FINANCIAL STABILITY REPORT

March 2014

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF CHARTS

EXECUTIVE SUMMARY

During the second semester of 2013, the international environment was characterized by the gradual recovery in the Eurozone and the U.S. economy, as well as by an upturn in the Chinese economy. Although overall uncertainty regarding the moderation of the United States monetary policy impacted the performance of Latin American economies, Colombian financial markets have shown adequate liquidity levels and less volatility in the second half of the year compared with the first.

Financial intermediation activities of credit institutions showed a slowdown in the second semester of 2013, after a period of stability that began at the end of 2012. The gross portfolio grew at an annual real rate of 10.5% in December 2013, a figure less than the observed 6 months before (12.5%). This behavior is explained by a slowdown in all types of portfolios, with the exception of mortgage loan portfolio

On the other hand, the accumulated profits during the last twelve months had exhibited a stable behavior between June and December 2013, while the return on assets (ROA) and the return on equity (ROE) indicators showed a downward tendency. On side of liability, a slower growth in deposits was observed, along with a restructuring of the fixed term certificates of deposits (CDT for its acronym in Spanish) to shorter maturities.

By December 2013, the portfolio share of non-banking financial institutions in the total financial system remained stable at a level close to 48%. Additionally, portfolios for mandatory pension funds (MPF), insurance companies (IC) and funds managed by trust companies (TC) were characterized by high participation of domestic public debt securities. It is worth noting that the return on investments for MPFs has declined, and that these funds had a higher exposure to unhedged foreign currency investments. In terms of profitability, measured by the entities' ROA and ROE, it is remarked that it has increased for stock brokerage firms and investment management companies in the last half of 2013, while it declined for the other sectors.

Regarding the debtors of the financial system, it is emphasized that for the analyzed sample of private corporate sector companies in September 2013, financial indicators show a good situation in terms of profitability and liquidity. Under stress tests that suppose extreme and hypothetical scenarios, it has been found that the firms analyzed by the private corporate sector would not show a substantial deterioration in their financial status, nor a significant materialization in the system's credit risk would be observed.

Moreover, during the second semester of 2013, an increase in the levels of indebtedness and household income was observed. Although these expansions were lower than those reported six months earlier, the financial burden indicator recorded an increase, explained by the greater growth of debt versus the one shown for income. However, household incomes remain above the past two years average levels, which has resulted in expectations indicators remaining in positive and high levels. In recent months, greater demands are being recorded by credit institutions to extend consumer lending, which could influence on the households' future debt and financial burden growth.

With regard to credit risk, quality (QI) and default (DI) indicators did not show significant variations during the last year. In December 2013, QI and DI stood at 6.6% and 3.1% respectively, similar figures to those found a year ago (6.6% and 3.2%). By type, microcredits showed the greatest increase, both in QI and DI, while consumption and housing showed improvements. In the case of the commercial portfolio, stability in its indicators was observed.

When analyzing exposure to market risk, it appears that this increased, given the greater balance exposed for different entities, which was reflected in the increase in potential losses of the portfolio due to interest rate changes. With this analysis, the TCs, the ICs and the funds administered by the pension and severance funds management companies would be the most vulnerable to a decline in the prices of these assets. On the other hand, during the second semester of 2013, credit institutions registered liquidity levels above the minimum established by regulation. In addition, banks have shown an increasing trend in their liquidity indicator.

In summary, by December 2013, the financial system portfolio showed a decrease in its growth rate, after the stable behavior recorded since late 2012. This was accompanied by an evolution without significant variations in the quality and default indicators compared to December 2012. On the debtors' side, considering different stress scenarios on the private corporate sector firms, a substantial deterioration on their financial status is not observed, nor a significant materialization on the system's credit risk. In the case of households, an increase in the financial burden during the studied period is highlighted. Also, an increase in potential losses for the financial system derived from market risk was noticed, together with an increase in the banks liquidity level.

José Darío Uribe Escobar
Governor

FINANCIAL STABILITY REPORT

Written by:
Financial Stability Department
Monetary and International Investment Division

Under the mandate given by the Constitution of Colombia, and according to regulations established by Act 31 of 1992, Banco de la República is responsible for ensuring price stability. Proper completion of this task depends crucially on maintaining financial stability.

Financial stability is understood as a situation in which the financial system efficiently intermediates financial flows, contributing to a better allocation of resources and therefore to the maintenance of macroeconomic stability. Thus, financial instability directly affects macroeconomic stability and Banco de la República's capacity to fulfill its constitutional mandate, which highlights the need to promote monitoring and maintenance of financial stability.

The tasks that Banco de la República performs in order to promote financial stability are the following: first, the Bank is responsible for ensuring the proper functioning of the Colombian economy's payment system; second, the Issuer provides liquidity to the financial system through its monetary operations and by using its constitutional feature as lender of last resort; third, the Bank contributes, together with the Financial Superintendence of Colombia, and within its functions as credit authority, in designing financial regulatory mechanisms to reduce the incidence of episodes of instability; finally, Banco de la República exercises a careful monitoring on the economic trends that may threaten financial stability.

The Financial Stability Report is in the framework of this last task, serving two purposes: first, to describe the recent performance of the financial system and its main debtors in order to visualize future trends around this behavior; second, to identify the major risks faced by credit institutions. With these goals, it is purported to inform the general public about the trends and risks related to the financial system as a whole.

Technical Management
        Hernando Vargas
        Manager

Monetary and Reserve Division
        Pamela Cardozo
        Chief Officer

Financial Stability Department (*)
        Esteban Gómez
        Acting Department Head

        Wilmar Cabrera
        Laura Capera
        Jessica Castaño
        Felipe Clavijo
        Juan Pablo Franco
        Jorge Luis Hurtado
        Juan Sebastián Lemus
        Miguel Ángel Morales
        Javier Eliécer Pirateque
        Carlos Andrés Quicazán
        Juan Sebastián Rojas
        Ana María Yaruro

I.   MACROECONOMIC ENVIRONMENT

The international situation in the second semester of the year was characterized by the gradual recovery of the euro zone and the United States' economy, as well as by a recovery of the Chinese economy. Thus, the growth forecast for 2014 was revised upwards. As for Latin America and the Caribbean, growth rates slightly over the ones registered in 2013 are expected this year. Colombian financial markets exhibited adequate levels of liquidity and less volatility in the second semester, in spite of the significant impact of global uncertainty concerning the moderation of the monetary policy in the United States on local financial markets and on the economies of the region in general.

A.   INTERNATIONAL ENVIRONMENT[1]

During the second half of 2013, global economic activity strengthened and growth forecasts for 2014 were revised upwards. Forecasts for the years 2014-2015[2] are shown on Chart 1. According to the International Monetary Fund (IMF), it is expected that the world output growth would be of 3.7% in 2014 and 3.9% in 2015, figures above the projections for October 2013 and which respond to the positive dynamics of the advanced economies in the second half of 2013, and the upturn of the Chinese economy in the last quarter of that year. In fact, for advanced economies, as well as for the developing and emerging markets, a GDP growth of 2.2% and 5.1% respectively is projected for 2014, while for 2015

---

1   Economic growth data presented in this section is in real terms.

2   January 2014 update of the International Monetary Fund (IMF) Economic Outlook Report presented in October 2013.

Chart 1
Economic growth
(annual percentage variation)

	Current projections			Differences with October of 2013 projections		Projection
	2012	2013	2014	2013	2014	2015
World Output	**3.1**	**3.0**	**3.7**	**0.1**	**0.1**	**3.9**
Advanced economies	1.4	1.3	2.2	0.1	0.2	2.3
United States	2.8	1.9	2.8	0.3	0.2	3.0
Eurozone	(0.7)	(0.4)	1.0	0.0	0.0	1.4
Japan		1.7	1.7	(0.3)	0.5	1.0
United Kingdom		1.7	2.4	0.3	0.5	2.2
Canada	1.7	1.7	2.2	0.1	0.0	2.4
Other emerging and developing market countries	4.9	4.7	5.1	0.2	0.0	5.4
Latin America and the Caribbean		2.6	3.0	(0.1)	(0.1)	3.3
Brazil	1.0	2.3	2.3	(0.2)	(0.2)	2.8
Mexico	3.7	1.2	3.0	0.0	0.0	3.5
Asian developing countries	6.4	6.5	6.7	0.2	0.2	6.8
China	7.7	7.7	7.5	0.1	0.2	7.3
India	3.2	4.4	5.4	0.6	0.3	6.4
Colombia	4.0	4.0[a/]	4.3[a/]	0.3	0.1	4.5[b/]

a/ Banco de la República projection.
b/ IMF projection range for 2015-2018 (World Economic Outlook, October of 2013).
Source: IMF (World Economic Outlook Update, January of 2014).

forecasts are located in 2.3% and 5.4%, respectively.[3] In the case of Colombia a growth of 4.3%[4] for 2014 and 4.5% for 2015[5] is projected.

In the Euro zone economy, growth of 0.5% in the last quarter of 2013 indicates that, after seven quarters of negative growth, the region has emerged from recession, mainly driven by an external demand recovery, a less contractionary fiscal policy

---

3   In the October o 2013 Economic Outlook Report, economic growth projections for advanced economies, as well as for developing and emerging markets in 2014, were placed in 2.0% and 5.1%, respectively.

4   This figure corresponds to the average forecast interval of Banco de la República.

5   IMF's projection range for 2015-2018 (Economic Outlook Report, October 2013).

Figure 1
Eurozone confidence index
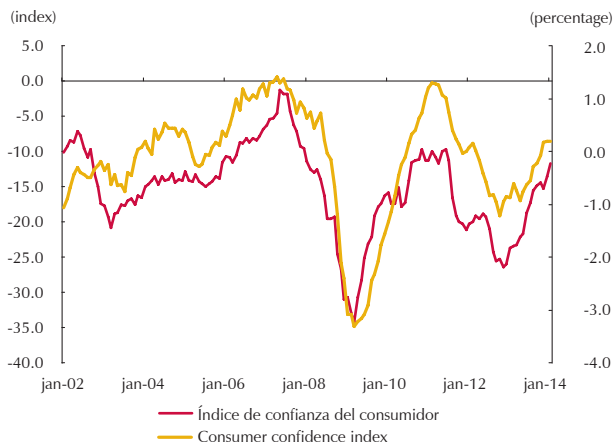
Source: Bloomberg.

and progress in regional financial integration.[6] This improvement in the economic situation has also been evidenced in the purchasing managers' index (PMI) and consumer and producer confidence indexes, which in December 2013 and January 2014 recorded above the average levels for the past two years[7] (Figure 1). Likewise, it is emphasized that the credit default swaps (CDS)[8] from countries like Spain, Germany, Ireland and France, have been falling since the second half of 2012, decreasing, on average, from 223.9 to 109.2 in the second half of 2013. During the course of 2014, that average has continued to decline, being located at 77.8.[9]

Despite these positive data, economic risks within the region remain. In 2013, the economy contracted by 0.4%, unemployment rate is at historic highs, fiscal imbalances have not disappeared, and the financial markets are still fragmented, making it difficult to buoyant domestic aggregate demand. Also, the IMF has warned of the risk of the lower inflation rates that have been recorded since mid-2011, as inflation expectations in the longer term could be decreasing and inflation would be lower than expected, therefore it would increase the real burden of debt, having premature expansion of real interest rates with the probability of deflation increasing if adverse shocks on the economic activity take place.[10]

---

6   Since November 2014, common banking supervision would begin to be implemented by the European Central Bank. It is important to note that before the coming into operation of this mechanism, there will be an assessment of the banks' balance sheets and a stress test, in order to identify and meet the possible needs to recapitalize some institutions, so that supervision over a financially sound banking system would be carried out.

7   In December 2013 and January 2014, the PMI was 52.7 and 54 respectively, while the average of the last two years was 47.6. Meanwhile, the consumer confidence index stood at -13.5 and -11.7 in December 2013 and January of 2014 in that order, both above the average figures for the last two years (-20.7) . Also, the producer confidence index was above the last two years average (0.2 in December 2013 and January of 2014, compared to -0.49 on average for the last two years).

8   A CDS is a financial contract agreed between an entity and a holder of a bond. Under that contract, the holder of the bond pays a premium to the entity, measured in basis points, in return for this to pay for the nominal value of the bond if the issuer does not comply with its obligations. The valuation of CDS has a direct relation with the investors' aversion risk level.

9   It is noteworthy that Portugal does not follow this trend. An increase in its CDS premiums in the second half of 2013 is evident, increasing from 375.2 in January-June 2013 to 427.2 six months later. However, in the first two months of this year this level has decreased to 275.8.

10   January 2014 update on the International Monetary Fund (IMF) October 2013 Economic Outlook Report.

(percentage)

Source: Bloomberg.
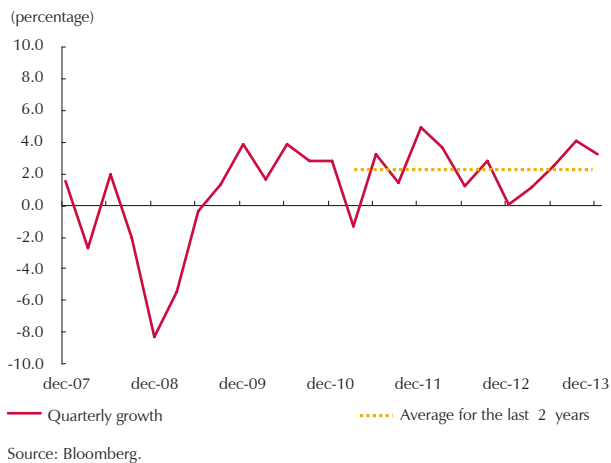
Similarly, the economy of the United States presented a positive trend in the second semester of the year, with a rate of growth of 3.6%[11], which placed economic expansion of 2013 at 2.7%, the highest rate of the last two years (Figure 2). This performance is mainly explained by a higher growth in household consumption and exports. Moreover, since the second semester of 2009, the unemployment rate has been declining from 9.8% to 7.1% four years later, a trend that is confirmed with the level reached in January 2014 (6.6%), the lowest figure since October of 2008. Likewise, between June and December 2013 the average consumer confidence index (77.5) was above the one from the previous year (67.7), and the one of the first six months of 2013 (69.0). It is noteworthy that by January 2014 this indicator was of 80.7, suggesting that the U.S. consumer confidence continues to strengthen.

The dynamics of the indicators for unemployment and consumer confidence could indicate that, for the current year, household consumption will be one of the engines of economic growth, which will be accompanied by a lower tax burden due to the recent budget agreement[12] that suspends government spending cuts until 2015. In response to the mentioned American economic strength and an improved outlook, the Federal Reserve (Fed)[13] decreased by $20 billion USD its asset purchase program, a process that has been called tapering.

When analyzing the performance of the Chinese economy, a greater dynamism is observed in the second half of 2013, largely due to an acceleration of investment, whereby economic growth for 2013 stood at 9.7%, down from 10.3% in 2012. It should be noted that this dynamic is expected to be only temporary, as recent economic policy measures by the Chinese government seek to curb credit growth, affecting economic dynamics in a negative way.[14] Additionally, although the PMI between June and December 2013 (51.0) was

---

11   It is worth noting that the dynamics of the two quarters was heterogeneous. In the third quarter of the year, the growth rate was 4.1%, while on the fourth it was 3.2%, which basically responds to the negative effects of the harsh winter suffered by the United States in the last months of the year, and the uncertainty generated by the discussions in Congress about the debt ceiling.

12   This budget agreement was approved by the United States Congress on the past December 18th, 2013.

13   After the December 2013 meeting, the chairman of the Fed announced a cut of USD $ 10 billion in the asset purchase program, an announcement that was complemented in January of 2014 with the adoption of a further cut of USD $ 10 billion. With this, the FED's purchase program moved from USD $ 85 billion to USD $ 65 billion, of which USD $ 30 billion will be used for the purchase of mortgage backed assets, and the remaining USD $35 billion to purchase Treasury securities.

14   These measures seek to revert the fiscal, commercial, financial and housing sectors present imbalances.

above the one of the previous year (50.1) and the one of the first half of 2013 (50.5), given the strong sensitivity this indicator has, the fall it had between the months of December 2013 and January 2014 (from 51 to 50.5) can be interpreted as a sign of declining prospects of the manufacturing sector within the country.

As far as the economies of Latin America and the Caribbean, higher growth rates for the present compared to 2013 are expected (3.0% vs. 2.6%) (Chart 2). However, for Argentina and Panama, a lesser expansion is expected, going from 3.5% and 7.5% to 2.8% and 6.9%, respectively. On the other hand, inflation rates expected for 2014 would show a similar behavior to those observed in 2013. Nevertheless, it is worth noting that for the current year, a 38.9% inflation rate is expected in Argentina, a higher figure than the one projected for 2013 (27.5%), while for Venezuela a lower level is estimated (46.0% vs. 35.0%).

Chart 2
Indicators for some countries in Latin America and the Caribbean

	Economic growth (annual percentage variation)			Inflation rate (annual percentage variation)			Current account balance (percentage of the GDP)		
	2012	2013[c]	2014[c]	2012	2013[c]	2014[c]	2012	2013[c]	2014[c]
Latin America and the Caribbean	**3.0**	**2.6**	**3.0**	**5.9**	**6.7**	**6.5**	**(1.9)**	**(2.4)**	**(2.4)**
South America									
Argentina[b]	1.9	3.5	2.8	25.2	27.5	38.9	0.0	(0.8)	(0.8)
Brazil	1.0	2.3	2.3	5.8	5.9	5.8	(2.4)	(3.4)	(3.2)
Chile	5.6	4.4	4.5	1.5	2.6	3.0	(3.5)	(4.6)	(4.0)
Colombia	4.0	4.0[a]	4.3[a]	2.4	1.9	3.0	(3.2)	(3.2)	(3.2)
Ecuador	5.1	4.0	4.0	4.2	2.4	2.6	(1.1)	(1.4)	(3.8)
Uruguay	3.9	3.5	3.3	7.5	8.9	9.1	(5.4)	(4.9)	(4.1)
Venezuela	5.6	1.0	1.7	20.1	46.0	35.0	2.9	2.8	2.2
Central America									
Costa Rica	5.1	3.5	3.8	4.6	5.0	5.0	(5.3)	(5.5)	(5.5)
El Salvador	1.9	1.6	1.6	0.8	2.3	2.6	(5.3)	(5.2)	(5.0)
Guatemala	3.0	3.3	3.4	3.4	4.8	4.8	(2.9)	(2.9)	(2.9)
Honduras	3.9	2.8	2.8	5.4	5.5	5.0	(8.6)	(9.0)	(9.2)
Mexico	3.7	1.2	3.0	4.0	3.3	3.1	(1.2)	(1.3)	(1.5)
Nicaragua	5.2	4.2	4.0	6.6	7.3	7.0	(12.9)	(13.4)	(13.0)
Panama	10.7	7.5	6.9	4.6	4.5	3.9	(9.0)	(8.9)	(8.5)
The Caribbean									
Dominican Republic	3.9	2.0	3.6	3.9	5.0	4.5	(4.8)	(4.5)	(3.9)
Guyana	4.8	5.3	5.8	3.4	4.8	5.5	(15.6)	(19.6)	(17.8)
Surinam	4.8	4.7	4.0	4.4	3.0	4.0	4.2	(3.6)	(6.2)

a/ Banco de la República. projection
b/ Inflation figures are the ones presented by the country's Congress.
c/ Figures shown for the years are projected.
Source: IMF (World Economic Outlook Update, October of 2013-january of 2014).

Given the international situation, another measure that assesses the potential vulnerabilities within the region, is the current account balance. For the Latin America and the Caribbean aggregate, a deficit of 2.4% of GDP for 2013 and 2014 is projected, which is common to all countries, except Venezuela, with an expected surplus of 2.8% of GDP for 2013. Nevertheless, it is expected that by 2014 this figure decreases by 60 basis points (bp), standing at 2.2%. The highest deficits for 2013 were observed in Guyana (19.6%), Nicaragua (13.4%), Honduras (9.0%) and Panama (8.9%). Although for 2014 a relatively similar behavior in the current account balance is expected, it is worth noting that a deepening deficit of 2.4 percentage points (pp) is expected for Ecuador.

Fed announcements about a possible cut in the asset purchase program and the start of tapering had consequences on the economies of the region in 2013[15], and represent one of the most important risks for 2014. A decrease in capital flows would bring greater currency depreciation, interest rates increases, and even a lower growth than the expected for the negative effects of a fall in foreign direct investment (FDI). As seen in Figure 3, sovereign risk for the region's countries has increased since May 2013, where Venezuela, Argentina and Brazil are the countries that have a higher EMBI+.[16] In the case of Argentina and Venezuela, exchange rates and price stability difficulties should be remarked; while for Brazil, the concerns go around its current account deficit financing and, to a lesser extent, inflationary pressures.

Figure 3
EMBI+ for some Latin American countries
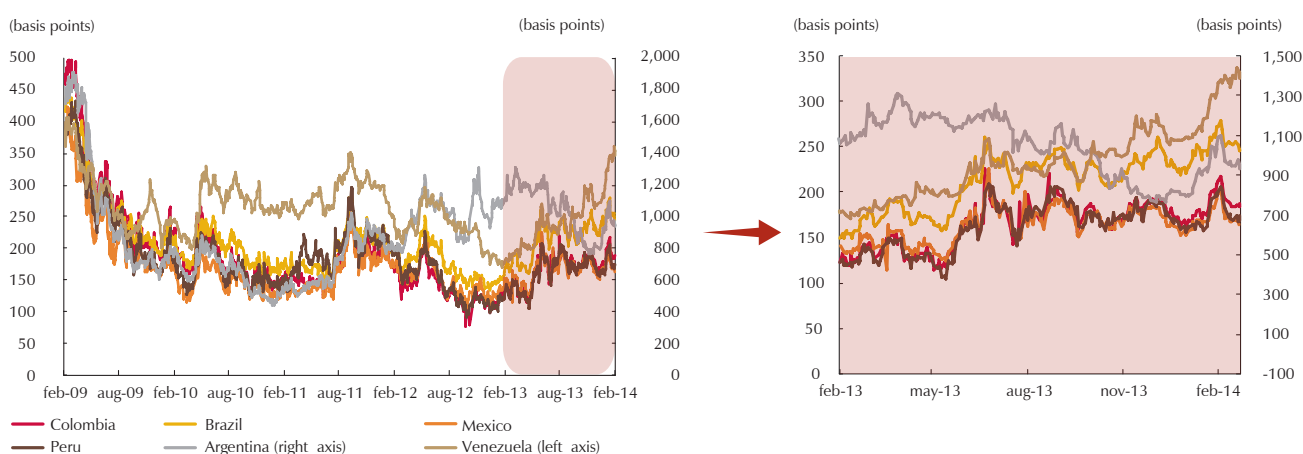
Source: Bloomberg.

---

15   For more details on the consequences of tapering in the local and regional financial markets, see section B on this chapter.

16   The Emerging Markets Bond Index Plus (EMBI+) is computed by JP Morgan to analyze the weighted behavior of sovereign debt bonds for 16 emerging countries.

Otherwise, the prices of commodities during the year 2013 presented different behaviors. The prices of oil, copper and coal remained relatively stable, with fluctuations of greater intensity in the price of oil, mainly due to conflicts in the Middle East (Figure 4). On the other hand, corn and gold had more pronounced drops in their prices during 2013. In the case of wheat, although it recorded a price drop versus the previous year, it was not as pronounced as those of corn and gold.

The price of Colombian coffee on the New York Stock Exchange had a downward trend during 2013. However, so far in 2014 it has picked up, partly by weather conditions that could affect the Brazilian harvest, and a recovery in the external demand. Regarding Colombia's[17] terms of trade index, it should be mentioned that it remains at historically high levels, and that a similar behavior as the one recorded for 2013 is expected for 2014.

Finally, with respect to global financial stability, it should be emphasized that some economic performance risks persist according to the IMF, due to the increase of corporate leverage, accompanied in many emerging economies with a higher exposure to foreign currency liabilities. It is further noted that in a number of markets, including many emerging ones, asset valuations could be under pressure if interest rates rise more than expected and affect investors' confidence.

Figure 4
Commodities price

(january 2006 = 100)

Oil — Copper — Corn — Colombian coffee
Gold — Coal — Wheat

Source: Bloomberg.

B. DOMESTIC FINANCIAL MARKETS

The behavior of the financial markets in Colombia during 2013 was closely linked to the international environment, particularly with the uncertainty caused by the advertisements of a possible gradual dismantling of the monetary stimulus program of the Fed in May 2013 (known as tapering). In response to the above, countries in the region experienced devaluations in their public debt and equity markets, and currencies depreciated against the dollar. Uncertainty regarding tapering continued in the second half of the year, although its effects on the financial markets in Colombia were more moderate, and in some cases even reverted after the strong reaction generated by the announcements.

---

17   Calculations based on the producer price index. It is defined as the ratio between the exported goods price index and the imported goods price index.

Indeed, the zero coupon rates of TES denominated in Colombian pesos, which showed significant increases in all the periods between March and June 2013[18], presented a relatively stable behavior in the second half of the year (Figure 5). When comparing the Colombian spot curve of June 28 with the one from December 27 of 2013, it is observed that for the period between 0 and 2 years, the rates' average shift was of -10 bp, while for the periods between 2 and 5 years and between 5 and 15 years, the changes were of -28 bp and 0 bp respectively.[19] Additionally, it is observed that the curve has presented further increases in all periods on the first months of 2014, possibly associated with the performance of emerging economies, particularly because of slowdown signs in the Chinese economy, as well as the uncertainty with respect to the path of the dismantling of the asset purchase program led by the Fed. Finally, the steepening of the yield curve of the TES B is worth highlighting, which shows the greatest reaction in the curve's longer terms. The change in the slope can also be seen in the expansion of the spread relative to the benchmark rate after the announcements of the Fed, which is higher in longer term titles (Figure 6).

Although the increase in the zero coupon rates was not an exclusive phenomenon in Colombia, the behavior in the second semester differed among Latin American countries (Figure 7). In particular, in Colombia, Mexico and Peru similar levels of rates were observed between June and December 2013, and an upward trend in the first months of 2014, while Brazil recorded an upward trend since mid-2013; Chile remains the exception, showing reductions in the zero coupon rate for ten year securities, which could be associated with both cuts in its monetary policy rate[20], as with a greater demand for sovereign securities by Chilean pension funds in search of safer assets (flight to quality).

Figure 5
Colombia spot curve

(percentage)

(percentage)
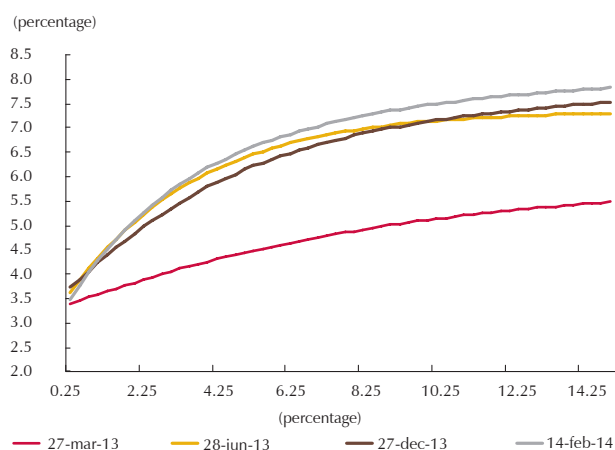
Sources: SEN (Electronic Negotiation System in Spanish) and MEC (Colombian Electronic Market in Spanish); Banco de la República calculations.

Figure 6
Zero rate, TES coupon and Banco de la República benchmark rate

(percentage)

Source: Banco de la República.

---

18   When comparing Colombian spot curves of March 27 and July 31 of 2013, it is noted that for terms between 0 and 2 years, the average rate increase was of 73 basis points, while for periods between 2 and 5 years, and between 5 and 15 years, the increases were of 175 bp and 236 bp respectively.

19   Specifically, for terms between 5 and 10 years, an average decrease of 13 bp was observed, which was compensated by an increase of the same magnitude in the longer end of the curve (10 to 15 years).

20   Chile's central bank cut its rate on October 17th (-25 bp) and November 19th (-25 bp).

(percentage)   (percentage)
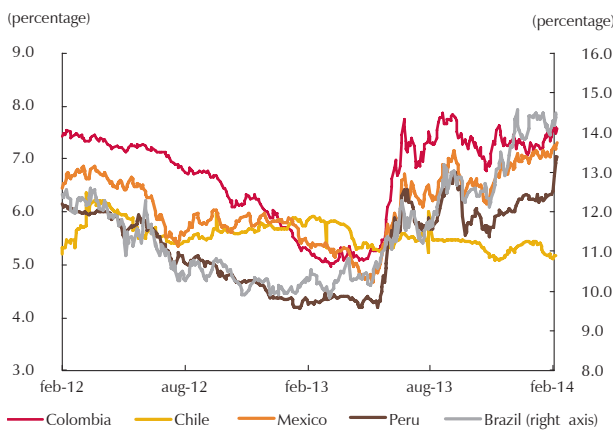
Sources: SEN and MEC; Banco de la República calculations.

(percentage)
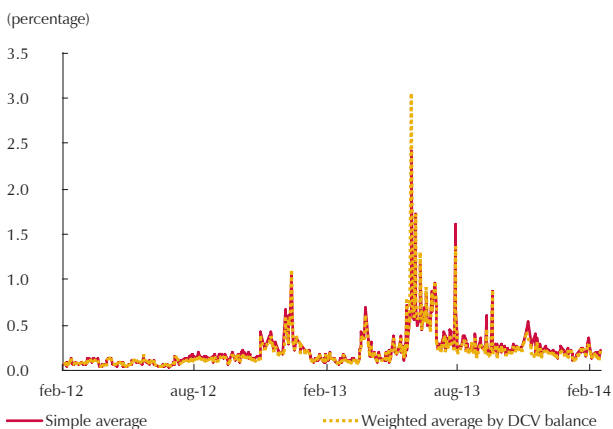
Sources: DCV (Centralized Securities Depository in Spanish) and SEN; Banco de la República calculations.

When analyzing the liquidity of the traded securities in the SEN[21], it is noticed that the TES' bid ask spread[22], which had presented increases in its volatility and level as a result of the Fed's announcement, showed a stable performance in the second half of the year, standing on average at 0.26%[23] (Figure 8). However, a lower liquidity degree was observed in this market compared to the second half of 2012, when the average bid ask spread was at levels close to 0.18%. It is important to mention that in the first months of 2014, market liquidity appears to be reaching again figures close to the ones reported prior to the announcement of the possible dismantling of the asset purchase program, registering an average level of 0.18%.

Throughout 2013, the interbank market interest rate (TIB in Spanish) was, on average, below the reference rate (-2.8 bp), while the market rate for simultaneous operations was placed, consistently, below the reference rate (-46.6 bp)[24] (Figure 9). Also, it should be remarked that the difference between the interest rate of simultaneous operations and the TIB

---

21   The Electronic Negotiation System (SEN for its Spanish acronym) is the centralized information system for transactions managed by Banco de la República, through which registered entities may carry out, on remote workstations, cash or forward trading, repurchase agreements (repo) transactions, simultaneous operations, temporary securities transfer operations (TTV in Spanish) with domestic or external public debt securities that are registered or held on a centralized securities depository. In addition, by this system, legally authorized financial institutions can make and record money lending transactions in the interbank market.

22   The liquidity level is measured by the bid ask spread. This spread shows the difference between the maximum price a buyer is willing to pay for an asset, and the minimum price at which he is willing to offer it. The greater the difference, the more illiquid the market is. The construction of the average bid ask spread can be found in Gonzalez and Osorio (2007). "El valor en riesgo ajustado por liquidez en Colombia", Reporte de Estabilidad Financiera, Banco de la República, marzo de 2007, pp. 120-126.

23   The bid ask spread is presented in relation to the securities' price.

24   During 2013, the simultaneous operations rate was above the benchmark rate only four times, corresponding to February 4th, 5th, 6th and 8th. The maximum difference occurred on February 8th, when the simultaneous operations rate was 4 bp above the benchmark rate.

(percentage)
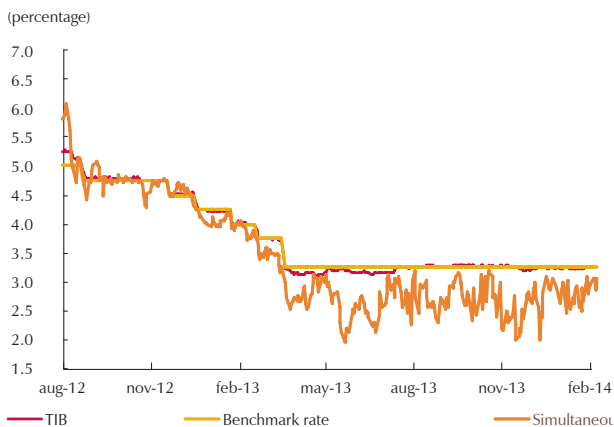
Source: Banco de la República.

has expanded since May, which might be associated to expectations of depreciation of the TES securities due to tapering, so some entities with short positions in those securities would seek to cover them in the simultaneous operations market.[25]

Regarding the private debt market performance in 2013, it shows a somewhat worse balance compared to 2012, since private securities issuances decreased by 9% (Figure 10). Nonetheless, it is important to emphasize on the private debt primary market dynamics in the fourth quarter of 2013, which recorded an increase in placements of 18% versus the same period of

Figure 10
Amount of private debt placements, by maturity and currency

(millions)
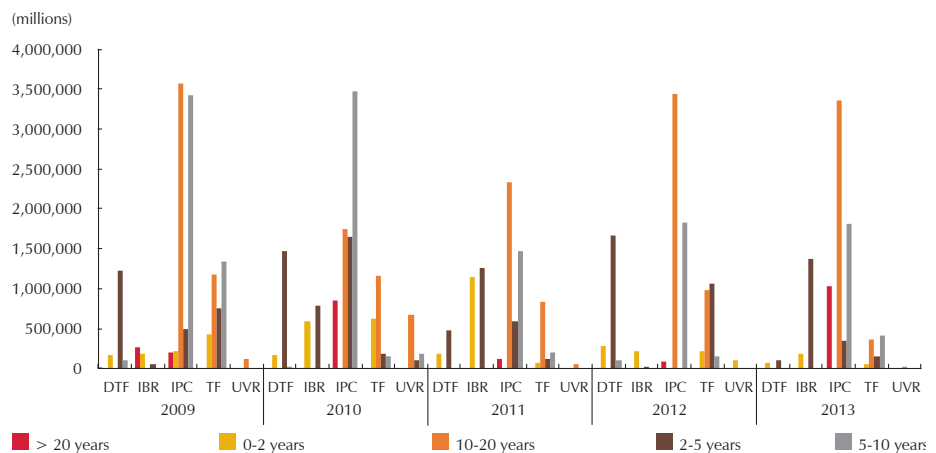
Note: DTF: Fixed term deposit ; IBR: Reference Banking Indicator; IPC: Consumer Price Index; TF: Fixed rate and UVR: Real Value Unit.
Source: Colombian Securities Exchange (BVC for its Spanish acronym).

2012 (a 79% growth compared to the amount placed in the third quarter of 2013). During the second half of the year, debt was issued in the amount of COP $4,225 billion, of which the financial sector participated with 27.6%, with maturities concentrated between 5 and 20 years (58.7%)[26], mostly tied to the consumer price index (CPI) (79%); albeit, it is also relevant to mention the high participation of securities tied to the IBR (Colombian

---

25   Indeed, in the Report on Financial Markets by Banco de la República for the fourth quarter of 2013, it is noted that since May 2013 the margin between the TIB and the rate of simultaneous operations has presented a high correlation with the rate of the TES.

26   During the second half of 2013, 20.8% corresponded to placements with less than 2 years maturity, 14.3% to maturities higher than 2 years and up to 5 years, 20.7% between 5 and 10 years, 38% between 10 and 20 years, and 6.2% on maturities over 20 years.

Banking Reference Indicator) (19%). Finally, the increase that occurred in the average margin of placements tied to the CPI in the second half of 2013, especially at the long end of the maturity structure (10 to 20 years), is highlighted. Such increase was of about 70 bp compared to the 2012 average, which is consistent with the observed movement in the yield curve for public debt securities.

Figure 11
Stock indexes for some Latin American countries

(percentage)

Source: Bloomberg; Banco de la República calculations.
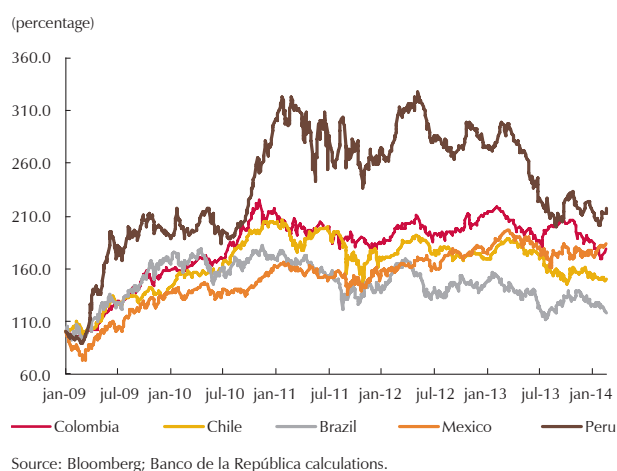
Figure 12
Trading volume and conditional volatility
(COLCAP)

(million Colombian pesos)   (percentage)

Fuente: Colombian Securities Exchange (BVC); Banco de la República calculations.
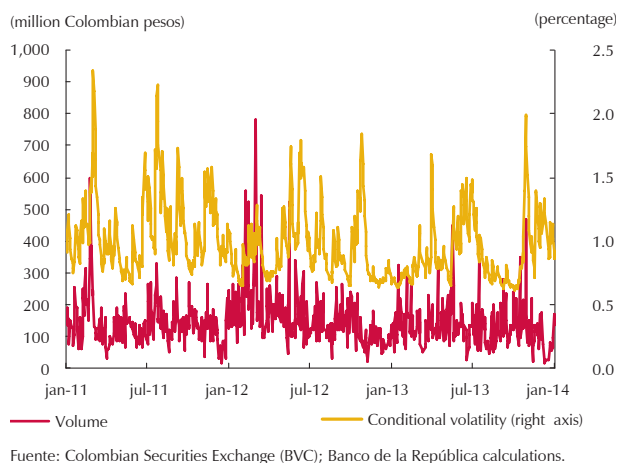
Meanwhile, the equity market in Colombia, as in other countries in the region, recorded significant depreciations during 2013, closely related to the behavior of international commodity prices, the downward review of growth projections in the region, and uncertainty regarding tapering (Figure 11). During 2013, the COLCAP[27] capitalization ratio accumulated a 12% depreciation, being higher than that reported by the exchange of Mexico (-2.2%), but lower than in Brazil (-15.5%), Chile (-14%) and Peru (-23.6%). Finally, during the second semester of the year, COLCAP's average negotiation volume was slightly below the average levels observed both during the first half of 2013, and the same period of 2012, while the conditional volatility presented similar values to those observed in the second half of 2012, and lower than those recorded in the second quarter of 2013 (Chart 12).

In short, during the second semester of 2013, the global economic activity strengthened, and growth forecasts for 2014 were revised upward. With regard to global financial stability, it should be emphasized that according to the IMF downside risks persist, given that corporate leverage has increased, accompanied by greater exposure to liabilities in foreign currencies in many emerging market economies. During 2013, particularly in the first half, the international context impacted the local financial markets significantly and, in general, the economies of the region, mainly through interest rate increases of public debt securities and devaluations in the equity markets. Despite the above, the financial markets in Colombia showed

---

27   COLCAP is a capitalization index that reflects changes in the prices of the 20 most liquid shares in the Colombia Securities Exchange (BVC), where the share of each stock in the index is determined by the corresponding value of the adjusted market capitalization (floating stock of the company multiplied by the last price). As of November 1, 2013, it replaced the IGBC as the leading indicator of the behavior of the Colombian stock market.

adequate levels of liquidity and lower volatility degrees, after the period of turbulence generated by the uncertainty of the start of the Fed's tapering. In the future, it will be important to maintain a careful monitoring over the potential effects that the reduction in global liquidity will have, given that possible capital outflows would affect the performance of equity and fixed income markets, as well as the value of currency.

II. FINANCIAL SYSTEM

A slight reduction in the growth pace of the gross loan portfolio is observed in the second semester of 2013, due to a slowdown of all modalities of the portfolio, except that for mortgage loan. In turn, investment increased slightly.

Upon analyzing the situation of credit establishments regarding profitability, a downward trend of the ROA and of the ROE is observed. On the other hand, its solvency registers above the regulatory minimum. Upon considering the evolution of its portfolio accounts, a smaller dynamism of deposits is observed, which is explained by the reduction in the growth rate of bonds, over a year CDTs, and savings accounts. Additionally, it is worth noting that a recomposition of CDT towards shorter expirations is observed.

Participation of non-banking financial institutions investments within the total financial system remained stable. Additionally, portfolios of greater size and growth to December 2013 were characterized by the high proportion of domestic public debt securities. On the other hand, mandatory pension funds' return on investments reduced and presented a greater exposure to unhedged foreign currency investments.

A. CREDIT INSTITUTIONS

1. General balance positions

The dynamics of the gross portfolio showed a slight slowdown after having been relatively stable since late 2012. Specifically, the mortgage loan portfolio showed an increase in its growth rate, while other portfolios recorded downturns. Meanwhile, growth in investment slightly increased, and its share in the assets of credit institutions remained relatively stable between June 2013 and December of the same year. On the liabilities side, a slowdown in bonds, over a year fixed term CD (fixed term certificates of deposits, CDT in Spanish) and savings accounts is observed, while the less than a year CDs had an increase in their rate growth.

Figure 13
Credit institutions assets

(trillion Colombian pesos as of December of 2013)   (percentage)
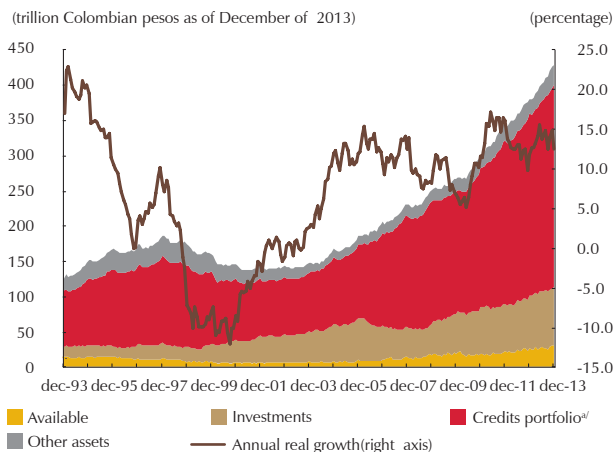
a/ Includes financial leasing and securitizations.
Source: Financial Superintendence of Colombia; Banco de la República calculations.

a.   Asset accounts

The annual real growth of assets of credit institutions showed a decrease by December 2013 with respect to the observed one semester ago: by the end of the year, this dynamic was of 12.6%, reaching a level of COP $427.8 trillion (b). This variation is less than the one registered in June 2013 (13.8%); however, it is greater than the one in December 2012 (11.7%). This is explained by a slowdown in the gross portfolio and the relatively stable investments performance, cash assets and other asset components[28] during the last half of 2013 (Figure 13).

