

First Semester of 2020

FINANCIAL STABILITY REPORT

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

ISSN - 2145-650X





FINANCIAL STABILITY REPORT



According to the Political Constitution of Colombia, *Banco de la República* is responsible for safeguarding the price stability of the economy. The proper implementation of this task depends crucially on maintaining financial stability.

Financial stability is understood as a general condition in which the financial system (financial institutions, markets, and infrastructures):

1. Assesses and manages financial risks in such a way that it facilitates the performance of the economy and the efficient allocation of resources;
2. is capable of autonomously absorbing, dissipating, and mitigating the materialization of the risks that may arise as a result of adverse events.

This Financial Stability Report (FSR) presents the Central Bank's appreciation on the recent performance of credit institutions and their debtors, as well as on the main risks and vulnerabilities that could affect the financial stability of the Colombian economy. The FSR intends to keep the participants in financial markets and the public informed, besides promoting public debate on the trends and risks related to the financial system. The results herein presented also serve as a basis for the monetary authority to make decisions that promote financial stability in the general context of the constitutional objectives of price and macroeconomic stability.

This FSR is complemented by the Payment Systems Report, published annually by *Banco de la República*, which reports on the performance of the financial infrastructures of the Colombian economy.

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Glossary

API: Application Program Interface	NIM: Net Interest Margin
AT1C: Additional Tier 1 Capital	NLR: Net Liquidity Requirements
BCBS: Basel Committee on Banking Supervision	NPL: Non-Performing Loans Indicator
BDBR: Board of Directors of <i>Banco de la República</i>	OB: Open Banking
BF: Brokerage Firms	PCF: Private Capital Funds
BIS: Bank of International Settlements	PEF: Private Equity Funds
bp: Basic Points	PFM: Pension and Severance Fund Managers
CDT: Term Deposit	PILA: Integrated Template for Liquidation of Contributions
CET1: Common Equity Tier 1 Capital	PUC: Single Accounting Plan
CI: Credit Institutions	QRI: Quality Risk Indicator
CIF: Collective Investment Funds	ROA: Return on Assets
CIR: Inter-sectoral Resolution Commission	ROE: Return on Equity
CMA: Competition and Market Authority	IRPR: Indicator of Risk Perception by Rating
COP: Colombian Pesos	RUNEOL: Single National Registry of Payroll Deductible Loan Operators
CPI: Consumer Price Index	RWA: Risk Weighted Assets
CSD: Central Security Depository	SB: Shadow Banking
DD: Distance to Default	SES: Superintendence of Solidary Economies
DSR: Debt-Service Ratio	SFC: Office of the Financial Superintendent of Colombia
EUR: Euros	SMES: Small and Medium-Sized Enterprises
FDI: Foreign Direct Investment	SS: Superintendence of Corporate Affairs
Fed: Federal Reserve of the United States	SYSMO: Systemic Stress Model
FNA: National Savings Fund	T2C: Tier 2 Capital
FSB: Financial Stability Board	TC: Trust Companies
FTD: Fixed-Term Deposit Effective Rate	TES: Colombian Public Debt Bonds
FXMI: Foreign exchange market intermediaries	TIB: Interbank Interest Rate
GDP: Gross Domestic Product	USD: US dollar
IBR: Banking Benchmark Reference Rate	UVR: Real Value Unit
IC: Credit Intermediation	VAR: Vector Auto-Regression Model
ICE: Indicator of Consolidated Exposure	VPF: Voluntary pension funds
IEFIC: Debt Service and Financial Education Survey	WATM: Weighted Average Term to Maturity
IFRS: International Financial Reporting Standard	
IIE: Indicator of Individual Exposure	
IMC: Foreign Exchange Market Intermediaries	
IMC: Investment Management Companies	
IMF: International Monetary Fund	
IPS: Health Service Providers	
LIH: Low Income Housing	
LRI: Liquidity Risk Indicator	
LSRR: Liabilities Subject to Reserve Requirements	
MADR: Ministry of Agriculture and Rural Development	
MER: Market Exchange Rate	
MT: Maturity Transformation	
NAFTA: North American Free-Trade Agreement	
NBFI: Non-Banking Financial Institutions	

Executive Summary and Risk Heatmap

In the face of the multiple shocks currently experienced by the domestic economy (resulting from the drop in oil prices and the appearance of a global pandemic), the Colombian financial system is in a position of sound solvency and adequate liquidity. At the same time, credit quality has been recovering and the exposure of credit institutions to firms with currency mismatches has declined relative to previous episodes of sudden drops in oil prices. These trends are reflected in the recent fading of red and blue tonalities in the performance and credit risk segments of the risk heatmaps in Graphs A and B.¹

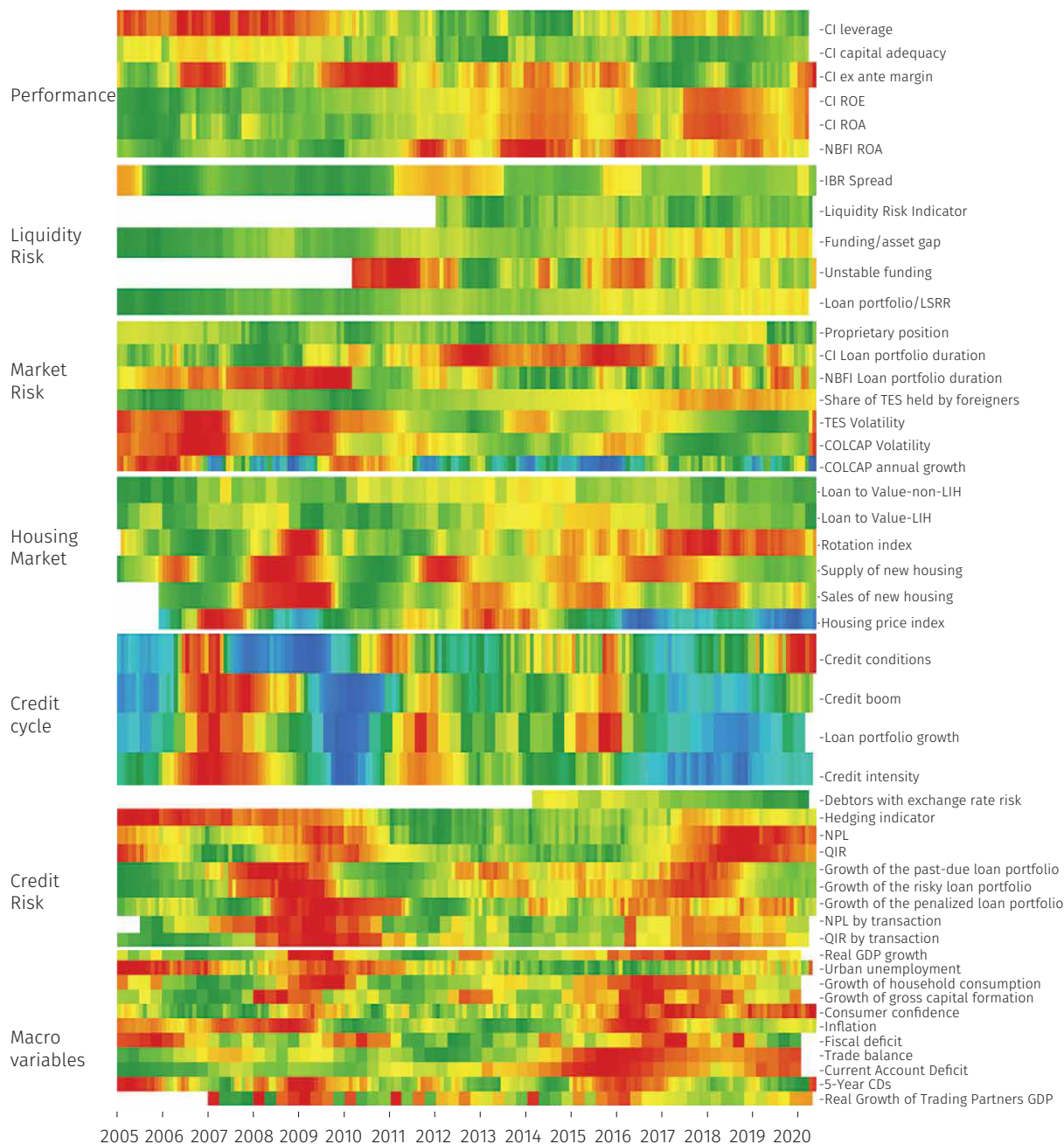
Naturally, the sudden, unanticipated change in macroeconomic conditions has caused the appearance of vulnerabilities for short-term financial stability. These vulnerabilities require close and continuous monitoring on the part of economic authorities. The main vulnerability is the response of credit and credit risk to a potential, temporarily extreme macroeconomic situation in the context of: (i) recently increased exposure of some banks to household sector, and (ii) reductions in net interest income that have led to a decline in the profitability of the banking business in the recent past.

Furthermore, as a consequence of greater uncertainty and risk aversion, occasional problems may arise in the distribution of liquidity between agents and financial markets. With regards to local markets, spikes have been registered in the volatility of public and private fixed income securities in recent weeks that are consistent with the behavior of the international markets and have had a significant impact on the liquidity of those instruments (red portions in the most recent past of some market risk items on the map in Graph A).

In order to adopt a forward-looking approach to those vulnerabilities, this Report presents a stress test that evaluates the resilience of credit institutions in the event of a hypothetical scenario that

¹ The technical details on the reading of, construction of, and variables used on the map are presented in Box 1 of the September 2017 Financial Stability Report.

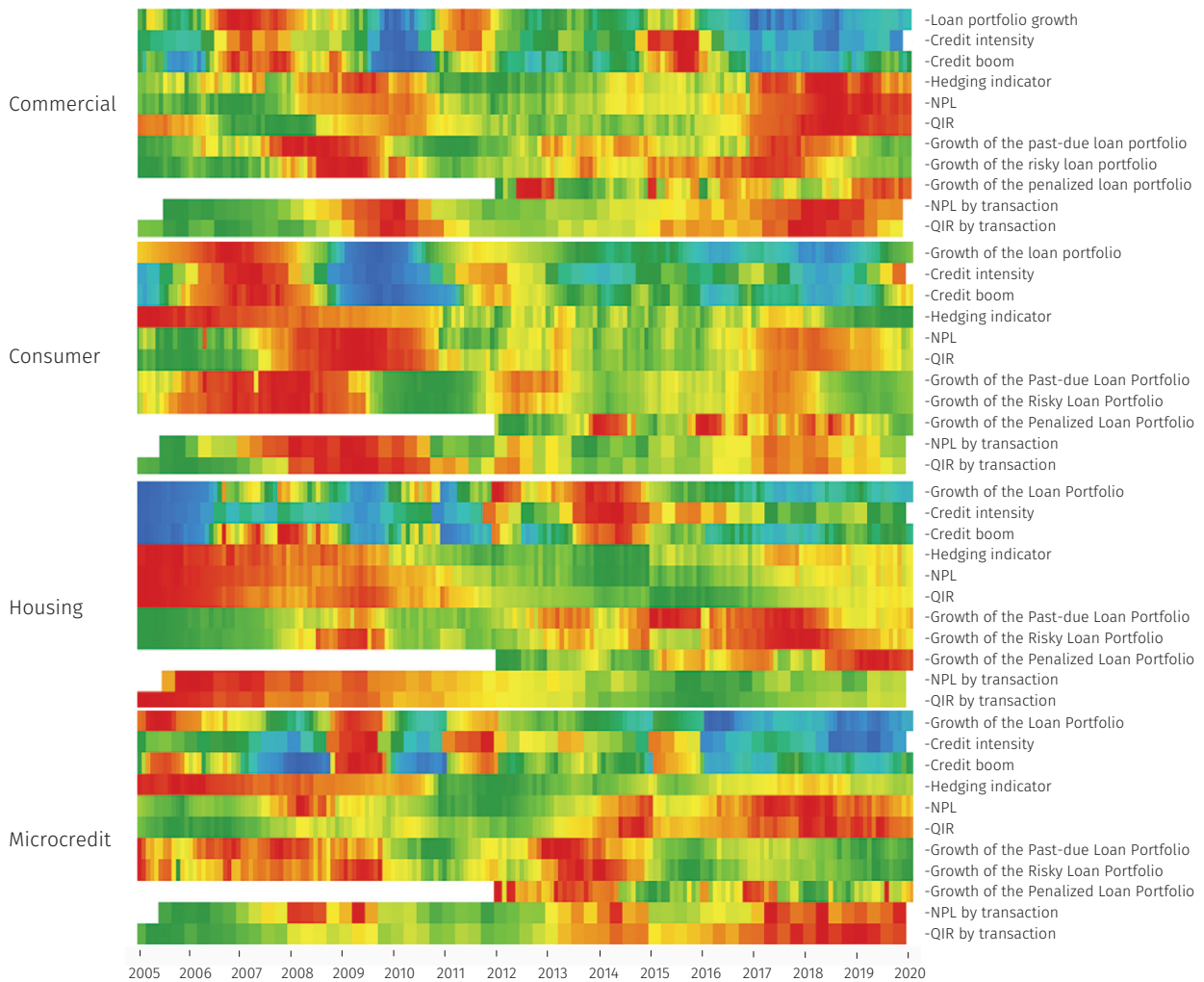
Graph A
Risk Map of the Colombian Financial System



Sources: Office of the Financial Superintendent of Colombia, DANE, Fedesarrollo, Bloomberg, and Banco de la República. Calculations by Banco de la República.

seeks to simulate an extreme version of current macroeconomic conditions. The scenario assumes a hypothetical negative growth that is temporarily strong but recovers going into the middle of the coming year and has extreme effects on credit quality. The results suggest that credit institutions have the ability to withstand a significant deterioration in economic conditions in the short term. Even though there could be a strong impact on credit, liquidity, and profitability under the scenario being considered, aggregate capital ratios would probably remain at above their regulatory limits over the horizon of a year.

Graph B
Map of Credit Risks



Sources: Office of the Financial Superintendent of Colombia, DANE, Fedesarrollo, Bloomberg, and Banco de la República. Calculations by Banco de la República.

In this context, the recent measures taken by both *Banco de la República* and the Office of the Financial Superintendent of Colombia that are intended to help preserve the financial stability of the Colombian economy become highly relevant. In compliance with its constitutional objectives and in coordination with the financial system’s security network, *Banco de la República* will continue to closely monitor the outlook for financial stability at this juncture and will make the decisions that are necessary to ensure the proper functioning of the economy, facilitate the flow of sufficient credit and liquidity resources, and further the smooth functioning of the payment system.

Juan José Echavarría
Governor

01

Macroeconomic Environment

The effect on public health and on the normal operation of the economy caused by the Covid-19 pandemic and the social distancing measures that seek to contain its impact have led various analysts to predict an economic downturn for 2020. In the baseline scenario, the International Monetary Fund projects that the global output growth rate will be -3.0% with all countries experiencing sharp reductions in their economies.

The current analysis of the global economic environment is strongly influenced by the great uncertainty about the duration and magnitude of the effects of Covid-19 on public health and the impact of social distancing measures intended to slow its spread. At the same time, the effectiveness of the set of measures, several of which are non-traditional, that have been widely implemented to provide partial financial relief for the most affected sectors is unknown. The latter seek to reduce the economic impact and thus, contribute to a faster recovery when it is possible to relax the social distancing measures.

Even though the International Monetary Fund's (IMF) growth projections are exposed to the abovementioned sources of uncertainty, they provide an order of magnitude as a reference point for understanding the dimension of the overall impact that is now beginning to materialize based on some economic indicators. In a baseline scenario, Colombia and its main trading partners are expected to show sharp contractions in economic growth in 2020 (Table 1.1, panels A and B) which is a significant change regarding the World Economic Outlook's forecast presented in January of 2020. In general terms, the world economy is expected to decrease by 3.0%, which is equivalent to the lower growth projection generated by this entity. Additionally, a greater synchronization is expected in the economic cycles of the different economies in comparison to the 2008 shock where several jurisdictions, including Colombia, were not significantly affected.

Table 1.1
A. Outlook for Annual Growth of the Major Economies (Percentage)

	Share of Colombian Exports ^{a/}	2008 ^{b/}	2019 ^{b/}	2020	2021
Advanced economies ^{c/}	39.5	0.6	1.7	-6.1	4.5
United States	29.1	0.4	2.3	-5.9	4.7
China	11.1	9.0	6.1	1.2	9.2
Euro zone	11.5	0.7	1.2	-7.5	4.7

B. Outlook for Annual Growth of Latin America and the Caribbean (Percentage)

	Share of Colombian Exports ^{a/}	2008 ^{b/}	2019 ^{b/}	2020	2021
Latin America and the Caribbean	22.8	4.2	0.1	-5.2	3.4
Ecuador	5.0	6.5	0.1	-6.3	3.9
Brazil	3.7	5.1	1.1	-5.3	2.9
Mexico	3.8	1.3	-0.1	-6.6	3.0
Peru	2.8	9.8	2.2	-4.5	5.2
Chile	2.4	3.2	1.1	-4.5	5.3
Argentina	0.6	6.8	-2.2	-5.7	4.4
Colombia		2.5	3.3	-2.4	3.7

a/ Share of total exports during March 2019 to March 2020 period.

b/ Actual Growth

c/ Based on IMF categories. Includes the United States, some countries in the Euro zone, and other advanced economies in Europe and Asia.

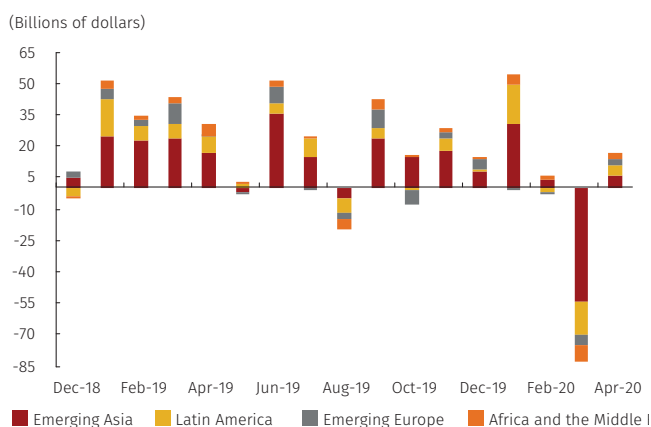
Sources: World Economic Outlook (April 2020) and DANE.

The IMF baseline projections assume that the greatest impact on production will occur during the second quarter of 2020 and that economic growth will recover by 2021. This is based on social distancing measures being partially relaxed starting in the second half of the year and the production structure not being drastically affected during that period. On the other hand, the forecasts that assume that social distancing measures will be extended and that there will be contagion spikes in 2021, though milder ones, suggest that growth rates for 2020 and 2021 will be lower than the baseline projections by three percentage points (pp).

On top of the unprecedented Covid-19 shock that imposes social, fiscal, monetary, and financial policy challenges, the Colombian economy has also been affected by the sharp reductions in commodity prices, primarily for crude oil, and the greater risk aversion towards assets in emerging economies.

The sharp reduction in the price for crude oil caused by the lower global demand and insufficient supply adjustments has led to a weakening of Colombia's external profile due to the lower income expected from exports. The combination of these factors, weaker outlook for growth, and the fiscal challenges involved in managing the health crisis are reflected

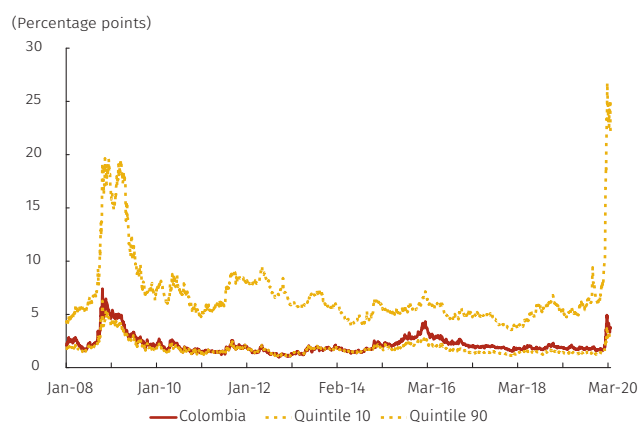
Gráfico 1.1

A. Net Foreign Investment Flows to Emerging Economies^{a/}

a/ Corresponds to net investment flows in debt and equity instruments on a monthly basis.

