Financial Stability Report

September 2010

ISSN - 2145 -650X

Reporte de Estabilidad Financiera

September, 2010

Banco de la República
Bogotá, D. C., Colombia

ISSN - 1692 - 4029

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Executive Summary

In the first half of 2010, the Colombian economy continued to consolidate the recovery that it had been experiencing since the third quarter of 2009. This greater strength has occurred in a context of rising prices for commodities, better expectations for world growth as well as increments in the levels of risk aversion. Locally, the outlook of both consumers and firms with respect to the future performance of the economy is positive. As a result, more momentum in intermediation can be expected.

In the first half of 2010, the total loan portfolio showed an annual real growth of 3.2%, higher than what had been reported in the previous six months (0.4%). This dynamism is mainly explained by the performance of the mortgage portfolio and consumer loan portfolio (19.2% and 6.2%, respectively). The commercial loan portfolio, in turn, showed an annual real expansion of -0.3%, although in the most recent six months its average growth has been positive (2.5%). The recovery of the loan portfolio has been accompanied by better levels of quality in spite of the fact both commercial and microcredit loan portfolio have deteriorated. With respect to liabilities, it is important to emphasize the fact that the growth rate for deposits declined (4.2% in June, 2010 compared to 5.8% in December, 2009) and that the shift from certificates of deposit (CDs) to demand deposits continued. This is primarily due to the low level of interest rates, larger bond issues on the part of the financial system and to the elimination of remuneration for reserve requirements on CDs, among others.

Non-banking financial institutions (NBFI) continued to build up their investment portfolio in spite of the slowdown shown in their rate of growth (going from 25.5% in December, 2009 to 18.1% in June, 2010) as a consequence of the lower earnings from valuation. With respect to the composition of their portfolios, it is important to highlight the fact that all of the NBFIs added to their positions in public debt securities in the first half of 2010. In addition, in the first few months of the coming year, the multifund plan for pension fund managers will go into effect. This draws our attention to the way these entities

could restructure their investment portfolio and which could possibly affect the prices of financial assets.

With respect to the financial system risks, an increase was seen in the TES positions for both the credit entities and the NBFIs, which raises their exposed balance. However, the reduction in the volatility mesures of TES prices in the last six months has mitigated the effect on the market risk for the financial intermediaries. It is worth pointing out that this stability in volatility does not mean that there will not be increases in price volatility for the portfolios of the financial intermediaries in the future. Credit risk has also improved for the entire system. However, the latest loan portfolio harvests must be highlighted because of the fact that they are better in comparison to those of the recent credit boom (2006-2007). This is in spite of the deterioration in the harvests of microcredit during the second quarter of the year in progress. With respect to liquidity risk there has been an increase primarily due to the fact that there has been a restructuring towards more volatile short term liabilities on the part of credit establishments. Nevertheless, stress tests show that the entities could endure an adverse situation that affects their liquidity positions.

In general, credit institutions have shown positive results over the course of the year. Profits grew at an annual real rate of 8.3% in June, 2010 and capital adequacy is at levels that are well above (13.5%) the regulatory minimum (9%). In spite of the fact that risks remain at moderate levels and that both quality and delinquency ratio have dropped, greater strength in intermediation activities should be accompanied by constant monitoring of the risk indicators to prevent adverse changes from affecting the stability of the financial system.

Finnally, in the months following the period that this report analyzes, there has been an increase in the inflow of capital to the private sector reported by the foreign exchange balance, specifically in the area of private sector net foreign indebtedness. The analyses done by the Banco de la República indicate that, so far, these operations have not caused a significant increase in foreign exchange risk for any agent in the economy. This is derived from the relatively low level of operations, the natural hedging of some companies and the transfers and reassignments of risk done through the derivatives market.

Board of Directors of the 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 in which the financial system is able to broker financial flows effectively. 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 Banco de la República's capacity to fulfill its constitutional mandate. In short, monitoring and maintaining financial stability are crucial to that activity.

Banco de la República provides for financial stability in a variety of ways. To begin with, 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.(Financial Superintendence) Moreover, Banco de la República carefully monitors economic trends that could threaten the country's financial stability.

The *Financial Stability Report* is part of this last task and accomplishes two objectives. First, it describes 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 can affect the financial system as a whole.

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(*) This report was prepared with the help of Juan Pablo Guerrero y Fanny Rincón. who are student interns in the Financial Stability Department. The assistance with data processing provided by Máryori Caviedes and Carolina Gómez is much appreciated.

I. Macroeconomic Environment

Although a better performance was seen in various economic indicators in Colombia in 2010, the effects on the financial system will largely depend on the recovery of our economy and the persistence of the positive strength in the international environment.

A. BACKGROUND: THE INTERNATIONAL ENVIRONMENT

In the first half of 2010, the global economy began to show signs of recovery, thus causing the growth projections for 2010 and 2011 to be modified upwards for the majority of countries. However, the risk aversion of international investors has risen due to the recent problems concerning uncertainty about sovereign debt and fiscal sustainability in some European countries.

This growth in risk aversion is reflected in the higher premiums of credit default swaps (CDS)[1] for several countries in the European Union. These rose considerably in May of this year and stayed at levels that are higher than those of the beginning of 2009. Likewise, the VIX[2] showed significant growth in May of 2010 with a monthly increase of close to 190% (Graphs 1 and 2).

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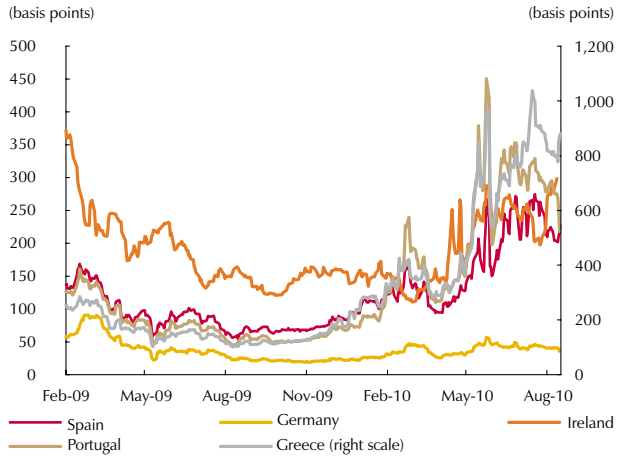
1 A CDS is a financial contract between an entity and a bond-holder. According to that contract, the bond-holder pays the entity a premium, measured in basis points, in exchange for which the entity will be responsible for the nominal value of the bond if the bond issuer does not fulfill its obligations. The appreciation of a CDS is directly related to the investors' level of risk aversion.

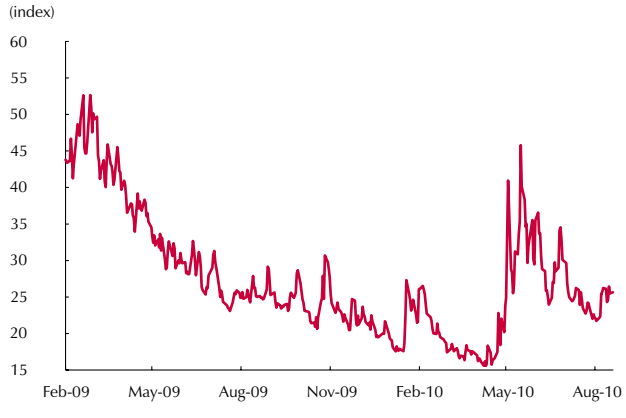
2 The VIX (composite volatility index) is an indicator of the implicit volatility in the options on the S&P 500 index. An increase in the VIX implies greater uncertainty in the stock market which is reflected in higher prices for options. Thus, this index can be interpreted as another measurement of risk aversion.

Graph 1
Five-year Credit Default Swaps (CDS) in some European Countries



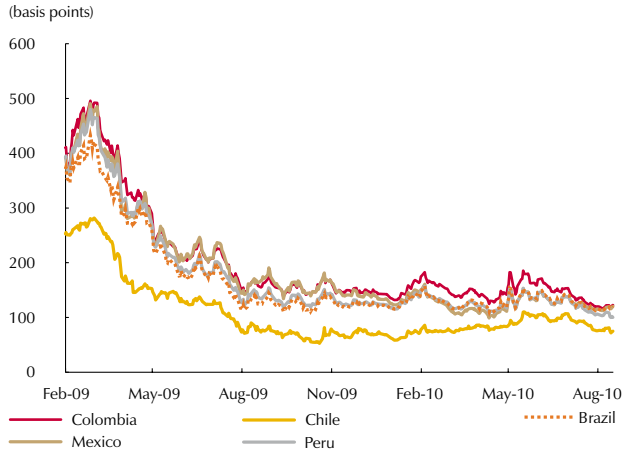
Source: Bloomberg.

Graph 2
Risk Aversion Index (VIX)



Source: Bloomberg.

Graph 3
Five-year Credit Default Swaps in some Latin American Countries



Source: Bloomberg.

Nevertheless, the effect of this increase in risk aversion has had a moderate impact on the CDS spreads for Latin American countries, which have remained relatively stable over the course of 2010 with a slight rise in May of this year (Graph 3).

Even while keeping in mind the recent situation in international financial markets, expectations for worldwide economic growth were revised upwards and are expected to reach a rate of 4.6% in 2010 and 4.3% in 2011. It is worthwhile to highlight the fact that just as in the previous *Financial Stability Report*, the differences in the projected economic situations projected for advanced and emerging countries are still evident. Accordingly as the developing countries in Asia will be expanding at rates of 9.2% in 2010 and 8.5% in 2011 and in Latin America they will do so at rates of 4.8% and 4.0%, developed countries will be growing at rates of 2.6% and 2.4% respectively (Table 1).

With more optimistic estimates of worldwide growth as well as a possible growth trend in demand, it is to be expected that the prices of commodities will remain stable and meaning better performance for the producing countries (Graph 4). However, this could generate inflationary pressures in the developed economies, their strength and the capital flows to emerging countries because of the interest rate differentials and expectations with respect to them.

The fiscal sustainability of European countries is still generating uncertainty about the possible effects it could have on the supply of global credit and capital flows. On the one hand, higher risk aversion could reduce the flows to emerging countries since agents would prefer less risky investments. On the other, the better outlook for growth could result in higher capital flows. In this case, developing economies would be more attractive than developed ones.

B. GROWTH IN THE PRODUCTIVE SECTOR

Since the last quarter of 2009, the Colombian economy has shown signs of recovery, reaching an

annual real rate of growth of 0.8% and having an outlook of 4.5% for 2010[3] (Table 1). This better performance is reflected in all of the components of GDP. Specifically household consumption rose 4 percentage points (pp), going from -0.5% in March, 2009 to 3.5% a year later, while gross capital formation rose 11 pp having gone from -3.0% to 8.0% during the same period. Likewise, even while exports continued to shrink, their performance was less negative as they went from -12.0% in December, 2009 to -6.3% in March, 2010 (Graph 5).

Table 1
Economic Growth
(annual percentage change)

	Actual		Current projections		Difference from April 2010 projections	
	2008	2009	2010	2011	2010	2011
World output	3.0	(0.6)	4.6	4.3	0.4	0.0
Advanced economies	0.5	(3.2)	2.6	2.4	0.3	0.0
United States	0.4	(2.4)	3.3	2.9	0.2	0.3
Euro Zone	0.6	(4.1)	1.0	1.3	0.0	(0.2)
Japan	(1.2)	(5.2)	2.4	1.8	0.5	(0.2)
United Kingdom	0.5	(4.9)	1.2	2.1	(0.1)	(0.4)
Canada	0.5	(2.5)	3.6	2.8	0.5	(0.4)
Other emerging markets and developing countries	6.1	2.5	6.8	6.4	0.5	(0.1)
América Latina	4.2	(1.8)	4.8	4.0	0.8	0.0
Brazil	5.1	(0.2)	7.1	4.2	1.6	0.1
Mexico	1.5	(6.5)	4.5	4.4	0.3	(0.1)
Developing countries in Asia	7.7	6.9	9.2	8.5	0.5	(0.2)
China	9.6	9.1	10.5	9.6	0.5	(0.3)
India	6.4	5.7	9.4	8.4	0.6	0.0
Colombia	2.4	0.8	4.5		0.4	1.8

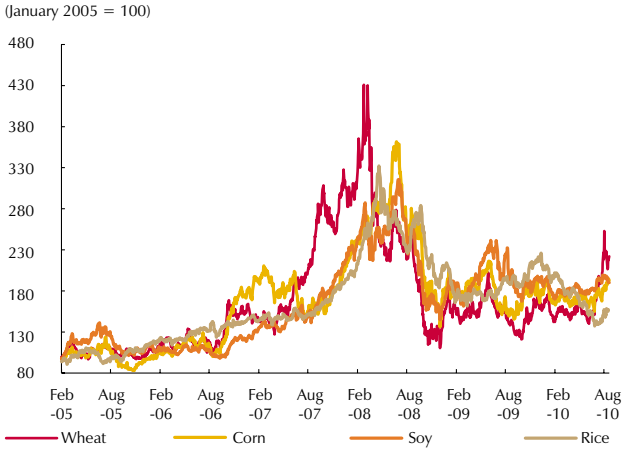
Sources: International Monetary Fund (World Economic Outlook, July, 2010) and Banco de la República.

Regarding the industrial sector, a sharp recovery in production was evidenced in the first half of the year. According to the Combined Industrial Opinion Survey (EOIC) published by the Colombian Business Association (ANDI), the rate of growth for the entire year up to June, 2010 was 4.3% in comparison to -6.7% the previous year (Graph 6). However, the situation in trade showed a different performance since the Indicator for Economic Expectations six months out (IEC) published by the Foundation for Higher Education and

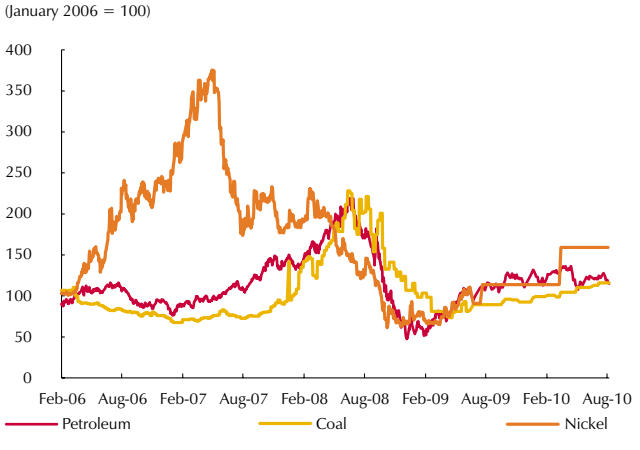
3 According to the Banco de la República's *Inflation Report* of June 2010 the range for the growth forecast is between 3.5 and 5.5%. Within this, the scenario with the highest probability is 4.5%.

Graph 4
Index of Commodity Prices

A. Wheat, soy, rice and corn

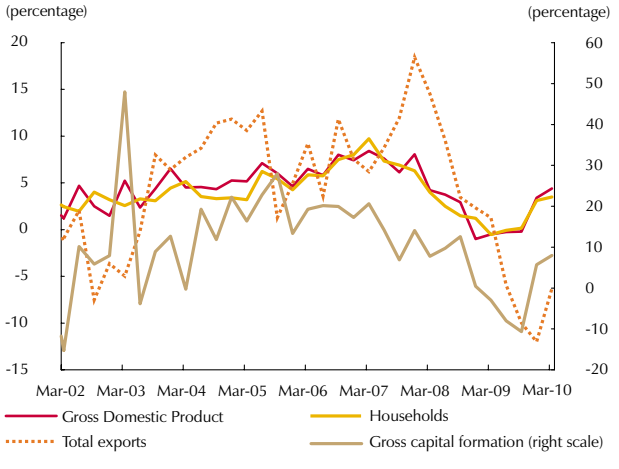


B. Petroleum, coal, and nickel



Source: Bloomberg.

Graph 5
Growth of the GDP and its Expenditure Components



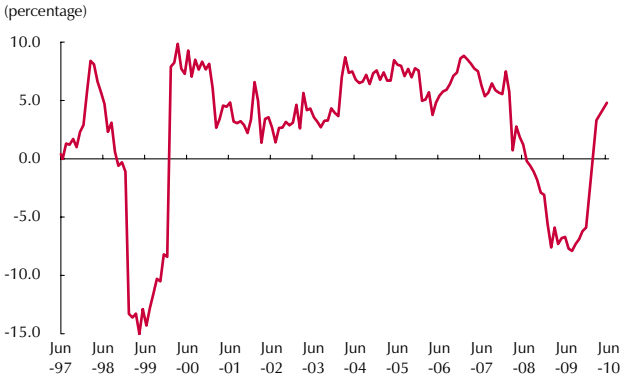
Source: DANE.

Development (Fedesarrollo) showed a slight decline, going from 34.7 to 30.6 between June, 2009 and the same month in 2010. Nevertheless, it is still at levels above the average for that indicator since June 2002 (Graph 7).

With respect to demand, according to the Consumer Opinion Survey (COS), taken by Fedesarrollo, the consumer confidence indicator shows considerable growth, having risen from 2.1 in June, 2009 to 27.2 a year later.

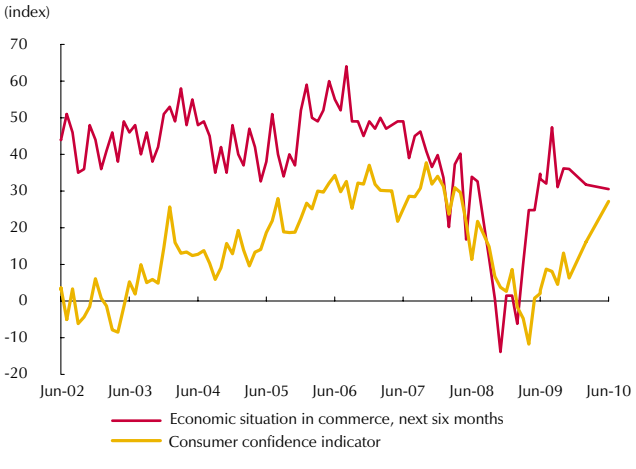
As shown in Graph 8, the deficit in the current account of the balance of payments as a proportion of the GDP is around 2.0%. Just as in previous

Graph 6
Year-to-date Industrial Productions Growth Rate



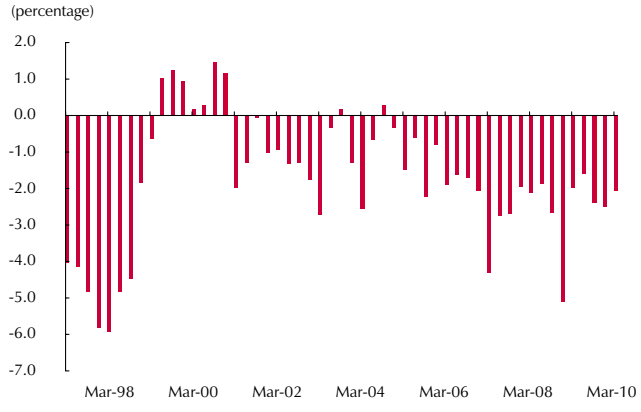
Source: ANDI (Combined Industrial Opinion Survey).

Graph 7
Consumer Confidence Index and Expectations for the Economic Situation in Six Months



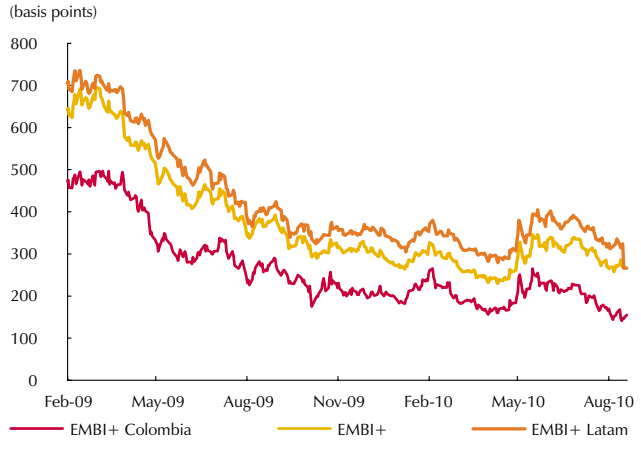
Source: Fedesarrollo.

Graph 8
Current Account/Current Account as Percentage of GDP



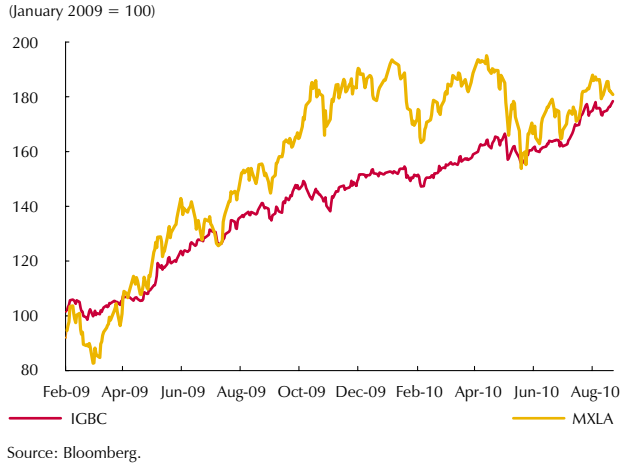
Source: DANE Banco de la República calculations.

Graph 9
EMBI+ Margin for Colombia Latin America and Other Emerging Countries



Source: Bloomberg.

Graph 10
The Stock Market in Latin America



Source: Bloomberg.

Financial Stability Reports, this continues to imply that the economy has a lower sensitivity to reductions in liquidity in international markets. In addition, if the possible implementation of a fiscal rule is taken into account, it can be expected that this indicator will not deteriorate.

C. OUTLOOK FOR THE FINANCIAL SYSTEM

For the second half of 2010, the performance of the local financial system will depend on the strength of the Colombian economy's growth and how the financial entities manage the different types of risk that they face. The changes in international risk aversion as well as the prices for commodities will also be determining factors of the capital flows to emerging countries like Colombia.

Although risk aversion has risen internationally as a consequence of the fiscal uncertainty in some European Union countries, as has been demonstrated in the above-mentioned performance of the CDS, the EMBI+[4] has shown a moderate slide in the two most recent months to levels close to 260 basis points (bp). The EMBI+ for Colombia, in turn, is very close to 155 bp, which is lower than the one for Latin America (Graph 9).

In addition, just as is shown in Graph 10, stock markets in Latin America still evidence strong growth. On one hand, the MXLA index[5] has continued its rising trend, even though over the course of 2010 it showed greater volatility. On the other, the general index of the Colombian Stock Market (IGBC in Spanish) has demonstrated sustained growth this year, with yields of 16.8%. Finally, the integration of Colombian, Peruvian and Chilean stock markets could increase the volume of

4 The emerging market bond index plus (EMBI+) is an indicator that measures the return on government bonds issued by emerging countries.

5 The Morgan Stanley Capital International Emerging Markets Latin America Index (MXLA) measures the performance of the securities exchanges in Peru, Brazil, Mexico, Colombia and Chile.

stock market transactions. As a result, local markets can be expected to show positive performance for the rest of the year.

With respect to credit risk, its rate of growth has continued to decline over the course of 2010, especially for consumer and mortgage loans, with slight increases in the commercial and microcredit portfolios. To the extent in which the economic recovery becomes more pronounced, the exposure to credit risk is expected to continue to decline and portfolio performance is expected to remain at positive levels.

Nevertheless, the high levels of unemployment, which will only begin to decline once the growth of the Colombia economy reaches higher figures, will continue to affect growth in the loan portfolio. Specifically, monitoring the performance of the commercial loan portfolio which, in comparison to the others, showed real negative annual growth becomes more relevant. This is especially important if we take into account the fact that it represents more than 50% of the total portfolio.

When one looks at the intermediaries' exposure to funding liquidity risk, it can be seen that this rose slightly over the period. This performance is partly explained by the fact that the growth rate of long term deposits is still negative, while demand deposits are showing rates that are both positive and above those for previous quarters. As a result, funding liquidity risk has risen since the maturity of assets has not changed substantially. Nevertheless, the liquidity available in financial markets made it possible for credit institutions to continue issuing bonds. These constitute a source of shorter term financing, thus reducing the funding liquidity risk.

The exposure to market risk, in turn, has risen for both credit institutions and for the NBFI due to the significant increase in their TES positions. Although Value at Risk (VaR) exercises show a slight decrease for all of the financial entities, this is due to the lower levels of volatility seen in the market in 2010, which is a consequence of lower uncertainty regarding the performance of macroeconomic variables. Nevertheless, it is important to continue to monitor this risk closely, given that a change in volatility institutions accompanied by larger holdings of securities could have adverse effects on the balance sheet of financial institutions.

Therefore, the effects on the Colombian financial system will depend, to a large degree, on the strength of growth and the possible recovery of the developed economies. If they reach the projected levels of growth, all types of credit can be expected to be more dynamic, provided that unemployment and the public debt do not increase.

Even though the greater strength of the loan portfolio and the current levels of risk exposure constitute a positive outlook for the Colombian financial system, it is important to continue monitoring them constantly.

II. The Financial System

In the first half of 2010, credit establishments continued to show solid profitability and capital adequacy ratios. The total loan portfolio reversed the negative trend it had been experiencing, especially in consumer and mortgage loans. An improvement in quality and default indicators has been observed, which reduces both credit risk and its materialization. The NBFI, in turn, maintained sustained growth of their investment portfolio and continued to show positive levels of profitability.

A. CREDIT INSTITUTIONS

In the first half of 2010, the negative trend that the growth of the gross portfolio had been registering, especially of mortgage and consumer loans, reversed. At the same time, investments began to see a slowdown in their rate of expansion.

In terms of credit risk, a slide in the indicators was observed, which could be associated with a lower level of risk. Nevertheless, it is important to specify that this performance was heterogenous among types of credit. There were improvements in the indicators for the consumer and mortgage portfolios but a deterioration in the indicators for commercial and microcredit.

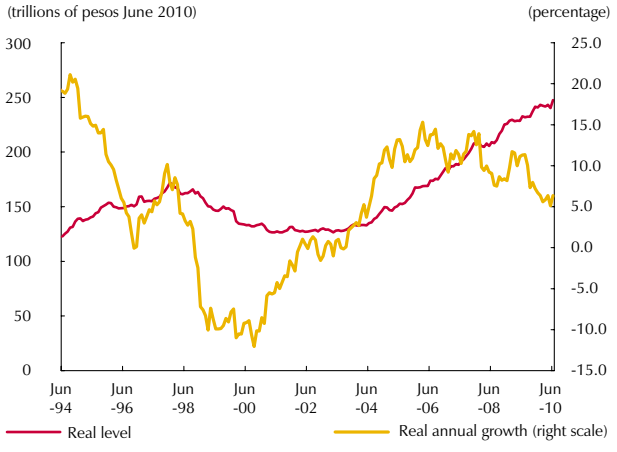
1. General Balance Sheet Positions

a. Asset accounts

As of June 2010, the assets of credit institutions showed an annual real growth rate of 6.4% and accounted to COP$247.5 trillion (t), which corresponds to the historical maximum for the series (Graph 11). In general, in the first half of the year, a relatively stable rate of growth was seen for total asset which, is explained by the growth of the loan portfolio and of investments in public debt.

So far in 2010, the momentum of the gross loan portfolio began to surge, thus changing the negative trend that had been seen since the beginning of 2008.

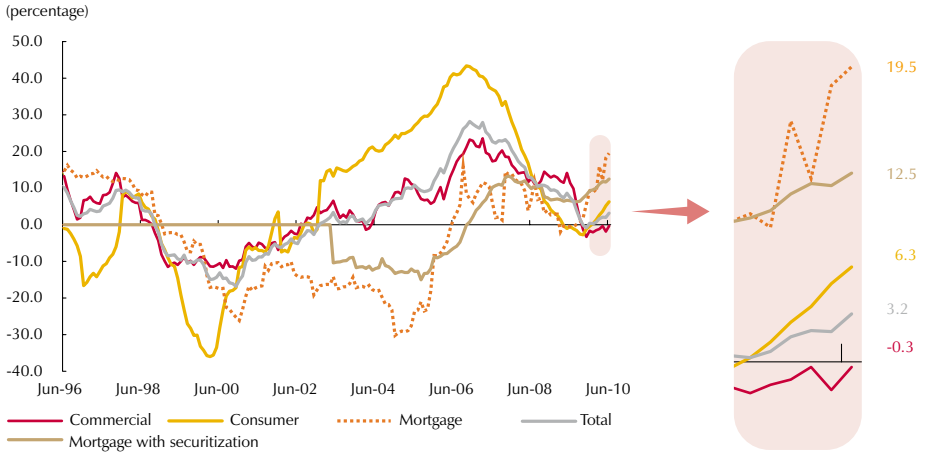
Graph 11
Credit Institutions Assets



Source: Financial Superintendency of Colombia, Banco de la República calculations.

The latter went from growing at a rate of 0.4% in December, 2009 to a rate of 3.2% six months later. As a result, it reached a level of COP$158.9 t (Graph 12). This performance is primarily explained by better economic growth, the policy of housing subsidies granted by the government and low interest rates. By type of credit, it can be seen that the consumer and mortgage portfolios showed variations that are higher than those seen during the previous half year. They went from growing at an annual real rate of -0.4% and 9.2% in December, 2009 to 6.3% and 19.5% in June, 2010. However, the commercial portfolio has continued to show a negative pace, growing at an annual real rate of -1.6% in December, 2009 0.3% and six months later.

Graph 12
Real Annual Growth of the Credit Institutions' Gross Loan Portfolio

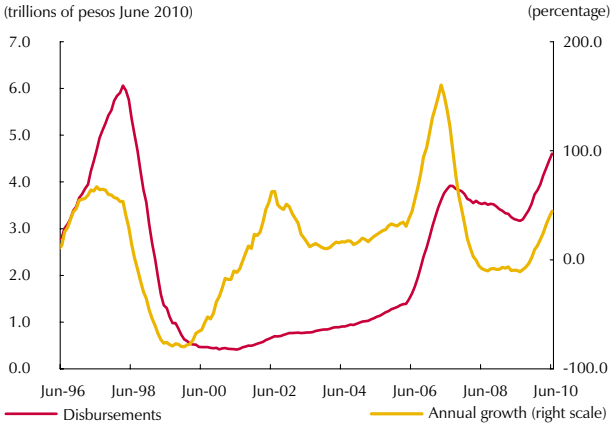


Source: Financial Superintendency of Colombia, Banco de la República calculations.

The mortgage portfolio with securitizations maintained its growth rate, registering an annual real rate of 12.5% in June, 2010. This trend is due to the -2.6% decline in securitizations and to an increase in the annualized monthly disbursements for the purchase of housing. The latter, registered an expansion, going from 9.3% in December, 2009 to 44.5% in June, 2010 (Graph 13).

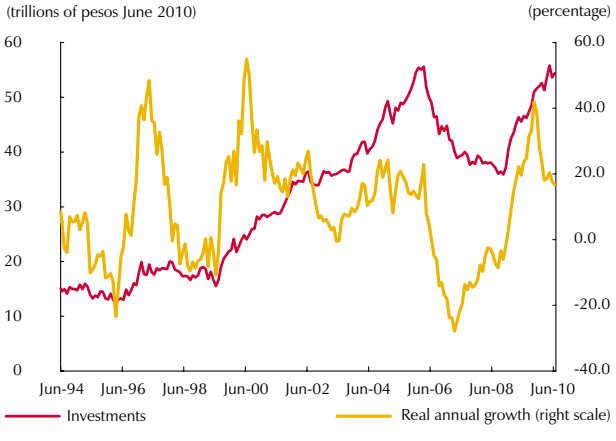
Analyzing the portfolio changes by type of intermediary, the commercial banks are seen to register an annual real growth of 7.1% in their portfolio for June, 2010 which is much higher than what was seen in December, 2009 (0.5%). The finance companies (CFC in Spanish), in turn, showed a slowdown starting in March, 2010 as they went from -10.4% in December, 2009 to -22.1% in June, 2010.

Graph 13
Monthly Disbursements for Purchase of Housing Purchase



Source: Asobancaria, Banco de la República calculations.

Graph 14
Credit Institutions Investments



Source: Financial Superintendency of Colombia, Banco de la República calculations.

This performance is mainly due to the sale of a portfolio belonging to a CFC to a commercial bank in the same conglomerate.[6] In addition, the leasing companies' portfolio also showed pronounced negative growth, primarily due to the fact that some commercial banks have merged with their leasing companies.

When the annual real growth of the portfolio is analyzed by type of capital–national or foreign[7] –a slowdown in the latter portfolio persists even though to a lesser degree. By December, 2009 the portfolio belonging to these entities had grown at a rate of -9.3% and six months later it was growing at a rate of -3.2%. The national ones, in turn, continued to have a positive momentum in the first half of 2010, as they went from 2.9% in December, 2009 to 4.7% in June of the following year.

When the annual real growth of the portfolio for foreign and national banks is analyzed by type of credit, one sees that the growth of the consumer and commercial loan portfolios of the former continued to be negative in June (-2.5% and -8.6% respectively). This contrasted with the positive change that these portfolios registered in the national banks (9.8% and 1.3%). In addition, the mortgage portfolio in both foreign and national banks is seen to expand, growing 19.9% and 19.4%, respectively.

The investments of the credit establishments grew during the first half of 2010, having gone from COP$52 t in December, 2009 to COP$54.4 t in June, 2010. Their annual real growth rate went from 28.4% to 16.7% during the same period (Graph 14).

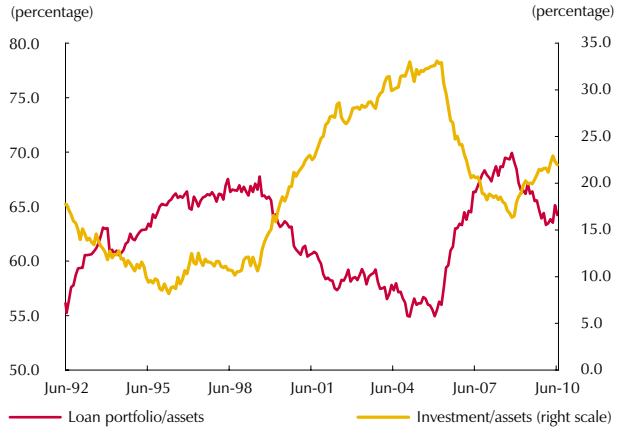
Given the performance of the loan portfolio and investments, it can be seen that the share that each has in the total assets has remained relatively stable in the first half of the year. In fact, in December, 2009 the loan portfolio represented 64.4% and in June of this year, it was 64.2%. While in December, 2009, investments represented 21.6% of assets, six months later, they had risen to a 22% share (Graph 15).

The increase in the loan portfolio occurred together with more GDP growth, which is the reason why the index of financial depth (measured as the ratio of the

6 In that process, the CFC handed over more than 25% of the assets, liabilities and contracts to its parent company (assets and contracts worth COP$1.2 trillion and liabilities worth COP$1.1 trillion).

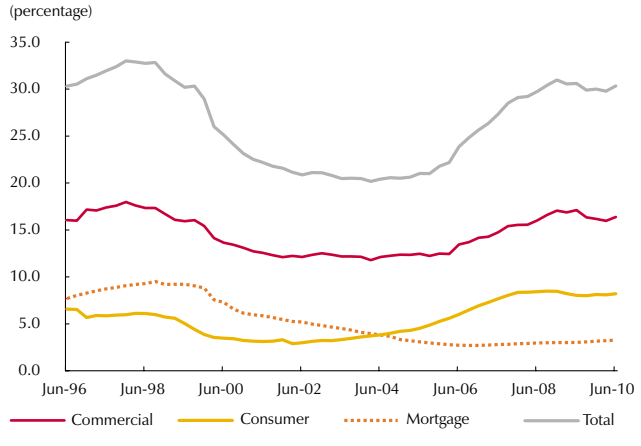
7 An entity is considered foreign if more than 50% of its capital comes from entities abroad.

Graph 15
Investment and Gross Loan Portfolio as a Percentage Share of the Total Assets of Credit Institutions



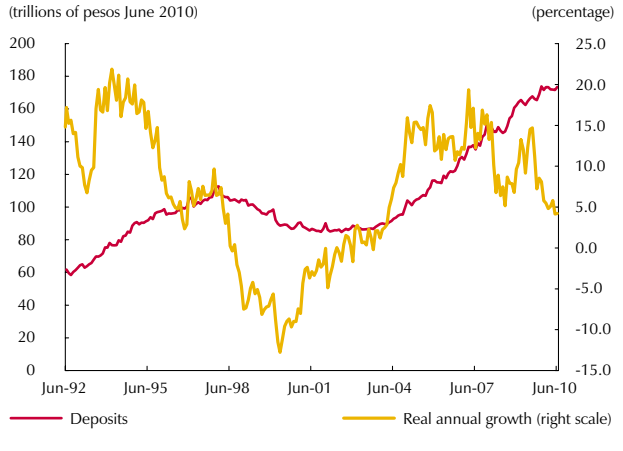
Source: Financial Superintendency, Banco de la República calculations.

Graph 16
Financial Depth (Loan portfolio/GDP)



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 17
Deposits with Credit Institutions



Source: Financial Superintendency of Colombia, Banco de la República calculations.

loan portfolio to GDP) has not shown significant variations so far this year and was at 30.3% in June, 2010. By type of credit, this indicator reached a level of 16.4% for commercial loans, which is 20 bp higher than what was seen in December, 2009 (16.2%) and 96 bp lower than what was registered in June, 2009 (17.1%). The indicator also showed a slight change for the mortgage and consumer portfolios, which reached 3.3% and 8.2%, respectively (Graph 16).

b. Liability Accounts

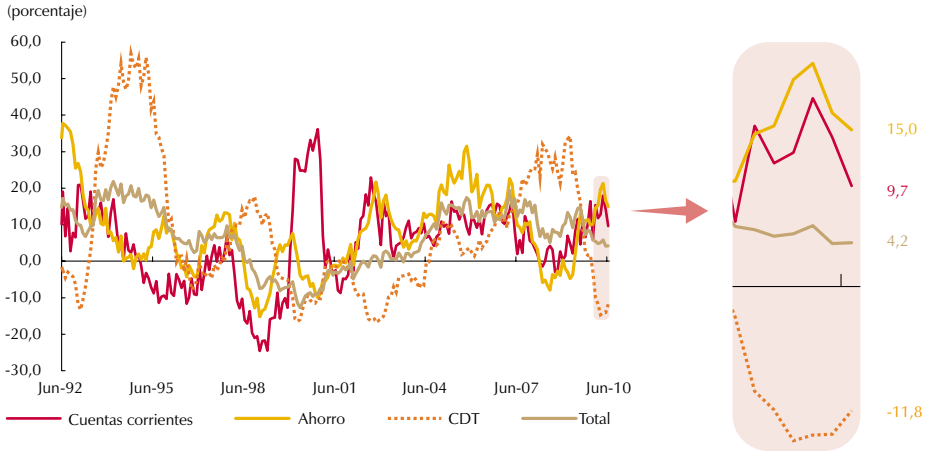
Just as in the second half of 2009, deposit-taking on the part of credit institutions showed slowdowns in their rate of growth in the first half of 2010, going from 5.8% in December, 2009 to 4.2% in June 2010. Total deposits in the system came to COP$173.5 t in June, 2010, a figure that is COP$1.9 t higher than what was registered in December of the previous year (Graph 17).

When the trend of deposits was analyzed by type, there was a deterioration in the strength of the certificates of deposit (CD) in the first half of 2010. Throughout the entire half-year, they registered negative growth. In contrast, checking and savings account are still showing a positive pace.

As is shown in Graph 18, in June, 2010 the CDs had an annual real growth of -11.8%, which is 8.9 pp lower than what was registered in December, 2009 (-2.9%). The drop in the strength of CDs growth can be explained by: i) the decline in interest rates, which makes CDs less attractive in comparison to savings accounts, ii) financial intermediaries have not been held back by liquidity restrictions and as a result, are not under pressure to raise financing, iii) the elimination of the remuneration on reserve requirements[8] for CDs on the part of the Banco de

8 The Board of Directors External Resolution 09, July 2009 eliminated the remuneration for reserve requirements for CDs which became effective starting with the bi-weekly reserve requirement for August 5, 2009.

Graph 18
Real Annual Growth of Deposits with Credit Institutions by Type of Deposit

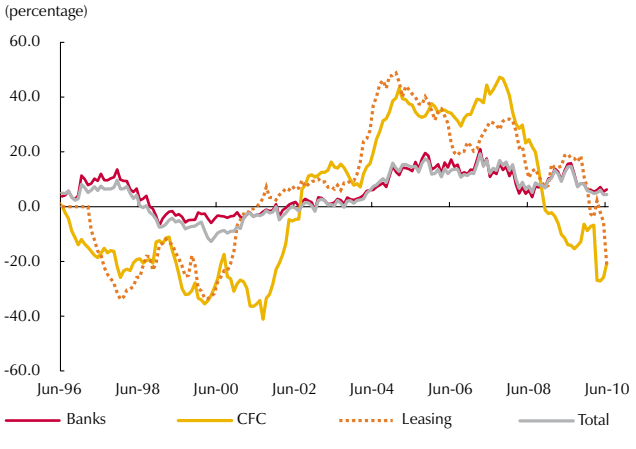


Source: Financial Superintendency of Colombia, Banco de la República calculations.

la República in August, 2009, and iv) the increase in the bonds issued by the financial system.

Checking and savings accounts showed more momentum in the first half of the year. The former reached an annual real growth of 9.7% as of June, 2010 which is 3.4 pp higher than what had been registered six months previously. The latter also registered higher growth, as they went from 10.1% in December, 2009 to 15% in June, 2010.

Graph 19
Real Annual Growth of Deposits by Group of Intermediaries



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Analyzing the performance of deposits by intermediary group, it can be seen that the commercial banks registered an annual real growth in deposits which is similar to what was seen in December, 2009. These grew from 6.2% to 6.3% six months later. In contrast, the CFC and leasing companies had lower levels (-20.7% and -21.6% respectively in June 2010). One possible explanation for this performance is the surrender of liabilities by one CFC and by the merger between some banks and their leasing entities (Graph 19).

2. Exposure of Credit Institutions to Main Debtors

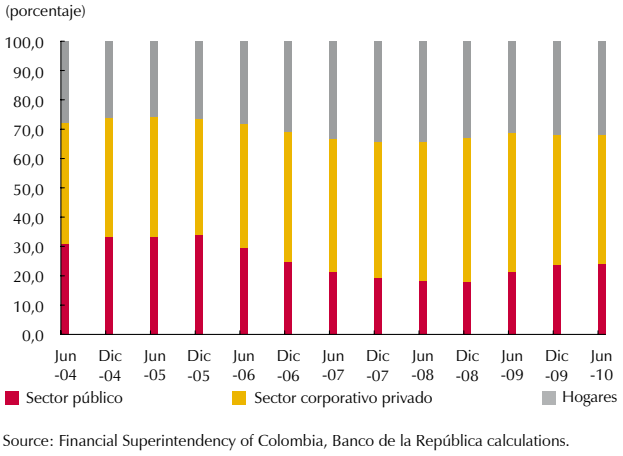
In June, 2010 the exposure of the credit institutions was COP$186.3 t, with an annual real growth of 6.3% compared to 10.8% registered the year before. The exposed amount, as a percentage of the assets, was 75.3%, a figure which is similar to what has been observed during the most recent two-year period (Table 2).

Table 2
Exposure of Credit Institutions to their Major Debtors

Type	Jun-09		Jun-10		Percentage real annual growth
	Trillions of pesos June 2010	Percentage share	Trillions of pesos June 2010	Percentage share	
Public sector					
Loan portfolio	7.4	4.2	8.9	4.8	21.0
Securities	30.4	17.4	36.0	19.3	18.5
Total	**37.8**	**21.6**	**44.9**	**24.1**	**19.0**
Corporate sector					
Loan portfolio	82.3	47.0	80.8	43.4	(1.8)
Securities	0.4	0.2	1.2	0.6	206.3
Total	**82.7**	**47.2**	**82.0**	**44.0**	**(0.8)**
Household sector					
Loan portfolio	50.8	29.0	55.4	29.7	9.0
Consumer	40.4	23.1	43.0	23.1	6.3
Mortgage	10.4	5.9	12.4	6.7	19.5
Securities	3.9	2.3	4.0	2.1	0.9
Total	**54.7**	**31.2**	**59.3**	**31.9**	**8.4**
Total amount exposed	**175.2**	**100.0**	**186.3**	**100.0**	**6.3**
Amount exposed as a share of assets (percentage)	**75.3**		**75.3**		

Sources: Financial Superintendency of Colombia and Banco de la República, Banco de la República calculations.

Graph 20
Exposure of Financial System by Type of Debtors



Source: Financial Superintendency of Colombia, Banco de la República calculations.

With respect to the composition of the exposed amount, there is an increase in the share of the public sector which went from 21.6% in June, 2009 to 24.1% a year later (Graph 20). This increase is due to the growth of its loan portfolio and public debt securities which, showed annual real rates of growth of 21% and 18.5%, respectively. With respect to the indebtedness of the private corporate sector, the share fell noticeably from 47.2% to 44% between June, 2009 and the same month in 2010. This is explained by the dynamics of the commercial loan portfolio in the portfolio of the private corporate sector, which registered an annual real variation of -1.8% in June, 2010, while a year previously it had grown at a rate of 10.3%.

With respect to the household share of the exposed amount, this showed a slight increase going from 31.2% in June, 2009 to 31.9% a year later.

3. Loan Portfolio Quality and Loan-loss Provisioning

The real growth of the loan portfolio so far this year, as well as the indicators of credit risk, show evidence of an improvement with respect to six months and a year ago. However, this performance has been diverse if it is studied by type of credit. Specifically, a deterioration in the indicators for the commercial and microcredit portfolios can be seen. In what follows, an analysis of both the *ex-ante* measurement of credit risk (quality indicator) and the *ex-post* measurement (default indicator) is presented.

The quality indicator (QI) – measured as the ratio between the risky[9] and gross loan portfolio – has remained at around 9.6% on average since the beginning of 2010. As of June of this year, a slight improvement in the QI, in comparison to a year ago, was seen as it declined from 9.7% to 9.2%.

This trend is explained by the slowdown in the risky portfolio which went from growing at a rate of 39.5% in June of 2009 to -0.8% in the same month in 2010. By type of credit, the contraction of the risky consumer and mortgage portfolios stands out. These went from growing at 28.2% and 23.7%, respectively in June, 2009 to -19.3% and -11.2% a year later (Graph 21).

The above can be seen reflected in a lower QI for the consumer and mortgage loan portfolios as the former went from 13% to 9.8% and the latter went from 10.6% to 7.9% between June, 2009 and the same month in 2010. This result is favorable given the accelerated rate of growth that the mortgage portfolio has had in more recent months (Graph 22).

In contrast with the above types of credit, as of June, 2010 the QI for the commercial and microcredit portfolios has deteriorated. For commercial loans, which went from 7.9% to 9% between June, 2009 and the same month in 2010,[10] there was a 1.1 pp increase in the QI. With respect to the QI for microcredit, as of June, 2010, this stood at 8.73% which is slightly higher than the percentage for the previous year (8.7%).[11]

Comparing the QI by type of intermediary, it can be seen that commercial banks showed an improvement in their indicator, having gone from 9.3% to

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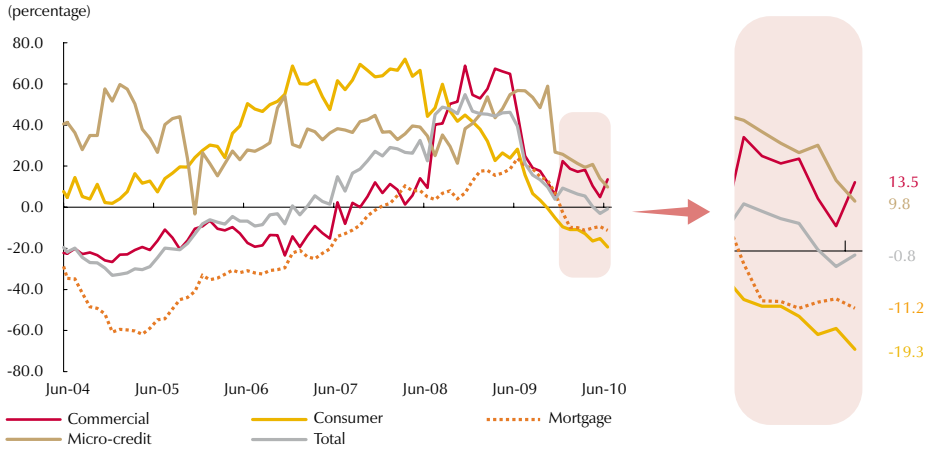
9 The risky portfolio is defined as the set of loans that have classifications other than A.

10 In the most recent six months, there was a change in the trend for the QI for the commercial portfolio, when it dipped slightly from 9.5% to 9% between December, 2009 and June, 2010.

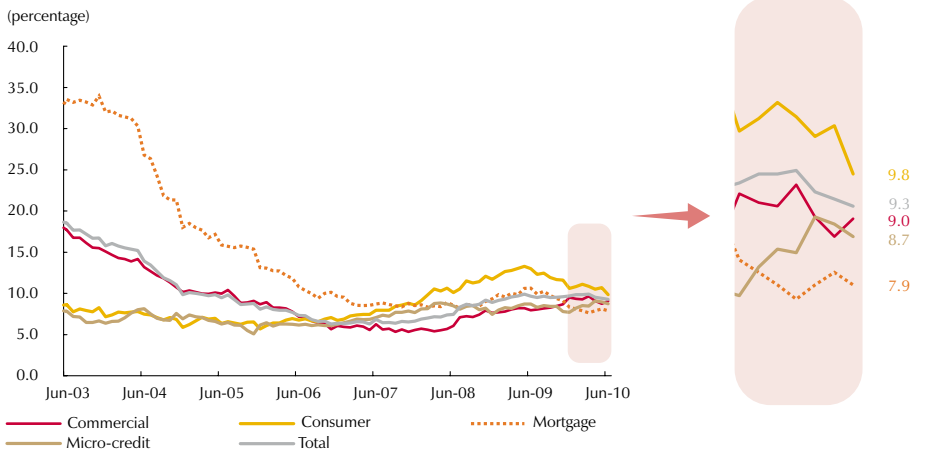
11 The indicator, which was at 9.1% in April, stands out since it reached its highest level since August, 2002 when it was at 10.5%.

Graph 21
Real Annual Growth of the Risky Loan Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 22
Loan Portfolio Quality by Type of Credit: Risky Portfolio/Gross Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

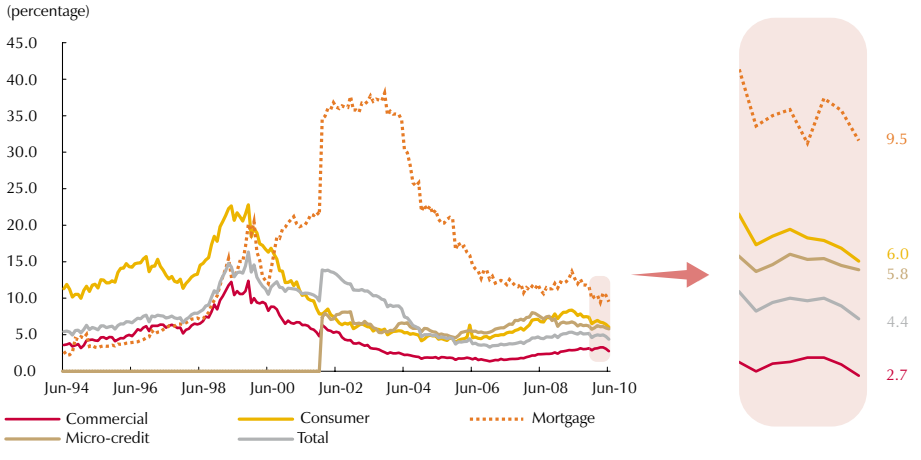
9% between June, 2009 and the same month in 2010. Likewise, the CFC were still seeing a greater deterioration in their portfolio in comparison to the rest of the entities, nevertheless, for June 2010, the QI for these dropped 80 bp which put it at 16.7%. On the other hand, the 40 bp increase in the quality indicator for the leasing companies stands out and the fact that in the first months of 2010, the QI for these entities reached their historical maximum (11.2%), after which it decreased.

When this indicator is examined by type of capital, no significant differences are found between them with the foreign institutions (8.9%) and the national ones (9.4%). By type of credit, the QI for the consumer and commercial portfolios of foreign intermediaries (7.8% and 9.7% respectively) is lower than the national ones (9.3% and 9.9%, in that order). In contrast, the performance

for the mortgage portfolio is slightly better for the national entities, with a QI of 7.7%, a figure that is 60 bp lower than that registered by the foreign entities.

With respect to the *ex-post* measurement of credit risk, known as the delinquency rate (DR)[12] there is a generalized improvement for all of the types of credit, which indicates a low tendency for risk to materialize. As of June, 2010, the DR reached a rate of 4.4%, which shows a decrease of 20 bp with respect to that of December, 2009 and of 80 bp with respect to June of the same year (Graph 23).

Graph 23
Delinquency Ratio: Non-performing Loans Portfolio/Gross Loan Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

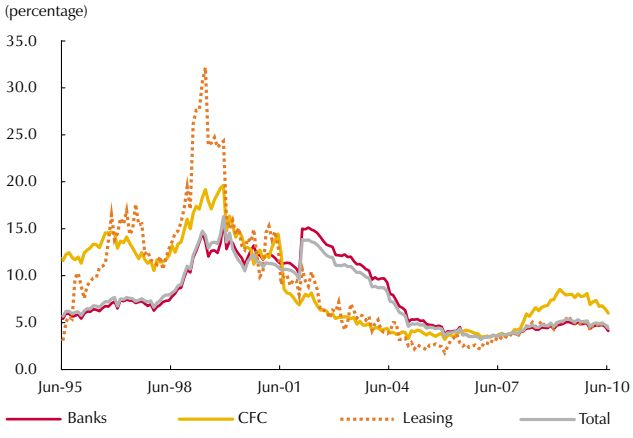
The mortgage portfolio had the highest indicator but also the largest decline, as its DR went from 12.7% in June, 2009 to 9.5% a year later. The consumer and microcredit portfolios, likewise, registered a decline in their level of default, going from 8.1% and 6.6% respectively in June, 2009 to 6% and 5.8% in the same month in 2010. With respect to the DR for the commercial portfolio, this remained stable during the first half of 2010 and was at 2.7% in June.

Like what was seen in the QI, the strength of the DR in the first half of 2010 suggests a reduction in the materialization of credit risk for all types of intermediaries compared to what was seen a year ago. This decreased, on average, 1.3 pp for CFC, 40 bp for leasing companies[13] and 30 bp for commercial banks. For the CFC in June, 2010, the indicator was seen to

12 Measured as the ratio between delincuent loans and the gross loan portfolio, in which delincuent loans are does overdue for more than 30 days.

13 A modification in the calculation of the delinquency ratio for leasing companies was made. In previous reports, it corresponded to the ratio of overdue loans, excluding leasing operations to the total gross portfolio of these companies. Due to the fact that the main product for these companies is precisely leasing, the decision was made to include this account within the calculations of the overdue loans so that the indicator would not be underestimated.