During the second semester of 2013, gross portfolio dynamics showed a slight slowdown after having been relatively stable since late 2012. The annual real growth rate in December 2013 (10.5%) is lower than the one reported in June of that year (12.5%) and to December's 2012 (11.8%). Thus, in December 2013 the total gross portfolio was at COP $286.0 trillion.

By credit type it is noted that in the last six months, all portfolios exhibited a slowdown, with exception of mortgage loan portfolio. Commercial loans showed a slowdown, reporting an annual real growth of 9.8% by December 2013, decreasing by 3.8 percentage points by June of the same year, but similar to that of December 2012 (9.4%). Also, the microcredit portfolio showed a growth rate decrease, from 17.7% to 15.1% in the second half of 2013. Similarly, the modality of consumption continues to slow down, reaching a variation of 10.0% by December 2013, when six months earlier it was of 11.0%. Meanwhile, mortgage loan portfolio securitizations recorded an increase on their growth rate, from 11.5% to 13.3% in the same period (Figure 14).[29]

Meanwhile, credit institutions investments amounted to COP $83.8 trillion in December 2013. The annual real growth rate showed a slight increase, moved from 12.7% in June to 13.3% in December of the same year (Figure 15).

---

28   Among other asset components, these include: bankers acceptances, cash and other financial derivatives instruments, as well as the other assets account.

29   Mortgage loan portfolio without securitizations presented an annual real growth of 25.7% in December 2013, showing an increase compared with the figure observed six months earlier (22.8%).

Annual real growth of credit institutions gross portfolio
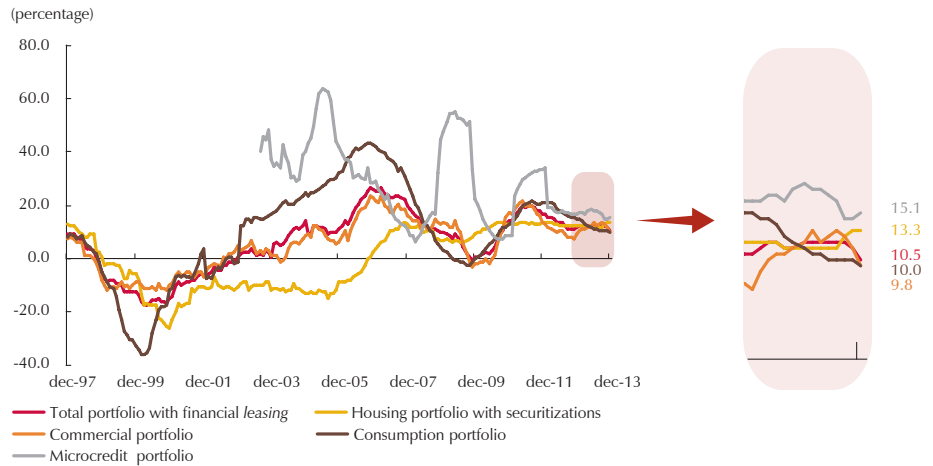
(percentage)

Total portfolio with financial *leasing*
Commercial portfolio
Microcredit portfolio
Housing portfolio with securitizations
Consumption portfolio

15.1
13.3
10.5
10.0
9.8

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

Figure 15
Credit institutions investments
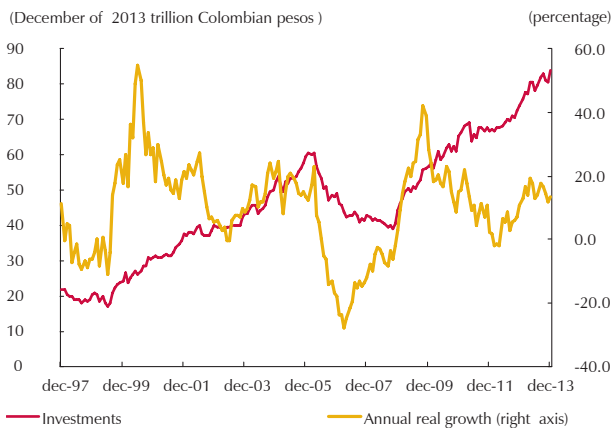
(December of 2013 trillion Colombian pesos)   (percentage)

Investments   Annual real growth (right axis)

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

Figure 16
Percentage share of investments and gross portfolio in credit institutions' total assets

(percentage)   (percentage)

Portfolio/assets   Investments/assets (right axis)
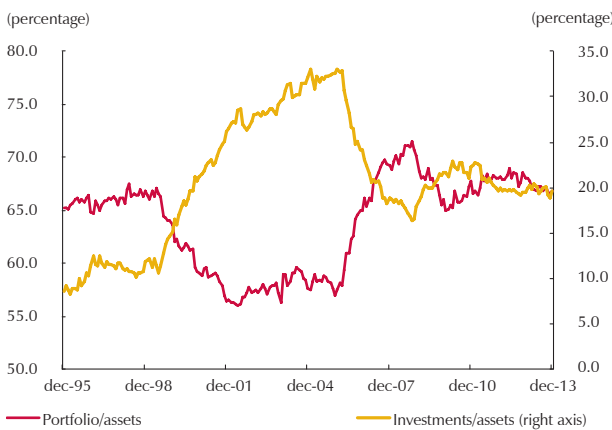
a/ Portfolio includes financial leasing and securitizations.
Source: Financial Superintendence of Colombia; Banco de la República calculations.

The share of gross loans and investments within the total assets of credit institutions has remained relatively stable over the past two years, reaching 66.9% and 19.6% in December 2013, respectively.[30] (Figure 16).

Although total portfolio growth showed a slight decline over the last six months of 2013, credit dynamics was higher than the GDP growth[31], which was reflected in increases in the financial depth indicator[32], which passed from 39.7% in June 2013 to 40.7% six months later (Figure 17). By type of credit, the largest indicator increase corresponds to the consumer portfolio, followed by mortgages with securitizations.

30   This reduction in the variability of the shares may be due to the regulation that has been created around the management of liquidity risk, which requires credit institutions to have a larger pool of liquid assets. (For further details, see External Circular 044 of 2011 of the Financial Superintendence of Colombia).

31   An annual forecast growth of 4.5% (real GDP) is used for the fourth quarter of 2013.

32   Financial deepening is a measure of the credit institutions' within the economic activity, and it is calculated as the ratio of gross loans, including securitizations, and the GDP.
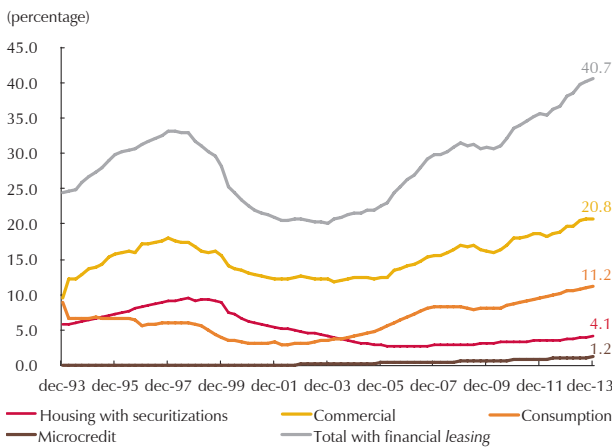
(percentage)

(percentage)

b. *Liability accounts*

The liabilities of the credit institutions reached a level of COP $364.7 trillion in December 2013, which corresponds to annual real growth of 12.3%, a figure lower than that seen six months ago (14.6%).

Liability consists especially of deposits[33], which in December 2013 accounted for 84.2%, followed by bank credits[34], contributing with 8.9%, and other components[35] with 6.9%. In that month, deposits totaled COP $307.0 trillion, presenting an annual real growth rate of 12.6%.

Regarding the composition of deposits, less dynamic on the bonds is observed, which recorded an annual real growth of 8.5% in December 2013, a figure down by 24.4 percentage points compared to six months ago. Also, savings accounts deposits showed a decrease in their growth rate, reaching 15.4% in December 2013, when six months before it was at 21.2%. Otherwise, the real growth rate of deposits in current accounts remained stable at 15.9%.
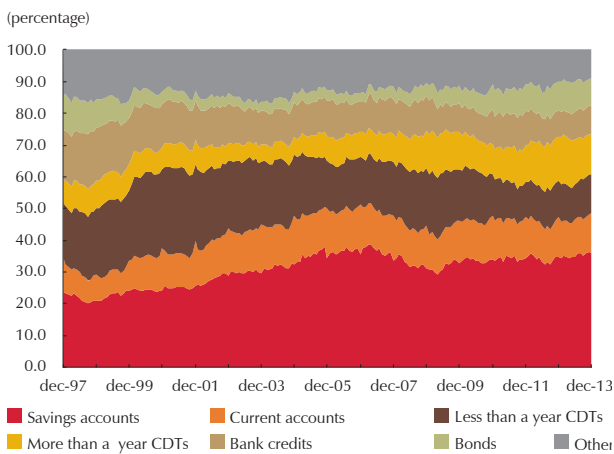
Furthermore, less-than-a-year CDs began to grow at a faster rate than the over-a-year CDs (19.5% versus 0.7% in December 2013), because the former had an acceleration of 8.5 percentage points between June 2013 and December of the same year, while the latter decreased their annual real growth rate in 17.2 percentage points. Contribution of the less-than-a-year CDs in total liabilities increased from 10.9% to 12.2% in the analyzed period, while the share of those CDs with a term longer than one year decreased from 14.2% to 12.6% in the same period. Significantly, during the last semester, bonds decreased their share from 9.6% to 8.6%, while current and savings accounts gained share in liability, from 11.7% to 12, 8% and 34.9% to 35.7%, in that order (Figure 18).

---

33   Deposits are the sum of deposit accounts, payables and bonds.

34   The registered value of loans is taken from banks and other financial institutions in the country or abroad in the form of direct loans.

35   The following accounts are included in this category: interbank funds, bankers' acceptances, accounts payable, estimated liabilities, provisions and other liabilities.

Figure 19
Credit institutions balance
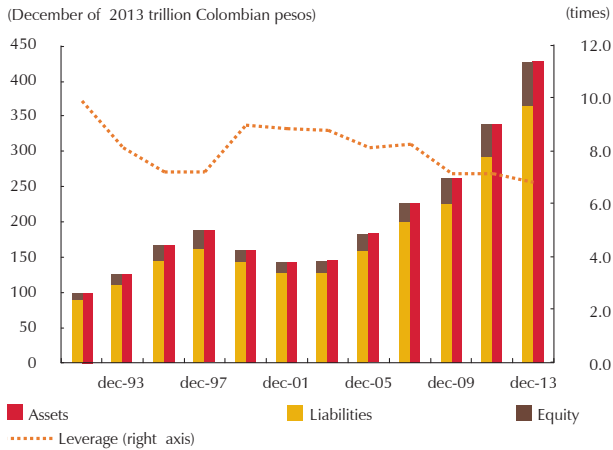
(December of 2013 trillion Colombian pesos)   (times)

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

Figure 20
Changes in the credit institutions income components

A.   Earnings

(December of 2013 trillion Colombian pesos)
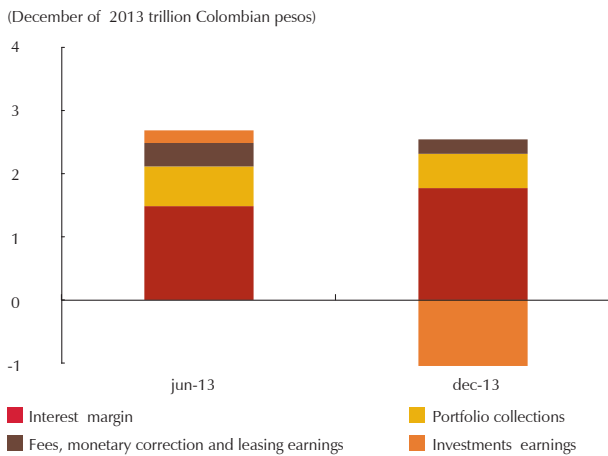
B.   Expenses and provisions

(December of 2013 trillion Colombian pesos)
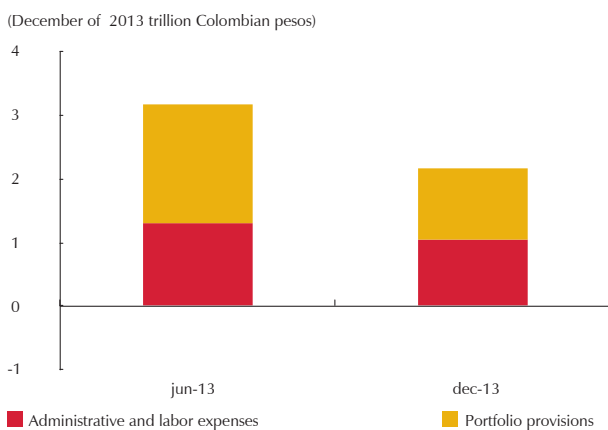
Source: Financial Superintendence of Colombia; Banco de la República calculations.

Finally, balance structure evolution of financial entities shows that the share of equity in total assets has continued to increase, akin to the behavior that has been taking place since December of 2007 (Figure 19). In December 2013, equity represented 14.7% of the total assets, while in the same month of 2011 it reached a level of 14.1%. Nonetheless, this has not led to significant changes in the total leverage ratio (total assets/equity), which stood at 6.8 times as of December 2013, when two years ago it was at 7.1.

2.   Income, profitability and equity soundness

By December 2013, the annualized income of credit institutions amounted to COP $7.5 trillion, representing an annual real growth rate of 0.1%, a figure slightly higher than that observed in June 2013 (-0.1%). This performance was due to an increase in the annual growth of interest margin earnings, which rose from 11.1% to 12.5% in the same period, and a decrease in the growth rate of administrative and labor expenses, which went from 9.1% in June 2013 to 6.9% six months later. Additionally, a decrease in portfolio provisions occurred, moving from an annual growth of 20.6% in June 2013 to one of 11.3% in December of the same year. However, this improvement was compensated by a decline in the annual growth of investment incomes, which moved from 4.5% to -21.1% between June and December 2013 (Figure 20).

Meanwhile, financial earnings are mainly composed of interest income, which in December 2013 accounted for 65.8%, followed by fees income, monetary correction and leasing (16.5%), investment income (9.2%) and other income (8.4%).Comparing these figures with ones from June 2013, a stable behavior of all items is observed.

Figure 21
Profitability indicators

A.   Return on Assets (ROA)
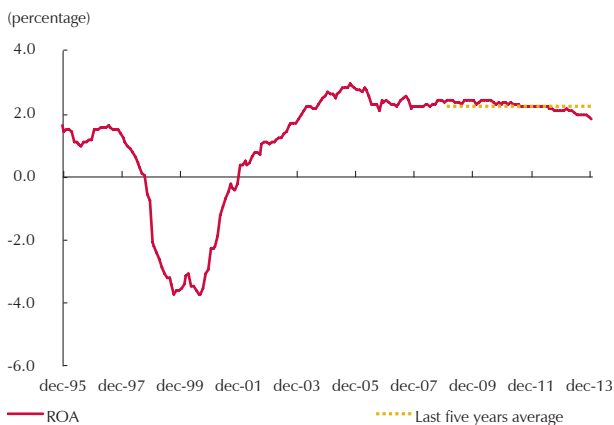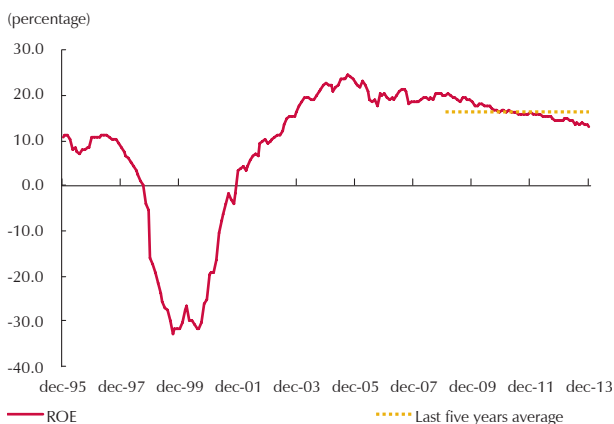
(percentage)

ROA	Last five years average

B.   Return on equity (ROE)

(percentage)

|	
ROE	Last five years average

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

Figure 22
Credit institutions solvency ratio

(percentage)

System	Last five years average	Minimum solvency ratio
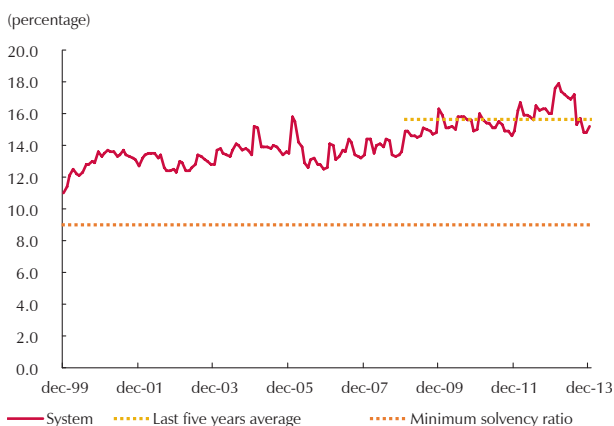
Source: Financial Superintendence of Colombia; Banco de la República calculations.

The profitability of financial institutions, measured by the return on assets indicator (ROA)[36], exhibited a slight downward trend during the second half of 2013, while for the return on equity indicator (ROE)[37] this trend is more pronounced. This performance is explained by a lower rate of income growth, compared to assets and equity. In December 2013, the ROA and ROE were at 1.9% and 13.0%, while six months earlier these indicators were at 2.0% and 13.6%, respectively. It is important to note that these values are below the average for the last five years (Figure 21).

Meanwhile, the capital adequacy ratio of the financial institutions is below the average of the past five years (15.6%); however, this ratio is above the regulatory minimum (9%). In December 2013, this indicator reached a level of 15.2%, lower than the Figure Begistered six months earlier (16.9%), and the one observed in December 2012 (16.0%) (Figure 22). This decrease in soundness is due to a decline of the technical equity (-5.5%) in the last half of 2013, and for an increase of the assets weighed by risk level (4.8%) in the same period. Nonetheless, it is worth noting that the decrease in soundness may be due to regulatory changes introduced by Decree 1771 of 2012, by which calculation method of this indicator was modified.[38]

3.   Intermediation margins

The ex-ante[39] intermediation margin for the whole system showed a decrease during the second semester of 2013, reaching a value of 6.0% for December of the same year, being 61 bp lower to the observed six months before. Regarding margin components for

---

36   This corresponds to the annualized income as a percentage of the average assets of each entity.

37   This is defined as the ratio between the annualized income and each entity's average assets.

38   These changes took effect on the 1st of August 2013.

39   The ex-ante margin corresponds to the difference between lending rates at which credit intermediaries place credits for each of their modalities and the deposit rate. Lending rates are weighted averages by the amount of disbursements for each of the portfolio modalities. On the other hand, deposits rates are weighted averages for the amount of raised CDs.
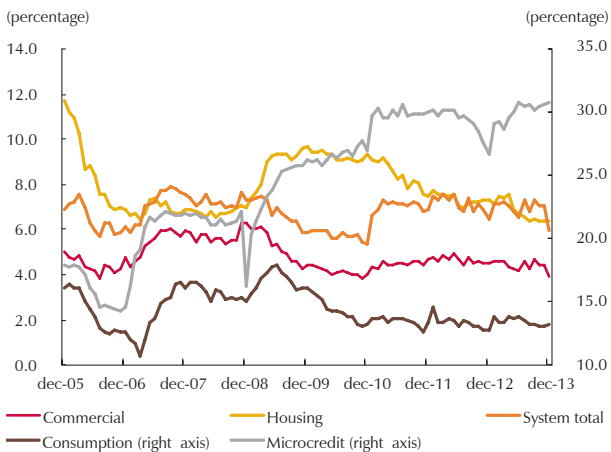
that period, deposits rates increased from 4.1% to 4.4%, while placement rates decreased from 10.7% to 10.3%. When performing an analysis by type of credit, a reduction in the ex-ante margin is observed in all portfolios: particularly those that showed the greatest reduction were consumption and housing, which presented a reduction of 54 bp and 28 bp in the second semester of 2013, recording levels of 13.3% and 6.4%, respectively (Figure 23).

Moreover, the ex-post[40] intermediation margin provided a relatively stable behavior during the second half of 2013, reaching a value of 7.1% in December of that year, with 5 bp lower than in June 2013 (Figure 24). This is because the implicit deposit and lending rates declined at similar levels. The first showed a decrease of 41 bp between June 2013 and December of the same year, reaching a level of 4.0%. For its part, the implicit lending rate increased from 11.6% to 11.1%. It should be noted that this margin is below the average of the last five years.

In conclusion, for the second semester of 2013, a slight decrease in the growth rate of the gross portfolio was observed, which reflects a slowdown in all portfolio types, excepting the mortgage loan portfolio. Meanwhile, growth in investments slightly increased.

When considering the evolution of the liability accounts of credit institutions during the last six months of 2013, a slower growth of deposits is observed. This is explained by the decrease in the growth rate of bonds over a year for CDs and savings accounts. In addition, it is worth noting that a restructuring of the CD towards shorter maturities is observed. Finally, in regards to the profitability and soundness of credit institutions, the downward trend in the ROA and ROE is remarked, being more pronounced for the latter, while capital adequacy ratio is placed over the regulatory minimum but below the average for the last five years.

---

40   This margin is compute as the difference between lending rates and implicit deposit rates, where the first is the interest income plus monetary correction, understood as the adjustments for changes in the real value unit (UVR in Spanish), as a percentage of the productive portfolio, and the second, the interest expenses plus monetary correction as a percentage of interest-bearing liabilities.

B. NON-BANKING FINANCIAL INSTITUTIONS

The analysis of non-banking financial institutions (NBFIs) is crucial for the purpose of this Report, because they are entities that can affect financial stability. On the one hand, they are economic agents that constitute savings and investment vehicles for households and the general public due to portfolio management. On the other, they are highly linked institutions with other financial agents, either as counterparts in their market operations, or because they belong to a financial group. Consequently, they are entities that could become systemic agents in certain contingencies. NBFIs that are analyzed in this section correspond to insurance companies (IC), proprietary and third-party positions of pension and severance funds management companies (PFM), trust companies (TC), stoke brokerage firms (BF) and investment management companies (IMC).

With the purpose of giving an order of magnitude to the size of each of the sectors that comprise the NBFIs, Chart 3 presents the value of their investments, their total share in the financial system[41], and their share in the gross domestic product (GDP). As of December 2013, the NBFIs portfolio presented an annual real growth of 3.1%, having COP $344.4 trillion, the equivalent to 49.0% of the GDP and 48.2% of the financial system investments. This increase is specially explained by the expansion of the funds managed by the TCs, the mandatory pension funds and life insurance companies. It is worth mentioning that the increase in this period was lower than in June, which is due to a lower growth in most of the portfolios analyzed, except for life insurance and proprietary and third-party positions of the BFs and IMCs.

Additionally, it is important to mention that the NBFIs maintained a stable share in the total portfolio of the financial system, accounting for 48.2% by December 2013. Moreover, it is worth noting that the most important portfolios, because of their size within each of the sectors studied, are the mandatory pension funds, life insurance companies portfolios (LIC), and the ones administered by the TCs and BFs, reason why the following subsections will be provide careful analysis to these funds.

---

41   Including financial institutions' total gross portfolio.

Chart 3
Investments value for non-banking financial institutions

	Dec-12			Jun-13			Dec-13		
	Trillion COP	Percentage of investments in the financial system	GDP percentage	Trillion COP	Percentage of investments in the financial system	GDP percentage	Trillion COP	Percentage of investments in the financial system	GDP percentage a/
Pension and severance funds management companies	**141.4**	**21.6**	**21.2**	**138.9**	**20.6**	**20.4**	**147.0**	**20.6**	**20.9**
Proprietary position	2.1	0.3	0.3	2.2	0.3	0.3	2.2	0.3	0.3
Mandatory pensions	122.9	18.8	18.5	120.9	17.9	17.8	128.7	18.0	18.3
Voluntary Pensions	10.1	1.5	1.5	9.9	1.5	1.5	9.9	1.4	1.4
Severance funds	6.2	1.0	0.9	5.8	0.9	0.9	6.2	0.9	0.9
Insurance Companies	**28.8**	**4.4**	**4.3**	**30.0**	**4.4**	**4.4**	**32.7**	**4.6**	**4.6**
General nsurance	6.4	1.0	1.0	6.7	1.0	1.0	6.8	1.0	1.0
Life insurance	20.8	3.2	3.1	21.7	3.2	3.2	24.3	3.4	3.5
Trust Companies	**148.5**	**22.7**	**22.3**	**150.2**	**22.3**	**22.1**	**156.4**	**21.9**	**22.2**
Proprietary position	1.1	0.2	0.2	1.1	0.2	0.2	1.1	0.2	0.2
Managed Funds	147.5	22.5	22.2	149.1	22.1	21.9	155.3	21.7	22.1
Brokerage firms and investment management companies	**9.1**	**1.4**	**1.4**	**8.0**	**1.2**	**1.2**	**8.3**	**1.2**	**1.2**
Proprietary position	1.6	0.2	0.2	1.4	0.2	0.2	1.3	0.2	0.2
Managed Funds	7.5	1.1	1.1	6.5	1.0	1.0	7.0	1.0	1.0
Total non-banking financial institutions	**327.8**	**50.1**	**49.3**	**327.0**	**48.4**	**48.1**	**344.4**	**48.2**	**49.0**
Total financial system b/	**654.2**	**100.0**	**98.3**	**675.0**	**100.00**	**99.22**	**714.1**	**100.0**	**101.56**

a/ December of 2013 projected GDP.
b/ Includes the credit institutions' total gross portfolio.
  Source: Financial Superintendence of Colombia; Banco de la República calculations.

1.   Pension and severance funds management companies (PFM)

i.   *Proprietary position*

The proprietary position assets of the PFM amounts to COP $3.4 trillion by December 2013, which had no significant changes compared to that observed in June of the same year. Investments represent the most important item of this

account, registering COP $2.2 trillion, equivalent to 64.8% of the total assets of these entities, and 0.3% of the investments in the financial system. Moreover, when the ratio of these assets as a proportion of liabilities is measured, in order to see if obligations are backed by asset positions, we find that between June and December 2013, this ratio was stable at 4.2 times.

Regarding the composition of the PFMs earnings, it is observed that the main item is the operating income, with a share of 98.2%. The latter, in turn, is composed in a 94.4% by revenues from commissions and fees.

On the other hand, when analyzing the profitability of these entities through the ROA and ROE indicators, a fall is observed, from 11.8% to 15.5% in June 2013 to 10.7% and 14.1 % six months later, respectively. The reduction in the ROA is explained by the fall of the annualized income (12.3%). This also determines the performance of the ROE, since decline in profits was greater than equity falls (3.5%). It is also important to monitor the ratio between equity and subscribed capital equity loss[42] of these entities, because if it registers below 0.5 times, the dissolution of the entity will take place.[43] This indicator increased from 11.7 to 13.0 times, following a drop of 13.5% of the subscribed capital stock, explained by the merger between Horizonte and Porvenir PFMs. It is worth noting that this value is above the average for the past two years (10.6 times).

In summary, the indicators presented suggest deterioration in the financial status of the PFMs, due to a fall in their profitability indicators and a reduction in equity and subscribed capital.

ii.   *Managed funds*

During the second semester of 2013, the annual real growth of funds managed by the PFMs reported a lesser dynamic. By December 2013 this value was at 2.5%, when six months earlier it was at 9.0%. This fall in the growth rate is partly explained by the lower return on investments during the second half of 2013, compared with that observed in the first half of the year.

Additionally, the balance of the managed funds registered a value of COP $152.2 trillion in December 2013 (Figure 25), sum that represents 20.3% of the investments in financial system, being the mandatory pension funds the ones with the greater share.

---

42   Ratio between equity and subscribed capital.

43   Article 457 of the Colombian Commercial Code.

(December of 2013 trillion Colombian pesos)   (percentage)
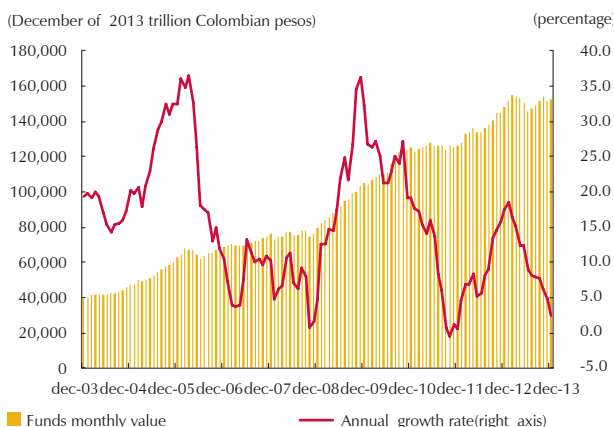
Source: Financial Superintendence of Colombia; Banco de la República calculations

Figure 26
Mandatory pension funds' (MPFs) average profitability for the last 5 years a/
(percentage)

a/ Since January of 2012, profitability information is taken from the moderate fund.
Source: Financial Superintendence of Colombia; Banco de la República calculations.

Figure 27
Biannual profitability for severance funds and minimal profitability

(percentage)
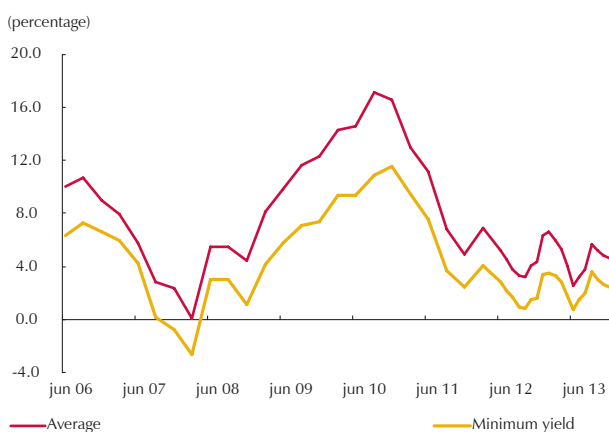
Source: Financial Superintendence of Colombia; Banco de la República calculations.

By separating the funds managed by the PFMs by type, it is found that the mandatory pension (MPF) funds recorded an annual real growth of 2.9% in their portfolio, reaching a level of COP $132.1 trillion by December 2013. Meanwhile, the severance funds (SF) showed an annual real growth rate of 1.7%, reaching levels of COP $6.7 trillion in December 2013. In the meantime, voluntary pension funds (VPF) exhibited a reduction in real terms of 1.1%, thus registering a value of COP $13.4 trillion at the end of 2013.

By analyzing the profitability of the MPFs[44] over the past five years, it shows that during the second half of 2013 a decrease in this indicator was registered, moving from 12.2% in June 2013, to 11.7% in December of the same year (Figure 26). It is noteworthy that profitability of conservative and programmed retirement funds has been, on average 1.8 percentage points (pp) above the minimum yield[45] they must meet since the implementation of this requirement in August 2013. Additionally, the minimum yield for the moderate and high risk funds is of 3.0 pp and 5.1 pp below the yield observed for these funds. However, this requirement is not in force for these last two funds.[46]

Moreover, the biannual profitability of the SFs showed an increase during the second semester of 2013, reaching a level of 4.6% in December 2013, compared to the 2.6% recorded six months earlier (Figure 27).

As for the composition of the MPF within the multifund scheme, no significant changes were recorded during the second half of 2013. The moderate

---

44   The calculation presented in Figure 26 shows the moderate fund's yield (87% of the MPFs on average since the start of multifund scheme; and is calculated as the internal return rate for moving window of the five years preceding the date of survey.

45   The calculation of the minimum yield has been performed for all funds with information since August 2011.

46   The requirement for compliance with a minimum yield came into effect since August 31 of 2013 for the conservative and programmed retirement funds, and will begin to be applied in August of 2014 for moderate and high risk funds respectively. See the box 'Reforms to the individual savings with solidarity pension regime' from the Financial Stability Report of September 2010.

fund is still concentrating most of the resources, representing 85.3% of the MPF by December 2013. Meanwhile, the conservative fund, high risk and programmed retirement funds participated with 7.0%, 1.0% and 6.7% respectively in the same month. This could be explained by two reasons: the first is that members have a preference for the moderate fund, and the second is that most of the members have chosen not to select any type of fund.[47]

By analyzing the composition of investments for each type of portfolio within the multifund scheme, it is observed that, in general, during the second half of 2013 a decrease in the share of domestic variable yield securities was seen, while there was an increasing exposure to external assets and unhedged foreign currency (which is presented as exchange exposure). It is important to mention that exposure to different debt securities is below the regulatory maximum for all funds. Finally, the redistribution that was observed was accompanied by an increase of 3.98% in the number of members for the analyzed period.

When disaggregating by fund type, it appears that the programmed retirement fund recorded an increase in public debt securities, while the moderate decreased its share. Meanwhile, conservative and high risk funds remained stable on their participation. Thus, the conservative and programmed retirement funds, due to their low-risk nature, remain concentrated in domestic public debt securities, registering ratios of 51.9% and 53.7% in December 2013, in that order.

Meanwhile, in the moderate funds, a decrease in the share of domestic variable yield securities of 1.6 pp, was observed, placing it at 31.1%. This decline was compensated by an increase in external assets and foreign exchange exposure, which in December 2013 represented 17.5% and 12.4% of the portfolio value in that order.

In the meantime, the high risk fund continues to present a diversified portfolio between local government debt securities, domestic variable yield securities and external assets. By December 2013, these participated with 26.9%, 35.0% and 30.6% of the fund respectively (Figure 28).

In addition, for all types of funds, an increase on the percentage of unhedged foreign currency portfolio is observed against that exhibited in June 2013. As of December 2013 this ratio was of 8.5% for the conservative fund, 16.3% for high risk, 12.4% for the moderate and 8.2% for the programmed retirement fund (Figure 28).

---

47   This is because, according to the regulation, people who did not choose a type of fund, is placed in the moderate one by default.

Figure 28
MPFs portfolio composition against existing legal limits

A.   Conservative fund
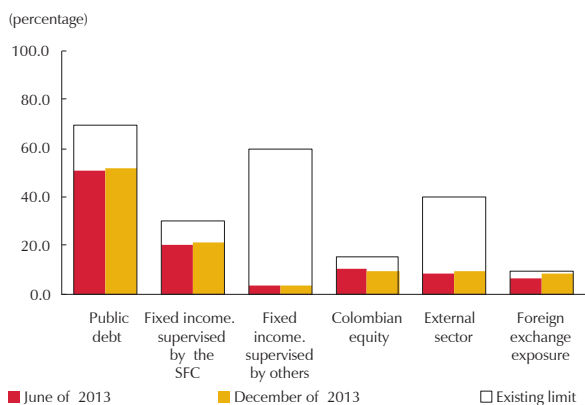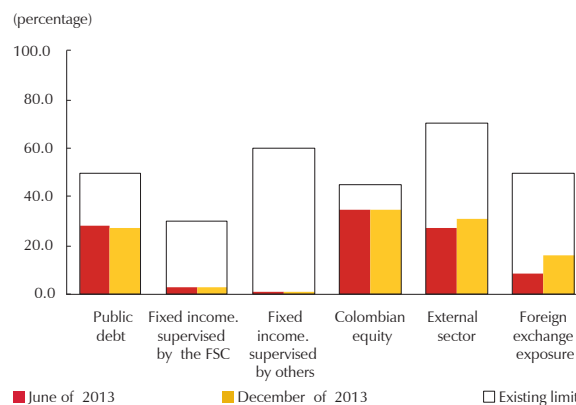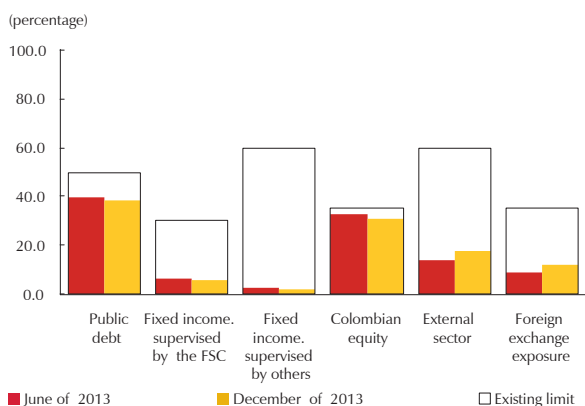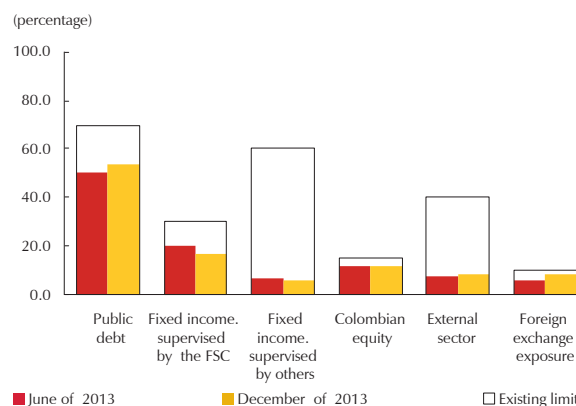
(percentage)

■ June of 2013   ■ December of 2013   □ Existing limit

B.   High risk fund

(percentage)

■ June of 2013   ■ December of 2013   □ Existing limit

C.   Moderate fund

(percentage)

■ June of 2013   ■ December of 2013   □ Existing limit

D.   Programmed retirement fund

(percentage)

■ June of 2013   ■ December of 2013   □ Existing limit

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

In summary, by December 2013, a slower growth in the value of the funds managed by the PFMs is observed, compared to the one in June of the same year. Also, a decrease in the profitability of several funds is presented, compared to what was shown six months ago. However, it is important to note that this indicator is above the minimum yield in all cases. Finally, a decrease in the share of domestic equity securities was observed, accompanied by an increase in exposure to external assets and foreign exchange.

2.   Trust companies

i.   Proprietary position

The proprietary position assets of the TCs amounted to COP $2.1 trillion as of December 2013, a slightly higher value than the one presented six months earlier

(COP $2.0 trillion). Investments and cash assets represent the most important items of this account, registering COP $1.1 trillion and COP $0.4 trillion respectively, which, together, equal to 73.9% of the total assets of these entities. However, their investments are only 0.2% of the investments in the financial system. Moreover, when the ratio of the assets as a proportion of the liabilities is measured, it is found that between June and December 2013 this ratio increased from 5.2 to 5.7 times.

Regarding the composition of the earnings of the TC, we observe that the main item is the operating income, with a share of 96.1%. This, in turn, is made in 76.9%, 5.6% and 5.2%, by revenues from commissions and fees, dividends and shares, and profits generated by valuation and yields, respectively.

By analyzing the profitability of these entities through the ROA and ROE indicators, a fall from 19.8% and 24.6% in June 2013 to 16.4% and 19.8% six months later, respectively, is observed. This reduction is explained by a decrease in the value of profits (13.5%), as well as an increase in assets (4.7%) and equity (7.2%). Additionally, the ratio between equity and subscribed capital of these entities went from 2.8 to 3.0 times, because the increase in subscribed and paid-up capital (1.7%) was lower than increase in equity. It should be noted that this indicator is at the average of the past two years.

In summary, the indicators presented suggest a mixed picture of the financial situation of the TCs. On the one hand, a decrease in the profitability indicators is observed. However, the backing for liabilities increased, and showed a higher level for the indicator of the ratio between equity and subscribed capital.

ii.   Managed funds

As of December 2013, the TCs managed funds[48] worth COP $272.9 trillion (38.8% of the GDP), which represents an annual real growth rate of 8.7%. Of these assets, 28.4% belong to management trusts, 26.8% to social security funds, 13.4% to mutual funds (MFs), and the remaining to trust property. Among the latter are the investment trusts (13.0%), collateral trusts (9.2%), real estate trusts (8.6%) and voluntary pension funds (0.6%) (Figure 29). Of the total of assets

---

48   Funds managed by the TCs come from different types of business: investment trust, where the client gives a sum of money to the trustee to invest in securities and take care of these investments; this modality is known as earmarking; management trusts, on which clients deliver assets to the trust without losing ownership of these, so that the trust manages them in accordance with what was agreed in the contract; real estate trust, which aims to manage resources and assets tied to a real estate project; collateral trust, where resources or assets that the customer placed as collateral for a debt to a third-party are administered; mutual funds trust, which manages funds whose resources come from two or more people for obtaining a collective economic performance; social security trust, which administers funds for the social security, and voluntary pension funds trust, that manages the funds that customers intended for that purpose.

Figure 29
Trust companies' managed assets distribution by type of business
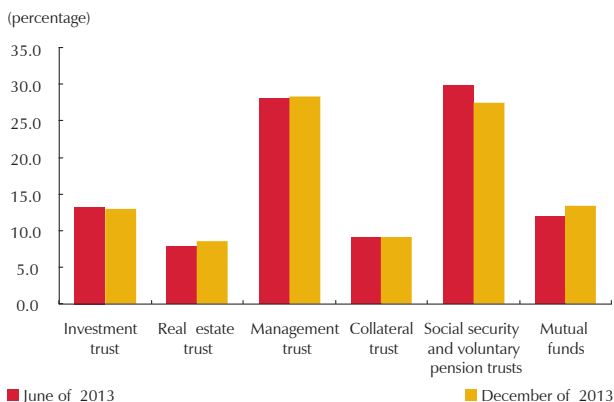
(percentage)

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

Figure 30
TCs investments compositions
(share percentage)

- 0.24 %
- 0.03 %
- 0.10 %
- 0.05 %
- 0.05 %
- 0.33 %
- 0.20 %

■ Domestic public debt
■ Shares
■ Securities from issuers supervised by the FSC
■ Foreign issued securities
■ Mutual funds
■ Securities from issuers not supervised by the FSC
■ Other securities
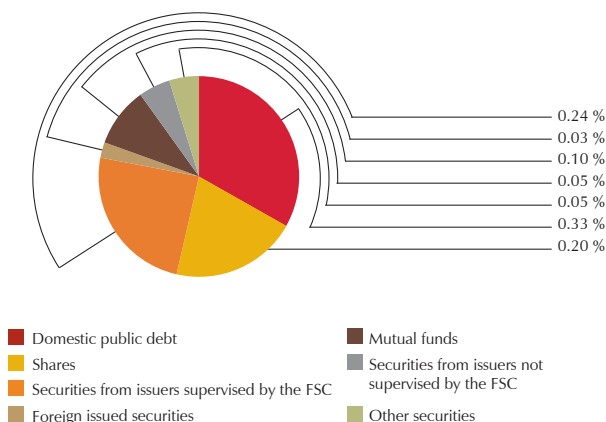
Source: Financial Superintendence of Colombia.

managed by the TCs, investments accounted for 56.9%[49] by December 2013, amount to COP $155.3 trillion, a figure that is COP $6.1 trillion higher than the one recorded six months earlier.

