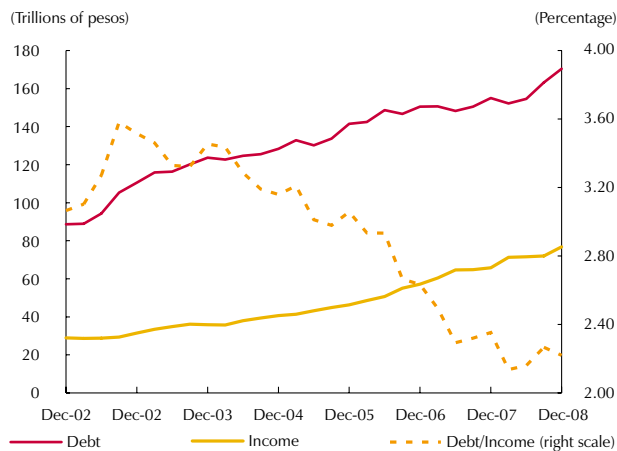
With a Keynesian approach, when economic activity declines, more public spending becomes one of the chief ways to reactivate the economy in the short term. However, financing this added cost has to be sustainable in medium and long term; otherwise, the long-term impact on the economy could be different than what is expected.

1. Aggregate Debt: NFPS

The NFPS debt, as a percentage of GDP, began to increase again during the second half of 2008, having declined since 2002. Amortization of the external debt during the last five years made it possible to shift some of the debt from

external to internal borrowing, and to reduce the gross total debt as a portion of GDP (from 55.7% in 2002 to 37.9% in June 2008). Nevertheless, following this reduction, the gross debt increased to 39.5% in December 2008, due to the increase in external borrowing. Accordingly, the gross NFPS debt went from COP\$172.8 t to COP\$188.9 t between December 2007 and December 2008 (Table 9).

Graph 70
CG Creditworthiness



Sources: Ministerio de Hacienda y Crédito Público and Banco de la República.

2. Creditworthiness

The downturn in the CG creditworthiness indicator (measured as the debt/income ratio) that began in September 2002 seems to have come to a halt in March 2008 (Graph 70). This is consistent with the added borrowing observed during the second half of 2008, compared to the growth in income. Borrowing was up 10.2% between June and September 2008, while income increased 7.2% during the same period.

3. Outlook

As mentioned the last edition of this report, the slowdown in economic activity as of 2008 and economic prospects for the future had a direct impact on the decline in tax revenue and the added fiscal deficit for 2009 and the coming years. Nevertheless, the Colombian government does not anticipate a substantial change in the fiscal balance projected in the Mid-term Fiscal Framework.

Initially, the government had hoped to market COP\$25.5 t in TES B. That amount was reduced by COP\$4.8 t for 2009, which is equivalent to 3.8% of GDP. The government ordered COP\$5 t to be placed through agreed operations and COP\$10.1 t through public auction. This increase in borrowing will raise the share of the external debt in the near future.

Box 4 ASSET PRICE OVERVALUATION

A main source of economic and financial instability occurs when high volatility and imbalances exist together in the price of assets and credit. This is known in literature as the financial accelerator. It occurs under favorable macroeconomic conditions, when agents are optimistic about their expected flow of income, which causes the price of assets to increase. Agents see this increase as an augmentation in wealth, which helps to alter their consumption patterns (investment) and their need for financing. Moreover, the enhanced value of assets is reflected in better collateral, thereby increasing the supply of credit. This adds to the resources available in the economy, stimulating demand and generating additional asset price increases.

Given the situation outlined in this report, in the chapter on the macroeconomic environment, these variables must be monitored to identify possible asset price changes that could jeopardize the borrowing structure of agents in the economy and their creditworthiness. The overvaluation analysis presented in this section focuses on asset prices in the mortgage and securities market,¹ and the evolution in credit growth, based on Indicators of financial depth.²

1. Credit Market

A Hodrick and Prescott filter is used to analyze the actual behavior of total credit, the consumer and mortgage loan portfolios, and mortgage loan disbursements. It estimates the smoothed tendency of these series,³ which is compared to the observed level of the indicator to calculate the deviation of each series with respect to that tendency.

By December 2008, the total loan portfolio as a share of GDP was 81 bp above its tendency (Graph B4.1). This is 13 bp less than the figure registered in June of that year. On the other hand, consumption lending as percentage of GDP dropped below its smoothed measurement in September 2008 and is 42 bp less than the smoothed measurement by December of that year (Graph B4.2). If the slowdown in the different types of lending continues, the indicator for the total portfolio can be

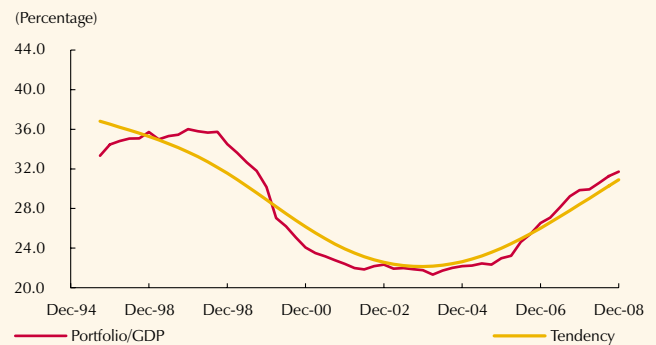
1 This does not include an analysis of the price of government securities (TES), as they account for only a small share of total household and corporate wealth. The opposite is true of housing and stocks.

2 Financial depth is the ratio of credit to nominal GDP.

3 The series for the total portfolio and the consumption loan portfolio, as a percentage of GDP from December 1994 to June 2008, were used. GDP at December 2008 was projected on the assumption that nominal annual growth would be 11.11%.

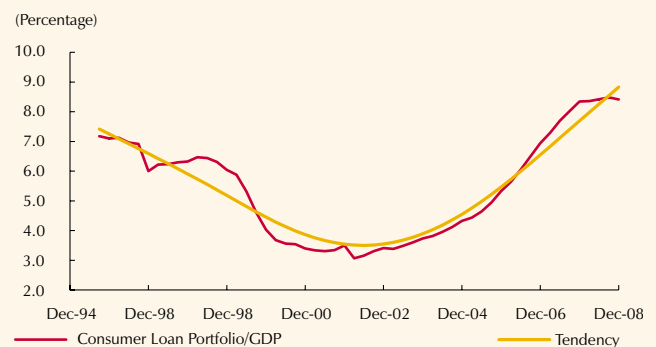
expected to continue to approach its smoothed measurement and the consumption credit gap would continue to increase.

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



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

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



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

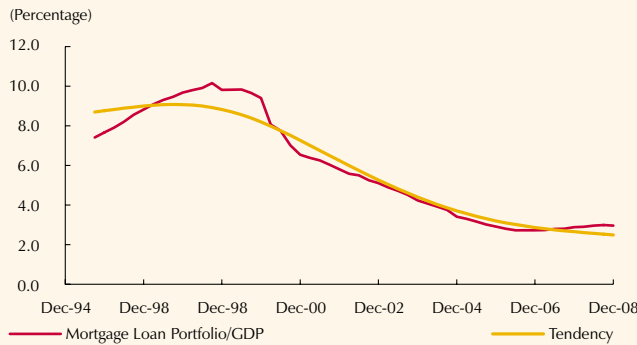
Graph B4.3 shows a 47 bp deviation in the mortgage loan portfolio with respect to its tendency. This figure is 75 bp below the average registered during 1999. It is important to analyze the level of this indicator compared to the momentum in the mortgage loan portfolio since the end of 2006, which placed it above its tendency. This indicator has evolved very differently compared to disbursements (Graph B4.4), which were 11 bp below their tendency. If the momentum observed in the last three months continues with respect to the increase in the mortgage loan portfolio, this gap could be expected to narrow and the indicator for the portfolio would converge to its smoothed measurement.

2. The Housing Market

Two different indexes were used to identify the existence of possible overvaluation in the mortgage loan market. Each serves

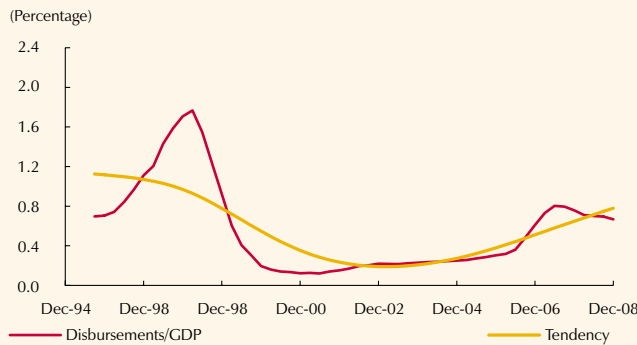
to analyze different markets, with their respective advantages and constraints. We used: i) the new home price index (NHPI) calculated by the National Department of Planning (DNP in Spanish), and ii) the Used Home Price Index (UHPI) calculated by the Banco de la República.⁴

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



Source: Superintendencia Financiera de Colombia, and DANE; calculations by Banco de la República.

Graph B4.4
Disbursements/GDP and Its Tendency



Source: Superintendencia Financiera de Colombia, DANE and ICAV; calculations by Banco de la República.

Two indicators are constructed with these two indexes: i) the ratio of the NHPI to the rental index (RI)⁵ and ii) the ratio of the UHPI to the RI. These indicators are used to compare the price of an asset to the price of the fundamental that determines said price (rentals, in this case). In addition, a Hodrick and Prescott filter is applied to both price series to evaluate their deviations from the tendency.

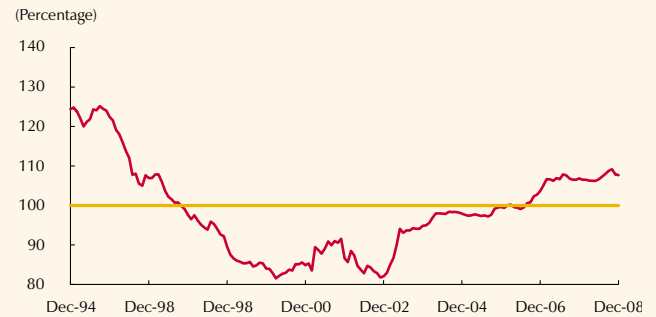
4 There is a third indicator: the Real Estate Registration Index (IRI in Spanish), which is compiled by Fedelonjas-ICAV. However, the IRI series is normalized to the average for 1998-2007, which means it cannot be analyzed the same way as the other indexes used in this report.

5 The leasing index is the housing component of the CPI.

Performance similar to what was registered during the first half of 2008 was found for the first indicator, with overvaluation staying near 7.9% during the second half of that year (Graph B4.5). This is not an alarming level compared to the results registered between 1994 and 1995, which were near 24%.

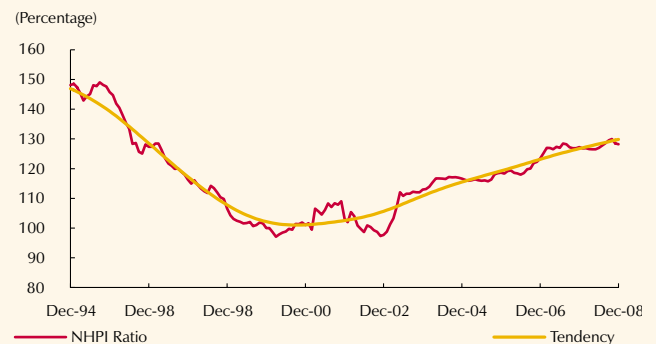
Graph B4.6 compares this index to its smoothed tendency. The results suggest the NHPI is currently 1.27% below its smoothed measurement and, during 2008, averaged an 0.55% undervaluation. It is important to emphasize that both indicators coincide in the high price levels registered during 1994 and 1995, but the second reflects more accurately the slowdown periods in the mortgage sector.

Graph B4.5
NHPI to Rental Ratio
(1994 – 2008 Average = 100)



Source: DNP and Banco de la República.

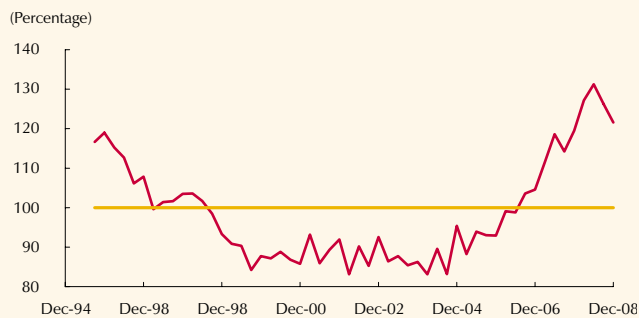
Graph B4.6
NHPI to Rentals Ratio and its Tendency
(December 1999 = 100)



Source: DNP and calculations by Banco de la República.

With respect to the market for used homes, the index shows around 21% overvaluation in December 2008, which is considerably more than during the pre-crisis period, when overvaluation was around 15% (Graph B4.7). Nevertheless, it is important to highlight the tendency in this index since the start of the second half of 2008; it dropped 7.63% during that period. This decline could be explained by the preference for liquidity, with agents opting for liquid assets, thereby raising the demand for rentals. This, in turn, increases their price and generates a decline in used home prices.

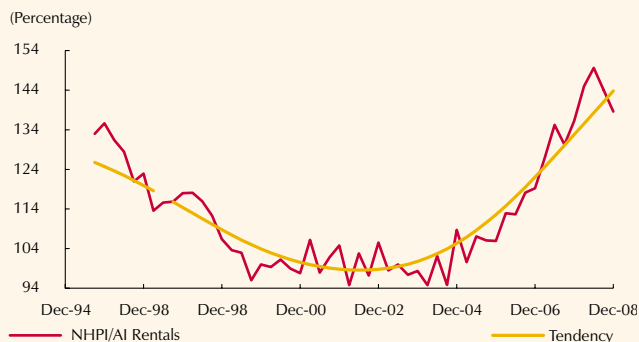
Graph B4.7
UHPI to Rentals Ratio and its Tendency
(December 1999 = 100)



Source: DANE; calculations by Banco de la República.

Graph B4.8 compares this index to its smoothed tendency. The results indicate that, despite the extent of overvaluation found in this type of housing, the price indicator during the final months of 2008 was below its tendency.

Graph B4.8
NHPI to Rentals Ratio and its Tendency
(December 1999 = 100)



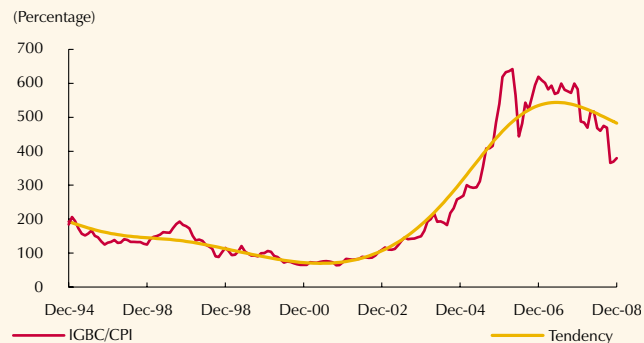
Source: DANE; calculations by Banco de la República.

3. The Stock Market

The Colombian Stock Market Index (IGBC in Spanish) is weighed by the CPI, and the deviations from its smoothed tendency are analyzed to evaluate overvaluation in the stock market.

The results of the exercise are similar to those published in the last edition of the *Financial Stability Report*. The deviation of the IGBC from its tendency suggests stocks were undervalued by approximately 15%, on average, during the second half of 2008 (Graph B4.9). This can be attributed to several factors.

Graph B4.9
IGBC to CPI Ratio and its Tendency
(December 1999 = 100)



Source: Colombian Stock Exchange; calculations by Banco de la República.