Graph 24
Default Indicator by Group of Intermediaries



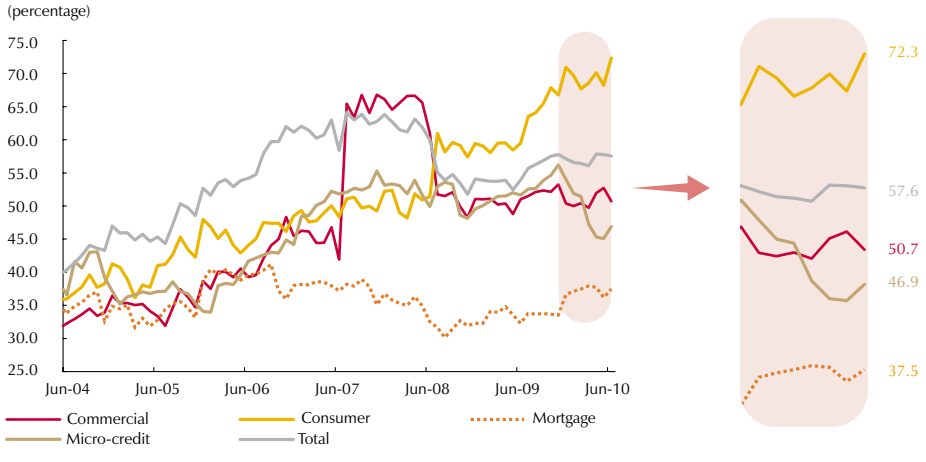
Source: Financial Superintendency of Colombia, Banco de la República calculations.

be higher than what was reported by the system, which was 6% and 4.4%, respectively (Graph 24).

Likewise, when default is analyzed between foreign and national entities, the DR was found to converge in the first half of 2010 and stood at 4.3% and 3.9%, respectively. This differential is mainly explained by the greater relative deterioration of the consumer loan portfolio DR for the foreign institutions since March, 2007. The above is associated with the rapid growth that this portfolio saw during the expansionary phase of credit (2005-2007) which surpassed in the real growth of the consumer portfolio of national intermediaries by 23 pp.

With respect to coverage indicator[14] —measured as the ratio between loan-loss provisioning and the risky portfolio— there was an upward trend in both the consumer and housing portfolios, which raised the coverage of the total portfolio by 3.6 pp, going from 54% in June, 2009 to 57.6% in the same month in 2010 (Graph 25). The above is explained by the decline in the risky portfolio (-0.8% annual real) and the increase in the balance of total loan-loss provisioning (5.9% annual real).

Graph 25
Hedge Indicator Loan-Loss Provisioning/Risky Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

14 Starting in April, 2010, the countercyclical loan-loss provisioning are registered in a separate account in the balance sheet (PUC) of credit establishments. In addition, this account now includes the countercyclical loan-loss provisioning for the loan portfolio and financial leasing operations. In order to account for everything related to leasing operations both in the numerator and the denominator, the indicator was modificated so that it would include, not only the portfolio and financial leasing loan-loss provisioning, but also the risky portfolio of both credit operations and those of financial leasing.

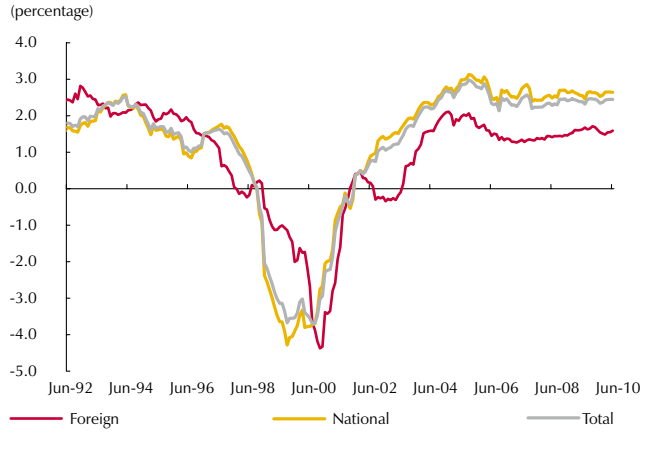
In contrast to the previous types of credit, the coverage indicator for the commercial and microcredit portfolios decreased. For the former, a slight drop of 30 bp in the indicator was registered and it stood at 50.7% in June, 2010. The above was due to more growth of the risky portfolio (13.5%) with respect to the commercial portfolio loan-loss provisioning (11.6%). For microcredit, a significant reduction that went from 54% in December, 2009 to 46.9% in June, 2010 was seen. This performance mainly reflects the significant rise in the balance of the risky microcredit portfolio (9.8% annual real) compared to the variations in its loan-loss provisioning (-0.3%).

4. Earnings, Profitability and Capital Soundness

The profits of credit institutions have grown at an average annual real rate of 8.3% in the first half of 2010. As of June this year, profits reached a level of COP$5.8 t, a figure that is higher than what was seen six months ago (COP$5.6 t) and in June, 2009 (COP$5.3 t). Unlike previous *Reports*, in which the increase was primarily explained by the rise in income due to investment appreciation, this time, the growth of profits was associated with the decline in the expenditure on loan-loss provisioning (-6.5% annual real) and by the rise in loan portfolio recovery (6.6% annual real), which is consistent with the lower levels of the quality and deliquency indicators.

In spite of the rise in earnings, the return on assets (ROA) remained stable and as of June 2010, registered a level of 2.4% (Graph 26). It is worth emphasizing that in spite of the sharp slowdown in the growth of the loan portfolio, the ROA has stayed at levels that are close to those seen during the credit expansion period of previous years. When the return is analyzed by type of capital, one finds that the return for foreign institutions stayed at around 1.6%. This figure is 1 pp lower than what was registered by national intermediaries during the same period (2.6%).

Graph 26
ROA by Type of Capital

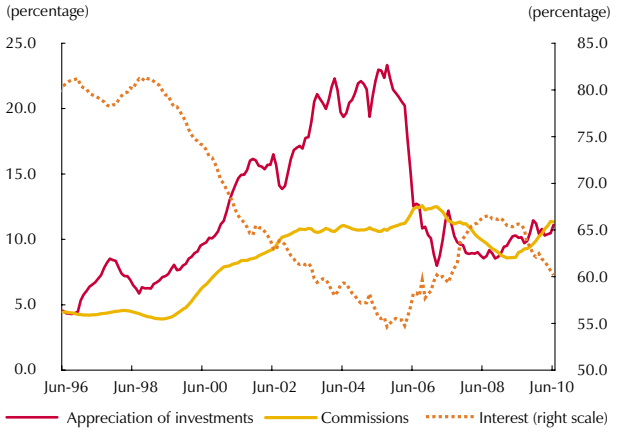


Source: Financial Superintendency of Colombia, Banco de la República calculations.

The composition of financial income did not present major variations in comparison to the *Report* for 2009. The majority of the earnings continue to come from interest, but their share is still showing a declining trend that seems to have been confirmed so far in 2010, having gone from representing 65.6% of the total earnings in June, 2009 to 60.2% in the same month in 2010 (Graph 27).

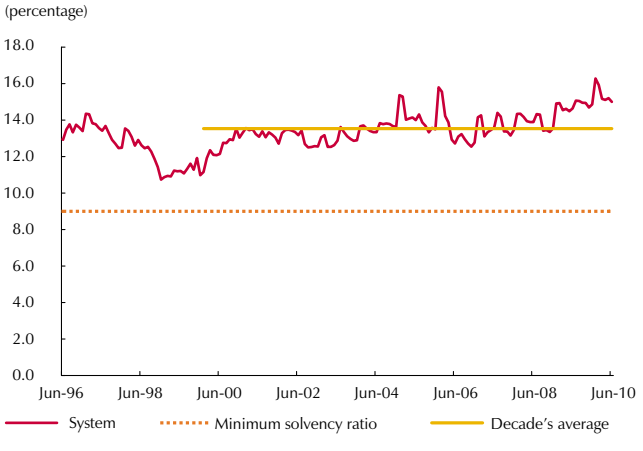
In addition, the earnings from the appreciation of investments kept their share stable at 11%. This is due to the decline in the earnings from interest rather than from an increase in this type of income, which actually decreased 2.7% compared to what had been seen in June, 2009. The share of earnings

Graph 27
Components of Financial Income



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 28
Solvency Ratio of Credit Institutions



Source: Financial Superintendency of Colombia, Banco de la República calculations.

from commissions, in turn, rose 2.3 pp and was at 11.3% as of June, 2010.[15]

With respect to the soundness of the system, the capital adequacy ratio[16] continues to stay above the average for the decade (13.5%) and exceeds the regulatory minimum (9%); reaching an average level of 15.4% in the first half of 2010. This number is 80 bp higher than that registered in the same period in 2009 (Graph 28). The above suggests that financial intermediation is not restricted by capital requirements.

This analysis of the capital adequacy ratio should be complemented by a consolidated capital adequacy ratio indicator for entities with subsidiaries that takes into account the extent of leverage for both the parent company and its subsidiaries.[17] The consolidated capital adequacy (weighted by each institution's capital share) rose in the last half of 2009 as it went from 12.5% in June to 13.5% in December of the same year. The performance of this indicator shows that when balance sheets are consolidated, the establishments are not in as good a position as when their individual capital adequacy is considered. However, this seems to improve for the most recent observations, in which there is a smaller difference between the consolidated and individual indicator.

5. Intermediation Spreads

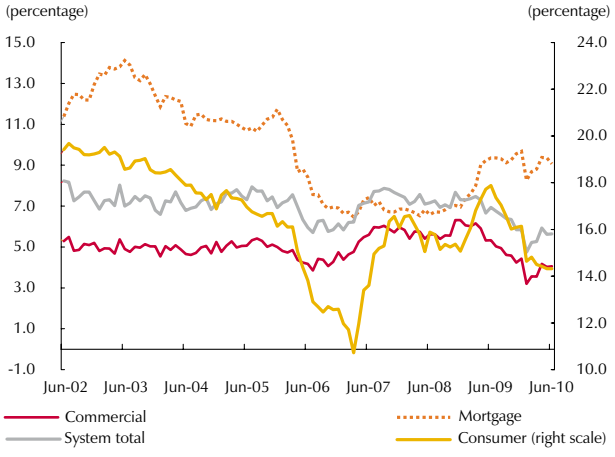
In the first half of 2010, the Board of Directors of the Banco de la República (JDBR in Spanish) continued its monetary policy posture, which translated into a gradual decline in the system's interest rates

15 This increase was associated with an annual real growth of 15.9% in commissions, especially the "other commissions" item (43.8% annual real), which corresponds to collection of fees, credit studies, untaxed commissions, etc.

16 The capital adequacy indicator corresponds to the ratio between technical capital and risk-weighted assets, where technical capital is the sum of basic equity capital and additional equity capital (Article 4, Decree 2360 of 1993).

17 According to the regulations of the Financial Superintendency of Colombia, credit institutions that have subsidiaries and are owners of more than a 50% share of these are required to present the consolidated capital adequacy of the group. However, if the institution has a share that is lower than 50%, it should subtract the subsidiary's technical capital from its own.

Graph 29
Ex Ante Spread, Calculated with the CD Interest Rate



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 30
Ex Post Spread

Source: Financial Superintendency of Colombia, Banco de la República calculations.

for deposits and loans. As can be seen in Graph 29, the *ex ante* intermediation spread[18] for the system as a whole decreased slightly in the first half of 2010 to 5.6% in June. This means a reduction of 20 bp in comparison to December last year (5.8%). When the spread is analyzed by type of credit, it can be seen that the spread for the commercial portfolio reached a level of 4.1% in June, 2010 compared to 4.4% six months earlier. Likewise, the *ex ante* spread for the consumer portfolio registered a decline between December, 2009 (16.1%) and June of this year (14.3%).

The *ex post* intermediation spread,[19] in turn, continued to decrease in the first half of the year and in June 2010 had a rate of 7.7%, a level that is 50 bp lower than what was registered in December, 2009 (8.2%) (Graph 30). This performance is due to a drop in the system's implicit lending rates, which went from 14.9% to 12.6% between December, 2009 and June 2010, together with a less than proportional decline of 1.8 pp in the implicit deposit rates, which reached a level of 4.9% in June, 2010.

In short, in the first half of 2010, the total loan portfolio began to show higher growth rates due to the strength of mortgage and consumer loans. With respect to credit risk, there was an improvement in the QI and DR for the consumer and mortgage portfolios and a deterioration in the QI indicators for the commercial and microcredit loan portfolios. This pattern is reflected in the level of coverage, since there is an increase for the consumer and mortgage portfolios and a decline in the coverage indicator for the commercial and microcredit ones. The above is due to the more than proportional growth of the risky portfolio of these last two types with respect to their loan-loss provisioning.

Just as in 2009, credit institutions presented stable profitability and solid capital adequacy ratios. The earnings from interest continue to represent the major part of total financial income and in spite of the fall in the intermediation

18 The *ex ante* spread corresponds to the difference between the lending rates charged by intermediaries for different types of loans and the average rate for term deposits (CDs).

19 The *ex post* intermediation spread is calculated as the difference between the implicit lending rates and deposit rates. The former are the earnings from interest plus indexation as a percentage of the performing portfolio and the latter, the outlays for interest plus indexation as a percentage of liabilities with cost.

spread, the return on assets remained relatively constant in the first half of 2010, as a result of the decline in the loan-loss provisioning expenditure and the increase in loan portfolio recovery.

Given the higher growth projections for the economy for the current year and the transmission of the reduction of the Central Bank's interest rate to market rates, greater strength in loan portfolio growth is expected.

B. NON-BANKING FINANCIAL INSTITUTIONS

Analyzing the performance of non-banking financial institutions (NBFI) is of vital importance for the objective of this *Report*, since these are entities that can have an influence on financial stability. On the one hand, they are economic agents that constitute a means of savings and investment for households and the public in general through portfolio management. On the other, they are entities that are closely linked to other financial agents, whether it is as a counterpart in their market operations or due to the fact that they belong to a particular financial group. Consequently, they are entities that can act as systemic agents under certain circunstances. The NBFIs that are analyzed in this section correspond to pension and severance fund managers (PFM), life insurance (LIC) and general insurance companies (GIC), trust companies (TC), brokerage firms (BF) and investment management companies (IMC).

In order to study the share that the NBFI portfolio has in the financial system, the value of investments for each type of entity within this sector is presented in Table 3. As can be seen, in the first half of 2010, the investment portfolio of the financial institutions rose 6.1%, thus coming to COP$431.5 t as of June this year. This performance, which follows the trend registered in 2009, was caused not only by the COP$13.4 t growth of the investment portfolio of the NBFIs (which is equivalent to an annual change of 6.5%) but also by the COP$11.5 t increase in the portfolio of credit establishments (corresponding to an annual growth of 5.6%).

The expansion registered in the NBFI investments portfolio is primarily due to the growth of the portfolios belonging to the compulsory pension funds and to the trust funds managed by mutual fund managers. These resources showed an increase of COP$6.2 t and COP$4.4 t in the first half of 2010, respectively. The severance portfolio, in turn, registered an increase of COP$800 billion (b) between June, 2009 and the same month in 2010, which is equivalent to an annual growth of 15.0% and which is mainly explained by higher profitability.

It is important to emphasize the fact that the high concentration of the resources managed by the NBFI (especially the PFM and mutual fund) in local securities and public debt securities make them specially sensitive to variations in domestic market conditions.

Table 3
Financial Institutions Investment Portfolio

	2007		2008		2009		2010	
	Trillions of pesos	Percentage of the GDP	Trillions of pesos	Percentage of the GDP	Trillions of pesos	Percentage of the GDP	Trillions of pesos	Percentage of the GDP (proj)
Credit Institutions								
Investment	34.95	8.11	38.75	8.12	50.77	10.06	54.36	10.39
Portfolio	125.10	29.03	147.79	30.98	151.32	29.98	158.95	30.37
Total credit institutions	160.06	37.14	186.54	39.11	202.09	40.04	213.31	40.76
Non-banking Financial Institutions								
Mandatory Pensions	51.12	11.86	58.38	12.24	79.90	15.83	86.13	16.46
Voluntary Pensions	7.06	1.64	7.52	1.58	9.47	1.88	9.81	1.87
Severance Pay	3.80	0.88	4.01	0.84	4.92	0.98	6.07	1.16
General Insurance	3.59	0.83	3.96	0.83	4.61	0.91	4.82	0.92
Life Insurance	6.94	1.61	11.90	2.49	14.33	2.84	15.08	2.88
Trust companies	68.35	15.86	74.73	15.67	88.14	17.46	92.54	17.68
Brokerage Firms and Investment Management Companies	3.35	0.78	2.60	0.54	3.41	0.68	3.73	0.71
Total Non-banking Financial Institutions	144.22	33.46	163.09	34.19	204.78	40.58	218.18	41.69
Total	304.27	70.60	349.63	73.30	406.87	80.62	431.49	82.45

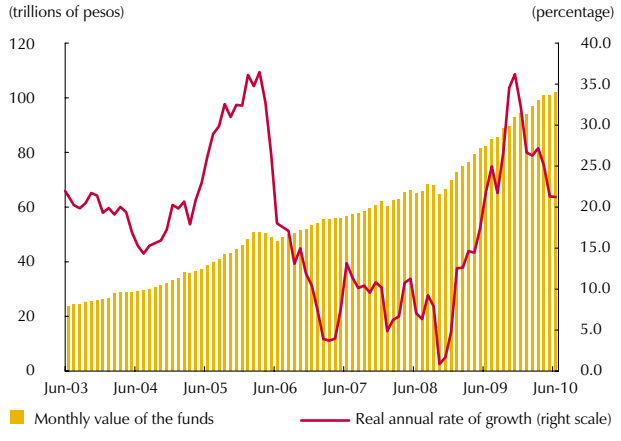
(proj) projected to June 2010.
Source: Financial Superintendency of Colombia, Banco de la República calculations.

1. Pension and Severance Fund Managers (PFM)

The funds managed by the PFM are still mainly comprised assets from the domestic market. Given the appreciation of these securities, primarily in variable income, the portfolio showed positive performance in the first half of 2010. Unlike what was seen in the second half of 2009, this period was characterized by a restructuring of the variable income portfolio towards public debt securities (where the latter still have the largest share).

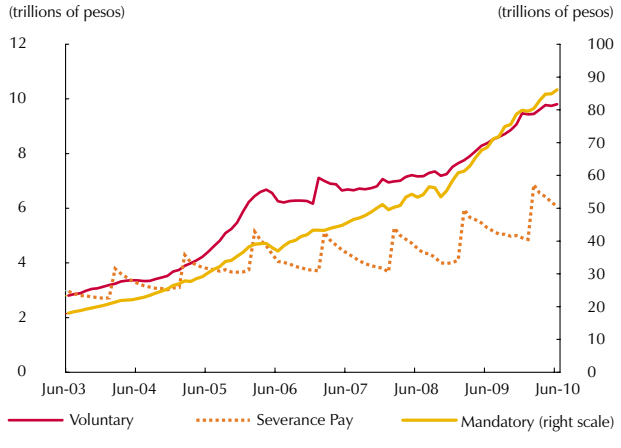
The increase in the value of the portfolio of the funds managed by the PFM was COP$7.7 t during the first six months of 2010, putting it at COP$102.1 t in June of this year (Graph 31). However, the annual real growth of the portfolio showed a slowdown as it went from growing at rates of 32.2% in December, 2009 to 21.2% in June, 2010. This figure is similar to that registered a year before (21.8%). During the same period, the mandatory pension funds (MPF) raised the value of their portfolio 22.7%, while the voluntary pension funds (VPF) raised theirs 14.4% and severance funds (SF) increased by 12.3% in annual real terms. At the end of the first half of 2010, the value of the funds was COP$86.1 t, COP$9.8 t and COP$6.1 t, respectively. Regarding the above, two aspects are worth highlighting: the first is that the positive change in the value of the MPF continues to be due to increases in the appreciation

Graph 31
Pension Funds: Value and Real Growth



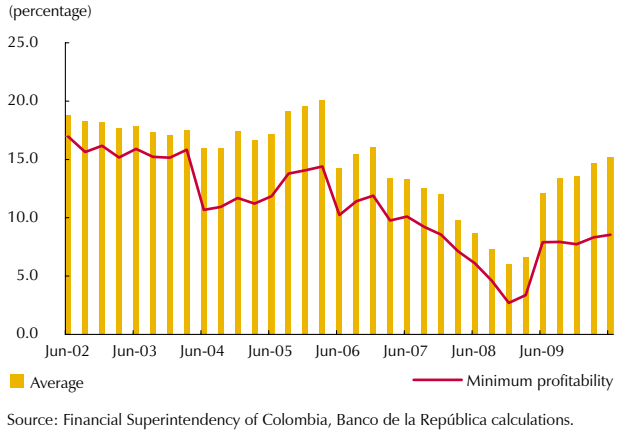
Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 32
Value of Pension Fund Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 33
Average Three-year Return on MPF and Minimum Profitability



Source: Financial Superintendency of Colombia, Banco de la República calculations.

rather than in contributions and the second, that the value of the FS is seasonal and characterized by the capitalization registered during the first two months of the year and disbursements in the following months (Graph 32).

The positive trend of the PFM corresponds to a sustained increase in the return on the portfolio. In the case of the MPF, the downward trend of the average three-year return registered in 2007 and 2008 was partly corrected and stood at 15.2% in the first half of 2010. This situation is accompanied by the performance of the minimum profitalibility which also grew from 7.7% in December, 2009 to 8.5% in June, 2010 (Graph 33). The average two-year return of the SFs, in turn, climbed to 14.6% in the first half of 2010. This figure corresponds to a six-month increase of 2.3 pp (Graph 34).

It is worth mentioning that pensions collected by those affiliated with individual savings plans (RAIS in Spanish) specifically depend on the value of the savings that were amassed during their working life and on the return that those deposits earned. Thus, even though the return seen in the most recent two years shows a positive result for the value of the savings of the FFPS affiliates, this occurred after registering a clear downward trend over a period of several years.

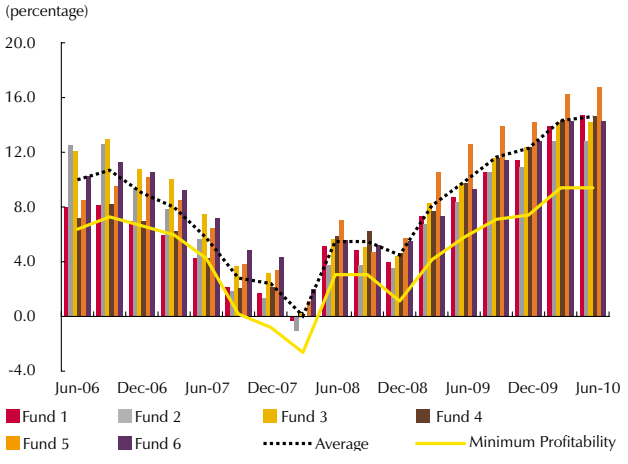
With respect to the composition of the portfolio managed by the PFMs, these are still concentrated in public debt instruments and, between December, 2009 and June, 2010, this concentration even rose 2 pp, thus placing it at 42.8%. Likewise, the investments in foreign sector instruments[20] rose moderately and reached 12% of the total invested resources. At the same time, the share of investments in the financial sector[21] and productive sector[22] dropped 55 bp and 1.5 pp in the first half of 2010, respectively. These shares amounted to 26.4% for

20 The majority of these are structured products issued by banks abroad.

21 Bonds, CDs and stocks with high stock market liquidity.

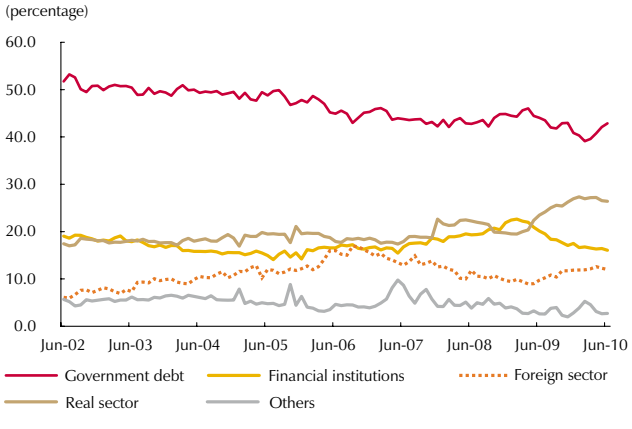
22 Mainly bonds and stocks with high stock market liquidity.

Graph 34
Two-year Return for Severance Funds and Minimum Profitability



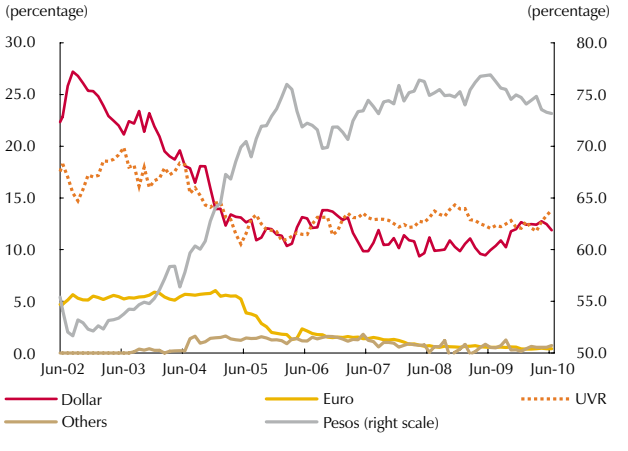
Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 35
Composition of Pension Fund Portfolio by Issuer



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 36
Composition of Pension Fund Portfolio by Currency



Source: Financial Superintendency of Colombia, Banco de la República calculations.

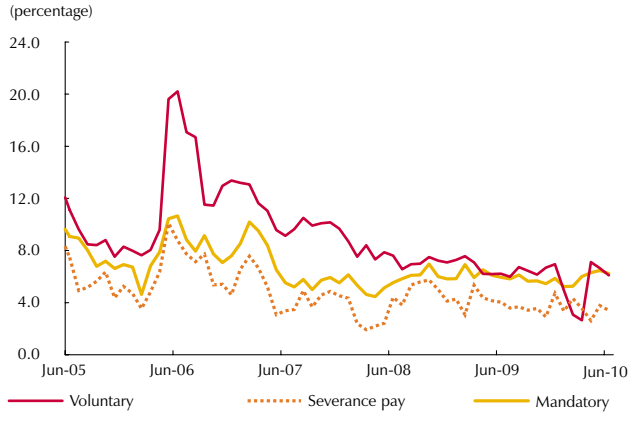
the financial sector and 16.1% for the productive sector. It should be noted that the decline in the share of investments in the latter sector could be due to the fact that the multifund scheme went into effect in September of that year. This plan established a maximum on the investment limit in national variable income instruments that was lower than the previous one[23] (Graph 35).

In 2010, the PFM preference for securities denominated in pesos remained. Nevertheless, there was a 1.8% rebalancing towards UVR-denominated instruments (inflation-indexed securities) in the first half of 2010, leading the latter to represent 13.8% of the total portfolio, whilst the rest of peso-denominated securities amounted for 73.2% (Graph 36). The share of investments in uncovered foreign currency, in turn, has remained stable and well below the regulatory maximum (30%). In particular, investments in dollars have declined 78 bp in the same period (representing 11.9% of the portfolio as of June, 2010) (Graph 37).

Based on the maturity, the portfolio is still concentrated in short-term securities without showing any significant change in the first half of 2010 (47.1% as of June, 2010). Next are the medium-term securities (between 1 and 10 years) which are 32% of the total portfolio in spite of a 4 pp decline in their share in the first half of 2010. Finally, the long-term securities increased their 17.2% concentration in December, 2009 to 20.9% in June, 2010 (Graph 28). It should be highlighted that given the nature of the pension and severance fund business, it would be expected that the portfolio would be concentrated in long-term assets, since they have liabilities with similar maturities. However, the larger share of assets with periods that are less than one year in the portfolio managed by the PFMs could be the result of the reduced supply of long-term investment securities in the domestic market.

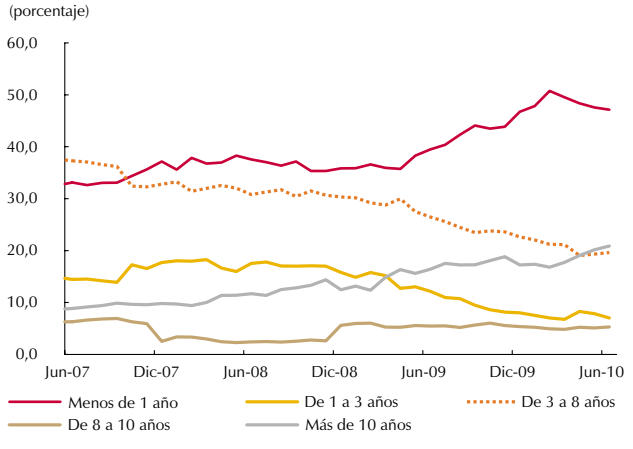
23 In September, 2010 the current fund will become a moderate fund. The latter will have a 30% maximum limit on national variable income investments, which is lower than the current limit (40.0%) (Decree 2373, July 2010).

Graph 37
Percentage of Unhedged Portfolio Value Denominated in Foreign Currency



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 38
Composition of Pension Fund Portfolio by Maturities



Source: Financial Superintendency of Colombia, Banco de la República calculations.

2. Life and Other Insurance

In the first half of 2010, the GIC and the LIC investment portfolios maintained the rising trend that has been registered since 2002. Thus, the value of those resources came to COP$4.8 t and COP$15.1 t in June, 2010, amounting to six-month increases of COP$200 b and COP$800 b, respectively.

To analyze the performance of insurance companies, one of the most used indicators is the technical profit margin. This establishes the proportional surplus or deficit insurance companies have with respect to their business and it is defined as the ratio between technical profits and the value of issued premiums. The first represents the operating profit of insurance companies,[24] while issued premiums are the expected value of the protection granted by the insurance companies for each policy issued. It is important to note that this indicator does not specify whether the entity is profitable or not. Instead, its interpretation is based on a correct estimate of potential losses. Thus, it is more negative in the case in which there are more losses than expected and positive in cases where the allowance for losses is higher than necessary. That is the reason the analysis of insurance company operations should be done together with the return on assets.

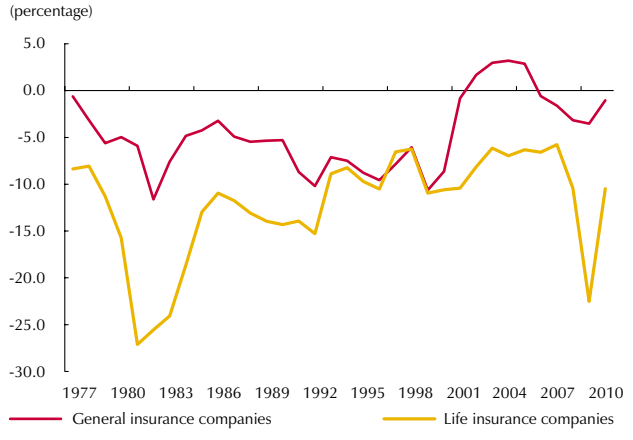
In the first half of 2010, a lower deficit was seen in the results of insurance company activity. This is reflected in the fact that the technical spread for both types of insurance companies corrected the declining trend shown in the two most recent years, reaching -1.1% for the GIC and -10.5% for the LIC. This is the result of an increase in the premiums earned[25] and of a reduction in the value of the losses incurred[26] (Graph 39).

24 Including the income from insurance and reinsurance minus the outlays for the same things, commissions and general expenditures.

25 Net value earned by the insurance company once the reinsurance and technical reserves are deducted.

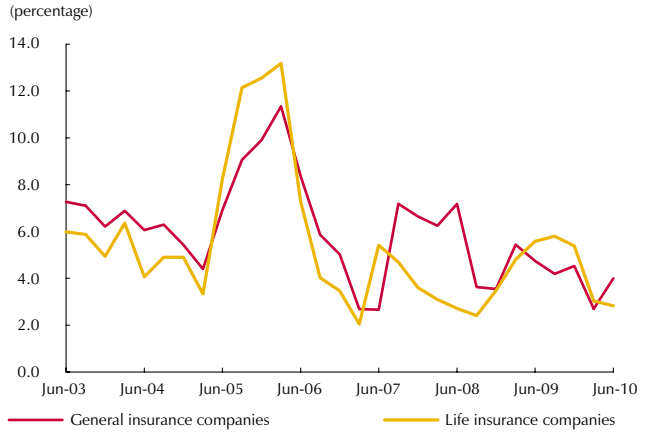
26 Total amount of the losses once the reinsurance part is deducted and the reserves for losses are included.

Graph 39
Technical Profit Margin



Source: Fasecolda.

Graph 40
ROA for Life and General Insurance Companies



Source: Financial Superintendency of Colombia, Banco de la República calculations.

In addition, the insurance companies' ROA registered a decline in the first half of 2010, when the variation in the profitability of LIC was greater than that registered for the GIC (58 bp as opposed to 4.6 pp). Thus, as of June 2010, the GIC ROA was at 4% while the LIC ROA was at 2.8% (Graph 40).

With respect to the investment portfolio of the insurance companies, this is still concentrated primarily in public debt instruments. In the case of the LICs, their share is staying relatively stable at 58.7%, while the GIC concentration in public debt securities rose 4 pp between December, 2009 and June 2010, when it was at 44.4% of the total value of the portfolio. The rest of the portfolio is distributed between financial sector securities (21% on average), real sector (18.8% on average) and foreign sector, with the latter being of greater importance in the GIC than in the LIC (16% as opposed to 1.5%) (Graph 41).

The high concentration in public debt securities as well, as the decrease in their profits for the first half of 2010 in comparison to that of the previous year, produced a drop in the levels of the return on investment. This was especially true for the LICs since these held a higher concentration of those securities. As of June 2010, those returns were 5.0% for the LICs and 5.3% for the GICs.

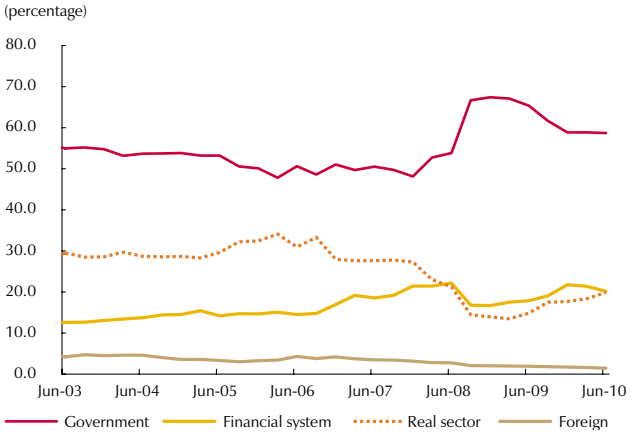
3. Trust companies

As of June 2010, the portfolio manged by trust companies had a value of COP$153 t, which represents a six-month growth of 6.5%. Of these assets, 36% correspond to social security funds and 14% to mutual funds along with other trust assets. Among these, real estate trusts, investment trusts, pension liabilities of the Banco de la República, Ecopetrol, etc. are included. (Graph 42).

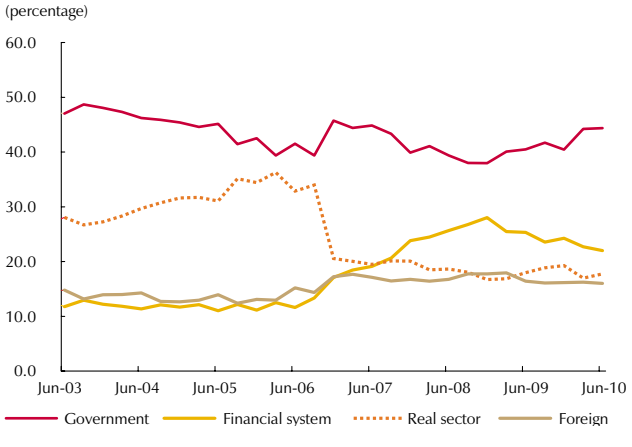
Of the total assets managed by the TCs, investments, which came to COP$92.5 t, represented 60.5% as of June, 2010. This figure is COP$4.4 t higher than the value registered six months ago. As can be seen in Graph 43, investments have seen continuous growth in the last 3 years. Just as with the assets, the most important items are in the portfolios of social security and mutual funds.

Graph 41
Investment Portfolio by Issuer

A. Life Insurance Companies

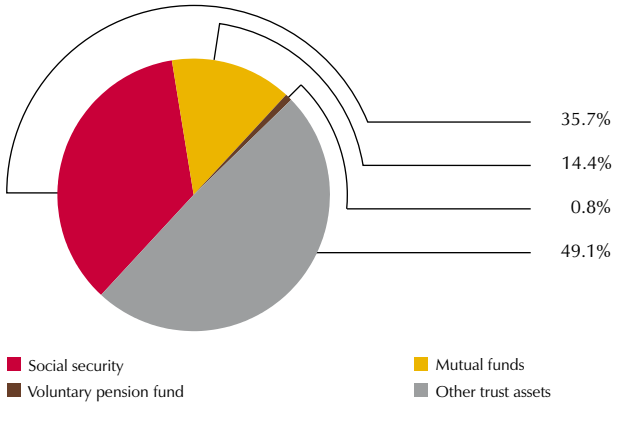


B. General Insurance Companies



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 42
Distribution of Assets Managed by Trust Companies as of June 2010



Source: Financial Superintendency of Colombia, Banco de la República calculations.

At the end of the first half of 2010, the share of resources invested for social security reached a value of COP$52.3 t, which represents 56.6% of the total portfolio. The mutual funds managed by the TCs, on the other hand, had a value of COP$16.1 t, which equals a share of 17.4% (Graph 43).

With respect to the composition of the portfolio managed by the TCs, one can see in Graph 44 that private debt securities make up 40.0% of the assets in the investment portfolio these entities have, while public debt securities have a 35.7% share. This preference for securities from the private sector can be seen starting in November 2009, since in previous quarters the share of public debt was significantly higher. Likewise, the TCs prefer to invest in local floating income securities and allocate 20.3% of their investments in this sector, while the foreign fixed income segment remains at around 3.8%.

4. Stock Brokerage Firms and Investment Management Companies

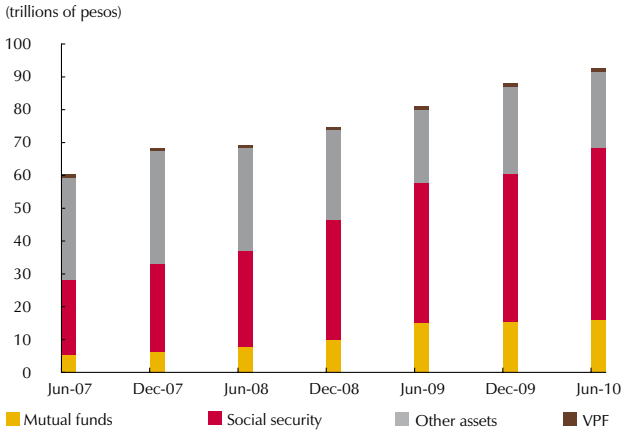
The value of the investment portfolio managed by the stock brokerage firms and investment management companies was at COP$3.7 t as of June 2010, having risen 9.4% compared to what had been seen six months before. The ROA for these entities, in turn, showed a decline in the first half of 2010, going from 3.6% in December 2009 to 2.8% in June, 2010. This was mainly due to a 8.9% reduction in their profits (Graph 45). This decline was not directly caused by a large deterioration in the performance of the BFs and the IMCs since the levels of profit seen in 2009 were significantly higher than the average for previous years.

The general trend registered by the ROA follows the individual performance of the majority of the entities in this sector, in which there is evidence of an overall deterioration of the return on assets in the first half of 2010. In Graph 46, 41 entities, whose returns increase in value in proportion to their distance from the center of the circle, are considered. It can be seen that only 21.9% of the

entities presented an ROA that was above that of December 2009.

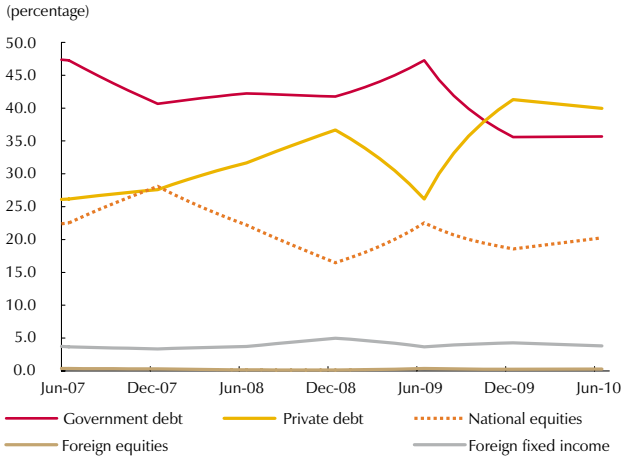
Just as was seen in the previous *Financial Stability Report*, entities with a significantly negative ROA do not have excessive levels of leverage. In fact, these are entities that have a ratio of investments to equity that is lower than the average registered for the sector. The latter was 4.0% as of June 2010 (in December 2009, it was 3.7%).

Graph 43
Changes and Composition of Trust Company Portfolio



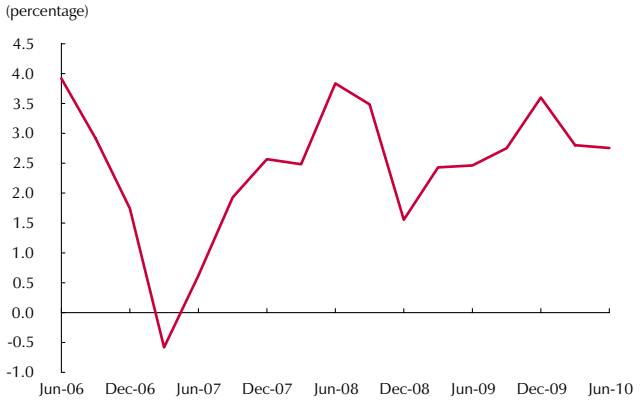
Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 44
Classification of the Investment Portfolio Managed by Trust Companies



Source: Fogafin.

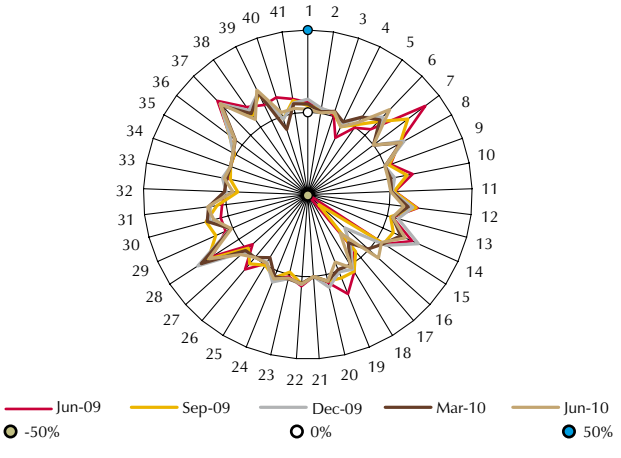
Graph 45
ROA of Brokerage firms and Investment Management Companies



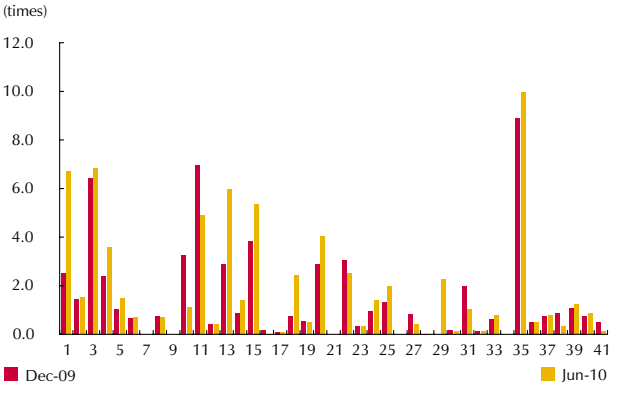
Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 46

A. ROA of Brokerage Firms and Investment Funds



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



Source: Financial Superintendency of Colombia, Banco de la República calculations.

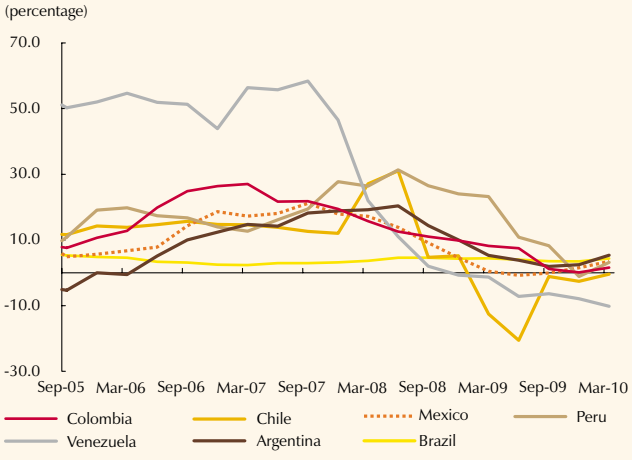
Box 1
INTERNATIONAL INDICATORS

The Latin American economies saw an improvement in their financial situation. This can be seen in the rise of the indicators of real growth for the gross portfolio and of efficiency as well as a decline in the default indicator.

In this box, the main financial indicators for Latin America are analyzed in order to evaluate the performance of variables such as profitability, efficiency, and risk and thus compare their development in the last few months of 2009 and the first few months of 2010.

During the first quarter of the year, there was an increase in the real growth of the gross loan portfolio for the majority of the countries analyzed. The most representative case was that of Peru which went from a rate of -1.1% at the end of 2009 to one of 3.2% in March 2010. Others such as Brazil, Mexico, Argentina and Colombia had slight rises that did not go above 3%. Chile and Venezuela, in turn, did not recover from the downward trend they had shown throughout 2009, at March 2010, this indicator was -0.4% and -10.2% for these countries (Graph B1.1).

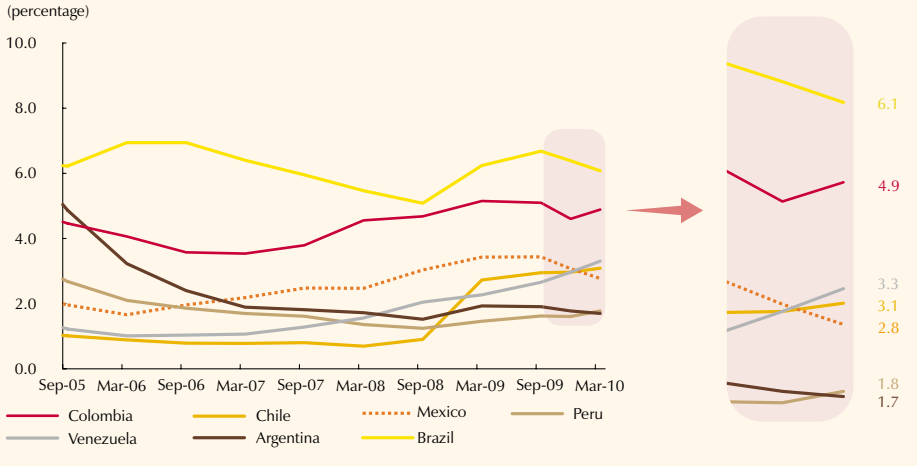
Graph B1.1
Real Growth of the Gross Loan Portfolio



Sources: Central banks and banking Superintendencies of each country, Banco de la República calculations.

The default indicator,[1] in turn, registered slight variations for all of the countries during the same period. Some such as Brazil, Argentina and Mexico saw their value lowered by 31 bp, 30 bp and 7 bp respectively in comparison to what had been seen in December of the previous year. For the countries in the sampling, the average debt indicator was 3.4% with Brazil (6.1%) and Colombia (4.9%) above this average in contrast to Venezuela (3.3%), Chile (3.1%), Mexico (2.8%), Peru (1.8%) and Argentina (1.7%) (Graph B1.2).

Graph B1.2
Default Indicator: non-performing loans/gross loan portfolio



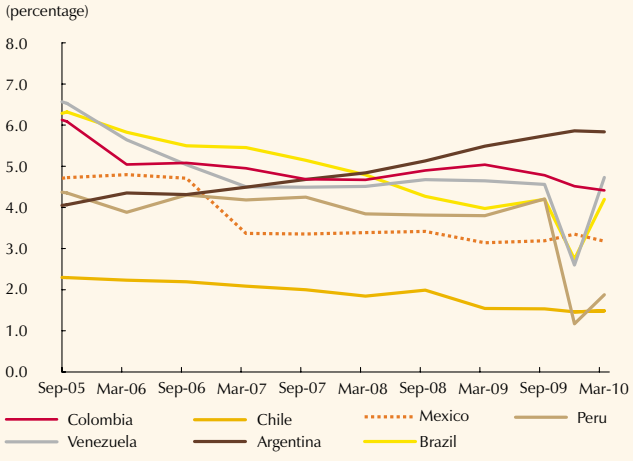
Sources: Central banks and banking Superintendencies of each country, Banco de la República calculations.

The efficiency indicator —measured as the ratio between the administrative and labor costs (ALC) and assets— did not show serious changes in comparison to what had been seen in December, 2009. However, Argentina (5.8%), Venezuela (4.7%), Colombia (4.4%), and Brazil (4.2%) are holding on to positions that are not very efficient with values that are above 4%. At the same time, this indicator is staying at around 2% for Mexico, Chile and Peru (Graph B1.3).

The loan portfolio coverage indicator declined in Peru (17.7 pp) and Colombia (7.1 pp) compared to what

1 It is important to keep in mind the fact that the indicators are not comparable between countries due to the fact that the measuring methodologies differ.

Graph B1.3
Efficiency: GAL/assets



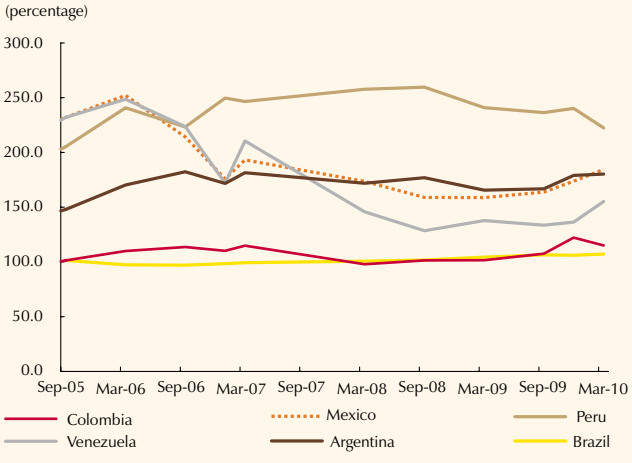
Sources: Central banks and the Banking Superintendencies in each country, Banco de la República calculations.

had been seen in December, 2009. This generated an increase in their exposure to loan risk. Nevertheless, Peru is maintaining the highest coverage indicator (222.4%) followed by Mexico (184.5%), and Argentina (180.3%). Venezuela, in turn, registered the largest percentage variation (18.8 pp) and had an indicator of 155.2% in March, 2010 (Graph B1.4).

Last of all, as can be seen in Graph R1.5, Mexico and Argentina are maintaining high ex post intermediation spreads (16.5% and 16.8% respectively) while Peru and Colombia have values of 7.8% and 7.6% respectively. Venezuela saw a large increase as it went from 5.4% in December, 2009 to 11.8% in March, 2010.

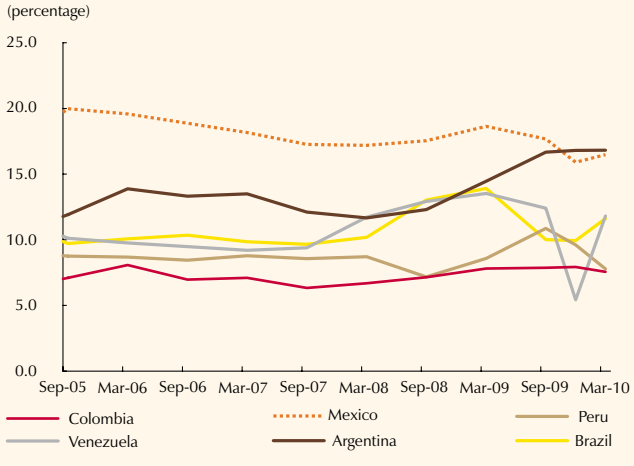
In short, the situation for the financial system in some Latin America countries is positive in spite of the appearance of some variations within the sample. On the one hand, Peru showed a significant recovery in the real growth rate of the loan portfolio, one of the lowest levels in the default indicator, and a reduction in the coverage indicator. On the other, Venezuela showed a low level in the default indicator and a rise in the coverage indicator. However, it still has a low level of efficiency and a sharp drop in the loan portfolio. Finally, Colombia showed low levels of loan portfolio coverage and growth and continued to have one of the highest default levels in the region as of March, 2010.

Graph B1.4
Coverage: Loan-loss provisioning/Non-performing Loans



Sources: Central banks and the Banking Superintendencies in each country, Banco de la República calculations.

Graph B1.5
Ex post Intermediation Spread



Sources: Central banks and the Banking Superintendencies in each country, Banco de la República calculations.

Box 2
CONCENTRATION AND COMPETITION[1]

In this box, the levels of concentration and competition of the financial intermediaries is analyzed. As a first approximation to a measurement of concentration, the share of the five largest intermediaries in the loan and deposit markets will be used. Also the Herfindahl-Hirschman index (HHI),[1] which makes it possible to quantify the level of concentration in these markets, will be used as a complementary measurement. It is essential to mention that high levels of concentration do not mean that a market is not competitive. Therefore, some additional indicators are used to determine the degree of competitiveness between the financial intermediaries in the loan and deposit markets.

1. Concentration

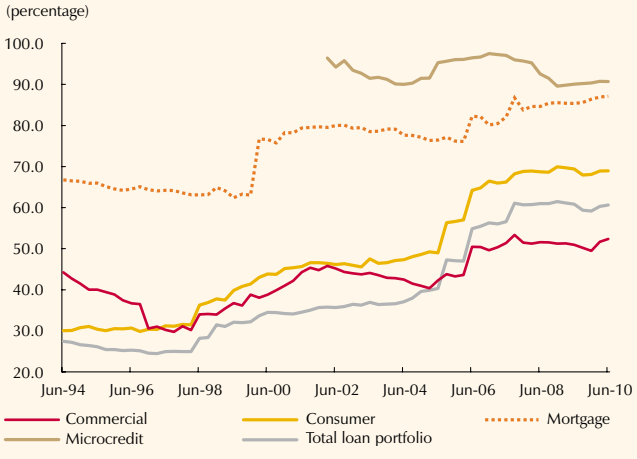
In the loan market, the levels of participation of the five largest intermediaries (RC5 in Spanish) had showed slight increases in the first half of 2010 (Graph B2.1, panel A and Table B2.1). During this period, the RC5 of the total loan portfolio grew 1.6 pp and recovered from the slight dip that occurred in the second half of 2009. With respect to the loan types, the commercial loan portfolio showed the largest increase as it went from 49.5% in December, 2009 to 52.4% six months later while the concentration for the rest of the loan types rose 65 bp on average.

The changes in the HHI for the loan portfolio in the first half of 2010 show a trend that is similar to that of the RC5. The rise in the concentration levels of the total loan portfolio has increased the value of the HHI for it and reached a value of 982 points (p) in June, 2010. This draws the market closer to a moderately concentrated structure (Graph B2.1, panel B).