When analyzing the investment portfolio for these entities, it is observed that the largest shares are presented in investments in domestic public debt, securities from issuers supervised by the Financial Superintendence of Colombia (FSC), and stocks, which represent 33.2%, 24.4% and 20.4% of the total investments respectively (Figure 30). It is worth mentioning that in the last semester the share in stocks and securities from issuers supervised by the FSC fell, which contrasts with the increase in the share of public debt securities and MFs.

Additionally, the portfolio of the open-ended MFs is analyzed[50] because of its potential systemic effects, given that these funds are susceptible to financial runs by investors, in addition to the high level of resources they represent. The level of assets of these funds showed an increase, from COP $28.1 trillion[51] in June 2013, to COP $31.9 trillion in December of the same year, from which 31.8% corresponds to cash assets.

Regarding the behavior of the composition of the investments of these funds, it is observed that from June to December 2013, the share of bonds and CDs decreased, while it increased for the public debt securities (TES for its Spanish acronym), highly traded shares and domestic variable-yield securities. Note that these fund investments are concentrated in CDs (46.1%) and high volume trading shares (9.9%) (Figure 31).

---

49   Meanwhile, the property and equipment segment represents 10.7%, cash assets 10.0%, other assets 8.8%, and accounts receivable 7.5%.

50   In this type of portfolio investors can redeem their share against the fund manager in the terms stipulated in the contract, which may be within the next three working days, that is, at sight, or by the covenant of permanence required under that contract. For further details on the types of MFs, see the box 'Changes in the regulation of the financial system, 2012-2013' of the September 2013 Financial Stability Report.

51   These balances correspond to the market value in Colombian pesos plus interest of the FSC format number 351. The possession of these securities is accounted if they are not committed to repurchase transactions, temporary securities transfer (TTV in Spanish) or simultaneous operations involving the transfer of ownership of the security involved in the transaction; otherwise, these securities are counted to its counterpart.

Figure 31
Composition of the open-ended mutual funds
managed by the TCs
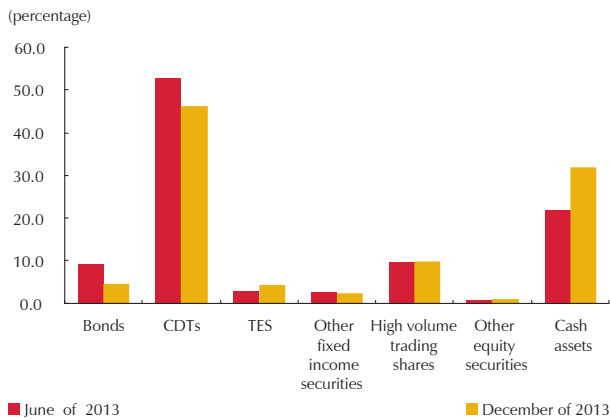
(percentage)

■ June of 2013   ■ December of 2013

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

Figure 32
Earnings composition

A.   BFs
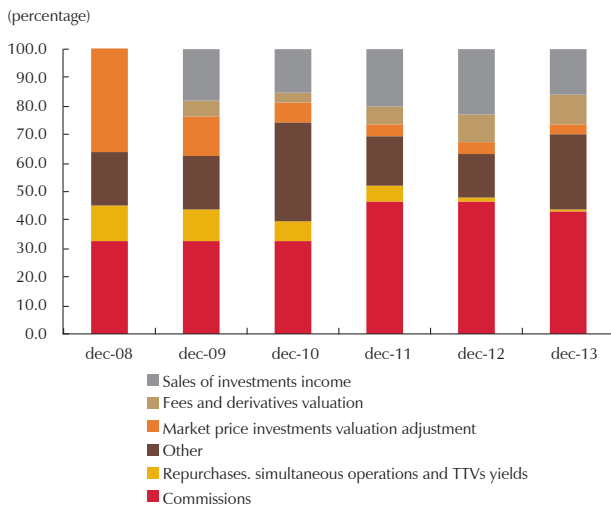
(percentage)

■ Sales of investments income
■ Fees and derivatives valuation
■ Market price investments valuation adjustment
■ Other
■ Repurchases. simultaneous operations and TTVs yields
■ Commissions

B.   IMCs

(percentage)

■ Commissions   ■ Repurchases. simultaneous operations and TTVs yields   ■ Other
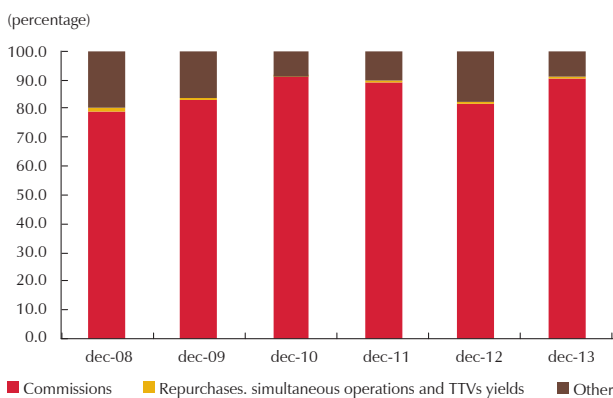
Source: Financial Superintendence of Colombia; Banco de la República calculations.

3.   Brokerage firms and investment management companies

i.   Proprietary position

The proprietary position assets of the BFs and IMCs totaled COP $2.4 trillion as of December 2013, a lesser value than six months earlier (COP $2.9 trillion). Investments are the most important item in this account, registering COP $1.8 trillion, which is equivalent to 75.0% of the total assets of these entities, although their investments only represent 0.2% of the investments in the financial system. Meanwhile, cash assets and accounts receivable are 9.4% and 8.8% of the assets respectively. On the other hand, between June and December 2013 the ratio of assets and liabilities increased from 1.4 to 1.5 times.

As for income composition, BFs obtained them from commissions charged to their customers (42.9%), profits from the sale of investments (16.5%) and from other income (26.2%). When the composition is analyzed over time, despite the drop in the most recent year, commissions are still the most important component to explain the income of these entities (Figure 32, panel A).

Earnings of IMCs come almost entirely from commissions (90.7%), which are derived from investment or securities funds management. The importance of the commissions for the IMCs has been high throughout the whole period of analysis (Figure 32, panel B).

By analyzing the commissions for BFs in detail, it will be found that the most important items are contracts by commission (35.7%), the management of securities or investment funds (32.8%), and correspondent agreements (14.7%)[52] (Figure 33, panel A).

---

52   With respect to such earnings, the contract by commission is an agreement by which the BF commits to buy or sell securities in its own name, but on behalf of an investor; on the other hand, the management of securities or mutual funds, is the agreement by which the entity commits to manage the resources of two or more investors, looking for the best collective economic benefit possible.

A.   Commissions

32.9%
14.7%
5.5%
2.9%
4.6%
3.6%
35.7%

- Commission Contract
- Securities or investment funds management
- Correspondent agreements
- Third-party securities portfolio management
- Money order commissions
- Placement of securities contracts
- Other

B.   Investments sale

62.0%
11.8%
18.9%
7.6%

- Negotiable investments in domestic public debt
- Negotiable investments in equity securities
- Negotiable investments in external public debt
- Negotiable investments in private debt

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

42.7%
1.1%
26.0%
17.1%
13.1%

- Domestic public debt
- Shares
- Securities from issuers not supervised by the FSC
- Foreign issued securiti
- Other securities
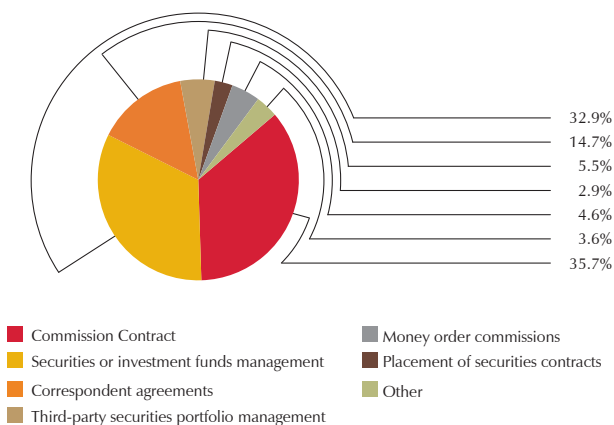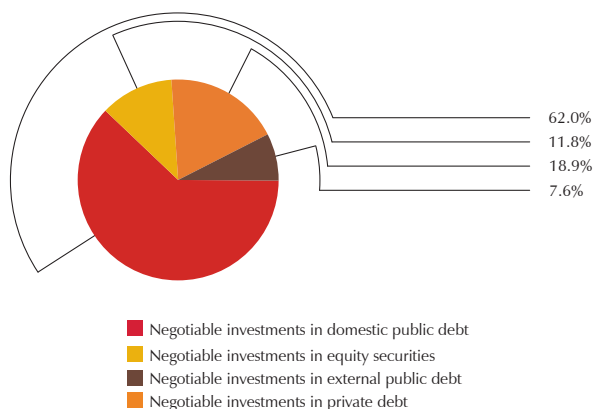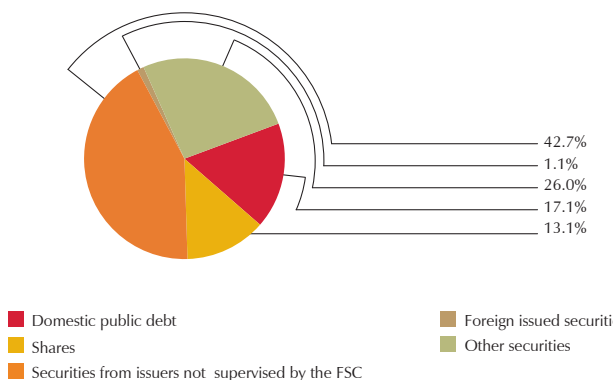
Source: Financial Superintendence of Colombia.

As for the profits from investment sales, it is observed that, in order of importance, these consisted of the sale of domestic public debt securities (62.0%), private debt (18.6%), equity (11.8%), and external public debt (7.6%) (Figure 33, panel B). It is worth mentioning that items with negative values were excluded from the above analysis; however, these do not have a significant representation in the sale of investments.

When analyzing the profitability of the BFs and IMCs via the ROA and ROE indicators, an increase from 1.8% to 6.5% in June 2013 is observed, to 3.0% and 8.7% in the month of December respectively. Higher values in these indicators are explained by the increase in the value of profits (31.7%), as well as the reduction in assets (18.5%) and equity (1.0%). Additionally, the equity loss indicator of these entities remained stable at 2.6 times for the last six months, although below the average for the last two years (2.9 times).

ii.   Managed funds

The assets value of the funds managed by the BFs and the IMCs reached COP $10.4 trillion in December 2013, compared to the COP $9.3 trillion in June of the same year, where investments represent 68% of these assets and 1% of the investments in the financial system. Meanwhile, the cash available accounts for 20.0% of total assets.

When the composition of the portfolio is analyzed, it can be seen that the major items are investments in securities of issuers supervised by the FSC, domestic public debt securities and shares, representing 42.7%, 17.1% and 13.1% respectively as a proportion of the portfolio (Figure 34).

Finally, according to Decree 2558 of 2007, there are contracts between the BFs and foreign or local entities for the promotion of the services which the latter offer; such contracts are called correspondent agreements, where the BFs could develop activities related to the delivery and receipt of money, securities and other complementary documents.

Figure 35
Composition of open-ended mutual funds
managed by the FBs and IMCs
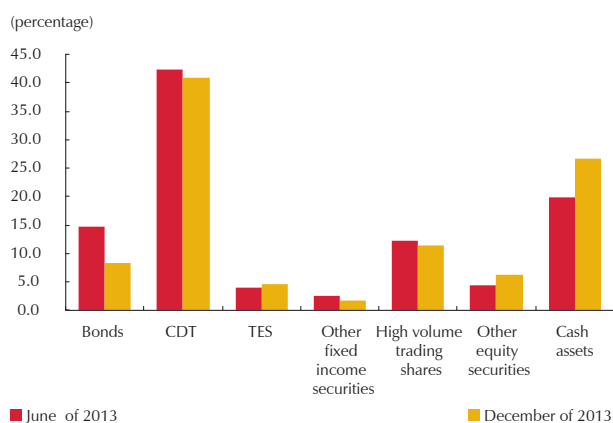
(percentage)

■ June of 2013　　　　　　　　■ December of 2013

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

Figure 36
ICs' investments composition

25.2%
7.2%
11.5%
6.5%
0.3%
1.3%
8.5%
32.8%
6.8%

■ Domestic public debt　　　　　■ Securities from issuers not supervised
■ Shares　　　　　　　　　　　　■ Other public debt securities
■ Securities from issuers supervised by the FSC　■ Bonds and mortgage securities
■ Foreign issued securities　　　■ External public debt
■ Mutual funds　　　　　　　　　■ Other securities
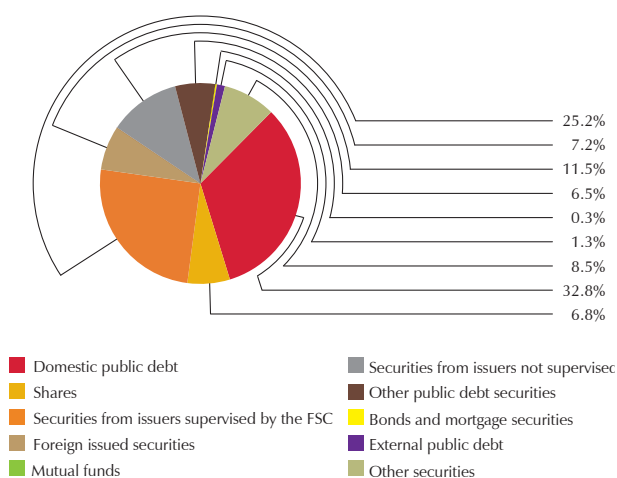
Source: Financial Superintendence of Colombia.

When analyzing the portfolio of the open-ended mutual funds, an increase is observed, since this went from COP $6.1 trillion in June 2013, to COP $7.2 trillion six months later; of which 26.7% is cash assets. Regarding the composition of the investments of these funds, it is noticed that from June to December 2013, the share of bonds and CDs decreased, while it increased for the TESs and domestic variable-yield securities. It is worth noting that these funds' investments are concentrated in CDs (41%) (Figure 35).

4.　Insurance sector

The assets of insurance companies were valued COP $44.7 trillion in December 2013, equivalent to an annual real growth of 8.0%. These assets are especially distributed among life insurance companies (64.9%) and general insurance (29.8%). Meanwhile, cash assets amount to 4.4% of the total assets. Additionally, the investments item is the most important component, representing 72.9% of the assets, which is why this report will deal with the composition of this subaccount (Figure 36).

The portfolio of these institutions is mainly composed by TES and securities of entities supervised and not supervised by the FSC, representing 32.8%, 25.2% and 11.5% of the total portfolio respectively. It is worth mentioning that the portfolio of life insurance and general insurance companies exhibits a similar composition to that presented above for the entire insurance industry.

In order to analyze the risks that this kind of entities may encounter, the claims ratio is initially observed[53], which rose from 47.1% to 44.6% between June and December 2013, which is explained by the higher growth of the premia issued (13.4%) compared to the paid claims (7.4%). A breakdown by type of company shows a mixed performance. On the one hand, life insurance companies showed a decrease in their claims ratio from 49.5% to 43.2% in the analyzed period. This is due to growth on issued premia (23.5%), which was higher than the paid claims (7.7%). On the other hand, general insurance companies increased their claims

---

53　This is calculated as the ratio of paid claims over premiums issued.

ratio, from 44.9% to 46.6%, as a result of slower growth on issued premia (4.2%) with respect to losses (7.2%).

Regarding the profitability indicators, the insurance industry exhibits a decline in ROA and ROE indicators between June and December 2013, from 1.9% and 8.5% to 1.4% and 6.4 % in that order. This behavior is due to a fall in profits (23.1%), along with increases in assets (5.7%) and equity (1.9%). By type of company, a similar dynamic is observed, since both, life insurance and general companies, exhibited reductions in both indicators.

Box 1
FOREIGN EXCHANGE AND SHORT TERM EXPOSURE INDICATORS BY CURRENCY FOR EXCHANGE MARKET INTERMEDIARIES (EMI)

The recent dynamics of the Colombian banking sector have been marked by its internationalization process. This trend has led some local banks to accelerate their expansion into foreign markets in recent years, seeking new business opportunities.

The regulation aimed at monitoring the entities' risks that are part of the financial conglomerates, has recently been addressed by the supervising authorities in different countries, who have recognized the effects the interaction of these entities might have on the financial stability, particularly when the group's subsidiaries operate in different regulatory environments. For example, in 2012 the Basel Committee presented the document 'Principles for the supervision of financial conglomerates', which defines international standards for a consistent and effective supervision of the financial conglomerates, especially those with operations in more than one country. Regarding the currency exposure of these groups, the Swiss Financial Market Supervisory Authority began requiring liquidity ratios by currency, proposed by the Basel Committee since June 2013, and will impose limits on it starting January 2015.

In order to monitor such risks, Banco de la República has implemented two instruments for measuring foreign exchange and liquidity exposure by currency for the EMIs: the foreign exchange exposure format and the short term exposure indicator by currency (EIC). Next, the measures implemented by the External Regulatory Circular DODM-139 published on the 20th of December 2013 are described:[1]

1.   Foreign exchange exposure by currency indicator

The proprietary position indicator that Banco de la República demands from the EMIs does not allow disaggregating exposures by currency. For example, an EMI could have a long exposure in dollars, and a short position in another currency (other than the Colombian peso) for an equivalent value in dollars, so that its proprietary position would not adequately reflect the risks taken by the institution. Additionally, the information requirement for this indicator is only done individually, i.e., it does not include the exposures that the subordinate entities may have.

In order to obtain information on foreign exchange exposures by currency from the EMI, the Bank implemented a

monthly format that includes both, individual information as well as consolidated, on the rights, obligations and the relationship between the net position (rights minus obligations) in each currency over technical equity. These data should be reported by all EMIs, even if they are not required to consolidate their financial statements with other entities, according to the Financial Superintendence of Colombia (FSC).

The format implemented by Circular DODM-139, complements the information obtained with the proprietary position indicator and the proprietary cash position in two ways: first, it allows counting on consolidated information, i.e., one that includes exposure, for both the parent company and its subsidiaries, even if these are in other countries. Second, the format allows measuring the exposure in different currencies, to the extent that the positions are registered in their real denomination and not in Colombian pesos, as it is reported in the consolidated balance sheet.

2.   Short term exposure indicator by currency

In order to obtain consolidated information about the short term exposure that the EMIs have in each currency, the Bank has implemented a format where the entities must report monthly information on liquid assets and short term requirements in every denomination. This format should be reported only by the EMIs, who are forced to consolidate their balance with other entities, in accordance with the instructions by the FSC.[2] This complements the information provided by the EMIs in the foreign exchange exposure format, to the extent that it determines the hedge degree that the entity has at the consolidated level on each denomination for a certain time horizon (thirty days).

Based on this information, institutions should calculate the EIC, which corresponds to the ratio between liquid assets (LA) and net liquidity requirements (NLR) of each currency for a thirty calendar-day horizon, subsequent to the information closing date:

$$EIC_x = \frac{LA_x}{NLR_x}$$

1   Changes through Circular DODM-139 March 5, 2014 are included.

2   Where there are entities in the financial conglomerate, which handle third party resources, only what corresponds to proprietary position should be included.

Where the x subindex denotes the currency on which the indicator is calculated.

The EMI must report the exposure indicator for currencies (including the Colombian peso) in which the sum of liabilities and assets (not from derivatives) consolidated by currency and the (nominal) gross position in derivative transactions exceeds 5% of the total assets reported on the separate balance sheet of the parent company (account 1 of the PUC, Spanish acronym for the Colombian Mandatory Chart of Accounts).

Liquid assets by currency correspond to the sum of cash assets and investments in debt securities, which are weighted taking into account a deduction (haircut) that depends on the liquidity of each security in the market. This item is divided into two categories: the first corresponds to highly liquid assets, among which cash assets and securities accepted by central banks for intraday trading, overnight, or those made daily are included.[3] The second is called 'Other liquid assets', and this takes into account the securities issued by governments, central banks and multilateral entities.[4] Assets in this category should relate at most to 30% of the total value of the liquid assets.

---

3   In the case of entities established in other countries, securities issued by the governments of the United States, Germany, France, Denmark, Norway, Sweden, Australia, Canada, New Zealand, the United Kingdom, Japan and Switzerland will also be included.

4   See Attachment 3 of Banco de la República's External Regulatory Circular DODM-139.

The NLR calculation for the EMI at the consolidated level is:

$$NLR_x = expenses_x - min\,[0.75(expenses_x);\ earnings_x]$$

Where x represents each currency. Both, earnings and expenses, must have a contractual maturity within a thirty days horizon subsequent to the closing date indicator. The entities that take deposits from the public must additionally include an estimate of non-contractual expenses, which is calculated as the amount of deposits and non-contractual payables increased by a factor of monthly net withdrawals.

The consolidated expenses and earnings flows with contractual and non-contractual maturity by currency, are the sum of those items for entities which consolidate with the EMI, avoiding double accounting for the transactions between related entities.

The first report for the foreign exchange exposure format must be submitted by the entities not later than April 23, 2014, with the closing date of 31 March of the same year. Meanwhile, the corresponding format for the EIC, should be reported for the first time on May 15, 2014, with closing date information as of April 30 of that year.

With the implementation of these formats and indicators, Banco de la República expects to obtain more information on foreign exchange risk to which the EMI are exposed, both at an individual as well as a consolidated level. This new regulation adds to the efforts of other regulators to keep a better track of the Colombian financial conglomerates.

Box 2

INTEREST RATES EVOLUTION BY PORTFOLIO AND THEIR EFFECT ON THE PROFITABILITY OF CREDIT INSTITUTIONS

This box analyses the developments in lending rates in the credit market during the last two years, with special emphasis between July 2012 and December 2013, when Banco de la República began to reduce its intervention rate. The analysis includes the impact that these changes have had on key profitability indicators as well as the behavior of concentration and competition of credit institutions (CI) in this period.

In general, the lending rates of the different types of portfolio reacted to the drop in the benchmark interest rate, after it started to decline since mid-2012. The decrease exhibited

in the interest rates for non-social housing (NSH)[1] and commercial portfolios is highlighted, which by the end of 2013 fell 1.94 and 1.64 percentage points (pp) in annual terms respectively; while the intervention rate was reduced by 1.0 percentage point. For non-social housing, this fall was accentuated by the implementation of the national government's

---

1   These rates do not include the discount for subsidies granted by the government.

Figure B2.1
Evolución de la tasa de interés nominal activa *ex ante* por tipo de crédito y tasa de referencia del Banco de la República

A.   NSH mortgage portfolio interest rate
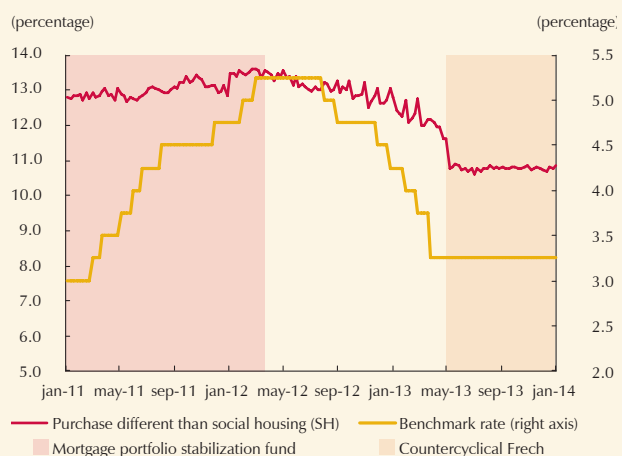
B.   Social Housing mortgage portfolio interest rate
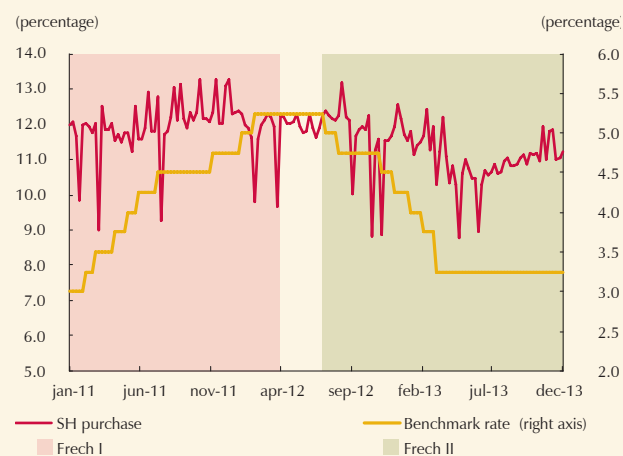
C.   Consumer portfolio interest rate
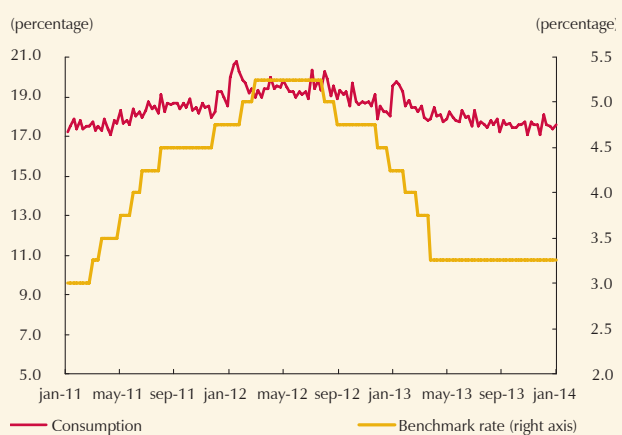
D.   Commercial portfolio interest rate
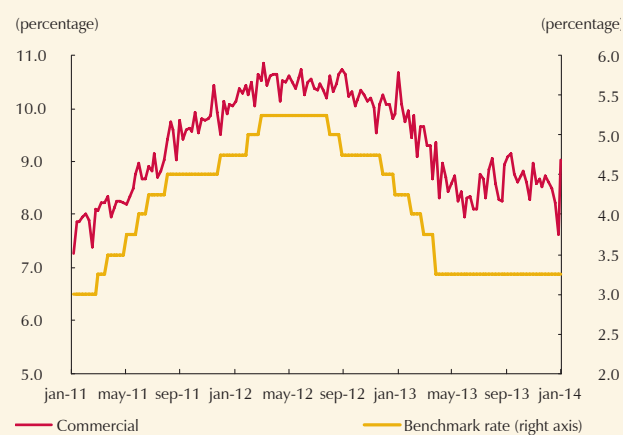
Source: Financial Superintendence of Colombia; Banco de la República calculations.

Plan to Enhance Productivity and Employment (PIPE for its Spanish acronym) (Figure B2.1).

a. Behavioral effects of rates on the CI's profitability

Since mid-2010, the ROA has been showing a declining trend, mainly explained because the average assets grew at a higher annual rate that the profits:[2] while the profits showed an average annual growth of 6.7%, the assets recorded an annual growth average of 12.3% (figures B2.2 and B2.3).

In order to analyze in detail the causes of the sustained slowdown on profits, changes in the income statement were

studied through the major margins that compose it (interest, financial, operating gross and operating net).[3] First, it is observed that the annual change in the interest margin level has remained relatively stable since mid-2012 (Figure B2.4), because the annual change in the level of portfolio interests income and the expenses on deposits interests has behaved similarly (Figure B2.5, panel A).

---

2   The average assets growth is mostly explained by the growth of the average portfolio, that between July of 2010 and December of 2013 passed from expanding 1.5% annually to 12.9% annually, averaging at 12.7%.

3   These margins are calculated as follows:
 - Interest margin = interests income – interests expenses
 - Gross financial margin = interest margin + other financial income – other financial expenses
 - Gross operating margin = gross financial margin + net operating income – administrative and labor expenses (ALE)
 - Net operating margin = gross operating margin – portfolio provisions + portfolio collections – other net provisions
- Gross profit = Net operating margin + Net non-operating income – other expenses

Figure B2.2
ROA
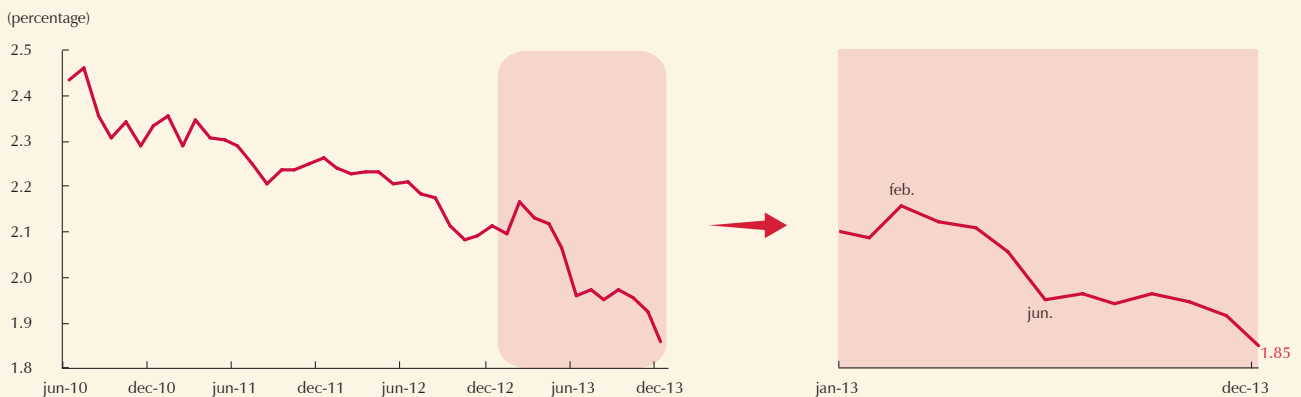
(percentage)

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

Figure B2.3
ROA components changes

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

(trillion Colombian pesos)

- Gross profit change
- Financial margin change
- Net operating margin change
- Provision change
- Interest margin change
- Gross operating margin change
- Investment income change

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

When analyzing the behavior of the gross financial margin, it appears that the annual change in its level had been registering a growing trend, which was reversed in February 2013. As seen in Figure B2.5 (panel B), this occurred mainly due to the lower dynamic on investment income, because although the annual change in the income level from commissions, monetary correction and leasing was also reduced, these do not have a high share within the total financial earnings.

In turn, the annual change in the gross operating margin level retains the same trend of variation as the gross financial margin, on which it is inferred that neither the behavior of the administrative and labor expenses or the net operating income impacted largely in their behavior (Figure B2.5, panel C).

Figure B2.5
Historical annual change in the level of the components of each of the margins

A.   Interest margin and its components

(trillion Colombian pesos)

- Interest margin change
- Interests income change
- Interests expenses change
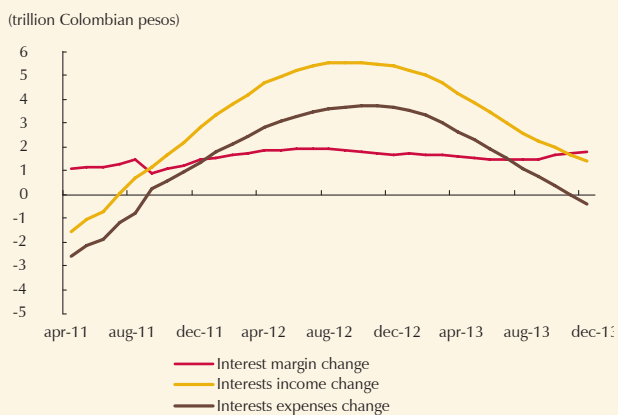
B.   Gross financial margin and its components
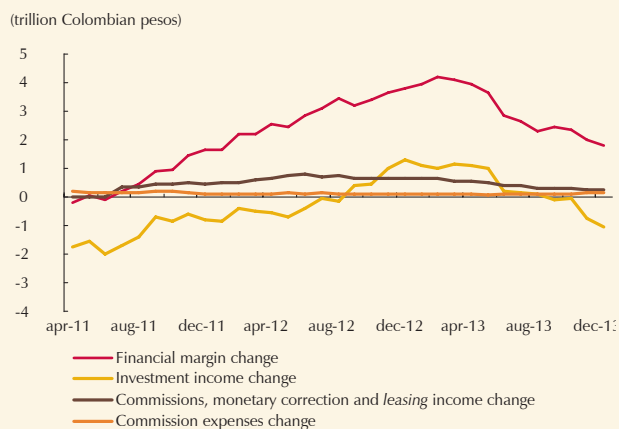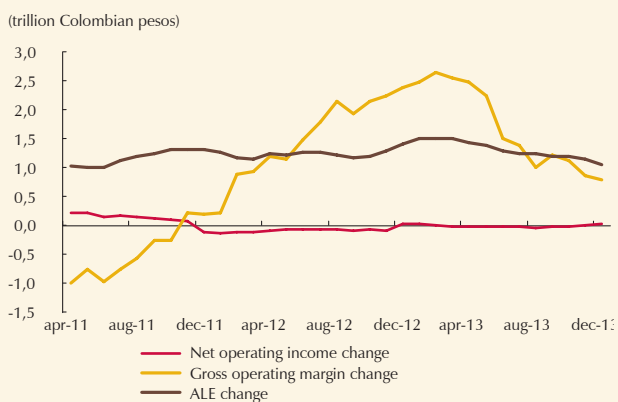
(trillion Colombian pesos)

- Financial margin change
- Investment income change
- Commissions, monetary correction and *leasing* income change
- Commission expenses change

C.   Gross operating margin and its components

(trillion Colombian pesos)

- Net operating income change
- Gross operating margin change
- ALE change

D.   Net operating margin and its components

(trillion Colombian pesos)

- Portfolio provisions change
- Portfolio collections change
- Other net provisions change
- Net operating margin change
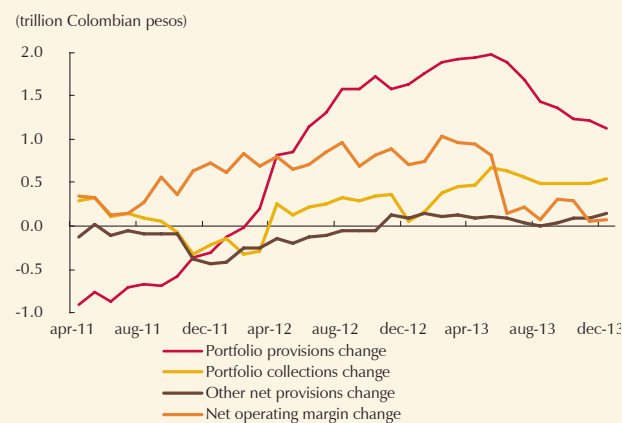
Source: Financial Superintendence of Colombia; Banco de la República calculations.

On the other hand, between June 2011 and February 2013 the annual change in net operating margin level, unlike the gross, presented a more moderate increasing trend, particularly by the steady increase in the annual change in the provisions level. However, after February, a decrease is observed in line with what happened with the other margins, but to a lesser extent due to the behavior exhibited by the provisions, which decreased their growth rate (Figure B2.5, panel D).

Moreover, when analyzing the ex-post margin of the total portfolio, it was found that it has had an stable behavior. Nonetheless, housing and commercial portfolios showed decreasing trends in the last year. Meanwhile, the ex-post margin of the microcredit and consumer portfolio showed a recovery during the same period (Figure B2.6). This allows us to infer that from an aggregate point of view, the fall during

last year of the marginal lending rates has not resulted in lower profitability of the intermediation business.

In analyzing the particular case of the behavior shown by the ex-post margin for the housing portfolio over the past year, it appears that the fall was due to a greater reduction in the ex-post lending rate against the one registered for ex-post deposits.[4] Also, it can be seen that the reduction in the ex-post lending rate was essentially because of the high levels of growth in the gross average production portfolio, which have been higher than those of interest income (Figure B2.7, panels A and B).

_____

4   Ex-post lending rate = Interests income/gross average production portfolio. Ex-post deposits rate = Interests expenses/interest-bearing liabilities.

Figure B2.6
Ex-post margin for the total portfolio and by type of credit
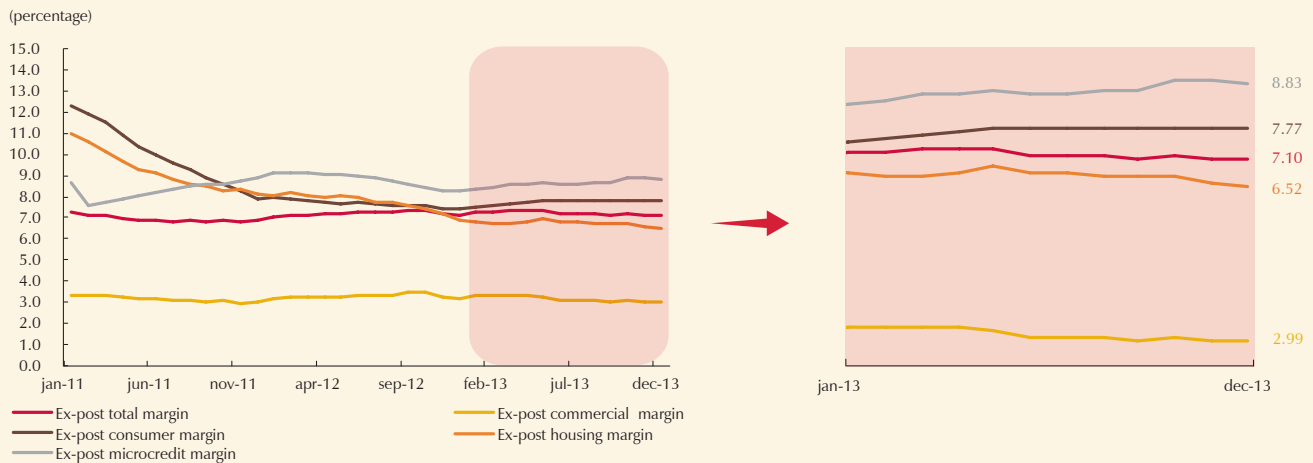
(percentage)

Ex-post total margin
Ex-post consumer margin
Ex-post microcredit margin
Ex-post commercial margin
Ex-post housing margin

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

Figure B2.7
Housing portfolio ex-post margin evolution and its components

A.   Ex-post margin

(percentage)

Ex-post lending rate   Ex-post deposits rate   Ex- post housing margin

B.   Ex-post lending rate

(trillion Colombian pesos)   (percentage)

Interests income   Gross average production portfolio
Ex-post lending rate (right axis)
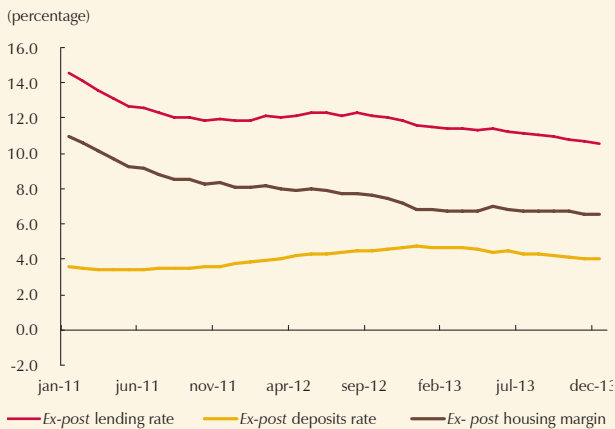
Source: Financial Superintendence of Colombia; Banco de la República calculations.
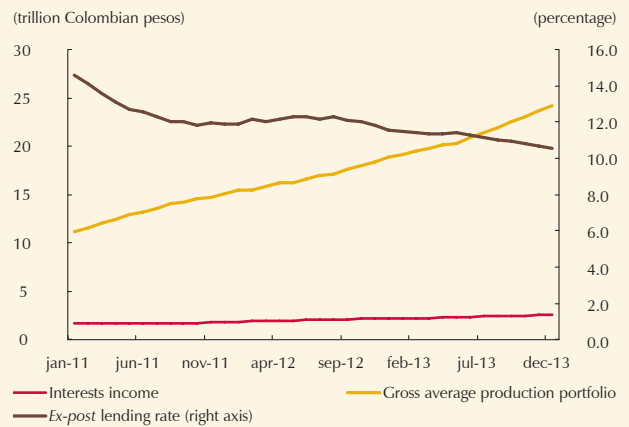
b. Evolution of the concentration and competition indicators for the total portfolio and by portfolio type

Given the drop in the ex-ante lending rates for the different types of credit, particularly housing and commercial, it is important to analyze the evolution of some concentration and competition indicators in each of the markets to understand the possible impact they had on the recent evolution of the rates.

As for the concentration measured with the portfolio share of the five largest institutions, it appears that in the last year this variable has increased for the total portfolio, as well as consumer and microcredit, while the commercial has remained stable and housing has been declining (Figure B2.8).

Figure B2.8
Portfolio share of the five largest institutions
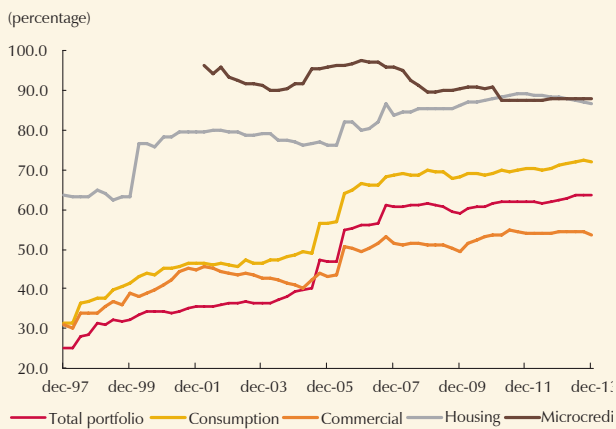
(percentage)

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

Figure B2.9
Statistical H evolution by portfolio type
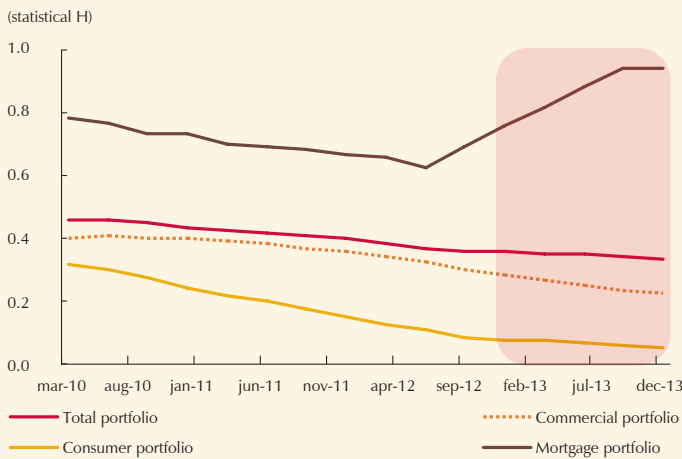
In assessing how competition has changed in the different credit markets over the past year, using the statistical H[5] (Figure B2.9) —which allows to analyze the response that the companies' profits have against changes in the production prices factor— it is observed that the statistical value for the total commercial and consumer portfolios, is already decreasing and, as of December 2013, it was at 0.33, 0.22 and 0.05 respectively. This indicates that both in the entire market as well as in the commercial and consumer markets, a monopolistic competition takes place. In contrast, during the period under consideration, the statistical H for the housing portfolio showed a large increase, recording a 0.94 level in December 2013, giving indications that this market is very close to reaching a perfect competition. It is worth mentioning that the evolution of the indicator for the latter type may be influenced by subsidies to the interest rate granted by the Government.