The first is the increase in uncertainty and risk aversion on local and international markets after several major investment banks went broke, coupled with poor performance on the part of other financial intermediaries. The second factor is the economic slowdown and the low forecasts for growth in the emerging market economies and in the developed countries. In the short term, one can expect this situation to continue, at least until the international markets stabilize and the local economy shows signs of recovery.

4. Conclusions

Generally speaking, the results of the exercises suggest overvaluation in both new and used home prices. Used home prices experienced the biggest shock. If the slowdown in mortgage lending continues and agents maintain their preference for liquidity, real estate overvaluation could be expected to continue to decline.

With respect to the stock market, the indicator shows stock prices are sharply undervalued, given the uncertainty on local and international markets and the economic slowdown in Colombia. The way this indicator performs in the future will be influenced largely by what happens to volatility and risk aversion in financial markets and the signs of economic recovery.

Finally, the change in the indicator for the total loan portfolio mirrors the slowdown experienced during the past year, particularly in consumer lending. As for the mortgage loan portfolio, the indicator shows signs of stabilization and, if the recent momentum in disbursements and the slowdown in mortgage lending continue, we can expect this indicator to converge towards its smoothed tendency.

IV. POTENTIAL RISKS

Credit institutions have increased their exposure to credit and market risk. Although market risk is higher than it was six months ago, it is still less than the highs observed during the previous five years. As to credit risk, the performance of new loans of all types is a particular cause for concern, as is the speed at which current loans are deteriorating.

A. MARKET RISK

1. Financial System TES B Market Exposure

Securities were valued using the same method applied for previous editions of the *Financial Stability Report*.²⁴ Tables 10 and 11 show all outstanding TES B valued at market prices.²⁵ TES holdings in the financial system increased from COP\$48.7 t on August 22, 2008 to COP\$60.2 t on February 20, 2009. This is a 23.5% growth compared to what was noted in the last edition of this report, which showed a major decline.

Peso-denominated TES continue to account for the largest share of the total portfolio in the financial system (68.1%). Unlike the shift towards TES denominated in real value units (UVR in Spanish), which was described in the last edition of this report, the share of peso-denominated and variable-rate TES had increased by February 2009, while the percentage of UVR-denominated TES had declined. This is consistent with valuation expectations,

24 The value of securities is assessed according to the average price at which the issue was traded on the market. (For details, see the December 2005 edition of the *Financial Stability Report*.)

25 The valuation exercise includes all outstanding TES B (tradable, available for sale and those held until maturity).

Table 10
Outstanding TES B Valued at Market Prices: Credit Institutions
(Millions of pesos)

	In pesos	At Variable Rate	In UVR	Total
Outstanding at August 22, 2008				
Commercial banks	10,492,954	388,901	2,982,199	13,864,053
Commercial financing companies	52,036	2,190	0	54,226
Upper-grade financial cooperatives	13,523	0	253	13,775
Financial corporations	1,292,931	3,287	233,260	1,529,478
Total: Credit Institutions	11,851,444	394,378	3,215,711	15,461,533
Outstanding at February 20, 2009				
Commercial banks	16,340,541	521,329	3,422,824	20,284,694
Commercial financial companies	105,208	2,352	15,093	122,652
Upper-grade financial cooperatives	9,758	0	778	10,536
Financial corporations	692,964	2,355	316,743	1,012,062
Total Credit Institutions	17,148,471	526,036	3,755,438	21,429,944

Source: Banco de la República.

Table 11
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 22, 2008				
Brokerage firms	584,019	9,092	59,773	652,884
Insurance and investment companies	1,784,481	187,306	2,091,624	4,063,410
Pension fund managers (PFM)	15,863,164	576,225	8,448,724	24,888,113
Trust companies	2,789,751	37,957	883,751	3,711,459
Total: Credit Institutions	21,021,414	810,580	11,483,872	33,315,866
Outstanding at February 20, 2008				
Brokerage firms	451,225	19,647	74,651	545,523
Insurance and investment companies	1,918,341	220,838	2,616,164	4,755,343
Pension fund managers (PFM)	17,518,010	367,361	9,343,431	27,228,802
Trust companies	3,950,561	1,255,311	1,067,536	6,273,408
Total: Non-bank Financial Sector	23,838,136	1,863,158	13,101,782	38,803,077

Source: Banco de la República.

due to falling inflation and a scenario characterized by an expansive monetary policy. Nevertheless, it is important to remember that what said before is true, provided there is no increase in risk aversion.

Pension fund managers (PFM) are still the major players in the market for government bonds in the financial system; although, relatively speaking, their TES holdings have declined in the last six months. On the other hand, by February of this year, the banks had expanded their share with respect to the portfolio in August 2008; that month, the TES portfolio of the PFM and the banks accounted for 51.0% and 28.4% of the total, respectively. By February 20, 2009, these proportions were 45.1% and 33.7%.

Table 10 shows the amount of TES B held by credit institutions. Valued at market prices, these positions came to COP\$21.4 t on February 20 of this year, which is more than the amount reported on August 22, 2008 (COP\$15.5 t). TES B held by commercial banks still represent the majority (94.7% of the total). This figure is higher than the amount listed in the last edition of this report (89.7%). Accordingly, although credit institutions in general increased their positions in these securities, the banks did so in a more pronounced way. As was the case for the financial system as a whole, the largest increase in government securities held by credit institutions was in peso-denominated TES. Besides the reasons mentioned earlier, in the case of credit institutions, the increase in TES holdings is also consistent with a greater perception of credit risk, given the deterioration in the indicators of loan portfolio quality and arrears, and the slowdown in the loan portfolio. On the other hand, contrary to the general tendency, finance corporations (FC) not only reduced their TES holdings, but also shifted towards UVR-denominated securities.

Commercial banks increased their TES holdings by 46.3% between August 2008 and February 2009. This was true for the vast majority of these organizations; nevertheless, some increased their government bond portfolios by more than 100% between August 2008 and February 2009. This tendency has been more pronounced since December.

The non-bank financial institutions (NBFI)²⁶ had a TES B portfolio valued at COP\$38.8 t, which is more than the portfolio held at the end of August 2008 (COP\$33.3 t). Within the NBFI, pension and severance fund managers (PFM) still account for the largest TES B holdings, specifically 70.2% of the total, which is 4.5 pp less than in August 2008 (Table 11). In this case, the reduction is due to growth in the share held by trust companies. By August 2008, their portfolio accounted for 11.1% of the NBFI total; six months later, it had increased to 16.2%.

The growing importance of trust companies in the government bond market is due largely to the performance of one firm in particular, which greatly increased its TES holdings due to the liquidation of the Social Security Professional Risk Management Unit. Its assets, liabilities and contracts were transferred to Compañía

26 In the NBFI considered in this section, trust companies include mutual investment funds.

de Seguros La Previsora Vida S. A.²⁷ By February 2009, the TES portfolio of the trust company represented 49.3% of the total for fiduciary companies; six months before, it was around 1.1%. Compañía de Seguros La Previsora Vida S. A. now holds 49.6% of the variable-rate TES in the financial system.

Peso-denominated TES continue to account for a major share of the TES portfolio of non-bank financial institutions (61.4% of the total). Nonetheless, contrary to the situation with credit institutions, the largest increase in the share of TES held by NBFI, with respect to denomination, was in variable-rate TES, which amounted to COP\$1.9 t in February 2009. This is 129.9% more than the amount reported six months earlier and is explained by Compañía de Seguros La Previsora Vida S.A.

A breakdown of peso-denominated TES B holdings, by amount and price, is provided in Table 12. The variation in price is due to a shift towards securities quoted at prices that rose or fell during the period in question; it is calculated as the residue between the total variation and the variation in amounts.

Table 12
Variations in TES B Holdings, at Fixed Rate in Pesos^{a/}
(Millions of pesos)

	Variation in Quantity	Variation in Price	Total Variation
Total: Credit Institutions	4,645,298	651,729	5,297,027
Commercial banks	5,229,963	617,624	5,847,587
Commercial financing companies	49,010	4,161	53,171
Upper-grade financial cooperatives	(3,869)	105	(3,765)
Financial corporations	(629,806)	29,839	(599,967)
Total: Non-bank Financial Sector	1,474,445	1,342,277	2,816,722
Brokerage firms	(141,051)	8,257	(132,794)
Insurance and investment companies	17,088	116,772	133,860
Pension fund managers (PFM)	619,447	1,035,399	1,654,846
Trust companies	978,962	181,849	1,160,811

a/ Variations between August 22, 2008 and February 20, 2009.
Source: Banco de la República.

The financial system saw the value of its government bond portfolio increase. Commercial banks, PFM and trust companies reported the largest increases. In the case of commercial banks and PFM, this is attributed to their importance within the system in the TES market.

The rise in government bonds held by institutions in every subsector of the system was due to an increase in quantity. The variation in price accounted for less than

27 See chapter II, section B, pp.32.

25% of the total change. This means added exposure to market risk. In any case, regardless of whether or not they added to their holdings, every institution saw them increase in value.

2. Sensitivity to TES B Rate Increases

The valuation losses that would occur with a 200 bp change in the interest rate of all maturities on the zero-coupon yield curve for fixed-rate and UVR-denominated TES²⁸ were calculated to determine how portfolio value would respond to interest-rate variations. This is an extreme and unlikely scenario. As with the exercises done earlier, only the trading book positions of these securities were included.^{29 30}

Valuation losses were estimated on the basis of the portfolio at February 20, 2009 (Table 13). The losses credit institutions would incur, with the hypothetical interest rate hike, came to COP \$657.9 b, which is equivalent to 14.7% of their annualized profits at December 2008. In the case of commercial banks, the figure was COP\$588.0 b (14.1% of their profits for the same period).

Table 13
Valuation Losses with a 200 bp Shock
(Millions of pesos)

	In pesos	In UVR	Total	Annualized Losses/ Profits (Dec.) (%)
Total Credit Institutions	(510,163)	(147,701)	(657,865)	14.65
Commercial banks	(469,175)	(118,787)	(587,962)	14.10
Commercial financing companies	(3,743)	(1,017)	(4,760)	4.96
Finance corporations	(37,245)	(27,898)	(65,143)	29.03
PFM	(2,722,972)	(1,099,205)	(3,822,177)	5.47^{a/}

a/ Loss as a percentage of the total value of the PFM portfolio at December 2008.
Source: Banco de la República.

In Graph 71, this outcome is compared to the results of previous periods.³¹ On the whole, the valuation losses credit institutions and commercial banks would incur

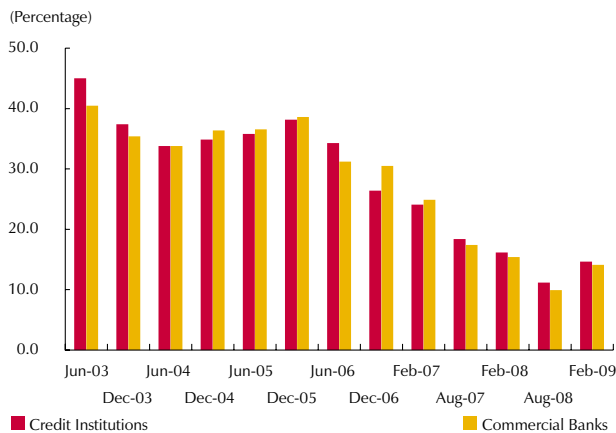
28 This is the shock suggested by the Basel Committee on Banking Supervision for countries other than the G-10. An increase in the real spread on the UVR reference rate for TES-UVR is implied. Higher expectations of inflation would result in losses only on fixed-rate TES, since the real return on UVR-denominated TES would not change.

29 The trading book is made up of the positions each bank maintains for the benefits to be derived from their short-term purchase and sale. In the Colombian case, it includes positions in tradable investments and those available for sale.

30 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.)

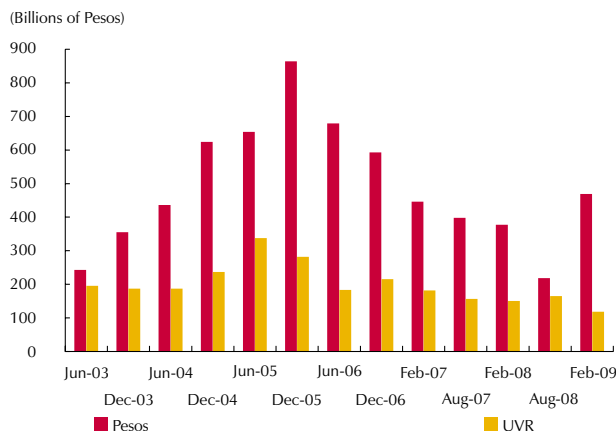
31 The exercises were done for the portfolio on the last working days of June and December, each year, during 2003-2006. The latest figures are for February 16 and August 31, 2007, February 29 and August 22, 2008 and February 20, 2009.

Graph 71
Valuation Losses as a Percentage of Profits,
with a 200 bp Shock



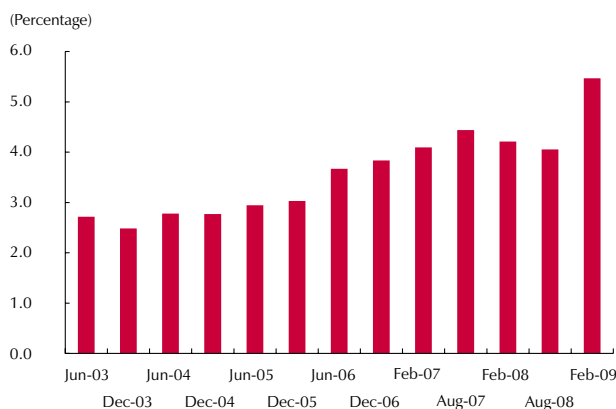
Sources: Superintendencia Financiera de Colombia; Banco de la República.

Graph 72
Valuation Losses for Commercial Banks



Source: Banco de la República.

Graph 73
PFM Valuation Losses as a Percentage of Portfolio
Value ^{a/}, with a 200 bp Shock



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

with the February 2009 portfolio would be higher than what was observed six months ago.³² Essentially, this is because the increase in the exposed balance was more than proportional to the increase in profits or in portfolio value.

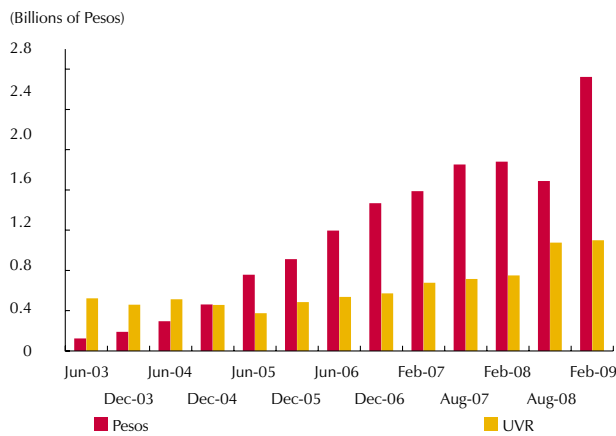
In addition to the shift from UVR-denominated securities towards those denominated in pesos, short-term investments increased more than long-term investments compared to the situation six months ago. Accordingly, the risk posed to the portfolio by interest rate changes declined to a modified duration of 2.6 years in February 2009, which is less than in August 2008 (3.2 years).

To isolate the effect profit performance has on the outcome for commercial banks, the valuation losses incurred by those organizations are shown in Graph 72, in billions of pesos. One sees a change in the tendency of those losses, which had been declining since December 2005, but were up by February 2009, having gone from COP\$383.4 b in August 2008 to COP\$587.9 b in the most recent observation. As illustrated, the valuation loss on peso-denominated securities rose by COP\$250.7 b to COP\$469.2 b in February of this year, while the valuation loss on UVR-denominated securities fell by COP\$46.1 b, due to the aforementioned shift in the portfolio.