Source: Institute of International Finance (IIF)

B. EMBI Colombia and Quintiles 10 and 90 for Latin America and the Caribbean



Source: JP Morgan.

in the perception of a lower credit quality for the country¹ by some rating agencies.

A less favorable economic panorama at the local level and, in general, for emerging economies has materialized in capital outflows and a higher cost of financing (Graph 1.1, panels A and B) that is partly due to a greater risk aversion among investors. In line with the prospect for weakness in the region's economies, the perception of the local financial system's credit quality has been affected² and the conditions for access to external financing have become stricter. With respect to the later, the survey on the *Recent Changes in Colombian Bank Foreign Indebtedness*, taken during the first quarter of 2020 and published by *Banco de la República*, suggests that the rates the banks have access to with their counterparts abroad have risen, and that they perceive a lower disposition on the part of these counterparts to grant them funds.

In this context, the soundness shown by the different financial institutions at the beginning of the shock together with the specific measures implemented by the authorities to mitigate the economic impact of the crisis has contributed to the continued smooth functioning of the payment system, appropriate market liquidity, and a presumably lesser impact on the normal functioning of the economy and credit.

The banking system has been characterized by significantly higher levels of liquidity and capital adequacy, in aggregate terms, than the regulatory limits during this recent period. In addition, after the reduction seen in 2016, the quality of the loan portfolio continued to

- 1 On April 1, 2020, Fitch downgraded Colombia's long-term sovereign rating from BBB to BBB- and maintained a negative outlook. On March 26, in turn, Standard and Poor's (S&P) decided to keep the rating at BBB- and change the outlook from stable to negative.
- 2 On March 27, 2020, Fitch changed the outlook for the Colombian banking sector from stable to negative. On April 9, the agency also changed the rating of some financial institutions from BBB to BBB- and changed the outlook for them from stable to negative. Furthermore, the S&P, in a March 30 release, and Moody's, in an April 22 release, changed the outlook for some financial institutions from stable to negative without this affecting their ratings. Note that the abovementioned revisions are mainly due to a perceived deterioration in the operating environment where they do business rather than a weakening of the institutions' financial indicators.

recover. The above indicates that the starting situation of the banking system makes it possible for it to absorb, without any major setbacks, part of the potential losses that could materialize given the shock experienced by the Colombian economy.

In order to partially mitigate the impacts on the real and financial sector cycles and to avoid the harmful effects of a synchronization of these cycles at this juncture, the different entities that the financial system security network is made up of³ have implemented a set of measures that are intended to ensure the liquidity of the system, the normal functioning of the payment system, the flow of credit to the real sector, and financial relief for debtors along with other aspects. The measures implemented and the continuous evaluation of new alternatives are focused on guaranteeing that the Covid-19 shock will be temporary and not generate lasting effects on the normal functioning of the economy. The above will contribute to a faster recovery once the public health measures, for example social distancing, can be partially relaxed.

Given the above, it would be pertinent to study the impact that an extreme, adverse, and hypothetical scenario in which the growth rate of the Colombian economy declines significantly could have on the CIs. The usefulness of the exercise lies in providing an estimate of the potential losses that could be seen in this scenario and revealing the possible transmission channels through which the vulnerabilities identified could end up affecting financial stability.

The results indicate that under the extreme scenario (and only going into 2021), there would be negative effects on aggregate indicators of total and core capital adequacy although they would remain at levels above the regulatory limits during the entire period of the exercise. This is indicative of the resilience of the credit institutions in the event of an extremely adverse scenario in the short term. In addition, the aggregate profitability of the CIs could present significant deterioration which would reflect the impact that the hypothetical adverse scenario could have on the ability of the entities to grant loans and do their intermediation work. These results are obtained from a hypothetical scenario. They use a set of restrictive assumptions, and do not consider the impacts of policy responses that have been seen recently. It is, therefore, to be expected that given the active and timely policy response of the different entities that the financial system security network is made up of, and given a smaller magnitude of the shock, the impact on financial stability will presumably be lower.

3 The institutions that make up the financial system security network are *Banco de la República*, the Office of the Financial Superintendent of Colombia, the Ministry of the Treasury and Public Credit, and the Financial Institution Guarantee Fund.

02

Vulnerabilities of the Financial System

In view of the possible impact of changes in the economic environment caused by the appearance of a global pandemic, this chapter assesses the general situation of financial institutions. An overview of the financial system and an analysis of their exposure to credit, market, liquidity, and interest rate risks are presented below.

2.1 Current Situation of the Financial System

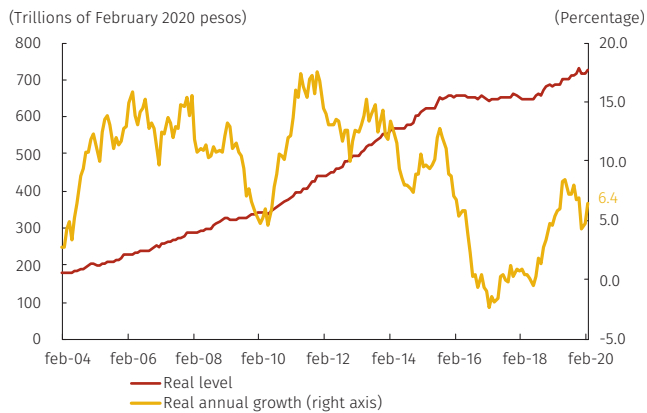
Throughout the second half of 2019 and during the first two months of 2020, a trend towards the expansion of the balance sheet of credit institutions (CIs) was being consolidated. In this environment, CIs generally maintained appropriate levels of capital adequacy and profitability. In the short term, a deterioration in credit market conditions can be expected due to the macroeconomic effects of the global pandemic.

As of February, 2020, CI assets (COP 728 trillion, t) still maintained a sound rate of expansion (6.4% real annual,⁴ Graph 2.1) consistent with the growth of the liabilities. To the extent that the growth of CIs' loan portfolio and investments was close to that of the assets, their share remained relatively stable in the recent past (Graph 2.2).

In this context, loan portfolio growth was gradually rising (Graph 2.3). Micro, commercial, and consumer loan categories registered higher growth rates in February compared to August 2019 (Graph 2.3). The case of consumer loans is particularly noteworthy: the real annual growth registered as of February

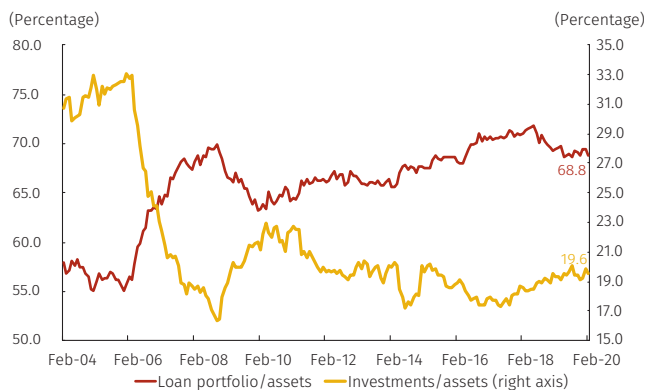
⁴ Real growth was calculated by using the consumer price index (CPI) excluding food.

Graph 2.1.
Credit Institutions Main Assets



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Graph 2.2.
Percentage Share of Investments and Gross Loan Portfolio in Total Credit Institutions Assets



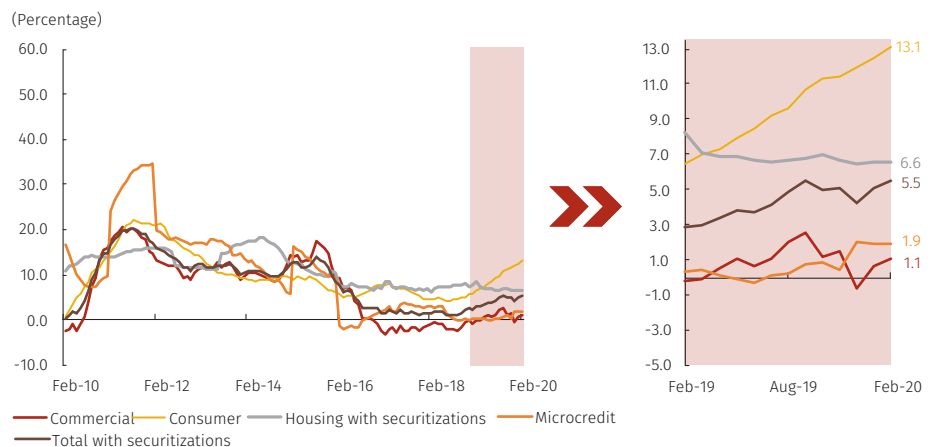
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

(13.1%) was the highest in seven years and was mainly a result of the greater participation of Bancolombia and Davivienda in this market. The growth of the housing loan portfolio, in turn, remained relatively stable. In the near future, and as a result of the immediate impact of the slowdown associated with the global pandemic, a rapid deterioration in credit market conditions is looming. According to the results of *Banco de la República's Survey of the State of Credit*, institutions perceived a lower supply and demand for credit at the end of March 2020 (Graph 2.4) and expected to raise their requirements in the second quarter of 2020.

Credit risk indicators, in turn, showed improvements, in spite of the surge in risky and past-due portfolios in the consumer and housing sectors.

Along with the growth of the loan portfolio, the credit quality indicators continued to register improvements in the six months prior to February 2020: both the quality indicator by risk⁵

Graph 2.3.
Real Annual Growth of the Credit Institutions' Gross Loan Portfolio



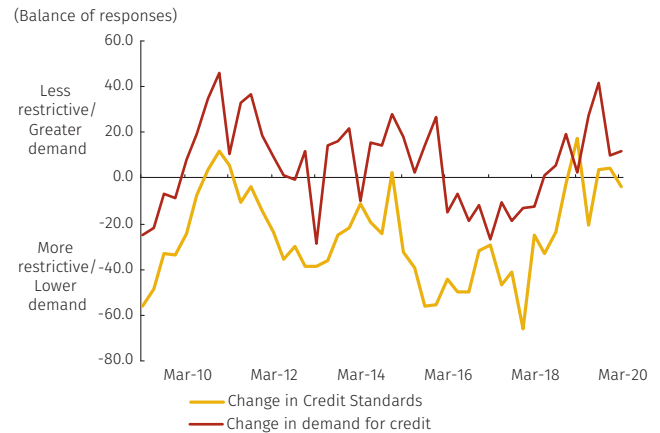
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

5 The QIR is defined as the ratio between the risky and the total loan portfolio (the risky loan portfolio corresponds to the balance of the loans with ratings other than A on a scale from A to E where A is the best rating).

(QIR) and the non-performing loans indicator⁶ (NPL) registered sustained declines. The QIR (NPL) of the total loan portfolio came to 9.2% (5.0%) in February and has remained at relatively high levels as a result of the slow expansion of the gross loan portfolio (Graph 2.5).

In the case of the consumer and housing loan portfolios, there were upswings in the past-due portfolio during the six months prior to February (in the case of the consumer loan portfolio, such upswings also occurred in the risky portfolio) which made them the only loan categories which did not see a decrease in their non-performing loan portfolio (real annual growth of 3.7% and 12.0% respectively). In the short term and in the face of the sudden

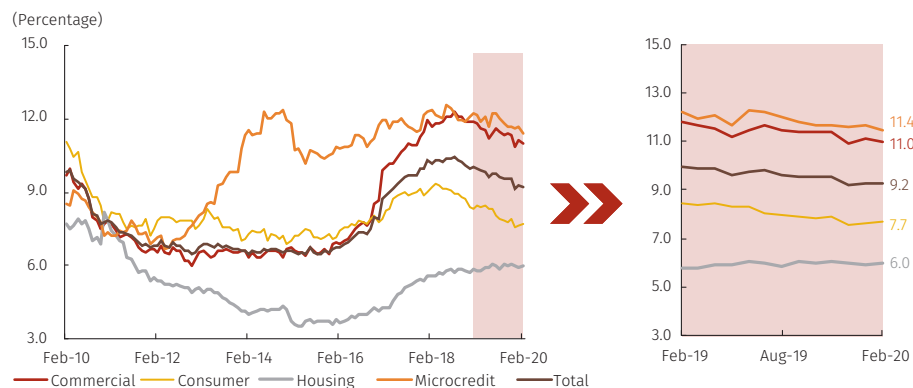
Graph 2.4. Change in Perception of Demand for Credit and in Credit Standards



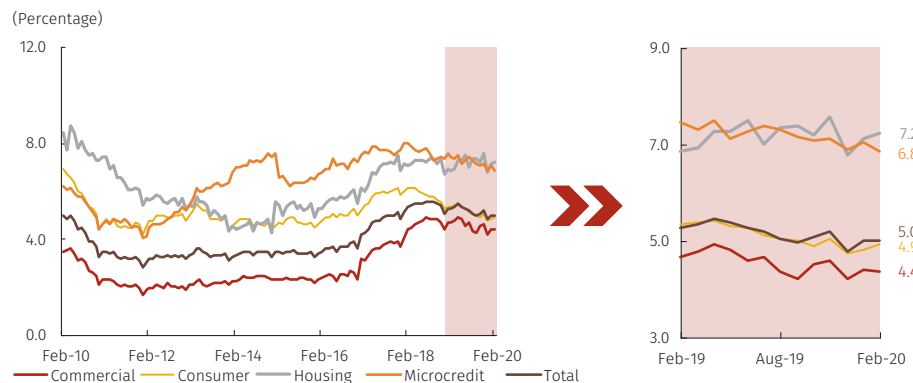
Source: Banco de la República.

Graph 2.5.

A. Quality indicator by risk (QIR)



B. Non-performing loans indicator (NPL)



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

6 The NPL is calculated as the ratio between the past-due and total loan portfolios (the past-due portfolio includes the balance of the loans that have been in arrears for a period of more than 30 days).

change in economic conditions, credit quality (especially that of household debt, which was rising) will probably be particularly vulnerable. The recent measures adopted by the Office of the Financial Superintendent of Colombia⁷ in order to assist in preserving the financial stability of the Colombian economy will tend to mitigate that.

The profitability of CIs declined slightly while their aggregate capital ratios continued to be well above regulatory minima. CIs' short-term aggregate liquidity, in turn, registered an increase during the last six months and is well above the regulatory limit.

In the event of a possible deterioration in loan portfolio quality, CIs have sufficient levels of profitability and capital adequacy as resiliency barriers. On the one hand, the return on assets (ROA, 1.6% as of February) is close to its average for the last five years. At the end of February, there was already a drop in profitability as a result of a lower *ex-post* net interest margins (Graph 2.6).⁸ On the other, total (15.3%) and core (10.5%) capital ratios of CIs have comfortably large margins over regulatory minima (9% and 4.5% respectively). A marginal reduction in these indicators has been seen during the recent period as a result of the expansion of the CIs balance sheet.

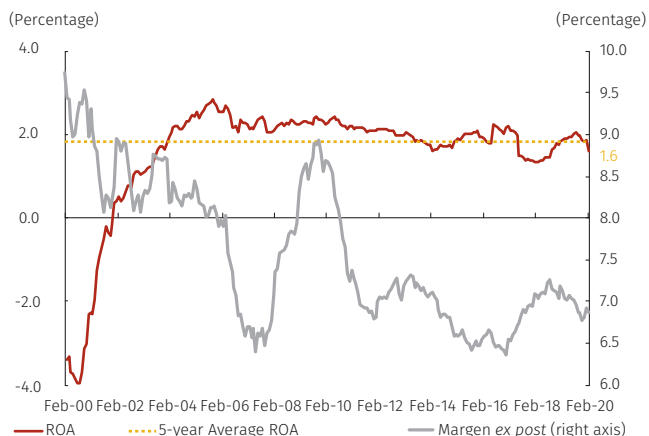
As of April 17, 2018, aggregate liquidity of CIs as measured by the *Office of the Financial Superintendent of Colombia* (FSC) indicator of liquidity risk (LRI) at thirty days registered a rise starting in October 2019 due to a greater accumulation of liquid assets. Even though the indicator varies somewhat by type of institution, liquid assets are more than twice the 30-day net liquidity requirements in all cases, which makes CIs capable of responding without disruption to their short-term obligations (Graph 2.7).

2.1.1 Non-Banking Financial Institutions

Assets that non-banking financial institutions hold in proprietary and managed accounts continued to show a rate of growth that was higher than the historical average.

In February 2020, the assets in the proprietary account of the Non-banking Financial Institutions (NBFIs) represented 5.1% of the financial system

Graph 2.6. Return on Assets (ROA) and Ex-post Net Interest Margin

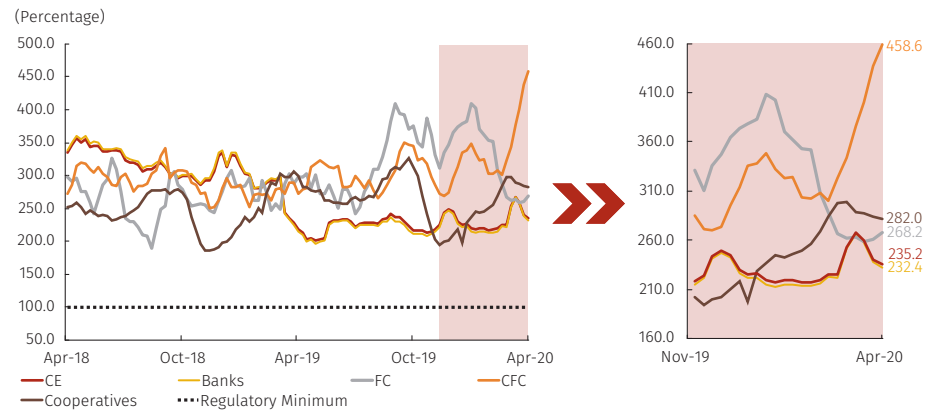


Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

7 Specifically, External Circulars 007 and 014/2020.

8 The lower net interest margin is the result of lower interest rates on loans (especially for consumer loans) and higher deposit rates as a result of the change to longer-term sources in the recent past.

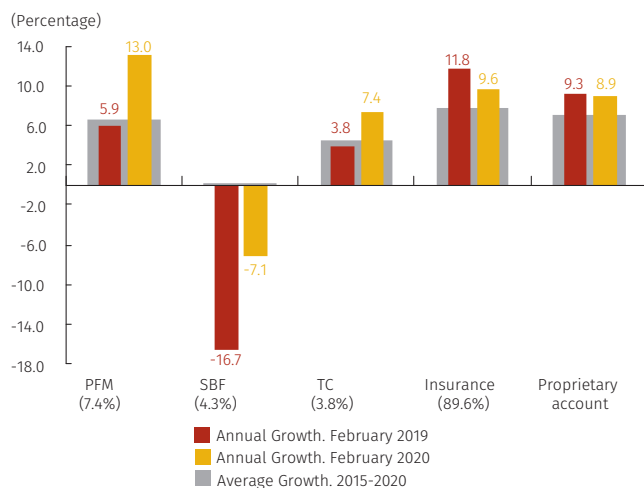
Graph 2.7.
Weighted Average 30-day Liquidity Risk Indicator (LRI) for CIs*



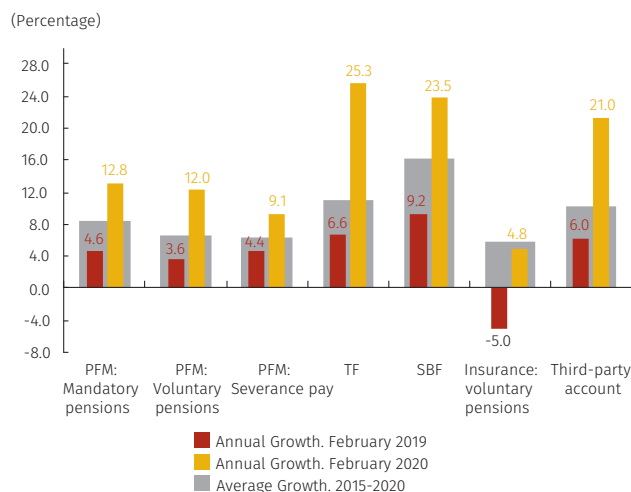
a/ Average that gives greater weight to the most recent data.
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Graph 2.8.
Real Annual Growth of NBFI

A. Proprietary Account^{a/}



B. Third-Party Account



a/ In panel A, the parentheses in the legends indicate the share of assets in proprietary account of each type of entity in the total.
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

assets. At the same time, there was also a slow-down in its growth with respect to February 2019, and this took it to 8.9% as a result of which it remained above the historical average (7.0%). The SBF continued to show a decrease. With respect to the breakdown of the assets in the proprietary position, the one for the insurance companies, which have a share that is close to 90%, is the most representative while the ones for PFM, TC, SBF represent approximately 7.4%, 4.3%, and 3.8% respectively (Graph 2.8, panel A).