In conclusion, since July 2012, when Banco de la República began to reduce the intervention rate, the rates for the different types of credit decreased, being the greatest reductions in the commercial and housing portfolios (especially in the non-social housing segment). This behavior was accompanied by declines in the ROA, explained by the higher annual assets growth against income. By analyzing in detail this latter category, it was found that the decrease in earnings was due to lower income on investment, which was partially compensated by lower provisions.

Meanwhile, the ex-post margin showed a more stable behavior compared to the ROA, although during the past year,

---

5   H = 0 indicates that the market structure is a monopolistic or collusive cartel type equilibrium; 0 <H <1 indicates monopolistic competition with free Chamberlain type entry; and H = 1 indicates perfect competition.

(statistical H)

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

commercial and housing portfolios recorded reductions. In the case of the mortgage portfolio, the above took place in a context of increased competition and lower concentration.

It should be noted that the results for this modality may be influenced by the interest rates subsidy programs implemented by the Government.

III. CURRENT STATUS AND PROSPECTS OF THE FINANCIAL SYSTEM DEBTORS

Financial indicators to September 2013 show a good situation for a sample of businesses in the private corporate sector. Additionally, two stress situations were included: the first one models the impact of a sudden depreciation of the Colombian peso vis-a-vis the U.S. dollar in said indicators, evidencing an improvement in the profitability indicators, while those of debt show a slight increase. No significant deterioration is appreciated in the financial situation of the corporations studied facing a depreciation shock. The second one assumes that the firms analyzed have both the operations quality indicator (ICO in Spanish) as well as the operations default indicator (IMO in Spanish) of the total balance of the commercial loan portfolio as a default probability, revealing that under this extreme setting a slight materialization of the credit risk takes place within the system.

On the other hand, during the second semester of 2013 lower growth was observed both in household debt and income. This caused an increase of the financial burden during this period. In spite of the lower dynamics of the sector, the economic situation of households has not deteriorated, inasmuch as growth of the income for these agents continues at levels above the average of the last two years and the expectation indicators remain at high and positive levels..

A. EXPOSURE OF CREDIT INSTITUTIONS TO ITS MAIN DEBTORS

By December 2013 the exposure of credit institutions to different debtors was of COP $311 trillion, which represents an annual real growth rate of 10.4% compared to that observed in December 2012. The exposed amount represented 72.7% of the credit institutions'[54] assets, a lower figure than the registered in recent years[55] (Chart 4).

---

54   The remaining 27.3% corresponds to the financial leasing accounts available, net valuing, accounts payable, assets given as operational leasing, acceptances, cash operations and other derivatives, together with other assets.

55   To December 2012 this figure was 74.2%, while a year before participation was of 74.1%.

Chart 4
Credit institutions exposure to its main debtors

Type	Dec-12		Dec-13		Percentage annual real growth
	December of 2012 trillion COP	Percentage share	December of 2013 trillion COP	Percentage share	
Public sector					
Portfolio	11,20	4.0	12,56	4.0	12.1
Securities	45,59	16.2	49,79	16.0	9.2
Total	**56,80**	**20.1**	**62,35**	**20.0**	**9.8**
Private corporate sector					
Portfolio	129,00	45.8	141,75	45.6	9.9
Securities	0,63	0.2	0,79	0.3	24.6
Total	**129,63**	**46.0**	**142,54**	**45.8**	**10.0**
Household sector					
Portfolio	91,21	32.4	103,40	33.2	13.4
Consumption	71,57	25.4	78,70	25.3	10.0
Housing	19,64	7.0	24,70	7.9	25.7
Securitizations	4,23	1.5	2,77	0.9	-34.5
Total	**95,44**	**33.9**	**106,17**	**34.1**	**11.2**
Total amount exposed	**281,87**	**100.0**	**311,06**	**100.0**	**10.4**
Exposed amount over assets (percentage)	**74.2**		**72.7**		

Note: Securitizations make reference to the amount that credit institutions hold.
Sources: Financial Superintendence of Colombia and Banco de la República; Banco de la República calculations.

In assessing the composition of the exposed amount, an increase in household participation is noted, explained by the behavior of the mortgage loan portfolio. It is worth noting a fall in the level of holdings securities backed by mortgages (securitizations) by credit institutions, moving from COP $4.2 trillion in December 2012, to COP $2.8 trillion a year later.

In the case of the corporate sector, its share decreased by 20 bp when comparing the result of December 2012 and the same month of 2013, due to the portfolio's performance. For this sector, loan portfolio recorded an annual real growth rate of 9.9% in December 2013, when a year ago this expansion was of 11.5%. On the other hand, the share of the public sector fell by 10 bp over the same period, explained by the lower dynamic of investments in these securities.

B.   PRIVATE CORPORATE SECTOR

As mentioned above, the major debtors of the credit institutions are the private corporate sector and households. Regarding the first, the exposure of financial

institutions to private real sector firms is high, since as of December 2013, 45.8% of their assets corresponded to loans or securities held by these (Chart 5).

Considering this, it is important to track the debt of the private corporate sector with the financial institutions: when analyzing this debt[56] in 2013 as a proportion of the GDP, a slight increase is observed, reaching 27.2%. Loans with domestic financial institutions remain as the main source of funding (21.4% of GDP),[57] followed by loans from foreign institutions (4.7% of GDP) and bonds (1.1% of GDP) (Figure 37).

a.   *Private corporate sector's financial indicators*

This report presents an analysis of financial and risk indicators for securities issuers that are under supervision of the Financial Superintendence of Colombia (Financial Superintendence)[58]. These results are compared with those calculated for a subsample of companies that reported to the Superintendence of Companies, and that this institution submitted to Banco de la República for monitoring and risk analysis purposes.[59] The information used to obtain the results presented herein has September 30 of 2013 as closing date. When analyzing the representativeness of the portfolio held by these companies in the total balance of outstanding commercial loans at the end of the third quarter of 2013, it is found that for both groups this figure was at 3.9% and 22.3% respectively.

---

56   This is defined as the total of financial obligations incurred into by private companies with national credit establishments, financial institutions abroad, and bonds. It is worth mentioning that the debt with suppliers was not included because the information of the total of credits with national suppliers is not available.

57   These credits are mostly placed in pesos (18.6% of the GDP), representing 78.8% of the balance due of the commercial loan portfolio as of December 2013.

58   It is only possible to analyze those securities issuers whose financial information is tabulated by the Financial Superintendence. There are cases of issuers that are under concurrent control by this entity, and who submit their financial information in a format that does not allow the calculation of financial indicators. Therefore, the sample of issuers being used is censored, in the sense that only takes into account those agents for which it is possible to calculate figures that help to analyze their financial situation. When the Financial Superintendence does not exercise exclusive control (and understood as concurring) over the securities issuer, and this is subject to supervision and inspection by another State agency, according to Article 11.2.1.6.2 of Decree 2555 of 2010, it is found that the role of the Financial Superintendence "will aim to verify that their operations conform to the rules governing the securities market, and ensure the timeliness and adequacy of the information that such issuers must provide to this market, for which it may impose sanctions if that is the case". This contrasts with the exclusive control functions that the Financial Superintendence has over the issuers of securities, particularly with regard to the request and management of financial information, whose description is written in Article 11.2.1.4.51 of the mentioned norm.

59   Until June 2012, Banco de la República had just received annual financial information of companies reporting their balance sheets and income statements to the Superintendence of Companies. In 2011, an interagency agreement between these institutions was signed, whereby superintendent shall request to a subset of companies (from the on made of companies that are supervised annually) their financial information on a quarterly basis.

Chart 5
Financial indexes status as of September of 2013

Financial indicators	Securities issuers subsample (percentage)	Companies supervised by the Financial Superintendence of Colombia (percentage)
A. Profitability indicators		
Return on assets (ROA)[a/]	6.0	7.5
Return on equity (ROE)[b/]	7.9	12.7
B. Indebtedness indicators		
Debt to equity ratio[c/]	23.7	40.9
Financial debt to equity ratio[d/]	7.6	10.5
Financial burden [e/]	56.7	53.1
C. Liquidity indicator		
Current ratio[f/]	115.9	147.2

a/ Measured as the ratio between income before taxes and the asserts.
b/ Measured as the ratio between income before taxes and equity.
c/ Measured as the ratio between liabilities and total assets.
d/ Measured as the ratio between financial obligations and total assets.
e/ Measured as the ratio between non-operating expenses and operating income.
f/ Measured as the ratio between current assets and current liabilities.
Sources: Financial Superintendence of Colombia and Superintendence of companies; Banco de la República calculations.

Figure 37
Private corporate sector financial debt as share of the GDP

(percentage)

- Bonds
- Loans with foreign financial institutions
- Loans in foreign currency with domestic financial institutions
- Loans in Colombian pesos with domestic financial institutions
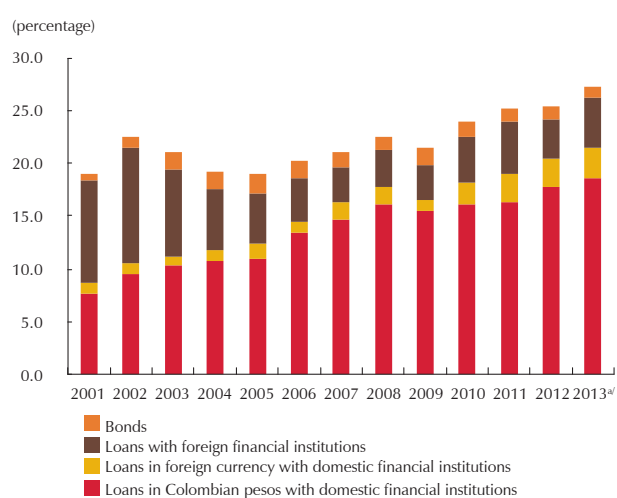
a/ Figures for the ratio are annual. As of December of 2013, the balances of loans extended by domestic and foreign financial institutions,
have as closing date the 31st of December of 2013. For the balance of the bonds, the latest information available was taken,
which corresponds to the 30th of September of 2013.
Fuentes: Banco de la República Financial Superintendence of Colombia; Banco de la República calculations.

Chart 5 exhibits the main financial indicators calculated for the subsamples of companies in the real sector supervised by the Financial Superintendence that issue securities, as well as those supervised by the Superintendence of Companies. The first sample consists of 71 firms, while the second has 1539 companies.[60]

---

60 It is important to highlight that those companies that were under equity loss were not taken into account. Under Article 457 of the Colombian Commercial Code, in this situation are the firms that are or will initiate a process of dissolution and therefore, their indicators introduce 'noise' to the performed calculations. As of September 2013, the Financial Superintendence tabulated information for 75 companies issuing securities, of which one was identified in equity loss status. As for the subsample of companies reported by the Superintendence of Companies, information collected for 1.588 firms, of which, at the end of the third quarter of 2013, 49 were under a state of equity loss. Finally, it is important to note that when cross-checking the two companies' subsamples, it is found that three of them are in the intersection. The issuers of securities group is excluded to avoid double counting of information. Thus, 71 securities issuers supervised by the Financial Superintendence and 1.539 firms that report their financial statements to the Superintendence of Companies are analyzed.

When analyzing the profitability indicators it is found that, in September 2013, the performance of the firms in the sample of the Superintendence of Companies is better than that observed for securities issuers (Chart 5, panel A). Both ROA (the ratio between income before taxes and total assets) and ROE (the ratio of income before taxes and equity) are higher in the first case, being of 7.5% and 12.7% respectively. It is noteworthy that in both cases the profitability indicators are positive, showing a favorable situation because for the two groups of companies surveyed, on average assets investment (regardless of how they were funded) resulted in generation of profits.

As for leverage indicators, it is found that both, debt to assets ratio (total liabilities/total assets), as well as financial debt ratio (financial liabilities/total assets), is higher for the sample from the Superintendence of Companies. Notably, the numbers observed for securities issuers, especially for the debt to assets indicator (23.7%), versus that observed for the financial debt ratio (7.6%), is suggesting that for these companies a low level of their assets is financed by debts owed to third parties (suppliers or creditors).

Nevertheless, when the financial burden indicator is analyzed (measured as the ratio between non-operating expenses and sales), it is found to be higher for the firms in the Financial Superintendence, suggesting that these contribute a higher proportion of their profits for the interests payment generated by their financial obligations (Chart 5, panel B). In neither case the indicator is above 100%, which suggests that, on average, companies are able to cover their expenses for funding themselves with creditors without making a total use of all business operation profits.

Finally, when analyzing the companies' payment capacity, it is observed that current ratio was at 115.9% for the sample of the Financial Superintendence, and 147.2% for the sample of the Superintendence of Companies. (Chart 5, panel C). This leads to the conclusion that companies can meet their short-term obligations without making use of all of their most liquid assets.

In summary, when analyzing the financial health of a subsample of securities issuers and firms supervised by the Superintendence of Companies, a favorable situation is found. Profitability indicators are positive and, on average, firms can support all their debts to the financial system by making use of their assets. Liquidity is good considering that the most liquid assets are greater than the short term liabilities. When comparing the performance of the two subsamples, it is found that the group of firms in the Superintendence of Companies has better profitability and liquidity indicators in relation to what is observed for the securities issuers. However, these exhibit a better situation in terms of leverage indicators, but their financial burden ratio results to be greater.

b.   *Financial indicators of the private corporate sector per economic sector*

This section presents the results of the main performance indicators, distinguished per economic sector and for each of the studied samples. Results for return on assets (ROA), debt to assets ratio and current ratio are analyzed. It should be noted that not all sectors appear simultaneously on the two databases of companies that are discussed, as it is the case of the electricity, gas and water, and hotels and restaurants sectors, which are contained in the subsample of companies supervised by the Superintendence of Companies, but they do not appear in the one for securities issuers.

In terms of profitability, it is found that the mining sector is the most profitable, because its ROA was at 31.3% for the sample of the Financial Superintendence, and 15.9% for the Superintendence of Companies, followed by the transport and storage sector, whose ROA reached 18.5% for the first sample and 10.9% for the second. In both samples, both sectors exhibit much higher indicators for what was observed for the rest. On the other hand, when the sectors with the lowest indicators are analyzed, agriculture is marked, being the indicator for the sample of the Financial Superintendence of 0.69%, while for the sample of the Superintendence of Companies the result is higher, reaching 1.7% (Figure 38, panel A). It is also important to mention the low results for electricity, gas and water (1.2%), and hotels and restaurants (1.3%).

The debt to assets ratio per economic sector evidenced that for most of them it is about 34.5% in the case of companies at the Financial Superintendence, and 48.8% for the firms at the Superintendence of Companies, on average. The figures for mining (60.4%) and transportation (50.8%) sectors stand out for the first sample, and the observed for the sectors of electricity, gas and water, (66.5%) and transportation (59.5%) in the second. Companies with lower leverage levels, relative to their total assets, are those in agriculture (17.3%) and the ones providing real estate services (12.7%) for the Financial Superintendence sample. In the case of companies at the Superintendence of Companies, agriculture and mining sectors have the best performance in the indicator, placing both sectors at a level close to 37% (Graph 38, Panel B). Finally, akin to what happens to the aggregate indicator, by sector (excluding mining), the firms at the Superintendence of Companies have higher levels of leverage with respect to the securities issuing companies at the stock market.

Current ratio shows that all sectors, except agriculture, transportation and real estate, in the case of the sample of the Financial Superintendence, and transportation sector in the sample of the Superintendence of Companies, can meet their short term obligations without using all of its most liquid assets, because they have a ratio that is above 100%. In the two subsamples under study, the construction sector is notable for having the highest current ratio indicator,

Figure 38
Financial Superintendence of Colombia's financial indicators for securities issuing companies, and Superintendence of Companies' supervised companies' sample

A. Return on assets (ROA) by sector

(percentage)

■ Securities issuing companies   ■ Superintendence of Companies
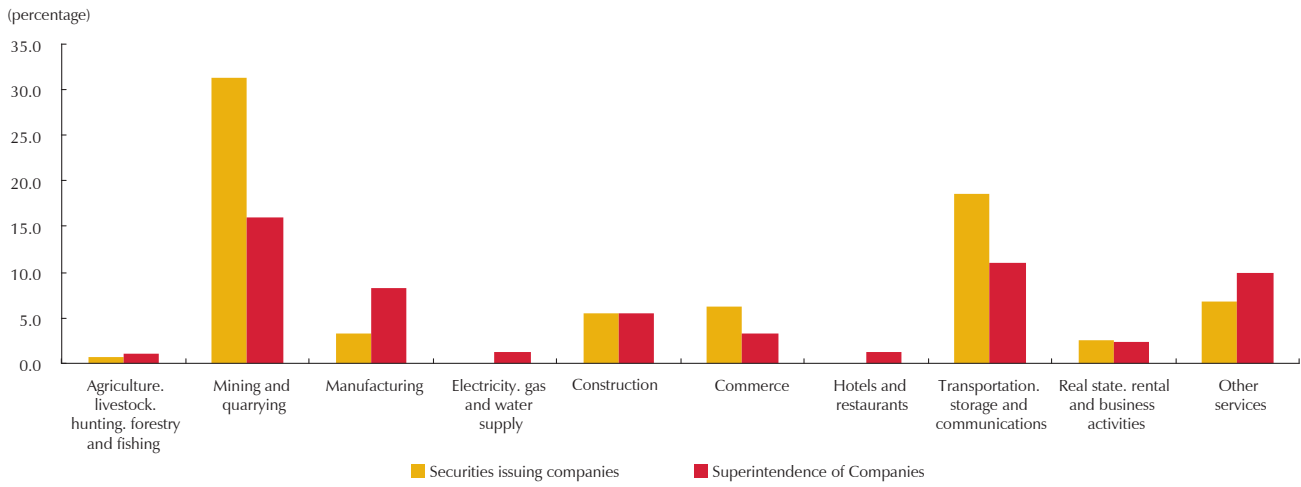
B. Debt to equity ratio by sector

(percentage)

■ Securities issuing companies   ■ Superintendence of Companies
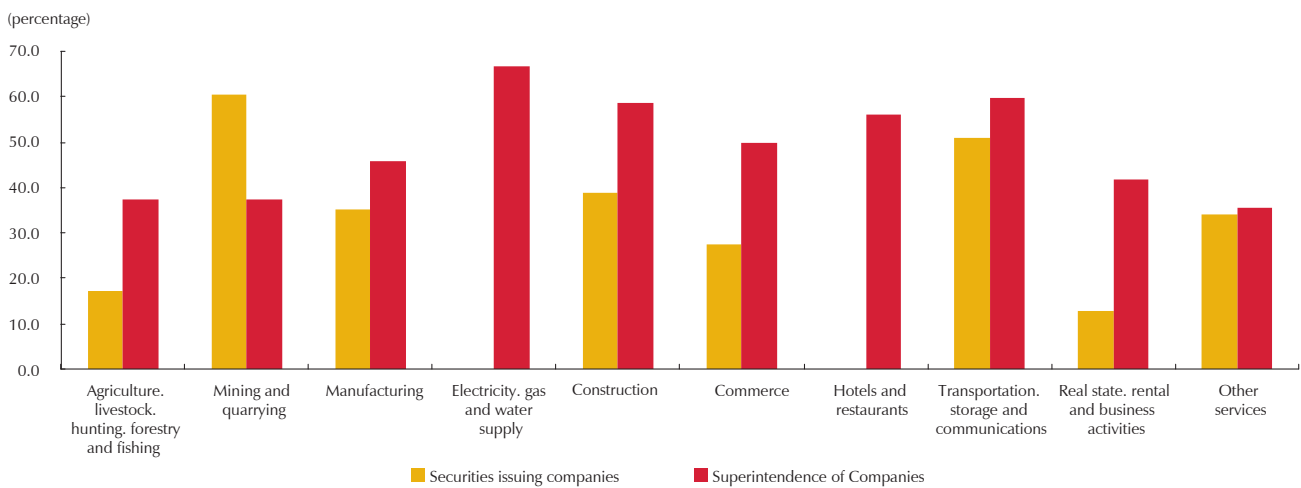
C. Current ratio by sector

(percentage)

■ Securities issuing companies   ■ Superintendence of Companies
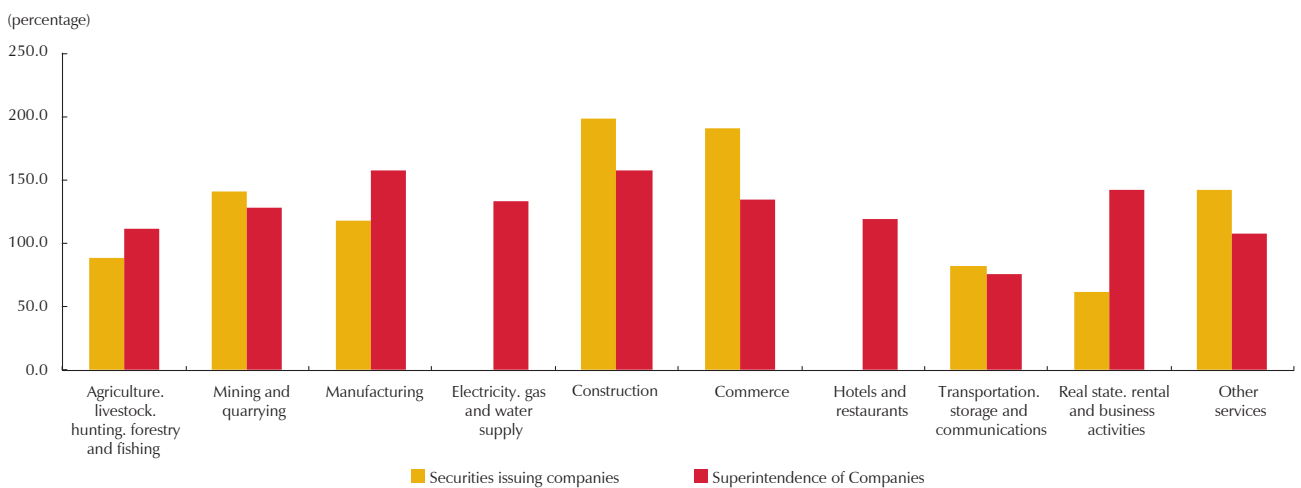
Source: Financial Superintendence of Colombia; Banco de la República calculations.

while the lowest is presented at the real estate sector. It is noteworthy that, unlike what happened with the indicators of profitability, high dispersion of liquidity indicators between sectors was not seen (Figure 38, panel C).

In summary, the analysis of financial indicators for securities issuers supervised by the Financial Superintendence of Colombia and for a sample of firms monitored by the Superintendence of Companies evidences that mining companies are, on average, the most profitable, and whose liquidity indicator allows them to meet their more liquid obligations without making use of all of its short term assets. In contrast, the transport sector, despite being the second most profitable one, has a high debt to assets ratio, and one of the lowest performances in the liquidity indicator. Additionally, the poor performance of the real estate activities in terms of profitability and liquidity draws attention. Finally, the most representative sectors within the analyzed subsamples (industry, in the case of the Financial Superintendence of Colombia, and commerce and industry in the group of firms in the Superintendence of Companies) exhibit indicators that suggest that they had a good financial situation as of September 30, 2013.

c.   Stress test for financial and risk indicators in the private corporate sector

In recent months there has been an upward trend of the nominal exchange rate, which could adversely affect the firms' payment capacity, especially in its obligations denominated in foreign currency, in turn affecting the stability of the system. In order to evaluate the financial impact of a high depreciation of the local currency against the American dollar of the groups under study, the effects of a sudden devaluation on the financial indicators that were shown in Table 5 is analyzed. Additionally, the impact that the default of these firms could generate in Colombia's financial system is evaluated by estimating how much would the commercial loan portfolio risk indicators be affected as of September 30th, 2013.

For this purpose, the variation observed between the maximum value of the market exchange rate (TRM in Spanish) between the 1st of January and the 22nd of February 2014 and the minimum recorded for 2013 (16.6%), applied linearly over accounts denominated in foreign currency for the balance sheet and income statement.[61] The aim is to observe how sensitive the firms' financial indicators are under a devaluation shock.

---

61   The information and the detail level of the main accounts differ for the two studied samples. In the case of securities issuing companies, it is possible to identify in the assets and the liabilities, the accounts denominated in foreign currency, but it is not possible to distinguish their term (that is, if they correspond to the short or the long term). In contrast, for the sample of companies supervised by the Superintendence of Companies, it is possible to distinguish the short term from the long term accounts, but it does not provide information on the assets accounts expressed in foreign currency.

Chart 6 contrasts the situation of the profitability and indebtedness indicators for securities issuers and companies supervised by the Superintendence of Companies after applying the proposed devaluation shock. When comparing these figures to those presented in Chart 5, it shows that, in terms of profitability, companies would present a less fragile situation (Chart 6, panel A), although this is not true when leverage indicators are analyzed, since these, together with the financial burden ones, would present increases when facing a shock (Chart 6, panel B).

Chart 6
Financial indicators status as of September of 2013 after a devaluation shock

Financial indicators	Securities issuers subsample (percentage)		Companies supervised by the Superintendence of Companies subsample (percentage)	
	Before	After	Before	After
A. Profitability indicators				
Return on assets (ROA) [a]	6.0	6.0	7.5	9.0
RReturn on equity (ROE) [b]	7.9	7.9	12.7	15.4
B. Indebtedness indicators				
RTotal debt to equity ratio [c]	23.7	24.2	40.9	41.8
Financial debt to equity ratio [d]	7.6	8.0	10.5	10.8
Financial burden [e]	56.7	61.7	53.1	62.3

a/ Medida como la razón entre la utilidad antes de impuestos y el activo.
a/ Measured as the ratio between income before taxes and assets.
b/ Measured as the ratio between income before taxes and equity.
c/ Measured as the ratio between liabilities and total assets.
d/ Measured as the ratio between financial obligations and total assets.
e/ Measured as the ratio between non-operating expenses and operating income.
Sources: Financial Superintendence of Colombia and Superintendence of Companies of Colombia; Banco de la República calculations.

Regarding profitability, as mentioned before, a devaluation shock does not generate a more fragile situation for the analyzed companies. For firms supervised by the Superintendence of Companies, indicators show a significant increase, while remaining relatively stable for the securities issuers subsample. In the first case, the increase in the ROA and ROE is due to an increase in profits, because not knowing the composition of assets and equity by currency, these are assumed as constant. Indeed, the devaluation shock has a positive effect on the firm's earnings, and this is greater than the impact observed for financial expenses, causing a sudden increase in the nominal exchange rate to have a positive effect on profitability indicators.

With regard to the income statement, for both samples, non-operating expenses as a proxy of the financial expenses are taken, and these are stressed adding the difference between earnings and expenses for exchange difference, increased linearly by varying the TRM proposed. However, for companies supervised by the Superintendence of Companies, additional information is available: for these firms operating income generated by activities abroad is provided, which is also stressed and taken into account in the shock.

Therefore, it is important to note that for both samples all available accounts denominated in foreign currency are affected, but given the information restrictions, it is not possible to apply the shock in the same way for the two groups of companies studied.

In contrast, for the securities issuers' sample, assets accounts denominated in foreign currency can be distinguished, but this is not possible to perform on equity accounts. Both, the ROA and ROE have minor variations, since for the first indicator income before taxes has a slight fall, along with a slight increase in total assets. In the second, although equity remains constant, the fall in profits is not enough to cause a significant change in the indicator.[62]

In terms of leverage indicators (debt to asset ratio and financial burden indicator), the increase observed in the sample of the Superintendence of Companies is because only liability accounts can be stressed. As for the sample of the Financial Superintendence, the increase is mainly due to a greater effect on the liabilities with respect to what was observed in the assets, since, on average, companies have larger holdings of liabilities denominated in foreign currency compare to assets denominated in that currency.

As a consequence, it is noticed that a sudden devaluation of the TRM has a mixed effect on financial indicators in the private corporate sector firms. On the one hand, on average, improvements or stability can be seen in the profitability indicators, and on the other hand increases in leverage indicators, especially for the financial burden one.

As a second test to estimate the effect that a default would bring to the risk indicators for studied firms —loan portfolio quality indicator (QI) and default indicator (DI)—[63] of the commercial portfolio, it was decided to use them as a proportion of the gross portfolio that passes to be risky or defaulting to the risk indicators (and therefore are used as proxies of the probability of default), calculated from the number of operations: operations quality indicator (OQI) and operations default indicator (ODI)[64] respectively. These indicators are calculated using commercial type credit information as of September 2013, being of 13.9%

---

62   Indeed, it is observed a slight positive change in indicators; however, due to the approximation of the figures to only one decimal, results seem to suggest that the indicators do not show a change.

63   The portfolio quality indicator is measured as the ratio between the risk and gross portfolios. Meanwhile, default indicator is measured as the ratio between non-performing loans portfolio, defined as one that has been in default for more than thirty days, and the gross balance.

64   The OQI and ODI are indicators that allow making an approach to the credit risk faced by the financial institutions but, unlike the QI and DI, these are calculated based on the number of credits. The operations quality (OQI) is constructed as the ratio between risk loans and total loans. For its part, ODI shows the relationship between credits in default and the total. It is important to note that for this test, the OQI and ODI are assumed as proxies of the firms' probability of default.

and 7.7%, in that order. Thus, the calculation of the stressed risk indicators is obtained by applying the following equations:

$$QI_{(commercial\ after\ the\ shock)} = \frac{risk\ portfolio_{commercial} + gross\ portfolio_{group} \times (OQI)}{gross\ commercial_{portfolio}}$$

$$DI_{(commercial\ after\ the\ shock)} = \frac{non\text{-}performing\ loans\ portfolio_{commercial} + gross\ portfolio_{group} \times (ODI)}{gross\ commercial_{portfolio}}$$

As per the construction of the test, higher increases in the risk indicators for companies supervised by the Superintendence of Companies are expected to occur, because these firms concentrate a higher gross loans balance. As it can be seen in charts 7 and 8, when it is assumed that the two subsamples of companies simultaneously default in their obligations with the financial system, it is found that QI goes from 6.5% to 10.7%, while DI does from 1.9% to 4.2%. It is important to mention that the stressed indicators are higher than those observed during the first quarter of 2010 (period of turbulence at international level, when the commercial portfolio risk indicators showed a high deterioration); however, they are lower than the historical maximum (QI: 27.7% and DI: 12.4%). Nonetheless, it also should be noted that the stress test supposes a hypothetical extreme and unlikely situation[65].

Chart 7
Effects on the quality indicator (QI) before a default on payments by private corporate sector firms under analysis

Commercial portfolio risk indicators	As of September 30 of 2013	Securities issuers subsample (percentage)	Companies supervised by the Superintendence of Companies subsample (percentage)	Both subsamples
Quality indicator (QI)	6.5	7.1	10.1	10.7

Sources: Financial Superintendence of Colombia and Superintendence of Companies of Colombia; Banco de la República calculations.

Chart 8
Effects on the default indicator (DI) before a default on payments by private corporate sector firms under analysis

Commercial portfolio risk indicators	As of September 30 of 2013	Securities issuers subsample (percentage)	Companies supervised by the Superintendence of Companies subsample (percentage)	Both subsamples
Default indicator (DI)	1.9	2.3	3.9	4.2

Sources: Financial Superintendence of Colombia and Superintendence of Companies of Colombia; Banco de la República calculations.

65   It is important to highlight that for the subsamples, OQI and ODI registered at levels which are significantly lower than those observed for the trade portfolio to the third quarter of 2013. On one part, for the companies under surveillance of the Superintendence of Companies, OQI rises to 1.8%, while ODI registers 0.4%. On the other part, for the subsample of value emissions, these figures correspond to 0.5% and 0.1%, respectively. In terms of risk, this not only provides evidence of a better situation for the groups analyzed in relation to that exhibited by the trade credit portfolio, but also that the stress exercise assumes, on its part, probabilities of non-compliance for the companies analyzed that may be considered extreme.

In conclusion, when analyzing the financial indicators of representative companies in the private corporate sector as of September 2013 (some securities issuers supervised by the Financial Superintendence, and a subsample of companies monitored annually by the Superintendence of Companies), a good situation in terms of profitability and liquidity is found. On the leverage side, it is found that the companies that report to the Superintendence of Companies have, on average, a higher level of their assets financed by third parties.

By incorporating a stress situation in which the impact of a sudden depreciation of the Colombian peso against the American dollar in the financial indicators of the analyzed firms is modeled, it is found that an improvement in the profitability indicators occurs, while leverage indicators show slight increases. No significant deterioration in the financial soundness of the companies under study was seen and, given the availability of information relating to balance sheet accounts or income statement denominated in foreign currency that can be used in the shock, the magnitude and direction of it may vary depending on the indicator analyzed.

Finally, it is assumed that the firms studied enter into a financial obligations default. Making use of the OQI and the ODI of outstanding commercial loans for the third quarter of 2013 as an approximation for the percentage of the portfolio held by firms under study —which would result in a risk or default portfolio in the commercial balance, respectively—, significant deteriorations in the risk indicators are noticed (QI and DI). It is important to highlight that this is an extreme scenario, since it assumes that the analyzed groups have the total balance's OQUI and ODI as default probabilities. Nevertheless, these indicators for both subsamples of firms are at very low levels, reflecting a slight materialization of credit risk in the system by the groups of companies that were studied in this section.

C.   HOUSEHOLDS

In this section, the financial situation of households is analyzed by evaluating their savings level, indebtedness and financial burden, and how these variables are related with the economic activity. Additionally, the expectations, confidence and economic conditions indexes of these agents are examined, in order to complement the study of the current financial balance with its future prospects.

Household debt composition and annual real growth

(December of 2013 Colombian trillion pesos)　　　　(percentage)

Consumption　　Housing　　—Debt annual real growth (right axis)
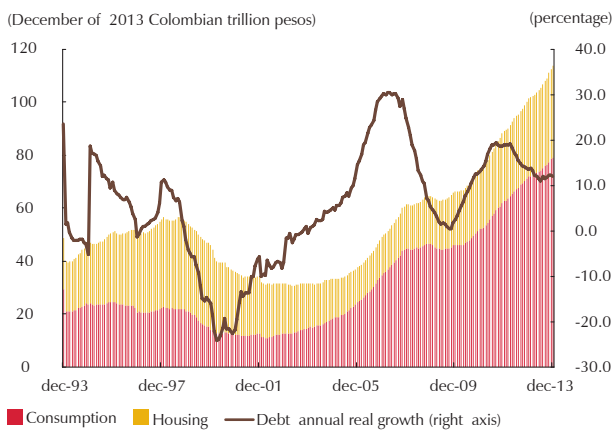
Note: the consumer portfolio includes consumer leasing; housing portfolio includes residential leasing and the total balance of the securitizations.
Sources: Financial Superintendence of Colombia and Colombian Securitization (Titularizadora colombiana); Banco de la República calculations

1.　　Households economic situation and debt

The household debt (defined as total mortgage and consumer loans granted by credit institutions) amounted to COP $113.7 trillion[66] in December 2013, and it is comprised of 69.5% in consumer loans and the remaining 30.5% on housing loans (Figure 39). The annual real growth of this joint debt was at 12% in December 2013, less than a year earlier (13.7%), indicating that it continues to slow since March 2012 This behavior is due to a slower consumer loans dynamic, which passed from growing at a rate of 20.6% in December 2011 to one of 9.8% two years later.

If resources disbursed by the National Savings Fund (FNA in Spanish) and cooperatives supervised by the Superintendence of Solidary Economy are taken into account, the household debt amounts to COP $131.1 trillion, of which 30.6% belong to mortgage loans, and 69.4% to consumer loans. The annual real growth of this debt by December 2013 was 12.0%, similar to that recorded for the portfolio granted only by credit institutions supervised by the FSC.

The household debt current composition corresponds to a scenario with fewer guarantees for credit institutions than in the late nineties, since the proportion of debt with collateral has decreased, which may indicate an increased credit risk. However, it must be emphasized that consumer loans are of smaller amounts and terms; and the balance of the portfolio is allocated to a greater number of debtors, which decreases the concentration risk. As of December 2013 the average amount of disbursements for consumption was COP $8.1 billion, while housing was at COP $74.6 billion; regarding the loans term, the former are agreed, on average, to 5.2 years, while the latter are on 14.5 years. Additionally, the greatest exposure to credit risk has more hedging, due to recent regulations requiring a higher provision level for this portfolio.[67]

When the household debt is compared with the evolution of economic activity, it is observed that the consumer portfolio slowdown registered since the second half of 2011 was preceded by a fall in household consumer spending. During the second half of 2013, annual real growth of the consumer portfolio has stabilized around 10%, while the average rate of expansion of household spending has

---

66　　This value corresponds to consumption types (including consumer leasing) and housing (including residential leasing and securitizations). The total balance of the securitized portfolio was of COP $ 4.2 trillion as of December 2013.

67　　With the entry into force of the FSC's external circulars 043 of 2011 and 026 of 2012, mechanisms that increased the level of provisions for the consumer portfolio were implemented, and are intended to preserve the healthy growth for this type of credit.

Figure 40
Annual real growth for household consumption spending,
per capita GDP and for the consumption portfolio
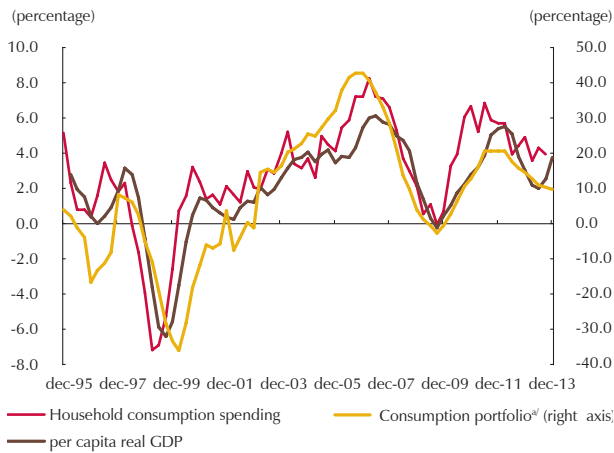
a/ Includes consumer leasing.
Note: the per capita real GDP for December of 2013 was calculated on a projection over a quarterly annual real GDP growth of 4.5%.
Sources: DANE (National Administrative Department of Statistics) and Financial Superintendence of Colombia; Banco de la República calculations.

Figure 41
Consumption and housing portfolios over GDP
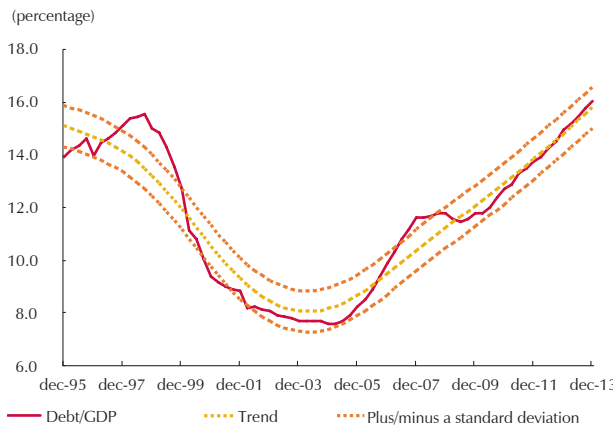
Note: the GDP of December of 2013 corresponds to that projected by Banco de la República, assuming an annual real growth of 4.5%. Calculations include consumer and residential leasing and securitized portfolio.
Sources: DANE, Financial Superintendence of Colombia and Titularizadora Colombiana; Banco de la República calculations.

shown a decline, passing from 4.7% to 3, 9% between 2012 and 2013. On the other hand, per capita GDP annual real growth has shown a recovery compared with that observed during the first quarter of 2013; nevertheless, it is located in similar levels to the ones in 2012 (3.7%) (Figure 40).

The debt to GDP ratio of households continues to rise, and in the last months of 2013 was above the trend line, although within the range of a standard deviation. This behavior is explained by a growth rate of household debt greater than the one observed for GDP (Figure 41). Between June and December 2013, this indicator increased from 15.5% to 16.1%. It is noteworthy that, when taking into account the FNA and entities supervised by the Superintendence of the Solidarity Economy, this indicator amounted to 18.5% in December 2013.[68] Nonetheless, it is also notable that the growth rate of household debt has been declining since the second half of 2012, while the GDP increased during the second half of 2013.

Stabilization in the growth rate of the household loan portfolio has been accompanied by a mixed performance of the disbursements on consumption and housing. In the first, these have shown an average of 11.6% in their annual real growth rate during the second semester of 2013, higher than the observed in June of that year (4.1%), mainly explained by the dynamics of personal and payroll loans, whose average growth rate fell from 8.6% to 17.2% between the first and second semesters of 2013. In terms of amount, most of the disbursements were granted in the payroll loan type (34.3%), followed by personal and vehicle loans, with shares of 28.9% and 13.5% respectively.

For its part, approved credit cards corresponded to 19.7% of disbursements, most of which were intended for customers with a monthly income above two monthly minimum salaries (SMMLV in Spanish) (86.5%).

When analyzing the number of operations by the consumer portfolio type, it is observed that approved credit cards have the largest share, although this has been reduced when compared with the data of June 2013, from 59.4% to 55.4% in

---

68   The portfolio of the solidarity sector's entities for 2013, was projected using the average annual real growth of the last two years (2011 and 2012)

December of that year. In contrast, personal loans have increased their share in the same period, moving from 16.1% to 20.2%.

On its part, the Report on the Credit Situation in Colombia of December 2013, shows an increase in the requirements for granting new consumer loans in the last quarter of that year; in fact, the entities' response balance (weighted by their share in this modality) has been in negative levels since the third quarter of 2011, indicating that households' access to consumer credit is more restricted than years before (Figure 42). It is also noted that, historically, an increase on requirements is later reflected in a slowdown of the portfolio, for which it is expected to continue shrinking its pace in the first months of 2014.

Figure 42
Changes in new loan granting requirements for the consumption portfolio
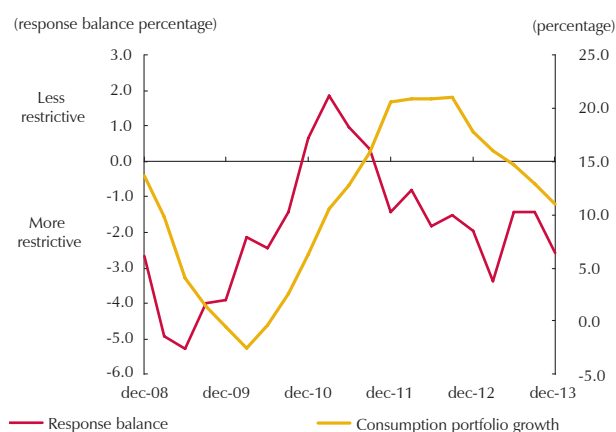
Source: Banco de la República (Report on the Credit Situation in Colombia, December of 2013).