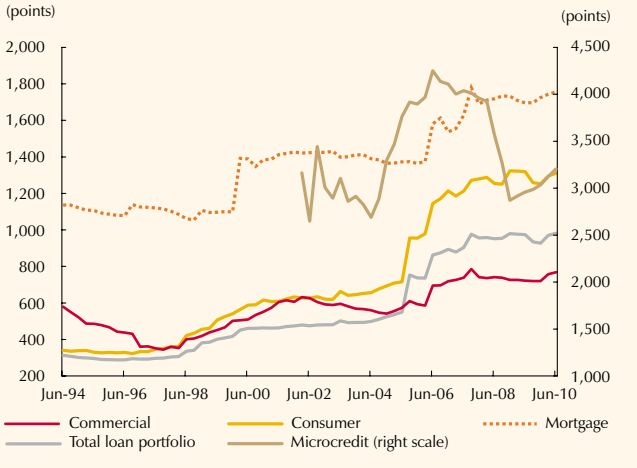
In the first half of 2010, the share of the deposit market held by the five largest intermediaries remained relatively stable with the exception of the CD segment (Graph B2.2, panel A and Table B2.2). At the end of the first six months of the current year, the concentration of deposits was at 58.6% while the RC5 of the CDs went from 46.8% at the end of 2009 to 49.3% during this period.

Graph B2.1

A. Loan portfolio Share of the Five Largest Institutions



B. HHI of the Loan Portfolio



Source: Superintendencia Financiera de Colombia, Banco de la República calculations.

Likewise, the HHI for deposits did not report large changes during the period analyzed. The HHI for total deposits registered a 10 p increase and remains a low concentration market. The savings and checking accounts registered declines of 37 p and 28 p respectively but are still considered moderately concentrated markets (Graph B2.2, panel B).

To summarize, the performance of the loan and deposit market indicators in the first half of 2010 shows a relative stability with respect to the concentration of the financial system. The change in the CD concentration indicators which have been growing since the end of 2005 should be noted.

1 The HHI measures the market concentration level. The indicator is in the 0≤HHI ≤10,000 range. A number below 1,000 is considered low concentration, between 1,000 and 1,800 indicates a medium or moderate concentration, and an index above 1,800 is considered high concentration.

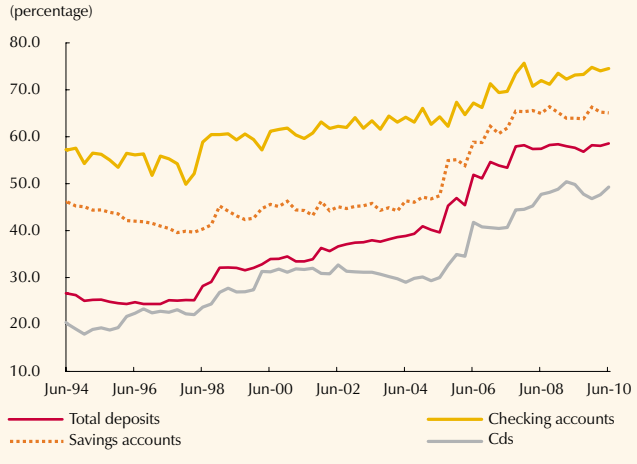
Table B2.1
Loan Portfolio Concentration Indicators as of June, 2010

	Total loan portfolio	Consumer	Commercial	Mortgage	Microcredit
Share (percentage)					
2 largest	33.88	44.21	25.75	47.53	66.52
5 largest	60.71	68.95	52.36	87.11	90.69
HHI	982	1.311	768	1.756	3.206

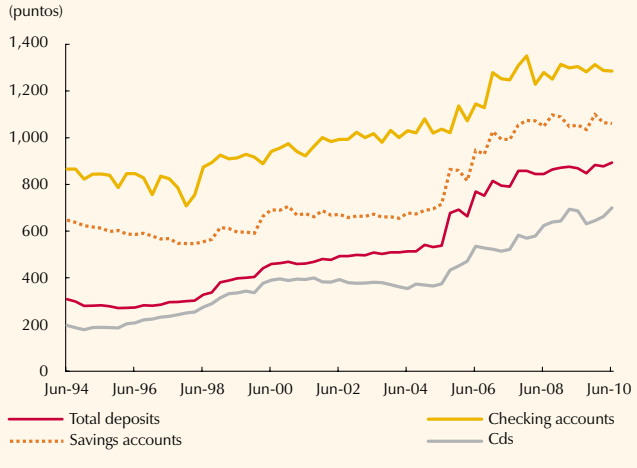
Source: Superintendencia Financiera de Colombia; cálculos del Banco de la República.

Graph B2.2

A. Share of Deposits: Five Largest Institutions



B. HHI of Deposits



Source: Superintendencia Financiera de Colombia, Banco de la República calculations.

2. Competition

With respect to the market structure, the results of the competition models showed no significant variations in comparison to those seen in the previous edition of the *Financial Stability Report*. The outcome of these exercises is given below.

The first method is the one introduced by Panzar and Rosse, which makes it possible to analyze how a company's earnings respond to changes in the prices of production factors. The response is measured by means of an H statistic, the value of which identifies the structure that characterizes each market.

The statistics indicate that the intensity of the competition varies from one type of lending to another. However, these markets are characterized by a free entry monopolistic competition structure (Table B2.3). With respect to each type of loan, the results indicate most competitive market is still the mortgage loan portfolio which increased its competitiveness over the last six months.

The analysis of statistic H is complemented by a method that is designed to determine the existing relationship between market power (Lerner Index), financial system concentration, and credit risk. The results indicate that higher levels of concentration are related to high levels of market power (Table B2.4). This suggests that the higher the level of concentration, the more power intermediaries have to control the market and the greater their possibility of passing on the cost of business to consumers through higher costs for financial services.

Another way to identify market structure is through conjectural analysis. This is characterized by the study of the reaction function of financial intermediaries in the loan and deposit markets. In the model, the conjectural parameter γ indicates how a company will react to changes in the terms on which its rivals compete, which shows the structure of competition in a given market.

The results for the loan market show that it is characterized by a monopolistic competition structure,[2] in which the levels of competition are lower than the Nash equilibrium[3] (Table B2.5). The deposit market,

2 The conjectural parameter is $\gamma > 0$.

3 The Nash equilibrium is a situation in which the agents are price takers but the economic benefits may be higher than 0. In this case, this equilibrium occurs when $\gamma = 0$.

Table B2.2
Deposit Concentration Indicators as of June 2010

	Total deposits	Checking accounts	Savings accounts	CDs
Percentage share				
2 largest	31.52	39.60	33.82	27.28
5 largest	58.56	74.52	65.07	49.29
HHI	894	1.285	1.061	699

Source: Superintendencia Financiera de Colombia, Banco de la República calculations.

Table B2.3
H Statistics by Loan Portfolio Type

Portfolio	H
Total	0.3315
Commercial	0.2150
Consumer	0.3845
Mortgage	0.7575

Note: Imbalanced panel estimate. The exercise was done for the entire financial system excluding leasing companies using quarterly data from March, 1995 to June, 2010.
Source: Superintendencia Financiera de Colombia, Banco de la República calculations.

Table B4.2
Relationship Between Market Power, Concentration, and Risk Dependent Variable: Lerner Index

	Financial system
HHI	0.1878***
	(0.0185)
Loan portfolio quality	0.1204***
	(0.0142)

Note: Estimated with imbalanced grouped squared minimums. The exercise was done for the entire financial system excluding leasing companies between May, 2002 and June, 2010.
*** 99.9% confidence level.
Source: Superintendencia Financiera de Colombia, Banco de la República calculations.

in turn, continues to show one of the highest levels of competition compared to the Nash equilibrium since the conjectural parameter shows a negative value. This suggests that the intermediaries are competing for their sources of financing.

After analyzing these indicators, the conclusion can be drawn that competition levels did not show significant changes in the first half of 2010. The loan market continues to be dominated by a monopolistic competition structure which covers all types of lending. The deposit market, however, is characterized by a highly competitive structure, which could be an indicator of considerable rivalry for different types of deposits.

Table B2.5
Conjectural Parameters for the Loan Portfolio and Deposits

γ of the loan portfolio	9.59E + 06***
	(1.76E + 06)
γ of deposits	-4.364***
	(0.004)

Note: The estimate of the reduced forms was done using the full information maximum likelihood method. The exercise was done for the entire financial system excluding leasing companies using quarterly data from March, 1995 to June, 2010.
*** 99.9% confidence level.
Source: Superintendencia Financiera de Colombia, Banco de la República calculations.

Box 3
ANALYSIS OF BANCARIZATION IN COLOMBIA

This box analyzes different bancarization indicators in order to measure the access to various financial services in Colombia. The earlier version of this box dealt with the information on deposits, loan portfolio and number of offices for credit establishments, but left out the information recorded through non-banking correspondents, which is now included.

1. Non-banking correspondents

The non-banking correspondents (NBCs) are a service provided by banks through third parties by using different commercial outlets such as drugstores, supermarkets and stores[1] in order to carry out transactions. These transactions include payment of utilities, taxes, payment of loans, withdrawals and cash deposits as well as opening of bank accounts, etc. The NBCs allow access to financial services outside the offices of financial intermediaries. Therefore, some districts and departments that do not have branches of some institutions can do transactions through NBC outlets.

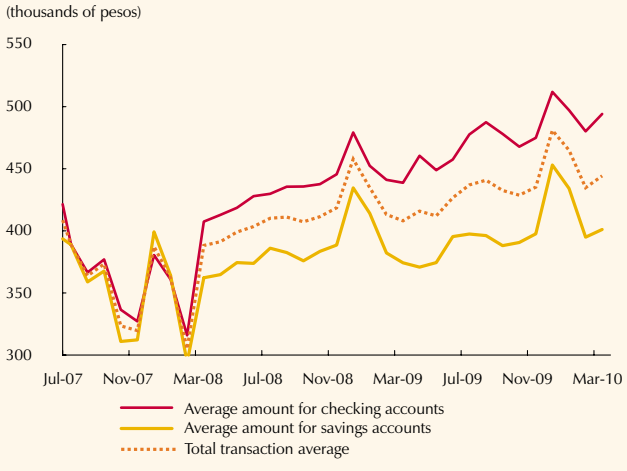
An analysis of the changes in the NBCs over time shows that between June 2007 and March 2010, the number of NBCs increased from 1,673 to 5,561 throughout the entire country. However, there is some level of variation when the number of NBCs per department is analyzed because there are some departments that do not have this type of service while others have more than 25% of the total.

In addition, if the number of NBCs per million inhabitants is analyzed, a high level of concentration is found because nine out of thirty-three departments[2] have an indicator that is above the total for the country (122.2 NBCs per million people). Of these, Bogota has the largest number of correspondents, 210.5 per million inhabitants and Arauca has the lowest, 12.1 per million inhabitants.

Also, the volume of transactions done through NBCs has climbed from COP$59.1 b in June 2007 to COP461 b in March 2010. Of this amount, payment transactions[3] represented 43.7% with an average transaction equaling COP$105,576.8. The item with the next highest share includes cash deposits in both savings accounts (SA) and checking accounts (CA) which represented 26.6% and a total of COP122.8 b in March 2010. If these transactions are divided between those done through checking accounts and those done through savings accounts, the average amount per transaction through the former has been higher than those done through savings accounts since March 2008 (Graph B3.1).

In addition, the cash withdrawals from these same accounts represented 21.7% of the total transacted volume and both the highest amount and number of withdrawals correspond to SA. Taking this into account, the balance between deposits and withdrawals by type of account shows that for savings, the withdrawals in the analyzed period are larger than the deposits while in the checking accounts, the opposite is true (Graph B3.2). However, the total balance is positive because the amount deposited in CA is larger than that deposited in the SA.

Graph B3.1
Average Amount for Cash Deposit Transactions



Source: Superintendencia Financiera de Colombia, Banco de la República calculations.

Finally, the payment of obligations resulting from commercial, consumer, micro-credit, and mortgage loans as well as credit cards made up 5.7% of the total amount transacted. As of March 2010, the transactions totaled COP26 b with an average transaction of COP229,418.

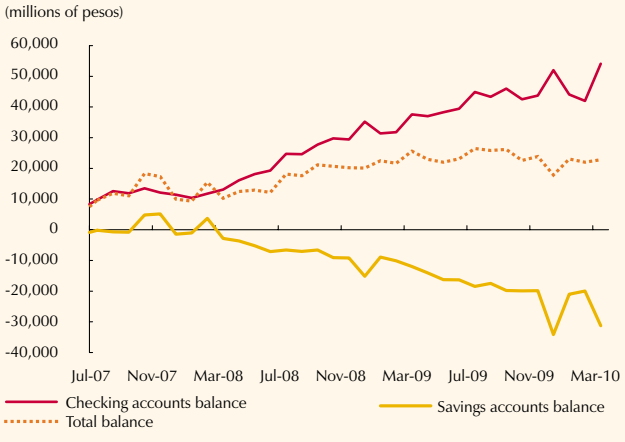
Below, there is an analysis of the different indicators that are intended to measure the financial activity of each one of the departments. This includes loan portfolio amount, deposits, number of offices, NBCs and population.

1 The types of NBC are: drugstores, supermarkets, stores, postal offices, telecomunication center, cooperatives and others.

2 Bogotá and Cundinamarca were considered separately.

3 This transactions include public service, social scurity, tax and agreement payments, among other raised funds.

Graph B3.2
Balance of Savings and Checking Account Transactions



Sources: Superintendencia Financiera de Colombia and DANE, Banco de la República calculations.

2. Level of Bancarization by Department

In the earlier version of the *Financial Stability Report*, there was an indicator of the number of inhabitants per office, it was highlighted the limited dispersion among the departments. Nonetheless, in the current edition, the number of NBCs was added to the number of offices in order to get a figure that incorporates other establishments that provide financial services. This new measurement shows that the bancarization indicator improves for almost all departments although the difference between the area with the best indicator (Bogota) and the lowest indicator of bancarization (Vaupes) is double. As of March 2010, there were close to 4,300 people per office and non-banking correspondent in the country.

When this indicator is analyzed by department, it can be stated that 42% of the 33 departments have fewer than 5,000 people per office and are mainly concentrated in the Andean region. Also, 14 departments have a bancarization level that is between 5,000 and 15,000 inhabitants per office and non-banking correspondent while two departments are still in the lowest levels of bancarization with more than 35,000 inhabitants per office and NBC (Map B3.1).

Likewise, an analysis of access to loans was done by using an index constructed as the ratio between the net loan portfolio[4] and the number of inhabitants in which, the higher the indicator, the higher the level of bancarization in the department. Map B3.2 shows that most of the departments (33%) have between COP500,000 and

Map B3.1
Thousands of inhabitants per office and non-banking correspondent

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

COP1,000,000 in net loan portfolio per inhabitant. It is possible to conclude that the dispersion of loans granted is high at the national level because the rate for the national total is over COP3,000,000 per inhabitant and the indicator of department with the highest loans per inhabitant is 200 times greater than the one of the department with lowest loans per inhabitant.

However, the differences between the departments are related to the economic activity in each. When the share of the departments in both the total loan portfolio and the GDP are compared, there is a correlation coefficient of 90.5% for these series because the departments with more economic activity are usually the ones that have more credit activity.

Furthermore, when constructing a similar indicator linked to the total deposits of the financial system, it shows a performance that is different from that for the loan portfolio. The dispersion is lower when the fact that the indicator for the department with the highest amount in

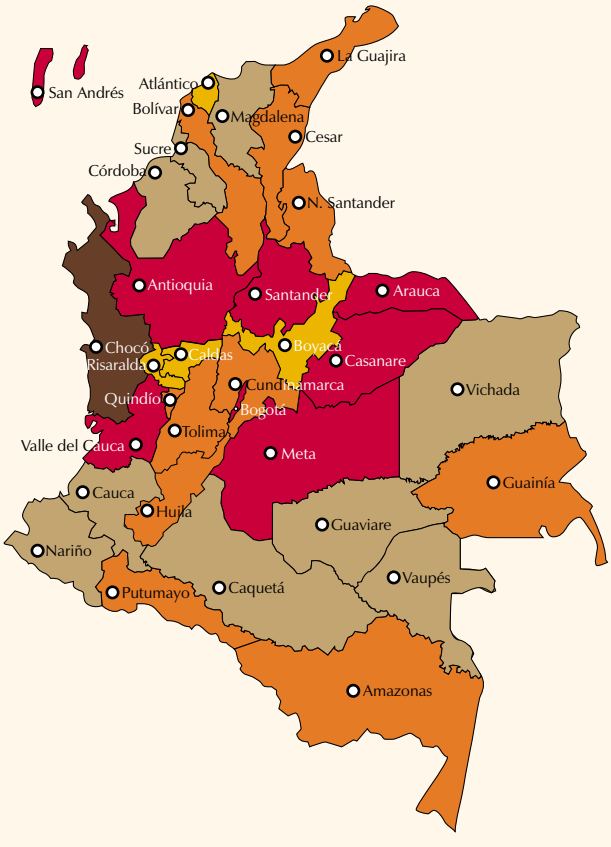
4 Due to problems with the information availavility we considered the total loans instead of the private sector loans.

Map B3.2
Net portfolio per inhabitant

Less than COP$2,000,000 per inhabitant
Between COP$1,500,000 and COP$2,000,000 per inhabitant
Between COP$1,000,000 and COP$1,500,000 per inhabitant
Between COP$500,000 y COP$1,000,000 per inhabitant
Less than COP$500,000 per inhabitant

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

Map B3.3
Deposits per inhabitant



More than COP$2,000,000 per inhabitant
Between COP$1,500,000 and COP$2,000,000 per inhabitant
Between COP$1,000,000 and COP$1,500,000 per inhabitant
Between COP$500,000 and COP$1,000,000 per inhabitant
Less than COP$500,000 per inhabitant

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

deposits is 29.4 times that for the one with the lowest indicator is taken into account. It can also be seen that the per capita deposits for most of the departments (33%) are between COP1,000,000 and COP1,500,000 (Map B3.3). Likewise, when the indicators for loan portfolio and deposits are compared, the departments with the least access to loans do not necessarily have the lowest amount in deposits. In the case of the territorial entities in the plains region, the per capita amount in deposits is higher than that for the loan portfolio. At the same time, the indicator for access to loans is higher than that for deposits in the case of some departments such as Atlantico and Valle del Cauca.

In terms of bancarization, the creation of the non-banking correspondents in Colombia has significantly contributed to the increase in access to financial services. However, the credit amount per capita is still concentrated in a few departments and simultaneously is at low levels if it is compared to the availability of deposits.

The recent introduction of the electronic accounts[5] along with the different financial education strategies promoted by Banco de la República (along with other entities), have given an incentive to a segment of the population to seek access to financial services. This segment had not been part of the system due to several factors such as income or education. Therefore, it is important to continue the development of new strategies and products that allow the number of agents who are part of the financial system to grow, especially in regions with a low level of bancarization.

5 The decree 4590 of 2008, regulated electronic accounts to promote the acces of low income population to financial services.

Box 4
REFORM OF THE FULLY FUNDED PENSION SYSTEM BASED ON INDIVIDUAL ACCOUNTS

1. Introduction

The financial reform[1] introduced some modifications to the fully funded pension system (FFPS). In particular, it authorized the managers of mandatory pension funds (PFM) to offer different portfolios to their account holders so they could choose the one that best suited their risk profile and the stage they are in their working lifetime (multi-fund option). It also modified the monthly contributions to the PFM so that the management commission would include both a component calculated on the income-based contribution and another based on the performance. The government has issued decrees establishing the multi-fund system. These decrees also regulate the portfolio investment regime and the minimum profitability that the fund managers are required to guarantee to their affiliates. In addition, the government has published a bill for discussion purposes in which the conditions and the amounts for the performance commission would be established. The most relevant aspects of the regulations set up by the government are shown below.

2. Decrees by Which the Multifund System and the Investment Regime for the Resources in the Mandatory Pension Funds Are Established

The managers of mandatory pension funds must offer their affiliates three kinds of funds so that they can choose the one that best fits their risk profile and the stage they are at in their working lifetime.[2] The exposure of the portfolio to financial risks defines the type of fund: i) conservative fund, ii) moderate fund, and iii) high risk fund.[3] Based on each one of the types of funds, the board of directors of the MPFs must approve and publish the investment policy, which will be subject to the investment regime defined by the national government. Also, they must establish the investment strategy for the portfolios they manage. This strategy will be reported exclusively to the Superintendencia Financiera de Colombia (FSC).

The adoption of the multi-fund system will go into effect after a transition phase in order to allow for proper disclosure, training, and implementation on the part of the fund managers. Thus, beginning on Sept. 15, 2010, the existing pension fund will be set up as a moderate fund subject to the investment regime applicable to it. If there are excesses or defects in any of the investment limits established, the MPF can keep those excesses or defects active until the new types of funds go into operation (February 28, 2011).

The account holders will be able to choose any of the three types of funds beginning on January 1, 2011.[4] Those that do not make any choice between January 1, and March 1, 2011 and who have not reached 50 years of age, in the case of women, and 55, in the case of men, will be assigned to the moderate system by default. The individual accounts of those who have reached the above-mentioned ages will be distributed between the conservative and moderate funds thus respecting the convergence rule that establishes the minimum balance that an account holder close to retirement[5] must have in the conservative fund, as shown in Table B4.1.[6]

The money deposited in the different types of mandatory pension funds must be invested based on the limits and guidelines set by the national government.[7] The approved investments encompass government bonds, debt securities issued by financial entities and the real sector in Colombia, credit-related securities derived from securitization processes, Banco de la República securities, shares in mutual funds, stock, investments in private capital funds as well as bonds, securities or shares issued abroad and structured products of protected capital, etc. The decree establishes rating requirements for the different investments. In general terms, an investment

1 Act 1328/July 2009.

2 Decree 2373/July 2010.

3 In addition, the PFMs must offer a special fund for scheduled retirement. The management of this must be oriented towards paying pensions.

4 The account holder will have the right to modify his choice of fund every six months.

5 The RAIS account holders will be able to retire at any age as long as the accumulated capital is sufficient to pay a pension that is at least 110% of the minimum legal wage for 1993, adjusted for inflation. The age column in the Table makes reference to the age required to get a retirement pension in the pay-as-you-go pension system.

6 The percentage assigned to the conservative fund could be higher by request from the account holder. Beginning in 2014, the age shown in the Table will be increased by two years for both men and women.

7 Decree 2955/August 6, 2010.

Table B4.1
Convergence rule

Age		Minimum Balance of the Individual Account in the Conservative Fund
Women	Men	(percentage)
50	55	20
51	56	40
52	57	60
53	58	80
54 +	59 +	100

Source: Decree 2373/July 1, 2010.

grade rating[8] is required for investments in fixed income securities issued both abroad and domestically by national companies.[9] The investments in fixed income securities issued by national companies abroad must have a rating equal to that granted to Colombia's foreign debt.[10]

The investments of the mandatory pension funds in securities or participating securities are subject to an overall limit based on the kind of fund for both those issued within the country and abroad. Investments in this type of asset for the conservative fund could represent up to 20% of the value of the portfolio and these increases to 45% and 70% in the case of the moderate and high risk funds respectively. Furthermore, the MPF must specify a minimum limit for these investments in their policy. This minimum cannot be lower than 20% for the moderate funds and 45% in the case of the high risk funds. Meanwhile, the investments made by any MPF in public debt securities issued or guaranteed by the nation must not be above 50% for the different type of funds.

Investments in other kinds of assets will be subject to quantitative limits, some of which are presented in Table B4.2.[11]

When the composition of the portfolio as of June 2010 is compared with the current limits (Graph B4.1, panel A), it is evident that all the investments are within the maximum limits established. However, when this comparison is made with the limits that will go into effect for the moderate fund as of June of the current year, the investment in floating rate investments will be slightly over the maximum limit allowed by the new system (Graph B4.1, panel B). This would suggest that the scope for the MPFs to make investments in floating rate investments is limited in the cases where the account holders choose the moderate and conservative funds.

3. Decree of Minimum Profitability

According to Act 100/1993, the MPFs must guarantee their affiliates a minimum profitability, which will be determined by the national government. The government regulated the methodology for calculating the minimum return[12] based on the following two factors: i) the profitability of a benchmark component, and ii) the average profitability of the system. The benchmark component is defined by the FSC by incorporating long-term criteria. Indices that summarize the performance of the national and international markets and a synthetic portfolio made up of fixed income securities issued by highly-rated national issuers could be used to build the benchmark component. The average profitability of the system, in turn, corresponds to a weighted average of the profitability earned by funds of the same kind, in which the individual share of each fund is held to a maximum limit[13] in order to reduce the impact of the results obtained by the larger funds.

The combination of the benchmark component and the average for the system make up a reference portfolio (benchmark) which is used to calculate both the requirement of minimum profitability and the commissions for performance.

8 The investment grade rating corresponds to a long-term rating that is at least BBB on both the Standard &Poor's and Fitch scales and Baa, at least, on the Moody scale. In the case of the short-term, the equivalent rating is A3, P3 or F3 on the Standard &Poor's, Moody's and Fitch scales respectively.

9 There are no rating requirements for public debt issued or guaranteed by the nation or by Banco de la República.

10 The lower rating for Colombia's foreign debt is taken as a benchmark for this purpose. If the private issue has more than one rating, the one with lower risk is chosen.

11 The PFM must refrain from using money from the mandatory pension funds to make investments in which that PFM or its affiliate or subsidiary companies have an interest. This includes situations where the PFM headquarters or its affiliates and subsidiaries are the issuer, guarantor or origin of securitization. The regulations establish additional limits such as: i) the exposure to a single entity or issuer is limited to 10% of the value of each type of mandatory pension fund, and ii) the maximum exposure to a single bond issue for all the funds managed by a single PFM is 30%.

12 Decree 2949/August 6, 2010.

13 The share of a particular fund in calculating the weighted average for the profit earned by the same type of funds is limited by an upper demarcation defined in relation to the number of funds of the same kind. Assuming six funds of each type are maintained, the individual share of each one of them in the weighted average would be limited to 20%.

Table B4.2
Overall Limits by Type of Instrument

Type of Investment	Share as Percentage of the Fund Value			
	Conservative fund	Moderate fund	High risk fund	Current limit
Public debt	70	50	50	50
Fixed income overseen by FSC	30	30	30	30
Fixed income not overseen by FSC	60	60	60	30
Floating rate income - domestic issuers	15	30	45	40
Foreign issuers	40	60	70	40
Currency exposure	10	35	50	30

Source: Decree 2955/ August 6, 2010.

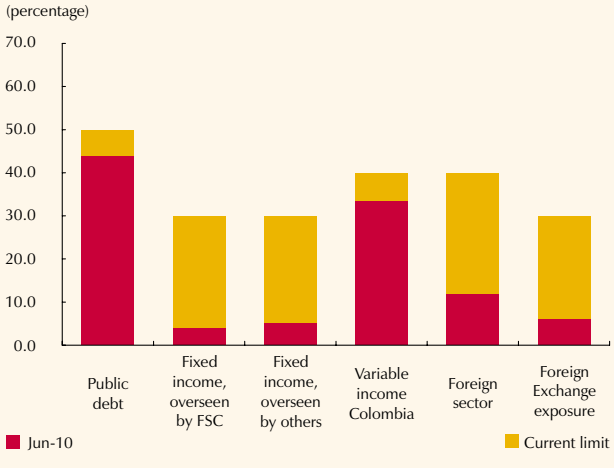
$$Benchmark\ portfolio = \alpha \times reference\ component + (1-\alpha) \times system \quad (1)$$

Where α corresponds to 30%, 20% or 10%, depending on whether it refers to the conservative, moderate or high risk funds respectively. By construction, the difference correlates to the share of the weighted average of the system's profitability. The requirement of minimum profitability corresponds to the minimum between the two options shown in Table B4.3.

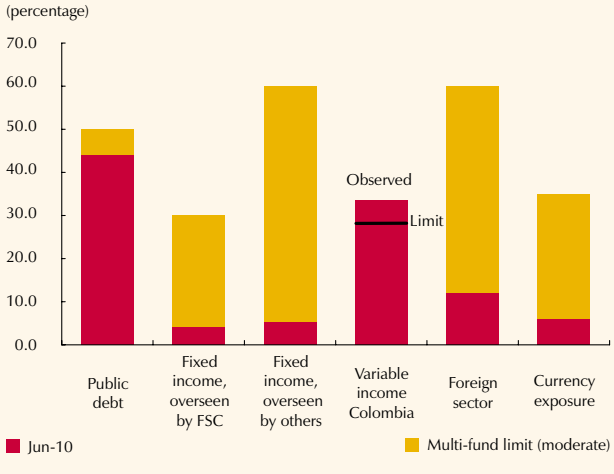
The minimum mandatory return will be calculated for a period of 36 months for the conservative fund, 48 months for the moderate one, and 60 months for the high risk fund. The FSC will verify compliance with the minimum profitability requirement on a monthly basis by comparing the profitability accumulated by each fund during the period measured with the minimum mandatory profitability calculated for the same periods as indicated in the previous Table.[14] The profitability for each type of fund will be equivalent to the internal rate of return in annual terms of the daily cash flow corresponding to the calculation period.[15] If the return obtained by the fund is lower than the required minimum return, the MPF must

Graph B4.1
Composition of the mandatory pension fund's Portfolio as of June 30, 2010

A. In Relation to the Current Limits



B. In Relation to the Limits of the Moderate Portfolio



Source: Superintendencia Financiera de Colombia; Decree 2955/August 6, 2010.

14 In the case of the high risk fund and between August 31, 2013 and July 31, 2014, the minimum return will tally with the minimum between the profitability of the benchmark portfolio reduced by 50% and the benchmark portfolio minus 500 bp. Between August 31, 2014 and July 31, 2015, the minimum profitability will correspond to the minimum between the profitability for the benchmark portfolio reduced by 43% and the benchmark portfolio minus 430 bp.

15 For this case, the daily cash flow is the one that regards the value of each type of fund at the start of operations on the first day of the calculation period and the net value of the daily contributions over that period as income. The expenses for this case correspond to the value of the fund at the close of the last day of the calculation period.

Table B4.3
Minimum Mandatory Profitability, Minimum Between Two Options

Type of fund	Option A	Option B
	Profitability of the Benchmark Portfolio	
Conservative	Reduced 30%	minus 200 bp
Moderate	Reduced 35%	minus 300 bp
High risk	Reduced 40%	minus 400 bp

Source: Decree 2946/ August 6, 2010.

cover the gap with its own funds, which will primarily affect the stabilization reserve.[16]

The requirement to comply with the minimum profitability will go into effect on August 31, 2013 in the case of the conservative fund and one year later for the moderate and high risk funds. During the year before this regulation goes into effect, the FSC will verify the return on the funds.[17] If the profitability obtained falls below the minimum required return, the MPF must provide the missing amount.

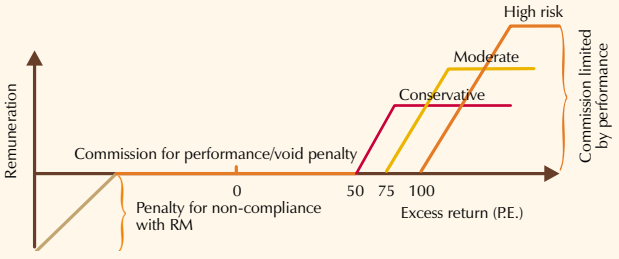
4. Bill to Regulate Commissions based on Performance

Currently, the MPFs receive a fixed commission equivalent to 3% drawn from the contribution made by each active account holder based on their income. This commission must be used to cover the management expenses and the purchase of provisional insurance for their account holders. The contingencies that the MPF must cover are: i) the lack of funds to provide for a failure to meet the minimum profitability. This is rectified by buying insurance from the Financial Guarantee Fund (Fogafin).

16 The companies that manage pension funds must keep a profit stabilization reserve with respect to each fund they oversee. This would be designed for complying with the minimum profitability required by the law. The minimum amount of that reserve must be 1% of the value of the respective fund.

17 The review of the minimum profitability during the year prior to when the regulation goes into effect will be carried out by taking the months between August 31, 2011 and July 31, 2013 as the period of calculation for the conservative fund and between August 31, 2011 and July 31, 2014 for the moderate and high risk funds. After the regulation is in force (August 31, 2013 for the conservative fund and one year later for both the moderate and high risk funds), the calculation period will be increased by adding the intervening months until the stipulated periods of calculation to verify the minimum profitability are completed (36 months for the conservative fund, 48 months for the moderate and 60 months in the case of the high risk one).

Graph B4.2
Performance-based Remuneration Proposal



Parameters (basis points)	Consertive	Moderate	High risk
Minimum excess return *(x)*	50	75	100
Maximum return remunerated *(z)*	200	300	400
Maximum excess per return	150	225	300

Source: Bill proposing commissions based on performance (Ministry of the Treasury and Public Credit).

And ii) the lack of funds to cover pension payments for disability and survivorship when the accumulated amount in the affiliate's individual account is insufficient after the requirements for accessing this benefit are fulfilled. To cover this, insurance is purchased from a company that specializes in that area.

The Ministry of the Treasury and Public Credit has published, for discussion, a bill which would regulate payments to the MPFs based on the best performance of the managed portfolios in order to give the managers an incentive to provide better management. Graph B4.2 shows the performance-based remuneration structure proposed in that bill.

A MPF will have the right to a performance commission if, during the period measured, it earns: i) an excess return compared to the benchmark portfolio that is above 50 bp for the conservative fund, 75 bp for the moderate one and 100 bp in the case of the high risk one, and ii) a real profitability of above 4%, 6% or 8% for the conservative, moderate and high risk funds respectively. Moreover, the excess return on which the performance commission would be paid is limited to 150 bp for the conservative fund, 225 bp for the moderate one, and 300 bp for the high risk one.

The commission based on performance corresponds to 5% of the excess profitability multiplied by the fund value, based on the following equation:

$$CAD = \frac{\left(V_{\max} - V_{\text{benchmark portfolio profitability } + x\ pb}\right)}{P} \times 5\% \qquad (2)$$

where:

$$V_{\max} = \min(V_{fund}, V_{benchmark\ portfolio\ profitability\ +Z\,pb}) \quad (3)$$

- V_{fund}, corresponds to the fund value at the close of the calculation period.
- $V_{benchmark\ portfolio\ profitability\ +Z\ pb}$, corresponds to the value of the fund at the close of the period calculated on the basis of the benchmark portfolio profitability plus 200, 300 or 400 bp (Z), for the conservative, moderate and high risk funds respectively.
- $V_{benchmark\ portfolio\ profitability+x\ pb}$, corresponds to the value of the fund at the close of the period calculated based on the profitability of the benchmark portfolio plus 50, 75 or 100 bp (X), for the conservative, moderate and high risk funds respectively.
- *P* corresponds to the period for the calculation of minimum profitability measured in years.

The first calculation of the performance commission will be done when the required months are fulfilled to complete the calculation period for the minimum profitability for each one of the funds, i.e., August 31, 2014 for the conservative fund, a year later for the moderate one, and August 31, 2016 for the high risk one.

5. Final comments

The goal of the multifund system is to allow the affiliates to choose the fund that best fits their risk profile and the stage they are at in their working lifetime and thus facilitate the management of the affiliate's money. This requires a lot of work on financial education in order to give the affiliates the proper tools to decide which fund fits their preferences. Otherwise, most of the money would stay in the default fund and the purpose of the system would not be fulfilled.

In Colombia, unlike other countries, the requirement of minimum profitability is defined in relation to both a benchmark portfolio and the profitability of the system. The latter factor carries significant weight in the definition of the benchmark, which could motivate the group performance by the MPFs. It is critical to study the possibility of defining the minimum profitability in relation to a benchmark made up of indices that reflect the market performance as is done with the portfolios that are managed on the international markets. Although there are currently no indices in the local market that properly represent the performance of the fixed income securities, efforts to advance in this direction must be undertaken.

The profitability of the mandatory pension funds is measured by using the internal rate of return, which assumes the same rate of return for the entire period measured. However, the methodology used the most for portfolio management is the *time-weighted return*. This correlates with the geometric average of the returns and offers more accurate results.[18] Indeed, it would be useful to analyze the possibility of implementing the latter methodology to measure the returns on the portfolios and the minimum profitability.

The bill proposes establishing commissions on the basis of performance which are additional to the fixed charge on the salary that the account holders currently transfer to the MPFs (3% drawn from contribution calculated on the basis of income). The new system of remuneration should be supported by a review of the cost structure for the industry in order to determine the level for the fixed commissions that would be appropriate and make it possible to cover the typical expenses incurred by the fund managers. It is crucial to undertake this study since, without it, the MPF could be receiving more than the necessary funds or less.

Although the purpose of the performance commissions is to align the account holder's preferences with those of the MPF, the proposed system does not take limits by type of risk into account. Besides encouraging the financial education of the affiliates, it is suggested that information be published about the exposure of the portfolios to different types of risks and return indicators adjusted by risk (Sharpe ratio).

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18 Litterman and the Quantitative Resources Group, Wiley Finance, Modern Investment Management (2003).

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

In 2009, there was a drop in the total indebtedness of firms and a restructuring of their liabilities towards more long term debt. The economic slowdown produced changes in the indicators for performance and indebtedness. This was particularly true for small firms and those belonging to the tradable goods sector. Nevertheless, the return on assets remained at levels above those that had been seen in the first few years of this decade. The mortgage portfolio also continues to increase its share of the total household indebtedness due to the higher growth of this type of credit in comparison to that of the consumer loan portfolio. At the same time, in the first half of 2010, the financial burden of households declined and their expectations about the economic situation have improved.

A. PRIVATE CORPORATE SECTOR

Analyzing the trend of the performance indicators and company leveraging is of vital importance for maintaining financial stability due to the fact that a large part of the financial system assets are concentrated there. The credits and securities of the private corporate sector represented 44% of the total assets of the credit institutions in June, 2010.

In this section, an analysis based on the accounting information reported to the Financial Superintendency and Superintendency of Firms is presented. Due to the frequency with which this information is collected, the results given in this section correspond to those from the financial statements of December, 2009. With respect to how representative the sample is, the indebtedness of the companies that are analyzed is 43% of the commercial portfolio in December, 2009.

The indicators examined seek to describe the indebtedness of the companies as well as their creditworthiness. These include indicators of indebtedness,

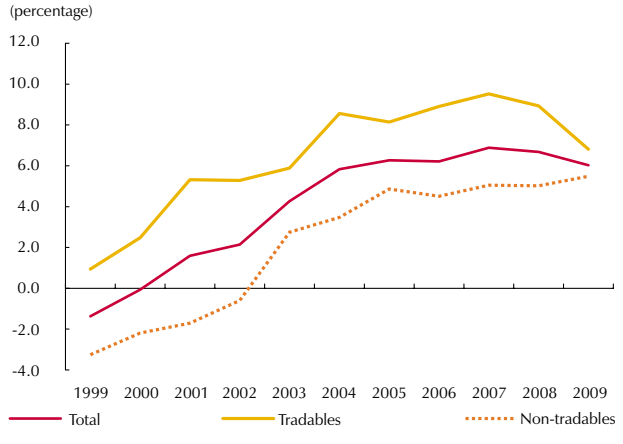
profitability and liquidity which have been identified as determinants of the financial fragility of Colombian firms.[27]

1. Indicator trend[28]

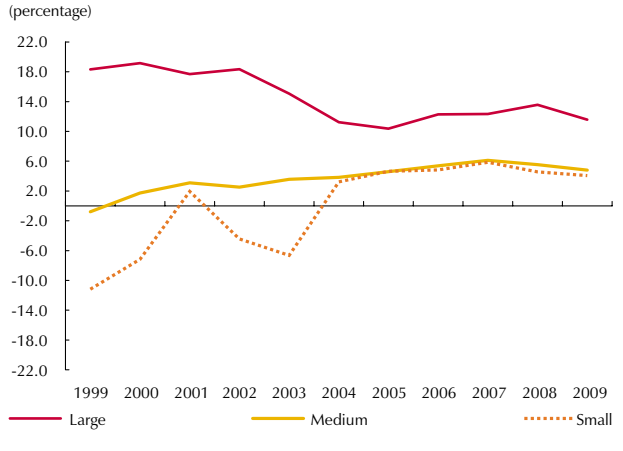
The low demand seen until mid-2009 and the slowdown in the commercial loan portfolio were reflected in the performance indicators and the leveraging of the companies in the sample. Thus, a drop in the return, in the total indebtedness and financial indebtedness was seen. It is important to highlight the fact that this performance was heterogenous throughout the economic sectors and the size of the firms.

Graph 47

A. ROA (earnings before taxes /total assets)



B. ROA by Size



Source: Financial Superintendency of Colombia and of Firms, Banco de la República calculations.

The strength of each one of the indicators is analyzed below. Companies that are producers of tradable goods and non-tradable goods are differentiated[28] and so are the small, medium and large firms.[29]

When the return on assets (ROA) –the ratio between the pre-tax profit and total assets– is examined, a generalized drop for all sizes of companies is seen as is a decline in the indicator for companies in the tradable goods sector. The foregoing translates into a 70 bp reduction in the ROA of the total sample, which had gone from 6.7% in December, 2008 to 6% in the same month in 2009 (Graph 47, panel A). It should be emphasized that in spite of the economic slowdown in 2009, the profitability of the companies remained at levels above those that were seen in the crisis or the late 90s as well as above those during the crisis of the first few years of this decade.

Analyzing the ROA by the size of the firm, one sees that the small companies continue to be the least profitable with ROA of 4.1% in 2009 (Graph 47, panel B). With respect to the economic sectors, the companies that produce non-tradable goods are still

27 Martinez, Oscar. "Determinantes de la fragilidad de las empresas colombianas", Borradores de Economia, num. 259, Banco de la República, 2003.

28 The companies that produce tradable goods are the ones that belong to the agricultural, fishing, mining and quarrying, and manufacturing sectors. The ones that produce non-tradable goods are in the rest of the sectors.

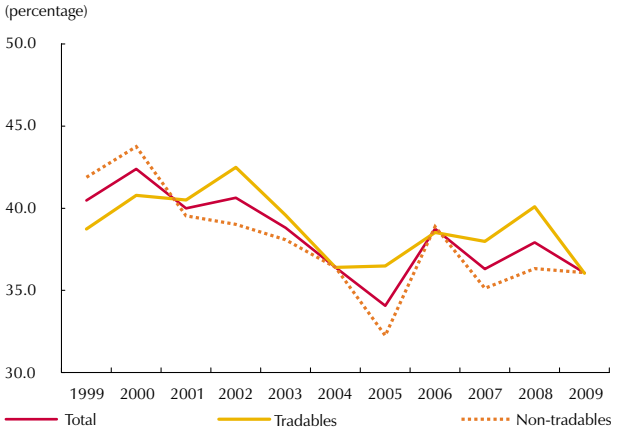
29 According to Act of Congress 590, 1990, companies can be classified by the size of their assets as follows: i) small: value of the total assets between 501 and 5,001 SMMLV, ii) medium: value of the total assets between 5,001 and 30,000 SMMLV, and iii) large: value of the total assets greater than 30,000 SMMLV.

less profitable than those that produce tradable goods in spite of the fact that their profitability rose 50 bp in 2009.

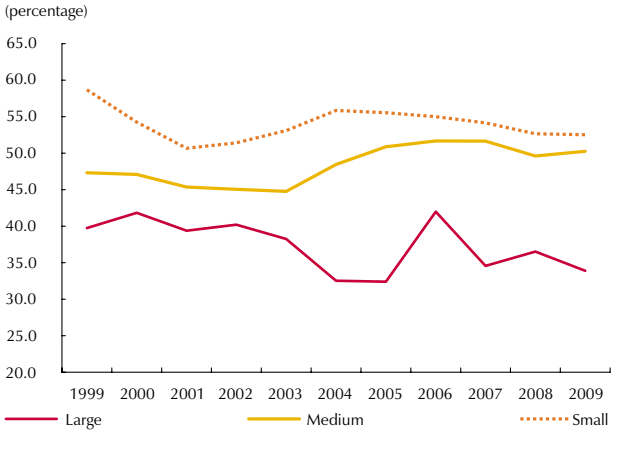
With respect to indebtedness, the indicators that were used were the ratio of total indebtedness and the ratio of financial indebtedness. The first ratio, defined as the proportion between total liabilities and assets, measures the degree of leveraging. The higher this indicator is, the greater the amount of money the firm will have to allocate to debt servicing. As of December, 2009, the ratio of total indebtedness was at 36.1% for the total sample which was 2 pp lower than what it had been in 2008 (Graph 48, panel A).

Graph 48

A. Total Indebtedness (total liabilities/total assets)



B. Total Indebtedness by Size



Source: Financial Superintendency of Colombia and of Firms, Banco de la República calculations.

When the different groups are all analyzed, one finds that this indicator fell for all of them. The ratio of total indebtedness of tradable goods firms and the largest firms registered the most representative change. They declined, following the same order, from 40.1% and 36.5% in 2008 to 36% and 33.9% in 2009 (Graph 48).

The ratio of financial indebtedness, which corresponds to indebtedness to credit institutions only, showed a general fall by both sectors and sizes. The foregoing is consistent with the strength of the commercial loan portfolio in 2009 and with the lower demand for credit that the banks saw that year. Thus, an indicator of 11.9% is obtained for the total sample which is 1.7 pp lower than what was seen in 2008. This performance could also be reflecting a correction in the levels of financial indebtedness seen in the last few months of 2008.

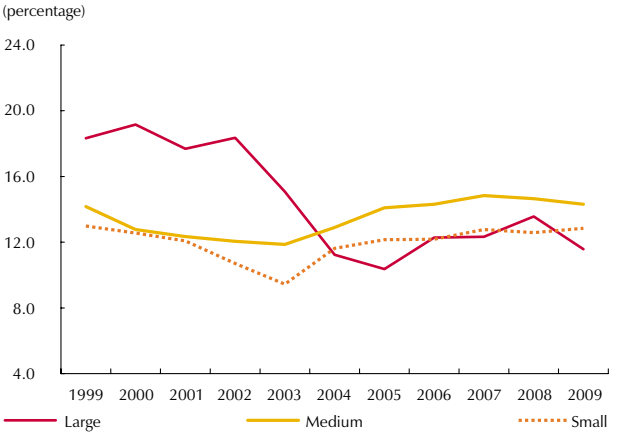
Comparing this performance with what was found for profitability (Graph 49), the relationship between profitability and leveraging is seen to be positive in the analysis by economic sector. In other words, the companies producing tradable goods are, in turn, the most profitable and the most indebted. At the same time, by size, the analysis shows an inverse relationship between profitability and leveraging with the small and medium firms being the least profitable and the most indebted.

Last of all, the companies are still concentrating their financial obligations in short term debt and in pesos. In December, 2009, the make up of this by period and currency showed that 68.6% was short term debt and 85% was denominated in pesos. This pattern did not vary significantly by sector or the size of the company. However, in more recent years, a change towards

Graph 49

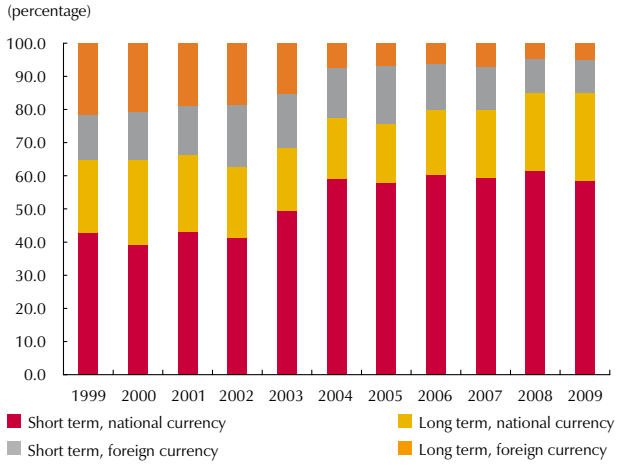
A. Financial Indebtedness
(financial liabilities/total assets)

B. Financial Indebtedness by Size



Source: Financial Superintendency of Colombia and of Firms, Banco de la República calculations.

Graph 50
Indebtedness by Currency and Term



Source: Financial Superintendency of Colombia and of Firms, Banco de la República calculations.

more long term loans has been seen such that in 2009, the share of the financial obligations with maturities of more than a year rose 3 pp and was at 31.4% (Graph 50).

2. Intragroup Analysis

Below, an analysis for each one of the groups of firms is given. The purpose for this is to identify the items that caused the variations in the profitability and indebtedness indicators. To do this, a homogenous sample was built which was made up of the firms that reported information in 2008 and 2009.

As was mentioned in the previous section, the companies that produce tradable goods registered a fall in the ROA that was mainly associated with the fishing and mining sectors.[30] In these sectors the return declined 5.7 pp and 16 pp respectively. In contrast, the increase in the profitability of companies that are producers of non-tradable goods was explained by the service and construction sectors (Table 4).

Going by size, the most profitable companies as of December, 2009 were the large ones (6.3%), followed by the medium ones (4.7%) and the small ones (3.3%) as can be seen in Table 5. There was confirmation of the fact that the firms with greater leveraging were the least profitable together with those that experienced a larger fall in this indicator. At the same time, this indicator declined 2.1 pp in the case of the medium-sized companies and 1.1 pp for the small ones. This contraction was associated with, in the first case, a 3.6 pp decrease in the operating income and, in the second case, with a 3 pp decrease in operating income and a 6 pp increase in sales expenditures.

30 In spite of the positive performance that the mining sector had in comparison to the rest of the sectors, there was an annual, real drop of 14.2% in the operating income between December, 2008 and the same month in 2009. The foregoing could be associated in large part with the decline in the prices for commodities compared to those seen in mid-2008 as a consequence of the international recession.

Table 4
Financial Indicator for the Corporate Sector by Economic Sector
(percentage)

Year	Tradable				Non-tradables		
	Agriculture	Fishing	Mining	Industry	Construction	Trade	Services
ROA							
2008	2.2	(3.5)	33.8	4.5	5.6	5.7	4.9
2009	2.5	(9.2)	17.9	5.3	5.9	5.6	5.4
Total Indebtedness							
2008	33.6	62.8	40.8	40.7	61.5	57.3	24.1
2009	31.4	70.5	31.6	36.4	59.2	53.8	19.4
Financial Indebtedness							
2008	13.4	32.0	3.8	17.2	20.3	21.2	9.5
2009	13.3	27.2	4.0	13.9	18.2	19.0	5.8
Sector share [a/]	3.4	0.1	7.1	32.6	5.6	16.1	35.2
Number of companies as of 2009	1.343	36	382	3.977	1.723	6.241	6.063

a/ As a percentage of total assets in December 2009.
Source: Financial Superintendency and of Firms, Banco de la República calculations.

Table 5
Financial Indicators for the Corporate Sector and by Size
(percentage)

Year	Small	Medium	Large
ROA			
2008	5.4	5.9	7.1
2009	3.3	4.7	6.3
Total Indebtedness			
2008	51.3	49.3	38.0
2009	50.6	47.8	33.1
Financial Indebtedness			
2008	12.2	14.5	14.3
2009	12.0	13.8	11.3
Share per total assets	1.9	9.2	88.9
Number of companies	3,680	7,426	8,659

Source: Financial Superintendency and of Firms, Banco de la República calculations

When the debt indicators are analyzed, it is evident that the declines for these are associated with the 6.6% decrease in total liabilities. Among these, the reduction in the balance of short term financial obligations stands out (Table 6). With respect to the analysis by sectors, the shrinkage is found to be the result of the mining, industry, commerce and services group. Finally, the fact that the large firms have had the largest falls in the debt indicators stands out. They have an annual, real variation of -4.9% pp of total indebtedness and -3 pp of financial indebtedness.

Table 6
Balance Sheet of Real Private Sector

	Trillions of pesos, December 2009			Rates of growth (percentage)		Share (percentage)	
	2007	2008	2009	2008	2009	2008	2009
Assets							
Current assets	**168.0**	**178.4**	**163.7**	**6.2**	**(8.3)**	**38.2**	**33.0**
Available	13.4	12.8	13.3	(4.8)	3.7	2.7	2.7
Investments	18.9	17.2	14.0	(8.6)	(18.7)	3.7	2.8
Debtors	83.8	92.9	87.6	10.9	(5.8)	19.9	17.7
Inventories	49.6	52.7	46.4	6.2	(12.0)	11.3	9.3
Deferred	2.3	2.8	2.5	20.6	(11.6)	0.6	0.5
Long Term Assets	**282.2**	**288.9**	**332.2**	**2.4**	**15.0**	**61.8**	**67.0**
Investments	77.8	79.4	98.6	2.0	24.2	17.0	19.9
Debtors	9.4	9.9	11.2	5.0	12.8	2.1	2.3
Property, Plant and Equipment	77.4	82.2	85.2	6.2	3.6	17.6	17.2
Intangibles	15.0	16.5	18.9	10.4	14.3	3.5	3.8
Deferred	12.2	13.6	15.0	12.1	9.9	2.9	3.0
Other assets	1.3	1.0	0.8	(26.2)	(18.1)	0.2	0.2
Appreciation	89.0	86.3	102.7	(3.0)	18.9	18.5	20.7
Total assets	**450.2**	**467.4**	**495.9**	**3.8**	**6.1**	**100.0**	**100.0**
Liabilities							
Current Liabilities	**121.8**	**130.9**	**114.4**	**7.4**	**(12.6)**	**71.0**	**66.5**
Financial liabilities	35.3	39.9	30.3	13.1	(24.1)	21.6	17.6
Suppliers	34.1	34.6	31.8	1.3	(8.1)	18.8	18.5
Accounts payable	23.8	26.6	24.2	11.7	(8.9)	14.4	14.1
Bonds and commercial paper	0.8	0.8	1.0	2.3	12.9	0.5	0.6
Others	27.8	29.0	27.2	4.3	(6.2)	15.7	15.8
Long Term Liabilities	**49.8**	**53.4**	**57.7**	**7.4**	**8.0**	**29.0**	**33.5**
Financial liabilities	23.6	27.3	26.8	15.8	(1.9)	14.8	15.6
Suppliers	0.9	1.1	1.3	24.7	14.4	0.6	0.7
Accounts payable	7.8	8.0	10.9	2.0	37.0	4.3	6.4
Bonds and commercial paper	6.6	5.8	7.2	(11.2)	23.7	3.2	4.2
Others	10.9	11.2	11.5	2.8	2.7	6.1	6.7
Total Liabilities	**171.6**	**184.3**	**172.1**	**7.4**	**(6.6)**	**100.0**	**100.0**
Total Equity	**278.6**	**283.0**	**323.8**	**1.6**	**14.4**	**2,125.6**	**2,119.0**
Capital stock	11.7	13.3	15.3	13.5	14.8	100.0	100.0
Surplus capital	53.6	58.5	71.6	9.2	22.4	439.4	468.6
Reserves	30.2	35.5	42.2	17.4	19.0	266.4	276.2
Equity revaluation	61.0	54.3	51.8	(10.9)	(4.7)	408.2	339.0
Dividends	0.0	0.0	0.1	178.1	206.5	0.1	0.4
Profit from the accounting period	23.1	23.0	22.5	(0.1)	(2.4)	173.0	147.1
Profit from previous accounting periods	9.6	11.4	17.2	18.2	50.7	85.5	112.4
Appreciation surplus	89.4	86.9	103.2	(2.8)	18.7	653.0	675.3

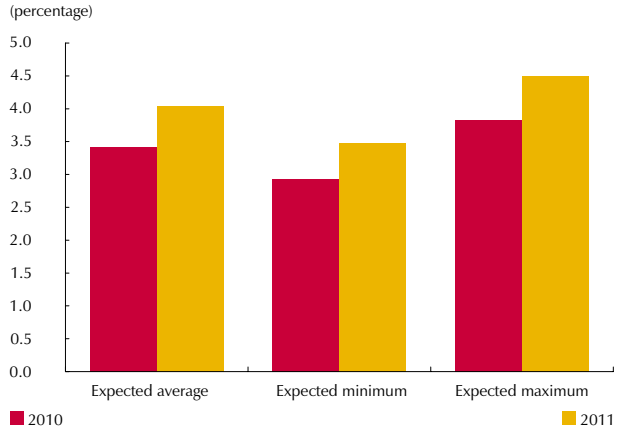
Source: Financial Superintendency and of Firms, Banco de la República calculations.