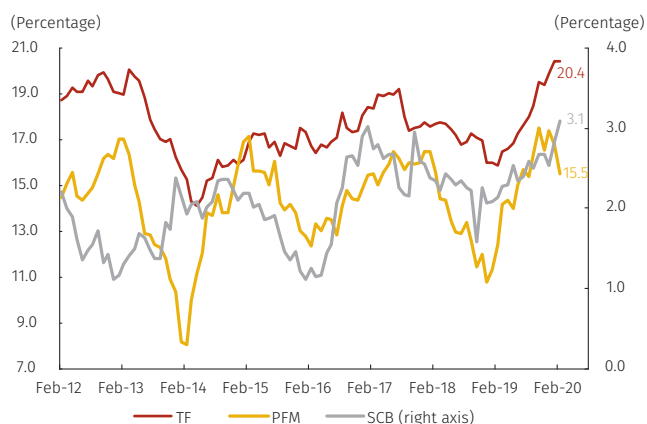
Regarding the portfolio managed by the NBFI, the balance represented 51.3% of the financial system assets and showed surges in growth for all of the entities with the TC and SBF seeing the most growth: 25.3% and 23.5% respectively (Graph 2.8, panel B). The assets of the voluntary pensions managed by insurance companies are the only ones that show a growth that is lower than their historical average. However, after having registered a decline during the same month last year, this data can be interpreted as a recovery.

Between February 2019 and the same month in 2020, the NBFI's ROA registered increases. This indicator remains above the average of the last five years.

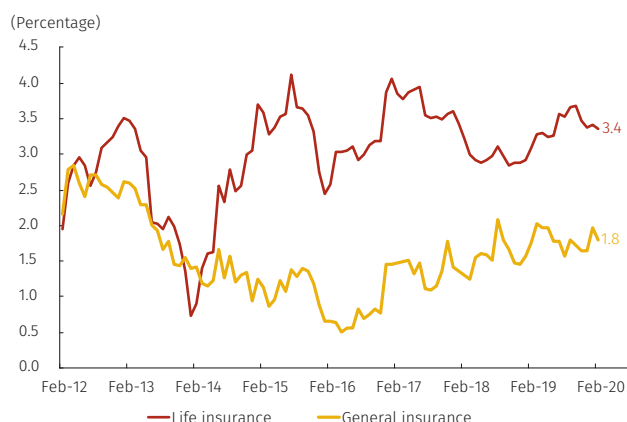
The ROA of the TC, PFM, and SBF stood at 20.4%, 15.5%, and 3.1% respectively. These figures are higher than those seen in February 2019 (Graph 2.9, panel A). With regard to the life insurance

Graph 2.9.
ROA of the NBF

A. Trust Companies, Pension Fund Managers, and Stock Brokerage Firms



B. Life and General Insurance



Source: Office of Financial Superintendent of Colombia (FSC), calculations by Banco de la República.

companies, the ROA was 3.4% while the ROA for general insurance companies stood at 2.0% (Graph 2.9, panel B). In general, an improvement is seen in the NBF's levels of profitability that surpass the average for the past five years.

Between February 2019 and the same month in 2020, the growth of the ROA for TC and PFM was mainly driven by the higher income from commissions and the stability of their expenditures. In the case of commission agents, other income, which included such items as valuation and sale of investments, contributed the most to their profitability as well as to a decrease in their labor and administrative expenses. Insignificant increases were seen in the financial income of the three types of entities (Graph 2.10).

During this period, the insurance companies showed a growth in their profitability that was caused mainly by a higher issuance of premiums and income obtained from reinsurance (Graph 2.11). Life insurance saw its profitability affected mainly by the accumulation of reserves while the expenditures on settling claims weighed more heavily for general insurance. Last of all, the accumulation of net reserve was negative in both cases.

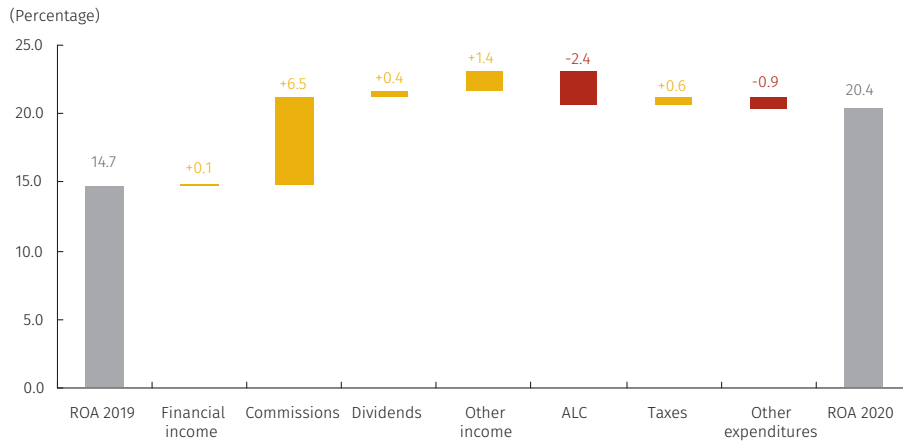
The NBF loan portfolio for TC and PFM is mainly concentrated in shares of national companies.

For SBF, the most important item is TES while for insurance, the most important one is fixed-income securities of domestic issuers (Graph 2.12).

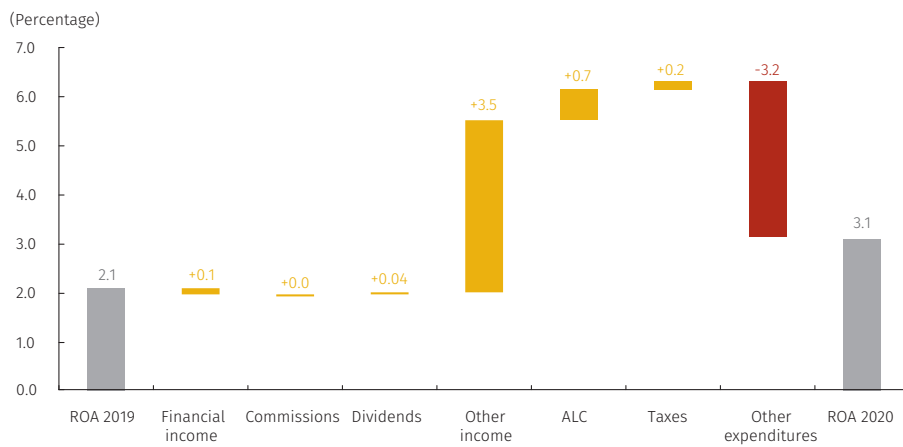
Finally, in a context of greater uncertainty and volatility in the financial markets, devaluations in debt security markets are expected to generate pressure on the financial situation of these entities. However, actions taken recently by *Banco de la República* help give the NBF certainty since it allows them access to various liquidity facilities. Thus, this is expected to contribute to strengthening their ability to mitigate the materialization of risks to their investment portfolios. The above also helps to stabilize the positions of the funds being managed since the management companies can turn to these facilities on behalf of the funds they manage.

Graph 2.10.
Breakdown of Profitability

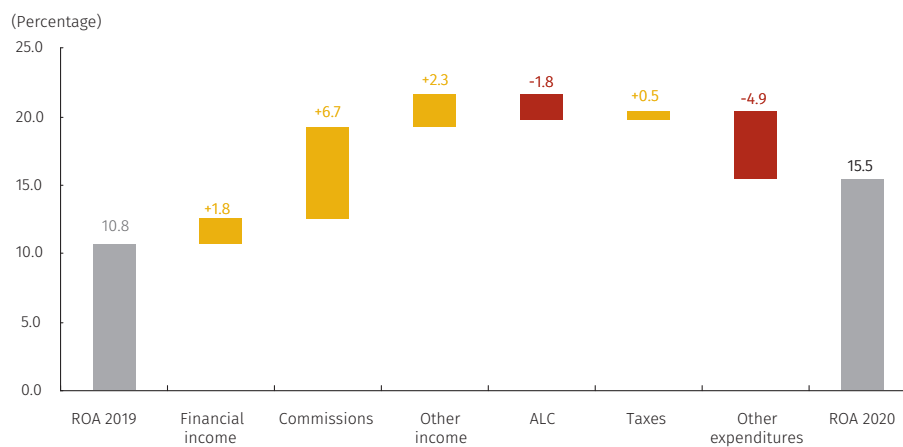
A. Trust Fund Companies



B. Stock Brokerage Firms



C. Pension Fund Managers

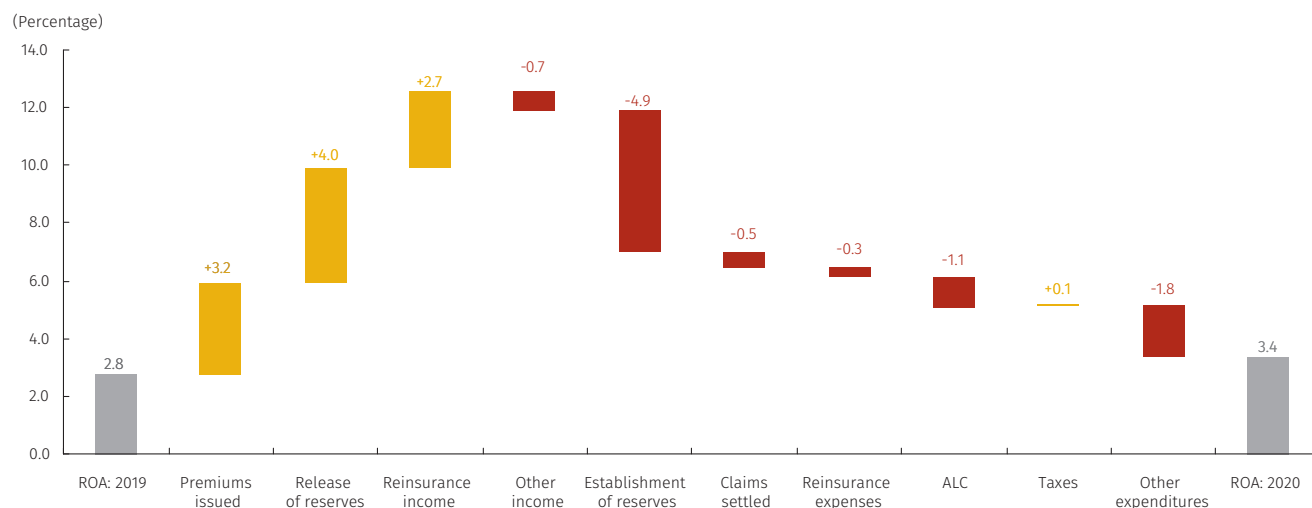


Notes:

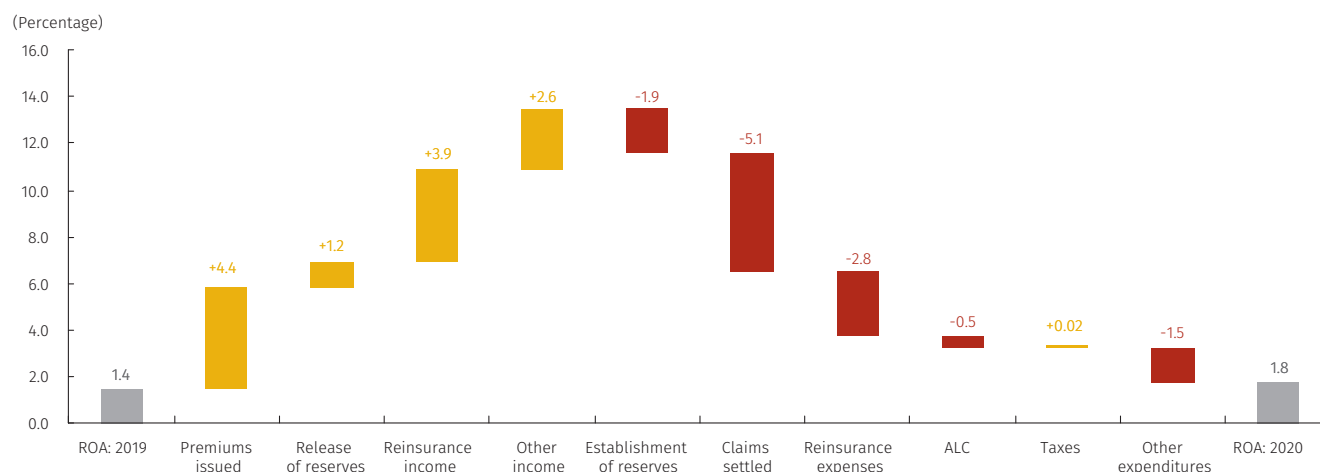
1. The colors of the bars represent the effect of the variation on the ROA: green is for contributions that increase the ROA and red for contributions that lower it.
 2. All the values shown on this graph correspond to the annualized value of each of the accounts on the balance sheet divided by the average annual assets as of February 2020.
- Source: Office of the Financial Superintendent of Colombia (SFC), calculations by *Banco de la República*.

Graph 2.11.
Breakdown of Insurance Company Profitability

A. Life Insurance



B. General Insurance



Note:

1. The colors of the bars represent the effect of the variation on the ROA: green is for contributions that increase the ROA and red for contributions that lower it.
2. All the values shown on this graph correspond to the annualized value of each of the accounts on the balance sheet divided by the average annual assets as of February 2020.

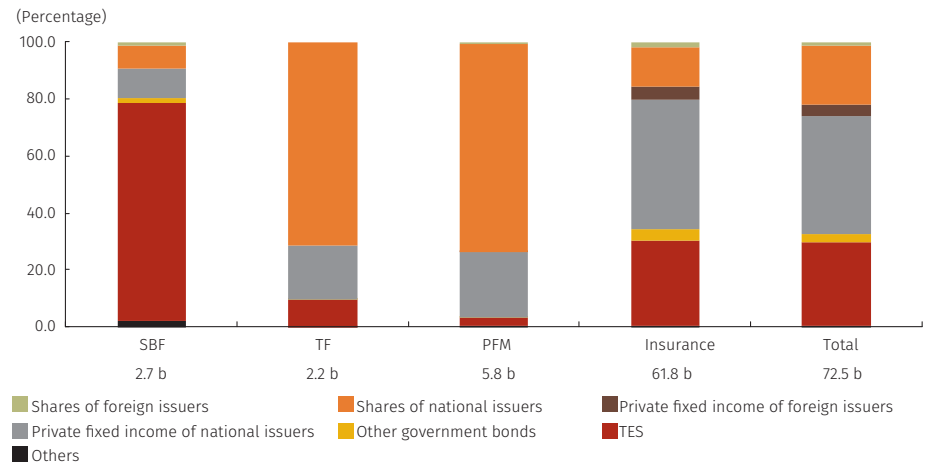
Source: Office of the Financial Superintendent of Colombia (FSC), calculations by *Banco de la República*.

2.2 Credit Risk

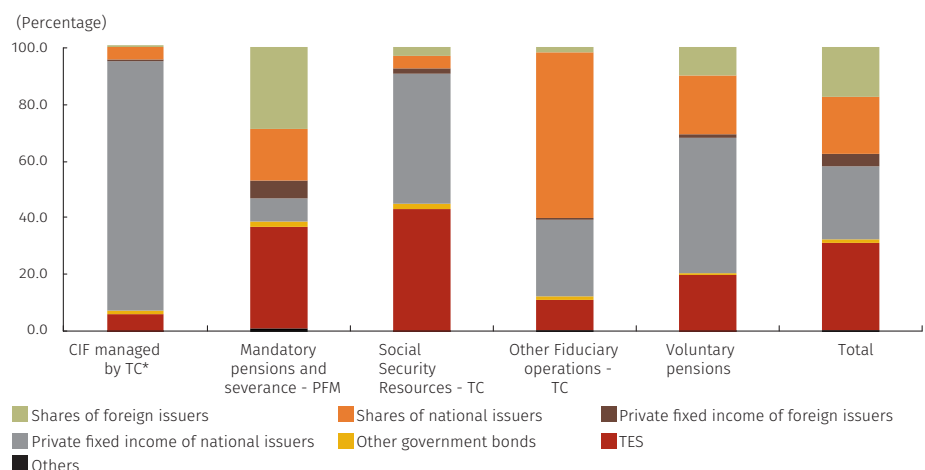
The analysis of credit risk that is presented below is divided between the corporate sector and households. The development of corporate sector indebtedness along with the perception and materializing of private companies' credit risk is analyzed by economic sector in the first subsection. The indebtedness of households is identified in the second sub-section and some risk indicators are presented that are related to the performance of this loan portfolio.

Graph 2.12.
Breakdown of the NBFI Investment Portfolio

A. In Proprietary Account



B. In Third-party account



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

2.2.1 Corporate Sector⁹

2.2.1.1 Change in corporate sector indebtedness

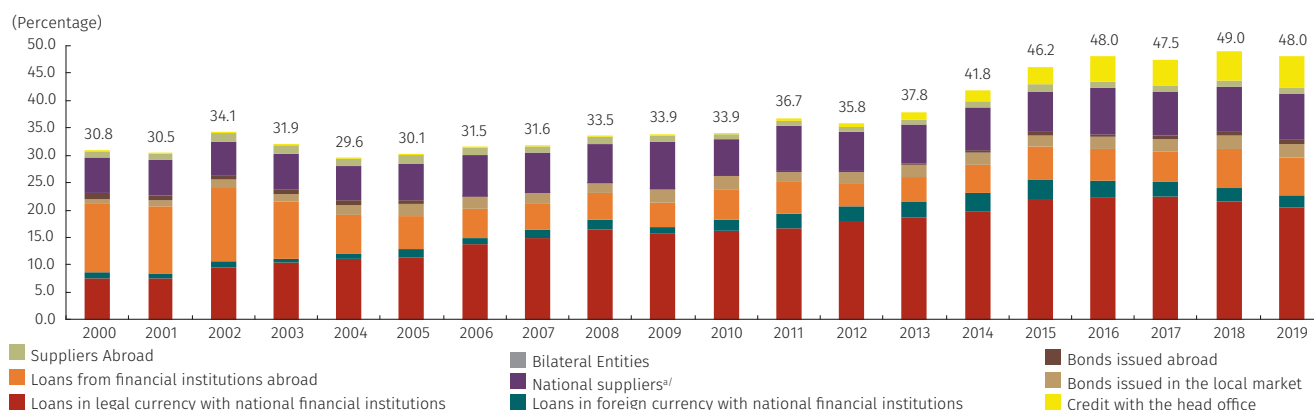
The corporate sector reduced its debt as a percentage of GDP. This is primarily explained by a slowdown in credits contracted with national financial institutions in the case of the private sector and by a lower balance owed to bilateral and multilateral entities by the public sector.

⁹ Due to the availability of information from the FSC Format 341, "Individual Information by Debtor: Active Credit Transactions," the figures in this section are presented with a cut-off date of December 2019. Moreover, the weekly information on deposits from Form 088 "Weekly Report: lending and deposit rates" and from Form 281 "Weekly report on main asset and liability accounts: balances at the close," reported to the same entity, have a cut-off date of April 17, 2020.

As of December 2019, the total indebtedness of the corporate sector as a share of the annualized GDP stood at 55.3% and showed a 1.6 pp decrease with respect to what had been seen 12 months ago. Of the total, the private corporate sector¹⁰ contributed 48.0 pp while the public sector contributed the remaining 7.3 pp. The first showed a drop spurred mainly by less indebtedness to domestic financial institutions (Graph 2.13, panel A). Likewise, the public corporate sector showed decreases in their indebtedness the majority of which was due to smaller loans from bilateral and multilateral entities (Graph 2.13, panel B).