On the behavior of disbursements of the mortgage portfolio, those for social housing (SH, VIS in Spanish) presented a slowdown, showing an annual real growth rate averaging -23% in the second half of 2013, when in the first half it was of 150.5%. Meanwhile, disbursements for non-social housing have shown acceleration, with a growth rate of 27.4% in the last six months of 2013, when in the first semester of that year it was of 16.2%. In December 2013, 79.1% of disbursements were for the purchase of non-social housing. This behavior can be explained by the interest rate hedging program for the purchase of new housing, promoted by the national government under the Plan to Enhance Productivity and Employment (PIPE for its Spanish acronym), which allocated resources in housing segments different than VIS (between 135 and 335 monthly minimum salaries, SMMLV in Spanish), for loans disbursed starting from May 6 of 2013.[69]

On the other hand, it is important to note that disbursements in the form of fixed real rate (UVR in Spanish, RVU or Real Value Unit in English) have shown a negative growth of 26.6% in the second half of 2013, while in the first half of the year it was of 202.8%. In contrast, disbursements for the fixed nominal rate (Colombian pesos) showed a greater increase, passing from 10.8% to 31.6% in the same period.

As for the number of disbursements of the housing portfolio, a decrease in the share of the ones destined for SH is observed, which went from 48.3% to 43.3% between December 2012 and December 2013. By denomination, disbursements

---

69   During the first six months of 2013, the interest rate hedging program resources were intended solely for the segments of housing priority interest (VIP in Spanish) and social housing (SH), as set out in the decrees 1190 and 0701 of 2012, and resolutions 0499, 1007 and 1263 of 2013 of the Ministry of Finance. The countercyclical-Frech program, which includes interest rate hedges for housing different than SH, is regulated by Decree 0701 of 2013 and Resolution 1263 of 2013.

in Colombian pesos continue to have the highest representation (80.1% versus 19.8% in RVUs), a situation that has been occurring since mid-2006, implying a high exposure of the credit institutions to interest rate risk.

The loan to value (LTV), a ratio between the value of disbursements and the value of collateral, has increased in new housing market, both in the SH and NSH modalities, whereas the LTV for used housing has remained relatively stable. The largest increase was observed in the indicator for new housing different from SH, which in December 2013 was at 53.8%, when a year earlier it was of 50.4% (Figure 43).

Moreover, the balance of households deposits was at COP $62.4 trillion in December 2013, registering an annual real growth of 10.7% (twelve month average), higher than that observed six months ago (8.2% annual real). 59.2% of the registered deposits in December 2013 correspond to savings and current accounts,[70] and 33.8% to CDs (Figure 44, panel A).

Two indicators are used to analyze household savings as a proportion of their income: the first corresponds to the ratio between the value of deposits in current and savings accounts of households at credit institutions and the aggregate disposable income, and the second, the ratio between the value of the CDs of these agents and the income variable. As seen in Figure 44, panel B, both indicators have shown an increasing trend in recent years. In December 2013 the value of deposits in current and savings accounts as a percentage of disposable income was of 18.4%, while for the CDs the ratio reached a value of 9.4%. These values are lower than the historical average since 2003, which for demand deposits is at 19.8% and in 9.5% for CDs.

When the composition of the CDs balance of the credit institutions is analyzed per sector, it is observed that the share of households in the total balance showed a decreasing trend until the end of 2012; since then, it has stabilized at values around 22.1%.[71] As for the corporate sector, it is seen that their participation in the CDs balance has steadily increased in recent years, reaching 53.4% in December 2013 (Figure 44, panel C).

Figure 43
Loan to value

Source: Colombian Banking Association (Asobancaria),based on report s by AV Villas, Banco Caja Social, Bancolombia, BBVA, Colpatria and Davivienda banks.

---

70   Special savings accounts are included there.

71   It is noteworthy that this ratio is underestimated because it does not quantify indirect holding of fixed term deposits by mutual funds (MFs) and other non-banking financial institutions.

Figure 44

A. Household deposits and savings composition and growth

(December of 2013 trillion Colombian pesos)   (percentage)

- Current account
- CDT
- Savings accounts
- Deposits annual real growth (right axis)
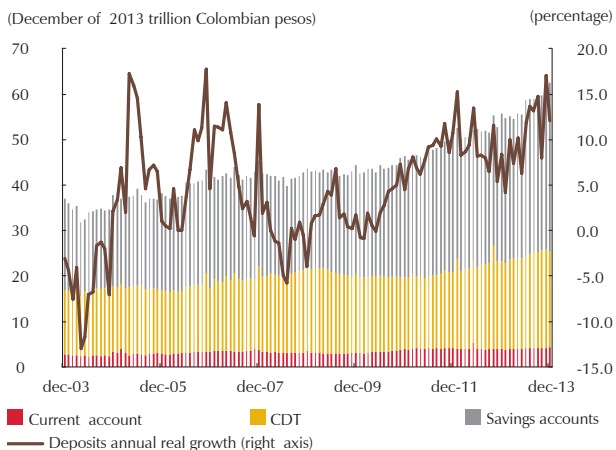
B. Household savings and income ratio

(percentage)

18.4

- CDT/Disposable income
- Demand deposits/Disposable income
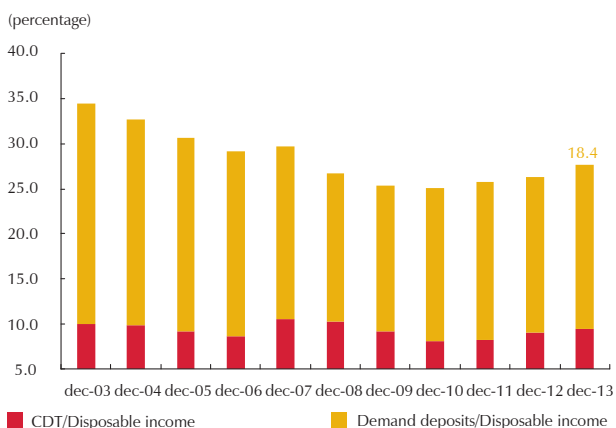
Note: The annualized income was obtained from the Great Integrated Household Survey (GEIH in Spanish) as the sum of all income received by households in the last twelve months for the thirteen metropolitan areas.

C. Fixed term certificate of deposits (CDT) composition by sector

(percentage)

53.4
22.1
17.3
5.8
1.4

- Households
- Companies
- Public sector
- Financial sector
- Other
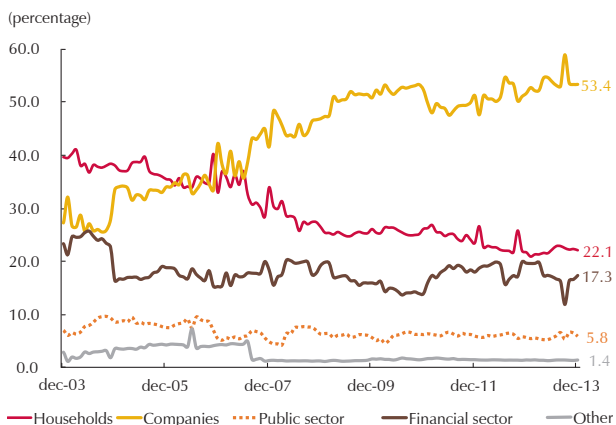
Sources: Financial Superintendence of Colombia and DANE; Banco de la República calculations.

2. Households financial burden

During the second semester of 2013 the households' financial burden indicator (FBI) showed an increase compared with that observed in December 2012, increasing from 16.6% in that month to 17.7% six months later (Figure 45). This behavior is explained by the annual interest and amortization payments growth rate, higher than the households' income. However, it is important to mention that both items have shown a lower growth than the one observed in 2012.

By separating the financial burden components by type, it is found that the increases in the debt service are explained, largely, by the behavior of the financial burden associated with consumer loans, which rose from 14, 3% of the employees remuneration in December 2012, to 15.1% six months later (Figure 46). Meanwhile, the employee remuneration share destined for the payment of housing loans has shown an increasing trend since the end of 2012, reaching a value of 2.5% in December 2013.

Figure 45
Households financial burden

(percentage)

17.7
7.2

- Interests payments and amortizations/employees remuneration
- Interests payments/employees remuneration

(e) estimated.
Note: these calculations include residential and consumer leasing as well as the securitized portfolio.
The series values may differ from those published in previous editions of the Financial Stability Report , due to the inclusion of these items and a refinement in the calculation of the credit cards' interest earnings.
Sources: Financial Superintendence of Colombia, DANE and Titularizadora Colombiana; Banco de la República calculations.

(percentage)

(e) estimated.
Note: these calculations include residential and consumer leasing as well as the securitized portfolio.
The series values may differ from those published in previous editions of the Financial Stability Report , due to the inclusion of these items and a refinement in the calculation of the credit cards' interest earnings.
Sources: Financial Superintendence of Colombia, DANE and Titularizadora Colombiana; Banco de la República calculations.

Figure 47
Households expectations indexes

A.   Households consumption growth and consumer
      expectations index (CEI)

(percentage)   (percentage)
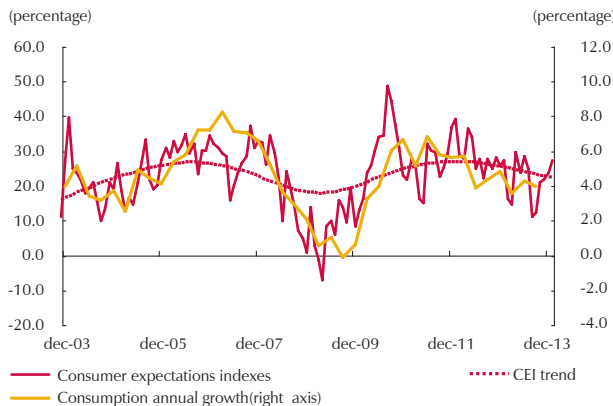
B.   Households' consumption growth and
      consumers' economic conditions index (CEI)

(percentage)   (percentage)
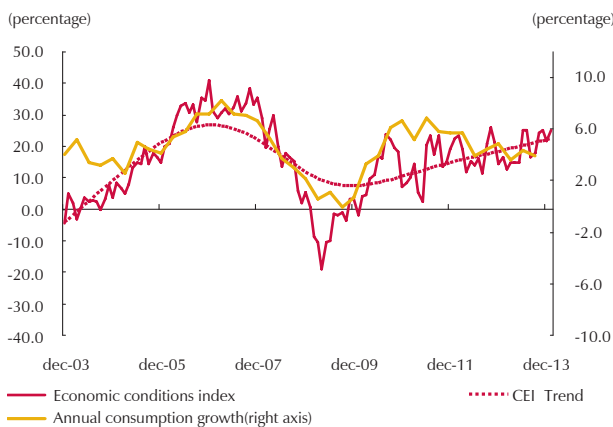
Source: Financial Superintendence of Colombia; Banco de la República calculations.

3.   Perspectives

Household expectations indicators showed a mixed performance in the second half of 2013. The consumer expectations index (CEI) was relatively stable, reaching 27.6 points (pt) in December 2013. This matches the lowest consumption annual real growth of these agents in this period (Figure 47, panel A). For its part, the economic conditions indicator (ECI) shows an upward trend, reaching, during the second half of 2013, 22.2 pt on average, when in the first six months of that year it was at 16.4 pt (Figure 47, panel B).

As for the intent to purchase durable goods indicator, a growing trend is identified, despite its volatility. On average, it was at 28.4 pt during the last six months of 2013, when in the first semester of the year was at 26 pt. In contrast, the housing purchase intent indicator showed a decrease, moving from 28.4 pt to 23.4 pt on average during the same period (Figure 48).

In conclusion, during the second semester of 2013 a moderate slowdown in household debt was observed as well as for income for this sector. The financial burden increased slightly during this period, so that the proportion of income that households must destine to meet their financial obligations was higher than that observed during the first half of

Figure 48
Housing and durable goods purchase intent indexes

(percentage)
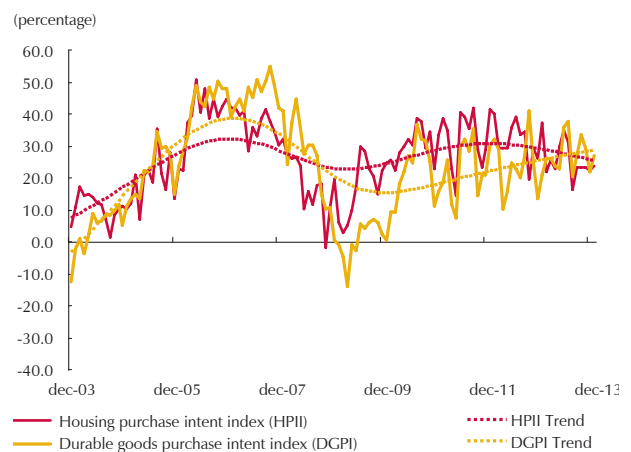
Sources: Fedesarrollo and DANE; Banco de la República calculations.

2013 Despite the sector's lesser dynamics, the households economic status has not deteriorated, as their income growth remains above the average levels for the last two years, and expectations and purchase intent indicators remain at positive and high levels.

Box 3
NEW HOUSING PURCHASE INTEREST RATES HEDGING PROGRAM

This box describes the main features of the housing purchase interest rate subsidy program implemented by the national government since 2009 and currently in force. In addition, a recount of the different stages, conditions, coverage and execution of the program is done.

In April 2009, the national government implemented as a countercyclical policy, a subsidy of the interest rate for loans destined to purchase new housing.[1] This program aims to facilitate the financing of new properties (by improving the debtor's financial capacity), as well as promoting the construction of new buildings, employment and the economy in general.

From 2009 to February 2014, four stages can be classified on the new housing loans interest rates hedging program: the first, initially applied for loans disbursed between April 1 of 2009 and June 30 of 2010, and then extended to those initiated before the 31st of March 2012. In a second stage, loans from July 3rd 2012 until July 31st 2014 are found. Then, new resources were destined, applying for loans granted after May 6th, 2013 until the exhaustion of the number of coverages established by the Ministry of Finance and Public Credit (MHCP in Spanish). Finally, in February 2014, a fourth stage which covers loans disbursed between February 1st 2014 and December 31st 2015 was approved. The closing dates for the completion of each stage may vary, depending on the execution of the coverages; i.e., when the hedges or established quotas are exhausted, the stage ends.

Below is an overview of the features of the housing purchase interest rates hedging program mechanism.

Program features

Under Article 48 of Law 546 of 1999, the Mortgage Portfolio Stabilization Reserve Fund (FRECH in Spanish) was created, whose objective consisted in facilitating the conditions for housing finance. Subsequently, the national government issued Decree 1143 of 2009, on which Banco de la República was authorized, acting as administrator of the FRECH, to provide conditional coverage to facilitate financing for the purchase of new housing, using the fund's resources, which at that time amounted to COP $ 537 billion.

According to Decree 1143 of 2009, the hedging consists on a financial swap calculated on the agreed interest rate for new loans granted by credit institutions to individual new housing mortgage loans debtors, only during the first seven years of the loan term or until its anticipated expiration.[2] The interest rate hedging degree depends on the housing value.

The MHCP regulated the conditions and methodology for the hedging calculation, that would apply for loans disbursed between April 1st, 2009 and June 30th, 2010, and for loans approved after the publication of the Decree (April 1, 2009) to be disbursed before the 30th of June, 2010. This first stage of the program is known as FRECH I.

The interest rate subsidy was also applied to mortgage loans for own housing construction debtors, and for obligations assumed under the residential leasing system, with the stipulation that if the tenant did not exercise the option, it should return the corresponding hedging amounts. MHCP's resolution 3177 of 2009 initially established 56.400 coverage quotas, which were assigned based on the housing value.

Then, with Decree 4864 of 2011,[3] FRECH I was expanded, covering those loans that had not been disbursed before December 22 of 2011 (date on which the decree was published) up to March 31 of 2012. Also, such extension covered the approved loans after the publication date of the decree which are disbursed before March 31 of 2012 or until the exhaustion of the number of the MHCP established quotas.

This extension established 79.732 quotas for additional coverage, reaching a total of 136.132 that, as in the first stage, have the property's value as allocation criteria. FRECH I total coverage was financed with the Fund's resources and by appropriations of the nation's general budget (PGN in

---

1   New housing is understood as that under a project, presale stage or construction and that, despite being completed, has not been inhabited.

2   Applied monthly starting from the first loan payment installment.

3   By which Decree 1143 of 2009 was modified.

Spanish), totaling $ 1.2 trillion COP,[4] corresponding to 0.2% of the gross domestic product (GDP) of 2012.[5]

Chart B3.1 shows the coverage quotas for loans under FRECH I and their following extension.

Afterwards, Decree 1190 of 2012 allowed the continuation of the interest rates subsidy program for disbursements starting from July the 3rd, 2012 until July the 31th, 2014 or until the exhaustion of the number of coverages established by the National Housing Fund (Fonvivienda). This stage is known as FRECH II, which unlike the first phase of the program, established a certain number of quotas per year.

Significantly, FRECH II coverages apply only to the purchase of new housing priority interest (HPI) and social housing (SH) in urban areas, and residential leasing contracts for the same type of housing. In addition, loan debtors or residential leasing tenants, must meet three conditions to qualify for coverage: i) having total revenues no higher than eight SMMLV (monthly minimum salaries); ii) not being homeowners in the national territory and iii) have not been beneficiaries of any coverage provided for in Decree 1190 of 2012 or FRECH I.

The resources devoted to FRECH II hedges amount to $ 624 billion COP, a sum corresponding to 0.09% of the GDP for 2013.[6] Furthermore, according to a report published by Camacol (Colombian Construction Chamber),[7] it was found is that the implementation of this program up to November 2013 reached 88.7% of the total coverage. Specifically, the implementation of hedging for housing loans of priority interest was of 85.8% at that date, while for the social housing segment it was of 89.7%. The number of coverages and the amount of resources provided for each of the years is presented in Chart B3.2.

For its part, Decree 0701 of 2013 provides new resources of the FRECH for coverage in the higher value housing segments, corresponding to 2.5% of the rate of interest under the Plan to Enhance Productivity an Employment (PIPE in Spanish) frame. These resources have been included in an account called countercyclical-FRECH, 2013.[8]

Loans and residential leasing contracts on which coverage may be effective, will be those granted after May 6, 2013 and until the coverages provided by the MHCP are exhausted. In addition, loan debtors or leasing contract tenants may not have been beneficiaries of any of the previous or recent FRECH stages.BOX 3.1

---

4   MHCP-Technical Viceministry (2013). Pronóstico del Exceso de recursos del FRECH y número de cupos estimados en un nuevo programa de cobertura contracíclico (Excess FRECH resources forecast and estimated number of quotas in a new countercyclical hedging program), March.

5   According to Camacol, as of December of 2011, 90% of the regulated coverages in the housing priority interest segment had been disbursed, and 100% in the higher housing prices segment (taken from the economic report "Mecanismo de cobertura a la tasa de interés: impacto en el mercado de vivienda y en la capacidad de pago de los hogares" — Interest rate hedging mechanism: impact on the housing market and households' payment capacity, December of 2011).

6   For the 2013 GDP, Banco de la República's fourth quarter of 2013 annual real growth projection (4.5%) was used, so that the nominal value of the GDP in 2013 which was used for the calculation was of $ 703,2 trillion COP.

7   Camacol (2013). Economic Report: "Hacia la consolidación del sector edificador en Colombia: avances del año 2013 y desafíos para el 2014" — Towards the building sector consolidation in Colombia: Progress in 2013 and challenges for 2014, December.

8   Significantly, resources provided for these coverages, will be those who are not committed to the coverages of FRECH I or FRECH II, and will be used for the granting and payment of the coverages provided in Decree 0701 of 2013, and transferred to the subaccount named countercyclical - FRECH, 2013.

Box B3.1
Frech I coverage quotas and extent

Housing type	Housing value in SMMLV	Housing approximate value in 2011's SMMLV (million COP)	Established quotas for approved loans before march the 31st of 2012	Interest rate hedging (percentage points)
Priority interest (HPI)	Up to 70 SMMLV	Up to $37,5	29,221	5
Social housing (SH)	Between 70 and 135 SMMLV	Between $37,5 and $72,3	65,315	5
Non SH	Between 135 and 235 SMMLV	Between $72,3 and $125,8	24,065	4
Non SH	Between 235 and 335 SMMLV	Between $125,8 and $179,4	17,531	3
Total			136,132	

Sources: Decrees 1143 of 2009, 1729 of 2009, 1176 of 2010 and 4864 of 2011 of the MHCP, and resolutions 2585 and 4864 of 2011 of the MHCP.

Year of loan disbursement or starting of the residential leasing contract	Number of HPI coverages	Number of SH coverages	Total funds (million COP)
2012	6,578	13,701	156,455
2013	10,200	28,000	296,464
2014	2,000	15,000	171,232
Total	18,778	56,701	624,151
Interest rate hedging (percentage points)	5	4	

Source: Decreto 1190 de 2012 Ministerio de Vivienda Ciudad y Territorio, y Resolución 0535 de 2012 de Fonvivienda, modificada por la Resolución 1007 de 2013.

It should be noted that credit institutions must guarantee an interest rate not exceeding 9.5 pp annual effective when it comes to loans or residential leasing contracts denominated in Colombian pesos, or a maximum annual effective rate of 6.5 pp for RVUs denominated loans to households between 135 MMLW and 235 MMLW. Meanwhile, for properties whose value will be higher than 235 MMLW to 335 SMMLV, interest rates agreed by the financial entities will be of 10.5 pp in the first case and 7.5 pp in the second.

On the other hand, in terms of the implementation of the third stage of the FRECH, in November 2013 there had been a registered 87.5% coverage for loans in the first housing segment (between 135 and 235 MMLW), and 82.4% for the second segment ones (more than 235 MMLW up to 335 MMLW).[9] On Chart B3.3, coverages planned for the countercyclical FRECH are presented.

In addition, Decree 161 of February 2014 of the Ministry of Housing, City and Territory (MVCT in Spanish), regulates the interest rate hedging for households that turn into beneficiaries of the Savers Priority Interest Program (VIPA in Spanish),[10] which provides a coverage of 5 percentage points (pp) of the interest rate on loans for the purchase of new urban housing of priority interest (up to 70 MMLW, which are equivalent to $ 41.3 million COP).

According to CONPES (in Spanish, National Council for Economic and Social Policy) 3746 of May 20 of 2013, 86.000 coverages for the fourth stage of the program are contemplated, which should be granted to debtors whose loans will be disbursed between February 1, 2014 and December 31, 2015, or up to the exhaust of the number of coverages defined by Fonvivienda. Additionally, the beneficiaries of this program may not have received coverage by either FRECH I or II nor countercyclical. For this program, a budget of $ 739 billion COP was planned, according to estimates from the MVCT, equivalent to 0.1% of the GDP in 2013.

---

9   These figures are taken from Camacol (2013). Economic Report: "Hacia la consolidación del sector edificador en Colombia: avances del año 2013 y desafíos para el 2014" — Towards the building sector consolidation in Colombia: Progress in 2013 and challenges for 2014, December.

10   In accordance with Decree 1432 of 2013, VIPA beneficiaries must comply with the following conditions: i) total monthly income cannot exceed two SMMLV; ii) not being homeowners in the national territory; iii) have not been beneficiaries of a family housing subsidy (except for special cases specified by the decree); iv) have not been beneficiaries of FRECH I, II and countercyclical coverages; v) have minimum savings of a 5% of the housing value, and vi) to have a preapproved loan for the value of the remaining funds to access the housing purchase instrument.

Housing type	Housing value	Housing value in 2013's SMMLV (million COP)	Established quotas for approved loans	Interest rate hedging (percentage points)
Non SH	Between 135 and 235 SMMLV	Between $7,6 and $138,5	9,231	2.5
Non SH	Between 235 and 335 SMMLV	Between $138,5 and $197,5	1,384	2.5

Source: Decree 0701 of 2013, resolutions 1263 of 2013 and 015 of 2014.

Finally, it is worth noting that the housing purchase interest rate hedging program has had an impact on both credit growth of this modality and interest rates. On the one hand, housing disbursements are more buoyant, accompanied by an increase in the housing portfolio expansion rate. Furthermore, after the coming into force of the countercyclical-FRECH, a reduction in the interest rates for housing purchase is observed. In this sense, it is not only important to monitor the quality of these loans, but also household's debt level.

Households use different funding mechanisms for the acquisition of real property, such as savings, government subsidies and housing loans. However, sometimes, the need for more timely financial resources, or to cover a larger value of the property, may lead them to simultaneously use several loans, including modalities different than housing. In this box, the proportion of debtors who may be in that situation and the recent trends in credit risk indicators of the loans of these people, is analyzed.

For this analysis, form 341 of the Financial Superintendence of Colombia (FSC) is used, which contains the information of people and companies with loans granted by entities supervised by the FSC is, and allows to identify the characteristics of each of the loans granted to a debtor.[1]

Figure B4.1
Debtors with more than one housing loan

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

1.   Households with more than one loan

Then, two groups of debtors are studied: the first, are those that have more than one loan in the form of housing, while the latter corresponds to debtors who presumably took consumer credit to buy real estate.

a.   Debtors with more than one housing loan

In June 2013, the housing portfolio had approximately 630.000 debtors. This number has shown an annual growth of about 11.6% since 2011. In Figure B4.1 the percentage of debtors who have more than one loan in this modality is presented. This proportion has remained relatively constant since the second semester of 2011, around 5.5%; nonetheless, the balance of the housing portfolio assigned to these debtors has increased since 2009, accounting for 13.5% of this modality's portfolio in June 2013.

In Figure B4.2, static groups analysis for the group of debtors with more than one housing loan, and the ones built using all the records of this portfolio for the same dates, are pre-

sented.[2] The results show that the static groups have a quality indicator (QI) in their first period, inferior than that observed for the total loans of the housing modality. In turn, the deterioration in the quality of these loans over time is less than that observed for the built static groups analysis, including all loans in this modality.

For its part, the proportion of debtors with more than one housing loan, who also have consumer loans (Chart B4.1) was analyzed. It is noted that this proportion showed a significant increase between June of 2011 and a year later, and has since shown a slight upward trend, especially explained by the tenure of credits in the form of "other consumer loans" (payroll loan, personal loan, revolving loan, etc.). In June 2013, 3.7% of debtors for housing, had more than one loan in this modality, and also had payroll, personal and revolving loans.

b.   Debtors with housing and consumer loans

Based on information from the 341 format, it is not possible to know whether consumer loans taken by debtors were intended for housing purchase, so it is necessary to make some assumptions to identify the debtors who could presumably be using this funding strategy. The operations analyzed correspond to debtors who:

---

1   This is possible as long as the loans were granted by different entities. If a debtor has more than one loan with a single entity, the format presents a single record (aggregate information), therefore it is not possible to identify the characteristics of each operation.

2   The 341 format assigns a risk rating to the debtor and not to the operation.

Figure B4.2
Portfolio quality analysis by static pool

A.   Cross checked static pool analysis for debtors with
      more than one housing loan

(percentage)

(quarterly follow up periods)

■ II quarter of 2013   —— II quarter of 2011   —— IV quarter of 2011
—— II quarter of 2012   —— IV quarter of 2012
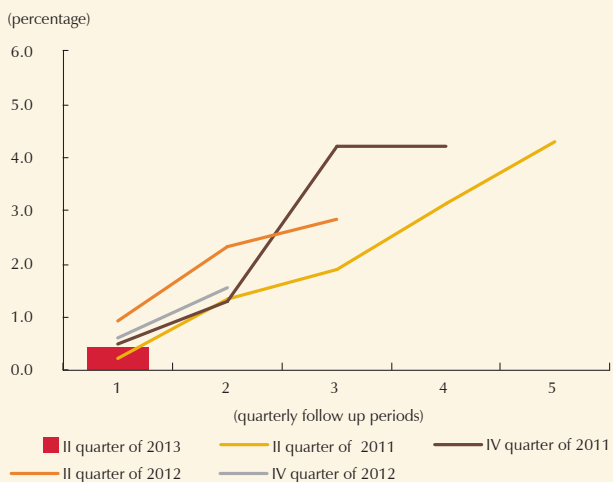
B.   Housing portfolio static pool analysis

(percentage)

(quarterly follow up periods)

■ II quarter of 2013   —— II quarter of 2011   —— IV quarter of 2011
—— II quarter of 2012   —— IV quarter of 2012
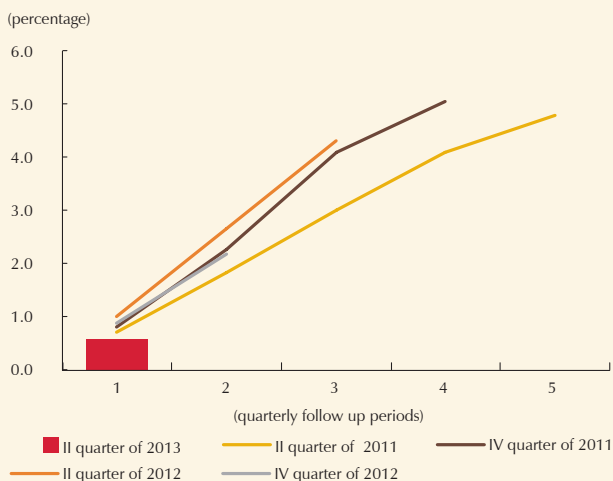
Source: Financial Superintendence of Colombia; Banco de la República calculations.

• Acquired housing loans starting from the first quarter of
2007.[3]

• Acquired loans in the form of other consumer (personal,
payroll, revolving), at the most, one year before the date
of granting of the housing loan and for an amount superior
to 10% of the property's value[4].

_____

3   Only records of debtors who have less than five housing
     loans were considered.

4   The housing value was calculated assuming that the value
     of the credit is equal to 59.7% of it in the case of SH, and
     48.8% for housing different than SH. These percentages co-

Box B4.1
Proportion of debtors with more than one housing loan
and consumer loan
(percentage)

Date	Credit cards	Car loans	Other consumer loans
Jun-08	3.22	0.50	2.80
Dec-08	2.87	0.47	2.48
Jun-09	2.10	0.37	1.77
Dec-09	2.32	0.39	1.85
Jun-10	2.47	0.48	2.16
Dec-10	2.78	0.58	2.12
Jun-11	2.77	0.56	2.13
Dec-11	4.17	0.93	3.38
Jun-12	4.34	0.97	3.57
Dec-12	4.48	0.99	3.67
Jun-13	4.47	0.97	3.65

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

On chart B4.2 the main features of these operations are pre-
sented. In June 2013, the number of debtors who acquired
housing loans at later dates to December of 2006, and who
could have taken consumer loans to finance the down pa-
yment is close to 103.000; which corresponds to 14% of
the total debtors who took housing loans starting from this
date. As for the balance's share for each modality, debtors'
loans considered in this analysis accounted for 36.1% of the
housing loans balance, and 7.9% of the "other consumer"
portfolio on June 2013.[5]

As for the loans average value, it is found that those with a
loan under the "other consumer loans" type, additional to
housing loans, have an average housing credit higher ($ 63.2
million COP) than the value observed for the total of debtors
of that portfolio ($ 42.1 million COP).

In Figure B4.3, the proportion of new housing loans that are
assigned each period to debtors entering the cross checking
is shown; i.e., the percentage of credits under this modality
that are granted to debtors who a year before had presuma-

_____

     rrespond to the loan to value reported by Asobancaria (Colom-
     bian Banking Association) in June of 2013 The limit is set on
     the sum of all the credits under "other consumer loans", which
     have been taken by the debtor one year before the date of the
     housing loan granting.

5   This calculation takes into account only debtors with less than
     five housing loans.

Number of debtors and average loan value by type

Variable	Debtors with housing and consumer loans	Debtors with housing loan	Debtors with other consumer loans
Number of debtors	102,953	707,664	9.856,350
Housing loan average value (Colombian pesos)	63.184,767	42.111,253	
Consumer loan average value (Colombian pesos)			5.809,244

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

bly taken consumer loans for the purchase of real estate. As noted, this proportion has presented a downward trend since June of 2011, moving from 14.3% in that date, to 11.8% six months later.

Figures B4.4 and B4.5 show the evolution of the static pool analysis for debtors who have loans both in the form of housing as in the "other consumer loans." These results are compared with those obtained for the total of debtors who took loans in each category.

When comparing the static pool analysis for loans under "other consumer loans" from the first group of debtors (Figure B4.4, panel A) with the ones constructed from the total of operations of this type (Figure B4.4, panel B), it is observed that the former have a better quality indicator (QI) in the first period of loan monitoring. However, its deterioration in terms of credit risk is higher. Consequently, in June 2013 static pool analysis from before 2012, show an IQ higher than the observed for the static pool analysis calculated with all credits under the other consumption type. Meanwhile, it is noteworthy that the initial QI of loans granted to the group of debtors for the first half of 2013 cross checking, is higher than that observed for previous static pool analysis.

When the static pool analysis of housing loans in the first group of debtors are compared (Figure B4.5, panel A), with those calculated from all operations of this type (Figure B4.5, panel B), it is found that the pace of deterioration in terms

Figure B4.4
Other consumer loans portfolio quality analysis by static static pool analysis

A.   Static pool analysis of loan from debtors of the housing-consumption cross checking

(percentage)
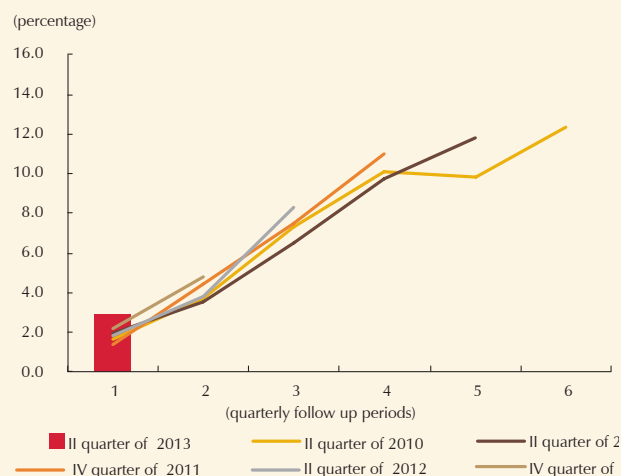
B.   Static pool analysis made with the other consumer loans portfolio

(percentage)

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

Figure B4.3
Proportion of new housing loans assigned to debtors of the housing-consumption cross checking

(percentage)
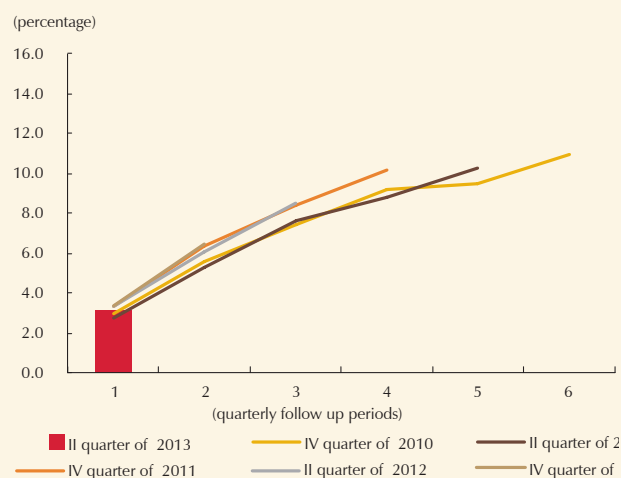
Source: Financial Superintendence of Colombia; Banco de la República calculations.

of credit risk is higher for the former. For example, in June 2013, credits from the first semester of 2010 showed an IQ of 7.4%, while this built value, considering all the operations of this type, was of 5.6%.

The results of the analysis presented in this box, suggest that the proportion of debtors in the housing portfolio using additional loans from other modalities to finance the purchase of property, is greater than those who have more than one housing loan. Although the number of debtors who presumably have taken consumer loan for this purpose, has declined since 2011, it is important to note that these operations represent a significant proportion of the housing portfolio (36.7%), and that their credit risk indicators show a faster deterioration compared to that observed for the total housing portfolio.

Figure B4.5
Housing portfolio quality analysis by static pool analysis

A.   Static pool analysis of loan from debtors of the housing-consumption cross checking

(percentage)
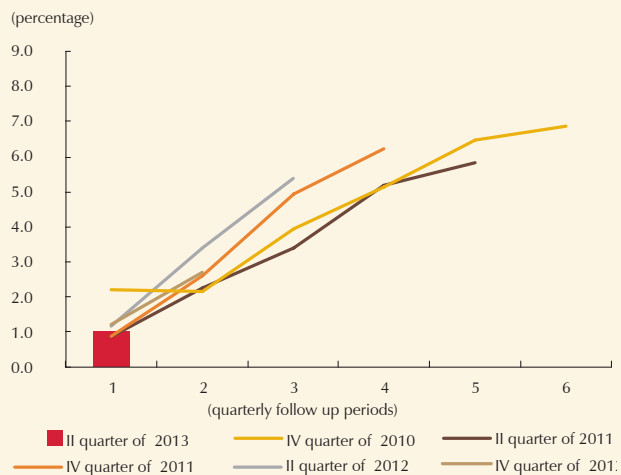
B.   Static pool analysis made with the housing loans portfolio

(percentage)
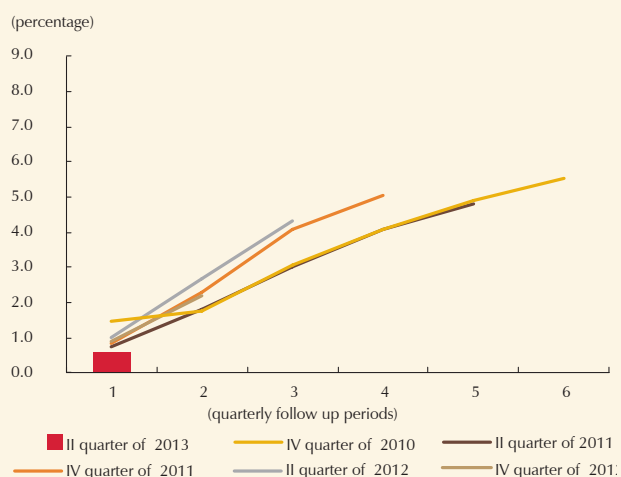
Source: Financial Superintendence of Colombia; Banco de la República calculations.

IV.   FINANCIAL SYSTEM RISKS

During the second semester of 2013, the dynamics for risky portfolio accelerated, while that of the non-performing loan portfolio slowed down. In turn, the quality indicator as much as the default one exhibited a stable behavior in comparison to a year ago. By modality, micro-credits showed the greatest increase both in quality and default indicators, while consumption and mortgage loans showed improvements. In the case of the commercial loan portfolio, its indicators exhibited stability.

On the other hand, exposure to market risk increased, given the greater balance exposed by different companies, which was reflected in the increase of the possible portfolio losses facing the variations of the interest rate. Under this analysis, trust companies, insurance companies and the funds managed by pension and severance funds managers would be the most vulnerable facing a reduction in the prices for these assets. Additionally, average value at risk increased during the last semester for all the sectors analyzed, except cooperatives, for which it decreased.

Finally, in the second semester of 2013, credit institutions exhibited liquidity levels above the threshold established by the regulations, which indicates that they count with the necessary resources to fulfill their commitments in the short term. Additionally, from October 2013, banks have shown a growing trend in their liquidity indicators, while those of other sectors do not show a definite trend. Finally, an exercise of stress on the liquidity risk indicator proved that banks would be in conditions to tend to their financial obligations in more adverse funding conditions.

A.   JOINT RISK ANALYSIS

In terms of financial stability, it is important to perform an ongoing monitoring of the different risks and profitability and soundness levels of the financial intermediaries, as well as of the macroeconomic conditions.

In order to perform a joint analysis of the risks to which the financial system is exposed to, a financial stability map is presented (FSM), which aims to measure the stability of the system with six dimensions: three, related with the present risk conditions; two, with the macroeconomic environment situation, and one, with the soundness and profitability of the system. The used methodology sorts the risk on a scale from one to nine, where one is the lowest level of risk. It should

be noted that the model seeks to provide an indicator of the current state of the financial system.

To complement this analysis, the financial stability index for Colombia (IEFI in Spanish),[72] is presented, which allows to determine the level of contemporary stress in the financial system, both, in overall and by sector, allowing to generate a diagnosis of Colombia's financial stability. The indicator is calculated on a monthly basis, and takes into account the profitability and probability of default.[73]

1. Financial stability map

As mentioned, the FSM considers six dimensions: domestic macroeconomic environment, external sector, profitability and solvency, in addition to credit, market and liquidity risks. For each of the categories, representative variables were chosen in order to assess the levels of risk each of them faces.[74] [75] The indicators considered for each of the dimensions are presented in Chart 9.

The model was built on a quarterly basis for the dimensions related to the macroeconomic environment, and monthly for the financial system variables.[76] For each of the indicators, the longest time series available was used, so that there are some variables whose dimension is shorter.

The comparative results of the FSM are presented in Figure 49. The brown color line represents the median, and is considered as a medium risk level. It should be noted that the figure interpretation should be cautious, because the description of the risks does not imply the analysis of systemic risk measure, does not take into account the relationships between the different risks.

---

72   For more information see D. Estrada and M. Morales (2009), A Financial Stability Index for Colombia, Banco de la República's Financial Stability Issues, Financial Stability Report, March of 2009.

73   As suggested by the document from O. Aspachs; C. A. E. Goodhart; M. Segoviano; D. P. Tsomocos; L. Zicchino (2006). Searching for a Metric for Financial Stability, LSE Financial Markets Group Special Paper Series, No. 167.

74   In choosing the variables, indicators who had a representative behavior of the risk to be analyzed in each dimension were taken into account; however, in some cases it is difficult to find indicators that fulfill this property.

75   The FSM was made following the methodologies suggested in the Global Financial Stability Report of the International Monetary Fund (October of 2008), and P. Bedford; C. Bloor (2009). A Cobweb Model of Financial Stability in New Zealand, Discussion Paper Series, no. DP2009 / 11, Reserve Bank of New Zealand.

76   The difference in frequency of each of the dimensions does not involve difficulties, because each one was independently built from the others.

Chart 9
FSM dimensions and variables

Domestic macroeconomic environment	External sector exposure	Credit risk	Liquidity risk	Market risk	Profitability and solvency
GDP growth	Colombia EMBI+	Default indicator	Unhedged liabilities ratio (ULR)[a/]	Negotiable securities percentage	Solvency
Inflation	Exports over imports	Non-performing loans portfolio growth	Liquid liabilities over liquid assets (LL/LA)	Value at risk (VaR)	ROE
Unemployment	Current account		Deposits over gross portfolio	Term	Ex-post intermediation margin
Fiscal deficit	Foreign direct investment (FDI)		Interbank funds over liquid assets		Leverage

a/ This ratio seeks to measure the shortage of liquid assets that financial institutions may face as a result of its term transformation activity. For its calculation, liquid liabilities, negotiable and available for sale investments, and liquid and total assets are taken into account. For more information see the March of 2010 Financial Stability Report, liquidity risk section.
Source: Banco de la República.

Figure 49
Financial stability map
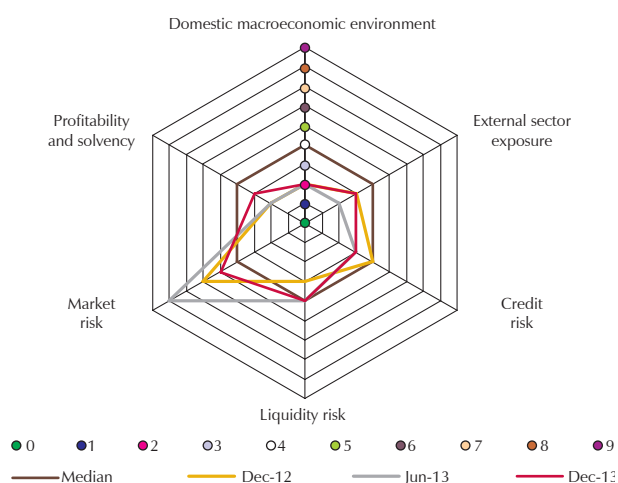
Sources: Financial Superintendence of Colombia, DANE and Bloomberg; Banco de la República calculations.