Assuming the stress scenario is the same, PRM valuation losses would come to COP\$3.8 b, which is 5.5% of the value of the portfolio at December 2008 (Graph 73). As of August 2007, PFM valuation losses due to the interest rate shock had declined; however, for this last exercise, losses as a percentage of the portfolio reached their highest levels during the period in question. This is explained by the slowdown in the growth of the portfolio of these institutions during the last few months. Moreover, given the growth in outstanding TES, the proportional increase in losses caused by the interest rate shock was greater.

32 Annualized profit at December 2008 was used for the February 2009 exercise.

Graph 74
PFM Valuation Losses



Source: Banco de la República.

The valuation losses pension fund managers would incur are shown in Graph 74 in millions of pesos, per type of holding. The losses that would be generated by peso-denominated securities rose considerably during last the six months, whereas those originating with UVR-denominated securities are practically the same compared to August 2008. This is consistent with the performance of these institutions, as described in the previous section.

3. Value at Risk for Commercial Banks

The value at risk (VaR) for the system is discussed in this section to arrive to a more rigorous estimate of commercial banks' exposure to market risk. This indicator was calculated for each of the commercial banks, using portfolio information available on Friday of each week from February 2003 to February 20, 2009. This is a more exact measurement of the market risk to which commercial banks are exposed to, as it estimates the maximum loss the system could incur with a particular investment portfolio at a specific point in time. The VaR for the system is the aggregate of individual VaRs.³³

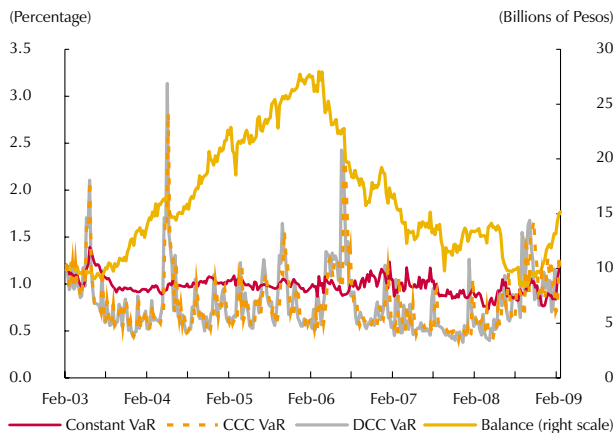
The VaRs were calculated daily, with a 99% confidence level, assuming normality and using the mapping technique suggested by Risk Metrics.³⁴ Three methods were employed to calculate the correlations and return variances for each of the risk factors (return on TES in pesos, TES- UVR and an additional exchange-exposure factor determined by changes in the representative market rate). Historic correlations and variances, constant conditional correlations and dynamic conditional variances (CCC models), and dynamic conditional correlations and variances (DCC models) were the methods used to calculate the correlation matrix and the return variance matrix, which are required to calculate VaR.

Graph 75 shows the changes in the calculated VaR (pursuant to each of the methods noted above) and in the exposed balance in the system's trading book during the period in question. The balance exposed to market risk has increased considerably during the last six months, having gone from COP\$8.5 t in August 2008 to COP\$15.2 t in February of this year, which is the highest exposure since March 2007. This is explained by the aforementioned growth in government bond holdings, and by an increase in the average share of negotiable and those available

33 For further details regarding the methodology used, see Martínez and Uribe (2008), "Financial Stability Issues," *Financial Stability Report*, March 2008.

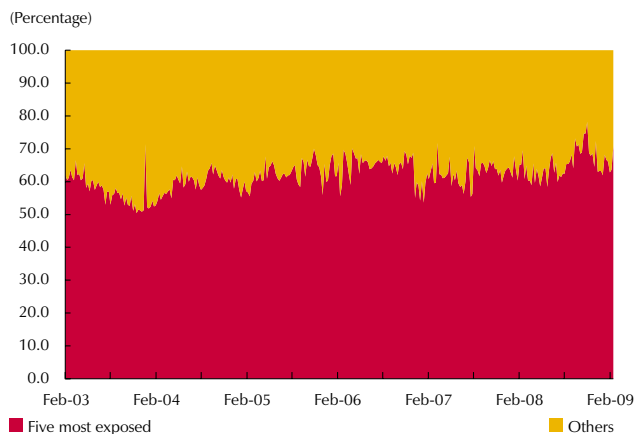
34 Risk Metrics (1996), Technical Document, J.P. Morgan/Reuters, Fourth Edition, December 1996.

Graph 75
Total VaR of Commercial Banks and Total Exposed Balance:
2002-2008



Source: Banco de la República.

Graph 76
Share of Total VaR for the Five Most Exposed Institutions



Source: Banco de la República.

for sale TES in the total portfolio, which was 46.9% in August 2008 and 58.8% in February 2009.

On the other hand, TES returns have become more volatile, as indicated by the various measurements of VaR. The three measurements show market risk increased during the last six months. In fact, the half-year average for constant VaR, CCC VaR and DCC VaR went from 0.86%, 0.67% and 0.65%, respectively, in August 2008, to 0.93%, 1.10% and 1.06% in February 2009. As one can see, the two last measurements are a more appropriate reflection of the change in volatility.

Finally, Graph 76 shows the portion of the VaR system that is explained by the share of risk pertaining to the five highest exposed institutions at each point in time. The portion of VaR attributed to the five banks with the most exposure came to 70.6% on February 20, 2009. This is above average for the sample as a whole (62.1%) and implies greater market risk by virtue of concentration.

The analysis presented in this section points to an increase in market risk for institutions in the financial sector. This is explained, on the one hand, by the increase in TES holdings and a larger portion of tradable securities, which add to the balance exposed to market risk. On the other hand, the return on government securities is more volatile. Even so, the expected drop in short-term rates would have

reduced the average duration of the portfolio held by commercial banks, which means lower interest rate risk.

B. CREDIT RISK

1. Credit Institutions

As summarized, growth in the loan portfolio and the different types of loans continues to slow, accompanied by deterioration in the indicators of loan portfolio quality and arrears. This suggests an increase in emergence of the credit risk assumed by financial intermediaries during the expansive phase of the loan cycle.

Given this situation, several stress exercises were conducted to determine how vulnerable credit institutions are to macroeconomic scenarios that are extreme but unlikely.³⁵ The exercises presented in this section are designed to analyze how changes in economic activity, interest rates, home prices and unemployment might affect the loan-portfolio quality indicator for commercial banks³⁶ and their profitability.

The change in profitability for commercial banks in each of these scenarios is shown in Table 14.³⁷ Shocks to macroeconomic variables increase the non-performing portfolio for the different types of loans. This translates into fewer profits, due to added provisioning and less income from interest.

Table 14
Stressed ROA, Stressed Profit and the Number of Banks with Negative Profitability after the Shock

	Shock 1 ^{a/}	Shock 2 ^{b/}	Shock 3 ^{c/}	Shock 4 ^{d/}
ROA at December 2008 (percentage)	2.44%	2.44%	2.44%	2.44%
Commercial	0.97%	1.99%	2.06%	0.79%
Consumption	1.35%	2.27%	1.86%	0.91%
Mortgage	2.32%	2.36%	2.26%	2.16%
Total	-0.11%	1.77%	1.35%	-0.85%
Profit at December 2008 (billions)	4.169	4.169	4.169	4.169
Stressed Profit (billions)	-190	3.029	2.311	-1.456
Change in Profit (%)	-104.56%	-27.35%	-44.57%	-134.93%
Number of banks	11	1	2	14

a/ Internal demand (commercial and consumption) or GDP (mortgage)
b/ Interest rates (consumption and commercial) or housing prices (mortgage)
c/ Unemployment
d/ Combination
Source: Banco de la República.

A shock to economic activity would reduce the ROA for commercial banks by 2.5 pp and would imply negative returns for eleven (11) of the banks in the

35 For more information on these methods, see “A Cointegration Analysis of Credit Risk ” in “Financial Stability Issues,” *Financial Stability Report*, September 2008

36 The first exercise analyzes the effects of a reduction in economic activity; namely a 6.8% drop in GDP and a 13.7% decline in internal demand, such as the slowdown during the second quarter of 1999. The second exercise looks at the impact of a 450 bp increase in interest rates, as was the case between May and June 1998. In terms of the mortgage loan portfolio, an 8% contraction in home prices, which is equivalent to the average decline in home prices during 1996-2000, was used. The third exercise considers the effect of a 4.2 pp increase in the unemployment rate, which is the average on record for 1999. The fourth scenario considers the impact these scenarios would have if they were to occur simultaneously.

37 The results are for a sample of 16 banks, since a bank must have at least a one-year history to calculate the increase in the non-performing loan portfolio.

sample. A rise in the unemployment rate, such as the increase in 1999, would lower the profitability indicator by 1.1 pp, which would mean a 44.6% drop in profits. If the shocks were to occur simultaneously, profits would plunge by 134.9%; that is, from COP\$4,169 billion to -COP \$452 billion.

2. Analysis of Loan Portfolio Concentration and Credit Risk³⁸

a. Commercial Loan Portfolio

Real annual growth in the commercial loan portfolio was 11.4% by December 2008 (COP\$93.2 t) (Table 15). The share of commercial loans in the total loan portfolio also increased during 2008, having gone from 58.7% in December 2007 to 60.4% a year later, while the number of borrowers declined by 17,166. The result was an increase in the average amount per borrower, which went from COP\$193.4 million to COP\$224.4 million.

Table 15
Capital in Domestic and Foreign Currency

	Balance ^{a/}	Share of the Total Loan Portfolio ^{b/}	Number of Borrowers	Average Amount per Borrower ^{a/}
Mar-06	58,750,409	60.99%	319,038	184.15
Jun-06	64,215,644	61.22%	333,934	192.30
Sep-06	66,982,939	60.02%	349,809	191.48
Dec-06	71,045,284	60.32%	362,943	195.75
Mar-07	71,947,717	59.32%	378,176	190.25
Jun-07	75,465,667	59.04%	395,963	190.59
Sep-07	80,231,291	59.28%	406,497	197.37
Dec-07	83,663,217	58.72%	432,588	193.40
Mar-08	82,955,519	58.55%	447,061	185.56
Jun-08	83,977,889	59.15%	431,552	194.60
Sep-08	89,859,822	59.80%	436,111	206.05
Dec-08	93,223,198	60.35%	415,472	224.38

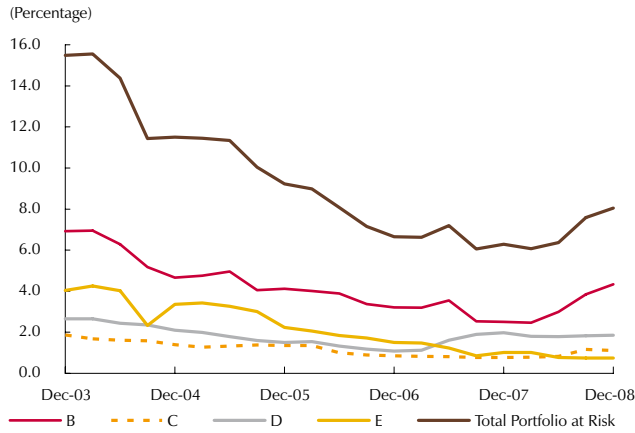
a/ Figures in millions of December 2008 pesos

b/ Figures according to the section of the financial system

Sources: Superintendencia Financiera de Colombia; calculations by Banco de la República.

38 The information on individual loans in each of the portfolios was taken from Form 341 filed with the Office of the Superintendencia Financiera de Colombia. It includes loans given by special and official institutions (IOES in Spanish), apart from rediscount loans (which are not considered in the section on the financial system).

Graph 77
Share of the Risky Portfolio, by Ratings



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

1) Credit Risk

As mentioned in the section on the financial system, the commercial loan portfolio was the one that deteriorated the most during 2008. A look at the increase in the portfolio at risk (1.8 pp between December 2007 and December 2008) shows the deterioration was due to B-rated loans, which accounted for 4.3% of the commercial loan portfolio in December 2008 (as opposed to 2.5% a year earlier) (Graph 77).

This increase in credit risk can also be observed through transition matrices, which show the conditional probability of a loan passing from one state³⁹ to another during a specific period of time.

The average transition matrix between June 2004 and December 2008 is presented in Table 16, Panel A, while the matrix for the last quarter appears in Panel B. The results show the density of the upper triangle in the second matrix is above average, which indicates deterioration in loans of this type and, therefore, an increase of the probability of loss due to default.

Table 16
Transition Matrices

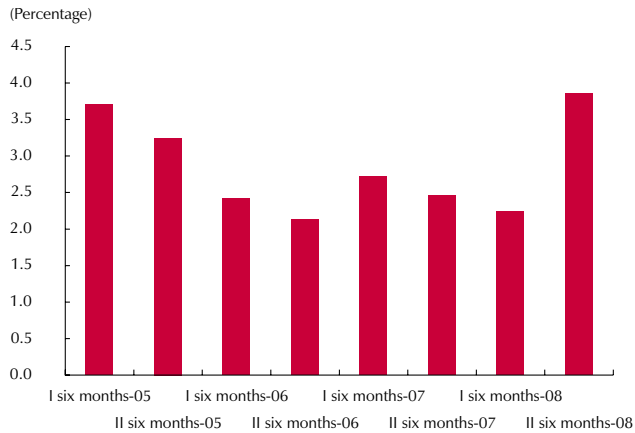
A. Average Matrix between June 2004 and December 2008					
	A	B	C	D	E
A	95.71	3.38	0.68	0.12	0.10
B	35.76	40.67	17.41	5.35	0.81
C	14.03	8.02	26.97	46.84	4.14
D	6.61	1.95	1.85	65.54	24.05
E	3.76	0.95	0.50	3.60	91.19
B. December 2008					
	A	B	C	D	E
A	93.67	5.15	0.93	0.22	0.03
B	31.03	41.64	18.60	8.15	0.58
C	10.89	9.29	28.96	45.32	5.54
D	2.85	2.09	2.30	79.42	13.35
E	3.02	0.93	0.67	6.92	88.46

Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

39 These states refer to the loan portfolio rating at each point in time (A, B, C, D and E).

A comparison of the matrices and an evaluation of the probability of maintaining the same state or rating show a reduction in the persistence in categories A and E, and an increase in the others. Category D is a case in point; its proportion rose by 13.8 pp.

Graph 78
Loan Portfolio Quality per “Harvest” for the First Six Months of Loan Life



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

To complete this credit risk analysis, it is important to consider how the harvests have evolved. This makes it possible to analyze the portfolio at risk from the standpoint of new loans every half year and how they develop over time. As to the initial qualification, the one in December 2008 is the highest for the period in question, since 3.9% of new loans are classified as risky. This represents an increase of 1.6 pp compared to the figure for the first half of 2008 (Graph 78). This last figure contrasts with the downturn observed since the first half of 2007.

As mentioned in past editions of this report, loans granted during periods when credit is growing are more likely to deteriorate faster; yet, there was no information to support that claim. However, when

looking now at how the harvests have evolved, one sees evidence of greater deterioration. With respect to loans granted during the second half of 2006, their portfolio quality index increase by 11.8 pp from date of birth (2.1%) to December 2008 (13.9%); similarly, loans granted during the following six months (2007-I) showed an increase of 9 pp in their quality indicator. On average, the loan portfolio quality indicator for other harvests increased by 7.5 pp.