3. Business expectations

The results of the surveys taken in the first half of the year show an improvement in the expectations of businessmen related to economic growth, perception of liquidity and availability of credit.

According to the survey of expectations done by the Banco de la República in June, those who were surveyed expect that the growth of the economy in 2010 will be within a range of 2.9% to 3.8%. This result is higher than what was expected in the survey taken in January of this year (1.2% to 2.1%) (Graph 51). With respect to 2011, businessmen foresee the economy growing between 3.5% and 4.5% in contrast with the 2.1% and 3.2% expected in January.

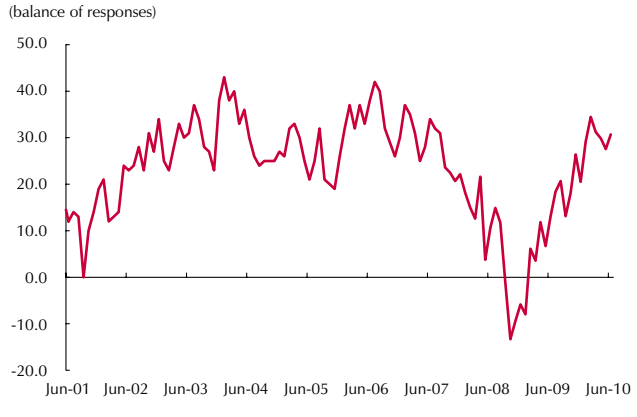
Graph 51
Expected Growth of the GDP



Source: Banco de la República.

According to the Fedesarrollo Survey of Business Opinion (EOE in Spanish) that was taken in June, 2010, the responses with respect to the firms' economic situation for the next six months shows an optimistic balance. In Graph 52, a growing trend starting towards the end of the third quarter of 2008 is seen which indicates that the number of businessmen with positive expectations has risen with respect to the pessimists.

Graph 52
Company Economic Expectations



Source: Fedesarrollo.

According to the ANDI Survey of Overall Industrial Opinion (EOIC in Spanish) done in June, 2010, the installed capacity was 76.5% thus continuing the positive trend seen so far this year. Among the main obstacles that businesses face are the low demand, the changes in foreign exchange and the increase in the costs of raw materials.

Taking up the Banco de la República survey of economic expectations, the proportion of those consulted who see that liquidity is at high levels showed a 22.2 pp recovery compared to the survey done in June, 2009 and is at 69.1%. Also, the group of businessmen who think that liquidity is low is 19.8%.

With respect to the liquidity expectations for the next six months, the balance of the responses suggests that this will remain unchanged (66.7%).

Finally, the proportion of businessmen who think that there is a high availability of credit rose, having gone from 60.5% in January to 76.5% in June, 2010. The

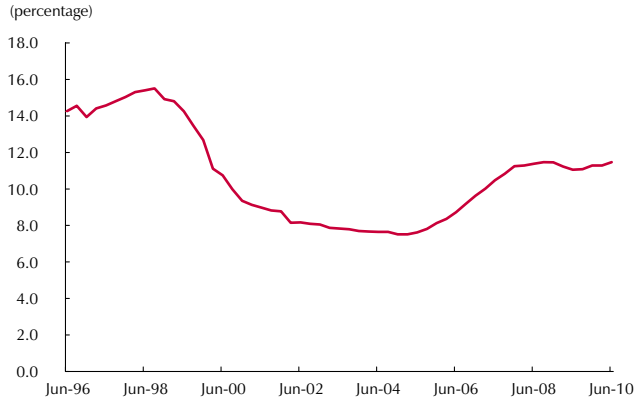
above is consistent with the reduction in the proportion of businessmen who believe that the availability of credit is low and those who think that it is not available at all.

When the availability of credit for the next six months is analyzed, 71.7% of the businessmen surveyed think that there will not be any changes in availability during this period while 16% predict that the supply will rise.

B. HOUSEHOLDS

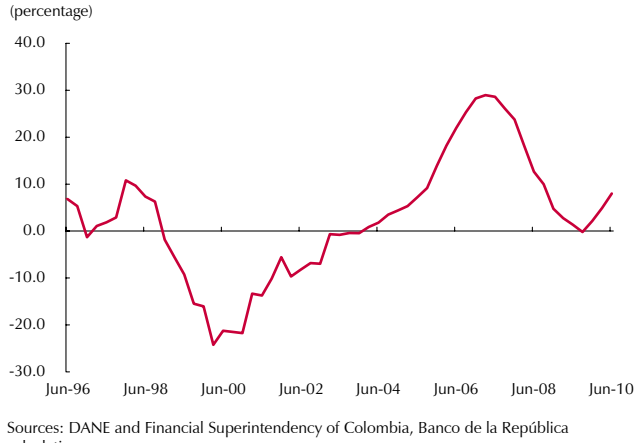
In this section, the overall performance of consumer loans and mortgages and how these are related to the change in the prices for housing and the financial burden on households is analyzed. In addition, different indices of the expectations, confidence and economic conditions for these agents are examined as well as their perception of purchasing housing and durable goods in order to understand the current financial situation of households and their future outlook.

Graph 53
Mortgage and Consumer Portfolio As a Percentage of GDP



Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

Graph 54
Real Annual Growth of Household Indebtedness



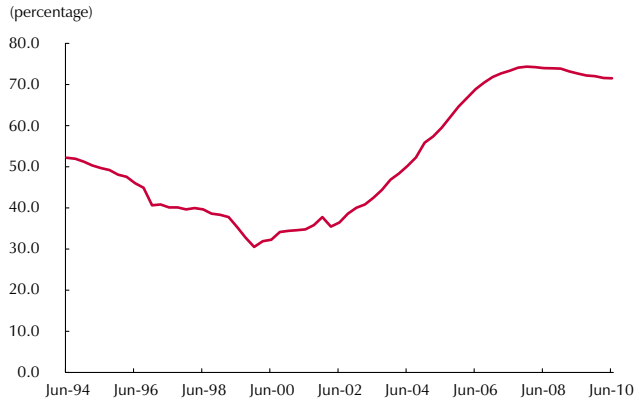
Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

1. Household Indebtedness

The level of household indebtedness (defined as the ratio of the sum of the total mortgage and consumer loans to the GDP) have showed a slight upward trend as it approaches 11.5%. This increase is related to the higher growth of indebtedness in comparison to that of the GDP. However, it must be emphasized that the ratio has fluctuated around 11.3% since the first quarter of 2008 (Graph 53). This level of indebtedness is still relatively low compared to the 15.5% registered in the third quarter of 1998. In the second half of 2010, the growing strength of the overall portfolio (mortgage and consumer loans) was accentuated as it registered an annual, real growth of 8.0% for this period (Graph 54).

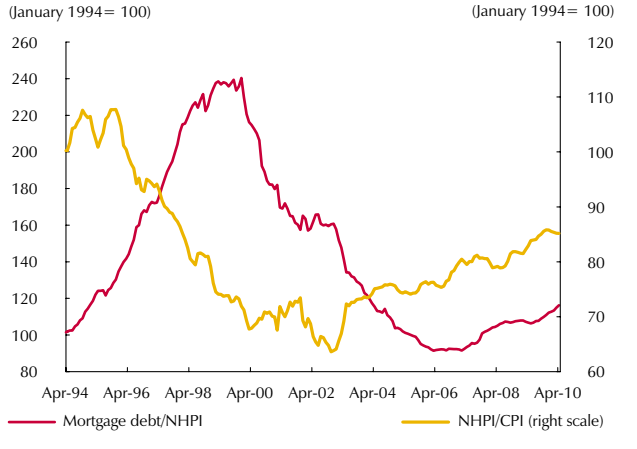
The analysis of the composition of household debt makes it possible to evaluate the exposure to risk that the different types of credit have. The more sizeable growth of the mortgage portfolio in comparison to the consumer one leads to a decline in the share that the latter has of total household debt (Graph 55). The drop in the consumer loan share of the total indebtedness implies a lower exposure of the financial system to credit risk given that mortgage loans have better guarantees collateral

Graph 55
Consumer Credit Share of Total Household Indebtedness



Sources: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 56
Ratio of Mortgage Debt Growth Index and NHPI, and NHPI/CPI Ratio



Sources: DANE, DNP and Financial Superintendency of Colombia, Banco de la República calculations.

in comparison to consumer loans. Nevertheless, the latter still represents around 71.5% of the total household portfolio.

In the case of the mortgage portfolio, one sees that their disbursements denominated in pesos and at the fixed rate continued to grow and represented 92.4% of the total in June, 2010. The concentration in this type of disbursement implies that credit institutions have a larger exposure to interest rate risk given that the borrowing rates may vary while the lending rates remain fixed.

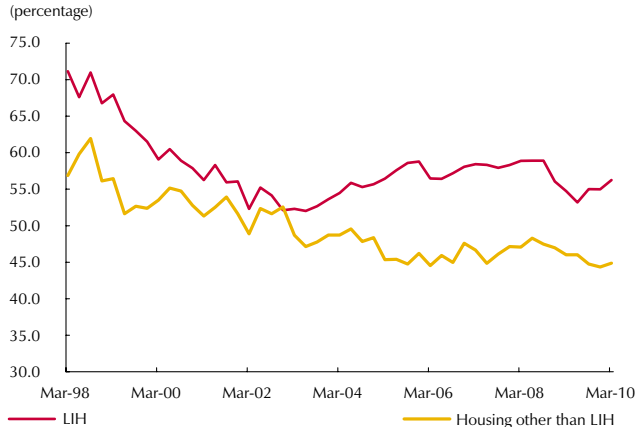
Furthermore, the ratio between the index of mortgage debt growth and that of new housing prices (IPVN in Spanish) rose in the first four months of 2010 and was at a level of 116.2 points in April of this year (Graph 56). This was due to the more than proportional growth of the mortgage portfolio with respect to the increase of the IPVN. Even though the indicator does not approach the levels registered during the crisis at the end of the 90s, its deterioration warns us of the need to closely follow the value of household mortgage debt in relationship to their guarantees.

At the same time, the ratio of the IPVN and CPI shows a stable trend following the constant increases that have been seen since the middle of 2003. This is due to the recent slowdown in the growth of the IPVN which is currently showing an annual rise of 4.7% in comparison to the 7.1% that it registered in December, 2009.

In keeping with what has been pointed out, the loan to value (LTV) for the mortgage portfolio shows an increase in the value of the disbursements with respect to the guarantees collateral. The rise in the indicator is more accentuated for the mortgage loans for low-income housing (LIH). This situation could be related to the incentive policies that were recently implemented for acquiring this type of housing as well as the generalized growth that the mortgage portfolio has experienced since the end of 2009 (Graph 57). Again it should be noted that in spite of the recent increase in the LTV, their current levels are much lower than those registered for the two types of housing during the crisis.

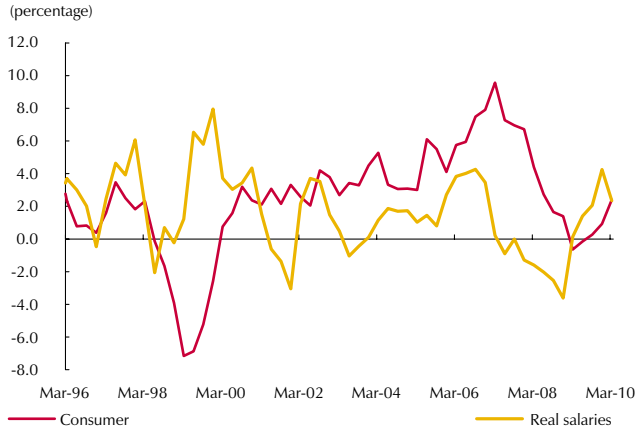
The annual, real growth of household consumption, in turn, went back to showing positive numbers and reached a level of 2.4% in March, 2010. This increase is related to the recovery that the consumer portfolio has shown in the first half of the year (Graph 58). In spite of the slowdown in the growth

Graph 57
Loan to value



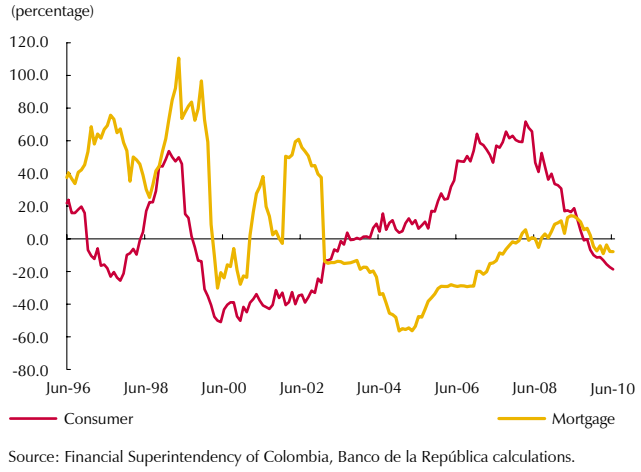
Source: Asobancaria, Banco de la República calculations.

Graph 58
Real Annual Growth of Household Consumption and of Real Salaries



Source: DANE, Banco de la República calculations.

Graph 59
Real Annual Growth of the Non-performing Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

of the real salary that was evident in the first half of 2010, it continues to show positive values (2.3% annually), which suggests a better financial situation for households as a result of their higher investments.

Meanwhile, a real shrinkage in the non-performing portfolio for mortgage and consumer loans[31] has been seen as they registered a drop of 18.7% and 7.9% respectively (Graph 59). This decline, accompanied by the growth of the two types of credit, shows an improvement in terms of credit risk associated with these debtors.

2. Household Financial Burden

In the first half of 2010, the household financial burden[32] continued to show the trend that had been seen in 2009. In June of the current year, this indicator reached a level of 16.5%, which means a reduction of 63 bp with respect to what was registered at the end of last year (Graph 60). The trend of this indicator can be explained, primarily, by the reduction, of interest payments as a result of the monetary policy effect of reducing interest rates. This is confirmed when the change in the indicator for financial burden which includes only interest payments is seen. This indicator showed a reduction of 51 bp during the same period.

The shrinking in the levels of household indebtedness could contribute to the improvement in the non-performing portfolio which, as was reported in Chapter II, declined in the first half of 2010.

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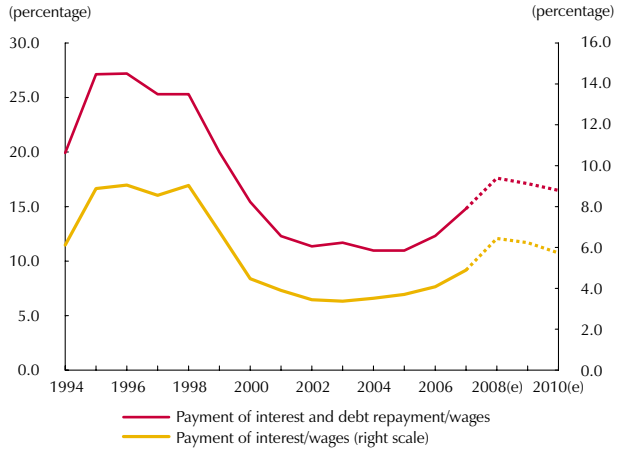
31 The definition of the non-performing mortgage portfolio was modified as of December, 2001 so that now it includes overdue installments as well as payments on overdue principal. That is why there is a jump in the annual series increase for all of 2002.

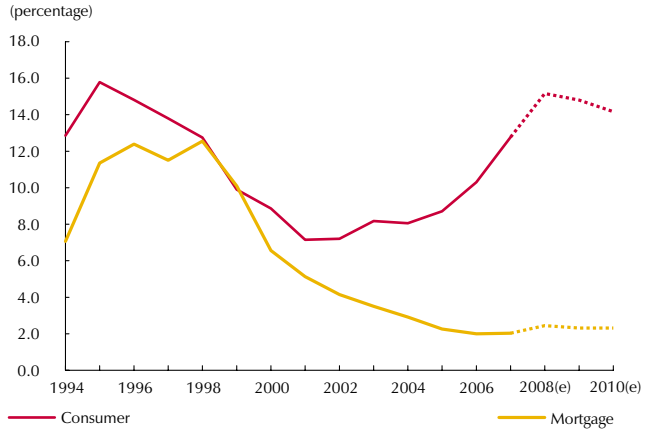
32 This indicator was slightly modified from the one that had been used to make estimates up until June, 2009. It is defined as the interest payment (with monetary correction) and payments against principal associated with the consumer and mortgage loan portfolios divided by employee wages. Since the previous Report, the 2000 base series has been used to determine the increase in remuneration paid to employees as reported by DANE. Before that date (1994-1999), growth was estimated based on the increases during this period associated with the new base. Remuneration for 2009-2010 was projected by using the increases in the real wage index for the manufacturing industry.

Graph 60
Household Financial Burden



(e) estimated.
Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

Graph 61
Household Financial Burden (including debt repayment)



(e) estimated.
Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

When the components of the financial burden are divided between the consumer and mortgage portfolios, the fact that the effect in the reduction of interest rates has been more significant for the former can be appreciated (Graph 61). This result could be because the consumer loan portfolio has a shorter duration and because its balance is approximately 3.6 times larger than the mortgage one is.[33] In spite of the reductions in the interest payments, the consumer portfolio is still the main component of the household financial burden since it represents 14.2% of the wages towards the end of the first half of 2010.

Another type of indicator for the household financial burden is built as follows:

financial burden = real component of interest paid / wages

The numerator reflects the interest expenditure but only that concerning its real component. It does not include the inflationary component since this is not an expense but a contribution to principal as it compensates for the loss in the value of the nominal amount outstanding over the course of time. This installment maintains the debt in real terms and leaves household wealth unaltered. Payment against principal is not included for the same reason. Thus, this indicator measures that portion of household financial expenses that reduces its wealth.

In the first six months of 2010, this indicator showed a declining trend in contrast to what had been seen since the end of 2006 and was at 5.6% at the end of the period (Graph 62). This performance is mainly explained by the reduction in the lending rates together with the stability of the inflation rate which has generated a decrease in the payments on interest.

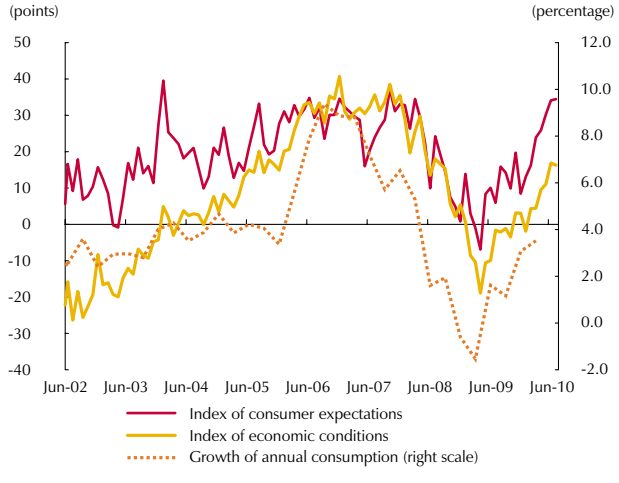
In spite of the reduction in the levels of household indebtedness, the results of the *Report on the Credit Situation in Colombia* (RSCC in Spanish) for June,

33 The effect of the reduction in the interest rate affects the outstanding consumer loan portfolio and not only marginal issues. This is due to the fact that these reductions generate a decline in the usury rate which, in turn, leads to later decreases in the rates of the loans that had been issued before the adjustments in the usury rate. In fact, the income from the consumer loan portfolio interest dropped 7.9% between June, 2009 and the same month in 2010 while the nominal growth of the consumer portfolio was 8.6% during the same period.

Graph 62
Household Financial Burden: Real Component of Interest/ Wages

e) estimaded.
Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

Graph 63
Growth of Household Consumption and Consumer Expectation and Economic Condition Indices



Sources: Fedesarrollo and DANE, Banco de la República calculations.

2010 indicated that the main factor that stopped the banks and the CFC from granting more or larger loans to households was still the payment ability of their existing clients. Thus, the perception of the intermediaries regarding the fragility of the debtors' ability to pay is still the same.

3. Outlook

In the first half of 2010, the improvement in household expectations regarding their economic situation continued. The Index of Consumer Expectations (ICE)[34] reached a level of 34.5 (p) in July, 2010, a level that was above what was registered in December, 2007 (Graph 63). A similar performance was seen in the Indicator of Economic Conditions (IEC),[35] which went from showing a negative value in January, 2010 (-1.3 p) to a value of 16.3 p in July of the same year. Those changes could indicate a more dynamic household consumption for the rest of 2010.

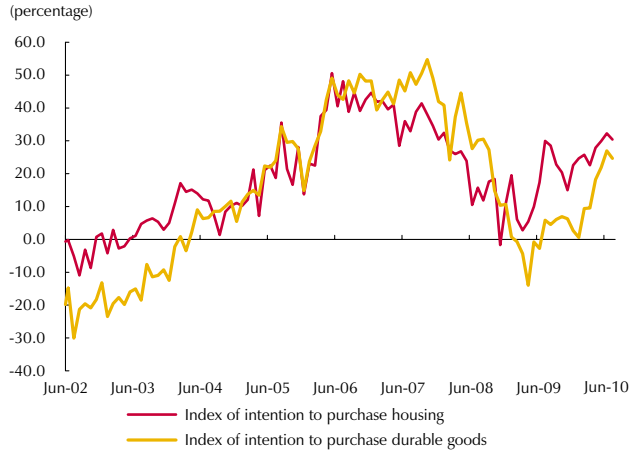
At the same time, the change in the indicators of intention to purchase housing and durable goods shows the improved expectations that households have with respect to the change in economic activity (Graph 64). In the first six months of 2010, the indicator of intention to purchase housing registered considerable growth and reached levels in July that were similar to those reported at the end of 2007. The index of intention to purchase durable goods showed a similar trend.

Finally, according to the RSCC from June, 2010, it can be seen that a high proportion of the banks kept their requirements the same and they are expected to stay at these levels for the next three months. In contrast, a high percentage of the CFC and Cooperatives expect to continue raising their requirements given their risk perception.

34 It is built on the basis of the following questions: Do you think that, within a year, your household will be doing better / worse / the same economically as it is now? Do you think that we are going to have good or bad economic times over the next 12 months? Do you believe that the country's economic condition will be better or worse a year from today?

35 This is built on the basis of the following questions: Do you believe that your household is doing better or worse economically than it was a year ago? Do you think that this is a good time to purchase large items such as furniture or appliances?

Graph 64
Purchase Perception Index of Housing and Durable Goods [a/]



a/ Percentage of household that believe it is a good time to buy a house or durable goods minus the percentage that believe it is a bad time.
Source: Fedesarrollo, Banco de la República calculations.

To conclude, households are showing better financial conditions compared to those seen half a year ago. The mortgage loan share of the total debt rose while the interest rates dropped over the first six months of 2010. This was accompanied by lower levels of financial burden for households.

C. NON-FINANCIAL PUBLIC SECTOR (NFPS)

1. Fiscal Balance

The analysis of this section is mainly based on the revision of the Financial Plan drawn up in June of this year by the Ministry of the Treasury and Public Credit. In the March, 2010 Financial Stability Report, the figures based on the revision of the Financial Plan made in January were presented. Although the most recent revision shows some updates, it does not represent changes in the goals of macroeconomic stability and sustainability of the public finances established by the Government.[36]

The projected NFPS balance for 2010 is marginally different from the one that was presented in the January revision. While the estimated deficit was 3.8% of the GDP in January, 3.6% was what was predicted in the June revision. This difference is primarily due to an updating of the data as of December, 2009 and to the change in the GDP forecast for 2010 (Confis, June, 2010). Within this, the deficit of the National Government (GN) in 2010 will be 4.4% of the GDP and the surplus of the decentralized sector (DS), 0.7% of the GDP (Table7). This data implies an increase in the NFPS deficit that is 1 pp of the GDP with respect to 2009 due to a rise in the NG deficit and a lower surplus in the DS.

Table 7
Fiscal Balance: Non-financial Public Sector

Balance by period	Billions of pesos		Percentage of the GDP	
	2009	2010[a/]	2009	2010[a/]
1. Non-financial public sector	(12,865)	(19,412)	(2.6)	(3.6)
1.1 Central National Government	(20,715)	(23,250)	(4.2)	(4.4)
1.2 Decentralized sector	7,850	3,838	1.6	0.7

a/ These data correspond to the revision done in June 2010.
Source: Ministry of the Treasury and Public Debt (Confis).

36 For more information see Fiscal Policy Board (Confis), Revised Financial Plan 2010, June 23, 2010.

This deterioration in the fiscal balance with respect to 2009 was due to a temporary change in policy to face the international crisis. In general, it was expected that better results in the economy would direct public finances back to recovery and sustainability as had been defined a year ago in the Medium Term Fiscal Framework (MFMP in Spanish). However, the lower revenue for the national government as a consequence of the reduction in Ecopetrol results has interrupted this change in posture and, in spite of the tightening of NG expenditures by COP$5.9 t this year in response to the lower revenue, the NFPS balance deteriorated. The consequence of this has been an increase in the government's financing needs and thus higher levels of public debt.

2. Creditworthiness and Debt Dynamic

Table 8 shows the NG's outstanding debt. In June, 2010 public debt grew at a much lower rate than it did in December, 2009 in spite of the deterioration of the fiscal balance. Specifically, the total gross debt grew at a rate of 7.8% annually in June while this same rate was 13.5% six months earlier. Domestic debt increased 10.9% in June, 2010 (15.6% in December, 2009) while foreign debt increased 1.4% (9.3% in December). As a consequence of the differences in the rates of growth between the two types of debt, domestic debt gained 2 pp in its share of the total in the last six months.

The national government's lower revenue which fell 0.6% annually in June, 2010 together with the moderate but positive growth of the gross debt generated a reduction in the NG's creditworthiness indicator (revenue/debt) (Graph 65). In fact, this has fallen continuously since September, 2009 when it reached 46.4% and today, it is at 40.3%.

The duration of the debt showed a significant increase starting in March, 2010 primarily because of the foreign debt. Specifically, the duration of foreign debt climbed from 5.5 to 6.3 years in March of the current year though it dipped slightly to 6.1 years in June 2010. In contrast, the duration of domestic debt remains at 3.7 years (Graph 66). This corroborates the government's preference for long term and reduces refinancing risks and levels of vulnerability regarding changes in interest rates.

Graph 67 shows the profile of the domestic and foreign debt maturities in pesos. The maturity of 60% of the obligations will occur between 2010 and 2015 and 80% of the total will have matured by 2020. This implies that the government has an important need to refinance in the medium term which could impose larger funding costs on it.

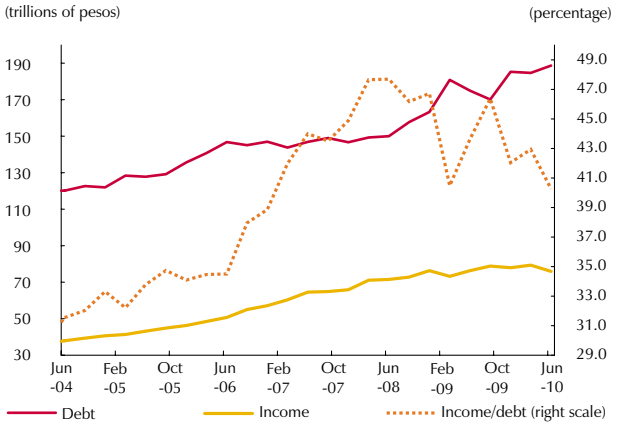
The total TES long term issue in 2010 will come to COP$25.5 t, of which COP$5.4 t (21.3% of the total and 4.8% of the GDP) will be for agreed operations, COP$13 t (51% of the total and 2.5% of the GDP) will be for bonds auctioned on the local market, COP$7 t (27.5% of the total and 1.3% of

Table 8
Gross Debt of the National Government

	Domestic	Foreign	Total	Domestic	Foreign	Domestic	Foreign	Total
	(billions of pesos)			(percentage share)		(nominal annual percentage growth)		
Mar-04	65.2	55.1	120.2	54.2	45.8			
Jun-04	64.0	56.2	120.2	53.3	46.7			
Sep-04	67.6	55.1	122.7	55.1	44.9			
Dec-04	68.6	53.4	122.0	56.3	43.7			
Mar-05	75.2	53.3	128.5	58.5	41.5	15.4	(3.3)	6.9
Jun-05	80.2	47.6	127.8	62.7	37.3	25.3	(15.2)	6.4
Sep-05	82.3	46.9	129.2	63.7	36.3	21.7	(14.9)	5.3
Dec-05	88.1	47.6	135.7	64.9	35.1	28.3	(10.7)	11.2
Mar-06	94.8	46.0	140.8	67.3	32.7	26.0	(13.6)	9.6
Jun-06	95.3	51.5	146.9	64.9	35.1	18.9	8.1	14.9
Sep-06	92.6	52.5	145.1	63.8	36.2	12.6	11.8	12.3
Dec-06	94.4	52.6	147.0	64.2	35.8	7.2	10.5	8.3
Mar-07	94.3	49.5	143.8	65.6	34.4	(0.5)	7.6	2.2
Jun-07	100.8	46.1	146.9	68.6	31.4	5.7	(10.5)	0.0
Sep-07	101.9	47.2	149.0	68.4	31.6	10.0	(10.1)	2.7
Dec-07	99.1	47.7	146.7	67.5	32.5	4.9	(9.4)	(0.2)
Mar-08	105.2	44.1	149.3	70.5	29.5	11.6	(11.0)	3.8
Jun-08	106.2	43.8	150.0	70.8	29.2	5.3	(5.0)	2.1
Sep-08	106.6	51.2	157.8	67.6	32.4	4.6	8.5	5.8
Dec-08	108.7	54.6	163.3	66.6	33.4	9.7	14.6	11.3
Mar-09	116.0	64.9	180.9	64.1	35.9	10.2	47.2	21.1
Jun-09	118.4	56.6	175.0	67.7	32.3	11.5	29.1	16.6
Sep-09	118.3	51.9	170.1	69.5	30.5	11.0	1.4	7.9
Dec-09	125.6	59.7	185.3	67.8	32.2	15.6	9.3	13.5
Mar-10	129.2	55.5	184.7	69.9	30.1	11.4	(14.4)	2.2
Jun-10	131.3	57.4	188.7	69.6	30.4	10.9	1.4	7.8

Sources: Ministry of the Treasury and Public Credit and Banco de la República

Graph 65
NG Creditworthiness

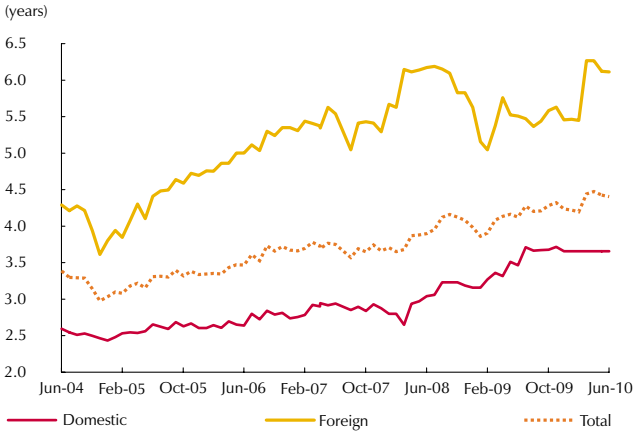


Sources: Ministry of the Treasury and Public Credit and Banco de la República.

the GDP) will be for forced operations and COP$60 b for awarded operations. The bond issues will stay at a level that is very similar to that of 2009 just as will the debt servicing (COP$25.5 t and COP$22.9 t for 2010 respectively) which implies a 111% roll-over of the debt (Graph 68). For the second year in a row, the roll-over of the debt is more than 100% and implies that the new issues are financing appropriations in addition to interest payments and debt retirement (Confis, June, 2010).

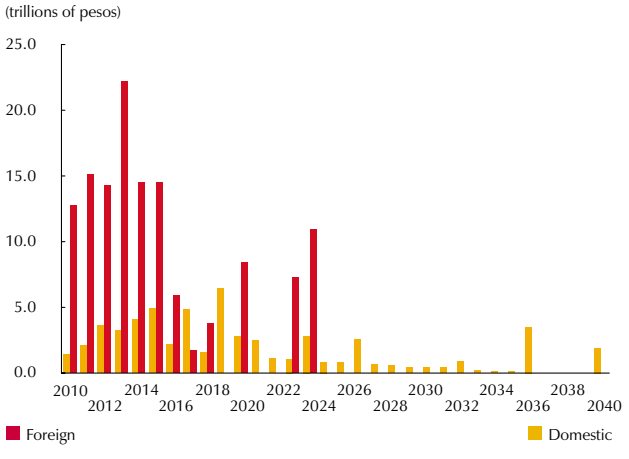
In the last *Report*, the fact that refinancing was close to 100% was mentioned. However, in the most recent revision of the Financial Plan, this indicator

Graph 66
Duration of NG Debt



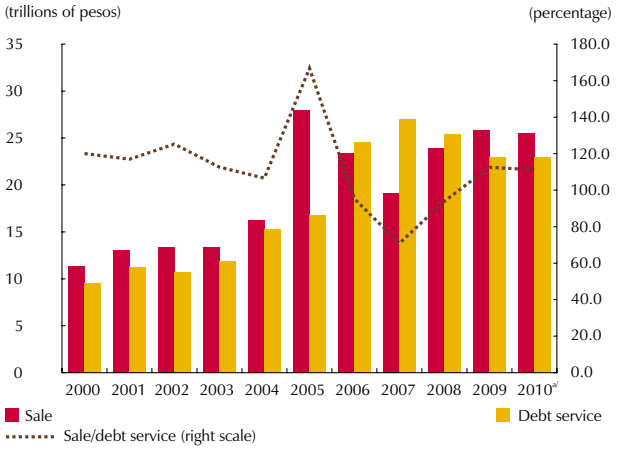
Source: Ministry of the Treasury and Public D=Credit.

Graph 67
Maturity Profile in Pesos



Source: Ministry of the Treasury and Public Credit.

Graph 68
Domestic Debt Rollover (TES)



a/ Projected numbers.
Source: Ministry of the Treasury and Public Credit.

was corrected upward due to a COP$1.3 t reduction in the payments against the principal of the domestic debt. This savings, which comes from a lower value for payments against principal,[37] reduced the bond issue goal by COP$500 b as well as causing other adjustments.

With respect to the coupon rate for the NG debt, Graph 69 shows a reversal (in May and June, 2010) in the declining trend that had been seen in domestic debt. In particular, this rate was equal to 8.6% in December, 2009 and 8.4% in February, 2010 while it was 8.7% in June of the current year. In the case of foreign debt, the trend continues to be a declining one and reached 5.7% as of June, 2010.

3. Outlook

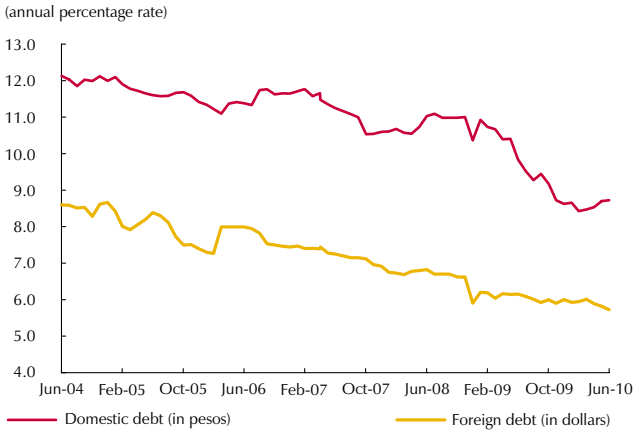
For this year then, a deficit of 3.6% of the GDP is expected for the NFPS, a result that is lower than what had been predicted in the January revision of the Financial Plan but 1 pp above that for 2009. This reversal in the fiscal balance was mainly due to the countercyclical policy adopted by the Government to face the financial crisis. As was mentioned, this was a transitory measure which, once the crisis was past, would revert in order to return to a path of recovery for the fiscal indicators. However, this reversal was interrupted due to the Government's low revenue caused by the adverse results in Ecopetrol (lower transfer of dividends and lower tax on income). Consequently, the National Government decided to reduce expenditures COP$5.9 t in an effort to respond to this drop in income (Confis, June, 2010).

In spite of the reduction in expenditures, the deficit in the NG financing is projected to be 4.4% of the GDP for 2010. This includes the COP$459 b cost of the economic restructuring.[38] This year, these

37 The bond issue goal for 2010 mentioned in the previous report was COP$26 t.

38 The economic restructuring includes increasing the capital of the public bank, servicing of the Housing Act bonds to rescue the mortgage sector and the cost of liquidating the Caja Agraria.

Graph 69
NG Average Debt Coupon



Source: Ministry of the Treasury and Public Credit.

restructuring costs will be 59% lower than those in 2009. In the case of the DS, the surplus will drop from 1.6% to 0.7% of the GDP. This is mainly due to a lower result in social security, the regional and local sectors and nation-wide companies.

The financing needs of the government in 2010 will come to COP$42 t (8% of the GDP), which includes a deficit COP$23.7 t (4.4% of the GDP) to be financed and COP$16.4 t (3.1% of the GDP) in payments against principal, etc. The domestic bond issues for debt (TES) to deal with these needs are projected to be COP$25.5 t (4.8% of the GDP). This is COP$500 b lower than those mentioned in the January revision of the Financial Plan as a consequence of the decline in the payment against principal for that debt. Disbursements for foreign debt, in turn, are projected at COP$4.4 t (0.8% of the GDP).

It is important to emphasize the fact that higher levels of deficit as well as higher levels of debt to finance it can put pressure on the foreign exchange rate and the interest rates, which would affect monetary policy decisions. These higher levels of debt could also begin to compete with the financial system for resources and thus increase the system's exposure to market risk.

Box 5
CURRENCY EXPOSURE OF NON-FINANCIAL FIRMS

The floating exchange rate regime which has been prevalent in Colombia since 1999 makes it possible for the price of foreign currencies, especially the US dollar, to fluctuate freely and be determined by the market. This fact imposes a challenge on Colombian firms that are exposed to the foreign exchange risk due to the nature of either their capital or their operations.[1] This risk could materialize to the degree that the value in pesos of their assets or liabilities (income or expenditures) denominated in foreign currency are affected by unexpected variations in the exchange rate.

The purpose of this box is to analyze the exchange rate exposure and the use of exchange rate derivative instruments by the companies in Colombia. The information used has a qualitative component from the module for foreign exchange risk[2] which was applied by Banco de la República and Fedesarrollo in July 2010. It also has a quantitative component resulting from the intersection of the bases for: exports and imports (foreign trade), the financial statements from the Superintendency of Corporate Affairs and the information from the forwards market.

1. The Use of Derivatives as Method of Exchange Rate Hedging

The information presented in this section corresponds to the results of the module for foreign exchange risk in which firms in the industrial and trade sectors were surveyed. The sample is made up of companies of all sizes with the large ones (30.6%) and the small ones (30.6%) having the larger shares.

Table B5.1 shows the percentage of companies, classified by their size, that answered affirmatively with regard to the use of instruments such as exchange rate forwards, options or futures. As can be seen, the percentage of firms that used these instruments is low and represented 21.5% of the total sample. This could be explained by the fact that not all of them have assets or liabilities denominated in foreign currency. However, when asked about the composition of their assets, liabilities, income and expenditures with respect to currency, 30.1% of the companies which denied having used hedging operations had some of those categories denominated in dollars.

Table B5.1
Use of Exchange Rate Derivatives

Asset size (millions)	Clasification[a/]	Share (percentage)	Yes (percentage)
More than 15.500	Big	30.6	40.1
Between 2.601 and 15.500	Medium	28.6	18.8
Between 260 and 2.600	Small	30.6	11.7
Less 260	Microenterprise	10.1	2.2
Total		100	21.5

a/ Aproximations made in accordance to the parameters estabilished by Law 590 of 1990.
Sources: Banco de la República and Fedesarrollo.

In addition, the percentage of companies that use this kind of instrument increases with the size of the company. As a result, 40.6% of the large companies make use of them compared to only 11.7% in the case of the small ones. These results are compatible with those found in countries such as the United States and Germany and have been associated with the fixed costs of maintaining a hedging program, which discourages small companies from using these instruments in spite of the potential benefits (Bodnar and Gebhardt, 1999:153-187).

The analysis by economic sector shows that the industrial companies represented 71.8% of all the firms that used derivative instruments for exchange rate hedging. In this group, 44% of the companies surveyed that manufacture rubber and plastic products stated that they had used these instruments. In contrast, only 9% of the companies that manufacture automotive vehicles used them (Graph B5.1, panel A).

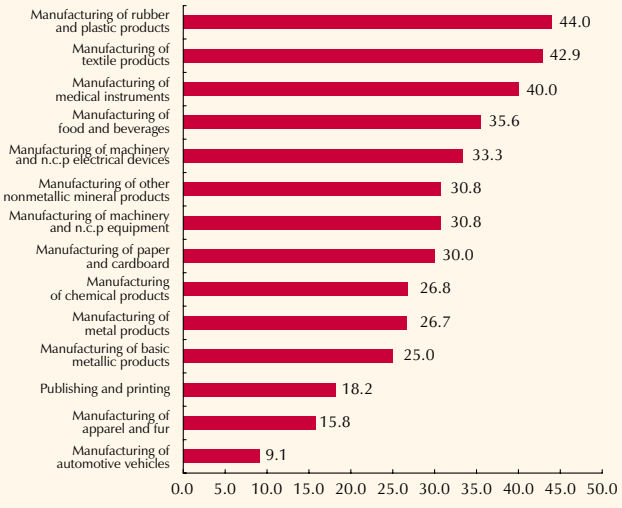
In the trade sector, 44% of the companies that work with machinery and agricultural supplies used hedging instruments whereas less than 14% of the companies in the apparel and construction materials sectors did so. This fact could be due to the stronger focus on the domestic market that the companies in the last two sectors have (Graph B5.1, panel B).

1 The foreign exchange risk is defined as the possible loss or profit that could occur as a result of unexpected fluctuations in the exchange rate.

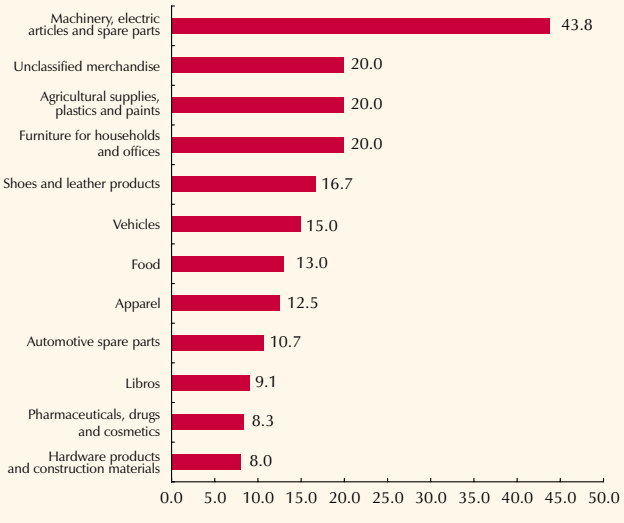
2 We would like to express our appreciation for Herman Kamil's work in preparing the questionnaire used in the module.

Graph B5.1
Use of Derivative Instruments by Economic Sector
(percentage)

A. Industry



B. Trade

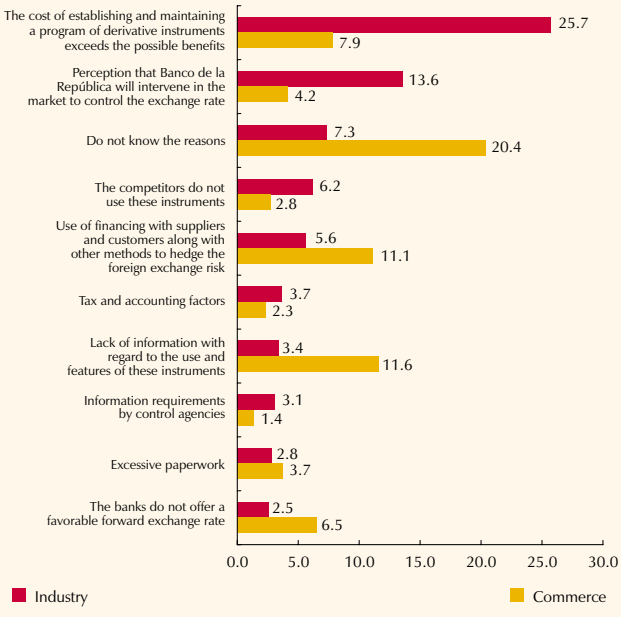


Sources: Banco de la República and Fedesarrollo (Special Module for Foreign Exchange Risk).

Finally, the companies were asked to explain why they did not use derivative instruments for exchange rate hedging. Graph B5.2 shows their answers classified by economic sector. As can be seen, the main reason the industrial companies chose for not using a program of derivative instruments was that the cost of establishing and maintaining one would exceed its possible benefits. The second reason refers to the role of the central bank in the exchange rate market and their perception that the Banco de la República would intervene to control the level of the exchange rate.

In the case of the commercial companies, the reasons are focused on the lack of knowledge about the instruments (20%), lack of information with respect to

Graph B5.2
Razones por las cuales no se utilizan instrumentos derivados de tasa de cambio



Sources: Banco de la República and Fedesarrollo (Special Module for Foreign Exchange Risk).

their use (12%), and the use of suppliers and customers as well as other methods to hedge the foreign exchange risk (11%).

In summary, this qualitative analysis shows a low use of derivative instruments to counteract the fluctuations in the exchange rate. Among the main reasons that companies give for not using those instruments are the cost of establishing and maintaining this type of program, the lack of knowledge about the instruments and the perception that the central bank will intervene in the market.

With respect to the companies that use this hedging method, there is a positive relationship between the size and the percentage of the companies that do use derivatives for the exchange rate. This could be associated with the fixed costs for implementing these programs, which discourage small companies from using them. This hypothesis seems to be validated by the abovementioned reasons in which the number one against is the cost of setting up these programs.

2. A Quantification of the Exchange Rate Exposure

In addition to the qualitative information on foreign exchange risk obtained through the survey, it is necessary to study the data on the financial states of the companies. Particularly, the survey analyzes the firms that carry out foreign trade and that report on their financial states to

the Superintendency of Corporate Affairs.[3] This makes it possible to determine if the low percentage of use of derivative instruments is only associated with the fact that not all companies have items denominated in foreign currencies, or if the percentage is low even among the companies that show foreign exchange disparities.

The analysis worked out in this section begins with the identification of two types of foreign exchange risk. According to Shapiro (2006), a company can face transactional risk when the shifts in the exchange rate affect the cash flow accounts such as income (exports) and expenditures (imports). The second type of risk is the conversion exposure which refers to foreign exchange risk that affects the financial statements.

a. Transactional risk

The transactional risk is calculated as the difference between the income and the expenditures denominated in foreign currency divided by the total income. Thus, when the percentage of income is higher than the percentage of expenditures, the company is considered to have a positive exposure to the foreign currency, which in this case would be the US dollar. The appreciation of the currency would lead to a decline in the value in pesos of a company's net profits. The opposite takes place in the case of companies that have larger expenditures than income in dollars and which would be benefitted by the appreciation of the peso with respect to the dollar.

Table B5.2 contains the foreign exchange exposure of the companies[4] both at the aggregate level and for the median company. At the aggregate level, the companies present a negative exposure because of the high proportion of net importing companies represented in the sample. Regarding the direct exposure of the median company, this is found to represent -10.6% of its total sales for 2009. Therefore, a 10% appreciation of the peso would result in an increase in its net income equal to 1% of its sales.[5]

The classification of the companies by net exporters and net importers shows that during 2009 the net exporters increased their exposure, which came to 23.4% of their total sales. Unlike the case of the net importers, the 10% appreciation of the peso would cause a loss in the net income for the median company, which would be equal to -1.1% of its sales.

Also, the study of the use of forward exchange contracts to cover exchange risk shows that the percentage of companies that hedge with these instruments is low. In 2009, 10.1% of the companies with positive exposure used forwards, but only 8.8% of the net importing companies followed suit. It is significant that the percentage of companies that use forwards reached its peak in 2008 with 18.9% for the net exporters and 13.1% for the net importers. This fact could be related to the high volatility of the exchange rate that year.

b. Conversion Exposure

In contrast with the analysis of the cash flow (transactional risk), the conversion exposure evaluates the possible losses that could be generated by the change in value when assets and liabilities denominated in dollars are converted into pesos. In order to clarify the difference, assume two exporting companies with the same level of transactional exposure. However, one grants longer terms to its customers than the other. This implies that the company that grants longer terms will have its assets (accounts payable) exposed for a longer time and, therefore, an appreciation could cause large losses due to the risks derived from the conversion exposure. In the case of the importing companies, this risk could be reflected in areas such as the inventories. For instance, if two companies import the same amount of merchandise, but one of them has a lower inventory turnover, then this company that has its inventory stored for a longer time could see the value of their merchandise decline more in terms of pesos with respect to the other company if an appreciation should take place.

The opposite of the previous examples is represented by the liability accounts in dollars which see their value in pesos decline in a context of an appreciating exchange rate. This reduction would be larger and longer for the companies that are relatively more leveraged.

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3 Since the database of the companies corresponds to importers and exporters, the exclusion of some companies that have bank loans denominated in dollars is possible. Nonetheless, as of December 2009, these debts represented 7.53% of the total financial obligations. The great majority of the liabilities denominated in dollars were due to the existence of contracted debts with suppliers.

4 It was assumed that the total income in dollars would correspond to the exports and the total expenditures, to the imports. Also, the calculations were done by using the average market exchange rate (MER) for the year.

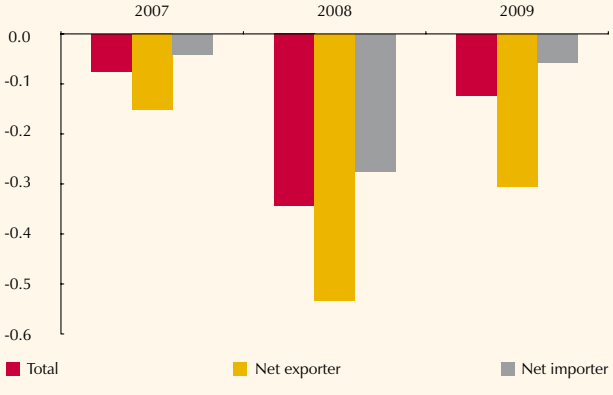
5 All the other variables are assumed to be constant.

Table B5.2
Foreign Currency Exposure for a Sample of Companies in the Non-financial Private Sector

Type	Year	Aggregate exposure [a/]	Median [b/]	Companies with forward exchange contracts [c/]
			(percentage)	
Total	2007	(3.1)	(2.0)	7.9
	2008	(4.8)	(2.3)	14.7
	2009	(5.2)	(4.4)	8.8
Net exporter (exposure > 0)	2007	19.9	10.5	9.8
	2008	19.0	9.9	18.9
	2009	23.4	11.1	10.1
Net importer (exposure < 0)	2007	(13.8)	(7.7)	7.2
	2008	(13.4)	(6.9)	13.1
	2009	(15.3)	(10.6)	8.4

Note: The sample is made up of 8,294 companies out of which 70.2% are net importers.
a/ The aggregate exposure is calculated as the ratio between the foreign exchange exposure (income – expenditures) and the total sales in the period.
b/ This refers to the 50th percentile of the distribution for the foreign exchange exposure ratio of the companies.
c/ Percentage of companies that carried out any operations with exchange rate forwards.
Sources: Superintendency of Corporate Affairs and Banco de la República, Banco de la República calculations.

Graph B5.3
Losses Due to Differences in the Exchange Rate
(percentage)



Source: Superintendency of Corporate Affairs, Banco de la República calculations.

The prior example makes it possible to shed light on the concept of conversion exposure in spite of the exclusion of important factors. Below, the ex post indicator for this risk is presented.[6] This is calculated as the ratio between the real profits or losses due to exchange rate differences and the total sales. A positive indicator would show that the company had profits due to the effect of the fluctuations in the exchange rate on its balance accounts. Meanwhile, a negative indicator would reveal the percentage of losses associated with the variations in the price of the dollar.

Graph B5.3 summarizes the net profits or losses as a proportion of the sales for each category in the previous section. As can be seen, there were losses during the entire period due to differences in the exchange rate which represented an average of 0.18% of the sales. The losses in the export sector during 2008 were significant since they came to 0.51% of the sales.

Therefore, the analysis of the risks derived from the exchange rate (transactional and conversion) indicates that companies that are involved in foreign trade are exposed to the fluctuations in the exchange rate and the impact of this depends on the net position of those companies. Because the sample is mainly made up of net importing companies, the aggregate exposure is negative. The ex post indicator, in turn, reveals that during the most recent three years, the companies have undergone losses due to differences in the exchange rate. However, it is important to mention that the losses have represented a low percentage of the sales and that most of the companies' exposure has not been offset (in the majority of the cases) by exchange rate derivatives. It should also be noted that companies that have loans denominated in dollars may be excluded from this analysis because they are not involved in foreign trade operations. The inclusion of those companies is left for future studies because the effects of the dollar fluctuations could be different from those found in the results presented in this document.

Finally, Table B5.3 shows the indicators for financial indebtedness, total indebtedness and the ROA in order

6 The information on assets and liabilities in dollars is available only for years before 2008. Therefore, the decision was made to work with only the real losses or profits caused by differences in the exchange rate, which are recorded in the financial statements of the companies.

Table B5.3
Indicators of Company Performance and Indebtedness

	Net exporters		Net importers		Total Superintendency	
	Aggregate	Median	Agregado	Median	Aggregate	Median
ROA	6.7	6.2	9.0	8.1	11.9	4.4
Financial indebtedness	17.8	13.5	16.1	10.9	11.9	6.1
Total indebtedness	42.6	53.4	47.7	53.6	36.1	50.0

Source: Superintendencia de Sociedades; cálculos del Banco de la República.

to establish how indebted and profitable the companies included in the study are. As can be seen, the median companies for both the net importers and the net exporters are more profitable and more leveraged with the credit companies (financial indebtedness) and with third parties (total indebtedness). Therefore, it is important to monitor their development closely because unexpected fluctuations in the exchange rate would affect both their net operating income and their soundness given the degree of exposure that these companies have.

Box 6
THE CONCEPT OF FINANCIAL CAPABILITY: A FIRST APPROACH

Financial capability, as it is known in the literature, is a broad concept that seeks to measure the consumers' ability to make decisions with specific information related to their financial situation as well as their knowledge with respect to risks, costs and benefits of the products. A financially capable consumer is defined as one who knows how to manage his money because he spends in accordance to his income, plans for the future, and saves for adverse events. He also knows how to choose products, when to look for counseling and how to act based on it. It is important to emphasize that financial capability is not the same as financial literacy, which makes specific reference to the knowledge and skills of the agents with respect to the financial products rather than to their behavior (O'Donnell et al., 2009).