In December 2013, domestic macroeconomic environment recorded a similar behavior to that observed in the first semester of the same year, and it is emphasized that all the indicators that comprise it showed an improved performance compared to six months before. During the second half of the mentioned year, the growth pace of the product remained at positive and higher levels than those recorded in the first half. This behavior was accompanied by a decrease in the inflation and unemployment rates,[77] as well as in the fiscal deficit (Figure 50, panel A). As for the external sector, there is a deterioration compared to the performance observed in the first half of the year. This result is due to a higher current account deficit, and the reduction of the FDI. However, a positive dynamic of the exports to imports ratio, and a lower perception of the country risk (Figure 50, panel B) is highlighted.

Regarding the financial system's risks, vulnerability with respect to credit risk was unchanged compared to the levels reached in June 2013, although a lower growth rate of the non-performing loans portfolio was noted, and a slight decrease in the default indicator during the analyzed period (Figure 50, panel C). Liquidity risk also remained stable, which is explained by a decrease in the ratio between interbank funds and liquid assets, which was compensated by a decline in the

---

77   This unemployment rate corresponds to the one reported for the seven metropolitan areas.

Figure 50
FEM dimensions

A.   Domestic macroeconomic environment

(standard deviations)

- GDP annual variation (negative)
- Fiscal deficit (negative)
- Inflation
- Standardized indicator
- Unemployment
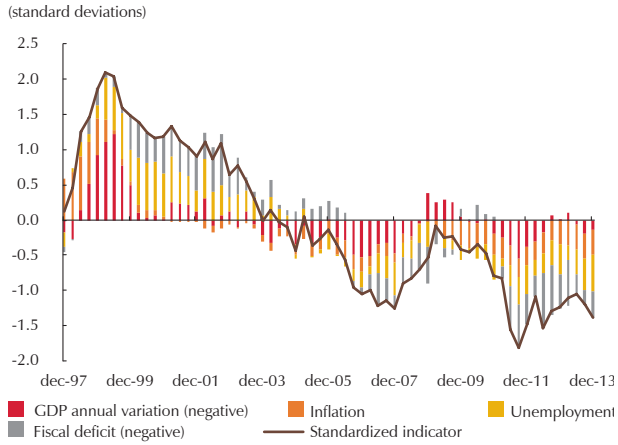
B.   External macroeconomic environment
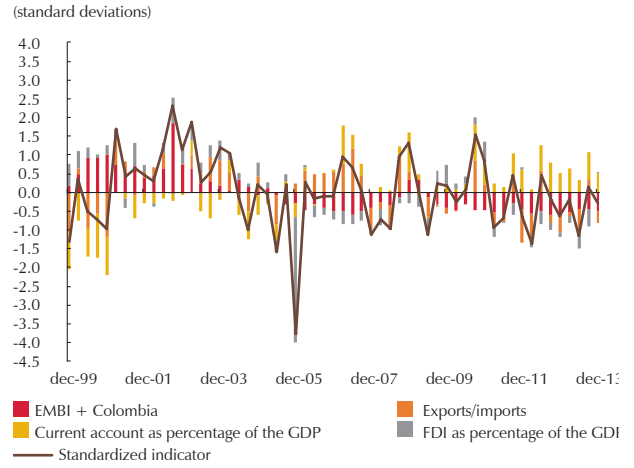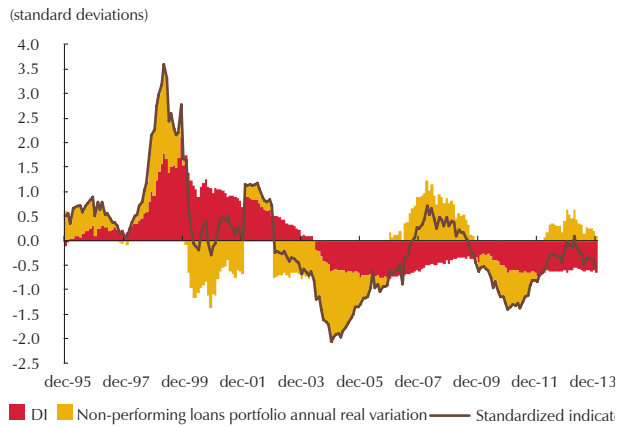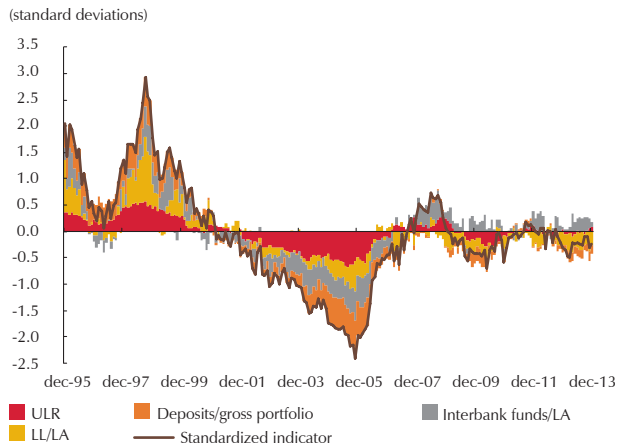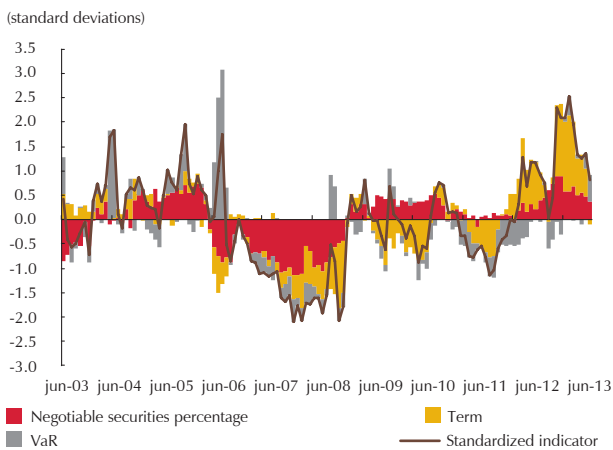
(standard deviations)

- EMBI + Colombia
- Current account as percentage of the GDP
- Standardized indicator
- Exports/imports
- FDI as percentage of the GDI

C.   Credit risk

(standard deviations)

- DI
- Non-performing loans portfolio annual real variation
- Standardized indicat

D.   Liquidity risk

(standard deviations)

- ULR
- LL/LA
- Deposits/gross portfolio
- Standardized indicator
- Interbank funds/LA

E.   Market risk

(standard deviations)

- Negotiable securities percentage
- VaR
- Term
- Standardized indicator

F.   Profitability and solvency

(standard deviations)

- Solvency
- Leverage
- ROE
- Standardized indicator
- Ex post margin
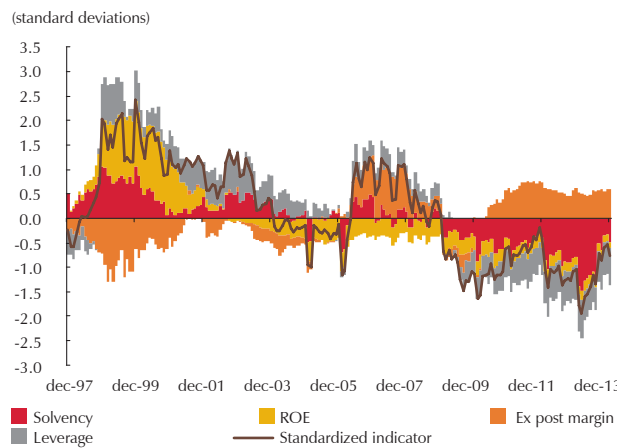
Sources: Financial Superintendence of Colombia, DANE and Bloomberg; Banco de la República calculations.

unhedged liabilities ratio (ULR), and the relationship between liquid liabilities and liquid assets (Figure 50, panel D).

In relation to market risk, it is observed that the exposure to it decreased compared to that recorded in June 2013, although it is still above the median. This result is explained by a reduction in both, the percentage of negotiable securities as its duration, while an increase in the value at risk (VaR)[78] was observed (Figure 50, panel E). Finally, the profitability indicator and capital adequacy ratio showed a deterioration compared to six months before as a result of a lower performance of all the variables that make up this indicator (Figure 50, panel F).

In short, during the second half of 2013 a reduction in market risk due exposure was evidenced due to the lower share of the negotiable securities balance, and a reduction in its duration compared with that observed in the first six months of the year, while the external sector and the dimensions of profitability and solvency showed deterioration. Meanwhile, the domestic macroeconomic environment and the credit and liquidity risks presented a similar behavior to that seen in the first half of the year. In general, although most of the components of the FSM do not register a risk level higher than the median, it is necessary to continue monitoring the analyzed indicators in order to identify changes in the indicator's trend that may show signs of system's stability risk.

2. Financial stability index for Colombia (IEFI in Spanish)

For the construction of the IEFI, it is used capital, profitability, credit risk and liquidity ratios of financial intermediaries. The selected variables to form the index are: return on assets (ROA), return on equity (ROE), the default indicator (DI), unproductive loan portfolio over total loan portfolio (UP), intermediation margin (IM), liquid liabilities over liquid assets (LL/LA), interbank funds over liquid assets (IF/LA), and ULR.

These variables are weighted by different methods suggested by international literature, such as variance equal approach,[79] principal components analysis[80] and models for count data. In this report, results are presented using the equality

---

78   Value at risk (VaR), is a measure that estimates the maximum loss that an institution may experiment in its investment portfolio on a forecast horizon and at a confidence level. It is noteworthy that the VaR series was used employing the quantile regression methodology, contemplating ARCH effects. For further details see box 5, "Implementación de la metodología de regresión por cuantiles para el cálculo del VaR" (Implementing the quantile regression methodology for calculating VaR), of the Financial Stability Report of September 2012.

79   It is known as VEA. In this technique, variables are standardized to express them in one unit and then adding them, using identical weights.

80   The main idea behind the methodology of principal components is to obtain an index from the weighting of the selected variables, such that this combination explains the maximum of the joint variance of the variables.

of variances methodology, since the index behavior is similar using the three mentioned methods.

It is worth noting that all the variables that make up the indicator were standardized, thus facilitating their interpretation. Therefore, the stress level of the current period can be compared with the historical in terms of deviations from the mean. Greater than zero index values correspond to periods of financial stress above the average, while negative values indicate periods of more stability. Also, an increasing or decreasing behavior of the index during a specified time also provides useful information about the evolution of the stress level in time.

Given the availability of data, the index can be built for the system, as well as by type of institution, including commercial banks (CB), commercial financing companies (CFC)[81] and financial cooperatives (COOP). Because the methodology used is that of equality of variances, all variables have the same weight in the index.

Figure 51
Financial stability index

(standard deviations)
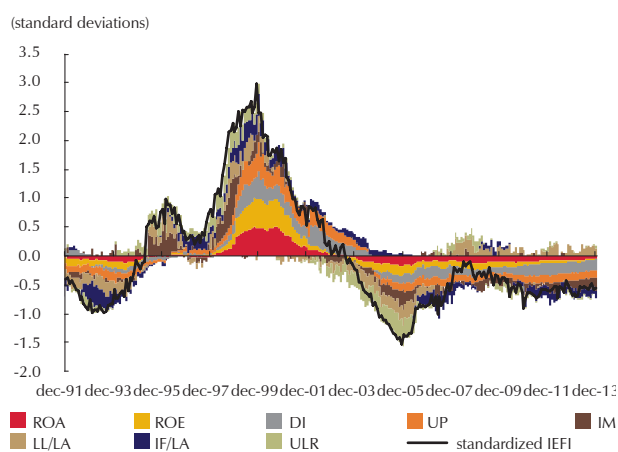
Source: Financial Superintendence of Colombia; Banco de la República calculations.

In Figure 51, it is noticed that the IEFI remained stable between June and December 2013. It should be noted that since mid-2003, the index has been registering negative values, suggesting that the stress levels of the system have remained low. Additionally, it is important to mention that the only factors that have positive values in the most recent periods are the interbank funds[82] to liquid assets ratio and the ULR.

Figure 52 shows the calculated indicator for the different types of analyzed entities. Between June and December of last year, the level of financial stress was stable and with negative index values for all types of entities. It is worth noting that for COOPs and CBs, the indicator has been showing an upward trend since early 2013, a dynamic that is mainly explained by the higher values of interbank funds to liquid assets ratio.[83]

81   This includes leasing companies.

82   These interbank funds correspond with those reported by entities in account 12 of the Mandatory Chart of Accounts (PUC in Spanish), in which the asset positions in money market and related operations are registered.

83   This ratio has been increasing, because since April 2013, liquid assets have registered a downward trend, while the interbank funds have remained relatively constant. In the case of CBs, liquid assets have been reduced due to a decrease in negotiable investments in debt securities, while for the COOPs these have been reduced by a fall in cash assets.

Figure 52
Financial stability index by type of institution

A.   Banks
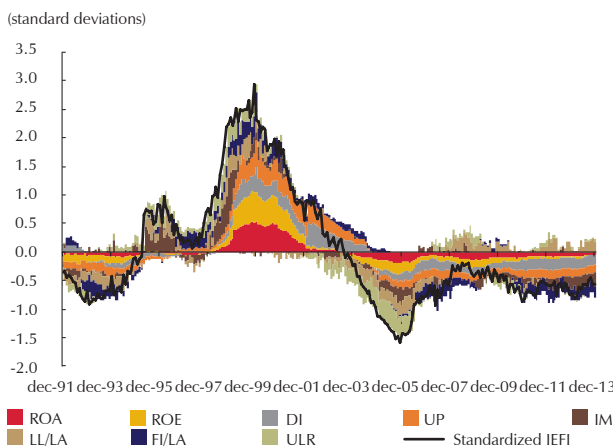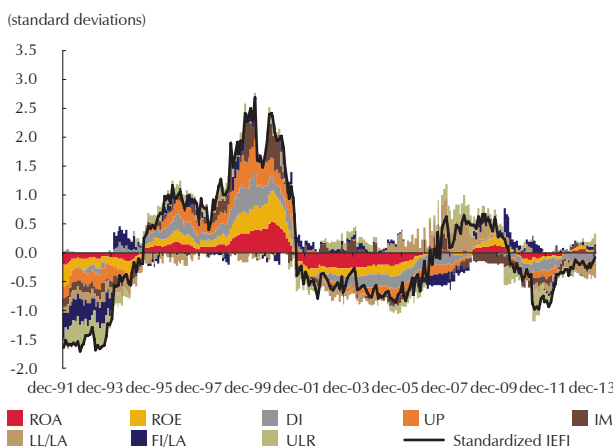
(standard deviations)

ROA	ROE	DI	UP	IM
LL/LA	FI/LA	ULR	Standardized IEFI	

B.   CFC

(standard deviations)

ROA	ROE	DI	UP	IM
LL/LA	FI/LA	ULR	Standardized IEFI	

C.   Cooperatives

(standard deviations)

ROA	ROE	DI	UP	IM
LL/LA	FI/LA	ULR	Standardized IEFI	
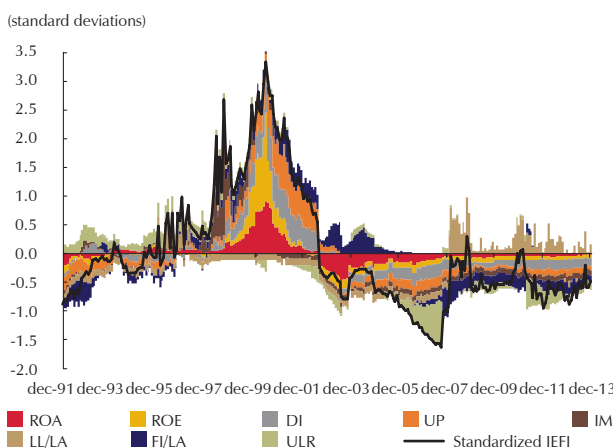
Source: Financial Superintendence of Colombia; Banco de la República calculations.

In conclusion, indicator results show that system's stress degree has been stable and remains below the historical average levels. It is noteworthy that, although the BCs and COOPs group presented index values similar to those recorded six months earlier, their indicator has been showing an upward trend since December 2012. Therefore, it is important to maintain a continuous monitoring that allows to identify an indicator's trend changes that show signs of risk that may affect the system's stability.

B.   MARKET RISK

1.   Financial system's exposure to public debt securities

In this section, market risk exposure of the public debt securities (TES) portfolio of different entities in the financial system is analyzed. For this, it was quantified the balance of investments in these assets in accordance with the available data in Securities' Central Deposit (DCV in Spanish) of the Central Bank.

The pension and severance funds management companies (PFMs) and trust companies (TCs), are the entities that manage the largest amount of public debt securities in the financial system, while commercial banks are the entities that have the largest number of these in proprietary position. In terms of credit institutions, commercial banks recorded an increase in the balance of TES exposed to market risk,[84] between August 2013 and February of the present year. By the 14th of February of this year, the exposed portfolio of these entities was at COP $28.65 trillion, when six months earlier it was at COP $27.39 trillion. This increase was accompanied by a decrease in the proportion of negotiable securities within the TES portfolio, from 76.32% to 73.14%. Moreover, financial corporations (FCs) increased their TES

---

84   This balance corresponds to the TES nominal balance in COP for the different entities.

holdings, increasing from COP $2.32 trillion to COP $4.55 trillion during the same period (Chart 10).

For its part, the PFMs and the TCs, jointly administer 91.97% (53.01% and 38.96% respectively) of the total public debt securities in proprietary and third party positions of the non-banking financial institutions (NBFIs). By analyzing the different portfolios of these institutions, a mixed behavior is observed. On the one hand, between August 2013 and February 2014, the proprietary position, administered by the PFMs and the TCs, as well as the third parties position of the brokerage firms (BFs), recorded a growth in its TES exposed balance. On the other hand, the BFs in their own position, as well as the insurance and capitalization companies (ICs), reduced their TES holdings (Chart 10).

Chart 10
Financial entities' market risk exposed TES balance (TES in Colombian pesos and RVUs)

	16-Aug-13		14-Feb-14		Variation (percentage)
	Exposed Balance[a]	Percentage[b]	Exposed Balance[a]	Percentage[b]	
Credit institutions	**29.73**	**77.59**	**32.73**	**74.48**	**10.10**
Commercial banks	27.39	76.32	28.65	73.14	4.59
Financial corporations	2.32	97.19	4.55	96.08	96.53
Commercial financing companies	0.02	53.61	0.02	50.83	(9.15)
Financial cooperatives[c]	0.00	7.37	0.00	29.42	36.66
Non-banking financial institutions	**98.71**	**96.65**	**101.78**	**96.02**	**3.11**
Pension funds proprietary position	0.07	50.26	0.15	85.26	114.77
Pension funds third party position	53.38	100.00	53.80	100.00	0.78
Trust companies proprietary position	1.50	94.54	1.56	93.68	4.53
Trust companies third party position	35.38	100.00	38.09	100.00	7.65
Brokerage firms proprietary position	0.65	99.99	0.57	99.99	(11.52)
Brokerage firms third party position	2.04	100.00	2.12	100.00	4.05
Insurance and capitalization companies	5.70	63.54	5.45	56.99	(4.24)
Financial system	**128.40**	**91.42**	**134.42**	**89.65**	**4.69**
Other	24.26	100.00	26.11	100.00	7.63
TES total in COP and RVU	**152.71**	**92.72**	**160.55**	**91.19**	**5.13**

a/ Figures in trillion Colombian pesos.
b/ TES total portfolio percentage.
c/ The market risk exposed TES balance for this entities is $426.6 billion COP and 582.9 billion COP for the 16th of August of 2013 and the 14th of February of 2014 respectively.
Sources: Financial Superintendence of Colombia and Banco de la República (DCV); Banco de la República calculations.

To measure the sensitivity of the value of the public debt portfolio to changes in the interest rates, the modified duration for each of the financial system's entities was calculated.[85] Between August 2013 and February 2014 a reduction in duration of the total bid of the government's and the financial system's debt took place; however, the performance was diverse across sectors. It is highlighted, on the one hand, an increase in the financial corporations' portfolio duration, from 2.78 years to 3.92 years in the studies period, and for ICs, which increased from 4.92 to 5.47 years. Moreover, it is worth noting that for the PFMs, duration decreased, both in the proprietary position as for third parties (Chart 11).

Chart 11
Financial entities' TES portfolio term[a/] (TES in Colombian pesos and RVU)

	16-Aug-13	14-feb-14	Difference
Credit institutions			
Commercial banks	2.56	2.52	(0.05)
Financial corporations	2.78	3.92	1.14
Commercial financing companies	1.85	1.38	(0.47)
Financial cooperatives	2.06	2.33	0.27
Non-banking financial institutions			
Pension funds proprietary position	4.56	3.66	(0.89)
Pension funds third party position	5.32	5.18	(0.14)
Trust companies proprietary position	4.12	4.07	(0.05)
Trust companies third party position	3.94	3.96	0.02
Brokerage firms proprietary position	2.24	2.07	(0.17)
Brokerage firms third party position	2.95	2.89	(0.06)
Insurance and capitalization companies	4.92	5.47	0.55
Financial system	**4.14**	**4.07**	**(0.07)**
Other	3.47	3.40	(0.07)
Bid	**4.04**	**3.97**	**(0.07)**

a/ Figures in years.
Sources: Financial Superintendence of Colombia and Banco de la República (DCV); Banco de la República calculations.

In summary, the FCs, cooperatives and the TCs managed position increased their market risk exposure as a result of increase in the duration of their portfolio and the balance exposed. For other portfolios, at least one of these indicators decreased.

---

85   The modified duration is a measure of a bond's price sensitivity given changes in the interest rates. In this Report, the negative of this indicator is presented, so the higher it is, TES portfolio presents more interest rate risk for this entities

2. Sensitivity to increases in the TES rate

This section provides a sensitivity test performed in order to analyze the market risk exposure of different financial entities. This consists in calculating the portfolio value losses given an increase of 400 bp in all the maturities for the TES zero coupon curve in Colombian pesos and real value units (RVU),[86] which is the shock suggested by the Financial Stability Board for such tests.

Financial institutions' valuation losses before a 400 bp parallel shock in the TES curve would increase when compared to August 2013 for most of the analyzed entities. In this scenario, as of the 14th of February 2014, losses to a parallel shift of the curve would reach COP $4.48 trillion for the total of credit institutions, an amount higher by COP $693 billion to those that would be presented if the shock had occurred in August 2013 (Chart 12).[87] This increase is especially due to increases in the exposed balance between August 2013 and February of the current year.

Chart 12
Valuation losses before a 400 bp increase as equity percentage

	16-Aug-13			14-feb-14		
	Losses	Equity	Equity percentage	Losses	Equity[a/]	Equity percentage
	(trillion COP)			(trillion COP)		
Credit institutions	**3.78**	**58.79**	**6.44**	**4.48**	**63.03**	**7.10**
Commercial banks	3.52	50.55	6.96	4.10	54.45	7.54
Financial corporations	0.26	4.96	5.30	0.37	5.33	6.94
Commercial financing companies	0.00	2.64	0.09	0.00	2.76	0.06
Financial cooperatives	0.00	0.65	0.09	0.00	0.48	0.04
Non-banking financial institutions	**17.79**	**378.27**	**4.70**	**18.42**	**388.50**	**4.74**
Pension funds proprietary position	0.02	2.75	0.68	0.03	2.57	1.07
Pension funds third party position	10.48	148.71	7.05	10.44	152.20	6.86
Trust companies proprietary position	0.25	1.63	15.35	0.26	1.74	14.92
Trust companies third party position	5.23	206.66	2.53	5.69	212.14	2.68
Brokerage firms proprietary position	0.02	0.82	2.90	0.02	0.84	2.62
Brokerage firms third party position	0.23	8.70	2.60	0.24	9.71	2.51
Insurance and capitalization companies	1.56	9.00	17.32	1.74	9.29	18.67
Financial system	**21.57**	**437.06**	**4.94**	**22.89**	**422.03**	**5.42**

a/ Equity as of December of 2013.
Sources: Financial Superintendence of Colombia and Banco de la República (DCV); Banco de la República calculations.

---

[86]   For the RVU TES, an increase in the RVU's benchmark rate real margin is assumed. If it were an increase in the inflation expectations, losses would occur only in fixed rate TES, as the security in RVU real return would not change.

[87]   For commercial banks, losses would increase from COP $ 3.52 trillion to $ 4.1 trillion in the period analyzed.

On their part, NBFIs would reach a joint loss of COP $18.42 trillion in February 2014, an amount higher by COP $629 billion to what would be recorded if the shock had occurred six months before. This result is mainly associated with the increase in the potential losses in the TCs third party position, which would reach COP $5.69 trillion in February of the current year, as well as the ICs ones, which would reach COP $1.74 trillion. In both cases, these would be superior to those that would have registered in August of 2013, increasing by COP $464 billion and COP $177 billion respectively (Chart 12). As well as for credit institutions, this behavior would be obeying to a rise in the exposed balance.

With the aim of giving an order of magnitude to those potential losses, these are presented as a percentage of the equity and profits for credit institutions and NBFIS.[88] By type of institution, ICs are the ones who would lose the most in relation to their equity (18.67%), a superior value that the one that would have presented six months earlier (17.32%). This increase is explained by the higher percentage rise in the TES duration for these institutions in relation to the decrease in the TES exposed balance and their equity growth. Additionally, it is important to mention that, under this scenario, the losses that entities would record, would absorb their total profits.[89]

Among credit institutions, commercial banks[90] and FCs are the ones who will lose the most in relation to their equity, 7.54% and 6.94% in that order, if the shock has occurred in February of this year. If losses in these sectors are compared in relation to their profits, as of February 2014, these would represent 59.60% and 63.23%, when six months earlier they were of 50.10% and 52.49%, respectively. Thus, for commercial banks and FCs, an increased vulnerability to market risk is seen, and losses on this scenario would represent a larger share of these entities' profits. It is important to mention that for the second, the level of exposure to market risk increased significantly in the period under review, both for an increase in their exposed balance, as for an expansion in their TES portfolio; hence that the incurred losses under this analysis, represent a significant portion of their profits. Meanwhile, commercial financing companies and financial cooperatives, would not record significant losses in relation to their equity and profits,[91] due to their low public debt portfolio balance.

---

88   The values of the profits and equity employed in this test correspond to the ones reported to the FSC with a closing date of August and December 2013.

89   The recorded losses would be COP $ 1.74 trillion, representing about 3.11 times the value of profits (COP $ 560 billion).

90   It is worth mentioning that, since this analysis excludes securities classified at maturity, the potential risks on the coupons that the entity receives for such securities are not taken into account. In particular, for banks, on a yearly period, income from these coupons would be COP $ 0.66 trillion and COP $ 0.84 trillion for the 16th of August 2013 and the 14th of February 2014 respectively.

91   With regard to its profits, losses would represent 0.47% and 0.41% respectively.

When analyzing the NBFIs losses, the entities who would record higher losses in connection with their equity, after the ICs, would be the TCs (proprietary position), which by February 14, 2014, would have lost 14.92%; a lower value that the result if the shock would have happened six months ago (15.35%). In terms of profits, losses for this sector would account for 75.28%. It is worth noting that the third party position of the PFMs and the TCs presented negative profits as of December 2013, which could be exacerbated before any adverse movement in the TES market, and thus generate greater decreases in the managed funds value.

The results for the sensitivity test show an increase in the market risk exposure for most entities, especially explained by a greater exposed balance. Thus, the ICs, TCs and commercial banks would be the most vulnerable entities with a decrease in the prices of these assets. Moreover, profit reduction in some sectors makes these entities more vulnerable to potential devaluations in the public debt market.

3.   Value at risk

Value at risk (VaR) is a measure that estimates the maximum loss that an institution can experience in its investment portfolio on a forecast horizon, given a determined confidence level. This is included in order to obtain a more rigorous approach to the market risk that both, credit institutions and NBFIs, are exposed. Specifically, the VaR of each of these sectors is defined as the aggregate individual VaR of each of the entities that make them up, and is presented as a percentage of the exposed balance.

First, the implemented procedure for calculating the VaR implies a returns daily estimation of each of the risk factors. Following the methodology suggested by RiskMetricks,[92] these factors were set to specific terms, both for the TES zero coupon in Colombian pesos, as for the TES denominated in RVUs, between January 3, 2003 and February 14, 2014.

From the returns estimates, VaR was calculated using the observed portfolios on Friday of each week during the studied period for each of the entities in each sector. With this information, risk measure was estimated daily with a 99% confidence by using the quantile regression methodology, including the dynamics of the conditional variance.

In general, for all the analyzed sectors, the average VaR between September 2013 and February 2014, were higher than those observed six months earlier, with the exception of cooperatives, for which it decreased by 10 bp (Chart

---

92   RiskMetricks (1996). "Technical Document", J.P. Morgan/Reuters, fourth edition, December of 1996.

13). With respect to other credit institutions, the average VaR for banks, financial corporations and commercial financing companies increased by 20 bp, 12 bp and 3 bp in that order (Figure 53). Meanwhile, some NBFIs entities recorded the largest variations in the financial system, such as in the case of TCs proprietary and third party positions (34 bp), followed by the PFMs

Chart 13
Average six month VaR

	Average (March of 2013 to August of 2013)	Average (September of 2013 to February of 2014)	Difference
		(percentage)	
Credit institutions			
Commercial banks	0.73	0.92	0.20
Financial corporations	0.71	0.82	0.12
Commercial financing companies	0.60	0.62	0.03
Financial cooperatives	0.62	0.52	(0.10)
Non-banking financial institutions			
Pension funds proprietary position	0.81	1.09	0.28
Pension funds third party position	1.20	1.40	0.20
Trust companies proprietary position	0.88	1.21	0.34
Trust companies third party position	0.94	1.28	0.34
Brokerage firms proprietary position	0.73	0.82	0.09
Brokerage firms third party position	0.61	0.79	0.17
Insurance and capitalization companies	1.03	1.06	0.03
Financial system	**0.87**	**1.08**	**0.21**

Sources: Financial Superintendence of Colombia and Banco de la República (DCV); Banco de la República calculations.

Figure 53
Credit institutions' VaR as percentage of the exposed balance

(percentage)
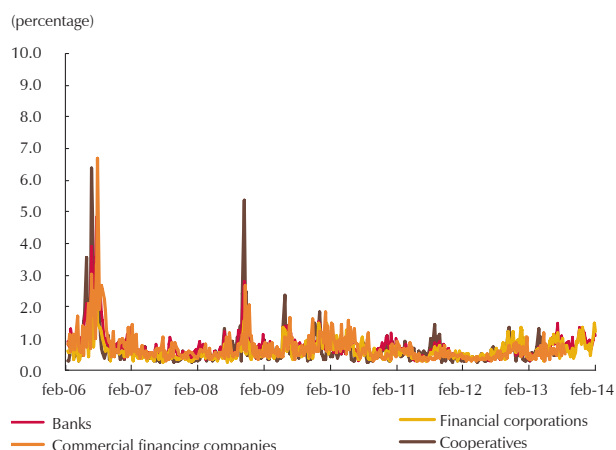
Source: Banco de la República (DCV); cálculos del Banco de la República.

proprietary (28 bp) and third party (20 bp) positions (Figure 54).

According to the above, the VaR of the financial system has registered an increase in its six month average compared to the immediately preceding period, although in the last two months it has shown a decline, and is at lower levels than those observed in periods of increased volatility in the public debt market (Figure 55). Despite this, it is important to continue monitoring this risk, as an adverse situation in this market, together with the high TES holdings recorded by some sectors of the financial system, can cause damage to the value of these portfolios, as well as in the entities' capital and solvency levels.

Figure 54
NFBI's VaR as percentage of the exposed balance

A.   Proprietary position

(percentage)

a/ Includes proprietary and third party positions.
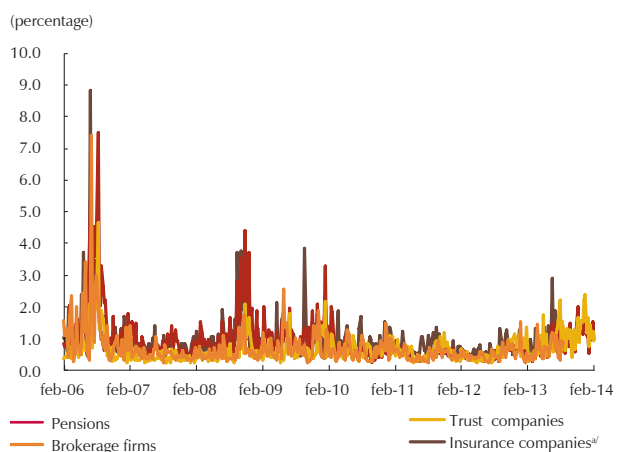
B.   Third party position
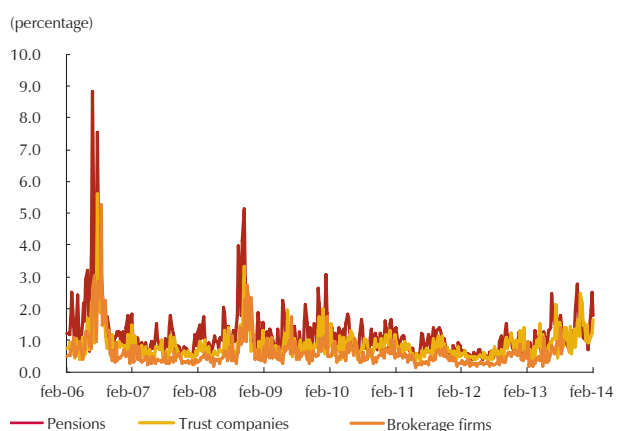
(percentage)

a/ Includes proprietary and third party positions.
Source: Banco de la República (DCV); Banco de la República calculations.

Figure 55
Financial system's VaR as percentage of the exposed

(percentage)
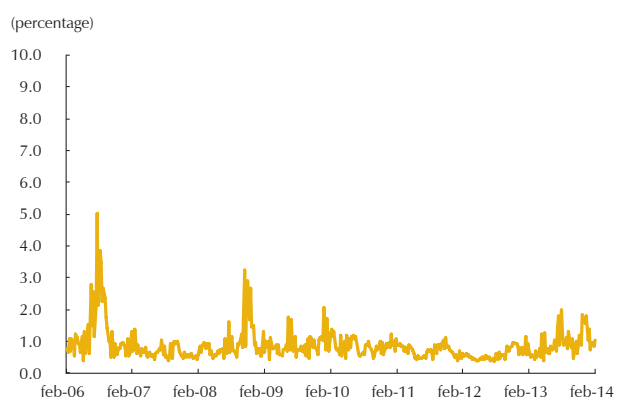
Source: Banco de la República (DCV); Banco de la República calculations.

C.   CREDIT RISK[93]

1.   Portfolio quality and coverage

Between December 2012 and a year later, a stable behavior in the risk indicators took place. In analyzing this result by type of credit, it is found that consumption and housing showed improvements in their indicators over the last year, while microcredit continues to show deterioration. For its part, the commercial portfolio continues to have a stable behavior in each of its indicators. Next, an ex-ante credit risk measure (quality indicator), and an ex-post (default indicator), are analyzed.

The portfolio quality indicator (QI), measured as the ratio between risky[94] and gross portfolio, was at 6.6% in December 2013; an unchanged figure from a year ago (Figure 56). By type of portfolio, a drop by housing and consumption is remarked, which decreased 95 bp and 50 bp respectively, reaching a level of 4.1% and 7%, in that order. Meanwhile, the commercial portfolio showed an increase of 20 basis points, while microcredits went from having a 7.8% indicator in December 2012, to 10.8% a year later.

The total risk portfolio recorded an annual real growth rate of 11.8% in December 2013, a figure higher than that observed in the same month in 2012 (9.8%). For that period, by type of credit, the microcredit risk portfolio has the greatest expansion, from an annual real growth of 32.6% to 58.8%.[95] Similarly, for

---

93   To deepen the analysis and results presented in this section, we suggest consulting the corresponding special report, published on Banco de la República's website (www.banrep.gov.co).

94   The risk portfolio is defined as the set of rated credits other than A.

95   According to the Report of the Microcredit's Current Situation in Colombia (Reporte de la Situación Actual del Microcrédito en Colombia) for the third and fourth quarters of 2013, this behavior may be the result of an over indebtedness of this modality's clients.

Figure 56
Portfolio quality indicator by type of credit: risk portfolio/gross portfolio

(percentage)

Source: Financial Superintendence of Colombia; Banco de la República calculations.
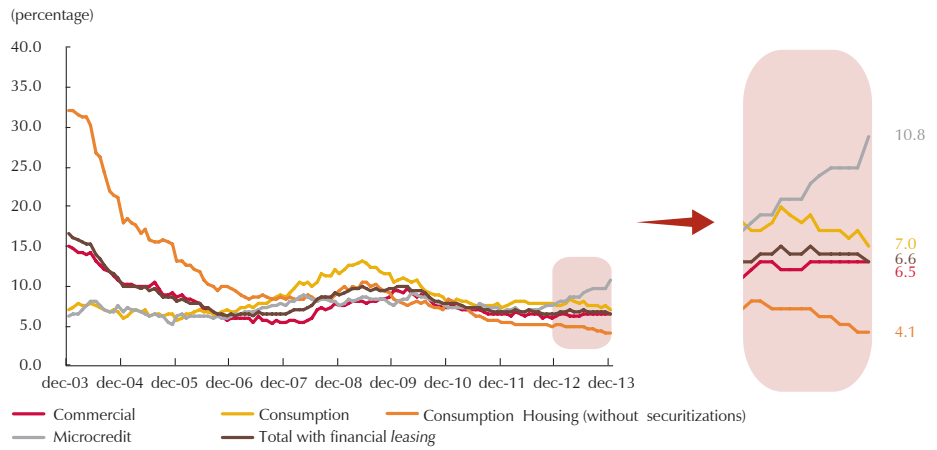
commercial loans, the risk portfolio rose to 5.4% to 15%. In turn, consumer and housing loans expansion rate of their risky portfolio slowed, from 19.2% to 2.7% and 13.4% to 2.3% respectively (Figure 57).

Figure 57
Annual real growth for the risk portfolio

(percentage)

Source: Financial Superintendence of Colombia; Banco de la República calculations.
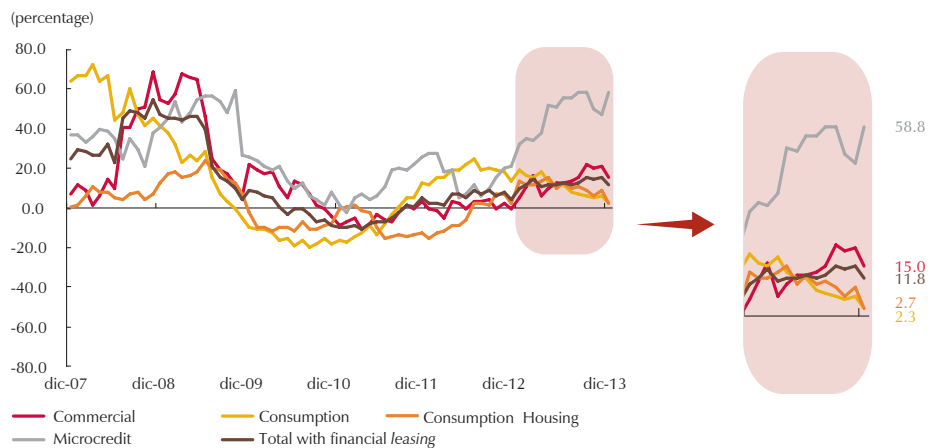
By contrast, total non-performing loans portfolio showed less dynamic in its growth rate, from 26.6% in December 2012 to 10.1% a year later. By type, except for financial leasing, all recorded slowdowns, highlighting the consumer portfolio in particular, which grew by 1.8%, when a year before it was at a rate of 30.5%. Likewise, it stands out that the latter is the one with the lowest growth rate (1.8%), while for microcredit it is the one exhibiting the highest (41%).

Furthermore, as of December 2013, default indicator (DI), measured as the ratio between the non-performing loans portfolio and the total gross loans portfolio,[96] presented a stable behavior compared with the observed a year earlier, reaching 3.1%. When analyzing the DI with write-offs,[97] it is noticed that this was having a similar behavior that the one that ignores write-offs until before the 1999 crisis, when the written-off portfolio began to grow at a faster pace. After the crisis, both indicators began to diverge substantially and, in the present, that one takes write-offs into account is 3.8% greater than the one that doesn't (Figure 58, panel B).

Figure 58
Default indicator: non-performing loans portfolio/gross portfolio

A.   Default indicator by portfolio type
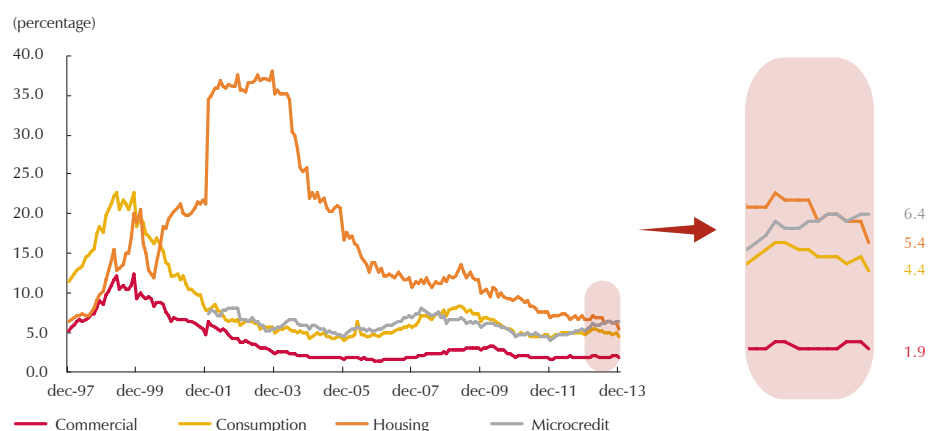
B.   Default indicator for the total portfolio with and without write-offs
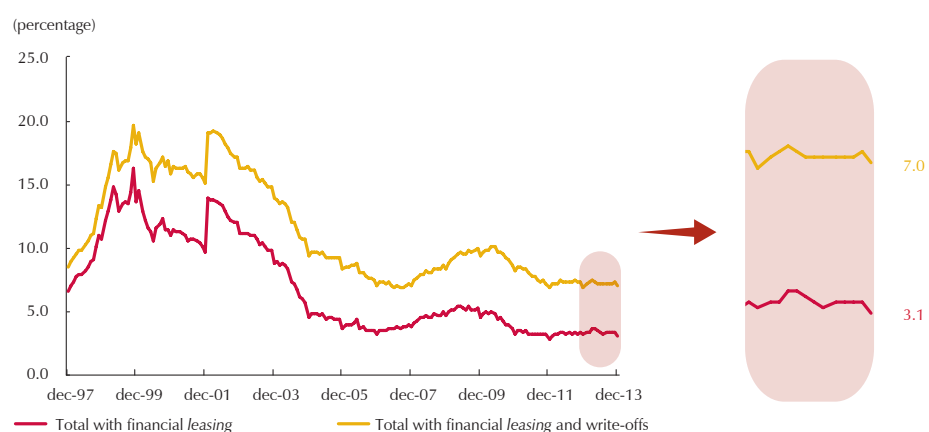
Source: Financial Superintendence of Colombia; Banco de la República calculations.