2) *Analysis by productive sector of the economy*⁴⁰

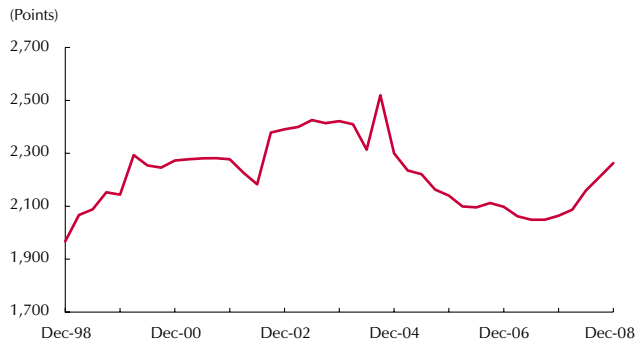
When the commercial loan portfolio is evaluated according to the ISIC classification by economic sector⁴¹ it is shown to be highly concentrated. During the period analyzed, the Herfindhal-Hirschman index was above 1,800, which is indicative of high concentration⁴² (Graph 79). This level implies an inherent risk in the economic cycle, since having a few sectors with such a

40 The ISIC information on each company was obtained from DIAN and the Office of the Superintendent of Corporate Affairs

41 Assigned by DANE, this is an adaptation of the international economic classification proposed by the United Nations. The idea is to make it comparable to that of other countries.

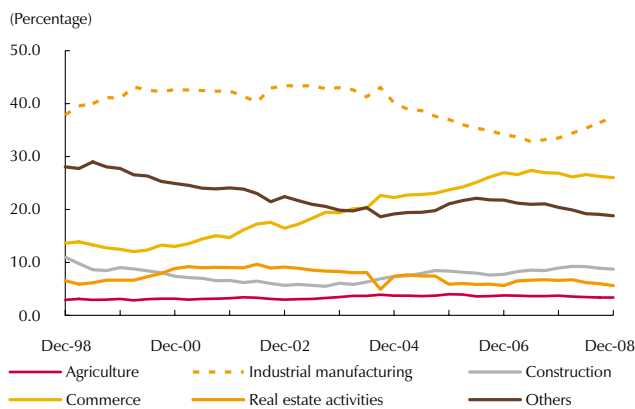
42 According to of the United States Department of Justice and the Federal Commerce Commission, this indicator measures the degree of concentration in a market on a scale of 0 to 10,000. An index below 1,000 implies concentration is low; an index between 1,000 and 1,800 denotes average or moderate concentration, and one above 1,800 is indicative of high concentration.

Graph 79
HHI of the Commercial Loan Portfolio, by Productive Sector of the Economy



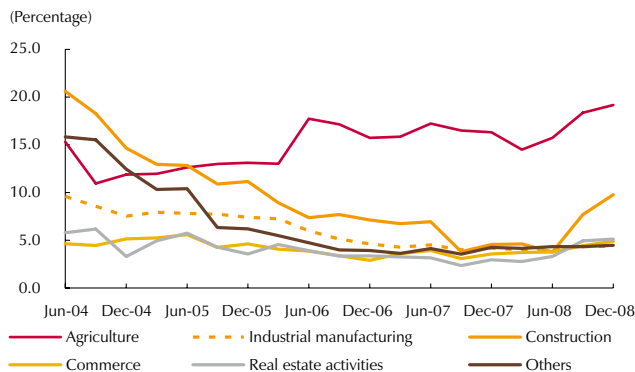
Sources: DIAN, Superintendencia Financiera de Colombia and Superintendencia de Sociedades (Office of the Superintendent of Corporate Affairs); calculations by Banco de la República.

Graph 80
Share of the Commercial Loan Portfolio, by Productive Sector of the Economy



Sources: DIAN, Superintendencia Financiera de Colombia and Superintendencia de Sociedades (Office of the Superintendent of Corporate Affairs); calculations by Banco de la República.

Graph 81
Change in Loan Portfolio Quality, by Productive Sector of the Economy



Sources: DIAN, Superintendencia Financiera de Colombia and Superintendencia de Sociedades (Office of the Superintendent of Corporate Affairs); calculations by Banco de la República.

large share makes the financial system particularly vulnerable to possible economic shocks.

Industrial manufacturing was the economic sector with the largest fraction of the commercial loan portfolio, having accounted for 37.5% of the total commercial loan portfolio in December 2008, while the commercial sector⁴³ accounted for 26.0%. The share of the commercial loan portfolio pertaining to the major sectors of the economy is shown in Graph 80.

This analysis shows the evolution in the portfolio at risk, by productive sector. Broadly speaking, the QI exhibited a downward tendency between March 2004 and September of 2007, with a change in 2008. In the case of the agriculture sector, its loan portfolio quality index remains high, since it is the sector with the largest share of the portfolio at risk (19.2% in December 2008); however, its segment of total portfolio is 3.4% (Graph 81).

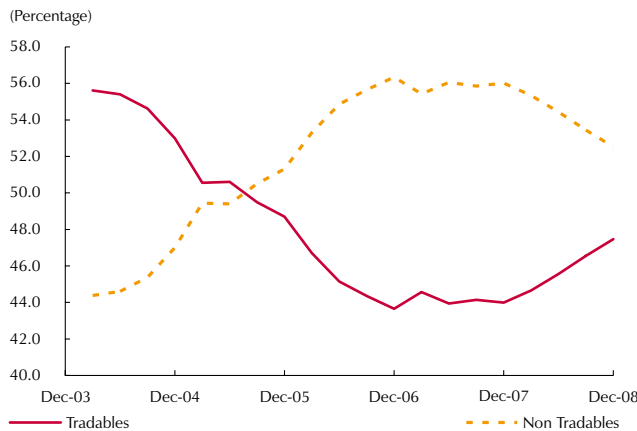
Construction and real estate⁴⁴ are among the sectors with the largest QI increases: 2.2 and 5.2 pp, respectively, between December 2007 and the same month in 2008. Together, they represent around 14.6% of the total portfolio. Consequently, these sectors explain a considerable proportion of the increase in the portfolio at risk during 2008.

Finally, an additional analysis was done on the basis of whether a company channels the majority of its production to the tradable sector or to the non-tradable one. Concentration with respect to these sectors, is not high, since the share corresponding to each of them has been relatively even. In March 2004, the tradable sector was responsible for the largest share of the commercial loan portfolio, accounting for 55.6%, and continued along this line

43 According to the ISIC-K classification, which includes real estate, entrepreneurial and rental or leasing activities

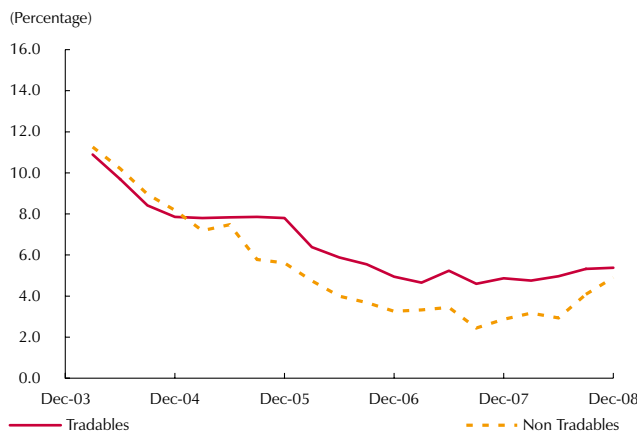
44 The ISIC –G classification, which includes wholesale and retail commerce and the repair of automotive vehicles, motorcycles, personal effects and household items.

Graph 82
Share, by Type of Sector



Sources: DIAN, Superintendencia Financiera de Colombia and Superintendencia de Sociedades (Office of the Superintendent of Corporate Affairs); calculations by Banco de la República.

Graph 83
Loan Portfolio Quality Indicator, by Type of Sector



Sources: DIAN, Superintendencia Financiera de Colombia and Superintendencia de Sociedades (Office of the Superintendent of Corporate Affairs); calculations by Banco de la República.

until the second half of 2005, when the non-tradable sector began to account for the biggest share (Graph 82). In December 2008, the non-tradable sector represented 52.5%; meanwhile, the slight gap between the two sectors continued to close, as can be observed since last year.

With respect to changes in the portfolio at risk, Graph 83 shows the non-tradable sector was the one where the quality indicator deteriorated the most, having gone from 2.9% in December 2007 to 4.9% a year later. The QI for the tradable sector went from 4.9% to 5.4% during the same period. Although the risk in the tradable sector is greater, the non-tradable sector accounts for a larger share, which explains the increase in the portfolio at risk, as a percentage of the total commercial loan portfolio.

In conclusion, the commercial loan portfolio continues to grow at positive rates and the average amount per borrower has increased as well. This makes for a higher granular concentration.⁴⁵ The portfolio at risk has expanded as well, making loss due to default more likely. This situation has been accompanied by added deterioration in the quality of new loans. Finally, it is important to emphasize that the commercial loan portfolio is highly concentrated in certain branches of the economy. The deterioration in the portfolio at risk of companies in the non-tradable sector also is a factor to bear in mind.

b. Consumption Loan Portfolio

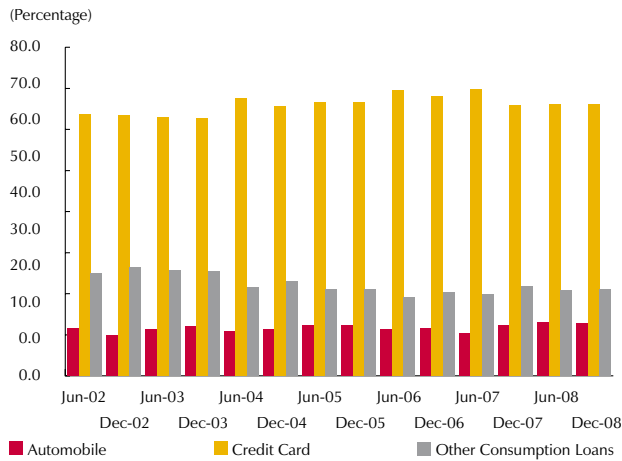
There are three types of consumption loans: credit card, automobile and “other” consumption loans.⁴⁶ Each has its own characteristics in terms of average amount, collateral, number of operations per type of loan and quality. The characteristics of consumption loans and the risk profile for each type are described in this section. The database used for that purpose has approximately 160 million entries registered between March 2002 and December 2008. It includes every consumption loan transaction and is constructed with the

⁴⁵ This refers to the concentration by individual borrowers.

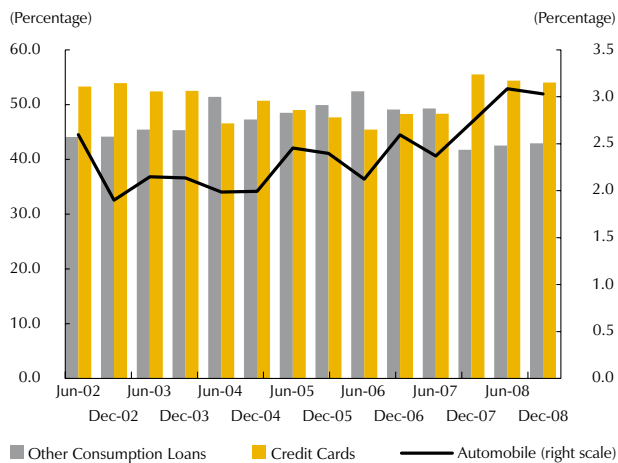
⁴⁶ “Others” include free investment, revolving credit, overdrafts, portfolio purchase and school loans.

Graph 84

A. Percentage of the Amount of Consumption Loans, by Type



B. Percentage of the Number of Loan Operations, by Type



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Table 17

Average Amount of Debt, by Type of Loan (Millions of Pesos) December

Date	Automobiles	Credit Card	Other Consumption Loans	Total Consumption
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
2008	14.22	1.30	5.15	3.35

Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

quarterly reports credit institutions submit to the Superintendencia Financiera de Colombia (FSC).⁴⁷

1) Amount and Number of Loans, per Issuer and Type

In December 2008, commercial banks held 85.6% of the total consumption loan portfolio in the financial system, followed by commercial finance companies (CFC) with 9.9%. These proportions remained relatively constant throughout most of 2008.

The segment of the total consumption loan portfolio pertaining to each area of consumption lending is shown in Graph 84, Panel A. At the end of 2008, credit cards accounted for 21% of the consumption loan portfolio, while automobile loans represented 12.9% and “others”, 66.1%. Respectively, these proportions amount to COP\$8.6 t, COP\$5.3 t and COP\$26.9 t of the total consumption loan portfolio (COP\$40.77 t). There have been no significant changes in the sample in terms of these percentages.

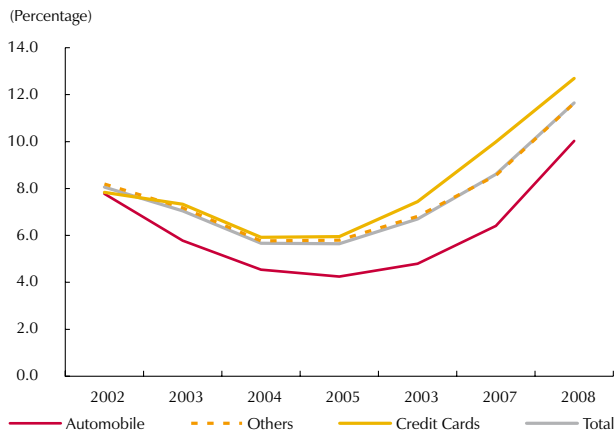
The number of consumption loans totaled 12.2 m active operations in June 2008: 43% were credit card loans and 54% were “other” type of consumption lending. The remaining 3% were loans for the purchase of automobiles (Graph 84, Panel B). The average amount per loan varies according to the type of loan, given their different characteristics and purposes. In December 2008, the average automobile loan came to COP\$14.2 m, whereas the average amounts for credit card and “other” consumption lending were COP\$1.3 m and COP\$5.15 m, respectively (Table 17). Real annual growth in average amounts, by loan type, came to -3,3%, 0,6% and -0,7% for automobiles, credit cards and “other” consumption loans, in that order.

47 As with the commercial loan portfolio, the figures used in these exercises come from FSC Form 341. Several institutions did not report data 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 in 2002 and 2003, compared to the total consumption loan portfolio observed during that period. As of 2004, the discrepancy in each quarter is below 7%, except in the third quarter of 2007, when the difference was around 10%.

At December 2008, the number of borrowers (4.97 m) was up by 6.9% for the year. This is consistent with the reduced momentum in consumption lending and with the more stringent lending policies adopted by credit institutions with respect to new loans.

The distribution of the consumption loan portfolio in December 2008 shows the median was COP\$1.42 m per active operation, compared to COP\$1.30 m a year earlier. This translates into 1.5% real annual growth. At the end of 2008, the lower quartile of these loans was COP\$540,000 and the upper quartile was COP\$4.3 m (as opposed to COP\$540,000 and COP\$3.9m a year earlier).

Graph 85
Loan Portfolio Quality Indicator by Type of Consumption Loan (Portfolio at Risk/Gross Portfolio)



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

2) Credit Risk and Loan Portfolio Quality

Graph 85 shows the loan portfolio quality indicator (QI) for the different types of consumption lending. The indicators for every group reflect deterioration during 2008. By the end of that year, the QI for credit card lending was 12.7%, which is 2.7 pp higher than it had been a year earlier. The QI for automobile loans was 10%, which is 3.4 pp more than the year before and represents the largest annual deterioration in the automobile loan portfolio during the last six years. The group that includes “other” consumption loans also deteriorated sharply, with a 3.1 pp increase in QI, which came to 11.6% in December 2008. As usual, the QI for credit card lending is higher than the QI for

the total consumption loan portfolio (11.7%). This is because credit card lending is not collateralized and the policies on giving out new credit cards are less strict than those for other types of consumption lending (which is why the interest rate on credit card loans is higher).