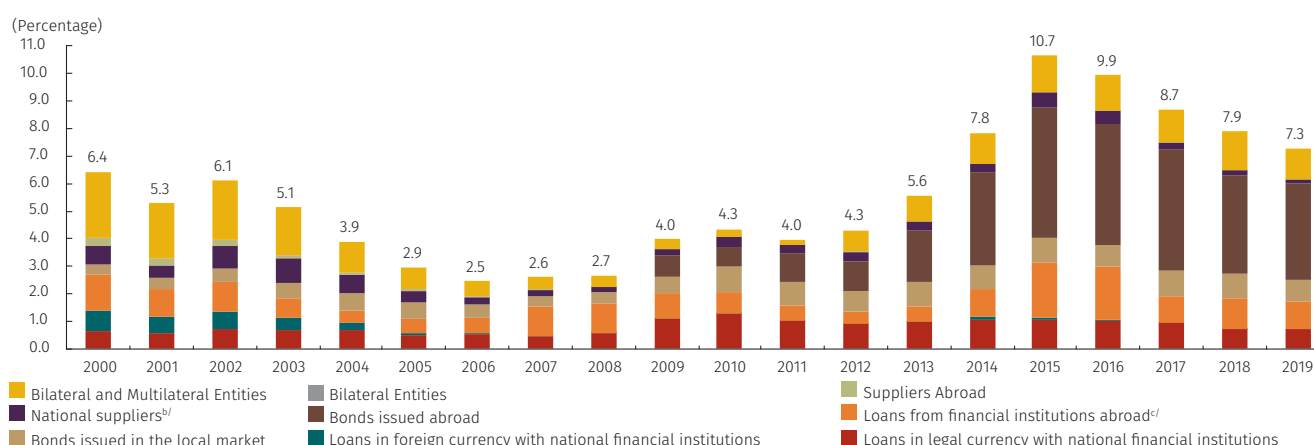
Graph 2.13. Corporate Sector Financial Debt as a Percentage of the GDP by Instrument

A. Private Corporate Sector



a/ This only includes information from companies that report their financial statements to the Superintendency of Corporate Affairs. In 2016, all of the companies registered their financial statements using IFRS which did not make it possible to determine the balance of debt owed to national entities. Therefore, in order to do an approximation of the data from these companies, the average percentage that the short and long-term providers reported under current and non-current liabilities respectively, during this period, for the companies that reported between 2007 and 2015 using the UAP was calculated, and an equal percentage for the entities that submitted financial statements in 2016 was assumed. Due to the fact that the financial statements for 2019 had still not been published as of December of that year, a supplier's balance equal to the December 2018 estimate is assumed. Sources: Office of the Financial Superintendent of Colombia, Superintendency of Corporate Affairs, and Banco de la República. Calculations by Banco de la República.

B. Public Corporate Sector



b/ Includes information on the balance of accounts payable of the main non-financial companies in the public sector.

c/ Financial leasing transactions are not included.

Sources: Office of the Financial Superintendent of Colombia, Contaduría general de la Nación (General Accounting Office), Ministry of the Treasury and Public Credit; calculations by Banco de la República.

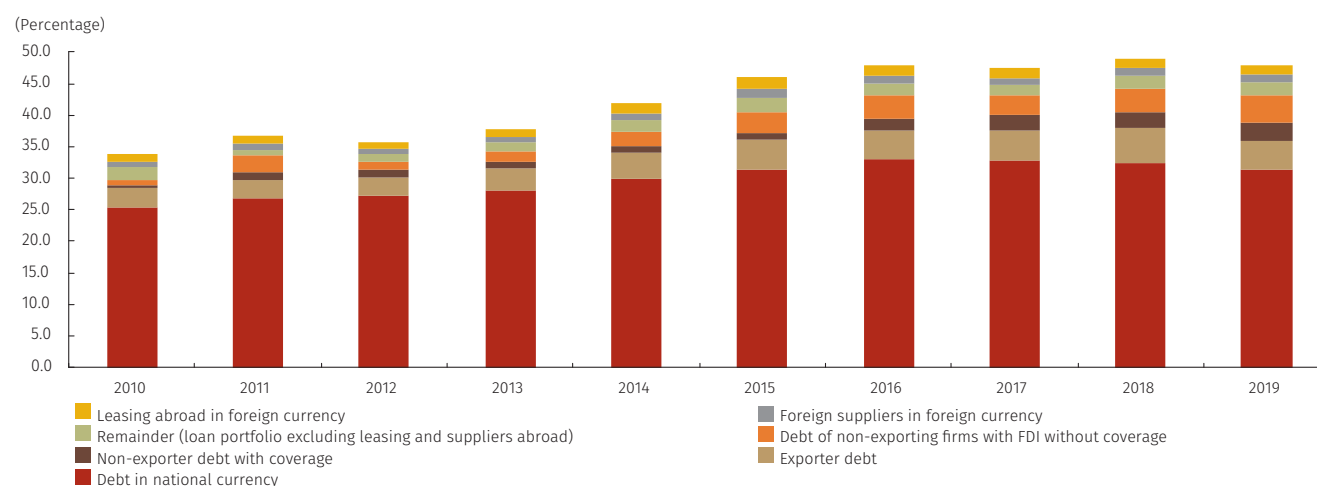
10 Throughout the entirety of this section, the term “private corporate sector” refers to private companies and excludes those that are monitored by the FSC.

As of the date of analysis, loans in legal currency from local financial institutions, accounts payable with domestic suppliers, and loans in foreign currency from foreign lenders continue to be the main sources of financing for the private sector. In the case of the public sector, the instruments used the most are the bonds issued on the foreign market and indebtedness with bilateral and multilateral entities. Likewise, note that the sources of financing that are used the least by these two groups of companies are, respectively, bonds issued abroad and loans in foreign currency from national financial institutions.

When indebtedness is analyzed by type of currency, private companies continued to keep approximately two thirds of their debt in pesos. The decrease in aggregate debt as a percentage of GDP was due to a drop in debt denominated in local currency which contrasts with the stability of the balance denominated in foreign currency in a context where the peso depreciated by 0.8% between December 2018 and the same month in 2019.

Debt denominated in foreign currency may be a source of vulnerability for the corporate sector to the extent that it exposes the entities to fluctuations in the exchange rate. Nevertheless, the exposure to exchange rate risk is mitigated if the company is an exporter, if it is hedged (through the use of exchange rate derivatives), or if it has the backing of a foreign entity (*i.e.*: through foreign direct investment,

Graph 2.14.
Private Corporate Sector Financial Debt as a Share of GDP by Exchange Rate Coverage and Debtor Foreign Trade



Note: the debt of suppliers in foreign currency and *leasing* with entities abroad is not available by NIT and, therefore, it is not possible to identify whether or not this debt belongs to hedged companies.

Source: Office of the Financial Superintendent of Colombia, DANE, and Banco de la República, calculations by Banco de la República.

FDI).¹¹ As of December 2019, Graph 2.14 shows the private corporate sector's financial debt as a share of the GDP by currency hedging and the debtor's foreign trade. The share of hedged debt in foreign currency indebtedness is 71.1%, and this has followed a rising trend since 2010 at which time it represented 51.1%.

In order to assess the vulnerability of the financial system to the exchange rate mismatches of these firms in a context of depreciation such as the current one, private companies exposed to exchange rate shocks were identified for the depreciation periods of 2015 and 2020.¹² Exposure to these firms was lowered,¹³ in a context where the CIs' levels of capital and profitability make them less vulnerable to these types of shocks than in 2015. The sector exposure, in turn, remains relatively stable in the two years evaluated with the manufacturing and trade sectors having the largest number of firms that are vulnerable to the exchange rate. Last of all, the debt ratio these firms have, understood as the ratio of financial obligations to assets, did not show much variation. However, when a threshold is calculated above which this ratio generates greater financial stress for the firms that are the most exposed to exchange rate risk, an increase was found in the number of companies classified as vulnerable.¹⁴

The public companies, in turn, continued to keep the majority of their debt in foreign currency. However, since 2015 this debt has declined by 2.7 pp of the GDP (Graph 2.15).

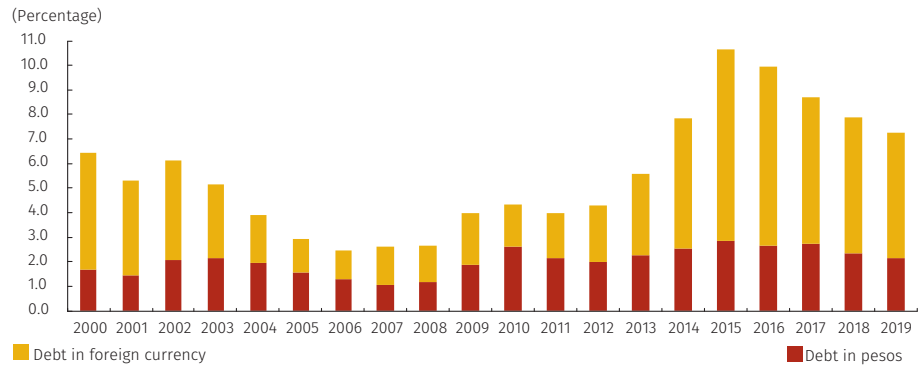
11 When a foreign entity has FDI in a local company, its foreign exchange risk is mitigated due to the fact that it is assumed that the investor has an incentive to support the company in the case of a depreciation in the exchange rate.

12 The companies identified are the ones that present negative exchange rate mismatches (assets in foreign currency minus liabilities in foreign currency) and are classified as vulnerable based on four indicators: 1) the value of currency mismatches to assets; 2) trade balance to operating income; 3) share of foreign capital to total capital; and 4) depreciation of the equity in the event of a 15% depreciation. Each one of these indicators is classified at a 1 to 3 level of risk based on specific thresholds for each with 1 being the highest risk level. Finally, the risk levels for each indicator are averaged. If the average for a company is less than or equal to 2.5, and its exchange rate mismatch is less than or equal to -20% of the total assets, the company is classified as vulnerable.

13 The exposure of the system to these firms was COP 24.1 t in 2015 and COP 20.3 t in 2019 and represented 10.8% and 7.9% of the total commercial loan portfolio for each of the respective years.

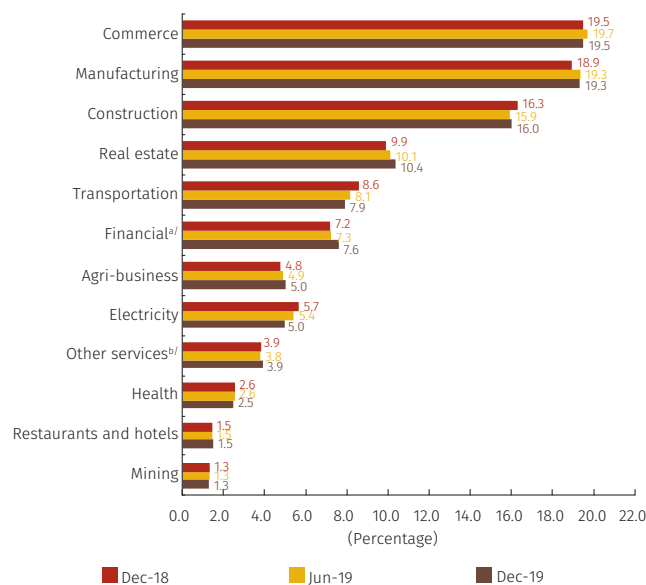
14 For more detail on the methodology for calculating thresholds of vulnerability, see "Indicadores de alerta temprana para el sector corporativo privado colombiano (Early warning indicators for the private Colombian corporate sector)," Borradores de Economía, No. 1084, *Banco de la República*.

Graph 2.15.
Public Corporate Sector



Note: Prepared using the same information as on Graph 2.13, panel B.
Sources: Office of the Financial Superintendent of Colombia, Contaduría general de la Nación (General Accounting Office), Ministry of the Treasury and Public Credit. Calculations by Banco de la República.

Graph 2.16.
Breakdown of the Private Corporate Sector Portfolio Balance by Economic Sector



a/ The financial and insurance sector excludes the loan portfolio granted to entities supervised by the Office of the Financial Superintendent of Colombia.
b/ 'Other services' groups firms belonging to the following economic sectors: public administration and defense; education; other community, social and personal service activities; private households with domestic servants; and the organizations and extra-territorial entities.
Sources: Office of the Financial Superintendent of Colombia, Superintendency of Corporate Affairs, and Banco de la República, calculations by Banco de la República.

2.2.1.2 Sector Analysis¹⁵

The analysis of various indicators makes it possible to infer that the economic sectors in which the credit risk has, to a great extent, risen are restaurants and hotels, construction, and transportation.

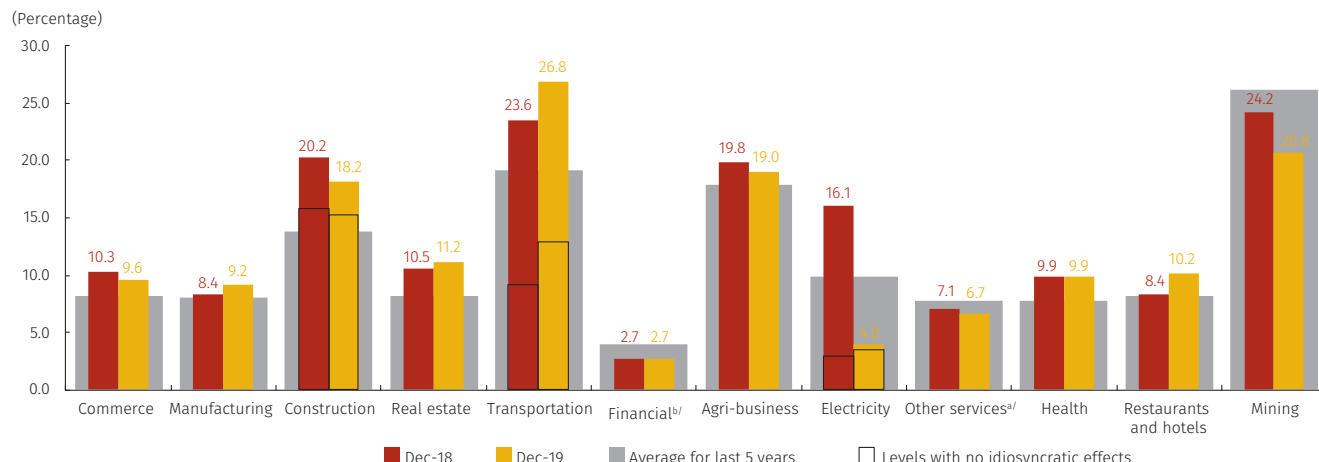
The economic sectors with the largest share of the loan portfolio granted to the private corporate sector were commerce, manufacturing, and construction which, as a whole, accounted for 54.9% of this portfolio as of December 2019 (Graph 2.16). When the QIR is calculated by economic sector, one sees that transportation, restaurants and hotels, manufacturing, and real estate were the ones whose indicators rose between December 2018 and 2019 (Graph 2.17, panel A).¹⁶ The electricity, mining, and construction sectors, in turn, showed the largest drops during the same period. In spite of the decline, this last sector is still the one that contributes the most to the QIR of the total commercial loan portfolio (Graph 2.17, panel B).

15 In this subsection, abbreviations will be used for the following sectors: 1) real estate, rentals and business: real estate; 2) agriculture, animal husbandry, hunting, forestry, and fishing: agribusiness; 3) mining and quarrying: mining; 4) electricity, gas and water: electricity; 5) transportation, warehousing, and communications: transportation; and 6) financial intermediation: finance.

16 The subsectors that contributed the most to the rise in the perception of risk in the transportation, restaurant and hotel, manufacturing, and real estate sectors between December 2018 and 2019 were international passenger air transportation, hotel accommodations, manufacturing of brick building materials, and real estate with proprietary assets respectively.

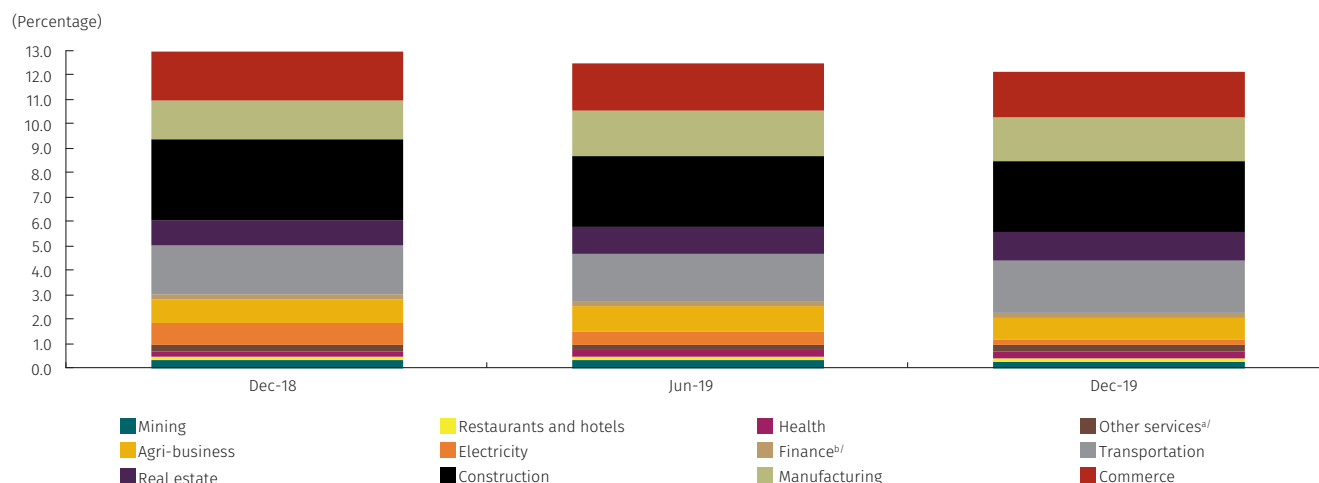
Graph 2.17.
QIR of the Private Corporate Sector

A. QIR by Economic Sector



Nota: Los sectores se ordenan horizontalmente (de izquierda a derecha) del más representativo al menos representativo.

B. Contribution to QIR by Economic Sector



a/ The firms that belong to the following economic sectors are grouped under 'other services': public administration and defense, education, health and social services, other community, social, and personal services, private households with domestic help, and extraterritorial organizations and entities.
 b/ In the sector of financial activities and insurance, entities supervised by the Office of the Financial Superintendent of Colombia are excluded.
 Sources: Office of the Financial Superintendent of Colombia, Superintendency of Corporate Affairs, and Banco de la República, calculations by Banco de la República.

The high levels of the risk indicators in the construction and transportation sectors are largely due to idiosyncratic factors. The former sector has been affected by the situation of the Concesionaria Ruta del Sol S.A.S, and the latter, by the performance of the companies that provide mass transportation for passengers. Up until the third quarter of 2019, the electricity sector was affected by the past-due portfolio of the Electrificadora del Caribe S. A., but this effect had declined significantly by December 2019 due to the fact that the majority of the entities that were exposed to this company wrote off their loans.

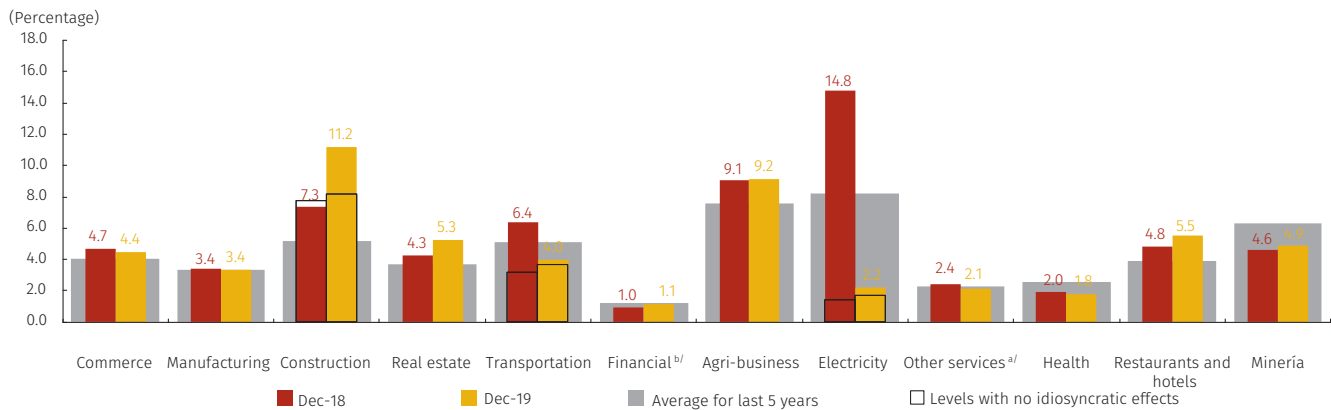
When the NPLs are evaluated, the sectors of construction, real estate, and restaurants and hotels are the ones that deteriorated the

most over the past year, and the first was the one that contributed the most to the growth of the indicator for the entire commercial loan portfolio (Graph 2.18).¹⁷ Thus, the rises in perceived risks in the sectors of restaurants and hotels and real estate measured by the QIR have been materializing as higher levels of default.