---

96   Non-performing loans portfolio is the one that has a default equal to or greater than thirty days.

97   Write-offs are assets that, as being considered uncollectable or lost, have been written-off in accordance with the existing legal provisions. It should be clarified that the balance consolidates historical data, thus it does not reveal exactly the portfolio's management evolution on a monthly basis.

By type, it is highlighted that microcredit was the one that exhibited the greatest indicator deterioration, by reaching 6.4%, a figure higher by 1.2 pp to the December 2012 one. This behavior indicates a greater materialization of credit risk for this modality. By contrast, the commercial loan portfolio remained its DI relatively stable, while housing and consumer portfolios recorded declines of 1.1 pp and 36 bp respectively (Figure 58, panel B).

The behavior of provisions as a proportion of the total non-performing loans portfolio, defined as the hedging indicator, was at 173% in December 2013, unchanged from the previous year. By type of credit, most portfolios showed increases in this indicator, being the commercial the only one that showed a reduction, from 1.8 times the non-performing loans portfolio for that modality in December 2012, to 1.6 times in the same month in 2013. Nonetheless, despite decline in this indicator, it is highlighted that it still remains at higher levels than one (Figure 59). In the case of housing loans, the indicator is less than one, because in this type of credit there is a collateral that supports it.

When analyzing the real annual growth of the total non-performing loans portfolio in relation to the provisions, it appears that the variations in the first are accompanied by changes in the second. Likewise, it is evident, that provisions have been being reactivated due to continuing increases in the non-performing portfolio, although this grows at a slower pace. By type of portfolio it is found that, in the case of consumption and housing, provisions react more acutely to a higher non-performing loans portfolio than in the others loan portfolios (Figure 60).

Figure 59
Hedging indicator
(provisions/non-performing loans portfolio)
(percentage)
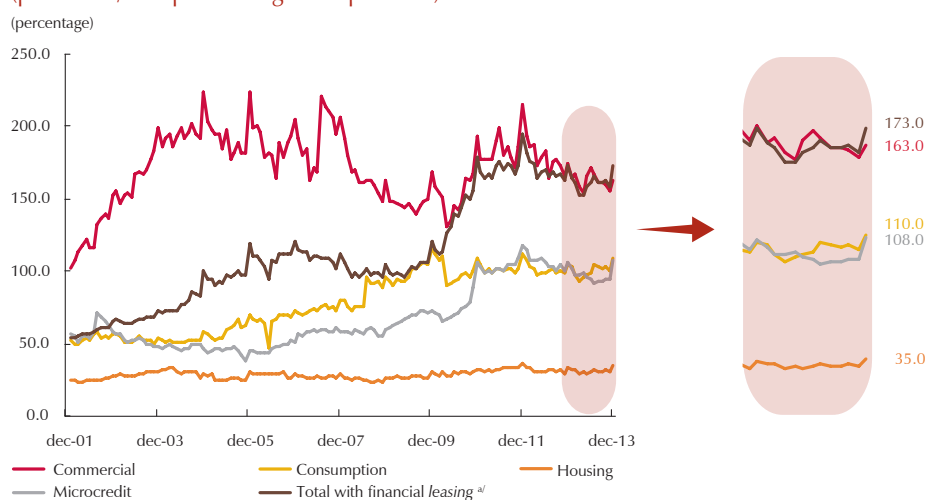
a/ Includes countercyclical provisions.
Source: Financial Superintendence of Colombia; Banco de la República calculations.

Figure 60
Non-performing loans portfolio and provisions growth by modality

A.   Total
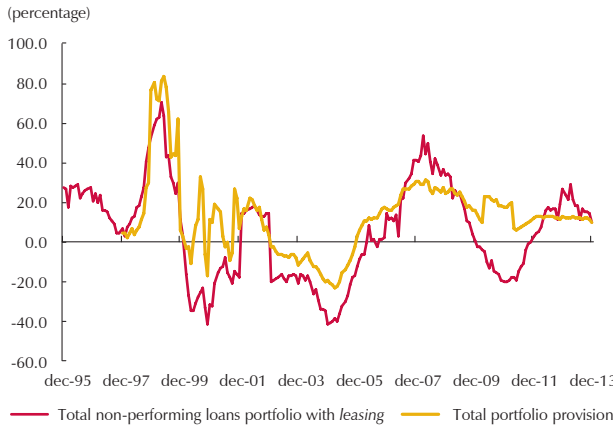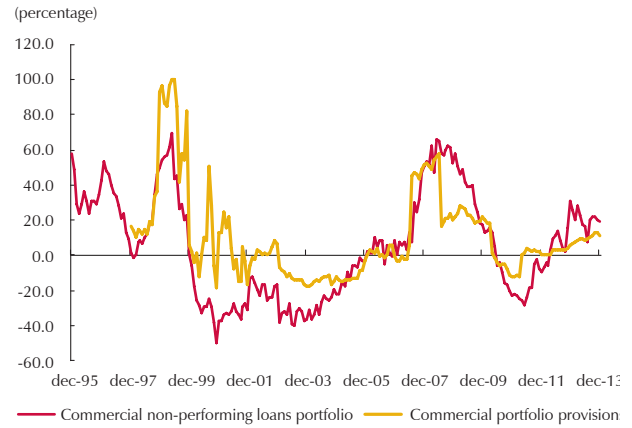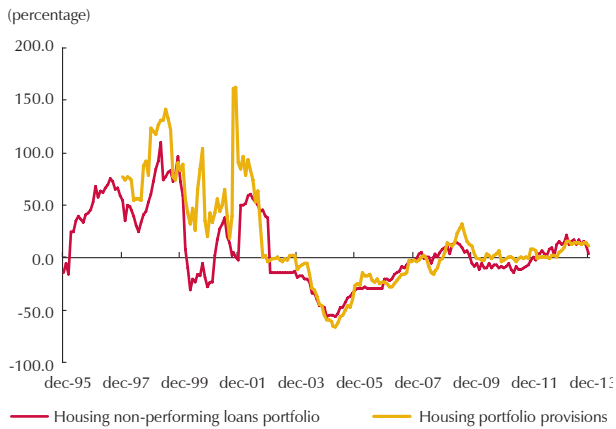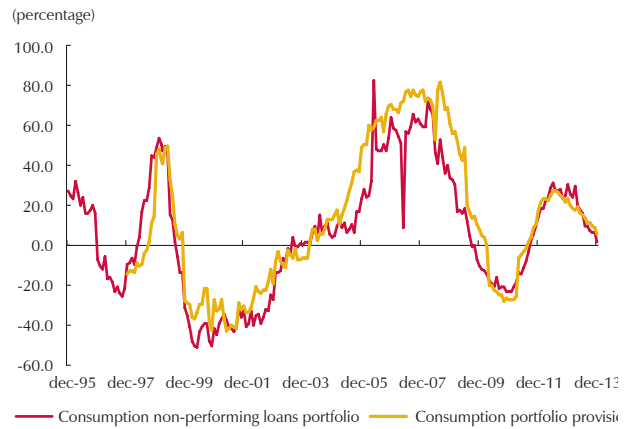
(percentage)

Total non-performing loans portfolio with *leasing* ——— Total portfolio provision

B.   Commercial

(percentage)

Commercial non-performing loans portfolio ——— Commercial portfolio provision

C.   Housing

(percentage)

Housing non-performing loans portfolio ——— Housing portfolio provisions

D.   Consumption

(percentage)

Consumption non-performing loans portfolio ——— Consumption portfolio provision

E.   Microcredit

(percentage)

Microcredit non-performing loans portfolio ——— Microcredit portfolio provision
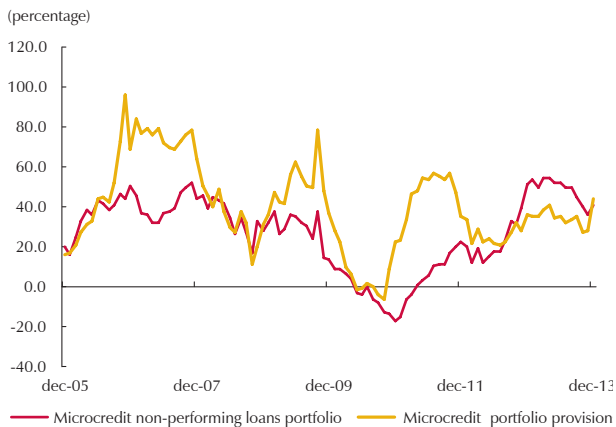
Source: Financial Superintendence of Colombia; Banco de la República calculations.

2.   Transition matrices and static pool analysis

In this section, the transition matrices and static pool are analyzed for each portfolio. A transition matrix is a representation of the frequencies on which credits are passed from one grade to another during a quarter. Letters in the rows correspond to the initial grading, and those in the columns to the final grade. The percentages below the diagonal represent improvements in the ratings, while those above represent deteriorations. Meanwhile, a static pool represents the set of loans that are granted within a specified period; its analysis allows examining its evolution, as well as comparing its behavior between periods. In the static pool graphs,

the bar represents the QI for the most recent data, the horizontal axis shows the follow up periods for each static pool, while each color identifies each period over time.

a.   Commercial portfolio

The following analysis is based on the transition matrix for those loans that remained outstanding between September and December 2013. These credits represent 40.5% of the total loans registered at the start of the studied period. The difference in the number of credits in both periods corresponds to maturities, prepayments, write-offs and refinancing.

The probability of remaining in the same grade[98] for loans in the commercial portfolio of the mentioned sample, increased during the second half of 2013, reaching 90.2%, when six months earlier it was 89.7%. This result indicates that migration between grades during the quarter was lower than six months earlier (Table 14).

When calculating the conditional probabilities of upgrading or downgrading,[99] it is noted that in December 2013, the downgrading probability is greater than the upgrading one, being 7.5% and 2.3%, respectively.[100] This result differs from the one observed six months earlier, when these probabilities were of 7.7% and 2.6%, in that order.

As for the QI of the static pool analysis of December 2013, this was at 3.0%, similar to that reported for loans granted during the second quarter of that year (2.9%), although above the average of the static pools calculated since December 2010 (2.8%) (Graph 61). By analyzing the evolution of the quality of the loans granted since the end of 2010, it is found that those coming from the second quarter of 2011 and 2012 registered the highest deterioration rate in the sample. It should be noted that as of December 2013, the deterioration rate of the loans originated during the fourth quarter

---

98   The conditional probability of remaining is calculated as:
$$P(A \mid A_{t-1})P(A_{t-1})+P(B \mid B_{t-1})P(B_{t-1})+P(C \mid C_{t-1})P(C_{t-1})+ \ P(D \mid D_{t-1})P(D_{t-1})+P(E \mid E_{t-1})P(E_{t-1})$$

99   The upgrading probability is calculated as:
$$P(A_t \mid B_{t-1})P(B_{t-1})+P(A_t \mid C_{t-1})P(C_{t-1})+ \ P(A_t \mid D_{t-1})P(D_{t-1})+ \ P(A_t \mid E_{t-1})P(E_{t-1})+ \ P(B_t \mid C_{t-1})P(C_{t-1})+$$
$$P(B_t \mid D_{t-1})P(D_{t-1})+P(B_t \mid E_{t-1})P(E_{t-1})+ \ P(C_t \mid D_{t-1})P(D_{t-1})+P(C_t \mid E_{t-1})P(E_{t-1})+ \ P(D_t \mid E_{t-1})P(E_{t-1})$$

On the other hand, the downgrading probability is calculated as:
$$P(B_t \mid A_{t-1})P(A_{t-1})+P(C_t \mid A_{t-1})P(A_{t-1})+ \ P(D_t \mid A_{t-1})P(A_{t-1})+P(E_t \mid A_{t-1})P(A_{t-1})+P(C_t \mid B_{t-1})P(B_{t-1})+$$
$$P(D_t \mid B_{t-1})P(B_{t-1})+P(E_t \mid B_{t-1})P(B_{t-1})+P(D_t \mid C_{t-1})P(C_{t-1})+P(E_t \mid C_{t-1})P(C_{t-1})+ \ P(E_t \mid D_{t-1})P(D_{t-1})$$

100   When including the number of non-performing loans in the analysis (i.e., those who matured, were written off or, for some other reason, did not recorded a grading), as of December 2013, the downgrading probability is 3.0%, 1.0% for upgrading, and 36.5% to remain the same, while the probability that a loan does not remain in both periods is 59.5%.

Chart 14
Commercial portfolio transition matrix

		December of 2013			
	A	B	C	D	E
A	94.6	4.6	0.8	0.1	0.0
B	24.1	55.0	13.8	6.9	0.2
C	3.8	9.1	52.0	32.8	2.4
D	1.4	1.0	3.6	84.5	9.4
E	0.3	0.3	1.1	0.6	97.8

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

Figure 61
Commercial portfolio static pool quality analysis

(percentage)

IV quarter of 2013   IV quarter of 2010   II quarter of 2011
II quarter of 2012   IV quarter of 2012   II quarter of 2013
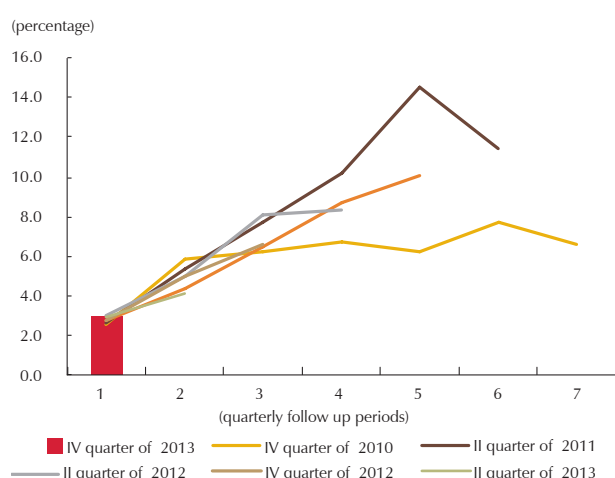
Source: Financial Superintendence of Colombia; Banco de la República calculations.

of 2010 and the second quarter of 2011 and 2012 has stabilized, reaching 6.6%, 11.4% and 8.4% respectively. On the other hand, the pool that most deteriorated in this period was the one originated during the fourth quarter of 2012, passing from 5.0% to 6.6%.

Finally, it is noteworthy that the QI of the commercial portfolio showed a decrease of 10 bp during the second semester of 2013, reaching 6.5% in December of that year.

b.   *Consumption portfolio*

The grading transition analysis for consumer loans is performed on those that have a rating for both, September and December 2013. These account for 53.4% of all the loans registered in the first date. The difference in the number of credits in both periods corresponds to maturities, prepayments, write-offs and refinancing.

Considering the above, in Table 15, the probabilities of migrating from one grading to another in the period mentioned are presented. The probability of migrating to a worse rating decreased for the consumer loans between June and December 2013, passing from 7% to 5.8%. Meanwhile, the probability of staying in the same rating, increased from 90.5% to 91.8%, while the probability of improving remained at 2.4%.[101]

---

101   Taking into account all the loans recorded in September 2013, the probability of upgrading the rating would be of 1.3%; 49.6% for remaining, and 3.1% for worsening. Finally, the probability that a loan would not be in the two periods, is of 46.0%.

	December of 2013				
	A	B	C	D	E
A	96.4	1.8	1.0	0.8	0.0
B	36.2	31.9	9.5	21.4	1.0
C	20.9	12.8	27.2	35.7	3.3
D	4.5	3.7	11.3	39.2	41.3
E	6.1	1.2	3.0	8.5	81.1

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

Figure 62
Consumption portfolio static pool quality analysis

(percentage)

IV quarter of 2013   IV quarter of 2010   II quarter of 2011
II quarter of 2012   IV quarter of 2012   II quarter of 2013
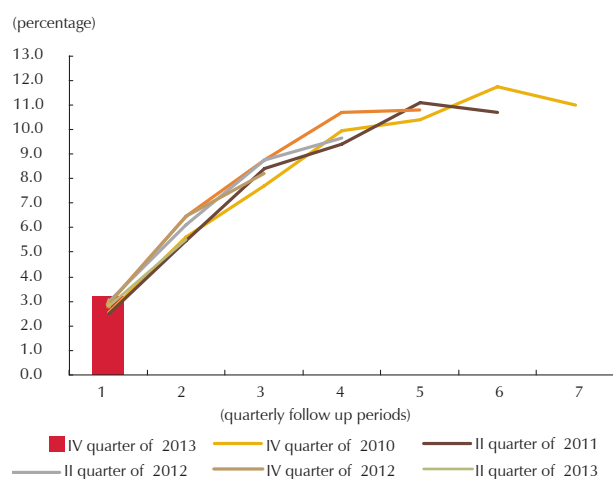
Source: Financial Superintendence of Colombia; Banco de la República calculations.

For its part, the pools generated during the fourth quarter of 2013 showed a QI of 3.2% during the first follow up period, which is higher than the ones from the second quarter of 2010 (2.8% on average) periods. However, the rate of deterioration of the QI for static pools generated during the second quarter of 2013 has been the lowest recorded in the past three years. For this data, the QI increased from 2.8% to 5.5%, between their first and second follow up periods, that is, it recorded an increase of 2.7 pp, while the mentioned variation was of 3.3 pp on average, for the previous static pools (Figure 62).

Finally, it is important to note that the quality indicator for the total consumer loans, showed a decrease between June and December 2013, passing from 8% to 7%.

c.   *Housing portfolio*

The transition analysis for housing loans grading is done on those who remained outstanding between September 2013 and December of the same year. These correspond to 89.2% of all registered transactions in the first date. The difference in the number of loans in both periods corresponds to maturities, prepayments, write-offs and refinancing.

When calculating the transition matrix for those loans that remained outstanding in the mentioned period, it is found that the conditional probability of migrating to a better grade, increased from 1.7% to 1.9% between June and December 2013; at the same time, the probability of worsening was reduced from 3.4% to

2.9% during the same period. On the other hand, the probability of remaining in the same grade increased by 40 bp, reaching a level of 95.1%[102] (Chart 16).

Chart 16
Transition matrices for the housing portfolio
(percentage)

	A	B	C	D	E
A	98.0	1.9	0.0	0.0	0.0
B	34.1	50.4	15.2	0.2	0.2
C	12.9	7.8	62.5	16.6	0.2
D	8.2	1.6	4.7	62.6	22.8
E	5.3	1.5	1.8	2.4	89.0

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

Figure 63
Housing portfolio static pool quality analysis

(percentage)

(loan's follow up periods)

II sem. 2013   II sem. 2010   I sem. 2011   II sem. 2011
I sem. 2012   II sem. 2012   I sem. 2013
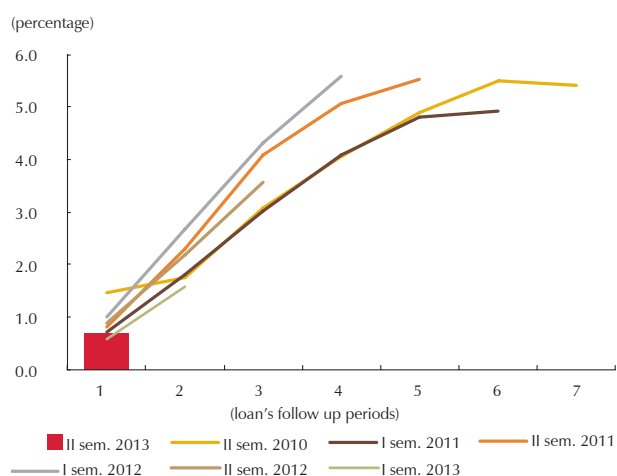
Source: Financial Superintendence of Colombia; Banco de la República calculations.

The static pool analysis for this type of loans shows that those granted in the second half of 2013, have a QI similar to that observed for those generated during the first half of the same year (0.7% vs. 0.6%), although lower than the QI for loans originated in 2011 and 2012 (0.9% on average). On the other hand, if the static pools' deterioration is analyzed along time, it is found that the ones for the first half of 2013 exhibit the lowest deterioration rate in their second term period. For that pool, the QI increased by 1 pp between the first and second follow up periods, while for the other loans it increased, on average, 1.3 pp (Figure 63).

Significantly, loans originated in the second half of 2010 and the first of 2011, exhibit a stabilization in their QI's deterioration pace as of December 2013, reaching 5.4% and 4.9% respectively; while the static pool from June 2012, which was originated with a QI of 1%, showed the greatest deterioration, registering a QI of 5.6% in December 2013.

Finally, the quality indicator for the total housing portfolio decreased between June and December 2013, moving from 4.9% to 4.1%.

---

102   If the number of non-performing loans is included in the analysis, the upgrading, downgrading, remaining the same and not being in both periods probabilities, would be of 1.8%, 2.7%, 84.8% and 10.8% respectively.

d. *Microcredit portfolio*

In assessing the microcredits transition during the second semester of 2013, it is found that 74.4% remained outstanding in the credit institutions' portfolio between the third and fourth quarters of that year.[103] For these, the transition matrix among gradings for the last quarter of 2013, remarked in Chart 17, was calculated. In particular, the probability of remaining in the same grade is 90.9%, and for an upgrade and a downgrade, are 1.0% and 8.1%, when six months earlier they were 90.3%, 1.1% and 8.6% in that order.[104] When considering the rating migrations without Banco Agrario,[105] the probability of remaining is lower (88.6%) than the one calculated for the total of the microcredit market; and it is greater for the improving and worsening probabilities (1.3% and 10.0%, respectively). It should be noted that between the two analyzed quarters, the latter probabilities show a similar dynamics to the ones featured by the microcredit market.

Chart 17
Transition matrices for the total microcredit portfolio
(percentage)

	A. Financial system total				
	December of 2013				
	A	B	C	D	E
A	94.8	3.1	1.3	0.8	0.0
B	15.6	41.1	11.0	9.6	22.7
C	8.2	4.9	31.8	9.4	45.7
D	3.1	1.3	2.5	26.1	67.2
E	1.0	0.4	0.4	1.0	97.2

	B. Without Banco Agrario				
	December of 2013				
	A	B	C	D	E
A	94.3	3.1	1.6	0.9	0.1
B	18.6	27.8	13.6	12.8	27.2
C	9.3	6.6	19.0	9.1	56.0
D	2.0	1.3	3.3	8.0	85.4
E	0.9	0.5	0.6	1.6	96.4

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

---

103   When excluding Banco Agrario from the analysis, it is found that 73.1% of loans remained outstanding between the third and fourth quarters of 2013.

104   If the migration probabilities are calculated considering the matured loans from one quarter to another, it is noted that the probability of remaining is 67.6%; 6.1% for worsening, 0.73% for improving, and 25.6% for leaving the balance.

105   Given the size of Banco Agrario's share in the microcredit portfolio (over 50%), the microcredit risk analysis is also made by excluding this entity, because the allocation of its microcredits can be related to government policies for promoting some sectors of the economy, but not necessarily to market conditions.

Figure 64
Portfolio static pool quality analysis: microcredit

A.   Financial system total
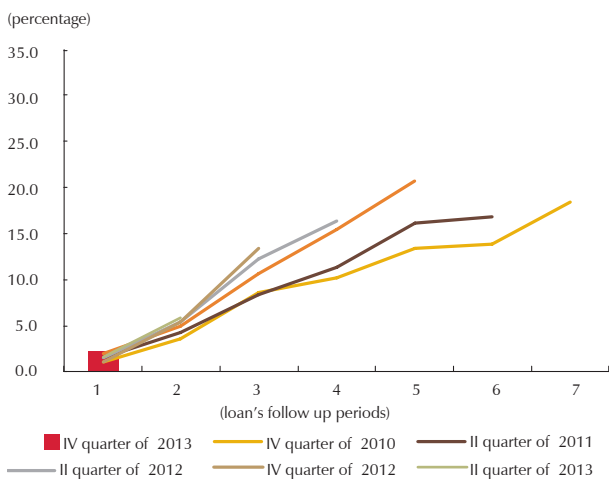
(percentage)

(loan's follow up periods)

■ IV quarter of 2013   ── IV quarter of 2010   ── II quarter of 2011
── II quarter of 2012   ── IV quarter of 2012   ── II quarter of 2013

B.   Without Banco Agrario

(percentage)

(loan's follow up periods)

■ IV quarter of 2013   ── IV quarter of 2010   ── II quarter of 2011
── II quarter of 2012   ── IV quarter of 2012   ── II quarter of 2013

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

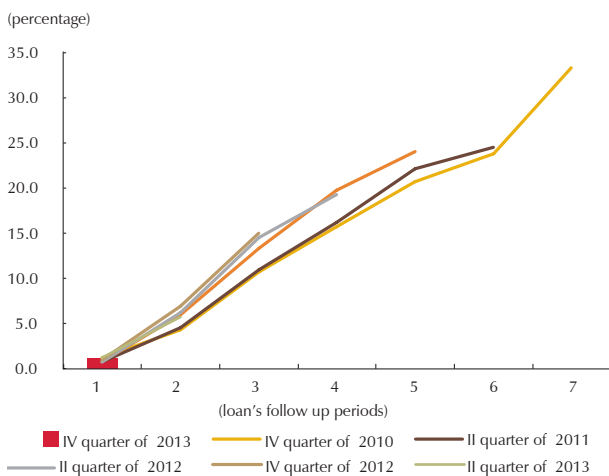In turn, the loans static pool analysis shows that the QI for new microcredits in the fourth quarter of 2013 is higher than those registered for credits generated since the fourth quarter of 2010, reaching 2.1%. When Banco Agrario is excluded from the analysis, the indicator is around 1.1%, which remained stable compared to the QI on which the static pool of the second quarter of 2013 was generated.

Furthermore, the static pool's deterioration pace has continued to accelerate, especially for loans granted during the fourth quarter of 2010 and the same quarter in 2012. It is worth noting that, when excluding Banco Agrario, microcredits show a faster deterioration pace (Figure 64).

Finally, it is noteworthy that the microcredit's portfolio QI showed an increase of 1.5 pp in the second half of 2013, reaching 10.8% in December of that year.

In summary, for the different portfolio types, the downgrading probability decreased compared to that observed in June 2013, while the upgrading one increased for the housing and consumer portfolios, unlike the commercial and microcredit ones, which exhibited a decrease in this probability. As for loans originated during the fourth quarter of 2013,[106] it was noticed that for the consumption and microcredit categories, the QI increased with respect to new loans granted in previous periods, while for the rest of portfolios it remained stable. Also, a decrease in the total QI for all portfolios is highlighted, with the exception of microcredit. Therefore, it is necessary to continue with the ongoing monitoring of the analyzed indicators, although it should be noted that the quality indicator of the different loan portfolios still registers low and stable values.

3.   Sensitivity tests

In this section, sensitivity tests are performed in order to assess the soundness of the banking institutions against adverse scenarios that affect the dynamics and

---

106   In the case of housing, static pools for the second half of 2013 are analyzed.

delinquency rates of their loan portfolio;[107] therefore, the effects of macroeconomic shocks on the entities' various financial indicators are estimated.

a.   Sensitivity analysis against macroeconomic shocks

Considering that, as of December 2013, the loan portfolio represented 67.8% of the banks' assets, it is critical to evaluate the loss absorption capability of the institutions when faced with an eventual macroeconomic shock that can exacerbate their exposure to credit risk.

This section provides a sensitivity test that aims to assess the behavior of some financial indicators of commercial banks in an adverse scenario of real GDP growth, real interest rate (DTF in Spanish), new housing real price index (NHPI) and unemployment rate over a two-year horizon. The proposed scenario presented was based on the worst trends observed for each of the series between the years 1991 and 2013. It is important to note that the analysis corresponds to a hypothetical case, which probability of occurrence is low, since these trends have never materialized simultaneously. In Figure 65, the trends for each of the variables in the stress scenario are considered.[108]

The results show the effect of the adverse scenario on the delinquency rate of the loan portfolio, profitability and solvency of commercial banks. Shocks on macroeconomic variables increase the non-performing loans portfolio of the different types of credit, resulting in a decline in profits as a consequence of an increase in the provisioning cost and a reduced interest income. It is worth noting that the provision expenses are softened by the use of countercyclical provisions.[109] Likewise, it is assumed that when an intermediary has a negative return, it should cover losses with capital, which results into a reduction of its solvency ratio.

If a scenario such as the one described above happens, the banks' default indicator[110] would rise from 3.0% in December 2013 to a maximum of 9.3% in September 2015 (Figure 66). Subsequently, the indicator would decrease, reaching 8.1% by the end of the test.

---

107   This exercise does not take into account the microcredit portfolio, since the information to make estimates and projections is only available from 2002.

108   For more information on the methodology used in this section, see "Credit Risk Stress Testing: An exercise for Colombian banks", Banco de la República's Financial Stability Issues, Financial Stability Report, September 2012.

109   Counter-cyclical provisions contribute up to 40% of the provision expenses in each period. The model assumes that the indicators that allow the use of these provisions are activated in the stressed scenario. Both for commercial and consumer loans, countercyclical provisions last a year on average and one month during the test.

110   The default indicator does not include information of the microcredit portfolio.

Figure 65
Macroeconomic variables' trends

A.   Real GDP growth

(percentage)

— Real GDP growth   ·······Stress trend

B.   Real DTF

(percentage)

— Real DTF   ·······Stress trend

C.   Real NHPI

(índex)

— Real NHPI   ·······Stress trend

D.   Unemployment rate

(percentage)
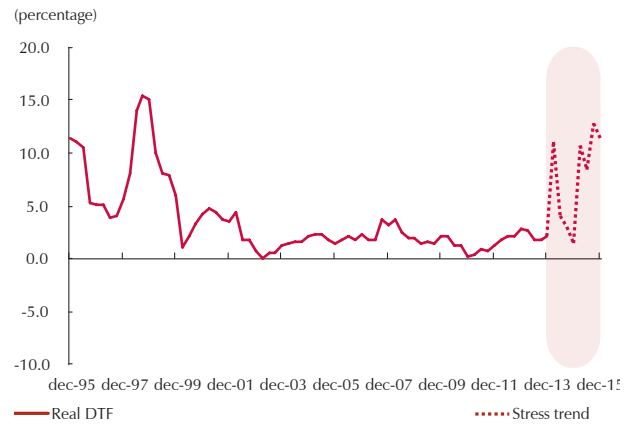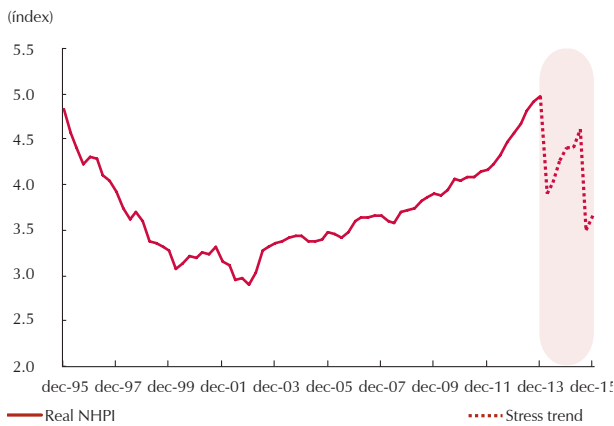
— Unemployment rate   ·······Stress trend
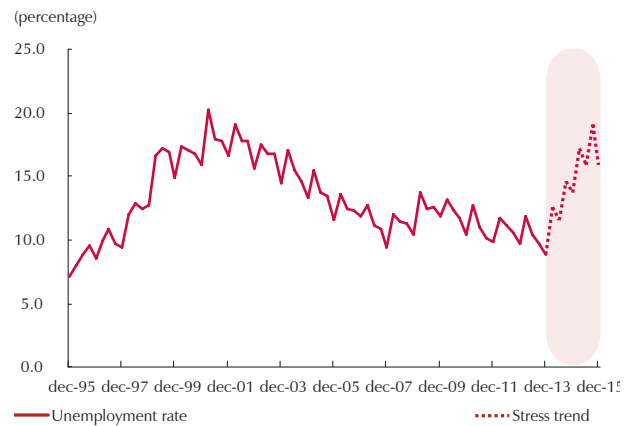
Sources: National Administrative Department of Statistics (DANE in Spanish), National Planning Department (DNP in Spanish) and Banco de la República.

Figure 66
Default indicator's evolution during an stressed scenario

(percentage)

— DI   ·······Stress trend   ·······Minus 1 σ   ·······Plus 1 σ
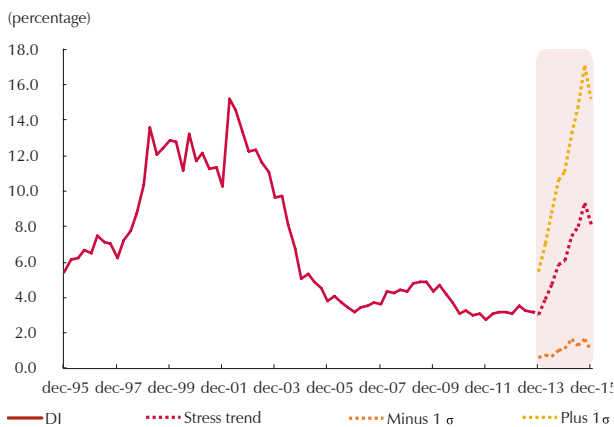
Source: Financial Superintendence of Colombia; Banco de la República calculations.

The increase in the loan portfolio default would generate a COP $10.1 trillion decrease in profits during the two years of the shock, that is, earnings before taxes would pass from COP $8.7 trillion in December 2013, to COP $1.4 trillion by the end of the test. As a result of the costs generated by the shock, 12 of the 24 entities would register losses at some moment during the test; while 10 would exhibit them at the end (Chart 18).

In the case of the return on assets, a reduction of 2.6 pp in the ROA would be observed, moving from 2.2% in December 2013, to -0.4% two years later. It is worth noting that the ROA would reach its minimum value

Chart 18
Profitability reduction in each period due to an extreme shock
(trillion Colombian pesos)

	Commercial[a/]	Consumption[a/]	Housing[a/]	Total[a/]	Stressed income[a/]	Banks with negative income[b/]
December of 2013 income	8.7	8.7	8.7	8.7	8.7	0
$t + 1$	(0.6)	(0.5)	(0.5)	(1.6)	7.1	1
$t + 2$	(1.2)	(1.1)	(0.5)	(2.8)	5.9	1
$t + 3$	(1.7)	(1.5)	(1.6)	(4.8)	3.9	5
$t + 4$	(2.0)	(1.4)	(2.0)	(5.3)	3.4	5
$t + 5$	(3.0)	(2.4)	(3.3)	(8.6)	0.1	10
$t + 6$	(4.0)	(2.6)	(3.2)	(9.7)	(1.0)	10
$t + 7$	(4.8)	(3.4)	(4.1)	(12.3)	(3.6)	12
$t + 8$	(4.3)	(3.1)	(2.9)	(10.1)	(1.4)	10
Income reduction in $t + 7$	54.9%	39.3%	47.6%	100%+	(12.3)	
Income reduction in $t + 8$	49.7%	36.0%	33.1%	100%+	(10.1)	

a/ Figures in trillion Colombian pesos.
b/ Represents the number of banks that would pass from having a positive income to a negative one as a result of the shock.
Note: The income presented in this test corresponds to that observed before taxes.
Source: Financial Superintendence of Colombia; Banco de la República calculations.

Figure 67
ROA's evolution during an stressed scenario

(percentage)

ROA   Stress trend   Minus 1 σ   Plus 1 σ
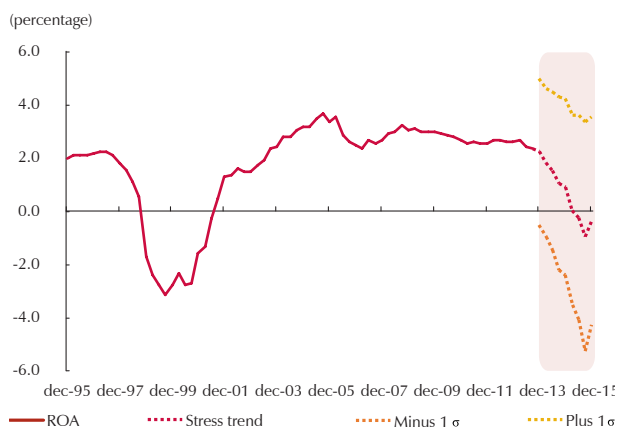
Source: Financial Superintendence of Colombia; Banco de la República calculations.

seven quarters after the shock, being -1.0% (Figure 67).

On the other hand, the solvency ratio of banks would not display major changes, going from 14.7% in December 2013, to 14.4% two years later,[111] a figure that is above the regulatory minimum set by the Financial Superintendence of Colombia (9%)[112] (Figure 68). However, the individual analysis reveals that two entities would record a level of solvency lower than the regulatory requirement during the test. It should be noted that the banks' aggregate solvency ratio would reach its minimum value two years after the shock (14.4%), as a consequence of an increase of 5.2% on the level of risk weighted assets and 71.7% on the accumulated losses absorbed with capital.

---

111   Importantly, no major changes are presented in this indicator because no high-magnitude negative profits are generated, as the calculation of risk-weighted assets depends on the portfolio exposure rather than its quality; for further details see "Credit Risk Stress Testing: An Exercise for Colombian Banks", in Banco de la República's Financial Stability Issues, Financial Stability Report, September 2012.

112   If the banks did not use countercyclical provisions to soften the provision expenses, the solvency ratio would stand at 13.9% by the end of the test.

Figure 68
Banks' solvency evolution during an stressed scenario

(percentage)

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

When comparing the results with those of six months ago, it is observed that, in general, as of December 2013, the effects of an adverse scenario on 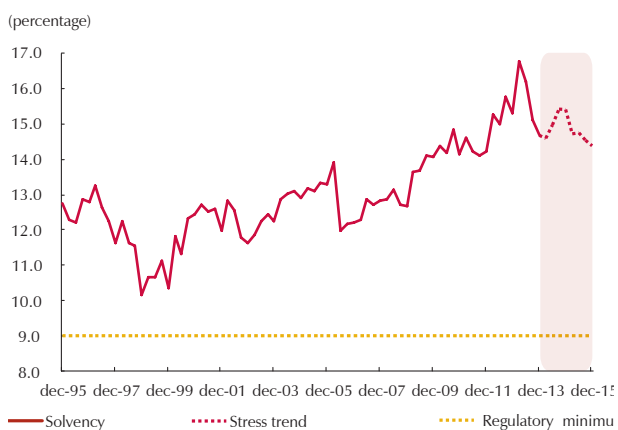commercial banks are higher than those observed when performing the same test in June of the same year (Chart 19). When performing the analysis per indicator, the increase of the DI at the end of the test performed in June 2013, was of 4.2 pp, while six months back it was of 5.1 pp. In terms of profits, the decline presented in the test conducted six months ago was of COP $7.7 trillion, whereas in the present day these would decrease by COP $10.1 trillion, which is directly reflected in the ROA at the end of each test. These differences are mainly due to the fact that during the second half of 2013 the two-year average of the quarterly dynamics for the total and non-performing loans portfolio was less favorable than that of the first half of the same year.

In conclusion, the sensitivity test evidences that the macroeconomic shocks considered as of December 2013, increase the commercial banks' default loan portfolio, which results in a significant reduction in its profitability level. As for the solvency ratio, it is noted that all entities, but two, would record a level above the regulatory minimum during the shock's two years. It is important to mention that the effects of adverse scenarios on various performance indicators of the banking institutions are sounder in December 2013 than six months ago.

Chart 19
June and December of 2013 stress test results

	jun-13	jun-15	Δ (jun 15 - jun 13)	dec-13	dec-15	Δ (dec 15 - dec 13)
DI (percentage)	3.4	7.6	4.2	3.0	8.1	5.1
Income (trillion COP)	8.7	1.0	(7.7)	8.7	(1.4)	(10.1)
ROA (percentage)	2.4	0.3	(2.1)	2.2	(0.4)	(2.6)
Solvency ratio (percentage)	16.2	15.8	(0.4)	14.7	14.4	(0.3)

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

D.   LIQUIDITY RISK

The funding liquidity risk refers to the relative difficulty that financial institutions may face when servicing their financial obligations in different time horizons. Analyzing this risk is important, since its materialization represents high costs for institutions as well as the loss of confidence from the public and its counterparts. In addition, the liquidity problems of an entity may threaten the stability of the

financial system if a significant proportion of the transactions depends on the timely payment of its obligations.

This section discusses this risk through the liquidity risk indicator (LRI),[113] and the evolution of its components. It also includes a stress test that measures the sensitivity of banks in extreme, but unlikely, low liquidity scenarios.

The Financial Superintendence uses the LRIR indicator, which is constructed as follows:

$$LRI_R = \frac{liquid\ assets}{net\ liquidity\ requirement}$$

Figure 69

A. LRIR seven day evolution by intermediaries groups (weighted moving average)

(percentage)
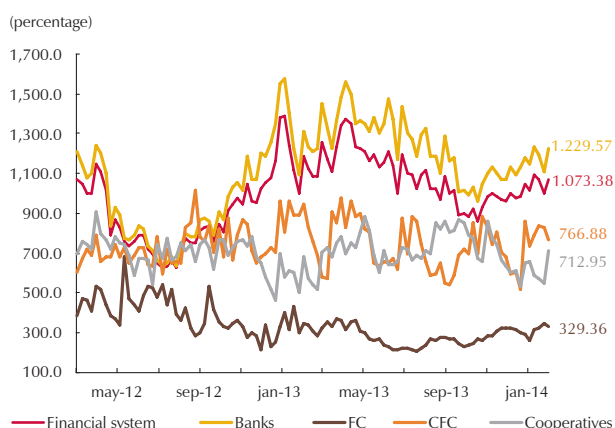
B. Calculated LRIR for a thirty day horizon by groups of establishments (weighted moving average)

(percentage)
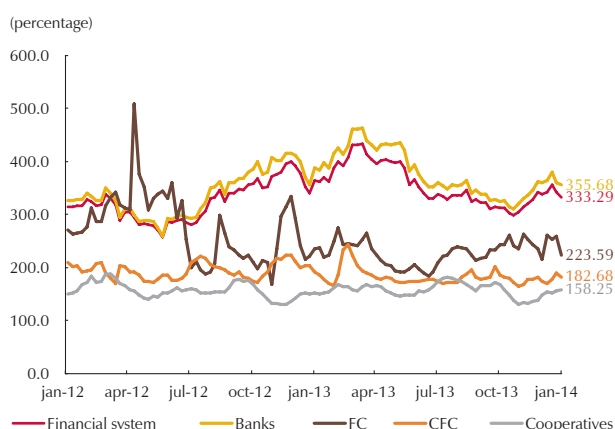
Source: Financial Superintendence of Colombia; Banco de la República calculations.