Financial capability has become an increasingly relevant topic within the public policy agendas of many countries because having financial agents who are more able to manage their money, demand the products that best fit their needs, and efficiently reduce the risks they face contributes to the development of markets and to financial stability. Currently, the countries that are most committed to developing policies that foster financial capability are the United Kingdom, France, the United States, Australia, New Zealand, the Czech Republic, Canada, the Netherlands and Singapore, which have either planned or carried out exercises directed towards measuring it. As a matter of fact, these measures have brought about massive governmental programs in the United Kingdom as well as in Australia, which include, for instance, the introduction of financial topics into the educational curriculum.

The measures taken in the United Kingdom[11] stress the importance of these kinds of exercises, which divide financial capability into four areas: i) money management, ii) planning for the future, iii) selection of financial products and iv) keeping oneself updated. By means of a survey, the participants are organized into groups depending how similar their answers are. Group 1 is made up of those people whose results are five points above the average for the population in all areas. Group 4, in turn, consists of those individuals that have a result that is five points below the average in all areas. Groups 2 and 3 are made up of people who have good results in some areas and bad in others.

The most relevant results of this study are shown as follows:

1. Within group 1, which represents almost 50% of the population, the outcome is that:

- The individuals have more financial products than the average for the population.
- 60% of the individuals placed in the two highest quintiles of income and 20% in the two lowest.
- There is a high correlation between education and financial capability.
- A high proportion (82%) are house owners.

2. Group 4, in turn, represents 11.5% of the population and has the following features:

- The individuals have, on average, a single financial product.
- 72.5% of the individuals belong to the two lowest quintiles of income and 10.5% to the two highest ones.
- 66% of the individuals have elementary or high school as their highest educational level.
- Just 28% work full time or half time compared to the average for the population (57%).
- Most of them are tenants rather than property owners.

By identifying the type of consumers with the lowest levels of financial capability, the development of strategies to improve it is facilitated. In addition, the information contained in these studies is a useful guide for the consumer protection agencies and other entities that work in the development of financial markets.

Due to the above, Banco de la República, in collaboration with DANE, implemented a survey focused on measuring the knowledge of the population concerning financial topics for the first time in March this year. In the second stage, the survey will include questions related to not only the level of financial literacy but also the behaviors and attitudes of the agents. This will make it possible to advance towards the goal of measuring the level of financial capability in the country.

1 The results presented are specific for Ireland and the survey was given between October 2007 and January 2008.

It is important for Colombia to make progress in this area, especially considering the major effort begun by the last administration in working on aspects related to bancarization and development of capital markets. These initiatives seek to not only foster access to financial services, but also provide new financing alternatives that can drive development in the entire country. However, the scope of these initiatives will always be limited if a larger degree of financial capability cannot be counted on. This would reduce the uncertainty of the buyers with respect to the products available and allow for their efficient use.

Box 7
SURVEY OF HOUSEHOLD FINANCIAL BURDEN AND EDUCATION

The goal of this box is to briefly introduce the survey of financial burden and financial education of households (lefic in Spanish).

In Colombia, the share of household debt has been 38,5% of the total gross loan portfolio, on average over the past ten years. This makes monitoring of the households a priority to preserve the stability of the financial system. However, the availability of micro-data that would make it possible to get a picture of this sector of the economy is scarce and sometimes nonexistent. Because of this weakness, Banco de la República implemented the lefic survey to gather information for an analysis of the financial conditions of households as well as their level of financial education. This would make it easier to understand how households make their decisions with regard to indebtedness, savings and investment. Also, it would provide information that would be useful for closely following up on their economic conditions.

The field implementation of lefic is in the hands of the National Statistics Department (DANE) and has been given in Bogota since the beginning of 2010.[11] The surveys are conducted personally and data regarding the financial features of the household as well as conditions of indebtedness, savings and investments are collected.

1. Survey design

The lefic sample is a sub-sample of the survey used in the DANE General Integrated Household Survey, in which a filter-question is included in order to identify the households that have a relationship with the financial system in terms of loans or debts. The survey is applied to the households that have such relation.[2]

This process of surveying the households has been done continually since March 8, 2010. The data is analyzed every six months and the indicators computed. During the first stage of data collection, 2,577 households were surveyed and the results, extrapolated to the population of Bogota, represents the information for 814,890 families (Table B7.1).

2. Household Financial Burden

The availability of the micro-data provided by the survey makes it possible to create more accurate financial burden indicators (FBI). Two different types of financial burden indicators are analyzed in this box. The first makes reference to the payments against principal and interests (debt service) as a share of total household income[3] (FBII):

FBII= (*payment against principal* + *payment of interest*)/ (*total income of the household*)

The second indicator shows this same proportion but as percentage of the total household wealth:[4]

FBIW= (*payment against principal* + *payment of interest*)/ (*household wealth*)

The advantage of these indicators is that for computing the denominator the actual incomeof the households that have credits is used and not the aggregate income of the economy. Thus, the FBII and FBIW provide a much more accurate measurement of the impact of the debt service on income.

These indicators are classified according to the age, gender, income and education level of the household head.

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1 The decision to carry out the first stage in Bogota was made because the loans granted in Bogota represent close to 44% of the total loan portfolio.

2 The references for the questionnaire design were taken from other similar surveys given in countries such as Chile (Financial survey of households), Spain (Financial survey of families), the United States (Survey of consumer finances), the United Kingdom (British household panel survey) and Italy (Indagine sui bilanci delle famiglie).

3 The calculation of the income of households makes reference to money earned through work activities (income from the main job, from the second job, in kind and from work done by jobless or inactive people) as well as money derived from other sources (interest, dividends, pensions, retirement, money transfers, severance, rent and other types of income).

4 The definition of household wealth takes into account the total income of the households, the real estate properties (apartments, industrial buildings, farms, commercial stores, lots, offices, warehouses, parking lots, hotels and hostels), vehicles (motorcycles, private vehicles, cargo and public service vehicles, ships and airplanes), machinery, equipment and livestock.

Table B7.1
Number of Applied Surveys and Extrapolated to Population as a Whole

	Households	People over 18
Surveys Given	2,577	6,645
Extrapolation from the Surveyed Population	814,890	1,950.291
Population with Financial Services	1,303.137	2,538.114
Total Population in Bogotá	**2,252.786**	**5,100.854**

Sources: lefic, DANE and Banco de la República.

Likewise, the debt service is analyzed for the total loans, mortgages and credit cards.[5]

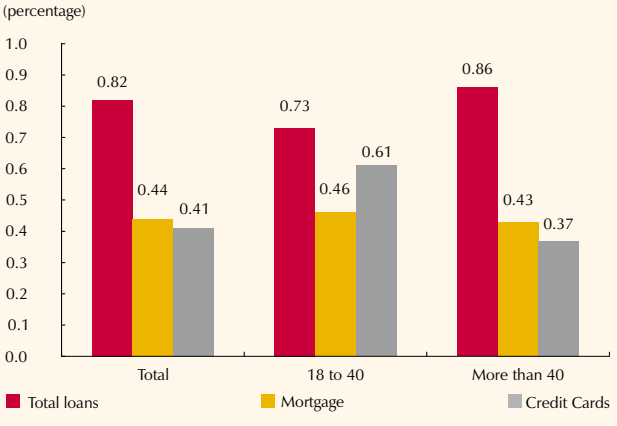
The FBII for the total loans indicates that the households spend an average of 18.7% of their income on servicing the debt whereas that figure is 16.2% for mortgages and 9.5% for credit cards. By age range,[6] the FBII shows that the most indebted households are those in which the head of the household is over 40 years of age, for these the debt service represents 18.8% of their income (Graph B7.1, panels A and B). This performance is the same for the analysis of mortgages, but not for the consumer loans. This suggests that the older households spend more on housing than the younger ones while the latter spend more on consumer loans than the former. Also, the FBIW indicates that the older households have a larger accumulation of wealth than the younger ones, which is evident in the reduction of the financial burden in the former.

By analyzing the financial burden based on the gender of the household head, the results show that the total servicing the debt does not differ significantly (average of 18.7%). However, when the differences by type of credit are studied, the households headed by men have larger payments for mortgages than those headed by women. The opposite takes place in the case of credit card payments (Graph B7.2, panels A and B). When the analysis of the indicator includes wealth, the FBIW for women registers a larger reduction than that for men with respect to the FBII. This points to a larger accumulation of wealth by women than by men.

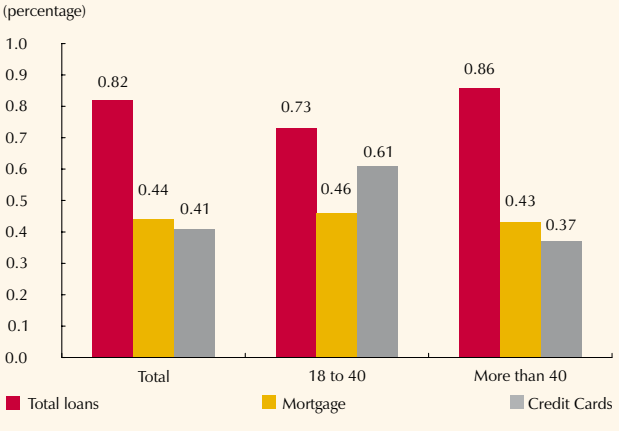
By level of income, the FBII shows a downward trend in the quintiles of income divisions. In these, the most indebted households are those that belong to the first two quintiles with a financial burden of 34.1% of their income while the least indebted are the ones in the last two quintiles. This performance can be explained mainly by the income that each one of these households earn (Graph B7.3, panels A and B). The debt service on mortgages that the families in the first two quintiles have to pay should be emphasized because it represents an average of 43.6%

Graph B7.1
Financial Burden by Age

A. FBII



B. FBIW



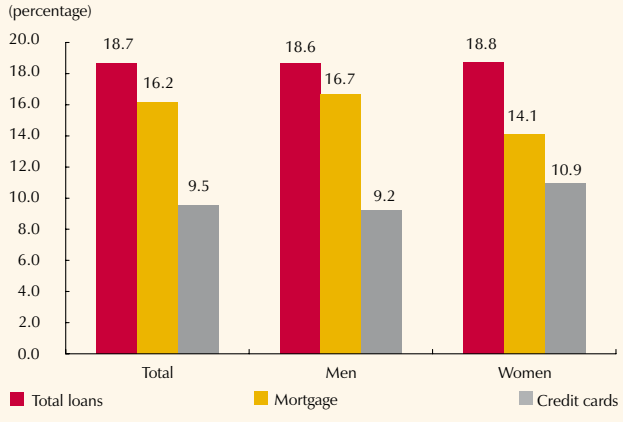
Sources: lefic, DANE and Banco de la República.

5 These types of loan were chosen because they are the items that represent the largest percentage of debt service for the households. It is important to note that the indicators by type of loan may be above the indicators for the total because the sample used to calculate each one of them contains only the debtors corresponding to the type of debt being analyzed.

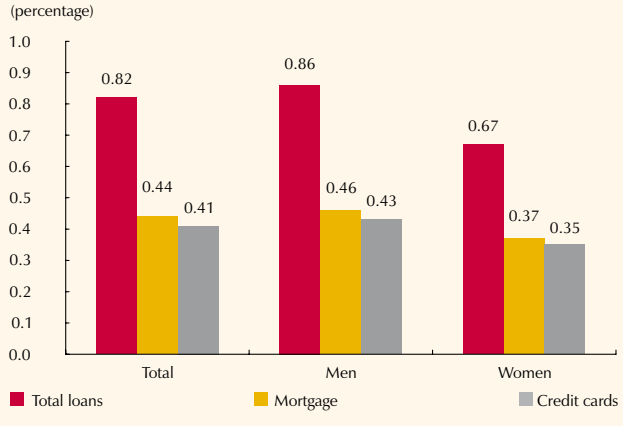
6 The ranges used to achieve these results were chosen because they provide statistically robust indicators.

Graph B7.2
Financial Burden by Gender

A. FBII



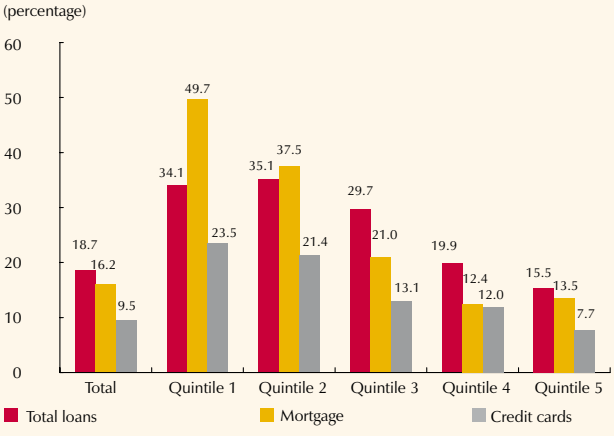
B. FBIW



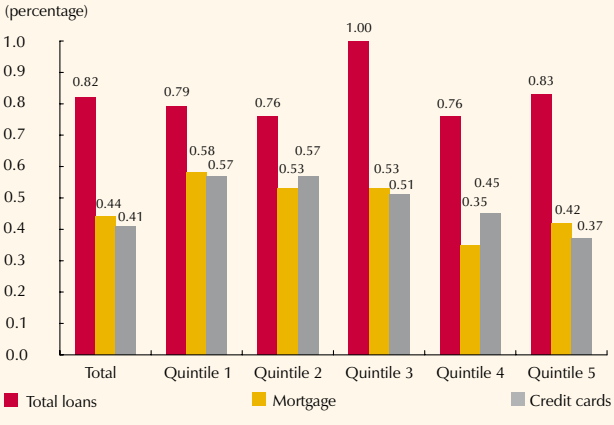
Sources: lefic, DANE and Banco de la República.

Graph B7.3
Financial Burden by Income Level

A. FBII



B. FBIW



Sources: lefic, DANE and Banco de la República.

of their income. Nonetheless, when the FBIW results are analyzed, the indicator is more homogeneous in terms of income among all the quintiles.

The results by level of education show a growth trend where the most indebted households are those in which the head of the household has completed either high school or university studies while those that have an elementary level of education are the ones that have lower financial obligations (Graph B7.4, panels A and B). This performance could be the result of greater ability to pay in correlation with higher levels of education. Therefore, there are more opportunities to get access to the financial system for those households with higher level of education.

This trend holds true in the analysis of the FLIW. However, the indicator for the total loans in the case of the households with elementary education presents considerable growth with respect to the FBII. This could indicate that the income level of these households is less compared with those that have a more advanced education.

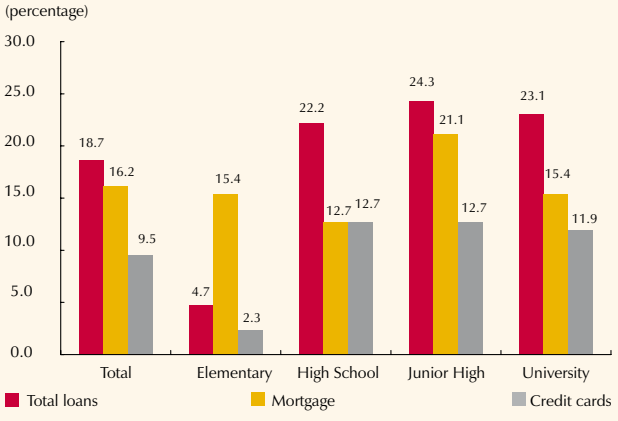
3. Financial Education

Financial education has become one of the most important topics in economic literature due to the upsurge in the growth of the financial systems (both traditional and capital market) as well as the growing exposure of the households. In this context, it is relevant for the families to have at least a basic knowledge of the economic and financial principles that would help them to make better decisions with regard to savings and investments. For instance, the recent changes in the pension system in which more than one portfolio is offered requires knowledge on the part of the contributors about the risks of the financial instruments.

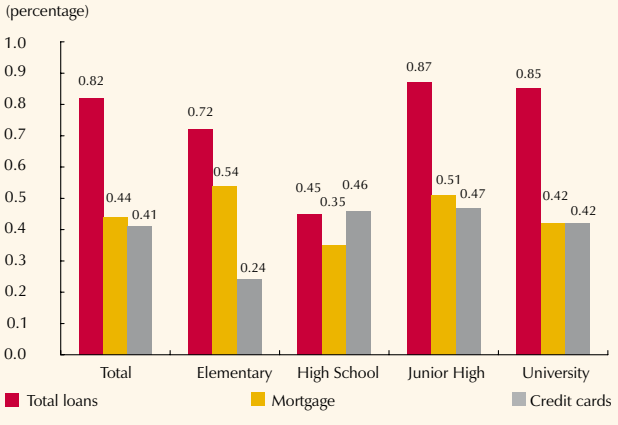
That is the reason the lefic includes a module that makes it possible to evaluate the level of education households have with respect to financial topics. The set of questions used are based on the study by Lusardi and Mitchell (2006), and have been included in studies done in

Graph B7.4
Financial Burden by Education Level

A. FBII



B. FBIW

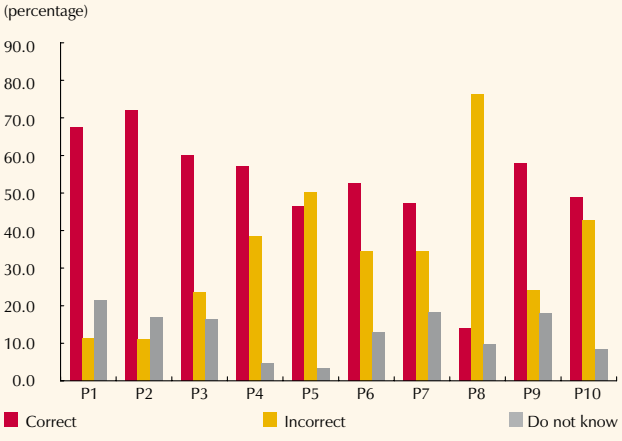


Sources: lefic, DANE and Banco de la República.

countries such as the United States, the United Kingdom and Peru, etc. The knowledge to be identified relates to areas such as management of interest rates, inflation, inter-temporal value of money, money illusion and capital markets.[78]

Based on the outcome, the households have relatively better knowledge of topics related to interest rates, inflation and inter-temporal value of money. The correct answers to questions on these topics registered a correct answer rate that was close to 64% (Graph B7.5). In contrast, when the answers regarding money illusion, the operation of the capital markets and their instruments are evaluated, the percentage of correct answers falls below 45%. These results highlight the importance of

Graph B7.5
Answers to Questions about Financial Education



P1. Simple Interest
P2. Compounded Interest
P3. Inflation
P4. Inter-temporal value of money
P5. Money illusion
P6. Risk diversification in income instruments
P7. Knowledge about the role of the stock exchange
P8. Relationship between interest rate and price of bonds
P9. Difference between the risks for fixed income and variable income instruments
P10. Profitability of investment instruments in the long term

Sources: lefic, DANE and Banco de la República.

pushing ahead on programs designed to increase the level of financial education, especially in topics related to the capital markets.

4. Conclusions

The first results of the survey show that the households spend close to 20% of their income on debt service. This proportion is higher for the households in which the head is over 40 years old as well as for those placed in the first two quintiles of income and for those that have a university education. In addition, the answers in the module for financial education indicate that the households have better knowledge of topics related to the operation of monetary variables than those about the capital markets. This fact implies that it is necessary to reinforce education in topics related to the capital markets.

7 The results presented in this box about financial burden are preliminary. That is the reason why they will be broken down in following reports.

Box 8
LOAN PORTFOLIO AND CYCLES IN ASSET PRICES

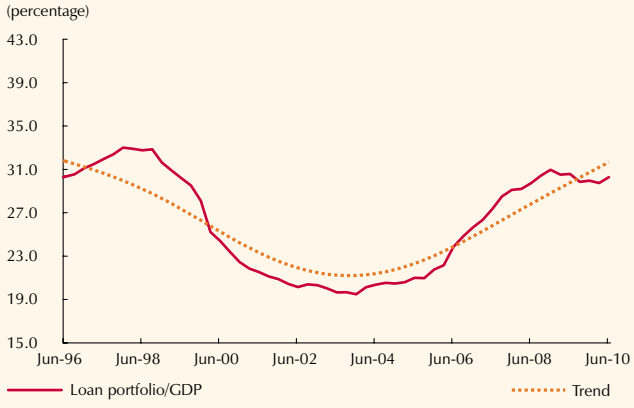
One of the main sources for potential economic and financial instability is the financial accelerator. This refers to the mechanism by means of which economic growth and the changes in asset prices can affect the decisions about private investment and indebtedness. The possible negative effects associated with the financial accelerator take place when there are imbalances and high volatility at the same time in both asset prices and credit cycles. It is important to identify situations in which there are permanent increases in the prices of assets resulting from a feedback loop caused by an excessive level of lending linked to larger financing needs on the part of debtors.[1] Thus, it is essential to monitor the variables that affect the performance and expectations of the debtors in order to analyze the consequences that this has on their ability to pay. This box describes the asset price cycles with respect to their trends in both the mortgage and the stock markets[2] and analyzes the performance of lending in light of financial deepening.[3]

1. Loan Market

In this section, the performance of the ratio between credit and GDP is studied by means of a Hodrick and Prescott filter for the entire loan portfolio as well as for the mortgage and consumption loans.[4] This allows for a descriptive analysis in which the observed level in the series is compared to their respective trend.

The total loan portfolio as percentage of GDP was below its trend during the first half of 2010 (Graph B8.1). The rise in this indicator is similar to the one for its trend which is the reasons why there is not variation of the gap between the two as of June 2010. The growth performance is mainly due to the loan portfolio recovery

Graph B8.1
Total Loan Portfolio/GDP and its Trend

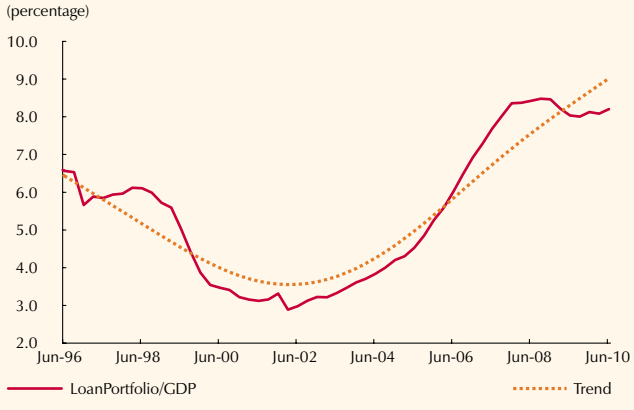


Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

in the first six months of 2010. As was emphasized in the prior Report, the series shows that the positive phase in the most recent cycle was equal in length to the one that occurred between December 1996 and September 1999. However, the maximum reach of the latter was three times as great. This fact suggests that the growth of the loan portfolio relative to the GDP was not excessive in the positive part of the cycle if it is contrasted with what took place before the crisis.

If the analysis is split up based on type of loan portfolio, one sees that, in the case of the consumer loan portfolio, its growth relative to GDP has been slightly lower than the rise in its trend and, therefore, the negative gap has risen modestly (Graph B8.2). Currently, this difference registers the larger, negative historic value. With the stabilization

Graph B8.2
Consumer Loan Portfolio/GDP and its Trend



Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

1 For more details with respect to the financial accelerator and how the imbalances and volatility in asset prices and in credit are generated, see the Financial Stability Report for September 2007.

2 The analysis of the price for public debt securities (TES in Spanish) is excluded because its share in the total wealth of households and companies is low. This is the opposite of what happens in the case of housing and shares.

3 This refers to the ratio between credit and GDP.

4 The series for both the total loan portfolio and the consumer loan portfolio are used as a percentage of GDP from December 1994 to June 2010. The GDP for June was projected by assuming a 4.9% real annual growth.

that has taken place since mid-2009, the dynamics of this loan portfolio is not of concern in terms of unchecked growth.

In contrast, the growth trend of the mortgage loan portfolio relative to GDP has caused the gap to be enlarged with respect to its trend which is still declining (Graph B8.3). This deviation of the series is still far lower than what was recorded in the third quarter of 1998. However, the performance of the mortgage disbursements has shown an upsurge during the last six months and that suggests that the expansion of the loan portfolio could be argument in the future (Graph B8.4). It is noteworthy that the rise in the ratio of the mortgage disbursements relative to GDP has been more gradual than what took place in the events prior to the financial crises at the end of the 1990's. The recovery in the housing market has caused the rise in this type of credit from mid-2009 until now and that emphasizes the importance of continuing to monitor the changes in this loan portfolio and its disbursements given that the positive gap of the ratios of these variables to GDP are growing larger.

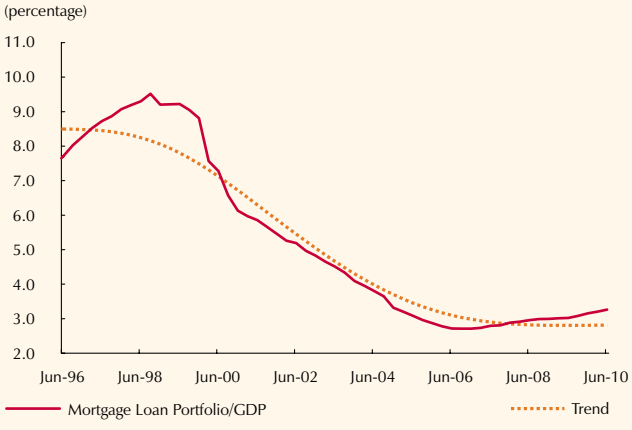
2. Housing Market

In order to verify the presence of possible overvaluations in the mortgage market, three different indexes were considered: i) the new housing price index (NHPI) from the National Department of Planning (DNP in Spanish); ii) the used housing price index (UHPI) from Banco de la República, and iii) the new housing price index (NHPIC) from the Colombian Chamber of Construction (Camacol). The ratio between these indices and the rent index (RI) from Banco de la República is calculated in order to compare the price of an asset (whether new or used) with the base that determines that price (in this case, the rent). A Hodrick and Prescott filter is applied to the first two ratios of the price series to evaluate the deviations with respect to their trends.[5] Furthermore, the differences between the two price indices for new housing are analyzed for the years in which they are comparable.

During the first six months of 2010, the ratio between the NHPI and the RI has been stabilized and has registered a deviation of approximately 11% with respect to the average between January 1994 and April 2010 (Graph B8.5). The stable performance has been seen since mid-2009 and contrasts with the upward performance of the series that has been noticeable since April 2008. The

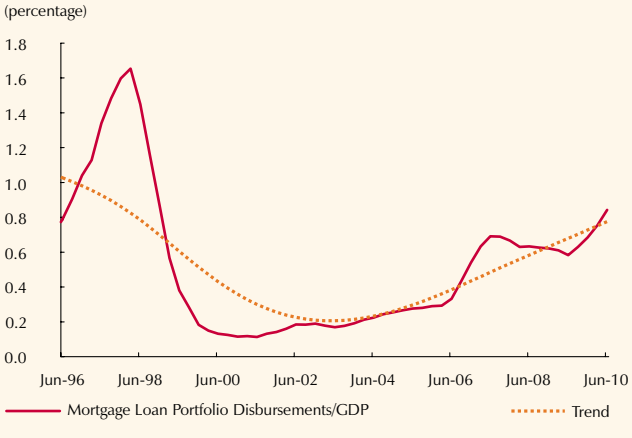
5 The NHPIC has been calculated monthly since March 2006. Due to limited amount of data, a comparative analysis is only done between the ratio of NHPIC and NHPI with respect to RI for the period in which the series are comparable.

Graph B8.3
Mortgage Loan Portfolio/GDP and its Trend



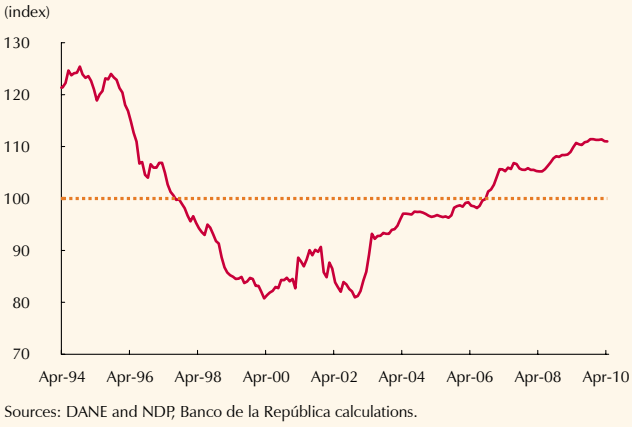
Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

Graph B8.4
Mortgage Loan Portfolio Disbursements/GDP and their Trend



Sources: DANE and Financial Superintendency of Colombia, Banco de la República calculations.

Graph B8.5
Ratio of NHPI to Rent
(January 1994-April 2010 average = 100)

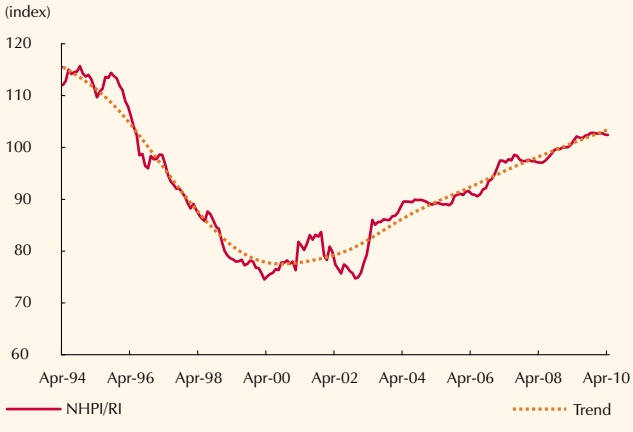


Sources: DANE and NDP, Banco de la República calculations.

current levels of this indicator are still lower than those registered in 1994 and 1995 when a maximum deviation of approximately was reported.

When the performance of the series relative to its trend is compared, the series turns out to be slightly lower than the trend (Graph B8.6). It is important to note that the price cycles for housing in relation to their trend show a small range with short phases. Indeed, the gap in the series with respect to its trend has not been larger than one point on the index in terms of absolute value since March 2009.

Graph B8.6
Ratio of NHPI to Rent and its Trend
(January 2009 = 100)



Sources: DANE and NDP, Banco de la República calculations.

The two previous methodologies must be studied as complementary ones given that the first identifies periods of high levels in housing prices such as those registered between 1994 and 1995. Meanwhile, the second shows that the trend of the series can vary over time, which has been useful for identifying periods in which the mortgage sector is slowing down.

If the performance of this indicator is compared with that of the NHPIC in relation to the RI since March 2006,[66] the two series are seen to show a similar trend, especially since mid-2008. Nevertheless, the two indicators showed a different performance between August 2007 and the same month in 2008. While the NHPIC has a tendency to grow, the NDP indicator remains relatively stable (Graph B8.7). This difference could be explained by the different methodologies used to calculate each one of the indices. On one hand, the NHPI calculated by the DNP takes the weight by range as fixed,[7] which causes a bias in the performance of the index since it does not take changes in the composition of the housing supply into account. In fact, the high range of prices, which is the one that has the most weight, presents a slight contraction during the time in which the index shows a stable performance. In contrast, the NHPIC is an index of variable weights calculated as the ratio of the prices per weighted square meter for the supply in each period in relation to the base period (March 2006). Although the index does not take low-income housing into consideration, the projects that the sample consists of belong to all the socio-economic levels. The rise in this index between August 2007 and a year later is primarily due to the growth trend of the prices in the lower socio-economic levels along with their higher relative share because of the increase in the construction area.

The ratio between the UHPI and the RI is still at its historic peak in spite of the slowdown that has been seen in its growth. By March 2010, the series reached a deviation of 30.2% relative to the average of the sample (Graph B8.8). This indicates that the increase in the prices of used housing has been faster than that for the new housing. This is a warning sign of the importance of tracking the prices of used housing in order to avoid an excessive overvaluation of these assets in the economy and this could generate difficulties with regard to changes in the macroeconomic environment or changes in agent expectations. However, if the trend of the series is kept in mind, the gap is negative which shows that there has been a decrease in the growth of the indicator with respect to its average performance (Graph B8.9).

3. Stock Market

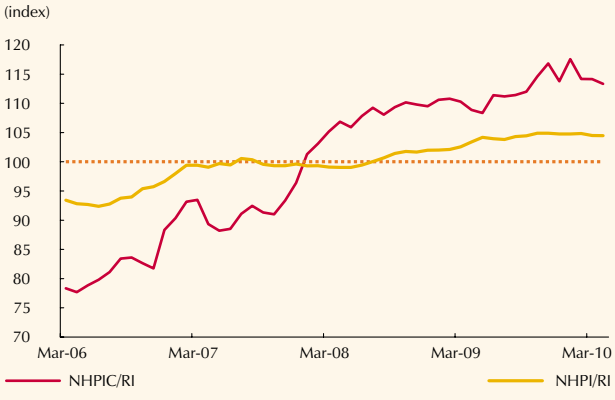
In order to evaluate the existence of overvaluation in the stock market, the general index of the Colombian Stock Exchange (IGBC in Spanish) is weighted by the CPI and the deviations with respect to its trend are analyzed.

The results show a recovery for the indicator which climbed to 63 points above its trend as of June 2010. The

6 In the case of new housing in Bogota, Camacol calculates the NHPIC series monthly beginning with March 2006.

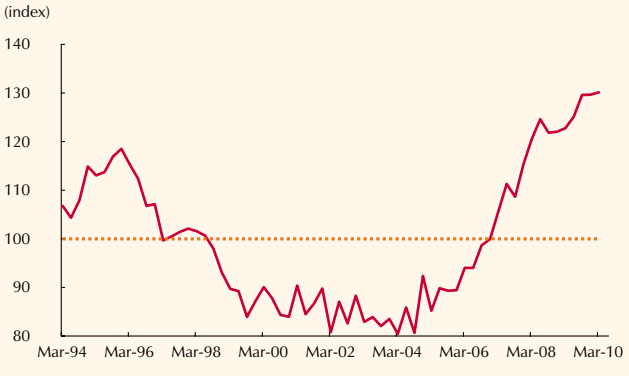
7 The sample is split into three ranges: low range for housing valued up to 507,747.55 UVR, a middle range for housing between 507,747.55 UVR and 1,165,836.90 UVR, and, finally, a high range for those with a price above 1,165,836.90 UVR. The weight of these ranges is fixed and equal to 22%, 26% and 51% respectively, and corresponds to the average construction area calculated between 1994 and 1998. One of the weaknesses in the methodology is that the weights were calculated for a period of time when the projects for high and medium socio-economic levels saw more growth than those for the low socio-economic levels. This situation does not apply currently.

Graph B8.7
Ratio of NHPIC to rent and ratio of NHPI to rent
(March 2006 - April 2010 average = 100)



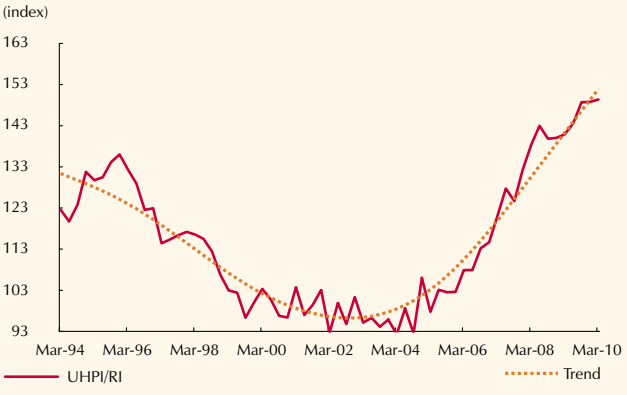
Sources: DNP, DANE and Camacol, Banco de la República calculations.

Graph B8.8
Ratio of UHPI to Rent
(March 1994 - March 2010 average = 100)



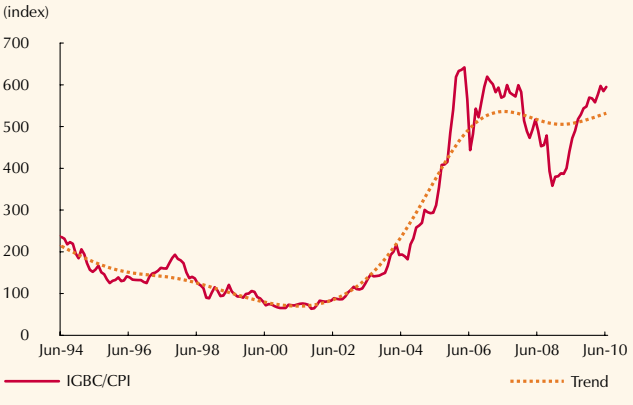
Sources: DANE and Banco de la República, Banco de la República calculations.

Graph B8.9
Ratio of UHPI to Rent and its Trend



Sources: DANE and Banco de la República, Banco de la República calculations.

Graph B8.10
IGBC / CPI and its Trend



Sources: Colombian Stock Exchange and DANE, Banco de la República calculations.

high volatility that this ratio has undergone in recent years is emphasized and has been associated with the boom in the activity on the Colombian stock exchange. The recovery in the IGBC that has taken place since late 2008 has recently been related to more consumer confidence due to better expectations and economic conditions as well as the stability in the local financial markets (Graph B8.10).

4. Final comments

When the credit market is analyzed, a recovery in the total loan portfolio with respect to GDP has been found for the last six months. This situation has also seen an abundance of consumer lending. The results show a marked growth in the mortgage loan portfolio and its disbursements which has gone hand in hand with an increase in the price index for used housing. This is a warning sign of a possible overvaluation of these assets in the real estate market. A concurrent increase in housing prices and in the growth of the mortgage loan portfolio could be risky for the financial system if there are significant changes in household expectations. However, when these prices rise, a positive effect on the debtors' wealth is generated, which has impact on their ability to pay and reduces the losses for financial entities caused by defaults on payment.

New housing, in turn, has shown a stable performance during the initial months of 2010 in both the index calculated by Camacol and the one calculated by DNP although their levels are relatively high. The two indices differ mostly in their performance during growth periods for low-income housing projects although their recent performance has been similar.

In addition, the stock market, measured by the IGBC, has maintained a positive trend since late 2008 as a result of the lower uncertainty in the domestic financial markets and the optimistic economic outlook.

Box 9
ADVANTAGES AND DISADVANTAGES OF THE FISCAL RULES: ANALYSIS OF THE CASE OF COLOMBIA

A fiscal rule (FR) is a restriction on the territorial finances that imposes numerical limits on the different budget appropriations. These kinds of rules are regarded as an institutional mechanism directed towards reinforcing credibility and fiscal discipline.

The advantages of applying FR are various and include the correction of fiscal distortions generated by policymakers through diverse incentives. First, the governing class focuses their campaign plans on the short term (due to their governing periods). Meanwhile under FR, the plans by the government must follow the same guidelines with respect to revenue and budget expenditures in order to be able to meet the mid-term goal. Second, the different political parties sometimes do not consider the consequences of their demands on the nation's budget while with a FR there are limits to expenditures that must be considered priorities such as high impact government plans. Other benefits could include better risk ratings, more confidence in the country on the part of investors and less uncertainty in the domestic markets, to name a few.

If the annual goals are not met, the loss of government credibility stands out as one of the disadvantages. Furthermore, these fiscal rules could mean a pro-cyclic stance in periods of recession because they require a lot of austerity, but in boom times, they may not be as demanding. The FR could also cause disadvantages for other priorities such as cuts in investment expenses which could have resulted in a positive social return and thus generate an adverse effect by causing negative long term impacts (for instance, reducing the budget for plans to eliminate poverty). Another drawback has to do with the effect on inflation since, depending on its size, it could affect the design and implementation of the rule.

Based on the goal to be met by the use of FR, this can be applied to the balance, the expenditures, the revenue or the debt. If it is applied to the first three, there could be a disadvantage because they do not have any direct relationship with the size of the debt. For example, in the case of an increase in the interest payment or the debt repayment, the annual targets would not necessarily be adjusted and funds would have to be diverted to support the magnitude of the debt.

In addition, the FR on expenditures and revenue can cause undesirable transfers between the different budget appropriations in the effort to meet the goal and without necessarily contributing to deficit reduction. In turn, the FRs applied to the debt are the most effective with respect to ensuring convergence with the objective. However, the guidance they offer is insufficient for applying policy when the magnitude of the deficit is far above its limit (MIF, 2009).

In the case of Colombia, the proposed FR seeks to correct the structural imbalance in the public finances, reduce the pro-cyclical tendency of the fiscal policy and guarantee the sustainability of the public debt in the mid- and long terms (Rincon, 2010).

The debt of the Central National Government (NG) is projected to represent 39.4% of GDP as of December 2010. Although this encompasses 87% of the total government debt, the Medium-Term Fiscal Framework (MTFF) does not establish specific targets to improve the NG balance over the next decade. This is the reason an inter-institutional technical committee (ITC) was created and staffed by members of the Banco de la República, the Ministry of the Treasury and Public Credit, and the National Planning Department (DNP in spanish). This proposes annual goals for the primary balance in order to reduce the level of NG indebtedness to 28.4% of GDP by 2020. This takes into account the economic cycle and other deviations such as fluctuations in oil revenue, which is the main source of income for the NG (ITC, 2010).

The rule chosen by the ITC for Colombia is defined by the following equation:

$$b_t = b^* + ay_t + ccip_t$$

Where b_t is the primary fiscal balance for the NG in year t; b* is the goal for the NG primary fiscal balance that makes its debt sustainable in the medium-term; a measures the degree of sensitivity of the fiscal authority with respect to the product gap y_t; and $ccip_t$ is the cyclical component of the petroleum revenue received by the NG. It is noteworthy that all the variables are expressed as a proportion of the GDP (ITC, 2010).

In order to be able to reduce the debt of the NG from a level of 39.4% of the GDP projected for 2010 to one of 28.4% of GDP in 2020, it will be necessary to have an annual average primary surplus of 1.3% of GDP between 2011 and 2020 based on the results obtained by the use of the fiscal rule. The rule requirements will be more lenient during the first five years due to the expenditures derived from the decisions by the Supreme Court with regard to health and displaced people as well as the tax

exemptions on the payment of ICA and property taxes. Therefore, the requirement in the primary balance would be 0.8% in 2011, 1.4% in 2015 and 1.8% beginning in 2016.[1]

The application of this rule will allow the uncertainty in the markets to decline because it will be possible to make a better projection with the set of available instruments. The NG would be committed to maintaining its credibility through the proposed goals, one of which would be to comply with the debt limits. This would make it possible to reduce the volatility in the macroeconomic variables and would result in an improvement in the conditions in the local financial market. Thus, there would be an incentive for long-term credit at the same time as there would be access to other products in the international financial system, which would foster the development of capital markets in the country. Likewise, this lower volatility would be associated with lower variations in the prices of assets which would reduce the sensitivity of portfolios to market risk. It is worth mentioning that this would also imply that the investments of the pension funds and other institutions in the financial sector (mainly the commercial banks) would have to be diversified beyond public debt securities. This could increase other type of risks in the financial system.

Also, compliance with the FR could translate into an improvement in the international rating for public debt. At the same time, the NG funds could be allocated more efficiently and support economic sectors through micro-credit policies. In order to control and periodically verify that this rule was being complied with, the creation of an External Committee for the Evaluation of the Fiscal Rule (ECEFR) was recommended.

In conclusion, the selection of the FR in Colombia is a simple design that is directly aligned with the goal. At the same time, it takes into account the effects of the economic cycle and the main resources of the NG. Thus, it becomes a structural rule that makes it possible to comply with the lower levels of public debt in the medium-term (ITC, 2010).

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1 Between 2011 and 2015, the rise in the goal for the primary balance would take place progressively and would be at 1.0% of GDP in 2012 and 1.1% of GDP in 2013 and 2014.

IV. Potential Risks

In the first half of 2010, there was an improvement in the credit risk of the consumer and mortgage portfolios that was reflected in both the transition matrices and in the harvests. The commercial and micro-credit portfolios, in turn, showed the opposite trend. In addition, as a result of the continued rise in the financial system's holdings of public debt securities, their exposure to market risk rose.

A. MARKET RISK

1. The financial system's exposure to public debt securities

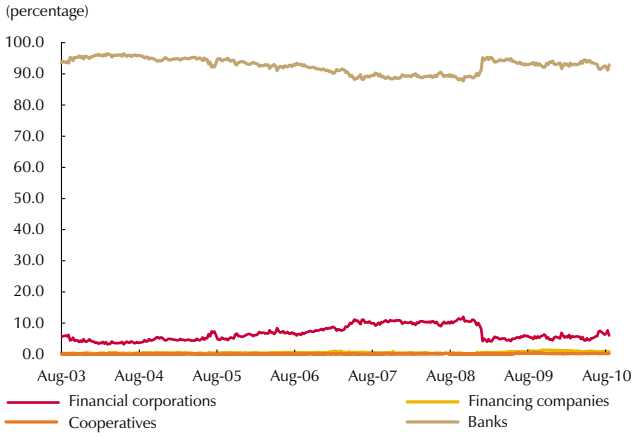
Commercial banks and the PFM are still the most representative entities in the financial system in the public debt market. Of the credit entities, commercial banks accumulated 92.9% of the TES balance as of August 2010 and their variation with respect to six months ago was -53 bp (Graph 70, panel A). In the group of non-banking financial institutions (NBFI), the PFMs have a 73.1% share of the total public debt securities although their proportion declined 1.4 pp with respect to February 2010. Other NBFIs that have lost relative importance in the TES market are the trust companies whose participation fell 3.3 pp. These reductions have been replaced mainly by insurance companies which increased their proportion by 2.8 pp (Graph 70, panel B).

Between February and August 2010 the TES balance in pesos and in UVR has increased for both the commercial banks and PFM by approximately COP$4.6 trillion each as a result of which the growth trend of the last few years will continue. These balances were at COP$25.8 t for commercial banks and at COP$31.8 t for the PFM in August 2010. Even though these quantities represent the amount exposed[39] for the PFM, it is necessary to consider the

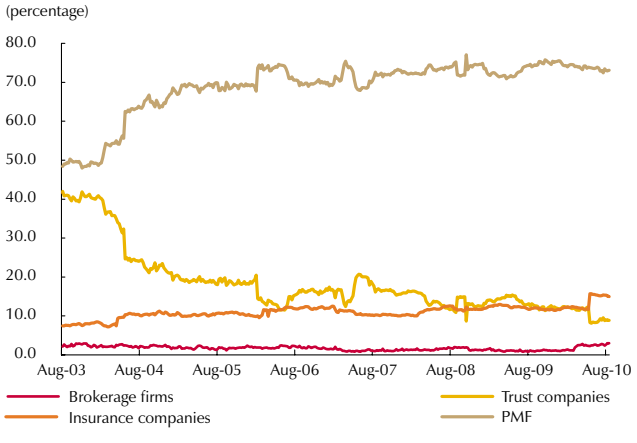
39 The exposed amount is defined as the balance of public debt securities that is subject to changes in market prices. Thus, this amount corresponds to the sum of the negotiable securities plus those that are available for sale.

Graph 70
Share of Outstanding Peso and UVR-denominated TES in Loan Portfolios

A. Credit Institutions

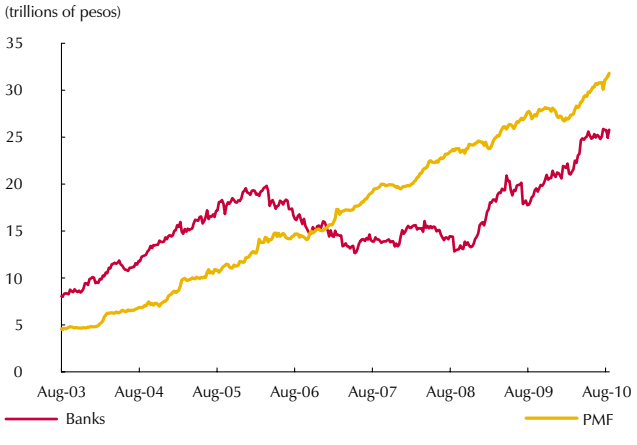


B. Non-banking Financial System



Source: Banco de la República.

Graph 71
Outstanding Peso and UVR-denominated TES Held by Commercial Banks and PFM



Source: Banco de la República.

investments in public debt securities made by commercial banks which are subject to changes in market prices[40] (Graph 71).

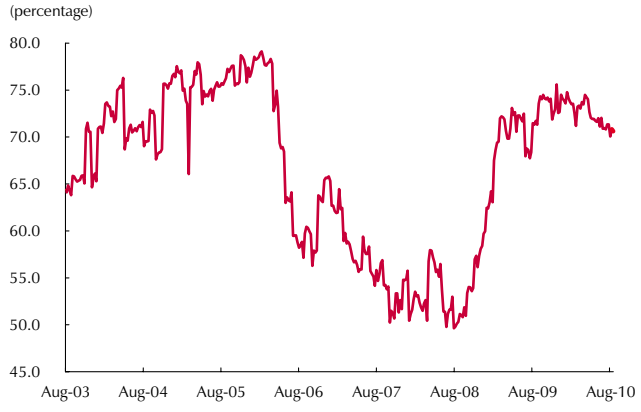
During the most recent six months, the commercial banks exposure rose by COP$3.2 t and reached COP$18.2 t in August 2010. Nevertheless, the share of these securities within the loan portfolio declined as it went from 72.6% in February 2010 to 70.6% in August of the same year. In spite of this tightening, their exposure still remains high in comparison to the historical average (66.7%) (Graph 72).

With respect to the composition of the portfolio by currency, the performance of both the commercial banks and the PFM is very similar. First of all, both types of entities have preferences for securities in pesos. The banks were holding a share of 82.6% and the PFMs, one of 64.2% as of August 2010. Secondly, between February and August of the same year, there was a 3.9 pp shift towards securities in UVR in the banks and of 2 pp in the PFMs as a percentage of the bond portfolio (Graph 73, panels A and B). This trend could be explained by a greater expected appreciation from the securities in UVR due to the anticipated increase in inflation resulting from the rise in the growth projections for the economy in 2010.

As a result of their business structures, the portfolio compositions differ for banks and PFMs by periods. As can be seen in Graph 74, panel A, the banks'

40 Investments can be classified as negotiable, available for sale or at maturity. The first are securities that are acquired to make a short term profit based on fluctuations in their prices. They are entered on the books initially at the purchase price and are revaluated daily based on the current market value. The resulting adjustment is entered in the profit and loss account. The second are securities that the holder intends and is legally entitled to hold for a period of no less than one year or Central Bank bonds with low or minimal marketability. In spite of this restriction, there is no change in their condition as saleable. They remain investments that can be sold at any time. In addition, they are initially entered on the books at the purchase price and are adjusted daily just as investments at maturity are. However, the variations in their market prices are incorporated in the adjustment, which is entered in the capital or proprietor accounts. Investments at maturity, in turn, are securities the holder intends and is legally entitled to hold until maturity or redemption. They are initially entered on the books at their purchase price and revalued daily exponentially based on the internal rate of return calculated at the time of purchase. The adjustment is registered in the profit and loss accounts.

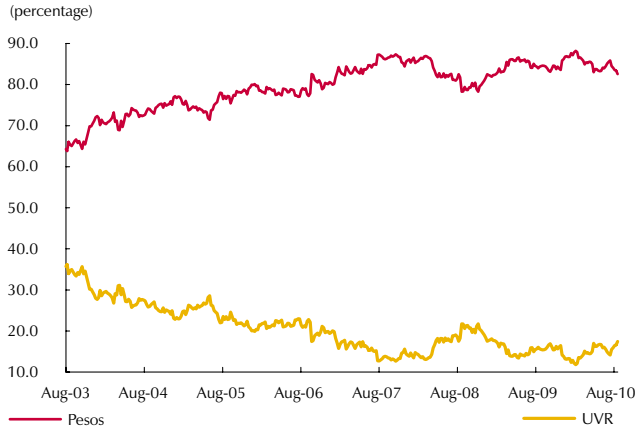
Graph 72
Share of TES Investment Portfolio Consisting of Negotiable and Callable TES Held by Commercial Banks



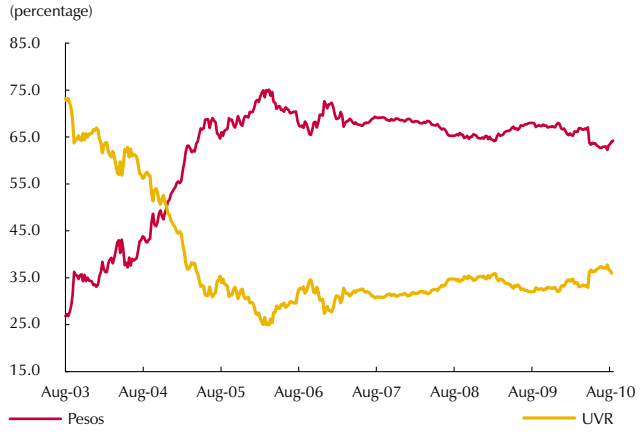
Source: Banco de la República.

Graph 73
Composition of Investment in TES by Monetary Unit

A. Commercial banks



B. PFM



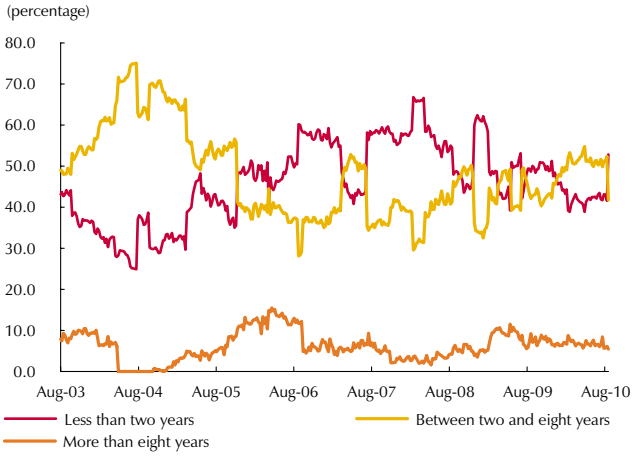
Source: Banco de la República.

securities are concentrated in medium and short terms while those of the PFMs are held in long and medium terms (Graph 74, panel B).

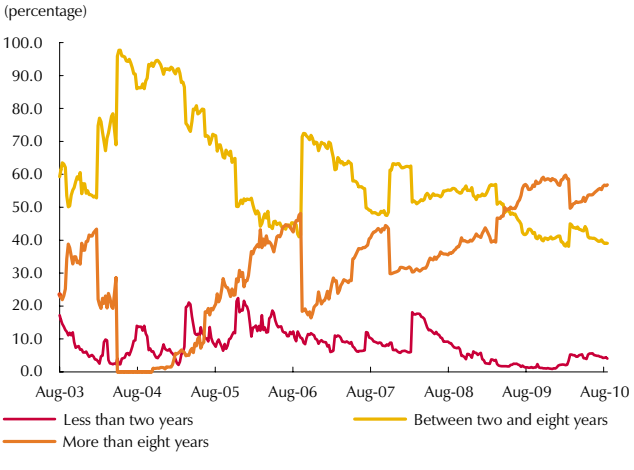
So far in 2010, the balance of the medium term TES held by commercial banks maintained the largest share within the portfolio (52.9% as of August 13, 2010). However, in the third week of August a change of 10 pp from securities with this maturity to short term ones was seen. This was a return to the trend of the most recent four years (2005-2009) when the short term securities corresponded to more than half of the total value of the loan portfolio.