In order to do a more thorough analysis of the performance of loans disbursed to firms, two additional indicators of credit risk were calculated which made it possible to identify episodes of major vulnerability for the CIs: the indicator of risk perception by rating (IRPR) and the weighted indicator of migrating to a worse rating.

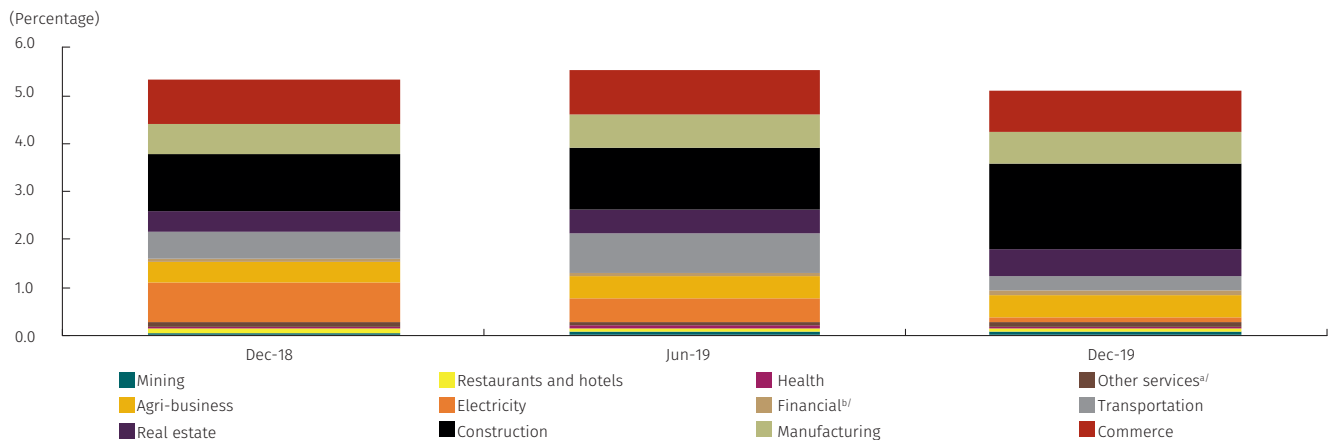
Graph 2.18.
NPL of the Private Corporate Sector

A. NPL by Economic Sector



Note: The sectors are organized horizontally from the least to the most representative.

B. Contribución al ICM por sector económico



a/ The firms that belong to the following economic sectors are grouped under 'other services': public administration and defense, education, health and social services, other community, social, and personal services, private households with domestic help, and extraterritorial organizations and entities.

b/ In the sector of financial activities and insurance, entities supervised by the Office of the Financial Superintendent of Colombia are excluded.

Sources: Office of the Financial Superintendent of Colombia, Superintendency of Corporate Affairs, and Banco de la República, calculations by Banco de la República.

17 The subsectors that contributed the most to the deterioration of the construction, real estate, and restaurant and hotel sectors between December 2018 and 2019 were civil engineering works, real estate with proprietary assets, and other services related to food respectively.

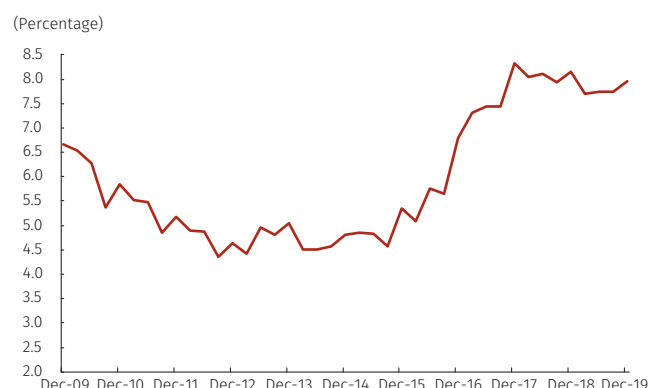
The IRPR is defined as the percentage of loans, in terms of their balance, that have a worse rating than they would if only the days past due were taken into account.¹⁸ The indicator was at a lower level than was reported a year ago in spite of showing slight increases in the last two quarters of 2019 (Graph 2.19, panel A). When evaluated by branch of activity, it is evident that the only sector that showed significant deterioration during the past year was transportation (Graph 2.19, panel B). In spite of remaining above their average for the past 10 years, the indicators for the mining and construction sectors have shown recent declines while the indicators for health, trade, and real estate have stabilized during the period under analysis.

The weighted indicator of migrating to a worse rating is calculated by both balance and number of transactions.¹⁹ Graph 2.20, panel A shows that the indicators for balance and registry exhibit mixed behavior: the first has shown a slight upward trend in recent quarters while the second has shown significant decreases during the period under analysis. The above indicates that, on average, the loans with the highest balances are the ones that are most likely to migrate to lower ratings.

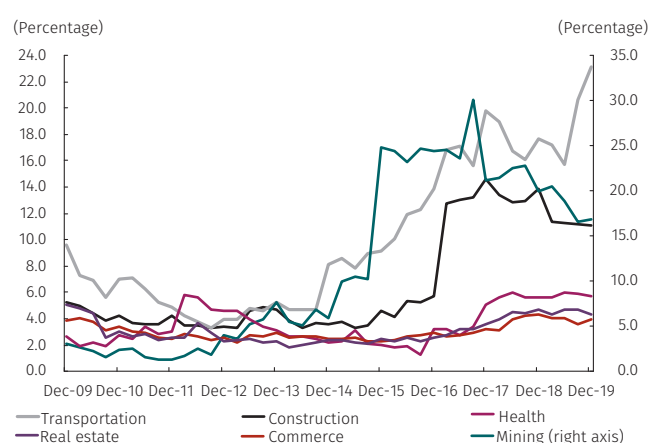
When this same analysis is done by economic sector, it is evident that the sectors that showed a deterioration in this indicator in the last few years have shown improvements recently due to the number of registrations (Graph 2.20, panel B). In spite of the above, when the indicator is

Graph 2.19. Indicator of Risk Perception by Rating

A. Total Loan Portfolio of the Private Corporate Sector



B. By Economic Sector



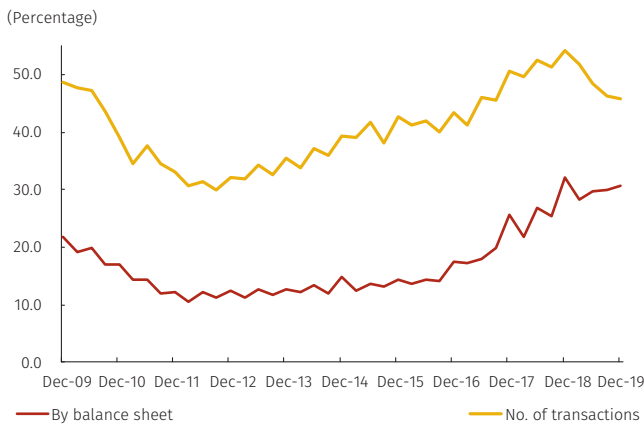
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

18 According to Appendix 1 to Chapter II of the Basic Accounting and Financial Circular issued by the FSC, if only the days past due were taken into account, the commercial loans would have to be rated as follows: 1) category A: loans that are past due by a month or less; 2) category B: loans that are past due by one to three months; 3) category C: loans that are past due by more than three and up to six months; 4) category D: loans that are past due by more than six and up to 12 months; and 5) category E: loans past due for more than 12 months.

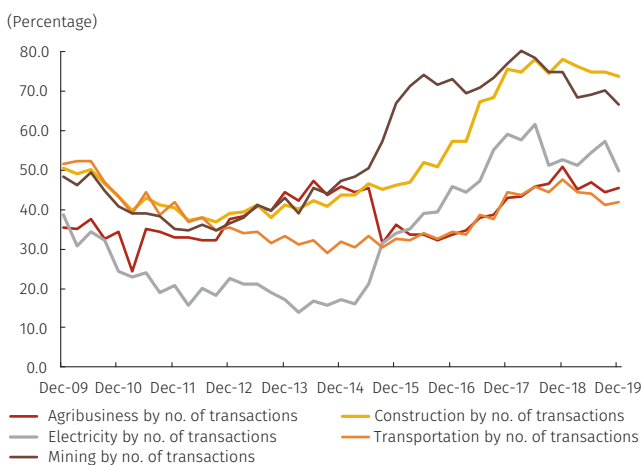
19 This indicator is calculated by using quarterly information from the FSC format 341 (active credit transactions). The term is assigned to the probability that a credit transaction has been rated with the letter during the quarter prior to the quarter being evaluated and is assigned to the probability that a credit transaction could migrate to the rating during the quarter being evaluated given that it was rated with the letter during the previous quarter. The ratings for the active credit transactions may correspond to any letter within the set {A, B, C, D, E} where A is the best rating (least risk) and E is the worst (highest risk). Given this, the weighted indicator of migrating towards a worse rating during the quarter is calculated as: . Note that this is a weighted indicator since the worse the rating that a loan migrates to is, the higher the weighting (which is between 1 and 4) is.

Graph 2.20.
Weighted Indicator of Migrating to a Worse Rating

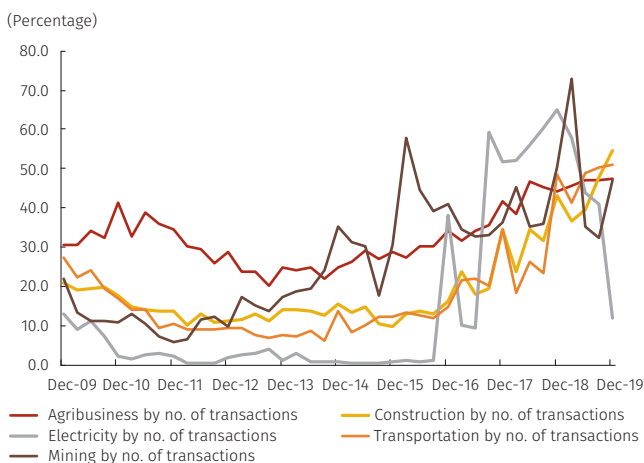
A. Total Loan Portfolio of the Private Corporate Sector



B. By Economic Sector and by No. of Transactions



C. By Economic Sector and by Balance



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

evaluated by balance, the loans for larger amounts in the construction and transportation sectors continue to show a rising trend in their probability of migrating to a worse rating (Graph 2.20, panel C).

The recent improvements in the risk indicators for the commercial loan portfolio facilitate the implementation of measures adopted by the National Government to provide a credit stimulus and flexibility for debtors at the current juncture.

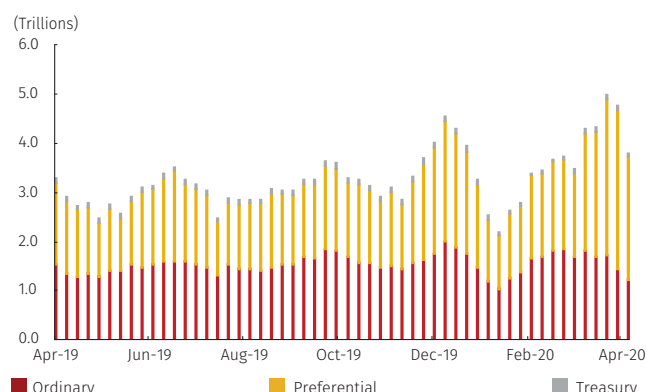
In periods characterized by downturns in consumption and investment such as the current one, credit becomes a fundamental catalyst for reactivating the economy. The indebtedness softens the transitory shock that the agents affected by the pandemic may suffer to their income, and this will keep them more financially healthy and allow them a faster and more effective recovery when a more tranquil economic environment returns. In the particular case of the Colombian financial system, this function is extremely important to the businesses which account for more than half of the current loans granted by CIs.

With this in mind, the National Government has implemented various actions that are intended to increase the access companies have to resources and thus help them to maintain their cash flow and minimize losses associated with decreases in their invoicing. The first of these was the creation of the special guarantee program “United for Colombia”, through which the National Guarantee Fund will back loans of up to COP 12 t for MSME. Moreover, Findeter and Bancoldex were authorized to grant direct loans with an offsetting rate to companies that need to finance projects or activities in the sectors most affected by the pandemic.²⁰

Graph 2.21 shows the disbursements from the commercial loan portfolio that demonstrated contractions in the second and third weeks of April 2020. These interrupted the growth trend that had

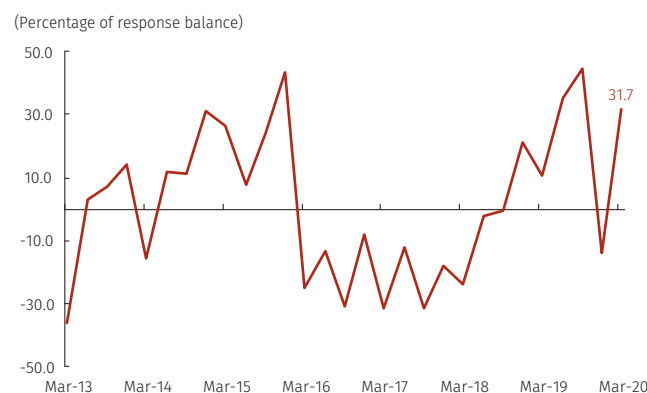
²⁰ For more information on these measures, see Decrees 466, 468, and 492/2020 in Section 4 of this Report: Financial Regulation.

Graph 2.21.
Commercial Loan Portfolio Disbursements (4-week moving average)



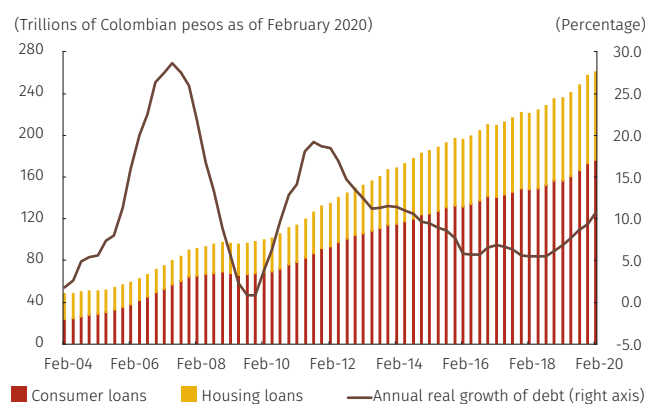
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Graph 2.22.
Credit Establishments' Perception of the Demand for Commercial Loans



Note: the credit Institutions were asked how the demand for new loans has changed during the last three months (scale was: 1 = lower; 2 = slightly lower; 3 = the same; 4 = slightly higher; and 5 = higher). The balance is the difference between the percentage of those surveyed who answered with 4 and 5 and the percentage of those who answered 1 and 2. A positive result in the balance is interpreted as a general perception of an increase in demand.
Source: Survey of the loan situation in Colombia, March 2020, calculations by Banco de la República.

Graph 2.23.
Households' debt composition and annual real growth



Sources: Office of the Financial Superintendent of Colombia, Superintendencia de la Economía Solidaria (Superintendence of Solidary Economy) and Titularizadora de Colombia (Colombian Securitization Office), calculations by Banco de la República.

been registered up to that point and was associated with the increase in the demand seen by the CIs in the March 2020 *Report on the Credit Situation in Colombia* (Graph 2.22). In this context, the incentives granted by the National Government could generate a counterbalance to the economic impact on the corporate credit market.

The National Government's credit stimulus programs are taking place in a context in which the vulnerability indicators of the commercial portfolio are improving. As has been shown throughout this section, credit risk has decreased in recent months with the exception of some specific sectors that have mostly been affected by idiosyncratic factors. In addition, the FSC has taken steps to reduce the potential impact of the current situation on the financial health of the CIs. The most notable of these include the relief granted to debtors and the possibility of de-accumulating the individual countercyclical component of loan-loss provisions as well as the general provisions, in order to reduce the expense generated as a result of the deterioration of debtors in the midst of the pandemic.²¹

2.2.2 Households

As of February 2020, the indebtedness of Colombian households continued to show a sustained rate of growth driven mainly by the consumer loan portfolio.

The loan portfolio allocated to households²² stood at COP 260.7 t thus registering a real, annual growth rate of 10.7%, which is the highest since mid-2014. Approximately two-thirds of the total indebtedness corresponds to consumer loans and the remainder to housing loans (Graph 2.23).

21 For more information about this measure, see Section 4 of the FSC External Circular 007/2020: Financial regulation in this Report.

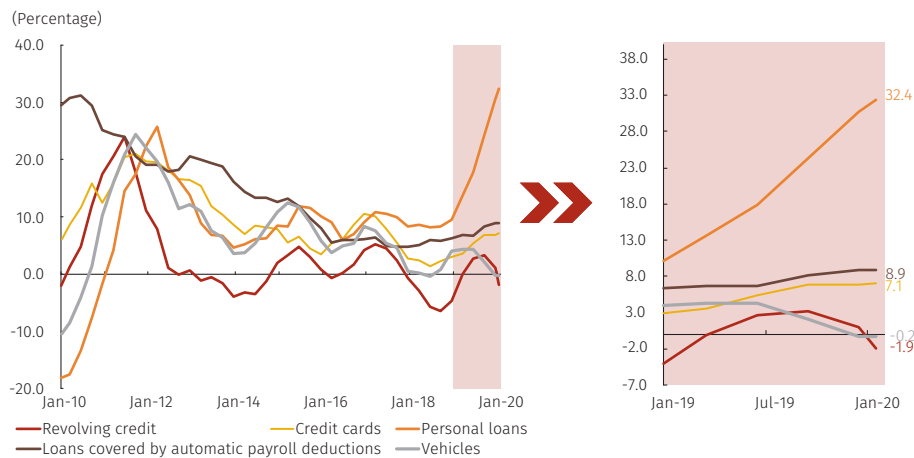
22 The loan portfolio allocated to households encompasses the sum of the consumer and housing with securitizations loan portfolios granted by credit institutions, the National Savings Fund (FNA, in Spanish), savings and loan cooperatives, and employee funds.

The greater dynamism in the consumer loan portfolio was explained mainly by the sharp surge in personal loans which registered the highest growth rates in the available history.

The growth in household indebtedness was explained by the stronger performance of the consumer loan portfolio, which registered a real annual growth rate of 12.4% as of February 2020. This expansion has primarily been influenced by the strong growth of personal loans that currently represent about 30% of the portfolio (Graph 2.24 and 2.25).

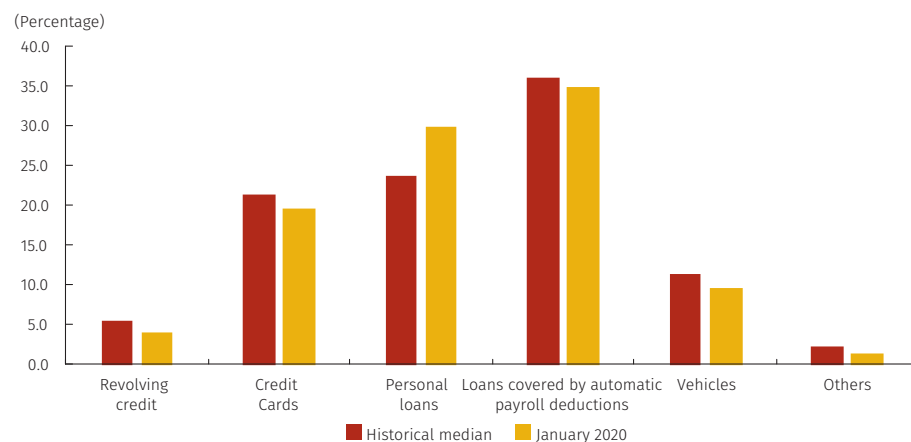
Notwithstanding the above, when analyzing the cycle of the loan portfolio granted to households, it can be seen that the expansion of aggregate indebtedness did not reach levels similar to those observed during the credit boom period of 2006.