Transition matrices were calculated for the total consumption loan portfolio to provide a more detailed look at how credit risk has evolved. The average transition matrices between 2002 and 2008 are shown in Table 18, Panel A, and the transition matrix at December 2008 is presented in Panel B.⁴⁸ The elements on the diagonal show the persistence of loans in their category. At the end of 2008, persistence is high for the A-rated (94.4%), D (53.8%) and E (77.2%) portfolios. For 2008, category E is the only one with below average persistence.

48 A transition matrix shows the probability of a loan migrating from one category to another during one quarter. The entry (i, j) of each matrix refers to the probability of change from category i to category j .

Table 18
Transition Matrices for the Consumption Loan Portfolio
(Percentage)

A. Average 2002-2008					
	A	B	C	D	E
A	95.25	2.87	1.12	0.62	0.14
B	48.75	23.99	8.27	18.25	0.74
C	27.47	11.02	13.70	46.10	1.71
D	15.21	5.25	5.04	25.27	49.24
E	6.30	1.45	1.29	3.39	87.57
B. Transition from 2008-III to 2008-IV					
	A	B	C	D	E
A	94.39	3.23	1.44	0.89	0.05
B	36.24	32.07	11.92	18.97	0.80
C	12.20	12.27	30.61	42.42	2.50
D	3.06	3.73	10.05	53.79	29.37
E	4.29	1.15	4.47	12.85	77.24

Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

The higher probabilities below the diagonal are associated with improvements in rating, while the numbers located on the diagonal refer to the probability of migrating to a lower category or rating. When comparing the average matrix for 2008 to the one observed since 2002, we find the average matrix is better in terms of its migrations than the last one, which indicates deterioration in credit risk. The probability of migrating to a lower category is greater in the last matrix (see the upper triangle), especially the probability of migrating from A and B to inferior categories. In the final quarter of 2008, these probabilities were 5.6% and 31.7%, respectively, whereas their respective averages since 2002 are 4.7% and 27.3%. Moreover, fewer migrations to better categories were observed in the last quarter, which confirms that credit risk is on the rise: the respective probabilities of migrating to a better rating from categories B, C and D are 36.2%, 24.5% and

16.8% in last quarter. Respectively, these figures are 12.5 pp, 14.0 pp and 8.7 pp less than the average since 2002.

In addition to considering the probability of a transition in quality (reflected in the matrices), it is important to know how quality has evolved based on the harvests of borrowers. This analysis identifies, in time, the quality of the debt owed by borrowers from the financial system during a given half-year period (harvest). Consequently, it allows for a distinction between the risk profile of new clients and that of old clients. This study is fundamental to determining whether the current momentum in the loan portfolio is based on a more flexible or a more stringent selection process applied by financial institutions when allocating new loans.

Loan portfolio quality, by harvest, is shown in Graph 86 for the different types of consumption lending.⁴⁹ An analysis of the automobile loan portfolio is presented in Panel A. Loans granted in the second half of 2008 have a 2.7% QI, which is less than the percentage registered in the two previous half-year periods for loans at their time of birth. In 2007-II and 2008-I, the QI for new loans was 5.8% and 7.5%, respectively. Consequently, the automobile loans allocated in the second half of 2008 are of better quality. As to the evolution

49 The “harvest” graphs are to be read as follows. The horizontal scale shows the assessment of the harvest during the six-month evaluation period. The colors of the bars are related to each “harvest”. The line indicates total portfolio quality for each type of loan in each period. When analyzing the quality of a “harvest”, it is important to remember that the loans most at risk account for a larger share of the outstanding balance several semesters after the harvest is issued. However, that bias is common to all the “harvests” and, for that reason, they can be compared to one another.

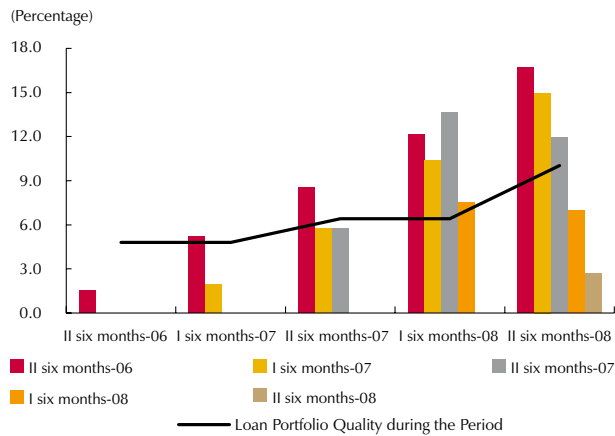
in portfolio quality, the loans generated in the second half of 2007 were deteriorating faster a semester after their birth, compared to the other harvests. This group saw its QI deteriorate by 7.9 pp a semester after its birth, which is the largest increase for the sample since 2006-II; average deterioration in six months is 3.7 pp. As to the situation in December 2008, it should be noted that the QI improved at the end of last year for the harvests in 2007-II and 2008-I.

Graph 86, Panel B shows the “harvest” analysis of credit card borrowers. The QI for new cards was 6.1% in the second half of 2008, which is less than the figure registered for new loans six months earlier (7.5%). The improvement in the indicator for new loans during the last half-year can be attributed to a better assessment and selection of new clients. A detailed look at the evolution of each harvest shows that credit card lending in 2007 has deteriorated the fastest.

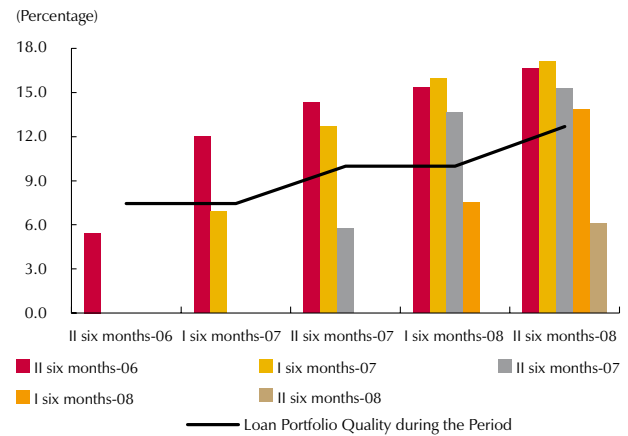
Contrary to the situation with automobile loans and credit cards, the QI for “other” new consumption loans deteriorated sharply (Graph 86, Panel C). At the end of

Graph 86
Portfolio at Risk/Total Loan Portfolio, by Harvest

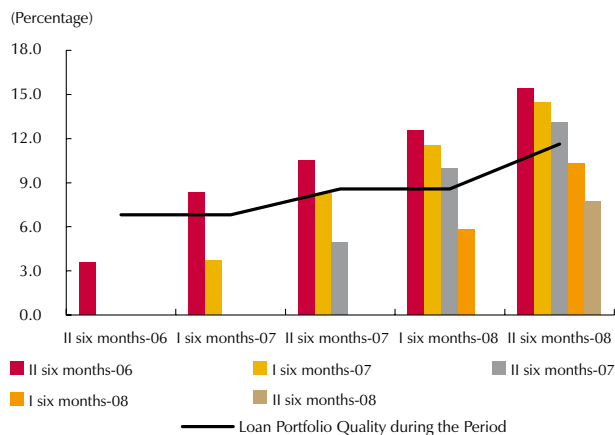
A. Automobiles



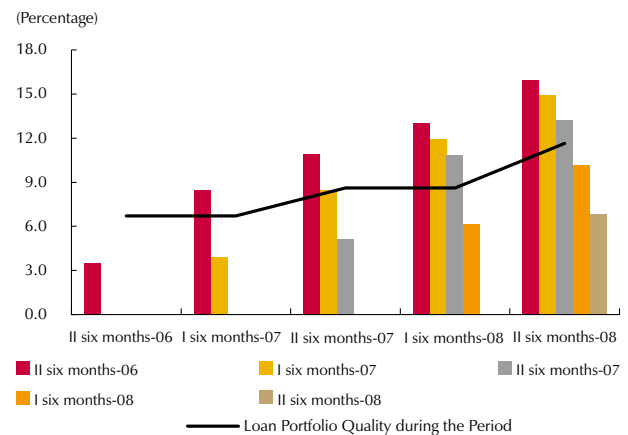
B. Credit Cards



C. Other Consumption Loans



D. Total Consumption Loan Portfolio

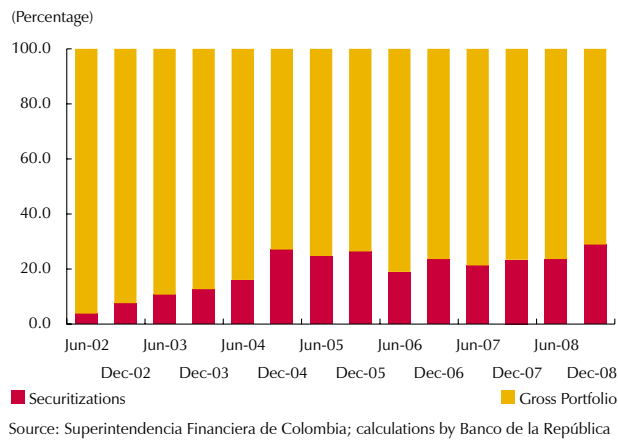


Source: Superintendencia Financiera de Colombia; calculations by Banco de la República

2008, the new loan QI was 7.8%, which is the highest on record since 2006-II for loans during the semester in which they originate. Despite an upward tendency in the new loan QI during the period in question, the inter-semester difference in the QI of new “other” consumption loans is highest in 2008-II. In other words, besides being the largest initial QI, the indicator for new loans in 2008-II showed the most deterioration. Given the importance of “other” consumption lending, the behavior of its “harvests” is similar to the behavior of “harvests” in the total consumption loan portfolio (Graph 86, Panel D).

c. Mortgage Loan Portfolio

Graph 87
Mortgage Loan Portfolio Composition, by Gross Portfolio and Securitizations



1) Credit Risk

The increase in mortgage portfolio securitization was more pronounced in December 2008 (28.8%). This is a high point for the sample and is 5.2 pp above the percentage reported in June of last year. Because banks do not list mortgage securitizations on their balance sheets, the larger the percentage of the securitized portfolio, the less credit-risk exposure for financial intermediaries (Graph 87).

Table 19 shows the evolution in mortgage loans based on the last entry each year from 2001 to 2008. Compared to the year before, the outstanding

Table 19
Amount of Principal in the Mortgage Loan Portfolio

Date	Balance Outstanding ^{a/}	Distribution of Amounts by User ^{b/}				
		5th Percentile	Lower Quartile	Median	Upper Quartile	95th Percentile
Dec-01	20,102,265	2,087,612	11,743,448	22,565,983	35,469,870	79,954,398
Dec-02	16,960,651	371,843	9,387,043	19,831,403	32,529,711	71,989,750
Dec-03	14,174,706	518,969	8,489,505	17,992,692	29,928,544	64,309,655
Dec-04	10,570,233	86,720	7,128,065	16,697,839	27,656,142	57,044,460
Dec-05	9,896,174	471,624	7,708,843	16,643,536	26,951,503	56,567,255
Dec-06	10,683,795	542,886	8,501,044	17,021,755	27,315,192	60,685,046
Dec-07	11,911,682	503,496	8,871,506	17,486,950	27,891,514	67,517,693
Dec-08	12,179,851	429,518	10,158,451	19,095,275	29,107,058	70,417,961

a/ Figures in millions of December 2008 pesos

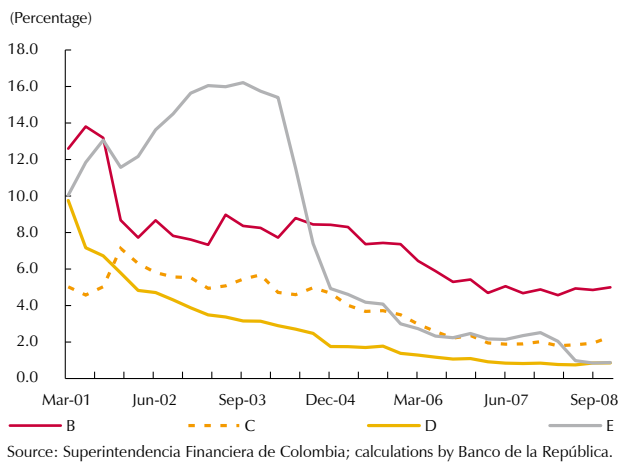
b/ Figures in December 2008 pesos

Source: Superintendencia Financiera de Colombia; calculations by Banco de la República

mortgage loan portfolio registered a real annual increase of 2.3% and came to COP\$12.2 t in December 2008. This increase was accompanied by a less uniform distribution of loans, since the amount of credit in the fifth percentile declined with respect to the amount observed a year earlier, while the amounts in the upper percentiles increased.

The quality index for the mortgage loan portfolio was 9.0% in December 2008. Although 1.2 pp less than the QI reported in December 2007, it is 51 bp above the figure for June 2008. Contrary to the downward tendency in the percentage of risky loans up until the first half of 2008, the share of non-A-rated mortgage loans began to grow.

Graph 88
Share of the Risky Portfolio by Ratings



This is explained by more relative growth in the portfolios classified between B and D. According to the latest figures, B-rated loans account for 5.0% of the total portfolio and C-rated loans represent 2.3%, having increased by 11 bp and 27 bp, respectively, compared to the same month a year earlier. (Graph 88). On the other hand, the downturn in the E-rated percentage of the portfolio seems to have reversed, particularly after the major reduction witnessed during the early months of 2008. In keeping with what was noted in this report, specifically in the chapter on the financial system, the increase in the portfolio at risk warrants special attention, insofar as it could add to the appearance of credit risk materialization, particularly if the increase involves low-rated loans.

A look at the transition in credit ratings for the mortgage loan portfolio shows an increase in the likelihood of a loan migrating to a lower rating between one period and another. As illustrated in Table 20, the probability of a B-rated loan migrating to a C rating was 20.7% in December 2008. This is 3.2 pp higher than the average percentage between 2007 and 2008. Likewise, the probability of a C-rated loan migrating to a D rating is now 1.5 pp greater than the average for the last two years. Moreover, the probability of an improvement in ratings, which is shown on the lower diagonal of the matrices, had declined by December 2008 with respect to the two-year average.

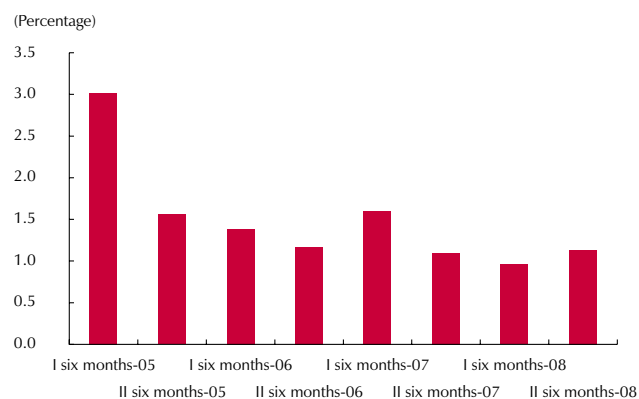
Graph 89 illustrates the quality of the mortgage loan portfolio, per harvest of borrowers, at the onset of the harvest (measured with the Quality Index [QI]). To begin with, the indicator for the harvest in the second half of 2008, at the time of issue, is 1.13%, which is 17 bp higher than the indicator for the harvest in the previous six-month period. On the other hand, the portfolio quality of all the harvests showed a faster rate of deterioration during the second half of 2008, compared to the increase registered in earlier semi-annual periods. Specifically,

Table 20
Transition Matrices for the Total Mortgage Loan Portfolio
(Percentage)

a. Average: 2002-2008						b. December 2008				
	A	B	C	D	E	A	B	C	D	E
A	96.0	3.8	0.1	0.0	0.0	A	95.8	4.0	0.2	0.0
B	31.1	50.7	17.5	0.2	0.5	B	28.9	50.0	20.7	0.2
C	14.1	7.4	61.9	15.8	0.6	C	11.8	6.7	63.9	17.3
D	8.4	2.2	5.3	56.9	27.2	D	8.6	1.5	4.0	58.6
E	5.4	1.2	1.5	2.2	89.7	E	6.3	0.7	1.9	2.4

Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 89
Mortgage Loan Portfolio Quality at the Onset of Harvests



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

the QI for the harvest issued in the first half of 2007, assessed in December 2008, is higher than the PI for the harvest issued a semester before. This is interesting, inasmuch as the former was quicker to deteriorate, even though the latter was issued earlier. In addition, the QI for the harvest in the first half of 2008 is the highest it has been for six-month loans since the level observed for the harvest in the first half of 2005, assessed a semester later. This means the level of deterioration during the latest six-month period is superior to the deterioration registered during the three previous years.