Graph 74
Composition of Investment in Peso and UVR-denominated TES by Maturity

A. Commercial banks

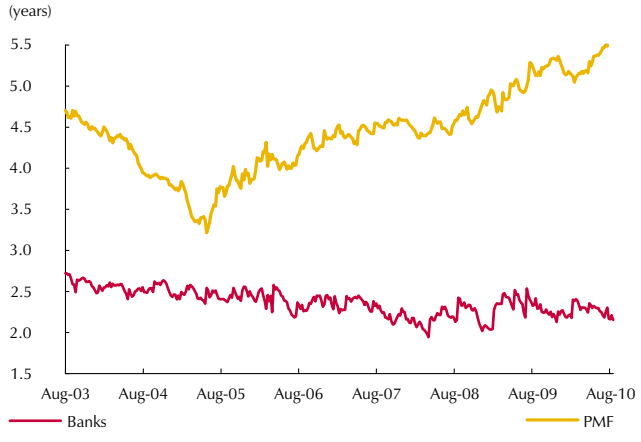


B. PFM



Source: Banco de la República.

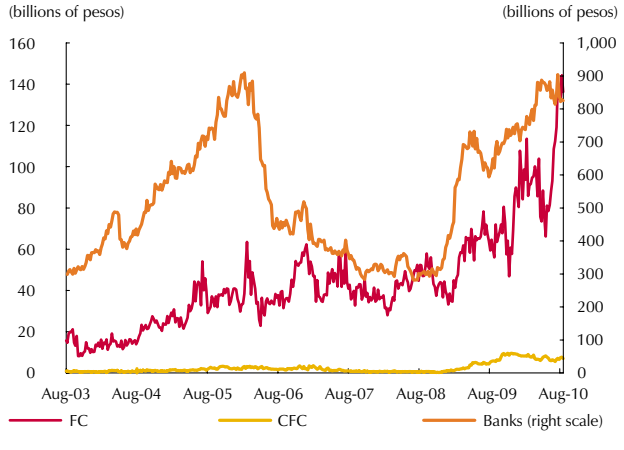
Graph 75
Duration of Commercial Bank and PFM Portfolios in TES



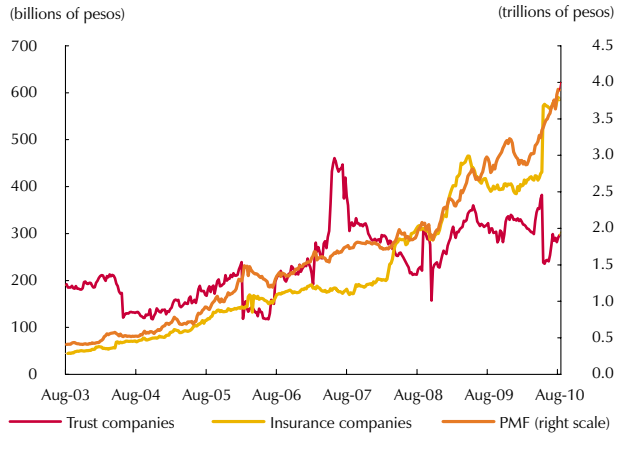
Source: Banco de la República.

Graph 76
Appreciation Losses with a 200 bp Increase

A. Credit Institutions



B. NBFI



Source: Banco de la República.

Between February and August 2010, the larger share of long term securities within the PFM portfolios (56.8%) continued in spite of a slight decline of 1.7 pp in the previous six months. This was primarily replaced by medium term securities the share of which was equivalent to 39.1% of the total public debt securities in August 2010.

Just as in the composition, the duration of the TES portfolio is also seen to be related to the market that each entity focus on. Therefore, a longer duration for the PFMs, which have had a growth trend in recent years, is seen which indicates an increase in the interest rate risk. In August 2010, this duration was equivalent to an average of 5.7 years and one of 2.2 years for the commercial banks (Graph 75).

2. Sensitivity to increases in TES rates

In this section, two sensitivity exercises are done in order to analyze the exposure to market risk that different entities in the financial system have. The first of these consists of calculating the losses in portfolio value in the face of an increase of 200 bp for all of the maturities for the TES zero coupon curve in pesos and UVR. This is the shock that the Basel Committee on Banking Supervision suggests for countries other than the G-10. In the second period, three scenarios for increases in the interest rates of the securities are considered assuming that the financial entities reorganize/ alter their loan portfolios in view of the possible increase in these rates in order to limit their losses. In other words, they reduced the duration of the portfolio and the share of negotiable securities, which will reduce their exposure to market risk. A strong reaction on the part of the entities is kept in mind with respect to this.

a. Exercise 1: A Parallel Increase of 200 bp in the TES Zero Coupon Curve

Graph 76 shows the losses that the financial entities would have in the presence of a parallel shock of

200 bp in the TES curve. It should be stated that the effect of a shock does not accumulate over time but pertains to the possible devaluations if one should occur at some point. The potential losses of the credit entities in the presence of a shock are given in panel A. In spite of the reduction in the share of negotiable securities a continuing increase can be seen in the exposure to market risk due to the increase that has occurred in the entities' holdings of TES in the most recent years. As of August 20, 2010, losses came to COP$968.4 b, a figure that surpasses what they would have been by COP$112 b if the shock had occurred six months earlier.

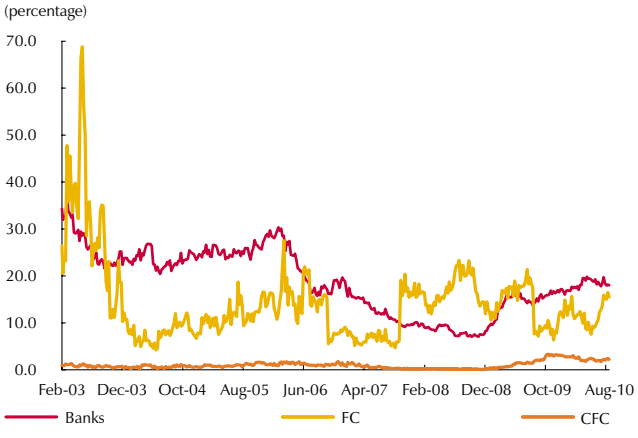
When the effects are analyzed by type of credit entity, the commercial banks are the ones that will incur the largest losses with changes in the interest rates of public debt securities. This is due to the fact that they are the credit entities with the largest balance exposed to TES. As of August 2010, their losses would come to COP$825.1 b, which is an increase of 8.4% with respect to the losses that they would have suffered six months before. It must be emphasized that the levels of exposure that these entities are seeing are similar to those seen in 2006 when the most serious crisis in the public debt market occurred during the decade of the 2000s. By the same date, the FCs would have lost COP$136.3 b, a number that is higher than the one in February 2010. This shows a considerable rise in the credit establishments' exposure to market risk.

The losses in the presence of an interest rate shock for NBFIs are shown in panel B. In August 2010, the losses for the period for the sector's total would be COP$4.9 t, which is COP$1.3 t higher than the losses they would have incurred six months ago. This increase is primarily explained by the losses the pension funds had (COP$4.0 t) and, to a lesser degree, the insurance company's losses (COP$589.1 b). These are, respectively, 39.2% and 44.7% higher than that they would have been in February of the present year. The trust companies, in turn, showed a slight decline in their exposure to interest rate risk as there was a reduction in losses with that scenario. This occurred due to the decline in the value of their TES portfolio.

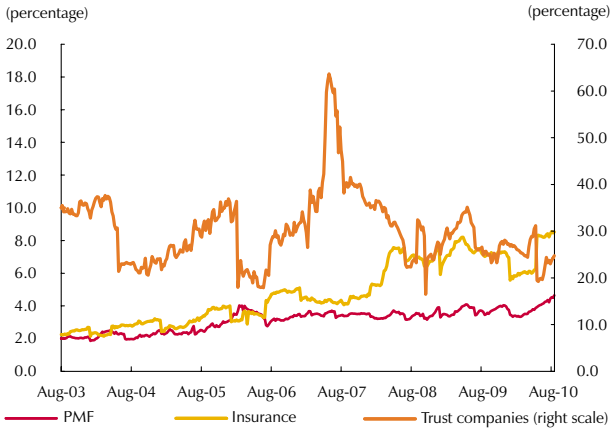
When the losses for the period are analyzed as a percentage of the profits for the credit entities, a slight rise can be seen in the most recent half of the year. As of August 2010, the losses represented 16.6% of the earnings, which is 1.0 pp higher than the one from six months ago. By type of entity, the banks are the ones that would lose the most with respect to earnings (18.0%, a figure that is 60 bp higher than the one that would have been seen in February 2010). As of August of the present year, the FCs went through a devaluation that represented 15.5% of their earnings, a number that is 3.7 pp higher than the one six months before. Thus, with respect to earnings, an increase is seen in the exposure to market risk for banks and FCs (Graph 77, panel A).

Graph 77

A. Valuation Losses with a 200 bp Increase as a Percentage of the Annualized Profits for Credit Institutions



B. Valuation Losses with a 200 bp Increase as a Percentage of Equity for NBFI [a/]



a/ Annualized profits and equity value as of June 2010 are being used for the 2010 calculations.
Source: Banco de la República.

When the losses are considered in relation to the value of the total net worth of the NBFIs,[41] it can be seen that trust companies are the entities that are the most exposed to TES interest rate shocks. As of August 2010, these entities would have lost 24.8% of their net worth while insurance companies and the PFMs would lose 8.5% and 4.6% respectively. It is important to emphasize the fact that these last two sectors showed an increase in their exposure between February and August of this year due to the above-mentioned increase in the value of their TES portfolio.

b. Exercise 2: A Parallel Shift in the TES Zero Coupon Curve Considering Changes in Duration and in the Outstanding Balance

Different scenarios regarding changes in the rates for public debt securities that correspond to the 99, 80 and 60 percentiles of the annual increases that have occurred in the zero coupon curve in pesos since 2003 are considered in this exercise. In each one of the scenarios, in view of expectations of increases in the rates, the fact that the financial system entities will redo their portfolio in order to minimize the impact on their earnings and the value of their net worth will be taken into consideration. Therefore, given an increase in the interest rates for securities, the entities will reduce the duration of their portfolio and the share of negotiable securities. The scenarios under consideration are given in Table 9.

For the extreme case, the changes in duration and share of negotiable securities were the ones that were seen between 2006 and 2007, which was the period with the greatest devaluation of public debt securities in the most recent decade. For medium and moderate scenarios, in turn, these changes were calculated by econometric estimates.[42] For this exercise, the public debt portfolios as of August 20, 2010 were taken.

41 Due to the change in methodology, the results for the NBFIs are not comparable to the ones in the previous Reports.

42 For each type of NBFI, a regression between the change in duration and the change in the one year rate of the TES zero-coupon curve was estimated. The sample considered has had 399 weekly observations starting in January 2003. In addition to the above-mentioned regression, for each type of credit entity, another is estimated between the change in the share of negotiable securities and the same variable apart from the previous regression. For this last regression, there were 88 monthly observations.

Table 9
Scenarios Used for the Stress Test

A. Credit Institutions

	Scenarios											
	1. Extreme[a/]				2. Medium[b/]				3. Moderate[c/]			
Type of entity	CB	FC	CFC	Coop	CB	CF	CFC	Coop	CB	FC	CFC	Coop
Change in duration (years)	(0.3)	0.0	(0.3)	0.0	(0.1)	0.0	(0.2)	0.0	(0.1)	0.0	(0.2)	0.0
Change in share of negotiable securities (percentage)	(20.0)	(5.8)	0.0	0.0	(4.0)	(4.6)	0.0	0.0	(3.0)	(4.0)	0.0	0.0

B. NBFI

	Scenarios					
	1. Extreme[a/]		2. Medium[b/]		3. Moderate[c/]	
Type of entity	AFP	Otras	AFP	Otras	AFP	Otras
Change in duration (years)	(0.3)	0.0	(0.1)	0.0	(0.1)	0.0

a/ 300 bp increase in the interest rate on TES.
b/ 200 bp increase in the interest rate on TES.
c/ 150 bp increase in the interest rate on TES.
Source: Banco de la República.

Table 10
Results of Stress Test

A. Credit entities

Type	Duration (years)	Negotiable securities (percentage)	Total balance	Exposed balance	Market price	Annualized profit	Scenario extreme		Scenario medium		Scenario moderate	
			(trillions of pesos)				($b)	(%)[a/]	($b)	(%)[a/]	($b)	(%)[a/]
Commercial banks	2.17	0.71	25.59	18.21	20.08	4.40	(831)	(18.1)	(776)	(17.0)	(600)	(13.1)
FC	3.97	1.00	1.66	1.66	1.83	0.88	(206)	(23.4)	(139)	(15.8)	(105)	(11.9)
CFC	1.90	0.71	0.25	0.17	0.19	0.32	(9)	(2.8)	(6)	(2.0)	(5)	(1.5)
Financial cooperatives	2.13	0.87	0.07	0.06	0.06	0.06	(4)	(6.7)	(3)	(4.5)	(2)	(3.4)

B. IFNB

Type	Duration (years)	Total balance	Market price	Equity value	Scenario extreme		Scenario medium		Scenario moderate	
		(trillions of pesos)			($b)	(%)[b/]	($b)	(%[b/]	($b)	(%)[b/]
PFM	5.75	31.80	38.17	86.13	(6.378)	(7.4)	(4.298)	(5.0)	(3.235)	(3.8)
Trust companies	3.58	3.87	4.43	1.23	(476)	(38.8)	(317)	(25.9)	(238)	(19.4)
Insurance companies	4.23	6.52	7.54	6.91	(957)	(13.9)	(638)	(9.2)	(479)	(6.9)
Brokerage firms	1.92	1.31	1.45	1.25	(83)	(6.6)	(55)	(4.4)	(42)	(3.3)

a/ Percentage of annualized profits as of June 2010.
b/ Percentage of equity value as of June 2010.
Source: Financial Superintendency of Colombia and Banco de la República, Banco de la República calculations.

The results of the exercise are shown in Table 10. In the case of the credit entities, it can be seen that when there is an increase of 300 bp in the TES rate, the banks and FCs would lose 18.1% and 23.4% of their annualized earnings respectively as of June 2010. Meanwhile, the CFC and cooperatives would only lose 2.8% and 6.7% respectively given the low TES balance.

As for the NBFI, the pension funds are the entities that would have the highest losses in each one scenario. In the most extreme one, these entities would lose around COP$6.4 b, which represents 7.4% of the value of their net worth as of June 2010. However, trust companies are the entities that would have the most losses with respect to the value of their net worth (38.8% in the most extreme scenario). In the same scenario, the insurance companies and brokerage companies would lose 13.9% and 6.6% of their net worth.

To summarize, the financial system entities in general have increased their exposure to market risk primarily due to the increase in their holdings of government bonds seen since 2009. The PFM and commercial banks are still the most important agents in this market. Nevertheless, due to the high value of net worth and earnings, they are not necessarily the ones that are the most vulnerable to market risk.

It is necessary to bear in mind the fact that the two exercises are different in terms of their definition which means that the results are not directly comparable. In the first exercise, parallel changes in all of the maturities of the TES zero coupon curve are considered. The second summarizes the parallel shock with a change in the rate for a zero coupon bond with a maturity that is equivalent to the average of the securities that the entities' portfolio consists of. However, the latter assumes that the agents behave dynamically and reorganize their portfolios in the event of a rise in interest rates.

3. Value at risk

The value at risk (VaR) is a measurement that shows the maximum loss that the system could experience starting from a portfolio of investments that were registered in a definite period. This is included in order to get a more rigorous approximation of the market risk that both the credit entities and NBFI are exposed. Specifically, when the VaR for each of these sectors is defined as the addition of the individual VaRs for each one of the entities that they consist of, this indicator gives a more precise picture of the exposure of each particular system and entity to market risk.[43]

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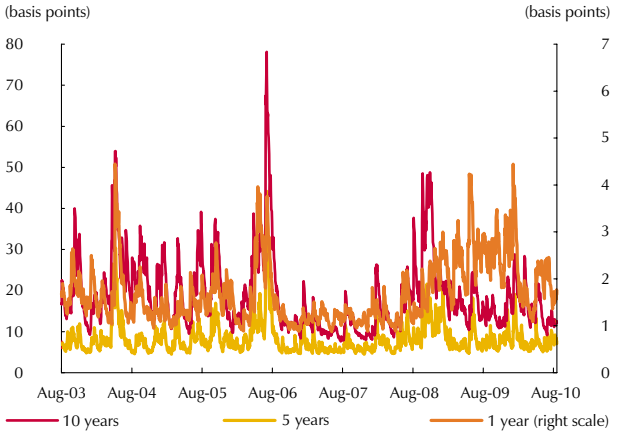
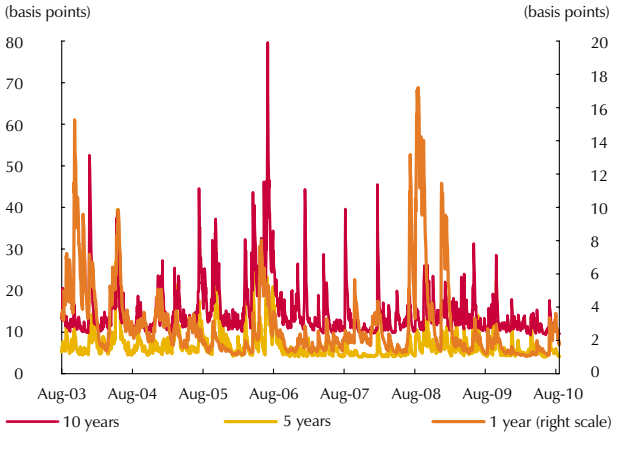
43 The details of the methodology used can be found in Martinez, O. and Uribe Gil, J. M., "Una aproximación dinámica a la medición del riesgo de mercado para los bancos comerciales en Colombia," Financial Stability Issues, Financial Stability Department, Banco de la República, no. 31, 2008.

Graph 78
Annualized Daily Volatility of the TES Zero-coupon Curve

A. In pesos



B. UVR



Source: Colombian Stock Market and Banco de la República, Banco de la República calculations.

First of all, the procedure implemented to calculate the VaR implies a daily estimate of the correlations and variations for the returns on each one of the risk factors. Following the methodology suggested by RiskMetrics,[44] these factors were established for specific maturities for both the TES zero-coupon curve in pesos and the TES denominated in UVR between January 3, 2003 and August 20, 2010. The results of the annualized volatility of the returns that were procured using constant correlations (CCC model) are given in Graph 78.

Unlike what has been seen since the end of the second half of 2008 and in 2009, when there was an increase in the volatility of the curve denominated in pesos (panel A) between February and August of the present year, there was a reduction in all of the tranches of the curve. This result was derived from the more stable trend of the benchmark interest rates and of inflation.

In another case, during the most recent half of the year the volatility of the TES curve denominated in UVR continued to register stable levels for all tranches in comparison to the results seen in the two previous years (panel B). For the short tranche, volatility diminished significantly during 2009 and remained constant over the course of 2010 after having presented a significant rise in the second half of 2008.

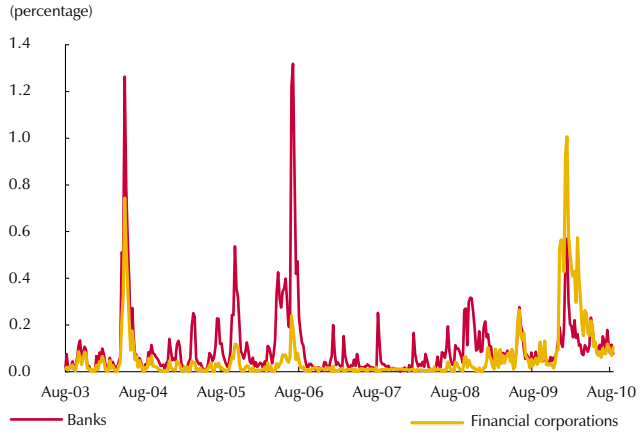
Starting from the estimates on the volatility of the returns, the VaR was calculated for the sectors which had portfolios in TES that represent a significant proportion of their total investments. To do this, they used the portfolios as seen on Friday of each week from January 2003 to August 2010 of each one of the entities that these sectors are made up of. With this information, the risk measurement was estimated daily with 99% confidence assuming normality (Graph 79).

With respect to the credit entities, the VaR was calculated for the banks and for financial corporations (panel A). Between February and August 2010, given the decline in volatility, this indicator showed a reduction as a percentage of the portfolio. In August of the same year, the overnight VaR for banks was at 0.08% in contrast with the 0.22% registered in February. For the FCs this

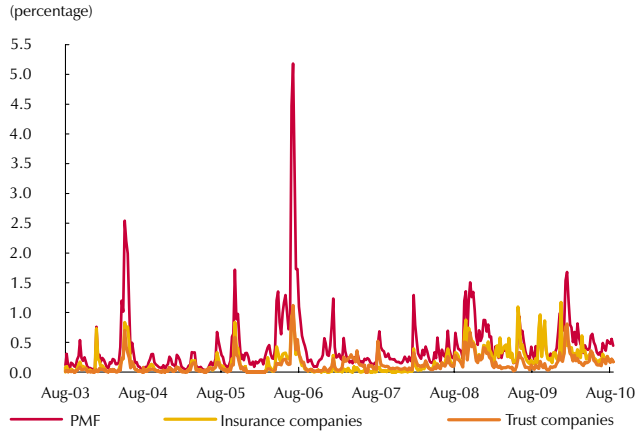
44 RiskMetricks, "Technical Document," J. P, Morgan/Reuters, fourth edition, December 1996.

Graph 79
VaR as a Percentage of Value of Exposed Balance

A. Credit Entities



B. Non-banking Financial Entities



Source: Colombian Stock Market and Banco de la República, Banco de la República calculations.

indicator diminished 33 bp during the same period going to 0.1% in August 2010.

In the case of the NBFIs, the overnight VaR was estimated for the PFM, the insurance companies, and trust companies. As can be seen in panel B, the first part of 2010 was characterized by a reduction in the VaR for all of the NBFIs. In August of the current year, the overnight VaR for the PFMs was at 0.44% of the value of the portfolio. For the insurance companies, it was at 0.17% and for the trust companies, 0.18%.

Starting with the previous calculations, it can be inferred that the banks and financial corporations have a market risk measured by the VaR that is lower than that of the NBFIs. This could be due to the maturity composition of the portfolio these types of entities have given that both the insurance companies and the PFMs manage investment portfolios that have significantly longer durations than those of the banks and financial corporations. When the duration is a measurement of the change in the value of a security in the presence of variations in the interest rates, the entities with greater duration have a higher change in the value of their portfolios when there are negative events in the TES yields. Therefore, the PFMs and insurance companies are the most sensitive to market risk. With the analysis done in this section, the conclusion can be drawn that exposure of market risk has risen for both credit entities and the NBFIs in the most recent months because of the significant increase in investments in public debt. Nevertheless, when the reduction in volatility registered in 2010 is considered, the overnight VaR has declined for all of the entities in the financial system.

B. CREDIT RISK

1. Credit Institutions

In the first half of 2010, growth was seen in the gross portfolio, which was accompanied by improvements in the indicators of portfolio quality and in the expansion pace of the risky portfolio. However, the various risks that the system faces remain latent. Therefore, it is important to evaluate the effect that an adverse macroeconomic situation could have on the performance of the credit institutions. A set of sensitivity exercises was developed for this

based on two types of scenarios: i) moderate, and ii) extreme and of limited probability (Table 11).

Table 11
Description of Shocks in Each Scenario

	Macroeconomic variable	Moderate	Extreme
Shock 1	GDP	1% decline in GDP	6.8 decline in GDP
	Domestic demand	1% decline in domestic demand	13.7 decline in domestic demand [a/]
Shock 2	Interest rate	Increase of 25 bp	Increase of 450 bp [b/]
	NHPI	1.0% reduction in housing prices	8.0% reduction in housing prices [c/]
Shock 3	Unemployment	1.0 pp rise in unemployment	4.2 pp rise in unemployment [d/]
Shock 4	Agregated	All of the above	All of the above

a/ This corresponds to the reductions seen in the second quarter of 1999.
b/ Corresponds to the increase registered by May and June 1998.
c/ Equivalent to the average declines that occurred in the 1996-2000 period.
d/ Corresponds to the average rise seen in 1999.
Source: Banco de la República.

The exercises that are presented show the effects that the shocks in question have on the non-performing portfolio and profitability of the financial intermediaries.[45] The shocks to macroeconomic variables increase the non-performing portfolio for the different types of loans. This translates into lower profits as a result of the increase in the costs for loan-loss provisioning and a reduction in the income from interest. Likewise, increases in the interest rates lead to an increase in deposit-taking costs along with more income from loans placed at variable rates. Depending on the extent of the increases in deposit and lending rates, this effect on bank profits will be positive or negative.[46]

When the results of the moderate scenario are analyzed, it can be seen that the macroeconomic shocks have a slight effect on the banks' profitability (Table 12). Nevertheless, when these results are compared to those obtained the previous six months, one sees that for all of the shocks, profitability is reduced to a greater degree. In the case of the aggregate shock, the ROA is seen to decline from 3.0% to 1.9%, which is equivalent to a reduction of 36.3% of the earnings. In this scenario, the fact that only one entity would present a negative profit as a result of different shocks is emphasized.

In the case of the extreme scenario, the shock to economic activity is the one that has the strongest negative effect on profitability. If this situation should

45 For more information on the methodologies, see "Un análysis de cointegración para el riesgo de crédito," Financial Stability Issues, Banco de la República, Report on Financial Stability, September 2008.

46 If the rise in the income from interest is higher than the outlays for interest, the profit increases.

Table 12
Stressed ROA, Stressed Profits, and Number of Banks with Negative Profitability after the Moderate Shock

	Shock 1[a/]	Shock 2[b/]	Shock 3[c/]	Shock 4[d/]
ROA as of June 2010 (percentage)	3.03	3.03	3.03	3.03
ROA after the shock on each portfolio				
Commercial	2.68	3.01	2.94	2.64
Consumer	2.64	2.78	2.62	2.60
Mortgage	2.81	2.84	2.83	2.78
Total portfolio	**2.11**	**2.53**	**2.37**	**1.93**
Profit as of June 2010 (b) [e/]	6,203	6,203	6,203	6,203
Stressed profit (b)	4,308	5,170	4,841	3,954
Percentage change in profit	(30.55)	(16.66)	(21.95)	(36.26)
Number of banks with negative profit due to the shock	**1**	**1**	**1**	**1**

a/ Domestic demand (commercial and consumer) or GDP (mortgage).
b/ Interest rates (commercial and consumer) or housing prices (mortgage).
c/ Unemployment.
d/ Combination.
e/ Test done on profit before taxes.
Source: Banco de la República.

Table 13
Stressed ROA, Stressed Profits, and Number of Banks with Negative Profitability after the Extreme Shock

	Shock 1[a/]	Shock 2[b/]	Shock 3[c/]	Shock 4[d/]
ROA seen as of June 2010 (percentage)	3.03	3.03	3.03	3.03
ROA after the shock on each portfolio				
Commercial	1.84	3.16	2.79	2.14
Consumer	1.87	2.77	2.34	1.58
Mortgage	2.76	2.84	2.74	2.66
Total portfolio	**0.53**	**2.45**	**1.88**	**0.06**
Profit as of June 2010 (b)[e/]	6,203	6,203	6,203	6,203
Stressed profit (b)	1,095	5,009	3,843	129
Percentage change in profit	(82.35)	(19.25)	(38.04)	(97.92)
Number of banks with negative profit due to the shock	**6**	**1**	**1**	**7**

a/ Domestic demand (commercial and consumer) or GDP (mortgage).
b/ Interest rates (commercial and consumer) or housing prices (mortgage).
c/ Unemployment.
d/ Combination.
e/ Test done on profit before taxes.
Source: Banco de la República.

occur, the banks' profits would decline 82.4% (Table 13). Likewise, if an increase in the unemployment rate should occur like the one that was seen at the end of the nineties, the ROA would drop 1.2 pp. The results for a simultaneous shock, in turn, show that the profits would go from COP$6.203 b to COP$129 b, which would represent a decline of 97.9%. Consistent with what has been seen in previous *Reports*, the negative effect on profitability is seen to be more pronounced for the economic activity shock, followed by the unemployment rate and, last of all, that of the interest rate.

Table 14
Commercial Loan Portfolio Capital

Date	Balance [a/]	Number of debtors	Average amount per debtor [b/]
Jun-04	51.2	263,478	194.2
Dec-04	59.3	274,543	215.9
Jun-05	60.4	289,018	208.9
Dec-05	61.5	312,687	196.6
Jun-06	67.8	333,934	203.1
Dec-06	75.7	362,943	208.5
Jun-07	80.2	395,963	202.5
Dec-07	89.1	432,588	205.9
Jun-08	89.2	431,552	206.6
Dec-08	101.9	415,472	245.3
Jun-09	102.6	401,073	255.8
Dec-09	101.0	394,741	255.8
Jun-10	103.6	384,561	269.3

a/ Balances in trillions of June 2010 pesos.
b/ Balances in millions of June 2010 pesos.
Source: Financial Superintendency of Colombia, Banco de la República calculations.

2. Analysis of the Loan Portfolio Concentration and Credit Risk[47][48]

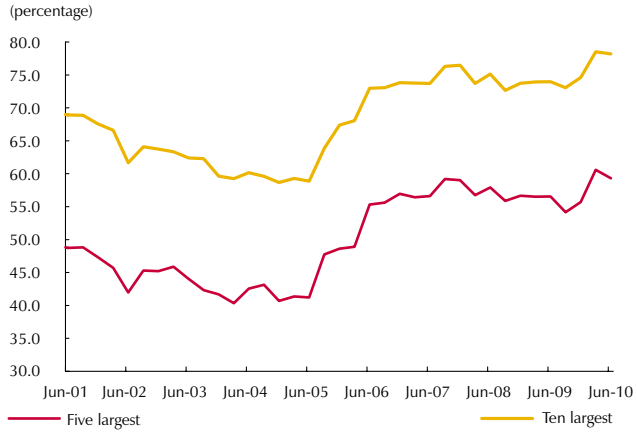
a. Commercial Loan Portfolio[48]

The commercial loan portfolio is still the one that has the largest share within the gross portfolio. In fact, as of June 2010 it represented 54%. For that date, the portfolio showed a real annual growth rate of 0.93% having recovered from

47 The information on the individual loans in each one of the loan portfolios comes from the Financial Superintendency of Colombia format 341. This includes the loans that were granted by the special and official institutions (IOES in Spanish) other than rediscount loans, leasing operations and loans given to trust companies, which are considered to be within the financial system section.

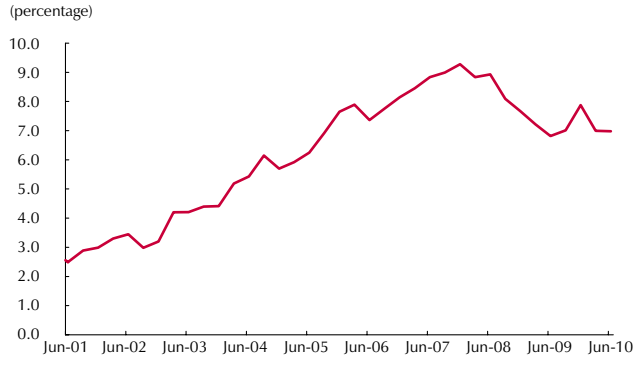
48 Starting in December 2009 information on loans given to trust companies is included.

Graph 80
Commercial Loan Portfolio Concentration in the Largest Financial Entities



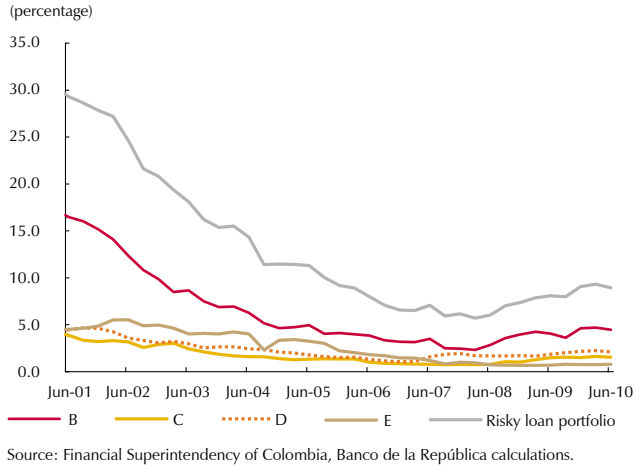
Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 81
Percentage of Debtors Accounting for 90% of the Commercial Loan Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 82
Share of Risky Portfolio by Rating



Source: Financial Superintendency of Colombia, Banco de la República calculations.

the negative momentum registered in December 2009.[49] However, the number of debtors has been declining since December 2008 and, as a result, the average amount per debtor rose to COP$269 m in June 2010 (Table 14).

The trend in the number of debtors could be explained by the recent momentum in the QI of the commercial loan portfolio where it can be expected that the financial entities would prefer to concentrate on the debtors with better credit risk rating.

1) Commercial Loan Portfolio Concentration

As of June 2010 a smaller diversification of the commercial portfolio can be seen among the entities in the financial system. Since the second half of 2006, the degree of concentration of the five largest entities has been rising and between June 2009 and the same month in 2010, this indicator went from 56.5% to 59.3%. Likewise, the 10 largest entities increased their concentration. The indicator changed by 4.2 pp during the same period and went to 78.2% (Graph 80).

Unlike the evolution of concentration by entities, the indicator that measures the proportion of debtors that account for 90% of the commercial portfolio, which was at 7.0%, did not show variations as of June 2010 in comparison to the previous year (Graph 81). Thus, the increase seen during the last half of 2009 (7.9%) was corrected. This trend towards more limited diversification among the debtors in the portfolio has been ongoing since the second half of 2008 (with the exception of the second half of 2009). It may be associated with the increase in financial entities' requirements for granting new loans and with the preference for holding on to debtors with high credit ratings who are generally those who have the highest loan amounts.

49 The results are different from those obtained in Section A, Loan establishments in Chapter II since in the current section more entities are included.

2) Credit risk

When the development of the portfolio quality index is analyzed, we find that this rose from 8.1% in June 2009 to 8.9% in June 2010. Nevertheless, in the most recent six months, there was a change in the trend with the QI declining slightly and going from 9.1% to 8.9% although it continues to remain at levels that are higher than those seen in previous years (Graph 82).

When the trend is analyzed according to credit risk rating, the category B loans are found to have a performance that is similar to the risky loan portfolio. The share this portfolio has of the total rose 40 bp as it went from 4.1% to 4.5% between June 2009 and the same month in 2010. However, when the performance for the most recent six months is analyzed, this share declined 22 bp. This category is the most important one within the risky portfolio since as of June 2010 it represented 50% while category E continues to be the one with the least weight with a share of 8.9%.

To analyze the shift between credit risk ratings, transition matrices, which show the probability of remaining at one rating level or going to another one, were used. In Table 15, panel A, the average matrix between March 2004 and June 2010 was shown. It showed that the highest probabilities were staying at A (95.0%) and E (94.4%).

Table 15
Transition Matrices Commercial Loan Portfolio
(percentage)

A. Average Transition Matrix between March 2004 and June 2010

	A	B	C	D	E
A	95.0	3.9	0.8	0.2	0.1
B	31.5	41.8	18.6	7.3	0.8
C	9.6	8.1	30.4	47.8	4.2
D	2.7	1.1	2.1	78.7	15.3
E	1.9	0.5	0.5	2.7	94.4

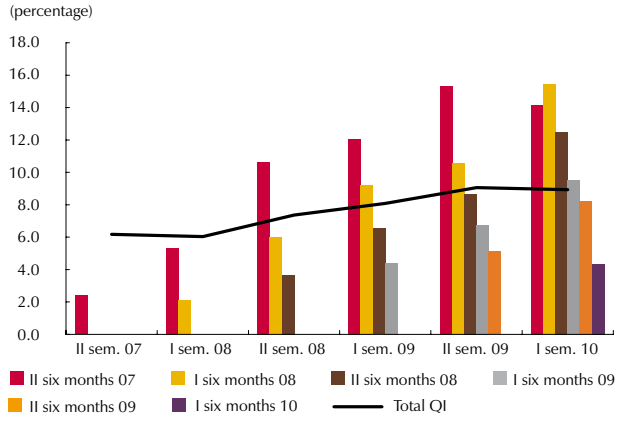
B. Transition Matrix as of June 2010

	A	B	C	D	E
A	93.5	5.5	0.8	0.2	0.0
B	31.5	42.0	18.6	7.6	0.3
C	6.1	11.8	40.5	38.2	3.4
D	1.5	0.9	2.8	84.7	10.1
E	0.7	0.4	1.4	2.7	94.8

Source: Financial Superintendency of Colombia, Banco de la República calculations.

In Table 15, panel B, the transition matrix for June 2010 is presented. When this is compared to the average matrix, it turns out that the probabilities of

Graph 83
Commercial Loan Portfolio: Analysis of Quality Index by Harvests



Source: Financial Superintendency of Colombia, Banco de la República calculations.

remaining at the same rating have risen in general terms, especially for ratings C and D while in the upper and lower triangles, the probability has declined. The above indicates a more limited movement between ratings which, together with the decline in the probability of changing to a higher risk rating, agrees with the moderate improvement in the QI in the first half of 2010.

The risk indicator for debtor harvests[50] makes it possible to examine the change in loans during their validity and compare between harvests for different periods. In Graph 83 is shown, the QI for each harvest and for the total commercial loan portfolio from the second half of 2007. The bars represent each one of the harvests evaluated in different six-month periods. Upon analyzing the change in this indicator, it can be seen that in the most recent six months there was a generalized deterioration of all of the harvests although the loans that were granted in the first half of 2010 showed a QI that was lower than the QI of the two previous harvests at the moment of origin.

Just as with the other types of loan portfolios, the loans granted in the first half of 2008 were the ones that showed the most deterioration in the first half of 2010. Their QI went from 10.6% in December 2009 to 15.5% in June 2010 at the same time as it was the harvest with the highest portfolio quality indicator. This performance occurred because these credits were granted during the credit boom when the financial entities lowered their requirements for granting loans and allowed higher-risk borrowers into the system. That is why the harvests of loans granted at later dates, when the requirements were raised, worsened at a slower pace.

In general terms, the commercial loan portfolio has recovered since the negative real growth seen in the second half of 2009. At the same time, there were increases in the intermediary concentration and debtor stability. With respect to the quality indicator of the portfolio and loan harvests, the rate at which they worsened declined although the QI remains at levels above those of previous years.

b. Consumer loan portfolio

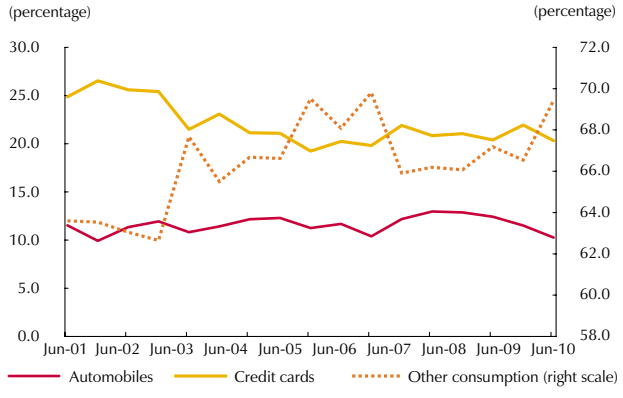
Consumer loans are classified into three types: credit cards, loans for purchasing vehicles, and other consumer loans.[51] Each one of these categories has different

50 A harvest represents the set of loans that are granted within a specific period of time.

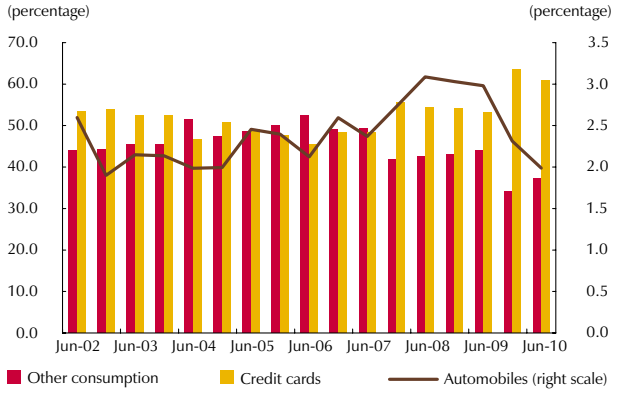
51 In the category of other consumer loans, the following stand out: unspecified use loans, revolving credit, overdrafts, portfolio purchase and school loans.

Graph 84
Consumer Loans by Type and Transactions

A. Percentage of the Amount of the Consumer Loan Portfolio by Type



B. Percentage of the Number of Consumer Loan Transactions by Type



Source: Financial Superintendency of Colombia, Banco de la República calculations.

average amounts, average loan maturity, types of collateral, and changes in quality. The consumer loan portfolio and the risk profile for each type are described in this section.

1. General characteristics of consumer loans

The consumer portfolio came to COP$43.4 t[52] at the end of June 2010. Of this total, 20.3% corresponded to credit cards; 10.3%, to loans for automobiles and other private use vehicles; and 69.4%, to the category of other consumer loans (Graph 84, panel A). In the first six months of the current year, the area of other consumer loans has notably increased its share of the consumer loan market at the expense of vehicles and credit cards.

Just as is illustrated in Graph 84, panel B, credit cards represented 60.8% of the total number of consumer loans (15.7 m) as of June 2010 such that loans for vehicle purchase and other consumer loans represented 2.0% and 37.2% respectively. Thus, the recent change confirms the greater importance that the number of credit card operations has. Nevertheless, the increase that the other types of consumer credit have shown is worth emphasizing.

The average amounts on loan differ based on the type of loan (Table 16) and depending on their distinct uses and characteristics. As of June 2010 the highest average debt amount was for the purchase of vehicles at COP$14.3 m in comparison to that of credit cards (COP$0.9 m), and other consumer loans (COP$5.2 m).

3) Credit risk and portfolio quality

As can be seen in Graph 85, the portfolio quality indicator showed a rising trend as of 2005 for all the types of consumer credit. However, that reversed in mid-2009. Since that point a systematic improvement in portfolio quality for all of the types of consumer credit has been seen. Thus, at the end of the study

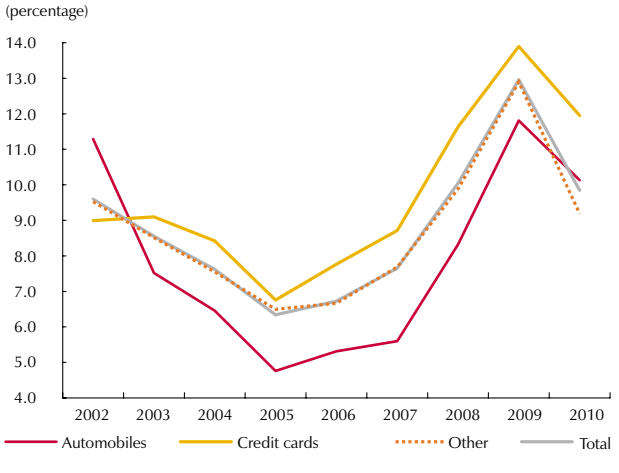
52 This value does not necessarily coincide with the balance of the financial states of the credit institutions that are reported monthly to the Financial Superintendency since this is calculated on the basis of the attached format 341. The percentage composition and number of loans are procured from this source.

Table 16
Average Amount of Debt by Type of Loan as of June Each Year
(millions of pesos)

Date	Automobiles	Credit cards	Other consumption	Total consumption
2002	8.25	0.87	2.68	1.86
2003	10.01	0.93	2.63	1.89
2004	11.57	0.98	2.79	2.12
2005	11.87	1.03	3.29	2.39
2006	13.72	1.10	3.43	2.59
2007	12.49	1.17	4.03	2.85
2008	14.00	1.28	5.19	3.33
2009	13.97	1.29	5.13	3.35
2010	14.27	0.92	5.16	2.73

Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 85
Loan Portfolio Quality Indicator by Type of Consumer Loan
(Risky Portfolio/Gross Portfolio) as of June of Each Year



Source: Financial Superintendency of Colombia, Banco de la República calculations.

period, the QI was at 12.0%, 9.2%, and 10.1% for credit cards, other consumption, and purchases of vehicles respectively. In spite of the improvement that was pointed out, the level of the indicator for credit cards is still higher than total consumer loans as a result of the lack of suitable collateral and that the policies for giving new cards are usually not as strict as for other types of consumer lending.

In order to do a detailed analysis of the changes in credit risk, quarterly transition matrices were calculated for the total consumer loan portfolio. The average transition matrices between March 2002 and June 2010 (panel A) as well as the June 2010 transition matrix (panel B) are shown in Table 17. The higher percentages below the diagonal are associated with rating improvements while those above it are related to deterioration or in other words, increases in the exposure to credit risk. When the transition matrix for the second quarter of the current year is compared to the historical average (2002-2010), lower probabilities of migrating to a worse rating are seen reflecting improvements in credit risk.

An analysis of the change in credit risk was done for the types of consumer loans based on the harvests of borrowers. This study identifies, over the course of time, the quality of the loans held by borrowers from the financial system in any given six-month period (harvest) and also makes it possible to distinguish the risk profiles of new loans in comparison to previous ones. This is essential for determining whether or not the current dynamics of the portfolio is based

Table 17
Transition Matrices for the Total Consumer Loan Portfolio

A. Average of the Transition Matrices Between March 2002 and June 2010

	A	B	C	D	E
A	95.2	2.9	1.1	0.6	0.1
B	46.1	26.3	8.9	17.9	0.8
C	24.7	11.2	17.3	44.6	2.2
D	12.9	4.8	5.9	31.9	44.5
E	5.8	1.4	1.6	3.8	87.4

B. Transition from I quarter, 2010 to II quarter 2010

	A	B	C	D	E
A	95.3	2.9	1.1	0.7	0.0
B	34.3	36.5	12.3	16.4	0.5
C	11.3	12.8	32.0	41.5	2.4
D	2.9	2.2	9.2	64.7	21.0
E	3.1	0.7	2.8	7.8	85.6

Source: Financial Superintendency of Colombia, Banco de la República calculations.

on a more flexible or stricter selection process when the financial institutions are allocating new loans.

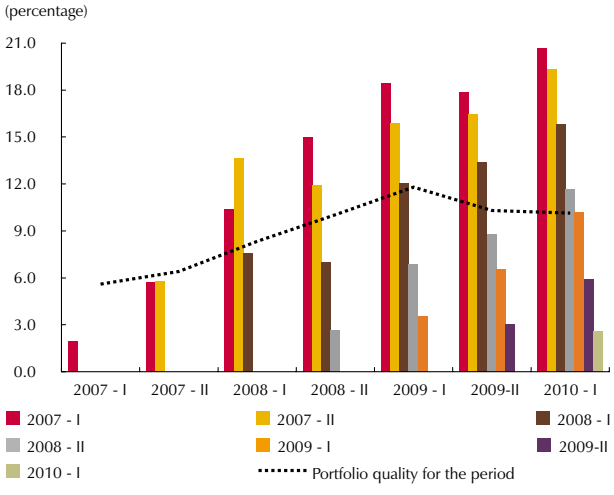
Graph 86 shows the quality of the loan portfolio by harvests and type of consumer loans.[53] Better quality indicators were registered for the loans that were granted in the first half of the current year for all types of consumer loans. In fact, the new loans in the first half of 2010 had a QI of 2.6% for automobile purchase loans, 5.3% for credit cards, and 4.0% for other consumer loans. These numbers are lower than the data registered in the harvests for December 2009.

Graph 86, panel A reflects the performance of the automobile loan portfolio. As can be seen, in addition to the above-mentioned improvement, the rate of harvest deterioration in the two most recent six-month periods is lower when they are compared to that presented by the harvests in previous years. This trend can also be seen in the risk indicators for credit cards and other consumer loans (Graph 86, panels B and C) which would help explain the overall improvement in portfolio risk levels (Graph 86, panel D).

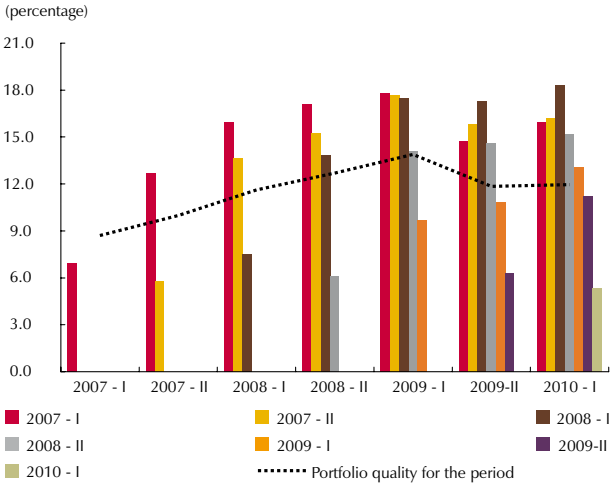
53 The harvest graphs can be interpreted as follows: the horizontal axis shows the six- month harvest evaluation period. The colors of the bars are related to each harvest. The line is the quality indicator for the total loan portfolio for each type of loan in each period. In the analysis of the portfolio quality of a harvest several six-month periods after it is issued, it is important to remember that the riskiest loans account for a larger share of the outstanding balance. However, that bias is common to all harvests and, therefore, they can be compared to each other.

Graph 86
Analysis of Consumer Loan Portfolio Quality by Harvests

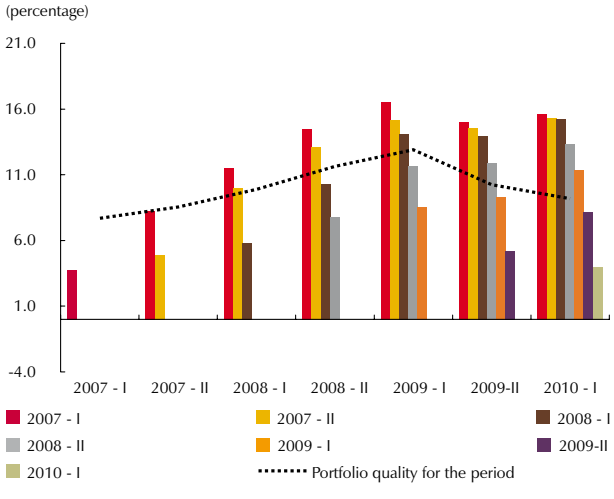
A. Automobiles



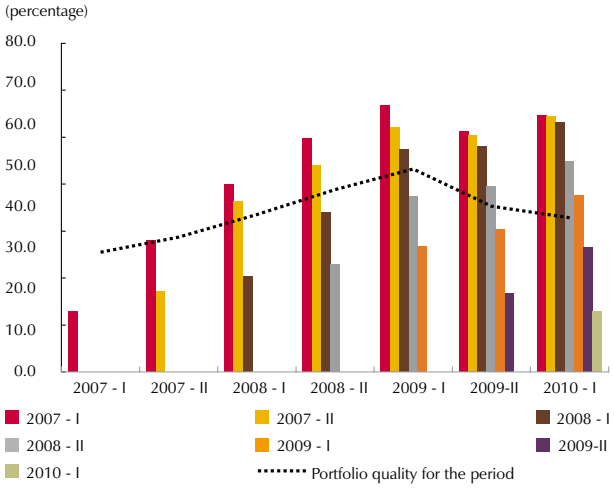
B. Credit cards



C. Other consumption



D. Total consumption



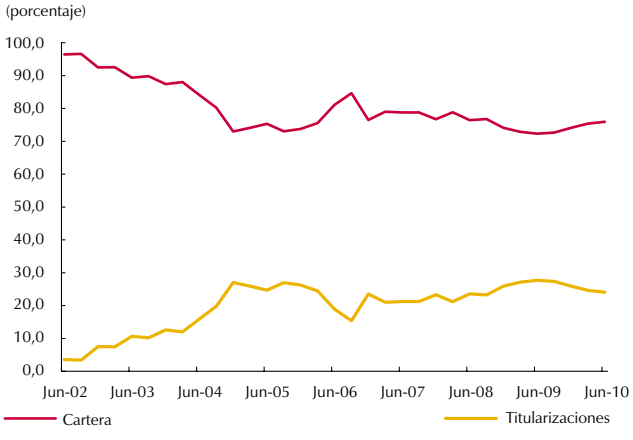
Source: Financial Superintendency of Colombia, Banco de la República calculations.

c. Mortgage Portfolio

1) Credit risk

When the composition of the mortgage portfolio is analyzed, both the portfolio and the securitizations are seen to hold to the trends that they have been following since mid-2009. The share of the portfolio continues to rise and was at 75.9% in June 2010. This figure is 1.8 pp higher than what had been registered at the end of 2009 (Graph 87). This behavior indicates that the exposure to credit risk that the entities have been subject to is still rising although not significantly.

Graph 87
Composition of the Mortgage Portfolio by Portfolio and Securitization in Pesos

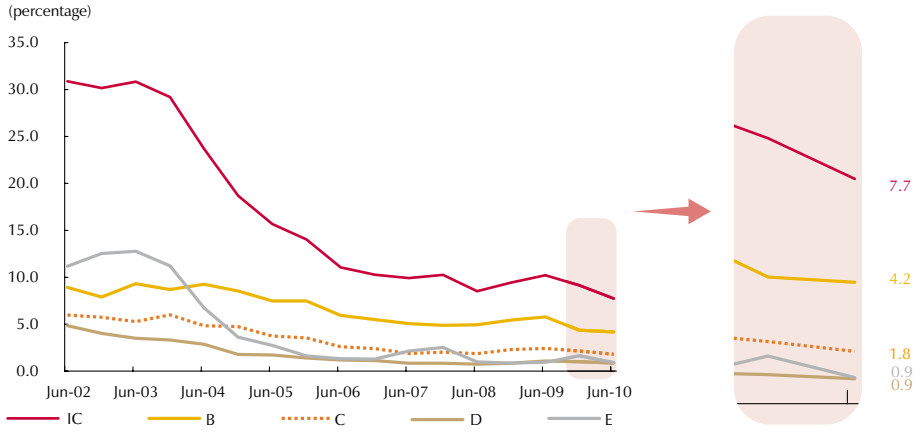


Source: Financial Superintendency of Colombia and Colombian Securitization, Banco de la República calculations.

When the mortgage portfolio is analyzed by ratings, one sees that the QI continued to decline in the first half of 2010. This trend is due to the drop in the share that the risky portfolio components have in the total compared to what was seen in the second half of 2009 (Graph 88). The decline in the share of loans with an E rating must be emphasized. These went from being the most representative in 2003 to one of those with a limited share in June 2010.

The transition matrix for June 2010, in turn, has shown an improvement compared to what was seen in the average matrix between June 2007 and the same month in 2010 as the stability of the A and B ratings rose and that of the C, D, and E declined (Table 18). With respect to the migration of loans, an increase of 3.1 pp was presented in the

Graph 88
Share of the Risky Portfolio by Rating



Source: Financial Superintendency of Colombia, Banco de la República calculations.

probability of going from a rating of B to C and of 3.8 pp from C to D. In contrast, the probability that a loan may have migrated from a lower rating to a better one rose by 3.5 pp with respect to the average matrix. This could be the result of an increase in the renegotiated portfolio and reflects, in part, the performance of the QI.

On analysis, the first half of 2010 is seen to have the best harvest on record since it has a QI of 0.6% (Graph 89). Likewise, the harvest born in the second half of 2010 shows less deterioration in comparison to those that originated before this period. It is worth pointing out that harvest for the first half of 2007 is the one that suffers the worst deterioration in the sample.