Graph 2.24.
Annual Real Growth of Consumer Loan Portfolio by Segment



Sources: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Graph 2.25.
Breakdown of Consumer Loan Portfolio by Segment



Sources: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

When the household credit boom indicator²³ is analyzed, it shows that the expansion levels of indebtedness did not translate into an excessive accumulation of vulnerabilities. When comparing the current levels of the indicator and the risk signaling, they are seen to maintain a rising but moderate trend as they take on yellow tones in contrast to the reddish tones presented during the last credit boom period (2006-2008; Graph 2.26).

Even though the past-due loans for some segments have registered upswings during the last few months, the non-performing loan indicator of the consumer and housing loan portfolios exhibited stable levels.

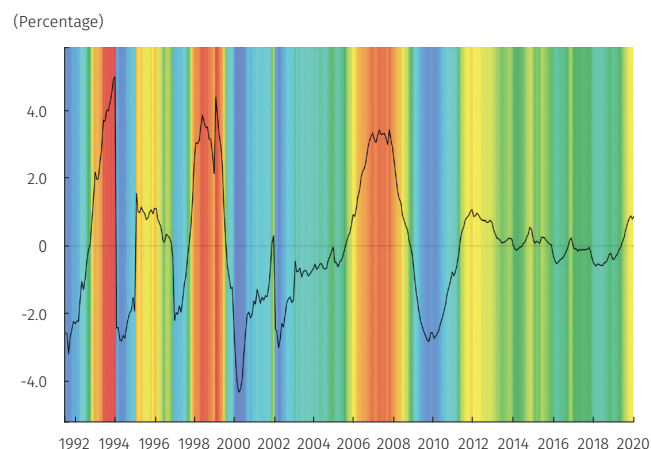
During recent months, there were surges in non-performing loans for all segments of the housing portfolio. Nevertheless, the total NPL ratio did not present major changes, in line with the peso-denominated, non-low income housing (Non-LIH) segment which represents close to 60% of this type of loans (Graph 2.27, panel A). In the case of consumer loans, although default indicators show a downward trend (Graph 2.27, Panel B), during the most recent six months most of the segments registered upswings in their past-due loans, with personal loans being the ones that grew the most (13.2% as of January 2020 compared to -0.3% in July 2019).

In contrast to the above, the analysis of the most recent information indicates that the growth of household indebtedness reversed its trend in March and April 2020. Some indicators of perception show that this is the result of lower supply and demand for credit in the market as a consequence of the health emergency caused by Covid-19.

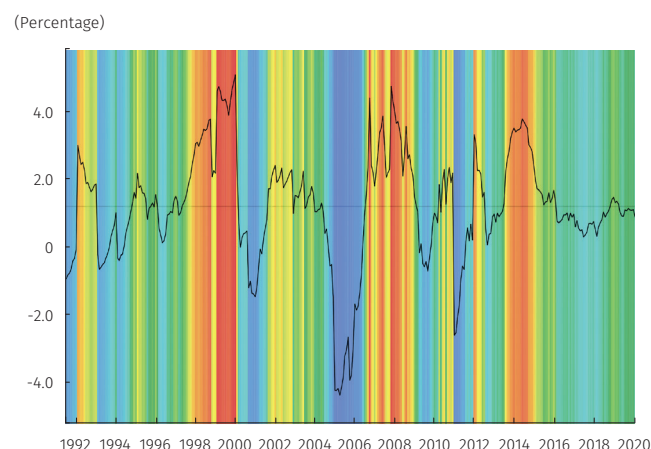
23 This indicator is defined as the sum of the cyclical component of the loan portfolio per capita and the cyclical component of the loan portfolio per capita's growth. Thus, the indicator signals periods in which the level of indebtedness is very high or growing too fast in comparison to its long-term trend.

Graph 2.26. Credit Boom Indicator

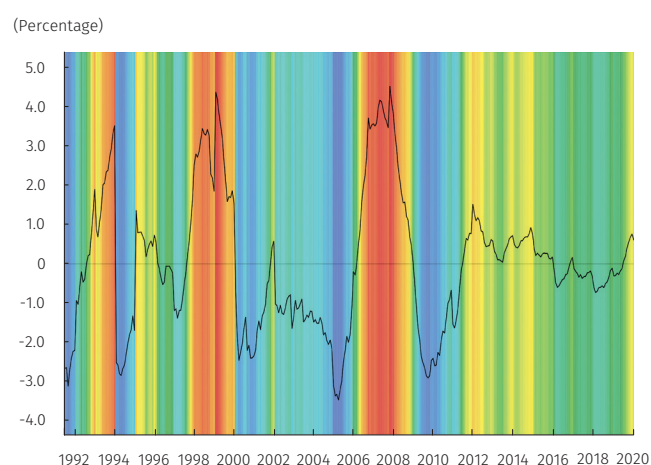
A. Consumer loans



B. Housing loans



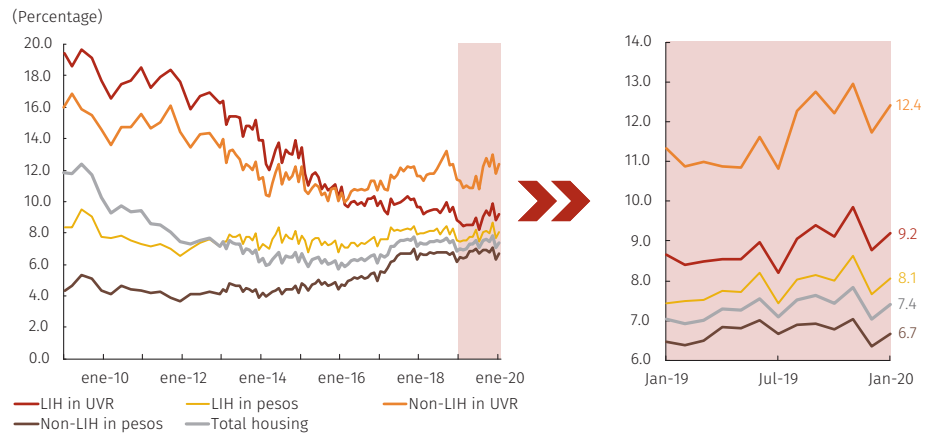
C. Aggregate household indebtedness



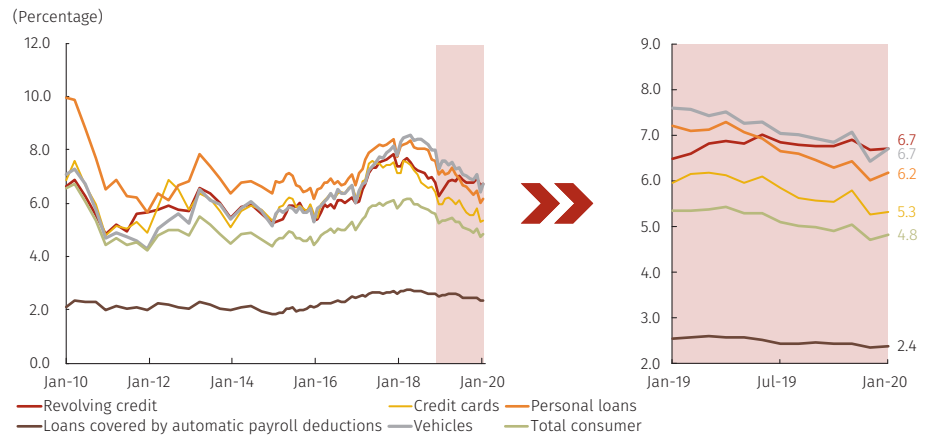
Note: The color chart represents the historical distribution of the indicator, so that, at its lowest points, it takes on blue hues, at its mid-points green ones and at its highest points, red hues.
Sources: DANE and Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Graph 2.27
Non-performing loan indicator (NPL) for housing and consumer loans, by segment

A. Housing



B. Consumer



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

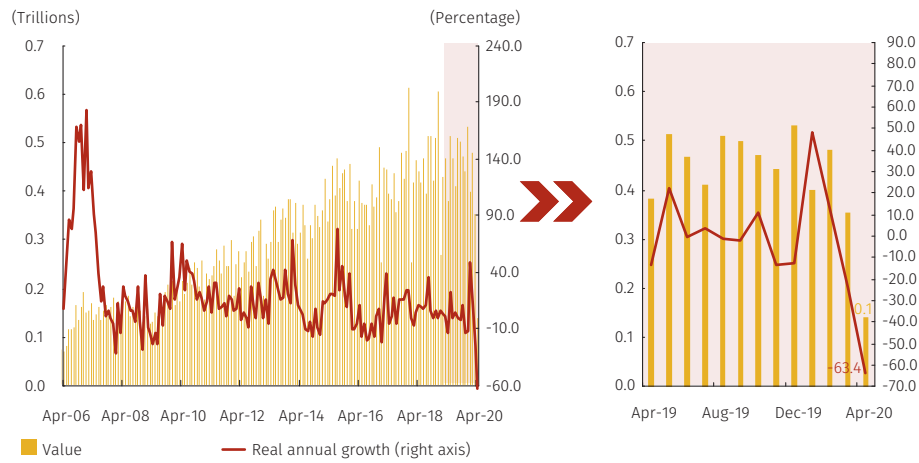
When the flow of new loans of the housing and consumer portfolios are analyzed, it is evident that, so far in 2020, their real, annual growth has been declining and has begun to register decreasing rates that, as of April 24, 2020, were showing historical minimums (housing: -63.4%, consumer: 62.9%, Graph 2.28).

The stock of loans reaffirms the performance seen in the flows. These figures show that the real annual growth in the housing portfolio was continuing on a downward trend and that, in March, the consumer loans reversed the expansionary path that they had been following since August 2018 (Graph 2.29).

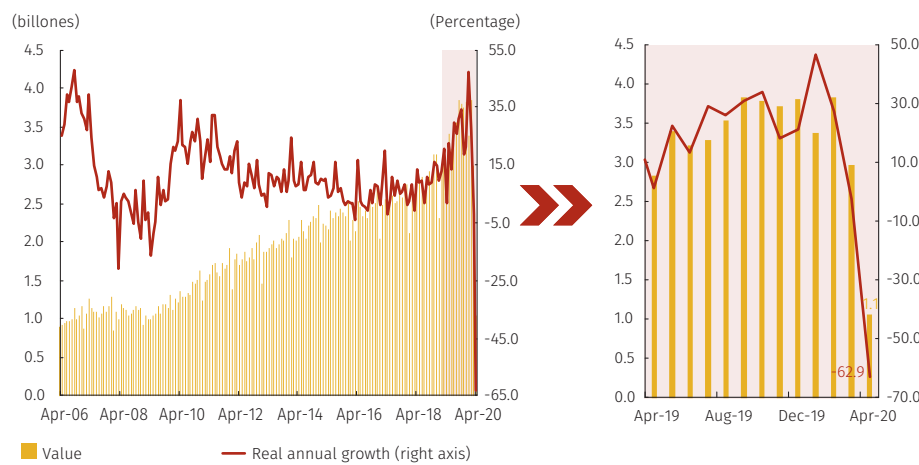
In line with the above, the *Report on the Current Credit Situation in Colombia* for the first quarter of 2020, published by Banco de la República, made it clear that the current economic conditions which resulted from the pandemic have had a strong impact on the supply and demand for new housing and consumer loans. Up to this point in

Graph 2.28.
Four-week Moving Average of New Loans Granted to Households

A. Housing

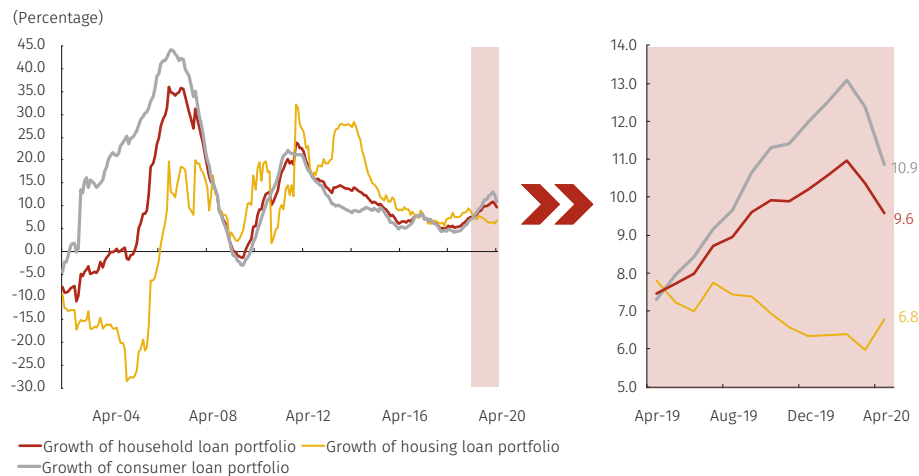


B. Consumer



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

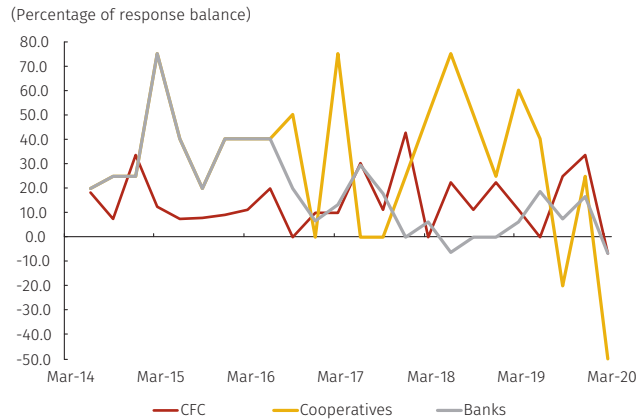
Graph 2.29.
Real Annual Growth Portfolio of Loans Granted to Households



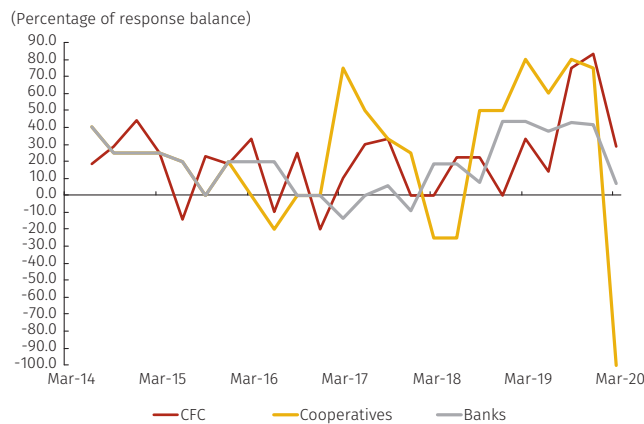
Source: Form 281 from the Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Graph 2.30.
Indicator of Change in Supply of New Loans to Households

A. Housing



B. Consumer



Source: Report on the Current Credit Situation in Colombia, Banco de la República.

2020, the indicator of change in the CIs' supply fell sharply for all three types of entities (Graph 2.30). Likewise, the indicator of perceived demand for housing and consumer loans showed a reduction for all types of lenders (Graph 2.31).

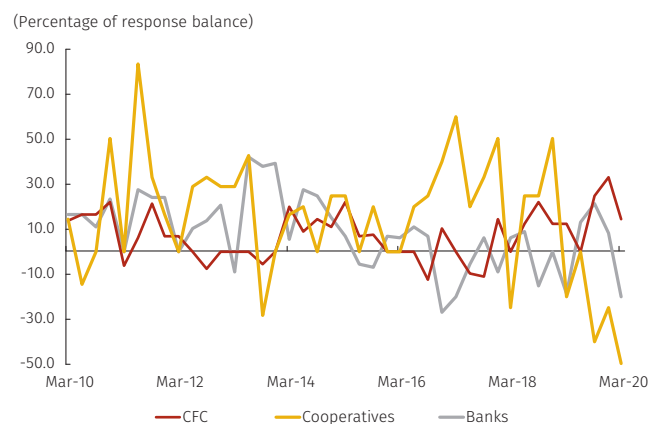
Despite the fact that credit institutions have favorable levels of profitability, liquidity, and capital adequacy, certain forward-looking indicators suggest that the supply of credit for Colombian households may continue to contract over the next three months as a result of the increased perception of risk in the economy caused by the health emergency.

The aforementioned report also showed that, by the second quarter of 2020, more than 60% of banks expect to raise their requirements for new housing and consumer loans (71.4% in the case of housing and 64.6% in that of consumer, Graph 2.32) which will probably reduce the number of loans approved. Should this expectation materialize, the household loan portfolio will probably continue to show declines over the next few months.

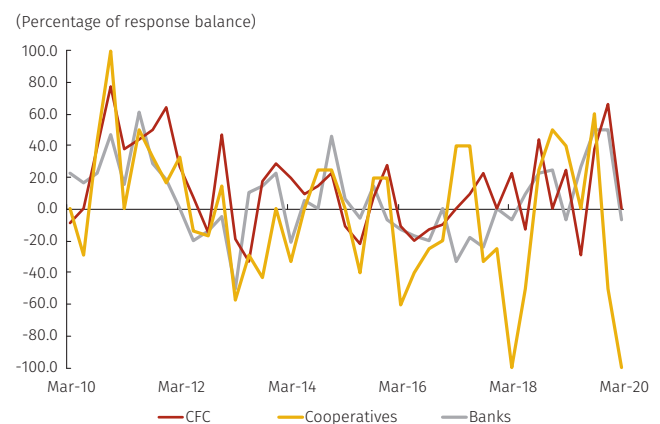
This analysis suggests that a more limited number of loans available from the CIs and a smaller demand for loans on the part of Colombian households could result in a more severe downturn and, possibly, a contraction in the

Graph 2.31.
Indicator of Perceived Household Demand for Loans

A. Housing



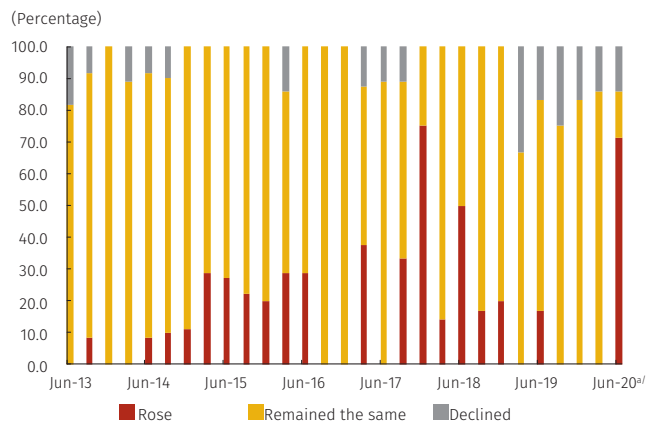
B. Consumer



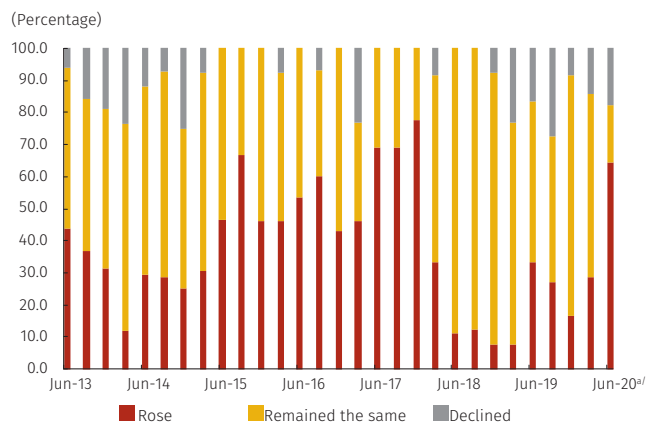
Source: Report on the Current Credit Situation in Colombia, Banco de la República.

Graph 2.32.
Change in Requirements for Allocating New Loans to Households

A. Housing portfolio



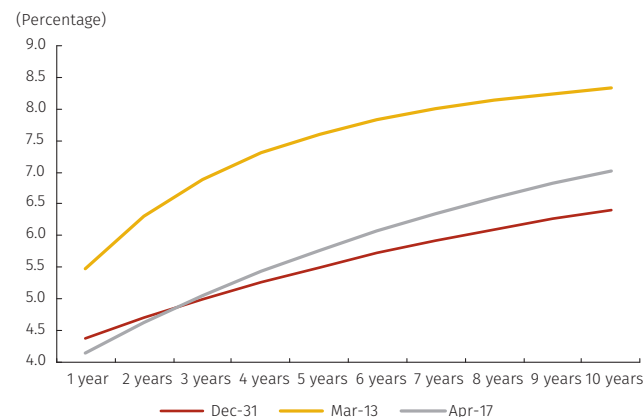
B. Consumer Loan Portfolio



Source: Report on the Current Credit Situation in Colombia, Banco de la República.