2) Credit Risk Combined with the Consumption Loan Portfolio

Exposure to the credit risk posed by agents with more than one type of loan is analyzed in this section. A database with borrowers who have mortgage and consumption loans was assembled with the closing figures reported in December 2007 and December 2008.

Table 21 illustrates the representativeness of the base. In December 2008, 67.2% of the mortgage borrowers also had consumption loans. This is 2.6 pp more than the year before, which indicates the system's exposure to borrowers

Table 21
Representativeness of the Combined Sample (Percentage)

	Number of Borrowers		Loan Capital	
	Mortgage Loans	Consumption Loans	Mortgage Loans	Consumption Loans
Dec-07	64.68	6.93	88.89	12.72
Dec-08	67.26	6.83	87.61	12.18

Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

of this type has increased. Nevertheless, when adding up the principle of the loans contracted by these borrowers, we see it amounts to 87.6% of the outstanding mortgage loan portfolio in the latest sample. This is less than the figure registered in December 2007. Although the constructed database is representative of the mortgage loan portfolio, it takes into account less than 7% of the borrowers in the consumption loan portfolio.

When analyzing how each type of loan in the database contributes to the portfolio at risk, from a percentage standpoint, we find the quality index is less compared to the QI of the portfolios as a whole. This means borrowers with both types of loans are, on average, less risky than the total borrowers

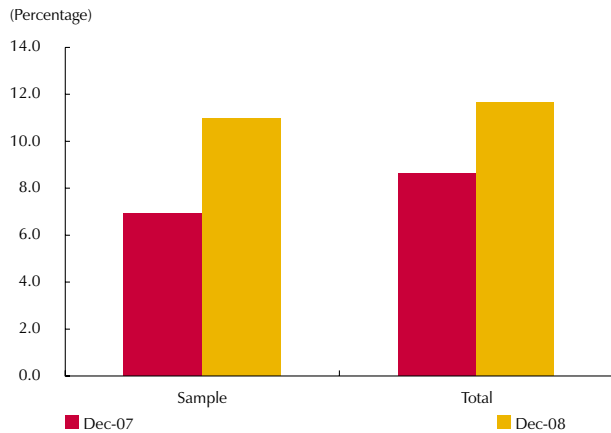
in each of the portfolios. In December 2008, the QI of the sample for the mortgage loan portfolio came to 7.5%, while the QI for the entire portfolio was 9.0%. An analysis of the consumption loan portfolio produced a similar result: 11.0% for the sample as opposed to 11.7% for the total. The indicator for this last type of portfolio deteriorated compared to the year before, by 4.0 pp and 3.0 pp, respectively. However, the PI for the total mortgage loan portfolio improved by 1.2 pp, while the QI for the sample deteriorated by 1.5 pp (Graph 90).

In short, although the quality of the mortgage loan portfolio had improved by December 2008 with respect to the year before, the risky portfolio, as a share of the total, increased in the final months of last year. Moreover, the likelihood of loans migrating to a lower rating, measured with the transition matrices, is above average for the last two years. This is substantiated by the fact that the QI for the last harvest in 2008 showed evidence of deterioration compared to the previous harvest.

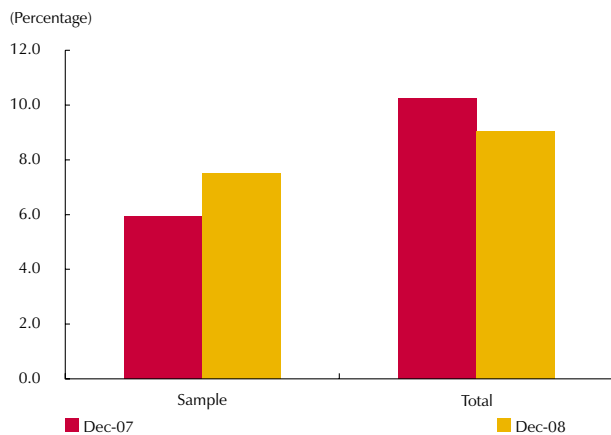
On the other hand, the analysis done to determine if the credit risk posed to institutions is greater in the case of borrowers with both consumption and mortgage loans shows they pose less risk than borrowers with just one type of loan. However, the quality indicators are not as good when compared to 2007.

Graph 90
PI Comparison between the Sample and the Total

A. Consumption Loan Portfolio



B. Mortgage Loan Portfolio



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

C. LIQUIDITY RISK

There are two dimensions or notions of liquidity risk widely discussed in literature. The first is the risk associated with the capacity of an institution to cover its liquid liabilities on time, which is known as funding liquidity risk. An evaluation of funding liquidity risk responds to the question as to whether or not an institution has enough liquid assets to cover its more immediate liabilities. On the other hand, given a potential need for resources, there is a liquidity risk associated with the capacity to liquidate assets at an adequate price and at the proper time. This is known as market liquidity risk.

The liquidity risk associated with each of these notions is measured in this section. Stress exercises are included as well to analyze how sensitive the system is to extreme, but probable scenarios of low liquidity.

1. Uncovered Liability Ratio (ULR): Funding Liquidity Risk Indicator⁵⁰

The uncovered liability ratio (ULR), as an indicator of funding liquidity risk, is calculated to measure the liquidity shortage financial institutions could face as a result of changes in terms or maturity. The following ratio is constructed for that purpose:

$$ULR = \frac{(LL + TrL) - [LA - INV + \lambda INV]}{TA - LA}$$

Where *LL* are liquid liabilities,⁵¹ *TrL* is the temporary component of all other liabilities,⁵² *INV* are tradable investments available for sale, *LA* are liquid assets⁵³ and *TA* are total assets.⁵⁴

In this equation, the liabilities susceptible to redemption are the sum of *LL* and *TrL*. The support institutions have (in square brackets) is determined by: i) liquid assets other than tradable investments available for sale (*LA – INV*), and ii) tradable investments available for sale multiplied by a discount (λ). This discounts means the value of *INV*—in terms of liquidity risk—is somewhat less than their market value ($\lambda < 1$).⁵⁵

50 Details on the basic notion and the method used to calculate the uncovered liability ratio (ULR) can be found in the March 2007 edition of the *Financial Stability Report*.

51 Liquid liabilities include the following accounts: Banco de la República, other negotiated repo agreements, with time certificate and liability positions in money market operations and related transactions.

52 This component includes the following accounts: regular assets, real-value savings accounts, special savings accounts, real-value term deposits, documents payable, the centralized account, funds placed in trust and special accounts, banks and correspondents, bank collection services, affiliate establishments, bank current account deposits, term deposits, special deposits, investment instruments in circulation, collections made, simple deposits, banker's acceptances in circulation, bank loans and other financial obligations, inactive ordinary accounts and current liabilities for bank services, all calculated using a Hodrick and Prescott filter.

53 Includes the following accounts: liquid assets minus cash and Banco de la República, interbank funds sold, repos and tradable investments available for sale.

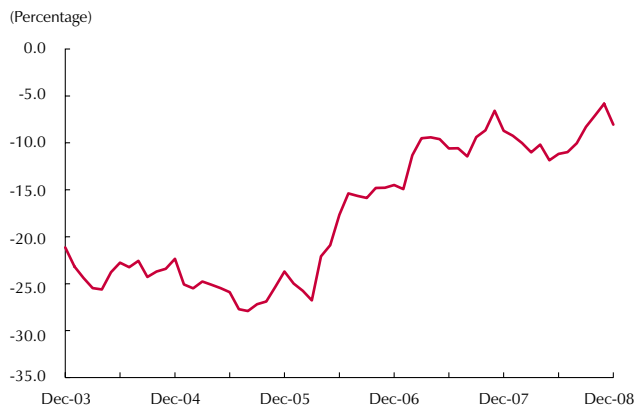
54 The reserve requirement is not included in total assets, since the liquidity risk measurement presented in this section is restricted to funding liquidity risk. The reserve requirement can be used to deal with systemic liquidity shocks, but not as a source of funding in normal situations.

55 λ is calculated as (*1-haircut*). The haircut is the discount the Banco de la República applies to the value of credit institutions' portfolios in their repo operations. Therefore, the information on haircuts can be used to calculate the value of the tradable investment portfolio discounted for repo operations.

The ULR can be interpreted using the following table:

ULR	Reason	Liquidity Risk
Positive	$(TrL + LL) > [\lambda INV + (LA - INV)]$	High
Zero	$(TrL + LL) = [\lambda INV + (LA - INV)]$	Medium
Negative	$(TrL + LL) < [\lambda INV + (LA - INV)]$	Low

Graph 91
ULR of Credit Institutions



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

a. Evolution

Graph 91 illustrates the recent changes in the ULR, which was -8.1% in December 2008. Although the indicator is negative, which suggests low funding liquidity risk, it has deteriorated with respect to June, when it was -11.2%. This is due largely to expansion in the volatile component of deposits (*TrL*). Even though this period saw an increase in investments on the order of COP\$3 t, more than half were earmarked for maturity, which does not offset the growth in *TrL*.

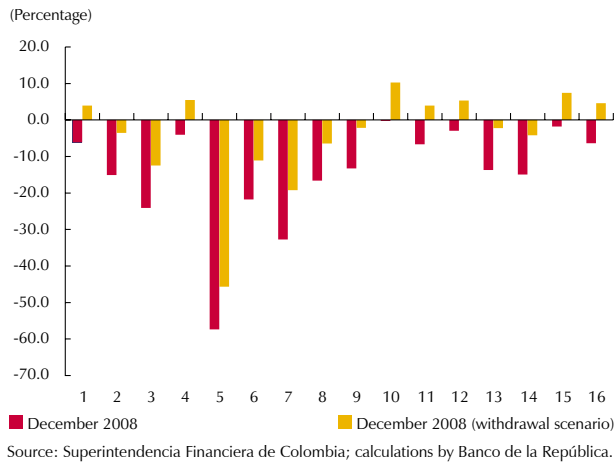
The reduction in this indicator between November (- 5.83%) and December 2008 is explained by the rise in investments. Funding liquidity risk tends to decline to the extent that these investments continue to increase on company balance sheets.

b. Stress Testing

Every institution had a negative ULR by the end of 2008, which means funding liquidity risk was low. However, when compared to the ratio observed six months earlier, one sees that eleven of the sixteen institutions raised their uncovered liability ratio. These institutions account for 78.5% of the assets in the system. Four of the institutions that reported deterioration in their ULR did so because of a reduction in investments during the six-month period. A distinct surge in the volatile component of deposits explains the deterioration experienced by the other institutions. Moreover, the institutions that improved their ULR did so by increasing their investments.

The uncovered liability ratio makes it possible to assess extreme but probable scenarios that are likely to affect an institution's liquidity and its capacity to resist such shocks. Graph 92 illustrates the results of a stress test that simulates

Graph 92
Sensitivity Analysis:
ULR of Credit Institutions



how the ULR of institutions in the banking system would be affected by a mass withdrawal equivalent to 12% of their total deposits.⁵⁶

In this stress scenario, seven banks would have a positive ULR, which indicates little resistance to a mass withdrawal shock such as the one proposed. This is more than the number observed six months ago, when three institutions would have exhibited a positive ratio in the face of a withdrawal shock. The extremely sensitive institutions account for 58.3% of bank assets (21.7% in June 2008) and have an ULR of 5.8%, on average. Therefore, the indication is that, in an extreme but probable situation, these banks would be obliged to liquidate 5.8% of their illiquid assets to cover their current liabilities. The system's apparent

loss of resistance to funding liquidity shocks during the last six months is a cause for concern. However, this exercise was done with closing data from December. In the first three first months of 2009, banks have increased their investment portfolios considerably (sight and tradable securities), which would mean

2. Liquidity-adjusted Value at Risk (L-VaR): A Market Liquidity Risk Indicator⁵⁷

L-VaR can be used to determine the percentage increase in the VaR that would be required to include market liquidity risk. The larger this percentage is, the greater the market liquidity risk and, therefore, the greater the necessary adjustment in VaR.⁵⁸ The L-VaRs estimated for credit institutions are presented in this section (Table 22). The exercise was done only for their TES portfolio, with data at February 20, 2009.

VaR for the credit institutions would be increased by 7.79% as a product of market liquidity risk. This is 3.7 pp less than the percentage calculated in June 2008 and reflects the situation on the TES market, which experienced more demand for those securities because of their valuation during the second half

⁵⁶ 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 the 1994 to 2008.

⁵⁷ The basic notion and the method used to calculate L-VaR are outlined in the March 2007 edition of the *Financial Stability Report*. For a detailed explanation of the method used to calculate L-VaR, see Juanita González and Daniel Osorio (2007), "Liquidity Adjusted Value-at-Risk (L-VaR) in Colombia," *Financial Stability Report*, Central Bank of Colombia, March.

⁵⁸ It is important to note that, due to limited information on the bid-ask spreads of TES, the VaR calculated in this exercise differs from the one presented in the section of market risk.

Table 22
Correction Percentage – February 20, 2009

Institutions	No Volatility	Volatility Scenario ^{a/}
1	5.91	30.81
2	6.00	32.42
3	14.32	38.42
4	5.88	31.34
5	9.39	29.68
6	8.09	52.23
7	7.42	21.08
8	15.34	19.52
9	13.02	31.90
10	7.91	60.57
11	6.58	53.63
12	9.96	22.10
13	7.19	58.06
14	7.82	35.58
15	7.24	31.83
16	6.75	41.21
Total	7.79	50.67

a/ Volatility in the second quarter of 2006
Source: Calculations by Banco de la República.

of 2008. The dispersal of the results, per institution, declined as a result and is now 2.9%, as opposed to 3.8% noted in the last edition of this report. This means the dynamics of market liquidity risk have changed (dispersion in December 2007 was 13.4% and now is more uniform).

In addition, a stress test was done to evaluate how liquidity adjustment behaves in extreme market conditions. The analysis specifically determines the L-VaR level in a context where the financial markets perform as they did during the first quarter of 2006, which is regarded as a particularly volatile period. The results suggest the percentage of adjustment would be 50.7%, with this stressed scenario. In other words, it would be 6.5 times higher than the percentage calculated in the initial exercise. Inasmuch as this value was 46.5% in August 2008, it is possible to infer that the TES portfolio held by credit institutions has become vulnerable to market liquidity risk in an extreme scenario such as the one in 2006. Consequently, market conditions that

can cause a significant reduction in the liquidity of those securities must be monitored constantly.