Table 18
Transition Matrices for the Mortgage Loan Portfolio
(percentage)

A. Average 2007-2010

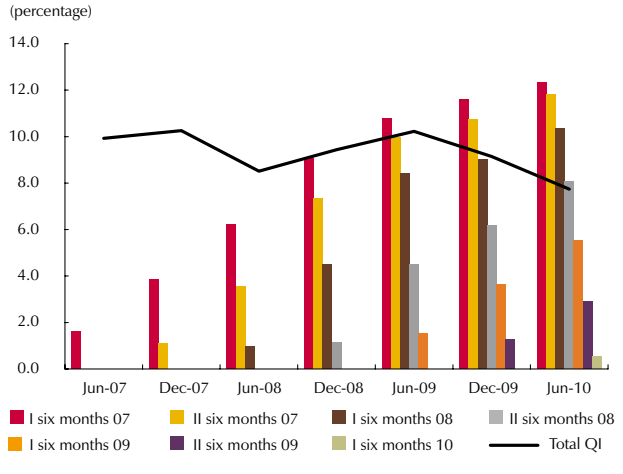
	A	B	C	D	E
A	96.4	3.4	0.1	0.0	0.0
B	31.3	49.9	18.0	0.4	0.4
C	14.7	8.1	59.6	16.6	0.9
D	8.1	2.2	6.1	56.3	27.3
E	5.6	1.2	1.9	3.8	87.5

B. June 2010

	A	B	C	D	E
A	96.5	3.3	0.1	0.0	0.0
B	27.0	51.4	21.1	0.4	0.1
C	14.2	8.7	56.1	20.4	0.6
D	7.5	1.8	5.8	54.5	30.4
E	9.2	0.8	2.2	4.2	83.7

Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 89
Analysis of Mortgage Portfolio Quality by Harvests



Source: Financial Superintendency of Colombia, Banco de la República calculations.

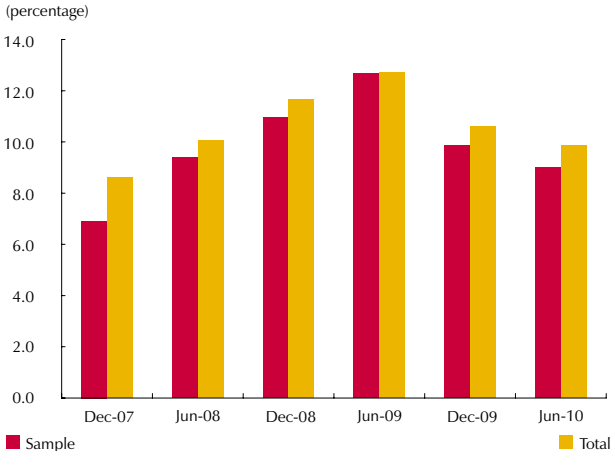
2) Credit risk together with consumer loan portfolio

The exposure of financial entities to the credit risk posed by agents with more than one type of loan is analyzed in this section. A database of borrowers who have both housing and consumer loans at the same time was built for that purpose. The figures were from the periodic six-month reports since December 2007. As of June 2010, agents with both types of loans represented 70.3% of the total number of mortgage debtors and their loans accounted for 79.4% of the total balance in this portfolio. This shows that borrowers who have both types of loans tend to build up higher debts. In the case of the consumer loan portfolio, these percentages are 7.0% and 11.7% respectively, which indicates that these borrowers are not the bulk of the portfolio.

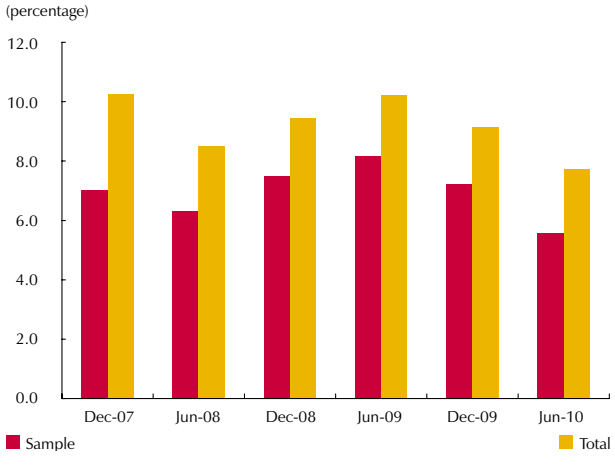
In Graph 90, portfolio quality indicator for consumer loans and the mortgages of agents with both types of loans is compared to the total loan portfolio. When the results for each one of the portfolios are analyzed, we see that the QI for debtors with both types of loans is lower than the one for the total sample and that the distance between the indicators rises at the end of the second half of 2010. This implies that borrowers that have both types are, on average, less risky than borrowers as a whole in each of the portfolios. This could be due to

Graph 90
QI Comparison Between Sample and Total

A. Consumer Loan Portfolio



B. Mortgage Portfolio



Source: Financial Superintendency of Colombia, Banco de la República calculations.

a greater ability to meet the payments which would allow them to leverage to a greater degree.

d. Micro-credit portfolio

Just as in the previous *Report*, the micro-credit portfolio continued to show positive rates of growth and between June 2009 and a year later, this portfolio grew at a real annual rate of 9.3% and was at COP$3.9 t. Likewise, the number of debtors in the sample continued to rise, as a result of which, the average amount per borrower remained stable at COP$4 m (Table 19).

The distribution of loan transactions can be seen in Table 20 with the finding that the concentration in terms of the amount per borrower continued to rise since between June 2009 and the same month in 2010, both the 95 percentile and the upper quartile rose 5.1% and 3.7% respectively. Meanwhile, the rest have shown an average tightening of 3.4%. This means that, to the degree the average amount of the loans declines, (COP$2.1 m), some borrowers are granted loans with much higher capital. This annual increase in concentration has been occurring since December 2005 though its pace has dropped in the two most recent years.

1) Micro-credit Portfolio Concentration

When the concentration per institution is analyzed, the largest is found to have 55.7% of the total loans while the five largest account for a 96.2% share (Graph 91). This concentration has been increasing constantly since June 2008 and is at quite high levels of concentration particularly in view of the fact that as of June 2010 more than twenty financial institutions granted that type of loan.

2) Credit risk

The quality indicator for the micro-credit portfolio is shown in Graph 92 with each one of the categories in the risky portfolio included. The first half of 2010 saw a deterioration in the QI for this type of loan as it went from 7.7% in December 2009 to 8.7% in June of the present year.

Table 19
Micro-credit Portfolio: Capital and Debtors

Date	Balance[a/]	Borrowers				Average amount per borrower[a/]
		Number	People[b/]	Companies[c/]	Foreigners[d/]	
			(percentage)			
Jun-02	429,351	118,912	99.6	0.3	0.0	3.6
Jun-03	562,361	151,495	99.3	0.6	0.1	3.7
Jun-04	811,708	204,607	99.3	0.6	0.1	4.0
Jun-05	1,332,001	308,055	99.4	0.6	0.0	4.3
Jun-06	1,747,812	437,068	99.6	0.3	0.0	4.0
Jun-07	2,092,298	559,345	99.6	0.3	0.1	3.7
Jun-08	2,352,072	646,051	99.7	0.3	0.1	3.6
Jun-09	3,593,126	900,097	99.6	0.3	0.1	4.0
Jun-10	3,928,153	981,908	99.5	0.4	0.1	4.0

a/ Balances in millions of pesos as of June 2010.
b/ Borrowers identified by citizenship card, ID card or birth certificate.
c/ Borrowers identified by taxpayer number (NIT).
d/ Borrowers identified by an alien ID card, passport, diplomatic credentials, or foreign companies with no taxpayer number in Colombia.
Source: Financial Superintendency of Colombia, Banco de la República calculations.

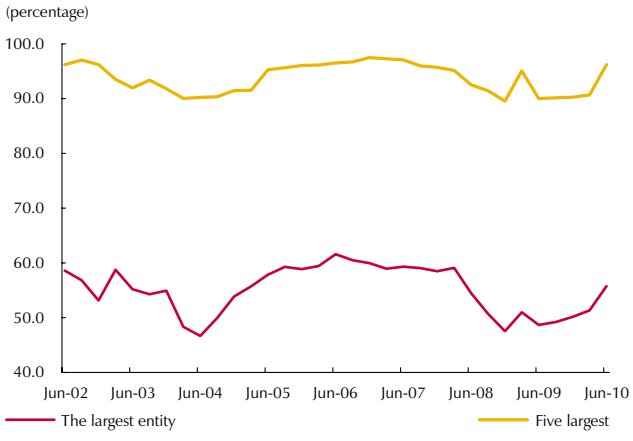
Table 20
Distribution of Amounts by Micro-credit Operation[a/]

Date	5th Percentile	Lower Quartile	Median	Upper Quartile	95th Percentile
Jun-04	0.33	1.37	3.02	5.26	7.90
Dec-04	0.49	1.69	3.39	5.48	8.03
Jun-05	0.48	1.76	3.51	5.64	7.66
Dec-05	0.51	1.78	3.48	5.59	7.46
Jun-06	0.51	1.78	3.40	5.45	7.48
Dec-06	0.52	1.72	3.33	5.35	7.82
Jun-07	0.45	1.55	3.10	5.09	7.72
Dec-07	0.48	1.58	3.10	5.10	7.90
Jun-08	0.41	1.39	2.80	4.79	8.31
Dec-08	0.34	1.12	2.41	4.70	9.99
Jun-09	0.29	1.02	2.25	4.62	10.94
Dec-09	0.31	1.02	2.21	4.81	11.71
Jun-10	0.28	1.00	2.13	4.80	11.50

a/ Balance in millions of pesos as of June 2010.
Source: Financial Superintendency of Colombia, Banco de la República calculations.

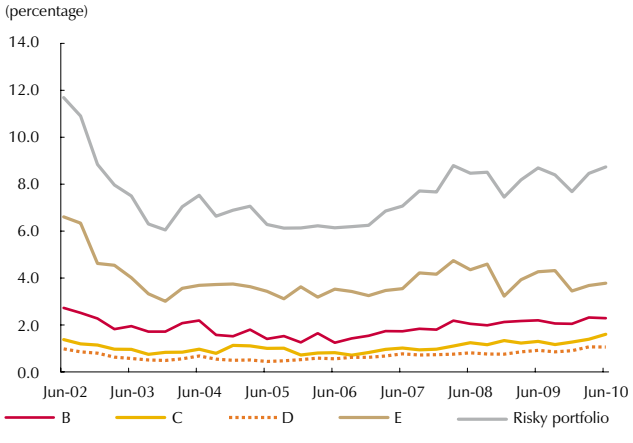
Some of the particularities of credit risk for this loan portfolio compared to other types must be clarified. First of all, for the entire study period, the main component of the micro-credit risky portfolio was E-rated loans. Their share of the total portfolio came to 3.8% in June 2010 in contrast with the other types of credit (commercial, consumer, and mortgage) for which B-rated loans were the most highly represented.

Graph 91
Concentration of Micro-credits in the Largest Entities



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 92
Share of the Risky Loan Portfolio by Rating



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Secondly, if the transition matrix[54] for micro-credit is compared to the matrices for other types of loans, we find that the likelihood of migrating from B, C, and D to E are much higher in this type of portfolio. Indeed, the percentages for micro-credit migration from the above-mentioned categories to E reached 24.9%, 48.8%, and 65.2% respectively at the end of the first half of 2010 (Table 21, panel B). The probability of the consumer portfolio migrating was 2.8%, 3.5%, and 7.3% respectively for the same date and was next in importance. As a consequence, it can be stated that although the QI for microcredit is not one of the highest, its risky portfolio is highly concentrated in E and thus requires a higher volume of loan-loss provisioning.

As was stated, the percentages above the matrix diagonal are associated with the likelihood of deterioration in the rating while the percentages below are related to the probability of improvement. When the matrix for the second quarter of 2010 is compared to that of the historical average (2004-2010), it is evident that the likelihood of the rating worsening has declined. At the same time that of keeping the rating the same has risen since the probabilities on the diagonal are better.

Finally, it is important to analyze the dynamics of credit risk by harvests of borrowers since these make it possible to do a detailed monitoring of the QI for the loans granted each six months during a specific period and to differentiate between the risk profiles of new clients and those of old ones. Thus, in contrast with the improvement in the migrations in the first six months of 2010, the harvest originating in this period shows a risk level higher than the new ones in previous periods (Graph 93).

A look at the change in the harvests shows that the one with the greatest deterioration is the one that originated in the first half of 2008 since its QI as of June 2010 was 14.9% while the indicator for the others was below 13.4%. It is worth emphasizing the fact that when the strength of the growth in 2009 is considered, it was to be expected that the deterioration for microcredits would

54 The transition matrices make it possible to estimate the probability of loan migration between the different risk ratings. In these, the percentages above the diagonal show the likelihood of deterioration in the ratings. The diagonal shows the probability of remaining at that same rating and the percentages below it show the likelihood of improving the rating.

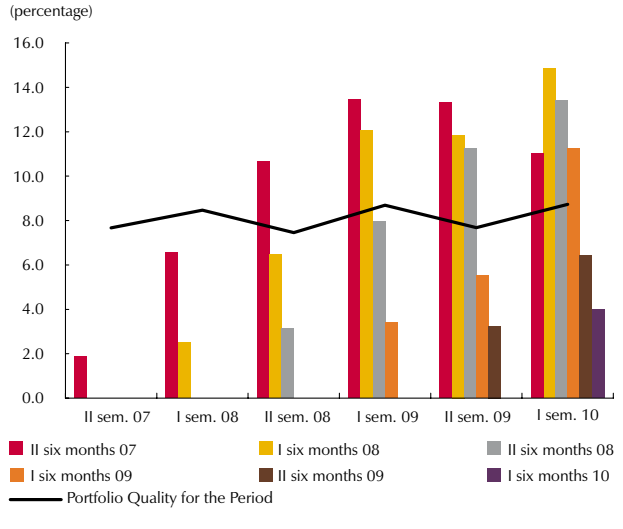
Table 21
Transition Matrices for the Micro-credit Loan Portfolio
(percentage)

A. Average between March 2004 and June 2010					
	A	**B**	**C**	**D**	**E**
A	96.4	1.9	0.9	0.6	0.1
B	29.8	24.2	11.0	8.0	27.1
C	13.2	5.5	17.7	8.7	54.9
D	7.6	2.2	2.5	14.0	73.7
E	2.7	0.6	0.4	0.5	95.8

B. June 2010					
	A	**B**	**C**	**D**	**E**
A	96.1	2.0	1.1	0.7	0.0
B	17.9	30.6	19.0	7.5	24.9
C	5.0	6.9	26.9	12.5	48.8
D	7.1	2.4	6.9	18.4	65.2
E	1.2	1.4	0.8	1.4	95.2

Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 93
Analysis of the Loan Portfolio Quality by Harvests: Micro-credit



Source: Financial Superintendency of Colombia, Banco de la República calculations.

be higher than what had been seen and that all of the harvests had deteriorated likewise. Nevertheless, there is no clear relationship between the strength of the economy and the development of the harvests such as in the case of the commercial loan portfolio.

C. LIQUIDITY RISK

Liquidity risk has two dimensions that have been widely discussed in the literature. On the one hand, there is the risk of funding liquidity, which is understood as the inability of an institution to cover current liabilities on time because it has insufficient liquid assets available. On the other hand, there is the risk of market liquidity, which appears when it is impossible to liquidate assets at adequate prices and in a timely fashion.

In this section, exercises to measure the liquidity risk associated with each one of the above-mentioned dimensions are presented. In addition, stress tests that measure how sensitive the system is to extreme but highly unlikely scenarios of low liquidity are included. At the end of the section, there is also an analysis of the structure of the interbank market network.

1. Risk of Funding Liquidity

The scaled liquidity risk indicator (*LRI*) is used to measure funding liquidity risk taking advantage of the new information that the Financial Superintendency has had available ever since the liquidity risk management system (*SARL* in Spanish) went into effect.[55]

The LRI was introduced in Colombia in the first half of 2009 and is structured as the short term liquidity gap calculated for time horizons of seven, fifteen, and thirty days.

For a one-week time horizon, the LRI formula is equal to the sum of the liquid assets adjusted for market liquidity (*ALM*) and the net liquidity requirement (*NLR*) estimated for the first time range:

$$LRI_1 = ALM + NLR_1$$

Where $NLR_1 = FNVC_1 + FNVNC_1$ with $FNVC_1$ being the net cash flow of contractual original from assets, liabilities, and off-balance sheet positions within a horizon of the next seven calendar days and $FNVNC_1$ being the estimated net cash flow of noncontractual origin for the next seven days from deposits and liabilities payable on demand. The *FNVC* can be positive or negative, depending on whether cash income exceeds outlays, but the *FNVNC* is negative.

$$FNVNC_1 = \text{-frn}_1 \text{ x [demand deposits]}$$

Where frn_1 is the net withdrawal factor for a seven-day horizon. It is calculated as the maximum percentage of net reduction in the sum of deposits and payment on demand the respective institution may have faced from December 31, 1996 to the last day of the month immediately prior to the calculation, taking end-of-month withdrawals into account for this calculation. The *FNVNC* is, therefore, an indicator of a stressed withdrawal scenario. Liquid assets adjusted for market liquidity (*ALM*), in turn, are calculated using the following equation, where securities are entered at a fair market price:

$$ALM = \textit{quick assets} + (\textit{bonds issued by the national government, Banco de la República, Fogafin}) \times (1 - \textit{TES“haircuts”}) + \textit{all other securities}) \times (1 - 1.2 * \textit{“haircut” TES}) - (\textit{total required daily average reserve})$$

When calculating the *LRI*, an additional 3.7% haircut is applied to the foreign currency component of the institution's liquid assets. In addition to including

55 In the September 2008 edition of the Financial Stability Report, the SARL and method for calculating the LRI implemented by the Financial Superintendency of Colombia is described.

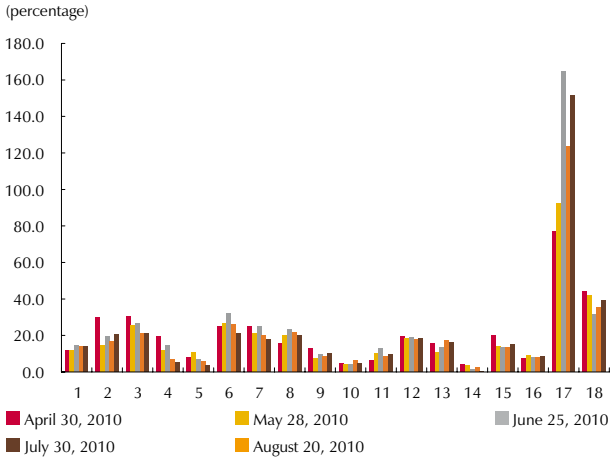
the adjustment for market liquidity, the idea is to do the same for exchange risk. Moreover, this indicator is scaled by illiquid assets to allow for a comparison among the different financial institutions. That is,

$$\widehat{LRI}_{1t} = \frac{LRI_{it}}{TA_{it} - ALM_{it}}$$

Where *TA* are total assets and *ALM* are liquid assets adjusted to market liquidity risk.

Given that *LRI* is a liquidity gap calculated on the basis of liquid assets - liquid obligations and liabilities, it is interpreted as follows: $\widehat{LRI}_{it} < 0$ implies high risk while higher $\widehat{LRI}_{it}$ levels are associated with a better liquidity position for the institution being analyzed.

Graph 94
LRI/(TA-LA) Banks



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 94 shows the evolution of the LRI for commercial banks from April 30 to August 20, 2010 based on the last week of the month. Although their liquidity levels varied considerably, in no case was the indicator negative. This suggests low funding risk for the financial institutions in question.

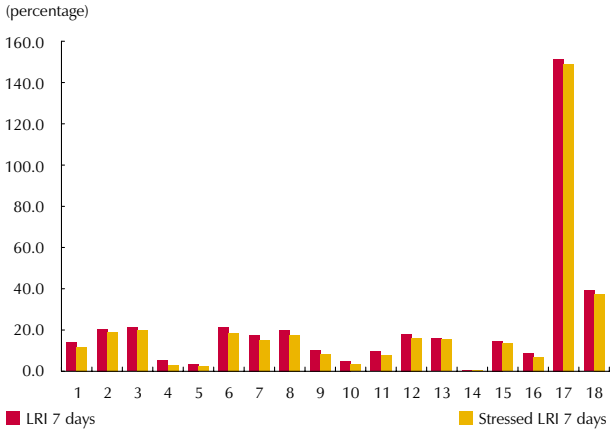
In spite of the above, the level of liquidity in the commercial banks has declined in recent months. When the evolution of the LRI is analyzed, it can be seen that the value as of August 20 (12.6%) is 5 pp lower than the level reported in February (17.3%) and close to 3 pp lower than the ratio for the same week a year ago (15%). The recent change in the indicator signals that the trend towards improvement in the funding liquidity position that has been seen in previous periods has reversed in the last few months.

Stress Test

Stress tests make it possible to assess the capacity of institutions to respond to shocks to certain variables in extreme but unlikely scenarios. The following test was done assuming a deposit-withdrawal in addition to the one already incorporated into the LRI. The stressed indicator was calculated for the commercial banks and is defined as:

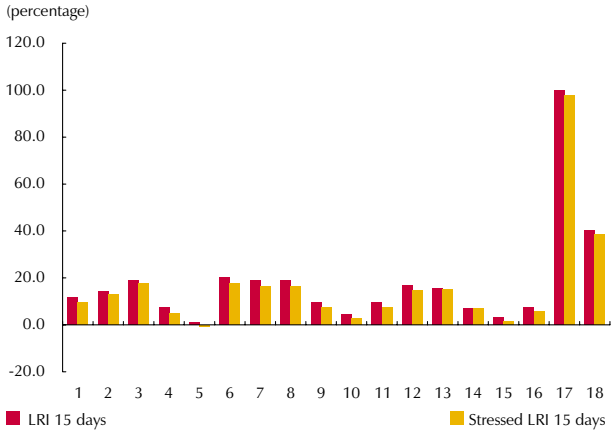
$$\widehat{LRI}_{i,t\ stressed} = \frac{LRI_{i,t} - x(current\ and\ savings\ accounts)}{TA_{i,t} - ALM_{i,t}}$$

Graph 95
Stress Test for LRI7/(TA-LA) August 20, 2010



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Graph 96
Stress Test for LRI15/(TA-LA) August 20, 2010



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Using the latest data for $LRI_{i,t}$ (seven days), the stress test was calculated for the banks, assuming $x = 4\%$.[56] As can be seen in Graph 95, none of the entities showed a negative *LRI* level after the stress test was applied. This proved that the banks were able to resist the simulated withdrawal shock without their liquidity condition deteriorating substantially.

Next, the same stress test was done but this time with a liquidity gap in the second week only. In this case, the LRI indicator is seen to take a negative value for one of the banks after the shock. This indicates that that institution would find itself in a situation of high liquidity risk (Graph 96).

2. Liquidity-adjusted Value at Risk (VaR-L): A Market Liquidity Risk Indicator[57]

L-VaR makes it possible to determine the percentage increase in the VaR estimate that would be required to take market liquidity risk into consideration. The larger the percentage is, the greater the market liquidity risk will be and, therefore, the greater the adjustment that will have to be applied to VaR.[58] The results of the L-VaR estimated for credit institutions are presented in this section. The exercise was done only for their TES portfolio based on data as of August 20, 2010 (Table 22).

The results show that the VaR for credit institutions as a whole should increase by 5.8% to incorporate market liquidity risk. This is 4.4 pp less than the percentage recorded on February 19, 2010. This implies a decline in the system's market liquidity risk which is at its historical minimum for the sample analyzed. The reduction of this risk is explained by both the

56 The size of the simulated withdrawal is equal to the simple weekly average of the withdrawal factor with respect to noncontractual liabilities presented by the banks in the LRI Report to the Financial Superintendency.

57 The method used to calculate L-VaR is outlined in González and Osorio (2007), "El valor en riesgo ajustado por liquidez en Colombia," Financial Stability Report, Banco de Colombia, March.

58 It is important to emphasize the fact that, due to the information restrictions on the bid-ask spreads for government debt securities, the VaR calculated in this exercise differs from the one presented in the section on market risk.

Table 22
Market Liquidity Risk (VaR-L)
Percentage of Correction

Entities	February 19, 2010		August 20, 2010	
	No volatility	Volatility scenario [a/]	No volatility	Volatility scenario [a/]
1	12.3	13.2	6.3	19.3
2	9.4	20.9	5.6	19.9
3	6.4	21.8	6.2	22.4
4	5.8	13.5	3.1	13.5
5	10.3	25.3	6.0	25.7
6	15.9	22.1	5.2	25.8
7	10.7	26.4	5.0	19.8
8	13.1	20.3	4.2	22.4
9	17.7	24.8	5.5	20.3
10	8.1	28.1	5.7	20.6
11	16.2	21.3	4.7	21.2
12	12.6	23.1	4.2	23.5
13	8.0	13.6	5.5	16.5
14	8.0	28.5	4.4	20.2
15	13.2	21.4	4.5	21.4
16	12.1	18.8	3.9	14.8
Total	**9.6**	**22.4**	**5.2**	**20.7**

a/ Based on volatility in the second quarter 2006.
Source: Banco de la República calculations.

decline in the bid-ask spread (bas)[59] (60) average for the system and the shift of the portfolio towards bands of more liquid debt securities.

The results, per institution, were more homogenous compared to what had been registered in February 2010. This shows that the entities have similar levels of exposure to market liquidity risk. The fact stands out that the indicator improved of all of the institutions, which indicates a favorable situation in terms of exposure to this risk.

Moreover, a stress test was done to evaluate the performance of liquidity adjustment in extremely illiquid market conditions. The scenario simulates a market performance similar to what was seen the first quarter of 2006 when there were high levels in both the bas and the bas volatility for all bands. Again the results show that the percentage of liquidity adjustments for the system declined from 22.4% on February 19, 2010 to 20.7% on August 20 of the same year. The current composition of the aggregate portfolio and individual portfolios shows greater resistence to an adverse liquidity shock.

59 BAS is a measure of the distance between the points registered for bid and for purchase of a security. A larger BAS is associated with a higher liquidity risk as it indicates more difficulty in carrying out a transaction.

3. Interbank Market for Government Securities: Structure of the Network

Currently, financial institutions manage a large part of their liquidity through government bonds which can be negotiated through two trading systems. One is the Colombian Electronic Market (MEC in Spanish) run by the Colombian Stock Exchange. The other is the Electronic Trading System (SEN in Spanish) which is managed by the Banco de la República.

In order to determine what the pattern of behavior of the financial entities has been in the interbank market for government debt securities (TES), the network of institutions (nodes) and the transactions among them (links) are analyzed. Information on the repo and simultaneous operations of the agents who participate in the SEN for each one of the dates analyzed is used to build the networks. In addition, the centrality indices described in Saade (2008)[60] are calculated to assign them to a radius on the network. Agents who are more central are found in the center of the network while those who are more peripheral are situated at a greater distance. The peripheral participants are shown within a dark gray area, according to the centrality index. The color of each node is associated with how much of a net supplier of liquidity the agent was that day. The existence of a line between nodes indicates that there were operations between those agents. The color of the line indicates the sum of the transactions between agents as an absolute value.

Graph 97 shows the structure observed in the SEN market for five Friday between July 2 and August 20, 2010 taking only the collateralized transactions between commercial banks into account. Three of the networks presented show an almost complete structure, which indicates that the majority of the agents who participated in the market traded with each other. This high connectivity in the network suggests that the system has greater resistance to liquidity shocks since the risk can be spread out better in comparison to an incomplete market.

On July 30 and August 20 the market was incomplete. In both cases, two agents turned out to be peripheral when they registered few transactions with other lenders in the market. A high level of persistence is seen in the agents' net liquidity positions but variations in their degree of centrality for the dates analyzed.

In order to analyze the roles that the different entities play in the current structure of the government debt securities market, the structure of this market in the MEC was also examined for July 30, 2010. On that date, the number of entities that participated in the market was 1,223. A sample was taken of

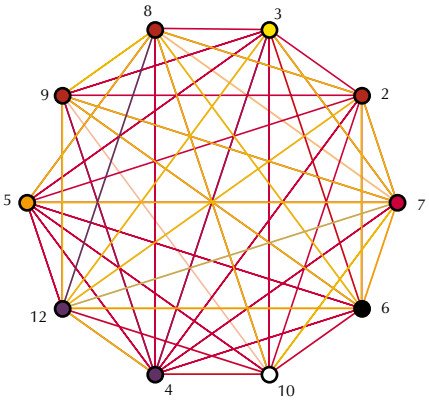
60 Saade, A., "Aproximación cuantitativa a la centralidad de los bancos en el mercado interbancario: enfoque de juegos cooperativos," Financial Stability Issues, num. 037 Banco de la República, 2008.

Graph 97
SEN Structure

A. July 2, 2010

Net supply of liquidity

- Between -209.4 b and -161.6 b
- Between -161.6 b and -113.8 b
- Between -113.8 b and -66 b
- Between -66 b and -18.1 b
- Between -18.1 b and 29.7 b
- Between 29.7 b and 77.5 b
- Between 77.5 b and 125.3 b
- Between 125.3 b and 173.1 b
- Between 173.1 b and 220.9 b
- Between 220.9 b and 268.8 b



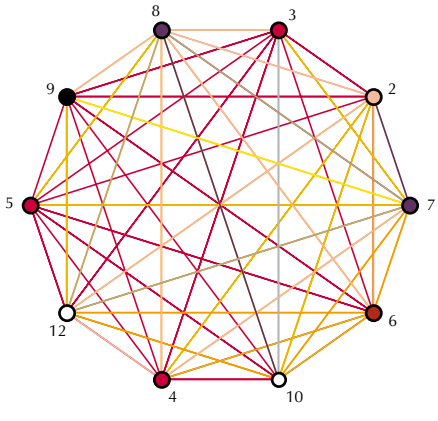
Total transactions

- Between 0 b and 6.6 b
- Between 6.6 b and 13.3 b
- Between 13.3 b and 19.9 b
- Between 19.9 b and 26.5 b
- Between 26.5 b and 33.1 b
- Between 33.1 b and 39.8 b
- Between 39.8 b and 46.4 b
- Between 46.4 b and 53 b
- Between 53 b and 59.6 b
- Between 59.6 b and 66.3 b

B. July 16, 2010

Net supply of liquidity

- Between -142.2 b and -112.4 b
- Between -112.4 b and -82.6 b
- Between -82.6 b and -52.9 b
- Between -52.9 b and -23.1 b
- Between -23.1 b and 6.7 b
- Between 6.7 b and 36.5 b
- Between 36.5 b and 66.2 b
- Between 66.2 b and 96 b
- Between 96 b and 125.8 b
- Between 125.8 b and 155.5 b



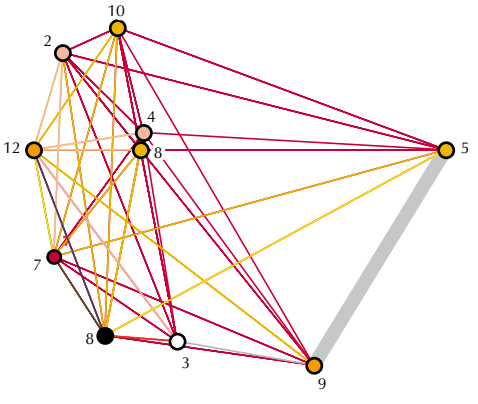
Total transactions

- Between 0 b and 4 b
- Between 4 b and 8.1 b
- Between 8.1 b and 12.1 b
- Between 12.1 b and 16.1 b
- Between 16.1 b and 20.2 b
- Between 20.2 b and 24.2 b
- Between 24.2 b and 28.2 b
- Between 28.2 b and 32.2 b
- Between 32.2 b and 36.3 b
- Between 36.3 b and 40.3 b

C. July 30, 2010

Net supply of liquidity

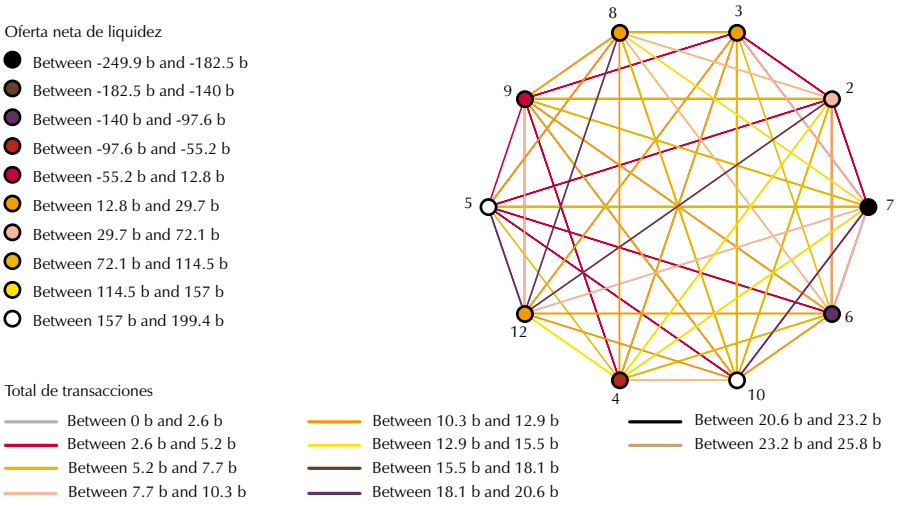
- Between -468.2 b and -391 b
- Between -391 b and -313.8 b
- Between -313.8 b and -236.6 b
- Between -236.6 b and -159.3 b
- Between -159.3 b and 82.1 b
- Between 82.1 b and 4.9 b
- Between 4.9 b and 72.3 b
- Between 72.3 b and 149.5 b
- Between 149.5 b and 226.8 b
- Between 226.8 b and 304 b



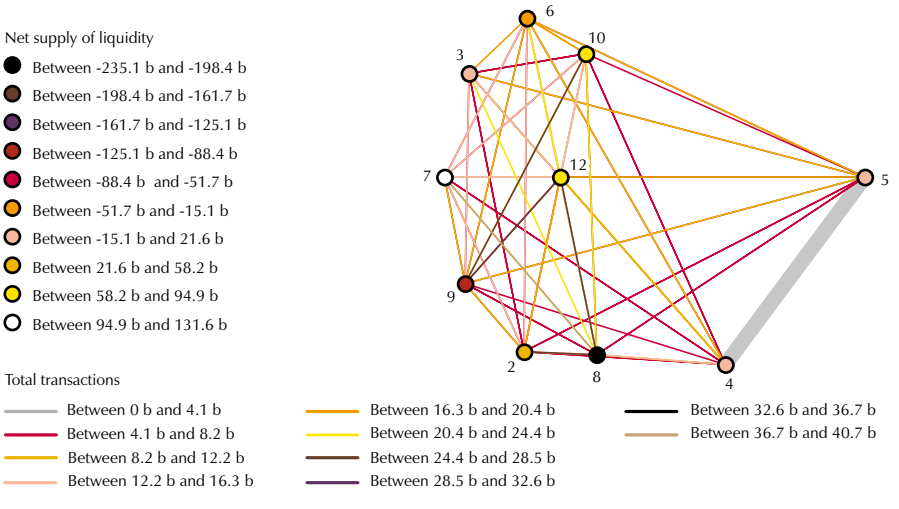
Total transactions

- Between 0 b and 5.4 b
- Between 5.4 b and 10.8 b
- Between 10.8 b and 16.2 b
- Between 16.2 b and 21.6 b
- Between 21.6 b and 27 b
- Between 27 b and 32.3 b
- Between 32.3 b and 37.7 b
- Between 37.7 b and 43.1 b
- Between 43.1 b and 48.5 b
- Between 48.5 b and 53.9 b

D. August 6, 2010



E. August 20, 2010



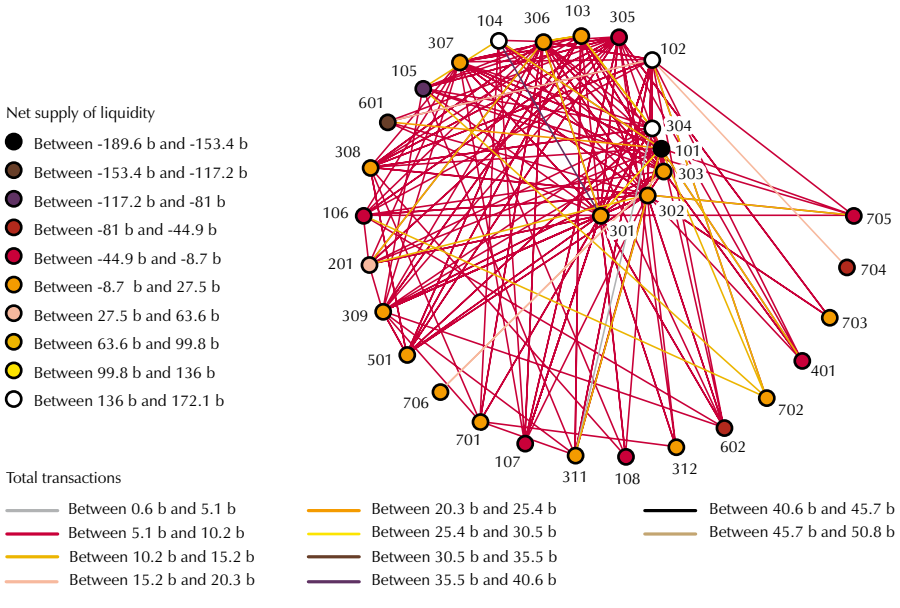
Source: Banco de la República, Banco de la República calculations.

the operations carried out by the 30 most important institutions in the market based the amount of their operations. That day the transactions between the entities in the sample came to COP$8.2 t, which was 67% of the total traded on the MEC (COP$12.2 t).

If the number of connections that the entities in the sample made is compared to the potential number of connections, we find that they carried out 65.7% of the possible transactions. This is in contrast with what was seen in the SEN where the connection is usually higher than 80%, which reflects a lower level of connectivity in the MEC. Nevertheless, it has risen significantly if it is compared to what was recorded on January 29, 2010 (24.9%).

In Graph 98 the structure of the market in government bonds managed by the MEC on July 30, 2010 is shown. The color of the links changes depending on the amount traded between each pair of entities and the color of the nodes differs based on the net position that each agent has. Likewise, the position within the network represents each entity's degree of connection. The intermediaries with a high degree of connectivity are in the center while the agents with a low one are found on the periphery. The entities with the most central position in the MEC network are the brokerage firms given the total amount in transactions and the high number of connections they have. Despite the high quantity of transactions banks have, they do not have a central position in the MEC due to the fact that they do not have a lot of connections. Comparing the results with those obtained that day for the SEN, the results show a stable net liquidity position for the banks that participate in both markets.

Graph 98
MEC Structure January 29, 2010



Legend: Banks start with 1; financial corporations, 2; Brokerage firms, 3; Insurance companies, 4; Trust companies, 5; Pension funds, 6 and others, 7.
Source: Financial Superintendency of Colombia, Banco de la República calculations.

D. COMBINED RISK ANALYSIS: FINANCIAL STABILITY MAP

In terms of financial stability, it is important to continuously monitor the different kinds of risks and macroeconomic conditions that the financial intermediaries face as well as their levels of profitability and soundness.

To do a combined analysis of the factors that the financial system is exposed to, the Financial Stability Map is introduced. The purpose of the map is to measure

the stability of the financial system based on six aspects or dimensions. Three are related to current risk conditions; two are related to the macroeconomic environment and one, to the financial soundness and profitability of the system. The method used ranks the vulnerability of the situation on a scale of one to nine with one being the lowest level of risk. Note that the model is designed to provide an indicator of the current situation in the financial system and therefore, should not be interpreted as an early warning indicator.[61]

Design of the Diagram

As was mentioned, the FSM considers six dimensions: the domestic macroeconomic environment, exposure to the foreign sector, profitability and solvency, and credit, market and liquidity risk. For each one of these categories, representative variables were selected in order to evaluate the levels of risk that each institution is facing[62] pursuant to the method suggested by the IMF[63] and by Bedford and Bloor (2009).[64] The indicators considered for each of the dimensions are shown in Table 23.

Table 23
FSM: Dimensions and Variables

Domestic Macroeconomic Environment	Exposure to Foreign Sector	Credit Risk	Liquidity Risk	Market Risk	Profitability and Solvency
Growth of the GDP	EMBI+ Colombia	Default indicator	ULR	Percentage of negotiable securities	Solvency
Inflation	Exports/Imports	Growth of non-performing loan portfolio	Liquid liabilities/liquid assets	VaR	ROE
Unemployment	Current account		Deposits/gross portfolio		Ex-post intermediation spread
Fiscal deficit	Foreign direct investment		Interbanking funds/liquid assets		Leveraging

Source: Banco de la República.

The model was built on a quarterly basis for the dimensions related to the macroeconomic environment and monthly for the respective financial

61 The method used to build the FSM is based on the IMF Global Financial Stability Map and on the Financial Stability Cobweb of the Central Bank of New Zealand.

62 Indicators with a monotonic behavior in terms of the risk to be analyzed in each aspect were kept in mind when selecting the variables. However, in some cases it is difficult to find indicators that fit this description.

63 Global Financial Stability Report (2008) International Monetary Fund (IMF), October 2008.

64 Bedford, P. and Bloor, C. (2009). "A Cobweb model of Financial Stability in New Zealand," Discussion Paper Series, Reserve Bank of New Zealand, DP2009/11, nb, 2009.

system.[65] For each one of the indicators the longest available time series was used. Therefore, there are some variables which have a very small dimension.

The method suggested by Bedford and Bloor (2009) was followed in the construction of the model. First, each one of the series was standardized in z-scores, where the standardized series is defined as:

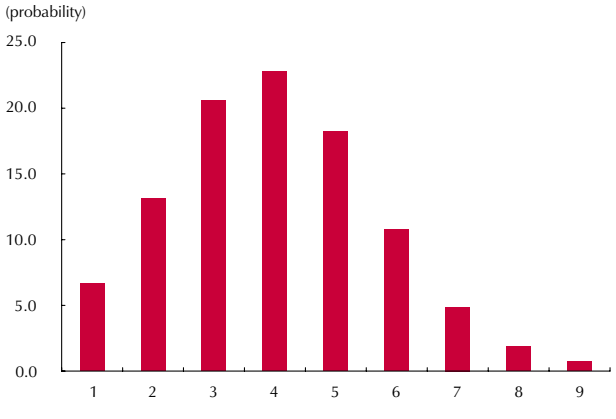
$$z - score = (x_t - \mu) / \sigma$$

In which x_t represents each of the variables at the moment t, μ is the mean of each series and σ is its respective standard of deviation. After they were standardized, the series were weighted using the principal component analysis[66] The first principal component (FPC) was used for each dimension. The FPC is defined as the risk indicator for each of the dimensions. The next step was to convert the FPC into an accumulated probability distribution using the normal distribution or:

$$Pr\,(X < PCP_t) = F_X\,(PCP_t)$$

where $F_X\,(\bullet)$ is the cumulative normal distribution function. The final step was to convert the cumulative probability values into an ordinal classification from one to nine.[67] The purpose was to create an asymmetrically distributed scale where the right tail has a low probability of occurring given the reduced frequency of high risk events such as a financial crisis. To do this, the average of the Poisson distribution probabilities with $\lambda = 4$ and the binominal with $n = 9$ y $p = 4/9$ were used. Given these cutoff points, the mean and the median of the indicators is equal to four and a positive bias is obtained in the range distribution. The distribution function of the classification is shown in Graph 99.

Graph 99
Distribution Function of Classification



Source: Banco de la República.

Graph 100 gives the performance of each dimension over time. For each one of the categories, the risk classification for each of the series is high during periods of stress, which shows that the model is properly adjusted. Furthermore, the levels of risk

65 The difference in the frequency of each of the dimensions did not pose difficulties due to the fact that each was built independently of the others.

66 The main component method consists of procuring an index based on the combination of a set of indicators that reflects the maximum variance of the indicators used.

67 A classification with nine ranges makes it possible to adjust the theoretical distribution to the desired performance of the ranges in the sample more precisely.

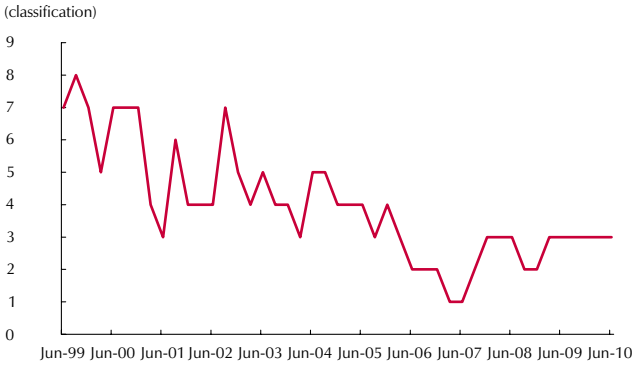
that each one of the dimensions registered in June 2010 are significantly lower than those registered at the moments of stress.

The comparative results of the FSM are shown in Graph 101. The brown line represents the median and is considered a normal risk level. It is important to

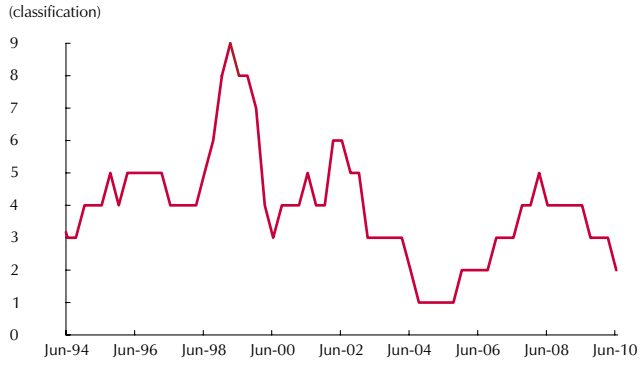
Graph 100
Components of Financial Stability Map

A. Domestic Macroeconomic Environment

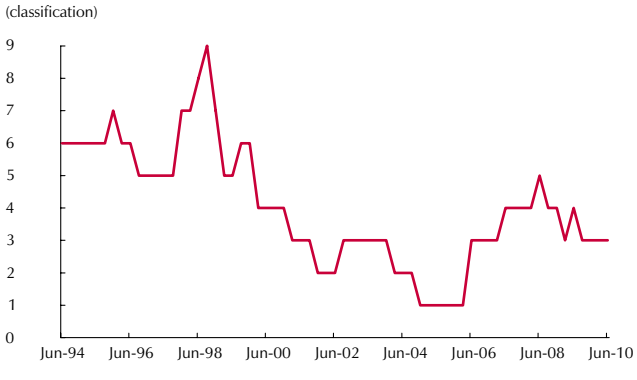
B. Exposure to Foreign Sector



C. Credit Risk

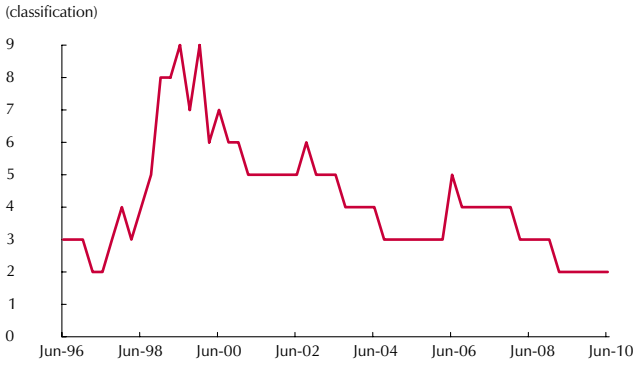


D. Liquidity Risk



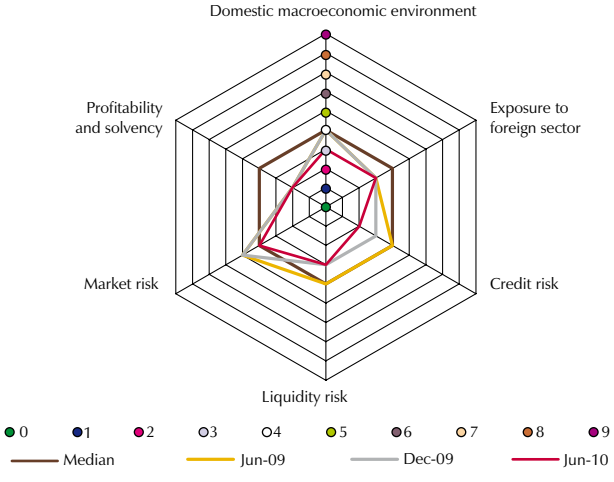
E. Market Risk

F. Profitability and Solvency



Sources: Financial Superintendency of Colombia, DANE, and Bloomberg, Banco de la República calculation.

Graph 101
Financial Stability Map



Sources: Financial Superintendency of Colombia, DANE, and Bloomberg, Banco de la República calculations.

read the graph carefully since the description of the risks does not imply an analysis of a measurement of systemic risk nor take into account the relationship between the different factors.

In the case of the domestic macroeconomic environment, a decline in the level of vulnerability at the end of the first half of 2010 is seen, and which can be explained by a higher rate of growth in economic activity during the period. However, exposure to external risk showed no significant changes in the risk level as a result of the stabilization of outstanding current accounts/GDP ratio and foreign direct investment/GDP ratio.

With respect to system risks, the FSM shows that the market risk saw a reduction compared to the levels registered in 2009 as it went to a level of four at the end of the first half of 2010. This result could be explained by the reduction in market volatility and percentage of negotiable securities. Liquidity risk, in turn, remained at a stable level, which is below the historical median, as a result of the intermediaries' larger holdings of TES. Likewise, credit risk continued to register declines during the first six months of 2010. This performance is essentially due to the drop in the default indicator and the growth rate of the non-performing portfolio.

The financial system saw no significant changes in the case of profitability and solvency during the first six months of the current year as a result of the stability with respect to solvency, return on equity, leveraging, and a slight reduction in the brokerage spread.

In conclusion, the consolidation of the best macroeconomic outlooks in the first half of 2010, mentioned in the previous Report, contributed to the reduction in the financial system's vulnerability to the domestic macroeconomic environment. According to FSM, market risk is still the most serious vulnerability the financial system has, which will make it necessary to monitor it in the second half of 2010.

Box 10
RESULTS FROM THE SOLE FINANCIAL INDICATOR (SFI) AS OF JUNE 2010

The sole financial indicator (SFI) is an accounting financial model that assesses and hierarchically organizes the performance of credit establishments.[1] With continuous monitoring of intermediaries, the SFI has proven to be a good predictor of their financial performance, which has turned it into an early warning system.

The SFI classifies credit institution management into four areas: I (with an SFI ranging between 1.5 and 2.0) and II (between 1.0 and 1.49) are where the most highly qualified entities are found since they respectively maintain an outstanding and acceptable profitability. In those areas, their cores indicators are consistent with a solid financial position. Area III (an SFI between 0.5 and 0.99) is considered risky since the entities in that one show signs of financial weakness in the core indicators even when they have slightly positive, real profitability. Finally, area IV (an SFI between 0.0 and 0.49) is considered to be of deterioration because that is the position of those intermediaries with poor core indicators and whose real, negative profitability has begun to weaken their equity. In this last case, these institutions are not sustainable in the medium term, unless they are financially supported by their shareholders or by some external organization (Graph B10.1)

1. Evolution of the Financial Situation by Groups of Financial Intermediaries[2]

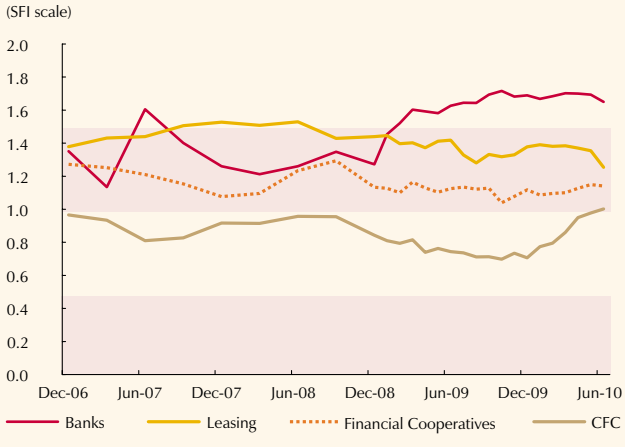
Graph B10.1 presents the change in the financial situation of each one of the four groups of credit establishments. None of the groups of credit institutions have been found in the danger area (areas III and IV) since the beginning of the study period (December 2006) with the exception of those belonging to the CFC group, which were in area III (risk area) for the majority of the period. However, the financial stability of these latter entities has been improving since December of last year and had moved into the acceptable zone (SFI 1.0) as of June of 2010.

Table B10.1
Classification by Area

Area	SFI Value	State
I	1.50 a 2.00	Outstanding
II	1.00 a 1.49	Acceptable
III	0.50 a 0.99	Risk
IV	0.00 a 0.49	Deteriorated

Source: Banco de la República.

Graph B10.1
Financial Entities (SFI change, 2006-2010)



Source: Financial Superintendency of Colombia, Banco de la República calculations.

As mentioned in the previous *Financial Stability Report*, the persistent increase in the rating of the aggregate for banks throughout all of 2009 and their subsequent sustainability around 1.6 reflects a satisfactory financial performance and a solid position compared to the other intermediary groups in the first half of the current year.

Even if the financial cooperatives have been close to the danger zone, they have shown a slight improvement in their financial situation as they have gone from an SFI of 1.08 in December 2009 to 1.14 as of June 2010.

The *leasing* companies, in turn, lost ranking in the end of the first half of the current year. Nevertheless, these results may have been slightly slanted by the absorption process on the part of commercial banks that these entities have experienced.[3] Thus, the SFI ranking went

1 For further information on the model, see Pineda, F. and Piñeros, H., "El IFU como mecanismo de alerto temprano: una nueva versión," in Financial Stability Issues., *Report on Financial Stability*, March 2009.

2 Banks (both commercial as well as the ones specializing in mortgage loans BECH), financing companies (CFC) and those specializing in leasing as well as the financial cooperatives are included. Financial corporations are not considered since they do not have loan operations. They are oriented more towards investment banking.

3 During the six-month period in question, four leasing companies were absorbed leaving six entities still in the financial market as of June 2010.

from 1.38 in December of last year to 1.25 as of June 2010.

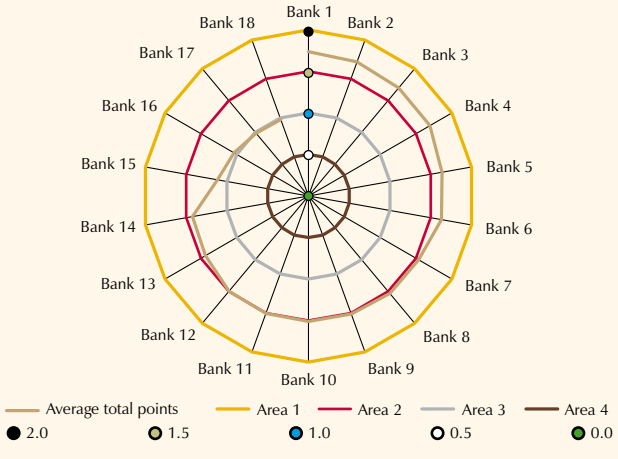
2. Ranks of Financial Entities Within Each Group

Graph B10.2 (panels A, B, C and D) shows hierarchical order by group for each one of the financial institutions based on the results of the intermediary management evaluated by the SFI. Only one financial entity (that belongs to the CFC), out of a total of 50 included among the credit institutions, was located in the deterioration area as of June 2010.