Graph 2.33.
Yield Curve for Fixed-income Securities

A. TES



Source: CSD and Precia, calculations by Banco de la República.

housing and consumer loan portfolios. Furthermore, the current situation could affect households' ability to pay and thus increase the CIs' exposure to credit risk. Therefore, the stress test in this Report will evaluate the resilience of CIs in the event of a materialization of these vulnerabilities.

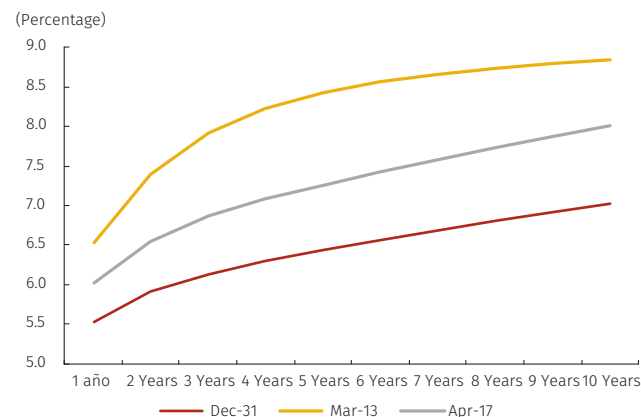
2.3 Market Risk

In the context of the pandemic and the clashes within OPEC+, public and private debt securities showed devaluations in the medium and long term in mid-March. However, these have been gradually corrected for the public debt curve.

The debt market exhibited a stable performance until mid-March 2020. At that point in time, devaluations occurred in view of the imminent economic effects that could be caused by the pandemic and the breakdown of the OPEC+ trade agreement. This meant an increase in the rates for the private and public debt markets for all maturities and a sharp increase in their yield curves (Graph 2.33).

Since these devaluations, the public debt market has recovered. This could be attributed to the liquidity facilities granted by Banco de la República to counteract the economic effects of the pandemic as well as the positive effect of

B. Private Debt



the measures taken by the FED. The yield curve of the peso-denominated TES market has shown an appreciation in the short term but has kept rates higher for longer maturities with respect to what was seen at the end of 2019. In line with the above, its slope, measured as the differential between the 1- and 10-year rates for peso-denominated TES, showed a rise that placed it at levels that have not been registered since mid-2011 (Graph 2.34). Regarding the private debt market, the devaluations have remained although the slope of the curve has flattened out compared to what was seen in mid-March.

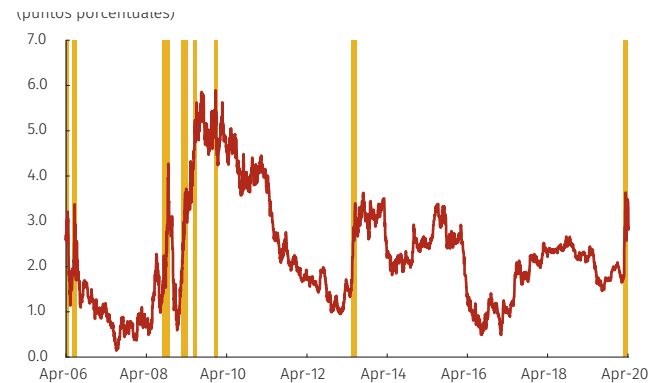
The markets also registered high levels of volatility due to the uncertainty of the economic environment.

The stock market price measured by the COLCAP index registered a rising trend between September 2019 and March of this year. At that point there was a sharp fall, which took it to levels that have not been seen since 2009. This performance was influenced by two factors: first of all, the crude oil price that initially fell because of the lack of a consensus in OPEC+ regarding control of the supply. Then, when a consensus was finally reached on April 9, it was affected again by the decline in demand due to the pandemic which caused even the WTI prices to reach negative levels. Secondly, by the nervousness in the markets about the effects that the lockdown could have on the economy and profits of companies listed on the stock exchange (Graph 2.35).

Due to the performance of the fixed income and variable income markets, an upturn in volatility was seen²⁴ due to the uncertainty in the economic environment (Graph 2.36). These values correspond to the historical maximums for the fixed income market and, in the case of variable income, this increase is the second highest after

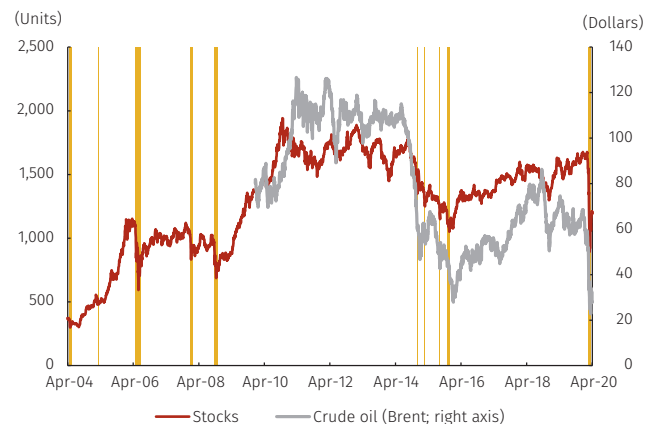
24 Volatility is calculated using a GARCH model (1.1). In the case of variable income, the daily returns of the COLCAP index were used, whereas, the daily differences in the first main component of each curve were used for fixed income.

Graph 2.34.
Difference in 1-year and 10-year TES Rates



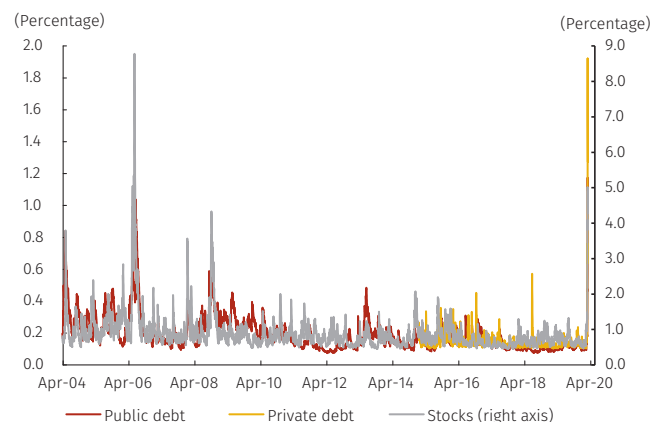
Note: The yellow bars indicate the periods in which the change in the differential is greater than 100 bp with respect to the previous month.
Source: CSD and Precia, calculations by Banco de la República.

Graph 2.35.
Performance of COLCAP



Note:
1. The yellow bars indicate the periods in which the monthly devaluation of COLCAP is greater than 10% with respect to the previous month.
2. The petroleum series starts in 2011 given that this was when Colombia migrated to Brent as the reference price for crude oil.
Source: BVC and Yahoo Finance, calculations by Banco de la República.

Graph 2.36.
Conditional Volatility of Colombia's Fixed Income and Variable Income Markets



Source: Precia, calculations by Banco de la República.

the one registered in the local stock market crisis of 2006.²⁵

Furthermore, events such as the decline in the share of the TES market held by foreigners as well as the volatility of expectations due to movements in the monetary policy rate could affect market stability.

The participation of foreigners in the bond market, which had been declining since the beginning of 2019, became more accentuated in recent months. Between September and December 2019, this share declined 79 bp and, between this last month and April of this year, it fell 219 bp and stood at 21.8% (Graph 2.37, panel A). So far in 2020, the decrease in the share held by foreigners exceeds the declines observed in 2018 and 2019 (Graph 2.37, panel B).

The current economic situation and the recent decrease in the *Banco de la República's* benchmark rate have modified the forecasts that analysts have made regarding changes in the policy rate (Graph 2.38). Unlike what was seen in the last *Report*, more than one intervention in the rate is expected for the remainder of the year, and it is expected to reach levels that have not been seen since 2011.

Finally, the main exposure to market risk on the part of the financial entities is concentrated in fixed income.

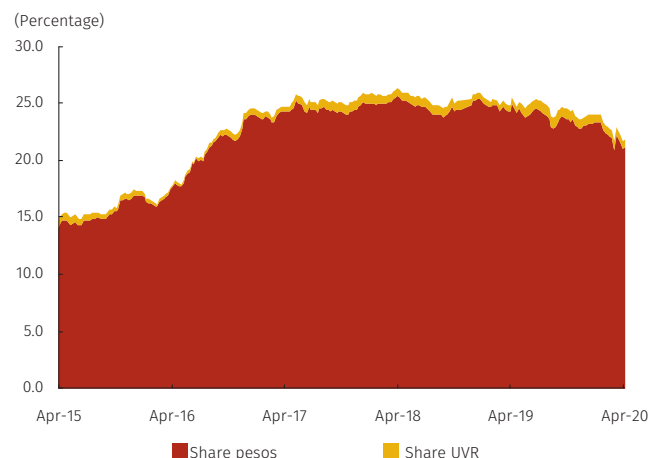
Exposure to fixed and variable income markets measured as an investment in securities exposed to market risk²⁶ is concentrated in the fixed income securities where the government bond market represents the largest share. The

25 On June 8, 2006, the IGBC (a reference index used in the Colombian stock market) registered a drop of 9.47%, and with this, a total devaluation of 22.0% was accumulated over the course of the year.

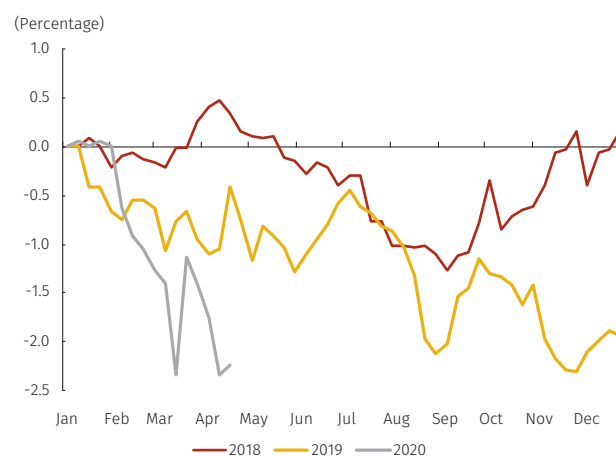
26 This balance is at market prices and is calculated in accordance with the guidelines of the Basic Accounting and Financial Circular. The balance in shares was analyzed for the equity instruments of domestic issuers while, for debt securities, the ones that are marketable and available for sale were analyzed.

Graph 2.37. Share of TES Held by Foreigners

A. Historical Performance

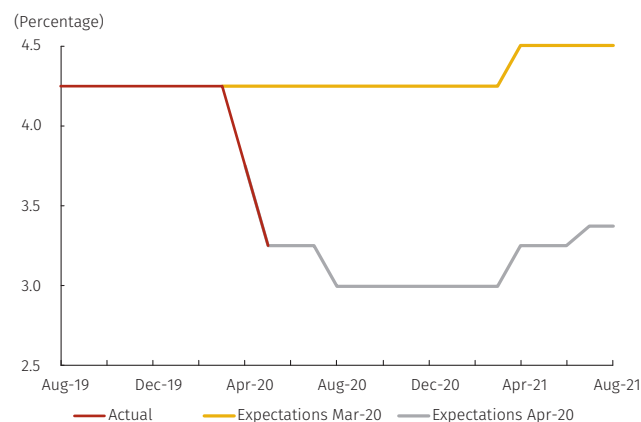


B. Cumulative Change



Source: CSD, calculations by Banco de la República.

Graph 2.38. Expectations for Policy Rate



Source: Survey of Economic Analysts' Expectations, Banco de la República.

insurance companies and the PFM, in turn, have a higher investment in private debt securities which is why the NBFi aggregate shows a high exposure to this market. With regards to CIs, the highest share is found in the public debt market with banks being the entities which have the highest investment in these kinds of securities (Table 2.1).

Currently, there is uncertainty in the economic outlook regarding the effects that a lengthening of the lockdown could have. Depending on the extent and intensity of the measures taken to contain the pandemic, the health of the financial system could be affected. This uncertainty will probably be reflected in an increase in market volatility and, consequently, in greater market risk for entities holding securities that are exposed to it. Furthermore, it could create vulnerabilities in the external sector which will probably produce an increase in the risk premia. These risk factors will be considered in the stress test presented in chapter 3 of this *Report*.

Table 2.1.
Financial Institutions' TES Balances (in pesos and UVR), Private Debt Securities, and Shares Exposed to Market Risk

Type of Entity	TES ^{a/}	Private Debt	Stocks	Total	TES	Private Debt	Stocks	Total
	(Balance in trillions of pesos)				(Percentage change in the last six months)			
Credit institutions	51.05	5.57	12.16	68.78	15.47	8.21	15.96	14.93
Commercial banks	47.31	5.33	0.00	52.63	14.72	9.59	0.00	14.18
Investment banks	3.32	0.15	12.14	15.62	14.77	5.87	15.82	15.50
Finance companies	0.42	0.08	0.00	0.50	427.03	-30.81	-0.70	156.47
Financial cooperatives	0.00	0.02	0.02	0.03	0.00	-51.35	0.00	-5.60
Non-banking Financial Institutions (NBFi)	10.31	13.87	6.24	30.42	2.59	-2.70	-4.81	-1.42
Pension Funds: proprietary position	0.08	1.03	0.14	1.25	0.34	29.65	6.01	24.23
Stock Brokerage Firms: proprietary position	1.52	0.18	0.09	1.79	21.17	-33.53	-53.75	3.91
Trust Fund Companies: proprietary position	0.36	0.31	0.67	1.33	132.95	-18.87	-24.95	-6.30
Insurance and Capitalization Companies	8.34	12.35	5.34	26.04	-2.46	-3.59	0.16	-2.48
Financial System's Proprietary Position	61.36	19.44	18.40	99.20	13.09	0.20	7.97	9.37
Managed position								
Stock-brokerage firms: third party position	0.99	8.95	6.76	16.70	6.80	-29.92	-14.22	-22.60
Trust Fund Companies: third party position ^{b/}	97.01	25.21	10.00	132.22	-6.72	-48.25	-56.05	-32.54
System	159.36	53.60	35.16	248.12	-11.33	-33.74	-26.25	-19.51

a/ Pension liabilities managed by trust companies are excluded.

b/ The value of the proprietary position is obtained from "Investment Portfolio" on format 351. The value of the managed position is obtained from CSD data. Source: CSD, Office of the Financial Superintendent, calculations by Banco de la República.

2.4 Liquidity and Interest Rate Risk in Banking Book

2.4.1. Liquidity Risk

At the beginning of 2020, the CIs were in a situation of ample aggregate liquidity and a funding structure that was mainly concentrated in stable sources. These preconditions made a favorable contribution to enabling the financial system to cope with the sudden change in macroeconomic and external conditions while counteracting the exacerbation of vulnerabilities in the system. The policies implemented by the economic authorities that were intended to provide greater liquidity to the market are expected to reinforce the ability of intermediaries to respond to their obligations, ensure the proper functioning of the payment system, and maintain confidence in the financial system.

The increase seen in the CIs' short-term liquidity is mainly the result of rises in the banks' available cash and high-quality investments that have been accentuated since March 2020.

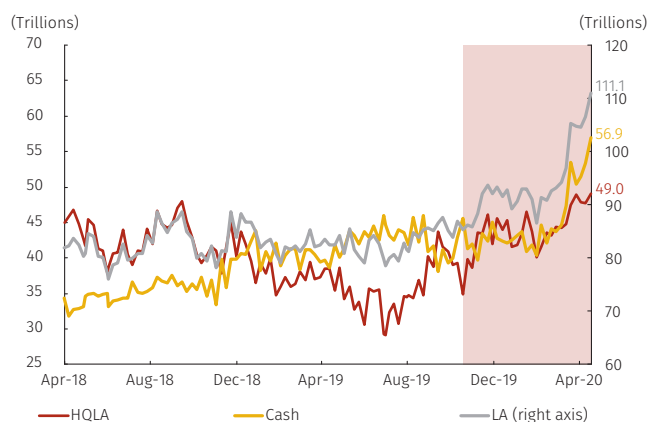
Between November 2019 and February 2020, the available cash and investments in high quality banking assets fluctuated between COP 40 t and COP 45 t. Later in March 2020, they experienced significant increases that doubled these balances (Graph 2.39). This occurred in a context of uncertainty and volatility in the financial markets, increased risk

aversion, and the resulting preventive measures taken by the Central Bank to provide liquidity to the financial system. In addition, it is thought that withdrawals that were recorded in the CIF may have migrated to demand deposits, an event that will be discussed later in this section.

In line with the above, the CIs have short-term exposure stable indicators that enable them to cover shortfalls in liquidity in other currencies at both, the individual and consolidated levels.

When the positions by currency are included within the short-term liquidity analysis, the individual () and consolidated ()²⁷ indicators of exposure for CIs that are foreign exchange market intermediaries (FXMI) reflect the fact that they hold sufficient resources to cover the positions in which liquidity

Graph 2.39. Change in Liquid Assets: Banking Establishments

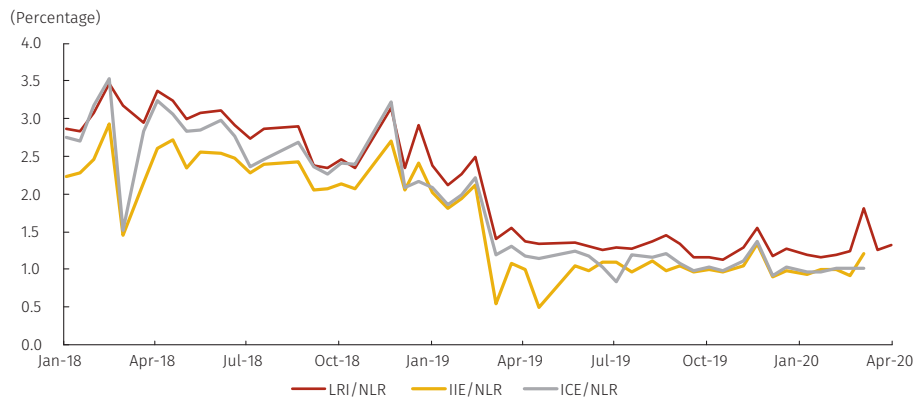


Note:
HQLA: Investments in high quality liquid assets
LA: Total liquid assets
Source: Office of the Financial Superintendent of Colombia.

²⁷ The and indicators make it possible to measure the liquidity risk of the foreign exchange market intermediaries (FXMI) by currency over a horizon of 30 days. For more information on the calculation of these indicators see Banco de la República's External Regulatory Circular DODM-361.

requirements exceed liquid assets. Over the last year and based on the most recent information, these measures registered relative stability as well as a rise in indicators at the individual level (Graph 2.40).

Graph 2.40.
Short-term Liquidity Indicators for CIs acting as FXMI

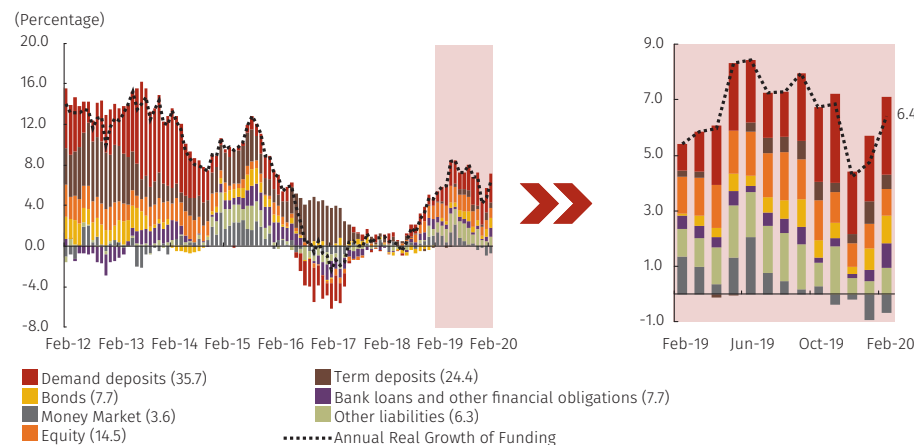


Note: The measurements are scaled with respect to the net 30-day liquidity requirements of the FEMI.
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

During the past year, the ECs’ funding structure continued to expand at a steady pace. There was a continual reallocation moving towards stable sources.