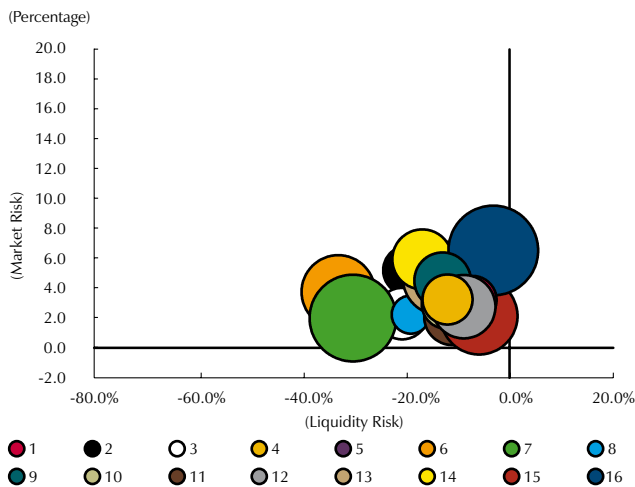
D. COMBINED DESCRIPTION OF RISKS

The stressed and non-stressed measurements of the three risks analyzed in earlier sections of this report are presented simultaneously in this section; namely, liquidity, market and credit risk at June and December 2008. The DCC-VaR for commercial banks, at thirty days, is shown on the vertical scale of Graphs 93 through 96, as a percentage of the balance exposed to market risk, while the ULR is shown on the horizontal scale to measure liquidity risk. The size of the bubbles indicates the credit risk measured with the arrears indicator (AI). The graphs should be interpreted with caution, since this combined risk description is not an analysis of a measurement of systemic risk, nor does it take into account the relationships that exist between the different types of risk.

Therefore, when comparing the two periods in question, the larger bubbles denote an increase in credit risk. A shift to the right indicates an increase in liquidity risk, while an upward shift signals an expansion in market risk. Therefore, in the event of a combined improvement in all three risks during the periods in question, the bubbles would be smaller and would shift downward and to the left.

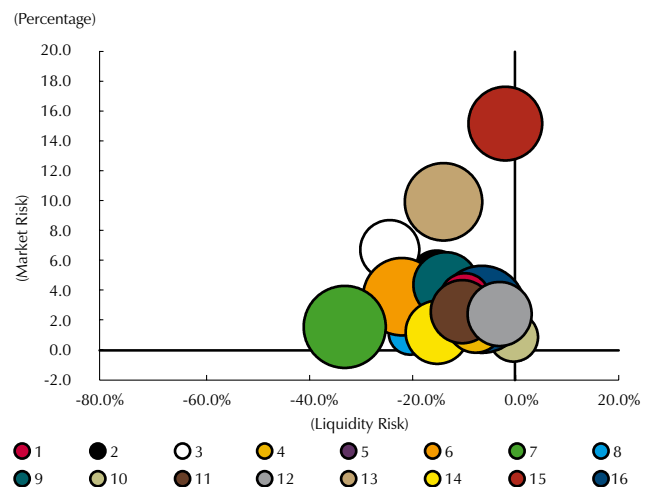
As illustrated in Graphs 93 and 94, there is an upward shift in the bubbles for December, indicating a rise in market risk. In fact, DCC-VaR at thirty days for these institutions was 3.7% in June and 5.1% by December. On the other hand, the graphs are not clear in terms of whether there has been an increase in credit risk. This is because several institutions improved their AI, while others saw theirs deteriorate. However, a closer look shows the AI increased for nine of the 16 institutions, including the largest ones. Therefore, it is possible to say that credit risk, in general, has deteriorated. In terms of liquidity risk, the ULR for these institutions increased as well, having gone from -11.2% in June to -8.1% in December 2008.

Graph 93
Set of Risks at June 2008, with Non-stressed Ratios



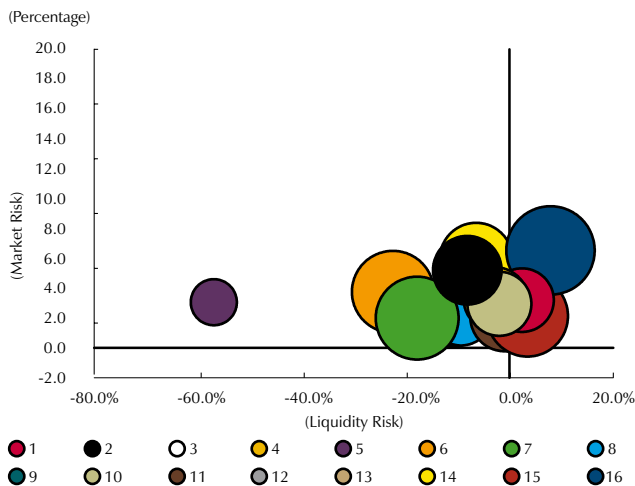
Note 1: The size of the bubbles is determined by the AI and shows the credit risk.
Note 2: The graph shows the non-stressed ULR and the non-stressed AI.
Source: Banco de la República.

Graph 94
Set of Risks at December 2008 with Non-stressed Ratios



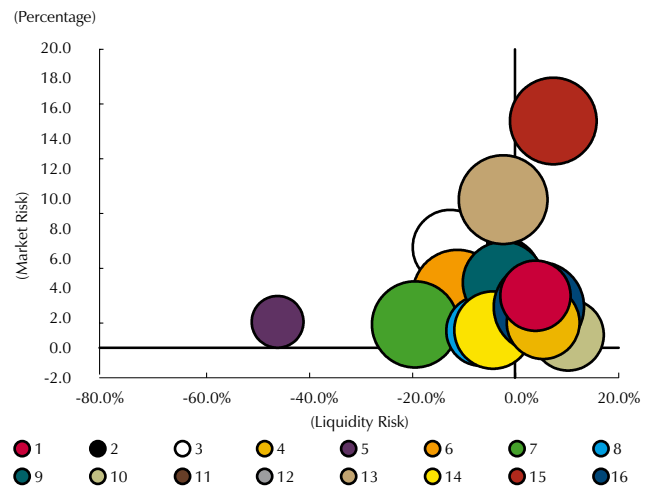
Note 1: The size of the bubbles is determined by the AI and shows the credit risk.
Note 2: The graph shows the non-stressed ULR and the non-stressed AI.
Source: Banco de la República.

Graph 95
Set of Risks at June 2008, with Stressed Ratios



Note 1: The size of the bubbles is determined by the AI and shows the credit risk.
Note 2: The graph shows the stressed ULR and the stressed AI.
Source: Banco de la República.

Graph 96
Set of Risks at December 2008, with Stressed Ratios



Note 1: The size of the bubbles is determined by the AI and shows the credit risk.
Note 2: The graph shows the stressed ULR and the stressed AI.
Source: Banco de la República.

An look at the stressed risk measurements leads to a similar analysis (Graphs 95 and 96). Exposure to liquidity risk is higher, on average. In June 2008, three of the sixteen institutions would have a positive ULR in the event of a mass withdrawal of deposits equivalent to 12% of the total amount deposited with these credit institutions; by December of the same year, the number increases to seven. On the credit-risk side, exposure is higher in December, since the bubbles are larger than in June.

In short, the analysis of the stressed measurements is congruent with the risk indexes that were observed: the bubbles grew in size between June and December of 2008, which demonstrates higher relative exposure to credit risk. In turn, the bubbles have shifted upwards and to the right, which indicates deterioration in levels of liquidity and market risk.

Box 5
COUNTERCYCLICAL REGULATIONS: AN ANSWER
TO THE INTERNATIONAL FINANCIAL CRISIS

The international financial crisis has revealed clear vulnerabilities in at least three regulatory aspects: shortcomings on the part of regulatory agencies when it comes to anticipating and dealing with liquidity problems, capital requirements that underestimate the risk posed by off-balance-sheet financial innovations, and pro-cyclical regulations on capital. In the case of the latter, criticism has been leveled against the pro-cyclical treatment encouraged in the Basel Accords, which bases capital requirements on parameters tied to the performance of the markets. Most regulatory schemes the world over demand more provisioning during times of recession, which is precisely when institutions are weaker.

These problems have sparked considerable reflection. Clearly, the financial intermediation industry has no capacity for self-regulation in terms of exposure to risk. This casts doubt on the principle of self-regulation promoted by the Basel Accords in favor of more restrictive regulatory principles, despite the costs implied by the fact that regulators usually lag behind the needs of an industry that is changing constantly. The importance of institutions adequately quantifying and revealing the risks posed by their off-balance-sheet items and the need to include those items in the capital adequacy ratio has been emphasized as well. Moreover, there is the obvious need to correct the shortcomings in coordination between central banks and regulatory agencies.

Another proposal to emerge from the crisis concerns the need to expand regulations by including a countercyclical component that is constituted during boom periods and can be used in times of crisis. The proposal by Brunnermeier et al. (2009)¹ is a step in that direction. It suggests an institution's capital adequacy ratio must include a multiplicative parameter that is related to macro-prudential and systemic risk factors. Accordingly, in boom periods, the capital adequacy ratio would be more demanding; later, it would be more relaxed.

While the importance of countercyclical regulatory schemes is being debated internationally, in Colombia, the Superintendencia Financiera de Colombia is already taking specific steps in that direction. Two very important initiatives are underway in this respect:

a. The economic slowdown worldwide will cause a slowdown in Colombia during 2009, with no short-term recovery in sight. As occurs during any recession, borrowers'

economic capacity to service their loans will deteriorate, thereby weakening the soundness of the financial system. Consequently, taking advantage of the good profits reported by the sector in 2008, Superfinanciera believes it is prudent for credit institutions to reserve a portion of those profits (approximately COP\$1.7 t) to deal with possible losses during the next three years. Once that period is over, institutions that did not need to use the reserve could revert it and apply the money as they wish.

Obviously, this and similar mechanisms reinforce the financial system's possibilities to deal successfully with the problems that might arise in the next few years. The benefits of this initiative are so important that, rather than remaining a discretionary measure, it should be adopted as a formal regulation that is activated whenever a recession approaches. This would save regulators the trouble of having to adopt it next time, since it would be part of the predetermined rules of game for the sector. Another aspect that remains to be corrected is the fact that institutions reporting losses in 2008 (clearly the most vulnerable) have no reserves for the years ahead.

b. Superintendencia Financiera has introduced a version, for comments, that improves the countercyclical component in the current credit-risk management system (SARC in Spanish). Essentially, it is an attempt to remedy the following problems:

- The fact that Superintendencia Financiera must issue a statement indicating at what point the countercyclical provisions can be used (known as a change of state) sends a very unfortunate signal to the market concerning the situation of the financial system.
- A change of state applies to all institutions simultaneously. However, some might not be in a difficult financial position, but would be allowed to use their countercyclical provisions anyway. Also, some institutions might be in a precarious situation even before a change of state is declared, which means they would be forced to establish countercyclical provisions, thereby exaggerating their weak position.
- A change of state instantly consumes all countercyclical provisions, leaving no reserve for what might happen later.
- The individual nature of the provision is such that it cannot be used to support the provision for other debtors in the event of a mass migration of loans towards lower ratings. In other words, an institution could go bankrupt without being able to use the countercyclical provisions for its healthy portfolio. It

1 Markus Brunnermeier; Andrew Crockett; Charles Goodhart; Avinash D. Persaud and Hyun Shin. "The Fundamental Principles of Financial Regulation," International Center for Monetary and Banking Studies, 2009.

would make no sense to have a bankrupt institution sitting on an enormous amount of countercyclical provisions it is not allowed to use.

The following are the general features of the new mechanism being proposed:

- The change of state would occur individually for each institution, when it exceeds the parameters of certain indicators that determine its financial situation. Accordingly, only weak institutions would be allowed to use their countercyclical provisions.
- The countercyclical provision is constituted individually, as is the case at present, but can be spent in a general way. Therefore, when a change of state is declared, the provision can be applied to loans in categories other than A.
- Institutions with aggressive portfolio growth will be required to offset the higher risk that strategy implies, by establishing a larger countercyclical provision.

This mechanism undoubtedly represents a major step forward compared to the mechanism currently in place. Nevertheless, there is still a constraint that limits its effectiveness: specifically, the low level of countercyclical provisions to deal with an eventual recessive cycle (around COP\$1.3 t, equivalent to 1% of the net portfolio). In fact, the provisions for P & L (net recovery) on the average net portfolio during the crisis at the end of the Nineties were 4% a year for 1998, 1999 and 2000. With the current numbers, the following would occur in the event of a similar crisis. The provisions were 3.2% in 2008. Added to 1% of the countercyclical provisions, they would cover only one year of the crisis, since the annual

provisions during the crisis were 4%, on average, for a period of three years.² Accordingly, for the second and third years, the legislation becomes procyclical by requiring loan-loss provisioning pursuant to the most demanding matrix, without the support of the countercyclical provisions, precisely at the time when institutions are the weakest. This is a contradictory situation in which the law (like all procyclical legislation) would exacerbate bankruptcy.

The procyclical nature of Colombia's regulations could be eliminated or reduced with a mechanism that makes it possible to increase the countercyclical reserve on a monthly basis, until it reaches an amount that adequately protects the sector against a crisis such as the one in the Nineties. As broadly outlined the previous exercise, that amount would have to be somewhere between two and three times what it is at present.

It is important to point out that countercyclical mechanisms can be designed as a provision on the asset side, which is deducted from the portfolio, pursuant to the case describe in section b. (in line with the well-known Spanish model), or as a capital reserve on the equity side of the balance sheet, as described in section a. (which is similar to the approach proposed by Brunnermeier et al., 2009). Nevertheless, if designed adequately, only one of the two is sufficient. Therefore, if the mechanism described in section b is designed appropriately (that is, with adequate countercyclical provisioning), the mechanism outlined in section a. would not be necessary.

2 This 4% would have been more if the current parameters for provisions had been applied at the time. Comparatively speaking, they are more demanding.

Box 6 A FINANCIAL STABILITY INDEX (FSI)¹

The huge imbalances in Southeast Asian financial and banking markets today and at the end of the Nineties demonstrate, once again, the enormous economic and social costs generated by periods of financial instability. With this in mind, the Central Bank of Colombia and the country's regulatory agencies have focused a good portion of their research on analyzing and developing potential early-warning indicators, stress testing scenarios and studies on the current situation in the financial sector. The objective of those efforts is to gauge the vulnerability of the sector and to understand how it can react to macroeconomic shocks and to regulatory changes.

Initially, literature on financial crisis and financial stress did little to arrive at a contemporary measurement of the current state of the system. In fact, crises usually were classified and measured with simple binary variables, and treated specifically as banking and/or exchange market phenomena, with an indication as to whether or not a crisis had occurred. In contrast, a financial stress indicator represents a continuous state, one that describes the conditions in the sector at each point in time, generating a current vision of the contemporary stress level, which is crucial to monitoring the system.

With this new orientation, the use of financial stress indexes has become increasingly widespread as an alternative for evaluating the quality of financial systems the world over. The indexes constructed by Illing and Liu (2003), Hanschel and Monnin (2005), and Puddu (2008) for Canada, Switzerland and the United States, in that order, are important examples. For the most part, the stress indexes developed in those studies make it possible to summarize the current situation of the financial system in a single measurement, which can be used to produce forecasts.

The financial stability index² (FSI) described in this section is a continuous and quantifiable measurement that can be used to determine the stress level in the Colombian financial system. It is a monthly indicator that features the considerations developed in Aspachs *et al.* (2006) with respect to profitability and probability of default. To that end, we used capital, liquidity, credit risk and return ratios

for the various types of financial institutions in Colombia, such as commercial banks (CB), mortgage banks (BECH in Spanish), commercial financial companies (CFC) and financial cooperatives (Coop).