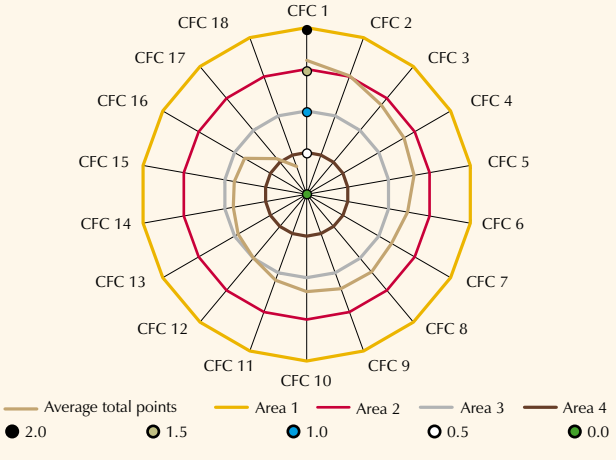
Finally, it is worth emphasizing the fact that the better performance of the Colombian economy so far this year is consistent with the lower percentage of credit establishments being in the danger areas. While 31.5% of the intermediaries were in the above-mentioned zone in December 2009, this share dropped to 27.5% six months later.

Graph B10.2
Rating as of June, 2010

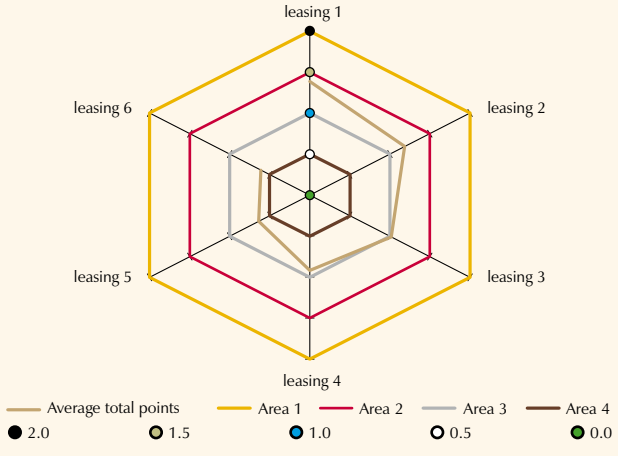
A. Banking system



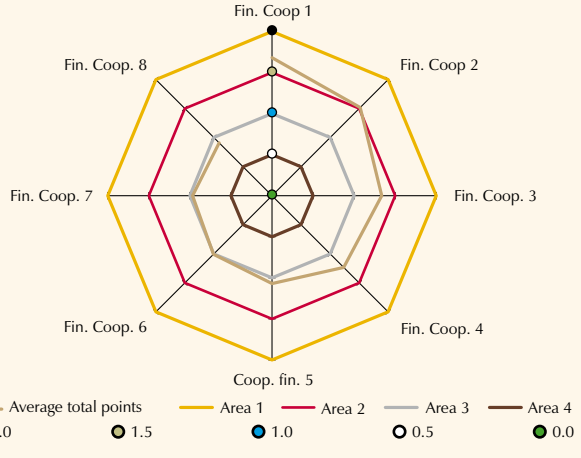
B. CFC



C. Leasing



D. Financial cooperatives



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Box 11
FINANCIAL STABILITY INDEX FOR COLOMBIA

The updated financial stability index for Colombia (IEFI in Spanish) is presented in this box. This is an ongoing and quantifying measurement capable of determining the stress level of the Colombian financial system over time.[1] The indicator is done monthly and considers profitability and probability of default developed in *Aspach and others,* (2006).[2]

Ratios of capital, profitability, credit and liquidity indicators of financial intermediaries were used to build the indicator. The variables selected to create the index are: return on assets (ROA), return on equity, (ROE), overdue loan portfolio/total loan portfolio (OLP), nonperforming loan portfolio/total loan portfolio (NLP), intermediation spread (IS), liquid liabilities/liquid assets (LL), interbanking funds/liquid assets (IF) and the uncovered liability ratio (ULR).

These variables are weighted by means of different methods suggested by international literature such as variance equal approach (VEA),[3] main components,[4] and account data models (zero inflated poisson regressions and zero inflated binomial negative-NIBN).[5] As shown in Table B11.1, the methodologies used give greater weight to the variables associated with returns and credit risk. As will be seen later, the indices built based on the different weights show similar behavior.

Information generated by the IEFE is easy to interpret given the fact that each variable included in its construction has been standardized. Thus, the stress level of the current period can be compared to the historical one in terms of deviations from the average. Index values above zero are equivalent to periods of financial stress that are above the average while the negative values indicate stages of greater stability. Likewise, index growth during a specific time period also provide useful information on the evolution of the stress level over time.

Table B11.1
Weights of the Variables in the Index by Method
(percentage)

	VEA	MC	ZINB
ROA	12.5	20.52	7.65
ROE	12.5	20.37	11.75
CV	12.5	20.05	15.69
CI	12.5	21.14	6.17
MI	12.5	15.13	23.03
PL	12.5	2.03	11.95
FI	12.5	0.31	12.03
RPNC	12.5	0.13	11.73

Source: calculations by Banco de la República.

Given the availability of data, the index can be built for the system as well as by type of entity including commercial banks (CB), banks specializing in mortgage loans (BECH),[6] financing companies (CFC), and financial cooperatives (COOP).

Graph B11.1 shows the change in the financial stability index between January 1995 and June 2010. The level of financial stress captured by the index begins to increase as of 2005, and this trend surges following the international crisis experienced starting in the second half of 2007. This trend disappears as of June 2009. After this date, the indicator stabilizes at values lower than the historical average and even shows a decline in the last few quarters. This suggests that the stress levels in the system are remaining low.

1 For further information, see Estrada, D. and Morales M., "Financial Stability Index for Colombia", Financial Stability Issues of the Banco de la República, *Financial Stability Report*, March 2009.

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

3 Variables are standardized in this technique in order to express them as a single unit and then add them using identical weights.

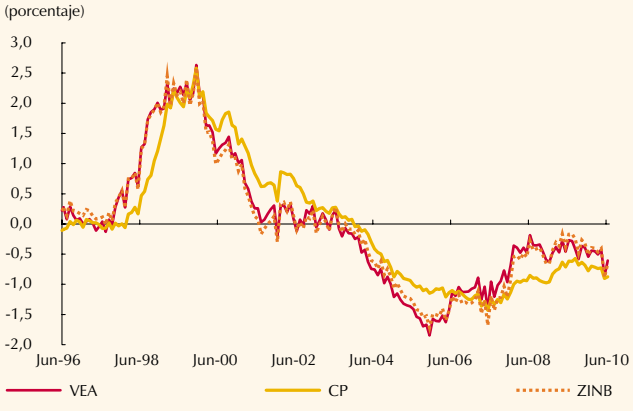
4 The main idea behind this methodology is to obtain an index based on the weight of selected variables so that this combination will provide a fuller explanation of the overall variance of those variables.

5 This approximation uses econometric estimates to model the relationship between the variables that are stress indicators and the dependent variable. In this case, it is defined as the number of banks under stress per period. The weight is found based on the estimated coefficients.

6 Although this category does not currently exist, it has been decided to include it given that the entities that at one time specialized in mortgage loans still show a performance that is different from the rest of the intermediaries.

Graph B11.2 shows the four indicators corresponding to the different types of entities under analysis.[7]

Graph B11.1
Financial Stability Index



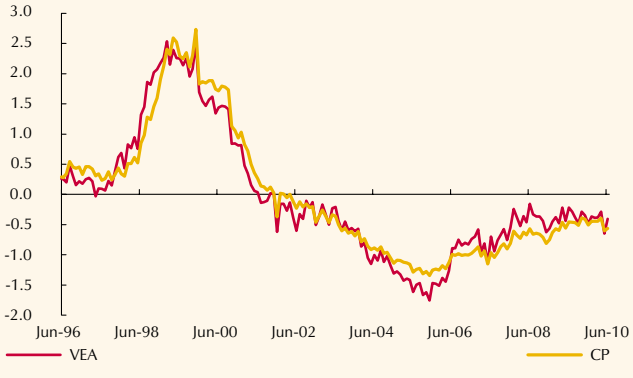
Source: Superintendencia Financiera de Colombia; cálculos del Banco de la República.

In the case of CBs and COOPs, one sees that the level of financial stress has remained stable since last year while there has been slight decline in the last few months for the BECHs and CFCs. In all of the cases, the indicators have remained below the historical average, which is a sign that the financial system is going through a stage of greater stability. It should be pointed out that, in the case of CFC, the indicator has returned to below average levels after having registered a period of relatively high stress following the crisis of 2007.

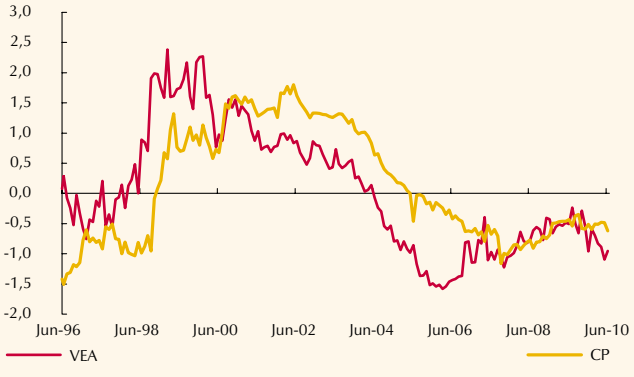
As has already been seen, the index manages to determine the current stress level in the system, both globally and separately. This makes it possible to do a diagnosis of Colombia's financial stability. The results of this updating show that the stress level of the system and the various types of entities that it consists of is low and has remained steady in the last few months.

Graph B11.2
Financial Stress Index by Type of Entity

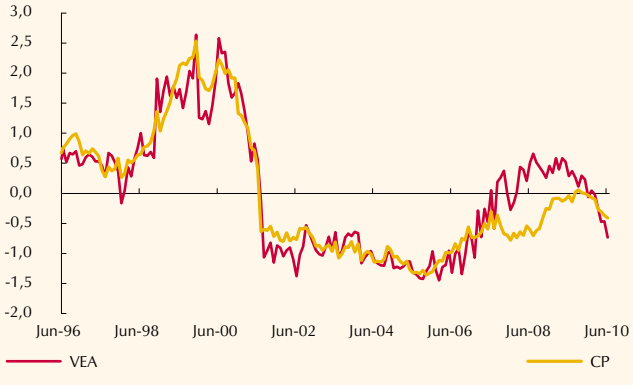
A. CB Index



B. BECH Index



C. CFC Index



D. COOP Index

Source: Banco de la República.

7 The methods used are variance equal approach and main components. The accounting data models are not used in this case.

Box 12
THE CURRENT SITUATION FOR MICROCREDIT IN COLOMBIA

The micro-credit market in Colombia has expanded significantly in the last few years and has drawn the attention of governmental authorities, multilateral organizations, and more recently, that of the conventional financial system. This entails new challenges for financial agents with respect to attending to the growing demand and the new regulatory requirements. Taking this into account, a summary that is part of the financial stability topic, "The place of Micro-credit in Colombia: Successful Characteristics and Experiences," is presented. This can be consulted in the electronic version of this Report. The purpose of this document is to establish a descriptive outline of the situation for microcredit in the country and emphasize the main characteristics of this market, the public and private initiatives, the most relevant experiences on the national and international stage as well as the lessons that should be included in the design of new initiatives designed to foster access for the population with the least resources to financing mechanisms.

In Colombia, according to Act 590/2000 microcredit consists of the loan transactions for financing small businesses. These have a maximum amount per loan transaction of 25 times the current minimum, monthly, legal wage (SMMLV in Spanish) which is equivalent to COL$12,875,000 in 2010 and the balance per borrower with the same lender may not exceed that value at any time.[1] These financial products require a specific credit technology due to the fact that the majority of the potential clients do not have assets to back them and that the information about their projects is meager.

This technology uses alternative methods for client knowledge, valuation of the collateral, and design of the payment schedule for the loans. Rhyne and Holt (1994) mention some practices designed to satisfy the financial needs of small businessmen. One that should be mentioned is a simplified design of the loan application, which should be monitored and get a fast response, as well as the creation of incentives (individual or group) for normal collection of the debt. Some strategies for collecting information include field visits and the use of non-conventional sources as well as constant contact with the client in the productive process. This method has been used by institutions such as Banrural in Guatemala, the Caja Municipal de Ahorro y Credito in Peru, Bancamia and BCSC[2] in Colombia, etc.

The strategies mentioned above imply higher operating costs compared to conventional loans. Therefore, these services are usually offered at higher interest rates within a government-regulated plan.

1. Government actions

The implementation of credit technology specific to supplying the small business sector with financial resources has gone hand in hand with various governmental and private efforts related to regulation and financial deepening, especially in remote areas. In regions like that, access to microcredit services should be accompanied by mechanisms that make it possible to overcome geographic, educational, and cultural barriers and put the population in closer contact with the financial entities. The government has launched a set of programs designed to favor people's access to financial services. The strategies used include supporting the processes of bancarization through the start up of non-banking correspondent (NBC) operations,[3] implementing financial education programs, designing loan alternatives intended for small businessmen in both the urban and rural sectors as well as monitoring vulnerable groups.

The NBC operations have succeeded in increasing the financial system's coverage and reducing the number of districts lacking a financial entity from 309 in 2006 to 60 in 2010 (Banca de las Oportunidades, 2010). However, the expansion of these intermediaries has occurred mainly in the departments in the central region, especially in districts that are close to the large cities. Demographic dispersion as well as the lack of communications and transportation

1 Act 590/2000 was modified by Act 905/2004 and the decrees that regulated them. Specifically, Decree 919/2008 eliminated the maximum amount of indebtedness for each small businessman which had been fixed at 120 SMMLV. Thus, the small businessmen have the possibility of surpassing that amount provided that they comply with the limits of indebtedness per lender.

2 The BCSC emerged through the merging of Banco Caja Social and Banco Colmena in 2005.

3 Decree 2233/2006 defines the non-banking correspondents (NBC) as people or corporations that have the due moral suitability and a physical, technical, and human resource infrastructure that is appropriate for offering the financial services authorized by a duly constituted banking institution. The operations of NBCs allow the credit institutions to offer services through third parties, who have been previously authorized and identified and that are connected through data transmission systems.

infrastructure has made implementing these means of access in the most remote rural areas difficult.

Part of the governmental efforts related to the expansion of microfinance have been grouped together within the investment program of the Banca de las Oportunidades. This was created on the basis of the guidelines in the Development Plan, 2006-2010 and is managed by the Banco de Comercio Exterior (Bancoldex).[4] The purpose of this program is to enable the people with limited resources to get access to micro-credit services. The main role of the Banca de las Oportunidades consists of providing private financial institutions who do the intermediation work in this market with resources from the national budget and from international organizations through rediscount lines. The Banca also works to bring about the necessary regulatory, educational, and advertising environment for the growth of the microcredit loan activity the financial entities are carrying out.

To create incentives for access to microcredit on the part of the small businessmen in rural zones, the government, working through the Ministry of Agriculture and the Fund for Financing the Agricultural Sector (Finagro), has set up the Rural Development Support Project (Pademer) and the Rural Opportunities Program (2007-2013).[5] Currently, the latter is responsible for coordinating the efforts to expand microcredit into these areas.

2. Potential demand

The total number of potential applicants for microcredit includes all the people with a start up business that requires financing as well as the microcompanies in (whether these are solo proprietorships or have up to nine employees including those who do not do their work at the company's physical location).[6] Since there is no national census of all the types of micro-businesses, the number of potential applicants was estimated based on the micro-company survey (MS), the ongoing household survey (ECH in Spanish) and the general integrated household survey (GEIH in Spanish) done by DANE.[7]

The estimates used the number of micro-companies reported in the MS as the base.[8] Then, both self-employed workers and business owners who have between two and nine employees and whose place of work is not at a fixed location are drawn from the number of people who are over 18 years of age. Finally, those people who are interested in setting up a business are also added.

The results of the MS suggest that there were approximately 1,166,000 active micro-businesses in Colombia as of the first quarter of 2009. Those micro-businesses that do not have a fixed place of business must be added to that number. It is estimated that there were close to 757,000 businesses of that type in 2009. After that solo proprietorships are taken into account and information from the GEIH was used to estimate their number. According to GEIH, close to 6,400,000 people were self-employed and did not have a fixed place of work in 2009. The number of people who wanted to set up a business, in turn, was approximately 2,346,000 individuals that same year. Adding up the above results, there are close to 10,200,000 potential applicants for micro-credit in the urban area.

The procedure followed so far to calculate the number of urban applicants for microcredit cannot be duplicated in the rural areas. This is due to the fact that the exact number of households located in those areas which are interested in getting some type of financing to set up a business is unknown. Nevertheless, the real demand can be obtained using the DANE Quality of Life Survey (ECV in Spanish) from 2008. Assuming a total of 1,800,000 households in the rural area, this survey indicates that 161,000 or, in other words, 8.8% have requested a loan for their agricultural activities. Of these, 66.3% have been given a loan and 21.7% have been denied one. The remaining 12.0% had not received a reply at the time of the survey.

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4 The Banca de las Oportunidades program was regulated by Act 1151/2007.

5 The Pademer project ended in 2006. The results made it possible for the Colombian government to renew their credit with the International Agricultural Development Fund (IADF) to finance the Rural Opportunities program.

6 Act 590/2000 includes an additional classification criterion for a micro-business based on the value of its assets, which should not exceed 501 SMMLV (COL$258 million as of 2010. This criterion was not taken into account in the estimate of the potential applicants since it is not possible to get this information with the surveys used.

7 The corrections were applied to the expansion factors of the ECH to maintain the representativeness of the sample with the GEIH given by the Mission to Link the Employment and Poverty Series (Mesep in Spanish). It should be mentioned that ECH had a sample size of approximately 10,000 households while the GEIH had 22,000. Thus, the information that is procured is more representative.

8 Based on the MS methodology, a micro-company is defined as a firm that operates at a fixed location and has between two and nine employees.

3. Coverage of demand

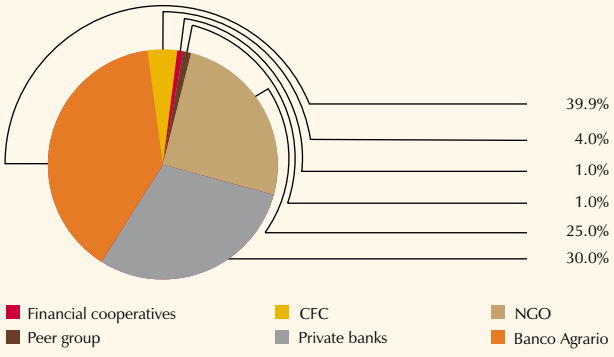
The microcredit loan portfolio has shown a significant increase in the last few years having reached an amount that is more than COL$3.9 trillions at the end of the first half of 2010. The momentum that micro-credit has had in the last few years has been the result of new private financiers entering the market such as Bancamia and Procredit and the launching of new lines of credit and discounts on the part of public entities.

In Graph B12.1, the composition of the outstanding portfolio by type of entity as of June 2010 can be seen. In it, the Banco Agrario holds the largest share with approximately 40%. This is because it is the entity through which the government makes loans directly to small businessmen, especially in rural areas.[9] In addition, the entities in the private sector that hold the largest amount of this loan portfolio are banks (30%) and NGOs (25%).

The fact that new agents who were willing to offer products related to micro-credit entered the market in 2008 meant significant growth for both the number of micro-loans granted and the loan portfolio balance. This trend, however, saw a significant slowdown in 2009. That year the NGO loan portfolio contracted 19% while in the case of the banks, it grew at an annual rate of 16%, which was much lower than the rate that had been seen in previous years (50%). In spite of the decline in the availability of this type of loan in the private sector, the total micro-credit loan portfolio balance has continued to expand, mainly under the impetus of the public sector.

The number of active users of microcredit reached 1,840,000 in December 2009. In spite of the growth that has been experienced in terms of the micro-credit

Graph B12.1
Distribution of the Outstanding Micro-credit Loan Portfolio by Type of Entity as of June 2010



Sources: Superintendencia Financiera de Colombia y Emprender; cálculos del Banco de la República.

offered by different entities, the coverage of the potential demand is still very limited when the data from the previous section is considered. Taking the estimates of urban applicants for microcredit, there would be an approximate coverage of 18% (without including the potential applicants from the rural area). This indicates that the market for micro-credit has huge possibilities for expansion.

To summarize, micro-credit is a financial product developed to meet the financing needs of small businessmen who do not have collateral nor basic information about their projects available. Therefore, microcredit technology should be used to serve them in order to broaden their coverage. Even if the number of private microfinancing entities interested in that sector has risen, the coverage of the potential market is still very low, especially in the rural areas that are distant from urban centers. As a consequence, efforts should be focused on designing incentives to encourage the presence of financial entities in these areas. Some examples would be to make the limits on the lending rates for microcredit flexible and the creation of networks of technical assistance.

9 The fact that not all of the micro-loans offered by the Banco Agrario use micro-credit technology should be emphasized.

Box 13
A COMPARATIVE ANALYSIS OF CREDIT RISK

One of the main objectives the supervisors and regulators of the financial system have is monitoring the credit risk intermediaries face.[11] As the different types of loan portfolios experience different types of risk, it is important to describe their characteristics in order to approximate the levels of loan-loss provisioning and adequate capital. Thus, the purpose of this box is to estimate the distribution of loss probability as a percentage of the commercial and microcredit loan portfolios and evaluate their trend since this is the basis for establishing the loan-loss provisioning and capital requirements. In addition, a definition of the main differences in the behavior of credit risk between these two types of portfolios is sought.

To fulfill this objective, the methodology stated in Adasme et al (2006) is followed. This consists of estimating the distribution of loss probability as a percentage of the loan portfolio from a non-parametric approximation. The advantages of this type of technique are, first of all, that it does not require any distributional assumptions about the effect of the default probability. Secondly, it makes it possible to arrive at estimates that are free of erroneous specifications from the models. To be specific, the technique that will be used is *bootstrapping*, which has also been used in this context by Carey (2002), and Majnoni and Powell (2005).

The information on debtors contained in the Financial Superintendency Format 341 will be used for this exercise. For the micro-credit loan portfolio, information was drawn from every December between 2003 and 2009 while for the commercial loan portfolio, the period was from 2000 to 2009. The following exercise was done for each one of the loan portfolios:

1. The loans reported in December of a given year and that did not expire in the next 12 months were considered. The ratings and the total for these in both periods were also taken.

2. A categorical variable was defined to establish the default for each one of the loan portfolios. In the case of commercial loans it was exactly specified that there is default when the rating in a given period was A or B and, in the next 12 months, it went to C, D, or E. For microcredit, given the characteristics of the type of borrowers, there is default when the rating was A in a given period and in the next 12 months it changed to B, C, D, or E.

3. Having defined the loans that defaulted and those that did not, a simulation was done to find the distribution of portfolio loss probability in a specific year through the technique of bootstrapping. To do this, the steps below are followed:

- The population was defined as the total for a loan portfolio in a given year.
- One hundred thousand random samples were taken of this population.
- To calculate the size of each sample (n) a sampling margin of error of 1% and confidence level of 99% was considered.[2]
- The default probability for each sample was calculated as a percentage of the value of the portfolio of the sample that is in default. In other words:

$$\widehat{\theta}_{i,t} = \frac{\sum_{j=1}^{n}(k_{j,t}I_{j,t})}{\sum_{j=1}^{n}k_{j,t}}$$

Where,

$\widehat{\theta}_{i,t}$ = *the default probability of sample i in year t*
$K_{j,t}$ = *value of loan capital j in year t*
$I_{j,t}$ = *if the loan is in default in year t*
0, if it is not.

Afterwards, the loss for each loan portfolio is calculated as:

$$\rho_{i,t} = \left(\tilde{\theta}_{i,t}\right)\left(PDI_t\right)$$

Where,

PDI_t = *Loss given the default in the portfolio for year t*

The estimate of the PDI was done based on chapter 2 of Act 100/1995 of the Financial Superintendency.[3]

1 The share of the portfolio/total assets of the credit establishments as of June, 2010 was 64.2%.

2 For more information on calculating the size of the sample see Majnoni and Powell (2005).

3 For more details on this estimate, see the Financial Stability Issue: "Análisis comparativo del riesgo de crédito: una aproximación no paramétrica," in the electronic version of the Financial Stability Report, September, 2010.

- Using 100,000 simulations a $\rho_{1,t}, \rho_{2,t}, \cdots \rho_{100.000,t}$ sample is obtained for year t for which the empirical probability distribution is estimated. In addition, the expected loss for the portfolio in year t ($\bar{\rho}_t$) and the maximum loss as a percentage of the portfolio in year t are estimated at an a $\alpha\left(VeR_{\alpha,t}\right)$ level of significance as:

$$\bar{\rho}_t = \frac{\sum_{i=1}^{100.000} \rho_{i,t}}{100.000} \qquad VeR_{\alpha,t} = Cuantil_{\alpha}(\rho_{1,t}, \rho_{2,t}, \cdots \rho_{100.000,t})$$

Thus, the unexpected loss for the portfolio in year t can be defined as:

$$\rho ne_t = VeR_{\alpha,t} - \bar{\rho}_t$$

The results of the simulations for the micro-credit and commercial loan portfolios are given in Graph B13.1. As can be seen, the probability distribution of the losses for these two types of loans is very different. While in the microcredit portfolio the distribution is close to normal,[4] in the commercial loan portfolio, the distribution is asymmetrical biased to the left and has fat tails. In the first case, the shape of the distribution is due to the fact that Act 590/2000 defines microcredit as including a maximum amount per loan. This results in the capital balances not being highly varied and, due to the law of large numbers, the distribution converges to normal.

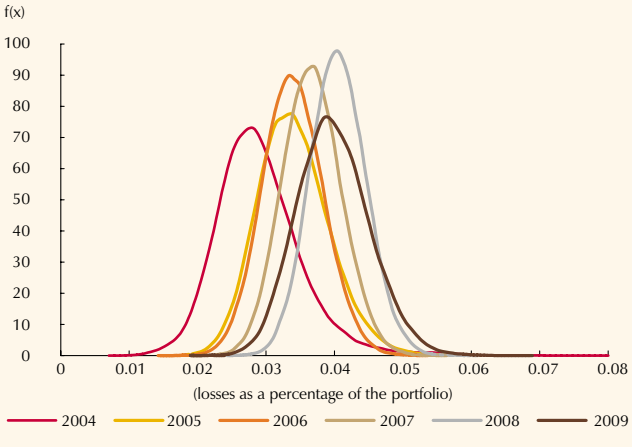
In contrast, since the amount per loan for commercial loans is not fixed, the difference between them tends to be large. Furthermore, the results suggest that the loans with higher capital have a lower probability of default. Therefore, the distribution of the portfolio losses is biased to the left. Also, given this type of distribution, the probability of extreme losses may be high in comparison to the microcredit loan portfolio.

Likewise, when analyzing the behavior of the default probability for the two loan portfolios, in the years in which there is less growth in the economy, the commercial loan portfolio distributions move to the right. This suggests that to the degree that there is more strength, the default probability of the commercial loan portfolio may decline. However, for the microcredit loan portfolio, there is no clear relationship between economic growth and credit risk in spite of the fact that the observations are available for only a part of the cycle.The above-mentioned behavior is obtained by comparing the average default probability of both loan portfolios for each year to the growth of the economy (Graph B13.2).

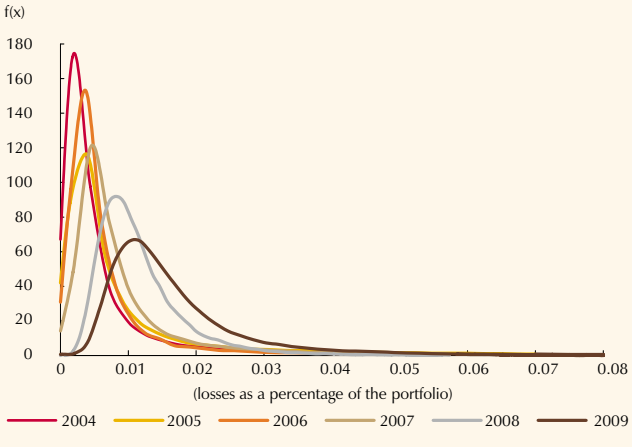
In Graph B13.3, the distribution of the losses is given as a percentage of the loan portfolio for the commercial and microcredit loan portfolios in 2009. As can be seen, the expected loss is higher for the microcredit loan portfolio (4.0%) than for the commercial loan portfolio (1.7%). However, when the maximum loss that can be presented at a significance level of 1% (VaR) is seen, it is higher in the commercial loan portfolio (6.3%) given the wider tail that its distribution presents compared to the one in the microcredit loan portfolio (5.3%). The above could suggest that even if a loan for the micro-business sector needs to have more loan-loss provisioning than what is demanded for the commercial one, it is also evident that it could require less regulatory capital to cover unexpected losses.

Graph B13.1
Change in the Distribution of Losses as a Percentage of the Loan Portfolio, 2004 to 2009

A. Microcredit Loan Portfolio



B. Commercial Loan Portfolio

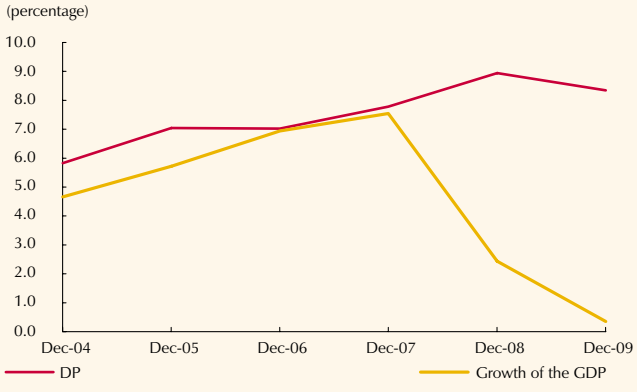


Source: Financial Superintendency of Colombia, Banco de la República calculations.

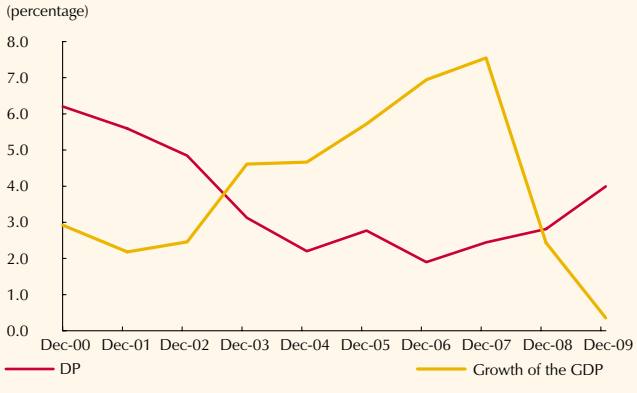
4 The Jarque-Bera normality test was done for each year. In the majority of the periods, a p-value that was higher than 5% was obtained. Therefore, the hypothesis that the data are following a distribution normal cannot be rejected.

Graph B13.2
Growth of the GDP in Comparison to the Average Default Probability (DP) of:

A. Microcredit Loan Portfolio

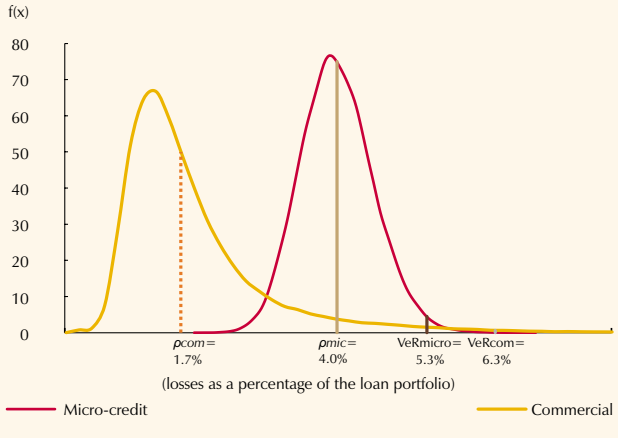


B. Commercial Loan Portfolio



Sources: Financial Superintendency of Colombia and DANE, Banco de la República calculations.

Graph B13.3
Distribution of the Losses as a Percentage of the Loan Portfolio, 2009



Source: Financial Superintendency of Colombia, Banco de la República calculations.

Table B13.1
Distribution of the Losses as a Percentage of the Loan Portfolio, 2009

Year	Micro-credit		Commercial	
	$\overline{\rho}$	ρne	$\overline{\rho}$	ρne
2004	2.9	2.1	1.0	9.4
2005	3.4	1.4	1.2	8.7
2006	3.4	1.1	0.8	6.6
2007	3.7	1.0	1.0	5.8
2008	4.1	1.0	1.2	3.0
2009	4.0	1.3	1.7	4.6
Average	3.6	1.3	1.2	6.3

Source: Financial Superintendency of Colombia, Banco de la República calculations.

In Table B13.1 the expected (***ρ***) and the unexpected (***ρ*** ne) losses are presented for the commercial and micro-credit loan portfolios. Here, the first measurement is used for calculating the loan-loss provisioning and the second one, for the required level of capital. For all of the years of the sample, what has been mentioned is confirmed with respect to the amount for loan-loss provisioning and regulatory capital based on the type of loan. On average, the level of loan-loss provisioning for micro-credit is 3.6% while for commercial, it is 1.2%. However, the level of capital for each peso granted is 1.3% for the first and 6.3% for the second.

In short, different behaviors are seen in the distribution of the losses for the microcredit and commercial loan portfolios as a percentage of each portfolio. Thus, when the results are compared to the current regulation, the exercise suggests higher percentages of loan-loss provisioning for micro-credit than for commercial, in which it agrees with the regulations. However, the same thing is not true with respect to the level of required capital. In this case, the regulations demand that this be the same for both loan portfolios. The results show that the level of capital for the commercial loan portfolio is higher than it is for microcredit.

At the same time, the distribution of the default probability in the commercial loan portfolio has an inverse relationship with the economic cycle while in the microcredit portfolio no clear relationship can be seen. As a consequence, credit risk in this type of portfolio is determined by factors other than the strength of the economy. Therefore, before incorporating countercyclical provisions, the above result for the micro-credit loan portfolio must be kept in mind.

Box 14
FINANCIAL REFORM IN THE UNITED STATES

The defects in regulation and supervision of the financial system in the United States were determining factors in the recent financial crisis. The failures in regulation were on all fronts: poor capital requirements and excessive leveraging, decentralized supervision and regulation of many entities as well as a lack of coordination between them, lax requirements for many entities considered to have a lot of influence on the entire system, the regulators' ignorance of the innovative financial instruments and, in general, about the risk-taking on the part of the entities together with the damaging effect of those positions on the stability of the financial system.

The extent of the financial reform in the United States is very broad. Nonetheless, the main goal is to create better controls over those entities that have the potential to generate systemic risk, and hence, destabilize the rest and generate financial crises. To prevent this, the reform proposes:

- To assign the mission of identifying these entities to the Federal Reserve (based on their size, leveraging and interconnection with the rest of the entities). In addition, it requires discipline in terms of liquidity and indebtedness as well as higher levels of capital.
- In the case of financial conglomerates, the proposal for these entities is that they should have higher levels of capital in the cases of both the individual companies and the overall conglomerate. Furthermore, the regulation and supervision should be done within each of the firms that it is made up of.
- In addition, these entities should have sufficient collateral in case financial difficulties occur and they require an injection of liquidity on the part of the government.

In its function as a systemic regulator, the Federal Reserve (Fed) will be able to apply stricter rules, for which the decision was made to adopt the Volcker rule. Its primary scope includes:

- Prohibiting the banks from trading their own capital as well as investment capital or hedge fund financing and private capital funds.
- Demanding additional capital requirements and quantitative limits on the non-banking financial sector if those entities are found to be involved in transactions using their own capital or in activities using funds.
- Requiring that the large and complex entities (too big to fail) prepare a "living will" as well as a liquidation fund:
    - The reason for the first of these would be to periodically put a manual into the hands of the regulators that would serve not only as a guide to the structure of the entity, but also provide guidelines for the entity to liquidate itself rapidly and less traumatically.
    - The purpose of the second one would be to create a fund of US$50 t that would serve to cover the costs of the liquidations.

The idea behind these initiatives is to put an end to the moral risk existing in the market today given the implicit protection of the government and Fed which could generate incentives for the entities to be larger in size and to take greater risks.

The higher capital requirements will be one of the basic pillars for discouraging excessive risk-taking or, at least, generate appropriate backing at the first sign of risk. These levels of capital should be sufficient to cover possible losses due to the purchase/sale of financial assets, the loans granted to riskier clients, the off-balance-sheet operations, the purchase of mortgage loan portfolio securitizations (even though they have high ratings), over-the-counter (OTC) derivatives, etc. Likewise, the reform proposes that the capital level during the high part of the cycle should be enough to cover the requirements in bad periods. This is similar to the system of counter-cyclical loan-loss provisioning designed in Spain (although the reform in the United States is in reference to capital). The reform also opens up the possibility of having the banks keep a portion of their capital in the form of contingency capital, which would be transferred to equity at the moment that financial difficulties arise.

The creation of a Financial Stability Council at the highest level of the Treasury of the United States was also proposed. The purpose of this body would be to establish cooperation between the different entities that are responsible for the supervision and regulation of the financial system such as the Fed, the Treasury and the other agencies attached to the government. This mechanism would be based on transparency and would seek to create a space where:

- Information is shared between agencies.

- Potential risks as well as new financial instruments are analyzed.
- Models for appraising new and existing instruments are evaluated.
- Decisions with respect to the size and systemic risk of a particular entity are made.

In spite of the cooperation between different agencies, the reform is specific in stating that there is only one entity (the Fed given its experience) responsible for setting standards that the entities should comply with and for any failure in particular that the system presents. The Fed will also be in charge of regulating the investment banks, which previously were the responsibility of the Stock Exchange Commission (SEC).

Another serious regulation deficiency seen during the crisis was the large number of exceptions that made it possible for many types of non-banking financial entities to be unregulated. In order to eliminate these deficiencies, all of the institutions involved in financial operations will be subject to the same rules as the lending institutions. Such is the case of firms that use banks within their same economic group to issue credit cards for their commercial establishments. The same thing happens with the trust companies and hedge funds. The latter are not even required to be registered with a regulating agency in spite of the substantial assets that they manage and the high risk positions that they are exposed to.

The reform also proposes the creation of an Insurance office within the Treasury to improve regulation of the insurance sector. This office should:

- Demand strong capital standards and suitable risk management models in order to identify potential risks. These, given the high interconnection of this sector with the rest of the system, could unleash financial crises.[1]
- Inform the Fed when an insurance company is involved in activities that make it possible to consider it a financial intermediary. Thus, the full rigor of the regulations for this type of entity would be applied to it.

It, likewise, orders the creation of an Office of Credit Risk Agencies (CRA) within the SEC in order to reinforce the regulation of such agencies. The new rules that would govern these entities seek to strengthen internal control, independence, transparency, and penalties for poor performance. To do this:

- The CRA would be required to divulge their calculating methods as well as their historical ratings.
- They would be obliged to designate independent directors that would make up at least half of the Board of Directors and whose pay would not be tied to the classifier's performance.
- Authority is given to the SEC to revoke the license of any CRA that gives the market erroneous ratings over the course of time.

The Office of Consumer Financial Protection will also be created. Its main job would be:

- To ensure that the banks, non-banking financial institutions as well as all businesses that deal with mortgages and have assets of over US$10 t in value comply with the regulations.
- To create an Office of Financial Education which would have the job of reducing the inequality of information between investors and bankers and thus achieve a better assignment of resources.
- To create a legal office within the SEC in order to give investors legal assistance with their complaints.

One very important aspect within the reform is the OTC derivatives and structured financial products. The financial reform seeks to make these activities more transparent and responsible in order to discourage the excessive risk-taking that occurs in those markets.

- OTC derivatives will be regulated by the SEC and the Commodities and Futures Trading Commission (CFTC) and an effort will be made to have the majority of these operations negotiated through central counterparty risk clearinghouses and on trading systems.
- Those operations that are negotiated apart from these platforms should be reported to the regulatory entities to guarantee appropriate monitoring of the risks in those markets.
- The swap operations that are not handled through a trading system will be subject to stricter margin requirements and the primary agents in this market will be subject to capital requirements.
- The entities that participate in these operations are prohibited from receiving assistance from the Fed.
- Entities that sell structured investment products (such as securitizations) must hold a purchase position in the same products of at least 5% to insure against the credit risk exposure that the final investor will face.[2]

1 This was the case of the AIG which carried out highly risky operations outside its core business and was intricately connected to the rest of the system.

2 If the underlying loans of the structured instrument comply with a series of quality standards, the percentage could go below 5%. The agents cannot cover or transfer the risk of that exposure.

The reform also seeks to raise the international regulatory standards and improve cooperation between countries. Through the new regulations, it seeks to strengthen the international consensus on four central points:

- Regulatory capital standards
- Monitoring of the global financial markets
- Supervision of internationally active financial firms
- Prevention and management of crises

As a recommendation, it is suggested that the Basel Committee on Bank Supervision reinforce its prudential regulatory framework and develop macroprudential tools as well as expand regulatory reach (to include hedge funds and rating agencies, etc.) together with a revision of compensation plans since the Basel proposals have tended to be more microprudential in character. With respect to this last point, the reform proposes that the compensation should fit the performance of the executives and be appropriate to the risk horizon that the entities are taking. Likewise, it proposes a modification to the retirement packages for executives which would be designed by outside consultants and approved by shareholders.

Last of all, the financial reform proposes giving the Executive branch tools for crisis management in terms of resolving conflicts, liquidating entities, and financial assistance. The objective is:

- To create a resolution that would endow the government with a legal structure to respond to financial difficulties.
- This resolution would be used in extreme cases when the stability of the system is seriously threatened. In normal conditions of institutional stress, the regular course of action would continue to be liquidation.
- If the failure of that entity should imply risk for one or more entities in the financial system or for the system as a whole, the government will make use of the resolution, which will include such things as capital investments, purchase of stock in the entity, financial assistance in the form of loans, backing for their liabilities, etc.[3]

In conclusion, the financial reform seeks to correct the deficiencies of the previous regulation with respect to how to do monitoring and clearly defining who should do it. Specifically, the regulatory changes concentrate on the large and highly interconnected entities as well as on the financial innovation that made it possible for the financial system to take highly risky positions without the regulatory entity or their own investors understanding how to evaluate them.

Thus, the reform has a clear goal to monitor and control the systemic risk of the institutions, a function that will be the Fed's responsibility, as well as to oversee all of the entities that carry out financial transactions apart from whether or not they are categorized as banks. Likewise, they will require institutions that trade in derivatives to do so through clearinghouses to increase the transparency and decrease the counterparty risk. The financial product consumer will also be protected by the regulation through the creation of an office responsible for that. Even if the Colombian financial market differs drastically from the US market on some fronts, it is worth taking note of the special emphasis in the reform on systemic risk that could be caused by those outside of the traditional financial system. The non-banking financial institutions do give Colombia a significant expansion of banking services and a detailed analysis of the impact of that dynamic on financial stability should be a priority.

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3 The decision to rescue an entity will be the Fed's with the authorization of the President of the United States and with the votes of three quarters of the members of the Fed and three quarters of the Federal Deposit Insurance Corporation (FDIC).

Financial Stability Issues

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Un análisis del exceso de capital de los bancos comerciales en Colombia
Capital and risk taking by colombian banks
Javier Gutiérrez Rueda
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Un análisis de sobrevaloración en el mercado de la vivienda en Colombia
Analyzing overvaluation in colombian housing prices
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Miguel Ángel Morales
David Pérez Reyna

¿Cómo se ven afectados los hogares por la substitución entre cartera e inversiones?
Implications on households of substitution between loans and investment
Santiago Caicedo
David Pérez Reyna

UN ANÁLISIS DEL EXCESO DE CAPITAL DE LOS BANCOS COMERCIALES EN COLOMBIA

JAVIER GUTIÉRREZ RUEDA
ÁNGELA GONZÁLEZ ARBELÁEZ
DAIRO ESTRADA

El objetivo de este documento es estimar los determinantes del capital económico, para luego compararlo con el capital regulatorio sugerido por Basilea II, utilizando un modelo unifactorial de riesgo basado en el sistema de calificaciones internas (IRB, por su sigla en inglés), el cual sólo tiene consideraciones de riesgo de crédito. Por una parte, los resultados muestran que dentro de los determinantes del capital económico se encuentran el riesgo de crédito, el crecimiento de la cartera y el ciclo económico, entre otros. Por otra parte, se observa que los excesos de capital están explicados, en gran medida, por consideraciones de la exposición al riesgo de crédito de los bancos.

CAPITAL AND RISK TAKING BY COLOMBIAN BANKS

The main purpose of this document is to estimate economic capital determinants, to later compare it to the regulatory capital suggested by Basel II, using a single factor risk model based on the Internal Ratings-Base (IRB) approach, that only has credit risk considerations. On one hand, results show that among economic capital determinants are credit risk, gross loans growth and the economic cycle, among others. On the other hand, we found that capital in excess is mainly explained by banks credit risk exposure considerations.

UN ANÁLISIS DE SOBREVALORACIÓN EN EL MERCADO DE LA VIVIENDA EN COLOMBIA

SANTIAGO CAICEDO
MIGUEL ÁNGEL MORALES
DAVID PÉREZ REYNA

En este trabajo se presenta un modelo SVAR, donde se imponen restricciones de largo plazo para identificar choques de demanda y oferta en el mercado hipotecario. Con el modelo se analiza si el comportamiento del precio real de la vivienda en Colombia diverge de la tendencia de sus fundamentales, y se determina si ha existido sobrevaloración en los precios para el período 2008-2009. Los resultados sugieren que en el largo plazo los principales determinantes del precio de la vivienda son los choques de demanda por este activo y los costos de construcción asociados con los choques de oferta en el mercado hipotecario. Finalmente, se encuentra que los actuales niveles de estos precios están por encima de lo proyectado por sus fundamentales.

ANALYZING OVERVALUATION IN COLOMBIAN HOUSING PRICES

In this paper we present a five-variate SVAR model to analyze the behavior of the housing prices. We impose theory based long-run restrictions to identify the effect of different supply and demand shocks. The model determines whether the behavior of real house prices in Colombia diverged from market fundamentals, and establishes if there is an overvaluation in housing prices over the period 2008-2009. The results suggest that housing demand shocks and construction costs are the main long-run determinants of this asset prices. We find that current price levels are above of forecasted value using their fundamentals.

¿CÓMO SE VEN AFECTADOS LOS HOGARES POR LA SUBSTITUCIÓN ENTRE CARTERA E INVERSIONES?

SANTIAGO CAICEDO
DAVID PÉREZ REYNA

En este documento se desarrolla un modelo de equilibrio general dinámico estocástico (DSGE, por su sigla en inglés) para analizar el efecto que tiene sobre los hogares la substitución entre cartera e inversiones de los bancos. Se modela un banco representativo que puede enfrentar problemas de liquidez debido a la diferencia en el vencimiento de los créditos comerciales que otorga a las firmas y los depósitos que suplen los hogares. El portafolio de los bancos consiste en bonos de renta fija y cartera comercial. Los resultados muestran que choques positivos de liquidez, generados por cambios en las preferencias de los hogares, son beneficiosos para las familias e influyen en la composición de los activos del banco. De manera similar, un aumento en la tasa de interés de los bonos genera un efecto sustitución en favor de éstos, pero no implica menor intermediación bancaria, por lo que el bienestar de los hogares aún aumenta.

IMPLICATIONS ON HOUSEHOLDS OF SUBSTITUTION BETWEEN LOANS AND INVESTMENT

In this paper we develop a DSGE model to analyze the welfare implications that bank's asset recompositions might have over households. We model a representative bank that potentially faces liquidity difficulties due to a mismatch between credits issued to firms and deposits supplied by households. The bank has a portfolio consisting of loans and bonds. The results show that positive liquidity shocks, driven by changes in the household preferences, affect the bank's asset allocation decisions and are beneficial to households. Similarly, when the bond rate increases, there is a substitution effect that lowers the loan to bond ratio, but despite this, the bank's intermediation activity increases inducing a positive effect over the household's welfare.

ESTRUCTURA DE RED DEL MERCADO ELECTRÓNICO COLOMBIANO E IDENTIFICACIÓN DE AGENTES SISTÉMICOS SEGÚN CRITERIOS DE CENTRALIDAD

AGUSTÍN SAADE OSPINA

En este documento se utilizan herramientas de análisis de redes tradicionales para describir las características generales de la estructura del Mercado Electrónico Colombiano (MEC). Se encontró que éste está fuertemente concentrado en unos pocos agentes, con bajo nivel de conectividad, aunque con un alto grado de reciprocidad en las relaciones entre los agentes. Se calcularon indicadores de centralidad diaria para cada uno de aquéllos, buscando identificar cuáles son sistémicos según su posición relativa en la red. Este análisis permitió observar que en el MEC los agentes más grandes, los que tienen mayor número de conexiones, aquellos con mayor capacidad de intermediación, y los que tienen relaciones cercanas con agentes más importantes tienden a ser los mismos cada día. Finalmente, vía simulaciones, se buscó medir qué tan sensible es la estructura de red del MEC ante la ausencia de los agentes más conectados. Se encontró que la estructura es fuertemente dependiente de las conexiones de unos pocos agentes, que pueden clasificarse como centrales a la red.

COLOMBIAN ELECTRONIC MARKET NETWORK STRUCTRE AND SYSTEMIC AGENTS IDENTIFICATION ACCORDING TO CENTRALITY CRITERIA

This paper uses network analysis traditional tools in order to describe general characteristics of the Colombian electronic market (MEC), finding that it is highly concentrated in few agents, with a low level of connectivity, but with a high level of reciprocity in the relationships between agents. Daily centrality indicators where calculated for each agent, in order to identify which are systemic according to their relative position in the network. This analysis shows that the largest agents in MEC, the ones with the greatest number of connections, those with the largest intermediation capacity, and the ones with closer relationships with the most important agents, tend to be the same every day. Finally, measurement of how sensitive is the MEC structure in the absence of the more connected agents was done through simulations, finding that the structure is highly dependent on the connections of a few agents that can be classified as central in the network.

PROVISIONES BANCARIAS Y MICROCRÉDITOS

SANTIAGO CAICEDO
DAIRO ESTRADA
AGUSTÍN SAADE OSPINA

En este documento se desarrollan dos modelos bancarios, uno para los que ofrecen créditos tradicionales y otro para aquellos especializados en microcrédito. El banco tradicional se enfoca en identificar y excluir a agentes con perfiles muy riesgosos, mientras que el de microcrédito se especializa en el monitoreo de sus deudores. Los parámetros del modelo son calibrados con información del sistema bancario colombiano. Los resultados muestran que los dos sistemas son rentables si no existen provisiones. En contraste, cuando se imponen provisiones que únicamente dependen de la evaluación de riesgo de los deudores, el banco de microcrédito es inoperante para una parte importante de los agentes más riesgosos. Finalmente, se analiza un sistema de provisiones que incorpore consideraciones de monitoreo y se encuentra que, dentro de este esquema, el banco de microcrédito otorga créditos a agentes con perfiles riesgosos y el nivel de monitoreo óptimo es comparativamente superior al del sistema de banca tradicional.

BANK PROVISIONS AND MICROCREDIT

In this paper we develop two models, one for the traditional banking system and another for the microcredit market. We suppose a monopolistic traditional bank that specializes in screening potential debtors based in their risk profile and a microcredit bank that focus on monitoring their riskier profile customers. The model is calibrated with Colombian financial data. The results show that both banking systems are able to operate in a regulation framework without provisions. When provisions that depend only on the screening level are introduced, a significant portion of the risky debtors are left out of the financial system and the microcredit bank would not operate in certain market conditions. Nonetheless, when we consider provisions that include monitoring considerations, the microcredit bank would be profitable for the different debtor risk profiles, and its optimal monitoring level is higher in comparison with the ones chosen by the traditional bank.

ANÁLISIS COMPARATIVO DEL RIESGO CREDITICIO: UNA APROXIMACIÓN NO PARAMÉTRICA

ÁNGELA GONZÁLEZ ARBELÁEZ
JUAN CARLOS MENDOZA
JOSÉ HERNÁN PIÑEROS G.

El objetivo de este documento es estimar la distribución de pérdidas de las carteras comercial y de microcrédito mediante una aproximación no paramétrica. Se utilizó la metodología de *bootstrapping* para encontrar esta distribución de pérdidas como porcentaje del portafolio para ambas carteras. Los resultados muestran que la de microcrédito exhibe una pérdida esperada mayor a la comercial, lo que lleva a que sea necesario constituir más provisiones por peso otorgado para la primera. Por su parte, la cartera comercial presenta pérdidas no esperadas superiores, por lo que el nivel de capital que se debe exigir es mayor que para microcrédito. Adicionalmente, las pérdidas esperadas de la cartera de microcrédito no muestran una relación clara con el ciclo económico, en contraste con la comercial.

COMPARATIVE ANALYSIS OF CREDIT RISK: A NON PARAMETRIC APPROACH

The main purpose of this document is to estimate the loan loss distribution for commercial and micro-loans using a non-parametric approach. The Bootstrapping technique was used in order to find loan loss distribution as a percentage of total loan portfolios for both types of credit. Results suggest that micro-loans have an expected loan loss larger than the one for commercial loans, leading to higher provisions for each peso granted. In contrast, since commercial loans exhibit larger unexpected losses, they need higher capital levels. In addition, micro-loans' expected losses do not have a clear relationship whit the economic cycle, contrary to commercial loans.

SITUACIÓN ACTUAL DEL MICROCRÉDITO EN COLOMBIA: CARACTERÍSTICAS Y EXPERIENCIAS

DEPARTAMENTO DE ESTABILIDAD FINANCIERA
DEL BANCO DE LA REPÚBLICA
FINAGRO
MINISTERIO DE AGRICULTURA

El presente documento expone las principales características de la situación actual del mercado de microcrédito en Colombia. destacando aspectos técnicos y regulatorios. así como recientes iniciativas gubernamentales y privadas orientadas a promover el acceso a este tipo de financiación. El estudio se complementa con la estimación de su cobertura. teniendo en cuenta la demanda potencial y las características de la oferta. Los resultados encontrados sugieren que el microcrédito tiJan grandes posibilidades de expansión. particularmente en zonas rurales y en pequeños centros urbanos. Se sugiere. por tanto. crear incentivos que permitan a las entidades financieras hacer presencia en estas áreas. tales como la creación de redes de asistencia técnica que brinden orientación en el proceso de implementación de tecnología microcrediticia. además de la modificación de algunos aspectos en el marco regulatorio en el que actualmente se desarrolla su actividad.

CURRENT STATE OF THE COLOMBIAN MICROCREDIT: CHARACTERISTICS AND EXPERIENCES

This document illustrates the main characteristics of the current state of the Colombian microcredit market. highlighting its technical and regulatory aspects. as well as recent government and private initiatives in order to promote the access to this kind of loans. This analysis is complemented with the estimation of its coverage. taking into account the potential demand and supply characteristics. The results suggest that microcredit has a significant prospective expansion. primarily in rural areas and small urban centers. We suggest. therefore. to establish incentives that allow financial institutions to attend these regions. such as the creation of technical networks that provide guidance for the implementation of microcredit technology process. as well as some modifications in its regulatory framework in which operates.