Institutions should maintain an indicator level greater than 100% in the seven and thirty-day horizons. The LRI interpretation is: a value less than 100% implies a high risk, while higher levels of LRI are associated with a better liquidity situation for the analyzed entity. Since there is a minimum threshold required by regulation for the seven and thirty-day horizons, this section analyzes the recent behavior of the indicators for those two horizons.

As seen in Figure 69 (panels A and B), in the seven and thirty day horizons, banks hold a higher level of liquid assets in relation to their liquidity requirements, compared to other financial intermediaries. When analyzing the seven days liquidity levels, we observe that, since October of 2013, banks and financial corporations (FC) have shown an increasing trend, reaching 1229.6% and 329.4% as of the 31st of January 2014. For other sectors, a defined trend is not observed.

For the thirty day horizon LRI indicator, it is found that liquidity levels are lower than in the first horizon for all intermediaries. As in the seven days horizon, the banks' indicator is the highest among all intermediaries, reaching a level of 355.7% in January 2014, followed by the indicators of the FCs, the CFCs and Coops. In this horizon, the growing

---

113   The details of the liquidity risk management model can be found in Chapter VI of the Accounting and Financial Basic Circular and its annexes.

Figure 70
Weekly cash flow components

A.   Earnings
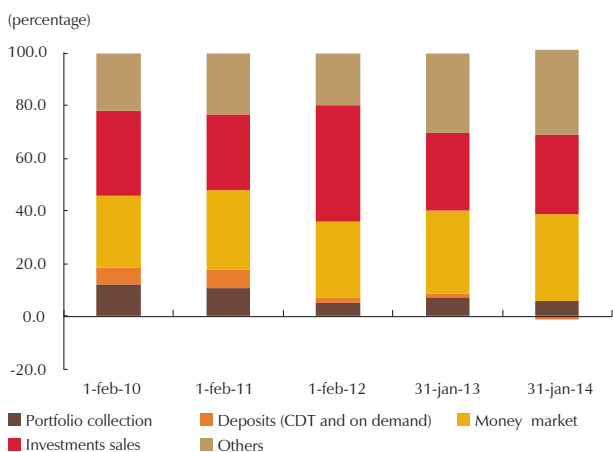
(percentage)

■ Portfolio collection   ■ Deposits (CDT and on demand)   ■ Money market
■ Investments sales   ■ Others

B.   Expenses

(percentage)

■ Portfolio disbursements   ■ CDT maturities   ■ Money market
■ Investments purchase   ■ Others

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

trend exhibited by the CFs seven-day indicator is not observed; but the banks one shows growth since late November of 2013.

When analyzing the financial system's aggregate cash flow,[114] it is observed that the earnings classified as 'other' (earnings from derivatives, bank loans and others), and earnings from the money market, have increased their share between February 2010 and January 2013, passing from 22.0% and 27.4%, to 32.3% and 33.2% respectively. Meanwhile, earnings from the sale of investments, deposits and loan portfolio collection, have reduced their share during the same period (Figure 70). The negative contribution of earnings from deposits in January 2014 is explained by the negative variation in savings and current accounts in the first weeks of that month.[115]

As for the composition of expenditures it is noted that, in January 2014, the 'Other' category, composed of expenses for derivatives, ban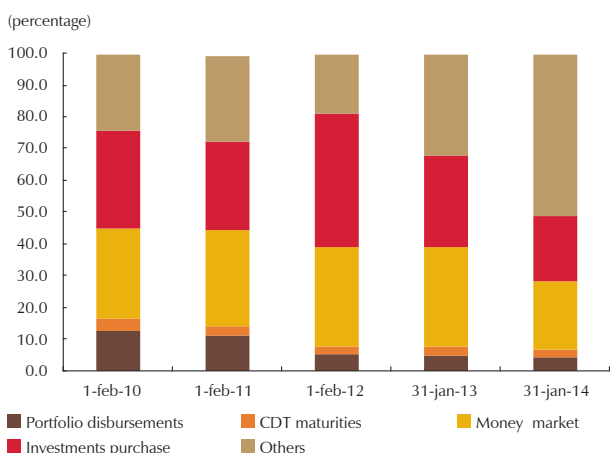k loans, among others, was the most representative, with a share of 51.1%. Furthermore, expenses from money market operations[116] and investments purchases, lost share between February 2012 and January 2014, having a participation of 21.7% and 20.2% in this last month respectively. Likewise, loan disbursements and fixed term deposit certificates maturity expenses, which have the lowest share on the items, also lost share, jointly adding 6.8% of the expenditures in January 2014.

It is important to consider the type of business of the financial system's entities in the liquidity risk management. Those with a greater share of investments in their balance, typically handle a higher level of liquid assets, while earnings from operations in the money market and sell of investments, represent a larger

---

114   This information is contained in format 458 of the Financial Superintendence of Colombia, and corresponds to the earnings and expenses registered during the five business days prior to the reporting of the liquidity risk indicator date, thus, they are not projected.

115   This item, despite corresponding to an earning, may have negative values because of the way information is recorded.

116   It is important to highlight that the net income from these transactions is relatively low in absolute terms, so the share of these items in both earnings and expenses, reflects the high number of operations of this kind and their short term nature, and it does not imply a high dependence from institutions on these funding sources.

proportion of the total. In these cases, the entities typically present more volatile liquidity indicator levels; such is the case of financial corporations, whose earnings from these operations correspond to 93.7% of the total. In contrast, cooperatives derive most of their earnings from deposits and loan collection (71.1%), while 50.1% of their expenditures correspond to fixed term deposit certificates maturities and disbursements, in relation to the lower level and less volatile behavior of their LRIR.

Counterparts of non-contractual deposits by sector

It is important to study the exposure of the financial system to those sectors or institutions that account for a significant proportion of the deposits. This analysis only includes those who do not have a contractual term, since the objective is to identify those depositors that have presented major withdrawals. Chart 20 shows the deposits' concentration level according to their major counterparts, as well as the percentage of maximum and average withdrawals for each one. It can be seen that, in December 2013, most of the deposits were from private sector companies (45.3%) and individuals (23%), while the public sector, pension and severance funds management companies, and trust companies concentrate a significant percentage of these resources (24.4%).

Chart 20
Deposits concentration by sector (financial system)
(percentages)

Sector	Share			Maximum withdrawals percentage	Monthly withdrawals percentage (average)
	Dec-12	Dec-13	Average since 2003		
Non-financial public companies	2.1	1.4	2.2	62.5	20.0
Social security public companies	0.2	0.5	1.1	66.6	12.0
Other public sector	11.4	12.1	13.7	10.3	2.9
Pension and severance funds	3.5	2.8	3.2	27.1	8.8
Trust companies	3.3	2.6	2.7	26.0	5.0
Special government institutions	2.1	2.6	1.5	19.9	5.7
Companies	45.3	45.7	38.3	5.9	1.9
Individuals	23.0	23.0	29.1	9.8	1.8
Other	9.2	9.2	8.2	19.1	4.4
Total	**100.0**	**100.0**	**100.0**	**2.1**	**0.7**

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

By comparing the shares of the different sectors observed in December 2013 with the historical average and data from a year ago, we see that the share of the deposits from private companies has increased, while the exposure to the pension and severance funds has fallen. As for the exposure to the public sector, it has

increased compared to that presented a year earlier, but recorded a value lower than the historical average.

The historical behavior of these deposits indicates that the ones that may have withdrawals of a greater magnitude are those from the public sector, particularly social security public companies, whose maximum monthly withdrawals percentage reaches 66.6% of their deposits. Resources from trust companies and pension and severance funds management companies also show a high volatility, while those from companies and individuals are more stable. This may be related to the fact that in these sectors the deposits concentration by agent is lower, making it less likely to find massive withdrawal scenarios.

Main customers' concentration of deposits

As a complement of the above analysis, the participation of the main customers in the total deposits (current accounts, savings and fixed term deposits) is examined. Although the fixed term deposits have a contractual maturity, their non-renewal by a major customer could have an important effect on the entities' liquidity. The information used to perform this analysis is reported by the banks to the FSC on customers who meet any of the following conditions: is part of the of the entity's fifty main customers, is a mutual fund (MF) or is supervised by the FSC.[117] Chart 21 presents the average number of main clients of banks and their deposits participation in the total. Banks exhibit a high concentration of deposits in a small number of entities; on average, a bank has 162 main customers, whose deposits correspond to 52.8% of the total. Compared to what was observed in December 2012, the deposits average concentration has been reduced in both, the number of main clients and the amount share.

Chart 21
Main clients deposits concentration

Entity	Dec-12		Dec-13	
	Share amount (percentage)	NNumber of main customers	Share amount (percentage)	umber of main customers
Entity with lower concentration	22.1	137	6.6	109
Entity with higher concentration	100	80	100	1
Average	55.8	170	52.8	162

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

---

117   This information corresponds to that reported in FSC's 474 format ("List of main deposits customers").

Stress test

In this section, a stress test on the LRIR liquidity indicator is developed, where several elements of a situation of low liquidity in the market are incorporated. The assumed scenario in this section is unlikely; however, in crisis scenarios, it is possible that funding sources reduce their availability and banks assets liquidation conditions turn more adverse.

The Basel Committee proposes some elements that should be taken into account in a stress scenario to assess funding liquidity risk, which are presented in Chart 22.

Chart 22
Stress test elements (Basel Committee)

Shock
Withdrawal of a significant proportion of deposits
Partial loss of the capacity of funding via collateralised transactions and through the interbank market.
Increase in the contractual expenses flow that may arise from a decline in public trust towards the institution.
Increase in the market volatility that may affect the quality of the collateral, so bigger haircuts are applied to securities.
Increased use of customers pre-approved loans.

Source: BIS (Basel III, December of 2010, "International framework for liquidity risk measurement, standards and monitoring").

Some of these elements are included in the indicator's calculation, as different deductions to the variables that compose it are applied to simulate a stressed scenario. Nevertheless, some of these discounts do not correspond to a record high, but are calculated based on information reported weekly by the institution; therefore, it is relevant to build a further stress scenario that allows determining whether banks can withstand a higher stress situation in terms of liquidity risk, and still meet the regulatory requirements.

In this test, the thirty-day horizon LRIR for the group of banking entities is used. The stressed liquidity indicator for this group of entities is constructed using the 80th percentile of the historical distribution of all entities for each item since 2009.[118] Chart 23 presents the shock for each item.

The shock to the CD renewal rate indicates that banks' outflows should increase as the entities release such deposits in each time horizon. The value applied to the stress test corresponds to the 20th percentile observed for banks. Furthermore, a shock on non-contractual expenses is included in the LRIR, by applying the mentioned withdrawals percentage to the group of banks.

---

118   In the case of the CD renewal rate the 20th percentile is taken, as lower values of this item indicate a more adverse liquidity scenario for the entities.

Chart 23
Shocks used in the stress scenario on the LRI thirty days indicator

Variable	January of 2014 stressed value	Average value applied en the LRI for banks
CDT renewal percentage	10.8	47.4
Deduction applied to liquid assets in legal tender	14.4	10.3
DI reported weekly	6.2	4.0
Deposits withdrawal	19.2	10.9

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

Figure 71
Stress test on the thirty days LRIR for banks
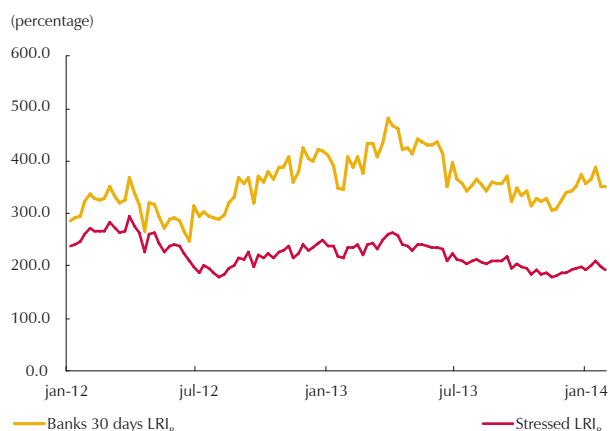
(percentage)

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

Meanwhile, the increase in the haircut applied to liquid assets indicates a lower availability of funding sources to provide short term liquidity. Finally, the increase in the portfolio default indicator means lower earnings from loan portfolio collection.[119]

Figure 71 presents the banks' liquidity indicator calculated for a thirty-day horizon. Between January 2012 and January 2014, the indicator in the stress scenario showed values above the threshold required by regulation, suggesting that the banks' actual liquidity levels would enable them to meet their financial obligations, even when faced with more adverse funding conditions.

119   In the liquidity indicator defined by the Financial Superintendence of Colombia, the revenues from the loan portfolio should have a deduction corresponding to 0.5 times the observed default indicator. In the stress test, however, such deduction is assumed to be equal to the default indicator.

Box 5
IMPACT OF THE TAPERING ANNOUNCEMENT IN COLOMBIA

In May 2013, the Federal Reserve of the United States (Fed) announced a possible withdrawal of the Quantitative Easing program (QE), by suggesting the reduction of its monthly purchases of financial assets (known as tapering), given some signs of economic recovery in this economy. This caused great uncertainty in the global markets, particularly in those emerging economies that exhibited direct or indirect effects because of the quantitative easing program that has taken place since the global financial crisis (2008-2009).

The program was created as a tool of unconventional monetary policy to increase the money supply by the purchase of financial assets,[1] which sought to stabilize asset prices and lower long term interest rates. In the case of the United States, the program consisted of three stages:

- QE1 (November of 2008 to March of 2010): during this period, a total of $ 600 billion USD was injected into the economy, which was equivalent to a monthly average of $ 35 billion.

- QE2 (November of 2010 to June of 2011): a total of $ 600 billion USD was invested in seven months, equivalent to a monthly average of $ 85 billion USD.

- QE3 (September 2012 to present): the Fed had been injecting $ 85 USD billion per month; however, from January 2014, monthly purchases have been reduced in $ 10 billion USD, being in March 2014 at $ 65 billion USD. Because an end date of the program was not defined, the total injected injected amount is yet unknown.

In addition to the mentioned effects in the United States, QE led to increased liquidity in the international markets, which had important effects in emerging economies, where increases in capital flow inputs, reductions in risk perception; currency appreciations; decrease in interest rates, and rising prices of real and financial assets were observed[2].

Following the tapering announcement and its implementation, many of the mentioned trends were reversed. Because of this behavior, Eichengreen and Gupta (2014)[3] analyzed emerging countries variables could explain the reactions of the tapering announcement in these economies. The authors found that those countries with financial markets of a bigger size,[4] which also allowed the real exchange rate to appreciate and an increase in the deficit in the current account during the QE period, are those who suffered the greatest impact on their exchange rates, international reserves and equity market. Additionally, the results show that the state of the macroeconomic fundamentals, such as fiscal deficit, public debt, reserve levels or rates of economic growth, had no effect on the magnitude of the reaction of these countries after the announcement.

Furthermore, the authors found little evidence that would allow to say that measures such as capital controls and/or fiscal contraction, would have reduced the effects of tapering. By contrast, they found that macroprudential measures, such as limits to bank credit growth, restrictions on the loan to value[5] or similar, could have been more effective to mitigate the appreciation of the real exchange rate and the increase in the the current account deficit during the periods of increased capital flows (QE).

Given the above discussion, this box is aimed to analyze the behavior of the variables studied by Eichengreen and Gupta (2014), contrasting it for the Colombian case. Then, the effects observed in Colombia and other emerging economies following the tapering announcement are compared. Finally, the levels of the variables in the time before the announcement of the withdrawal of quantitative easing are analyzed, and compared with what was observed in other emerging economies.

---

1   Mortgage backed securities and treasury bonds.

2   For more detail on the characteristics of quantitative easing, see Reportes del Emisor (Reports of the Issuer), no. 176: "Quantitative easing in the United States and some effects in Colombia" ("El relajamiento cuantitativo en los Estados Unidos y algunos efectos en Colombia"), January of 2014.

3   Eichengreen, B.; Gupta, P. (2014). "Tapering Talk: The Impact of Expectations of Reduced Federal Reserve Security Purchases on Emerging Markets", policy research working paper, num. WPS 6754, World Bank.

4   In financial markets of a bigger size and liquidity, investors may rebalance their portfolio more easily. Which, at the Fed's announcement, could have generated that investors liquidate their positions in a faster manner, amplifying the initial effects of the announcement.

5   Ratio between the disbursements and the collateral value.

1. Quantitative Easing (QE) in Colombia

As mentioned, QE had important effects on emerging economies, generating increases in capital inflows, reductions in risk perception; currency appreciations; decrease in interest rates, and rising prices of real and financial assets.

By analyzing the evolution of these variables in Colombia, it is observed that, in general, during the first stage (QE1), major reactions were recorded. By studying the evolution of the nominal exchange rate, an appreciation of 18% between November of 2008 and March of 2010 was observed; while in the periods of stages QE2 and QE3,[6] a depreciation of 4.6% and an appreciation of 1.5% respectively (Figure B5.1) was registered.

On the risk perception behavior, measured by Colombia's five years credit default swaps (CDS), it is observed that the indicator was significantly reduced, passing from 351.3 basis points (bp) in November of 2008, to 145.1 bp 17 months later. In the later stages of QE, the indicators were located in 108.4 bp and 90.9 respectively (Figure B5.2).

In the case of the stock market in Colombia, a percentage variation was observed in the Colombian Securities Exchange general index (IGBC in Spanish), from 61% during the period of QE1, while during QE2 and QE3 the variation was of -10.3% and -5.47% respectively (Figure B5.3).

In general, when analyzing these variables, major changes are observed during the first stage of QE, while in the rest, a significant reaction was not observed. In principle, this could be explained, because QE1 was implemented immediately after the most critical period of the international financial crisis, which partially returned the confidence of investors, helping to stabilize the markets. Meanwhile, the next rounds (QE2 and QE3) could have maintained high levels of liquidity in emerging economies, so the analyzed variables kept similar levels to those observed during QE1.

2. Effect of the possible withdrawal of the quantitative easing program announcement (tapering) in some emerging economies

To quantify the effect brought about by the announcement of the possible withdrawal of the quantitative easing program in emerging economies, Eichengreen and Gupta (2014) analyzed the behavior of some financial variables in the period immediately after the announcement of the Fed in May 2013, where it was said that it was possible that the Ameri-

Figure B5.1
COP for USD nominal exchange rate

(COP for USD)
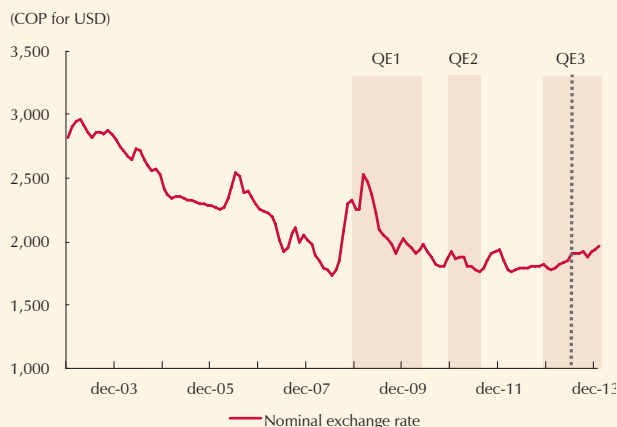
Source: Banco de la República.

Figure B5.2
5 years credit default swaps (CDS)

(basis points)
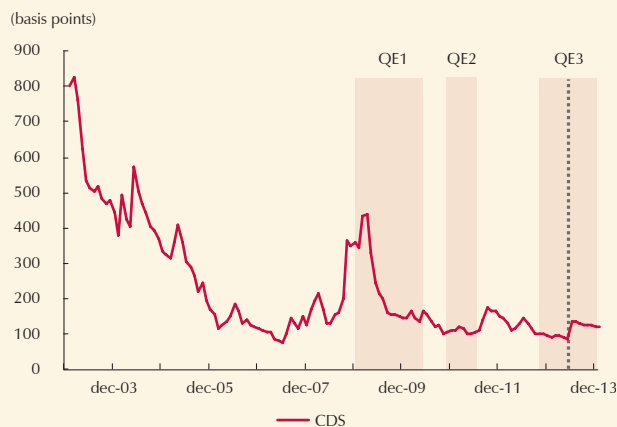
Source: Bloomberg.

Figure B5.3
IGBC

(points)

Source: Banco de la República.

can central bank would cut back its purchases of financial assets in the remainder of 2013, and that it would end the last stage (QE3) in mid-2014.

---
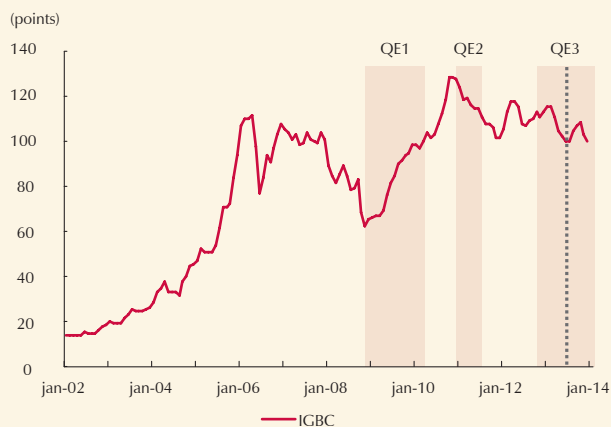
6   QE3 is still in effect, nonetheless, in this box, the calculations for this stage are performed to date of the start of the withdrawal of the quantitative easing program (May of 2013).

For this, the authors calculated the percentage change between April and July 2013 for relevant financial variables, such as the nominal exchange rate, the stock index and foreign reserves, as well as the change in the government securities bp spread[7] and the CDS of some emerging economies. This box extends this analysis to Colombia, and compares it with the results of other emerging economies (the so called Brics,[8] plus Indonesia and Turkey) (Table B5.1)

As can be seen, all the analyzed countries, except for China, experienced a depreciation of their exchange rate. Likewise, international reserves declined in six of eight cases (except for China and Colombia), while the stock market performance was mixed: it was observed that stock prices fell in four of eight cases. As for the spread and the CDS, in all cases increases were presented, indicating that the risk perception increased for emerging economies.

For the particular case of Colombia, the reaction of the variables analyzed was lower than the average studied (Brics and Indonesia and Turkey, and the average of emerging countries that were affected by tapering).

---

7   Absolute change in the bonds interests rates spreads between April and July of 2013. The original data are expressed in bp for US Treasuries.

8   Brazil, Russia, India, China and South Africa.

3.   Determininmg factors of the impact of tapering in some emerging economies

After the behavior evidenced in the emerging economies during the quantitative easing and the subsequent tapering announcement, Eichengreen and Gupta (2014) explored different factors associated with the depreciation of the exchange rate, losses in international reserves and decreases in stock market prices recorded between April and August 2013 for some emerging economies.

They used a model which incorporated factors such as the deficit in the current account, the real exchange rate, the size of the financial market, the reserves to M2 ratio, the growth of real GDP, public debt, fiscal deficit, inflation, the capital control index, the exchange rate regime and the world governance index, and used econometric estimates to determine the most relevant variables.

The obtained results suggest that higher depreciation in the exchange rate and other changes in the financial indicators registered after the tapering announcement would be associated with the deterioration in the current account and the magnitude of the appreciation of the real exchange rate in 2010 and 2012. Additionally, they found that countries with larger financial markets, measured as the sum of external financing, had more depreciation and losses in their international reserves.

Box B5.1
Effect in some financial market variables in the Brics, Indonesia, Turkey and Colombia, April and July of 2013[a]

	Nominal exchange rate percentage change[b]	Stock index percentage change[c]	International reserves percentage change[d]	Yields basis points change[e]	CDS basis points change[f]
Brazil	12.52	(8.92)	(1.69)	55.78	64.06
Russia	4.63	0.42	(3.32)	24.95	35.95
India	9.98	4.04	(4.77)	n. a.	n. a.
Indonesia	3.58	(10.01)	(13.61)	64.75	64.06
China	(0.85)	(6.49)	0.38	23.54	51.78
South Africa	8.96	3.07	(5.42)	57.68	48.17
Turkey	7.61	(12.16)	(8.2)	40.85	66.97
Brics, Indonesia and Turkey average	6.63	(4.29)	(5.23)	44.59	55.17
Emergent countries affected by the announcement	4.26	(7.56)	(5.15)	48.52	n. d.
Colombia	3.84	(4.09)	3.78	37.57	43.38

N/A Not applicable
N/A Not available
a/ For each of the analyzed variables, the sample of countries that were affected by the announcement. changes.
b/ Nominal exchange rate percentage change between April and July of 2013. Source: World Bank (GEM database).
c/ Stock index percentage change between April and July of 2013 Source: World Bank (GEM database).
d/ in international reserves percentage change between April and July of 2013. Original data expressed in millions of dollars. Source: World Bank (GEM database).
e/ Absolute change in the bonds interests rates spreads between April and July of 2013. The original data are expressed in bp for US Treasuries. Source: World Bank (GEM database).
f/ 5 years CDS absolute change between April and July of 2013. Source: Bloomberg.
Source: Eichengreen and Gupta (2014); Banco de la República calculations.

When the indicators of Colombia are compared with those of other emerging economies, it is observed that Colombia had an increase in the current account deficit close to the average, and a greater appreciation in the real effective exchange rate between 2010 and 2012 (Colombia presented a greater appreciation than the Brics, Indonesia and Turkey) (Chart B5.2). However, the size of the Colombian financial market was below the average calculated for the analyzed emerging economies. This, according to Eichengreen and Gupta (2014), would explain why the effects of the tapering announcement were lower in Colombia than the average for emerging economies.

In conclusion, in Colombia, the analyzed financial variables showed significant changes during the QE, especially in the first stage (QE1). When the effect of the announcement of the possible tapering had in some emerging economies' financial variables is studied, it was observed that in Colombia the effect was smaller than the average. In considering what factors would be associated with depreciation and variations in stock prices recorded between April and August 2013, it is noticed that the appreciation and higher current account deficit recorded during 2010 to 2012, may have reflected the largest increase in capital inflows r susceptible to be reversed during the tapering period. Finally, following the work of Eichengreen and Gupta (2014), it is expected that the effects in Colombia would be lower, although similar to those that the other emerging economies would face, given the lower external financing, the current account deficit and the appreciation of the real exchange rate.

Box B5.2
Some determining financial market variables of the tapering effect

	Brazil	Russia	India	Indonesia	China	South Africa	Turkey	Average	Colombia
Increase in the current account deficit (2010-2012 over 2007-2009)[a/]	2.18	0.83	1.83	(0.51)	0.34	0.69	1.64	1.00	1.18
Real exchange rate annual average percentage change (2010-2012)[b/]	(3.27)	(4.98)	(3.57)	(5.23)	(3.99)	(2.68)	(0.19)	(3.42)	(6.19)
Financial market size (2010-2012, Log)[c/]	14.94	14.89	14.22	13.32	14.90	12.68	13.83	14.11	12.03
M2/reserves ratio, 2012 (times)	4.88	1.93	4.68	3.12	4.56	5.70	3.67	4.08	4.28
Real GDP growth, 2012 (percentage)	0.872	3.4	3.237	6.226	7.7	2.548	2.171	3.74	3.96

a/ Current account deficit (2010-2012) and Current account deficit (2007-2009) ratio.
b/ The real exchange rate, is calculated as the nominal exchange rate (local currency per dollar) multiplied by the CPI for the United States, divided by the CPI for each country.
c/ Logarithm of the total external private financial flows (bonds, equities and credit).
Source: World Bank (GEM database), International Monetary Fund (IFS database); Banco de la República calculations.

Box 6
CHANGES IN THE FINANCIAL SYSTEM REGULATION

In past editions of the Financial Stability Report, boxes that summarize the system's stability most relevant regulatory changes were included. In particular, in the editions of September 2012 and 2013, the new standards for measuring the credit institutions capital as well as changes to the calculation of the pension and severance funds management companies (AFP in Spanish) solvency ratio in that order.[1] These changes are part of a set of measures that are being taken by the Ministry of Finance and Public Credit (MHCP in Spanish) as part of an agenda towards improving, both the quality of capital, as well as measuring the risks that agents are exposed to. This box is intended to supplement the information from the previous analysis concerning MHCP's efforts in this regard, explaining the changes introduced with decrees 1895 of 2012 and 904 of 2013.

Additionally, changes to the repo, simultaneous and temporary securities transfer (TTV in Spanish) operations, introduced by Decree 2878 of 2013, as well as the technical reserves for insurance companies' regime, amended by Decree 2973 of 2013, given its potential effect on the Colombian financial market.

1.   Decree 1895 of 2012

Decree 1895 of 2012 looks for a more accurate calculation of the appropriate equity that the AFPs, trust companies and insurance companies that administer social security resources, including the National Pension Fund for Subnational Entities (Fonpet in Spanish) should maintain through autonomous equity.[2] To this end, a measure of operating risk associated with this activity is introduced, and a clear separation is established with respect to the risk covered by stabilization reserve that the entities who manage these resources must constitute.

Operating risk refers to the possibility that a manager incurs in losses and decreases the value of its equity as a result of "[...] inadequate or failed internal processes,

personnel and internal systems, or due to external events "(Article 2.5.3.1.1, Decree 1895 of September 2012). Operational risk includes legal risk, but excludes strategic and reputational risks.

Following the suggestions of Basel II, operating risk is calculated based on the income from the various activities conducted by the manager in the natural development of its functions, also including a charge associated with the size of the assets of the social security administered by the entity. Specifically, we have that operating risk is composed of:

> a) Thirteen percent (13%) of income on fees from the management of resources of the Fonpet.[3]
> b) One forty eighths (1/48) of the value of the social security resources managed through autonomous equity, except for assets.[4]

To calculate the income on fees, the average annual income for the last three years is taken as reference.[5]

Therefore, what the decree is recognizing, is that the managers of social security funds, including the Fonpet, face an operating risk associated with the management of resources, and therefore they must have an adequate level of own equity to meet possible losses associated with such management. So, what is proposed, is that both, trust companies as well as AFPs that manage these funds, comply at least with a solvency ratio of 9%, which is defined as the ratio between technical equity and operating risk exposure. In the case of insurance companies, what must be met, is that the technical equity be greater than or equal to the appropriate equity, where the latter includes the value of the exposure to operating risk associated with the management of social security funds through autonomous equity.

---

1   Decrees 1771 and 1548 of 2012 from the Ministry of Finance and Public Credit.

2   In this Decree, unlike the provisions of Decree 1548 of 2012, the treatment given to the calculation of the operating risk associated with the administration of resources from the Fonpet is different. Particularly in Decree 1895, it is proposed to take into account the income from the management of these resources, while in Decree 1548 a percentage of the value of the managed resources was taken into account.

3   In the case of the AFPs, it also includes: c) 16% of income on fees from the mandatory pension funds, d) 16% of those from severance funds funds, and e) 0% of voluntary pensions.

4   In the case of the AFPs, those assets from which earnings referred on c), d) and e) come, are also excluded from the calculation.

5   For administrators who do not have this information, the applicable income will be calculated as the result of multiplying the value of the managed assets by the ratio of income on fess, over the value of managed assets of those financial entities that manage these resources in the last three years.

Finally, the decree establishes a clear separation with respect to the risk that the stabilization reserve covers, which the entities that manage these resources must constitute. Broadly, the stabilization reserve can be defined as a fund that those entities that manage resources that have an associated minimum return scheme must create in order to cover losses incurred due to the lower yields obtained compared to the former. In short, it is an insurance against market risk; therefore, the decree makes it clear that to the technical equity of the entities that manage social security funds, the value of the stabilization fund that they are obliged to create, must be reduced, because what is wanted, is that this equity (net of the reserve) would be only to cover operating risk.

2.   Decree 904 of 2012

The 2008-2009 financial crisis evidenced the need to strengthen the international standards in relation to the measurement of the solvency of the financial institutions, a task that began in Colombia with the issuance of Decree 1771 of 2012, which adjusted the quality capital of banks, financial corporations and financing companies. However, at that time, special Government institutions, financial cooperatives and cooperative bodies of higher level were left outside the scope of the new regulation. Given that financial cooperatives are credit institutions for all effects,[6] while official agencies with special regimes develop operations which by their nature are within the credit institution's ones,[7] it was demeed necessary to adapt the solvency rules provided by in Decree 2555 of 2010, to include these institutions within its scope.

Thus, the changes proposed in Decree 904 of 2012 accomplish two objectives: firstly, they mitigate arbitration in capital requirements by risk between credit institutions; on the other, they introduce elements typical of cooperative entities within the technical equity. This is particularly relevant, to the extent that cooperatives do not have a capital base provided by its partner shareholders, but from contributions from its members, which may be removed at any time. Therefore, what is sought is to define the balance sheet items that effectively fulfill the eligibility criteria of the base capital (loss absorption, subordination and perpetual vocation, among others); such as social contributions protection reserve, the minimum amount of non-reducible contributions provided in the bylaws, and the non-distributable fund,[8] constituted

for recording the surplus obtained by the provision of services to non-members.

3.   Decree 2878 of 2013

With Decree 2878 of December 11, 2013, the MHCP modified the operations related to repo, and simultaneous and temporary securities transfer operations. Through this, a common regime for the management of such operations is generated, particularly with respect to guarantees and the various limits that were previously discretionary by the stock exchanges and trading systems.

In the first place, that relating to guarantees is stipulated, which are classified into two types: basic (or initial) guarantee and the variation guarantee (or adjustment). The first refers to those guarantees which constitute the two parties of the transaction, or one of them, according the risk exposure they are taking. These guarantees must be constituted when the transaction is made. In the case of simultaneous and temporary securities transfer, this warranty is in addition to the securities subject in the initial operation (SSO). It is worth noting that these guarantees apply even for cash transactions, contrary to what happened previously under the Colombian Electronic Market Special Circular, in which the constitution of guarantees for simultaneous cash operations is not required.[9] In the case of repos, this guarantee is equal to the discount applied to the SSO. For its part, the variation guarantee or adjustment, as that constituted by the two parties in the operation, or one of them, depending on risk exposure, in accordance with the requirements of the stock exchange or the system in which it is acting. Additionally, it provides that it is the faculty of the stock exchanges and trading systems, to set minimum percentages for both classes of collateral.

Guarantees (both basic and adjustment) eligible for repo, simultaneous and temporary securities transfer operations, are money, TES treasury securities, along with stock and fixed income securities that are eligible as stipulated by the exchange or corresponding trading system. Furthermore, it is stipulated that the SSO is not acceptable as a basic or adjustment guarantee, except for repo operations in the basic guarantee. It is worth mentioning that the decree gives discretion to the regulations of the stock exchanges and trading systems for the acceptance of the SSO as collateral.

---

6   According to Article 40 of Law 454 of 1998, replaced by article 102 of Law 795 of 2003.

7   According to the provisions of article 2 of Decree 663 of 1993.

8   The quality of non-distributable, prevents the total or partial transfer of resources that make up the 'to other equity accounts' fund.

---

9   It is understood by cash operations, those with a performance of three days or less.

Additional to the guarantee scheme, the MHCP introduced limits on simultaneous, repos and temporary securities transfers made by third parties:[10]

- Maximum undertakings limit: the sum of simultaneous, repos and temporary securities transfers (held by third parties) may not exceed fourteen times the amount of the technical equity (TE) of who performs the operation.

- Limit by type of security: the total undertakings in repos, and simultaneous and temporary securities transfers individually considered by type of SSO, may not exceed fourteen times the TE for fixed income securities, and seven times for equities.

- Maximum limit on behalf of the same third party: the same third party cannot keep undertakings which together exceed 30% of the TE which together exceed 30% of the TE.

- Limit by species: the maximum limit of undertakings by third parties on repo, simultaneous and temporary securities transfers operations on a single kind of equity, cannot exceed 100% of the TE.

- Limits on operations in securities issued by related subjects:[11] the maximum limit of undertakings for repo, simultaneous and temporary securities transfers operations, that securities intermediaries perform on securities issued by their related subject on third party accounts, in aggregate, cannot exceed 200% of the TE. Additionally, the maximum limit of undertakings on behalf of third parties on a species issued by subjects related with the securities intermediary may not exceed 50% of the TE.

It is interesting to mention that the maximum undertakings limits, limit by type security, the maximum limit on behalf of the same third party and the limit by species, were already established by the regulations of the Colombian Securities Exchange (BVC in Spanish), [12] [13] although the latter was implemented in February 2013. However, these caps only applied to term operations[14] closed through the BVC, contrary to what happens with the limits on Decree 2878, which applied to all simultaneous, repo and temporary securities transfer (TST) operations.

It is worth noting that the guarantees regime as well as the limits described are not applicable to transactions offset or settled by a central counterparty risk clearing house. Also, the taker[15] in a repo operation, or the originator[16] in a TST who receives a security that cannot be transferred to a third party during the term of the transaction, is not subject to the guarantee regime or the described limits. Additionally, mutual funds that do not perform leveraged transactions, and those pension funds managed by the AFPs, are not subject to the mentioned limits, although they are to the system of guarantees.

The MHCP also introduced a restriction on the number of shares on repo, simultaneous and TST transactions. It sets that the maximum allowable percentage of the ratio between the number of shares that have been part of repo and simultaneous operations, and the floating stock of the respective species[17] is of 25%. Likewise, the maximum allowable percentage of the ratio between the number of shares that have undergone TST operations and the floating stock of the respective species, is 50%. The BVC had already established a similar limit in its rules on February 2013; however, this limit applied only to repo transactions closed through the BVC and made on shares, and this ratio was calculated on the number of outstanding shares.

Finally, transparency standards are established, and it is stipulated that the securities exchanges and trading systems must make available to the general public, the information about the floating stock (or the amount issued, as applicable), and the total exposure in repo, simultaneous

---

10   Those individuals or corporations, autonomous equities or portfolios of third parties on behalf of securities intermediaries perform transactions and, in general, all subjects different to entities supervised by the FSC in respect of securities transactions on which they act on their own behalf and with their own resources.

11   The decree defines related subject, as any subject who fulfills any of the following conditions: (i) Whether he, the shareholders or the real beneficiaries, are owners of 10% or more of the equity interest in the securities intermediary, (ii) being the legal persons on which the securities intermediary is the real beneficiary of 10% or more of the equity interest, (iii) being the parent of the securities intermediary or the subordinates of the former, or (iv) being the administrators of the securities intermediary, its parent company or its subordinates.

12   See section VI of Chapter III of the BVC's Special newsletter.

13   The maximum limit on behalf of the same third party in the BVC, is 60% for entities supervised by the FSC, and 30% for those who are not supervised.

14   Term operations are those with a maturity greater than three days.

15   I.e., the one who receives the SSO in the repo operation.

16   I.e., the one who transfers the SSO in a TST operation.

17   Floating stock means the number of shares held by shareholders, who considered each one individually, do not own more than five percent (5%) of the capital, plus the shares owned by the funds managed by the AFP, insurance companies and/or mutual funds.

and TST transactions recorded in their systems for each species. Additionally, they must also make available to the authorities and affiliates or members of the systems, the information about the amount of outstanding commitments compliance on behalf of their clients in the respective system.

4.   Decree 2973 of 2013

In December 2013, the MHCP issued Decree 2973, which introduces changes in regulations related to the technical reserves of insurance companies. This norm modifies Decree 2555 of 2010, and adds other provisions, which contained measures to regulate such reserves.[18]

The division of the technical reserves considers the characteristics of each of the branches that make up the insurance industry. In particular, there is a segmentation between insurance that cover losses that will occur with certainty, but whose time of occurrence is uncertain; and those in which

---

18   Being the reserves an important part of the of insurance companies liabilities, the applicable investment regime to these institutions, leads them toward the purchase of assets that enable them to meet their obligations. The reserves regime of insurance companies was established in Decree 2593 of 2010.

the possibility of non-occur of the loss exists, during the term of the policy.

The estimates of the reserves of the first take into account that the policy is constructed as a flow of resources that the insurance company will receive for a certain period, accompanied by a flow of expenditures that will begin after the loss occurs. In the case of the latter, in general, the income flow is not stopped by the loss, as long as the policy is in effect. The details of the division of the technical reserve can be seen in Chart B6.1.

Additionally, the decree introduces special provisions for earthquake insurance, because its characteristics are significantly different from those of other branches. This type of policy covers losses whose occurrence is rare, but whose impact is very high. Thus, a reserve for catastrophic risks constituted with the released funds of the current risk reserve, which for this branch corresponds to 100% of the pure risk premium, is introduced. The reserve for catastrophic risk is cumulative, up to a value sufficient to cover the maximum probable loss from the seismic event.

Finally, Decree 2973 of 2013 introduces a transitional regime in which insurance companies are given one year starting from the issuance of instructions by the FSC, for them to prove the amount of introduced reserves, except for the reserve unreported occurred losses, which has a two year period.

Box B6. 1
Technical reserve components

Kind of reserve	Description	Components	Components description	Applicable branches
			Technical reserves	
Current risks reserve	It is constituted to fulfill expected future obligations, derived from policies in effect at the date of the calculation.	Unearned premium reserve	(Issued premium - issuance costs) x not taken fraction of the risk[a/]. Policies with validity of less than one month must reserve as a minimum 50% of the net issued premium for issuing costs.	All the branches and coverages of the insurance contract, except those on who the insufficient assets reserve is applicable, and the branches of disability and life insurance pension.
		Premium deficiency reserve	Unearned premium reserve x max (0, (expenses - income) / issued premiums). A period of two years is taken as a reference, except for the branches of disability and life, that will take six months.	All branches and coverages of the insurance contract, except those on who the insufficient assets reserve is applicable.
Mathematical reserve	Max (actuarial present value of future obligations for the insurance company - actuarial present value of future payments by the insured, redemption value).[b/]			Individual life insurance, with benefits as an annuity, on which the premium is calculated in a leveled manner and savings funds.
	Actuarial present value of future obligations in charge of the insurer			Law 100 insurance pension branches, labor risks and pension commutation.
Insufficient assets reserve	To compensate the insufficiency to cover the expected liabilities flows of the mathematical reserve.		Max (present value of the liabilities flow - present value of assets flow, 0)	Individual life insurances, on where the premium is calculated in a leveled manner, savings funds, Law 100 pensions, pension commutation, voluntary pensions, education, voluntary rent and labor risks.
Pending losses reserve	Constituted for the payment of losses incurred once reported, or to ensure coverage of those unreported at the calculation date.	Reported losses reserve	Estimated amount to be allocated for the payment of occurred losses when they have been reported.	All branches
		Occurred losses reserve, unreported	Estimated amount to be allocated to meet future losses payments that have already occurred, but have not been reported to the entity, or for which there is insufficient information.	All branches, except for individual life insurance, on which the premium is calculated in a leveled manner, savings funds, Law 100 pensions, pension commutation, voluntary pensions, education and voluntary rent.
Loss deviation reserve	Constituted to cover risks whose loss experience may cause large deviations from what is expected. The methodology for its calculation will be determined by the Financial Superintendence of Colombia.			All branches.

a / The fraction of the risk not taken corresponds to the period remaining until the term of a policy expires. For example, if in January a one year insurance policy is taken, in June of that year the fraction of the risk not taken is six months.
b / The redemption value is the value that the insurance company delivers to the insured if he/she decides to cancel the policy. Not all types of insurance have the option of receiving the redemption value when cancelling the policy.
Source: MHCP.