In short, the variables that make up the indicator have been selected in keeping with those suggested in international literature and in analyzes of the Colombian financial system, and pursuant to the systemic relevance of those variables. Specifically, they include: return on assets (ROA), return on equity (ROE), ratio of the overdue portfolio to the total portfolio (OP), ratio of non-performing loans to the total loan portfolio (NP), intermediation spread (IS), ratio of liquid liabilities to liquid assets (LL), ratio of interbank funds to liquid assets (IF) and the uncovered liabilities ratio (ULR).

The most difficult aspect of the process is how the variables are weighted to arrive at a measurement, as this determines the impact each variable will have on the stress index. The difficulty in weighing the variables hinges on the absence of a reference indicator that makes it possible to verify the precision of the weights and to conduct tests with them. A wide variety of methods are used to weigh variables. In the Colombian case, they include the variance equal approach,³ principal components⁴ and, in general, account data models:⁵ zero inflated poisson and zero-inflated binomial negative regressions. In the end, different methods produced different weights for the variables (Table B6.1); however, in general, they indicate a greater weight for the variables that produce information on yield.

Using the weights calculated with the different methods, an index was constructed that considers various aspects of the Colombian financial system and its evolution in time. The information generated by the FSI is easy to interpret, because each variable has been standardized. The stress level for the current period can be compared to the historic one in terms of deviation from the mean. Index values above zero are equivalent to periods of above-average financial stress, while

1 For more information, see D. Estrada and M. Morales (2009), "A Financial Stability Index for Colombia" in "Economic Stability Issues," *Financial Stability Report*, Banco de la República, March 2009.

2 Financial stability is defined as a situation in which the financial system effectively brokers financial flows, contributing to a better allocation of resources and, therefore, to maintaining macroeconomic stability. For that reason, financial instability directly affects macroeconomic stability and the capacity of the Central Bank to carry out its constitutional mandate.

3 This technique standardizes the variables so they can be expressed in the same unit, then added using identical weights.

4 Essentially, the idea behind this method is to obtain an index by weighing the selected variables in such a way that the combination explains the maximum combined variance of those variables.

5 This approach uses econometric estimates to model the relation between the stress indicative variables and the dependent variable, defined in this case as the number of banks in stress per period. The weights are found on the basis of the estimated coefficients.

Table B6.1
Weights of the Variables in the Index, by Method

	Equal Variance Approach	Principal Components	Zero-inflated binomial negative
ROA	12.50%	17.53%	7.65%
ROE	12.50%	17.79%	11.75%
OP	12.50%	18.01%	15.69%
NP	12.50%	15.81%	6.17%
IS	12.50%	12.79%	23.03%
LL	12.50%	6.55%	11.95%
IF	12.50%	7.41%	12.03%
ULR	12.50%	4.12%	11.73%

Source: Calculations by Banco de la República.

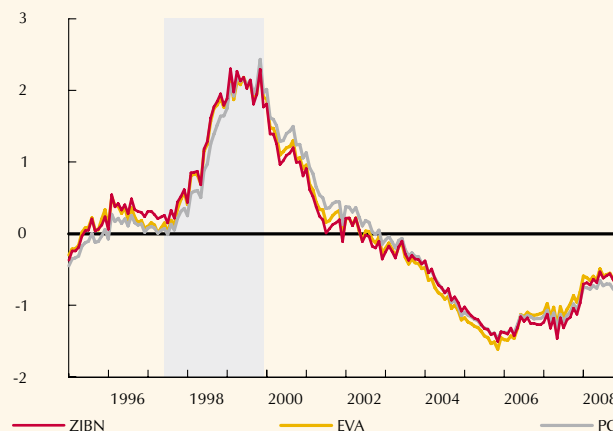
negative values indicate periods of above-average stability. Likewise, increases in the index during a particular period also provide useful information on evolution of the stress level over time.

Graph B6.1 shows how the financial stability index for Colombia evolved from 1995 to 2008.⁶ During that time, the economic crisis at the end of the Nineties is detected well in advance by the FSI. As the graph illustrates, the financial stress level suggested by the index adopted an increasingly upward course as of late 1997 and peaked at the end of 1999. The index also identifies times with low stress levels; namely, 2005 and 2006. During the final years of the period in question, the tendency of the index turned positive and inclined, suggesting the stress level had begun to increase. Accordingly, one can conclude that the system has become more vulnerable. However, it is important to point out that the indicator has yet to suggest the existence of a high stress level.

The FSI, by definition, identifies the contemporary level of stress in the system and, as such, it cannot be expected to predict future periods of stress or crisis. Hence, for policy purposes, it is extremely helpful in producing models that can be used to forecast the stress level. In this case, the FSI could be used as a dependent variable and could be modeled on the basis of macroeconomic variables.

One of the main differences between this work and existing literature is that it manages to develop a stress index per type of institution and per institution, thanks to the

Graph B6.1
Financial Stability Index



Source: Calculations by Banco de la República.

availability of data for the Colombia case.⁷ In the end, an index was developed for commercial banks (BC), mortgage banks (BECH), commercial financial companies (CFC) and financial cooperatives (Coop).

In general, one can see the tendency in the behavior of the index, per type of institution, is similar to that of the indicator for the system. However, because of this breakdown, it is possible to determine what types of institutions have the highest stress level. Graph B6.2 shows the four indicators for the four types of institutions. One sees accelerated growth in the CFC and COOP indicators during the last few months, which suggests a rapid increase in their stress level. In the case of CFC, the indicator reached a point above average, which denotes a moderate stress level. For BC and BECH, the increase in stress level has been accelerated as well, but to a lesser degree.

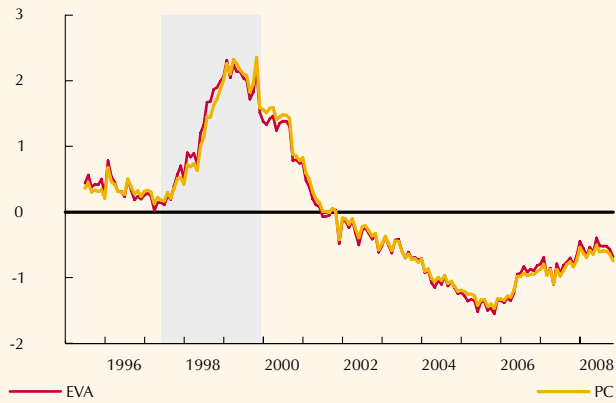
In short, the financial stability indicator presented in this section is an index that takes into account different aspects of the financial sector suggested in international literature and in an analysis of the Colombian financial system in general, with information on capital, equity, profitability, liquidity and credit risk ratios. It manages to determine the contemporary level of stress in the system, overall and with a breakdown, making it possible to arrive at a good diagnosis of financial stability in Colombia.

6 Data from January 1995 to November 2008.

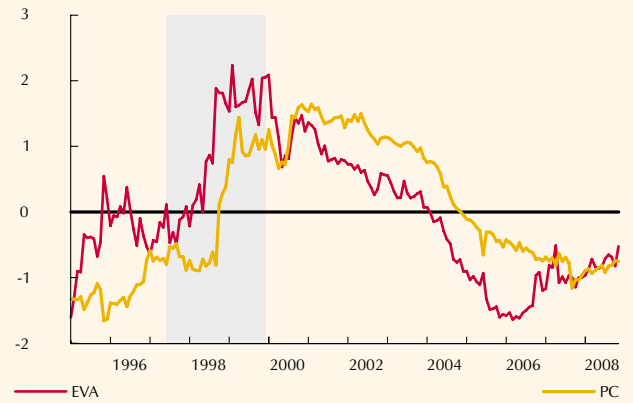
7 Variance equal and principal components are the methods used. The account data models were not used in this case.

Graph B6.2
Financial Stress Index, by Type of Institution

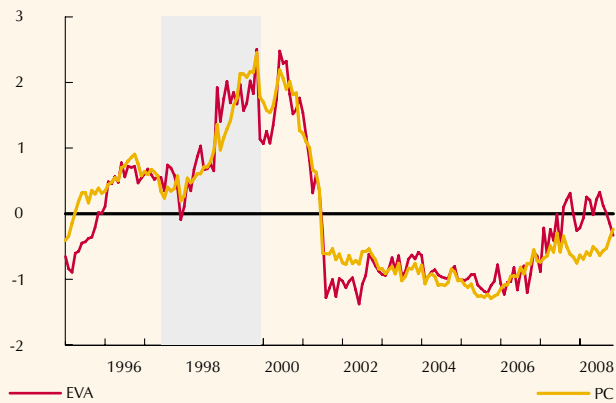
A. BC Index



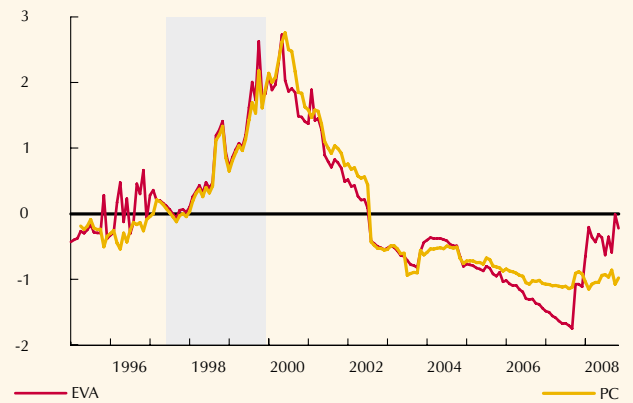
B. BECH Index



C. CFC Index



D. COOP Index



Source: Calculations by Banco de la República.

Reference

Aspachs, O., Goodhart, C. A. E., Segoviano, M., Tsomocos, D., & Zicchino, L. "Searching for a Metric for Financial Stability." *LSE Financial Markets Group Special Paper Series*, Special Paper No. 167, 2006.

Illing, M., Liu, Y. (). "An Index of Financial Stress for Canada." *Bank of Canada Working Papers*, No. 14, 2003.

Hanschel, E. & Monnin, P. "Measuring and Forecasting Stress in the Banking Sector: Evidence from Switzerland." *BIS Papers*, No. 22, 2005.

Puddu, S. "Optimal Weights and Stress Banking Indexes." HEC-Université de Lausanne, Switzerland, 2008.

FINANCIAL STABILITY ISSUES

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A Financial Stability Index for Colombia

Índice de Estabilidad Financiera para Colombia

Dairo Estrada

Miguel Ángel Morales

The unique financial indicator as an early warning mechanism: a new version

El indicador financiero único como mecanismo de alerta temprana: una nueva versión

Fernando Pineda G.

José Hernán Piñeros G.

A DSGE Approach to Analyze Financial Stability

Una aproximación para analizar la estabilidad financiera por medio de un DSGE

David Pérez Reyna

A FINANCIAL STABILITY INDEX FOR COLOMBIA

DAIRO ESTRADA
MIGUEL ÁNGEL MORALES

The imbalances of the financial systems during the present time and the late nineties have showed the vast economics and social costs generated by these periods of financial instability. As a consequence the development of stress indexes have started to widely spread as an alternative to assess the soundness of financial system around world. The goal of this paper is to construct a continuous and quantifiable index with the capacity to establish the stress level of the Colombian financial system as a function of profitability, liquidity and probability of default considerations. The methodologies used cover the equal variance approach, the principal components and in general the count data models. Finally, the results shows that the index determines effectively the contemporaneous level of stress for the system, in an aggregate form as well as in a disaggregate manner. In addition we performed some forecast of the financial stability index (FSI) using the relevant macroeconomics variables.

ÍNDICE DE ESTABILIDAD FINANCIERA PARA COLOMBIA

Los desequilibrios en los sistemas financieros actuales, así como los de finales de los años noventa, evidenciaron una vez más los enormes costos económicos y sociales generados por los periodos de inestabilidad financiera. De allí que el uso de índices de estrés haya empezado a ser ampliamente desarrollado como alternativa para evaluar la calidad de los sistemas financieros en el mundo. El objetivo de este documento es proponer un índice continuo y cuantificable con la capacidad de determinar el nivel de estrés del sistema financiero colombiano, teniendo en cuenta consideraciones de rentabilidad, liquidez y probabilidad de incumplimiento. Las metodologías utilizadas abarcan la aproximación de igualdad de varianza, los componentes principales y, en general, modelos para datos de cuenta. Al final los resultados muestran que el índice logra determinar el nivel de estrés contemporáneo del sistema tanto de manera global como desagregada. Asimismo, se desarrollaron pronósticos del índice de estabilidad financiera (IEFI), usando variables macroeconómicas relevantes.

THE UNIQUE FINANCIAL INDICATOR AS AN EARLY WARNING MECHANISM: A NEW VERSION

FERNANDO PINEDA G.
JOSÉ HERNÁN PIÑEROS G.

The intention with the new version of the Unique Financial Indicator is not only to summarize, assess, and organize hierarchically the banking sector performance, but also to establish early alert systems which allow forecasting with enough time the possibility of going into a financial crisis. In consequence, it would be feasible to make correct decisions in complement to the others that were adopted in order to contribute to moderate or avoid the crisis. The information about the financial crisis, which occurred at the end of the ninety decade, was used for contrasting the validity of the (accountant and financial) model. The results permit to claim that the crisis could be forecasted since the final of 1997, in other words, one year before the government to state the economic emergency, which was originated by the big vulnerability of the Colombian financial sector.

EL INDICADOR FINANCIERO ÚNICO COMO MECANISMO DE ALERTA TEMPRANA: UNA NUEVA VERSIÓN

Con esta nueva versión del Indicador Financiero Único se pretende no sólo resumir, evaluar y organizar jerárquicamente el desempeño de los establecimientos de crédito, sino también establecer un sistema de alertas tempranas que permita predecir con alguna antelación la posibilidad de entrar en una crisis financiera. Así, sería factible tomar medidas correctivas complementarias a otras previamente adoptadas para contribuir a moderar la crisis o a evitarla. La información de la crisis financiera ocurrida a finales de la década de los noventa se utilizó para contrastar la validez del modelo (contable y financiero). Los resultados permiten afirmar que dicha crisis pudo ser pronosticada desde finales de 1997, o sea un año antes de que se llevara a cabo la declaratoria de emergencia económica, generada por la gran vulnerabilidad financiera que estaba registrando el sistema bancario colombiano.

A DSGE APPROACH TO ANALYZE FINANCIAL STABILITY

DAVID PÉREZ REYNA

In this paper we present a DSGE to analyze the financial stability of a closed economy without government. The model is based in Leao and Leao (2007), and we include endogenous households' default of their debt, as well as a capital adequacy ratio for banks. The modeled economy has a central bank that provides liquidity to the financial system, which uses these resources to produce credit for households. The loans are spent in consumption, choosing the optimal percentage of default of the debt. Finally, we analyze the impact that real shocks and changes in monetary policy have on relevant variables for financial stability.

UNA APROXIMACIÓN PARA ANALIZAR LA ESTABILIDAD FINANCIERA POR MEDIO DE UN DSGE

En este trabajo se presenta un modelo de equilibrio general para analizar la estabilidad financiera de una economía cerrada sin gobierno. El modelo se basa en el propuesto por Leao y Leao (2007), adicionando un incumplimiento endógeno del pago de las deudas por parte de los hogares y una exigencia de capital para los bancos. De esta manera, se tiene un banco central que provee liquidez al sistema financiero, el cuál, utiliza los recursos para producir crédito para los hogares. Los préstamos son usados para consumir, escogiendo el porcentaje óptimo de la deuda que se va a pagar. Finalmente, se analiza el impacto que tienen choques reales y cambios en las medidas de política monetaria sobre variables relevantes para la estabilidad financiera.