Based on information as of February 2020, the funding of the CIs in terms of structural liquidity (liabilities plus equity) registered an average real annual growth rate of 6.4% during the past year due to a greater contribution from stable sources. Demand and term deposits, in particular, as well as equity continue to register higher growth rates. In addition, there was a greater share of financing through bonds at the same time as the money market segment lost relevance (Graph 2.41).

Graph 2.41
Real Annual Growth of EC funding and contribution of their Components



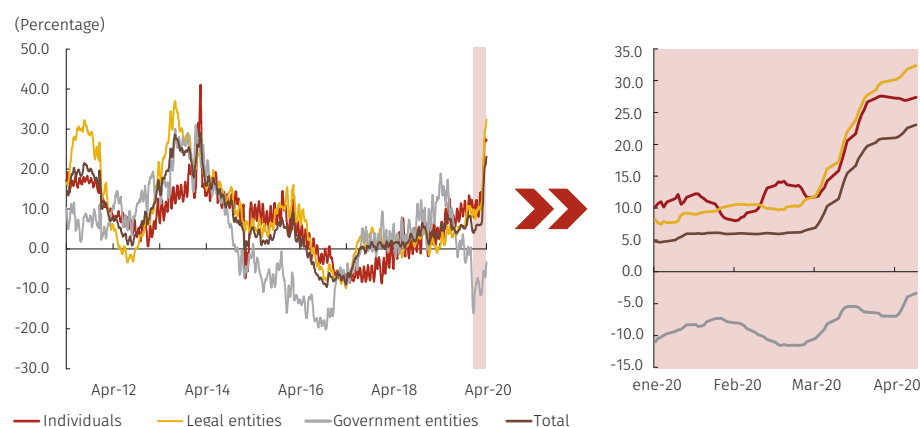
Note 1: other liabilities correspond to: acceptances in circulation and derivatives, capital contributions, banks and correspondents, Bocas, Boceas, CDAT, accounts payable, electronic deposits, affiliated establishments, other deposits and demands with and without amortized cost, labor obligations, loan-loss provisions, and collection services.
The legend in parenthesis shows the percentage share of each component of the total funding as of February 2020.
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

The greater amount in demand deposits, which is the main source of funding for CIs at the aggregate level, was explained by the larger contribution in deposits by individuals and the real sector. Based on the most recent information, the funding structure surged significantly as it moved towards deposits from individuals and legal entities depositing large amounts.

Demand deposits, which represent 41.8% of the CI liabilities, registered a real annual growth of 9.2% as of February 2020. With respect to their counterparties, deposits from individuals and the real sector were seen to grow at rates of over 10%, and considering their share of the total, they were the components that contributed the most.

Based on recent data (as of April 2020), demand deposits registered growth rates that have not been seen since the beginning of 2003 mainly due to larger deposits from individuals and large legal entities (whose average balance is higher than 220 SMLMV), financial entities, and CIF (Graph 2.42).

Graph 2.42.
Real Annual Growth of Demand Deposits by CI Counterparties
(10-day moving average)



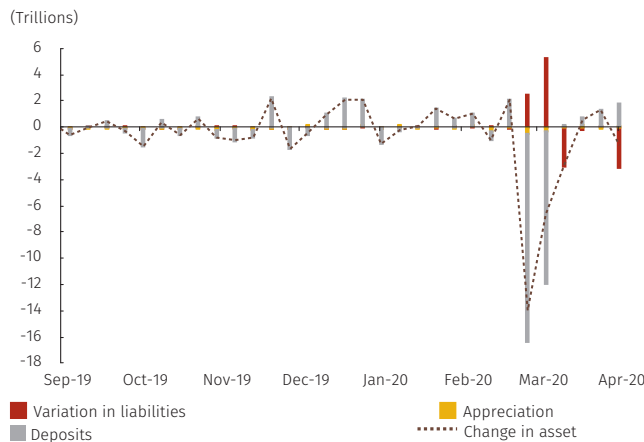
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

The current stress scenario has led to a tightening of the financing conditions for CIs that could contribute to modifying their current funding structure.

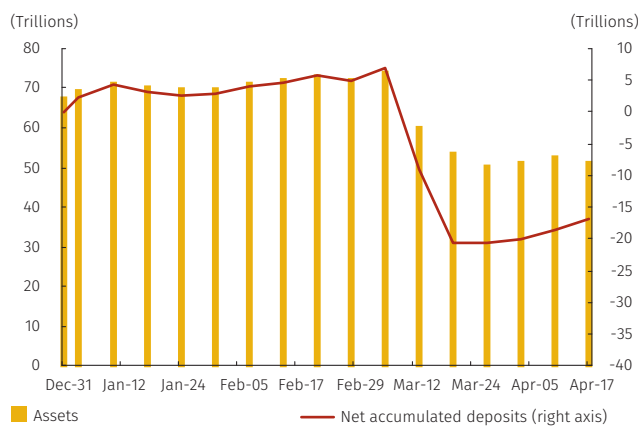
The CIs face greater restrictions on their funding due to the greater market uncertainty. According to Banco de la República's March 2020 "Report on the Recent Change in the Foreign Indebtedness of Colombian Banks," financial intermediaries reported that their international creditors seemed to be less willing to grant loans in foreign currency and that there were higher costs for these

Graph 2.43.
CIF Assets

A. Change by Components

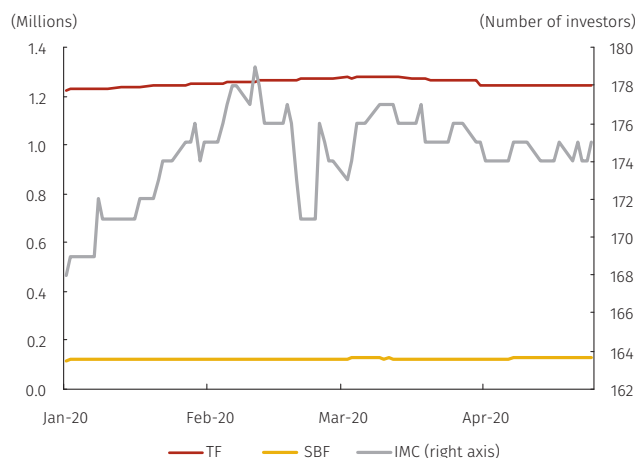


B. Assets and Net Deposits



Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

Graph 2.44.
Number of CIF investors



Source: Office of the Financial Superintendent of Colombia, calculations: *Banco de la República*.

funds.²⁸ In addition, the lower economic activity and greater preference for liquidity may put pressure on the long-term financing of intermediaries. This may contribute to a shift towards shorter-term and demand sources in the funding structure of CIs.

Collective investment funds, in turn, showed fluctuations in the total value of their managed assets in the presence of shocks caused by the redemptions and valuations of their investments.

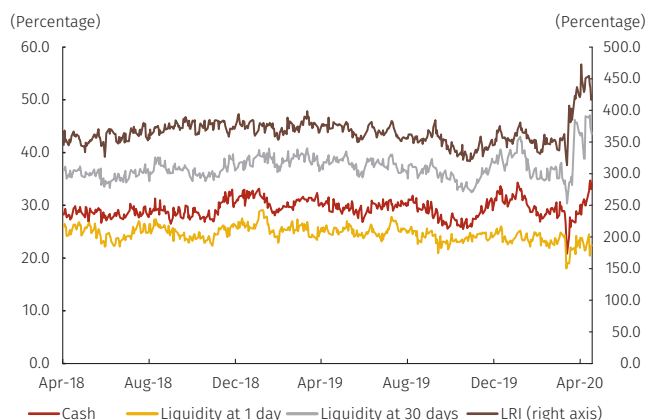
The market for open-ended collective investment funds with no permanence agreement (CIF)²⁹ managed by TC, SBF, and investment management companies (IMC) was affected by the nervousness in the international and local markets during the first part of the semester. This was reflected mainly in a sudden increase in withdrawals by its investors, who withdrew COP 24.7 t in March (Graph 2.43, panel A). Therefore, the asset that had reached a maximum value of COP 74.4 t during this period stood at COP 51.2 t by April 17, 2020 (Graph 2.43, panel B).

These withdrawals did not represent a massive outflow of investors. When the total number of adherents is analyzed, there were approximately 1,400,000 investors at the beginning of March, a number that decreased by 2.6% at the most critical point (Graph 2.44).

28 This report evaluated the foreign debt situation of the eight financial entities that account for 94.9% of the banking system's obligations to foreign entities. In this edition, the largest drop is seen in willingness by counterparties abroad since survey data became available: two entities stated that their counterparts are willing, five said that there is little willingness, and the remaining entity indicated that the counterparts are not at all willing to grant funds from the foreign trade line. For more information, please visit *Banco de la República's* web repository.

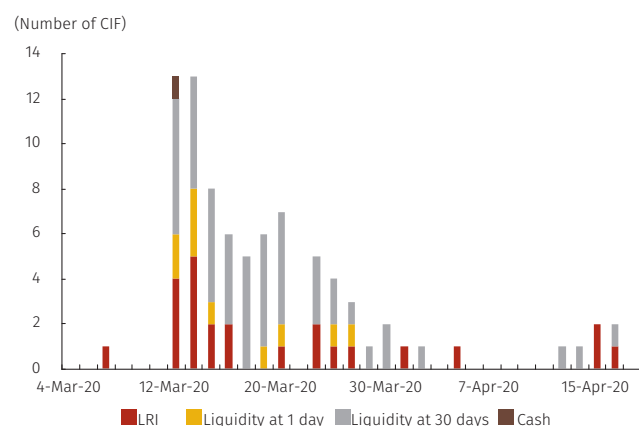
29 Only open-end CIFs with no permanence agreement were analyzed due to the fact that they are susceptible to withdrawals by the investors. Therefore, they are the only ones that must report to the FSC and comply with their liquidity indicators as stipulated in the FSC's EC 003/2015. These hold a 47.8% share of the total assets of the CIFs and Private Equity Funds as of April 17, 2020.

Graph 2.45.
Mean of Main CIF Liquidity Indicators



Source: Office of the Financial Superintendent of Colombia, calculations: *Banco de la República*.

Graph 2.46.
Defaults Registered by the CIF for Liquidity Indicators



Note: the number of CIFs that fail to comply with each indicator is on the graph. It is possible for a fund to fail to comply with several indicators, so the height of each bar does not necessarily represent the total number of CIFs that fail to comply per day.
Source: Office of the Financial Superintendent of Colombia, calculations: *Banco de la República*.

During the adjustment process caused by these withdrawals, a large number of CIFs showed pronounced decreases in their liquidity indicators (Graph 2.45). Some of them failed to comply with these indicators for periods as long as five days during March. This occurred due to the uncertainty related to the value of fixed-income securities, which liquidation to raise the funds needed to meet obligations, would have meant the materialization of losses for these entities (Graph 2.46).³⁰ However, following the BDBR’s announcement to extend access to repo auctions of public and private debt securities as well as the possibility of buying private securities with a remaining maturity of three years or less issued by credit institutions to the funds managed by TC, SBF, and IMC, there has been an improvement in liquidity indicators.

2.4.2. Interest Rate Risk in Banking Book

The structure of the interest rates of the credit institutions’ balance sheet is analyzed in this section as their exposure to the Interest rate risk in banking book.³¹ The measurement of this risk seeks to estimate how changes in the interest rates for assets and liabilities affect net interest income.

The share of assets and liabilities contracted at a variable rate registered a decline in the last six months.

Between September 2019 and the second week of April 2020, the share of assets held by CIs in fixed-rate contracts gradually increased relative to floating-rate assets. Similarly, fixed-rate liabilities as a share of assets increased in comparison to the levels seen in September 2019 (Graph 2.47).

30 Prior to this economic situation, failure to meet the liquidity indicators for CIFs was rare.

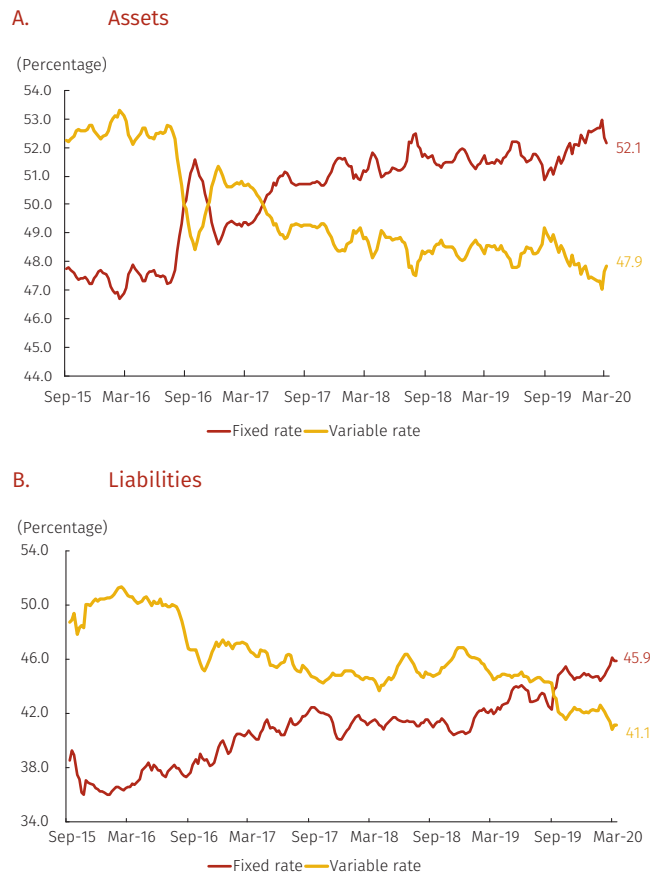
31 The interest rate risk has two dimensions: the first is analyzed in the section on market risk and refers to the risk of devaluations of the assets in the treasury ledger in the event of interest rate movements; the second, which is analyzed in this section, corresponds to the risk of interest rate changes to the entities’ net income from interest based on the information in the trading book.

When the structure and breakdown of the balance sheet items contracted at variable rates are analyzed, it is evident that the asset positions indexed at the benchmark rates are more relevant than the ones associated with inflation³² which is the opposite of what happens with liabilities contracted at variable rates (Graph 2.48). These components remain stable over time. However, the share of the BBI in lending operations continues to become larger with respect to the share of assets tied to the DTF. There is also an increase in active positions associated with the UVR compared to those indexed to the DTF.

The exposure to the interest rate risk in banking book measured by the WATM gap has registered a lower level during the past six months.

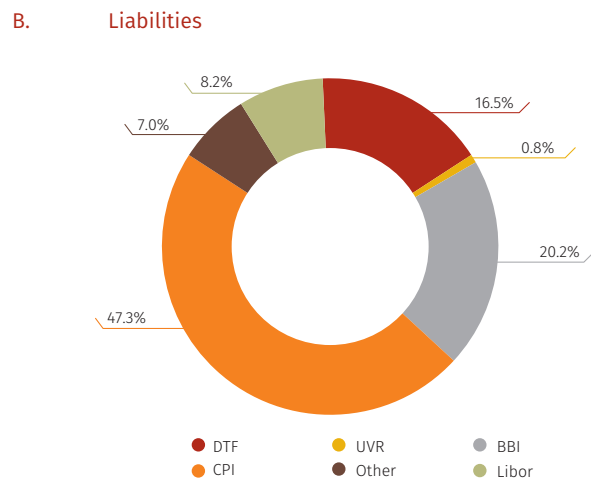
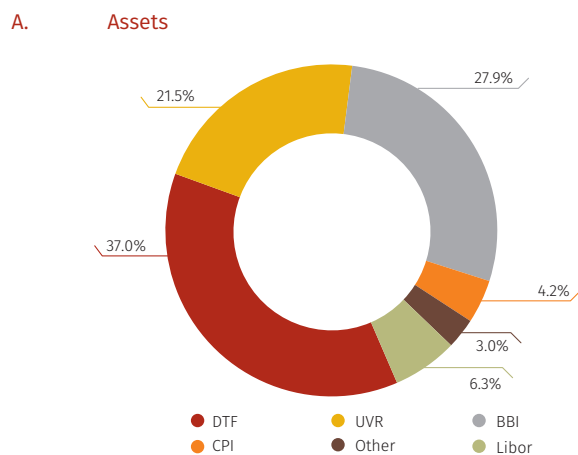
The *weighted average term to maturity (WATM) gap* was calculated in order to measure the exposure of the trading book to interest rate risk. This is defined as the difference between assets and liabilities that are sensitive to changes in interest rates for different periods. When this indicator takes on a negative value, it means that an increase of the same magnitude in lending

Graph 2.47.
Change in Breakdown of Assets and Liabilities by Type of Interest Rate^{a/}



a/ The balances of liabilities at fixed rates and at variable rates are presented as a proportion of the total assets.
b/ The balance of liabilities at a fixed rate incorporates demand deposits of individuals while the demand deposits of legal entities and government entities are included in the liabilities contracted at variable rates.
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

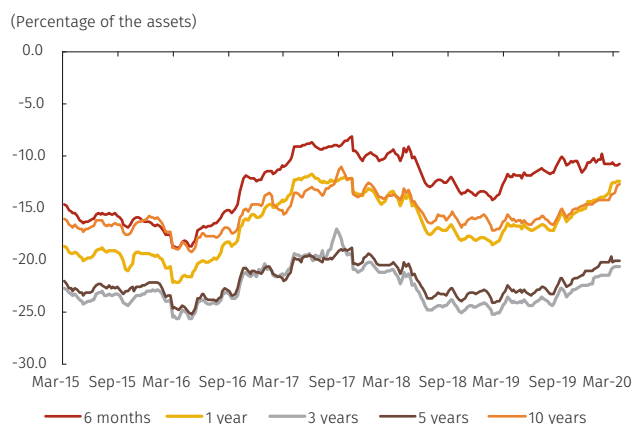
Graph 2.48.
Breakdown of the Balance Sheet Contracted at Variable Rates by Type of Rate – April 2020



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

32 The benchmark rates correspond to DTF and BBI while those associated with inflation are the UVR and CPI.

Graph 2.49.
WATM gap by Maturities



Note: corresponds to the total value for the CI. 4-week moving average.
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

rates and deposit rates would generate a reduction in the net interest income. This measurement of interest rate risk mainly depends on two factors: the share of assets and liabilities contracted at variable rates and the maturity of fixed-rate assets and liabilities.³³

In Graph 2.49, the *WATM gap* is presented for five different periods. This measure remains at negative levels for all time horizons in line with the balance sheet interest rate structure. There is a reduction in the *WATM gap* with respect to the levels seen six months ago, especially for periods of more than one year.

33 For more detail on the calculation of the *WATM Gap*, see the box “Interest Rate Risk of the Colombian Credit Establishments’ Trading Book” in the September 2015 *Financial Stability Report*. This measurement includes off-balance sheet transactions that are part of the assets of CIs (i.e.: approved but not disbursed loans, and credit card and loan openings), as recommended by the Basel Committee on Banking Supervision (2020) “Interest Rate Risk in The Banking Book,” Bank for International Settlements.

Box 1 Description of the Medium-Term Credit Cycle in Colombia

Wilmar Cabrera
Camilo Gómez
Daniela Rodríguez-Novoa*

The description of the real cycle provides an order of magnitude and direction observed in the level of economic growth. In particular, this analysis allows to identify whether the economy is in an expansion or contraction phase and how intense its amplitude is. In addition to the above, it is relevant to study the cycle of the different components of the economy and how these are synchronized or reinforced depending on the phase in which they are. Accordingly, the study of the financial cycle received a lot of attention after the financial crisis of 2008. This study showed that a sharp contraction in the financial cycle can be transmitted very intensely to the real cycle. In the same vein, there is empirical evidence that relates the intensity and duration of real shocks when they are accompanied by phases of contraction in the financial sector (Claessens *et al.*, 2011a, b). Thus, the description of the financial cycle, in its different phases is a tool that helps to identify periods in which vulnerabilities are accumulated, and to have a prospective measurement of the development of the financial sector.

In the current context of the economic shock caused by the pandemic, it is relevant to know the stage of the financial cycle to understand the synergies that can be generated between the real and financial sectors, and the role that financial institutions can play. Therefore, the objective of this box is to describe the medium-term cycles of the CIs' loan variables in Colombia. We follow Christiano and Fitzgerald's (2003) methodology that seeks to separate the fluctuations of a time series from its trend using filters for a given frequency. This contributes to describe

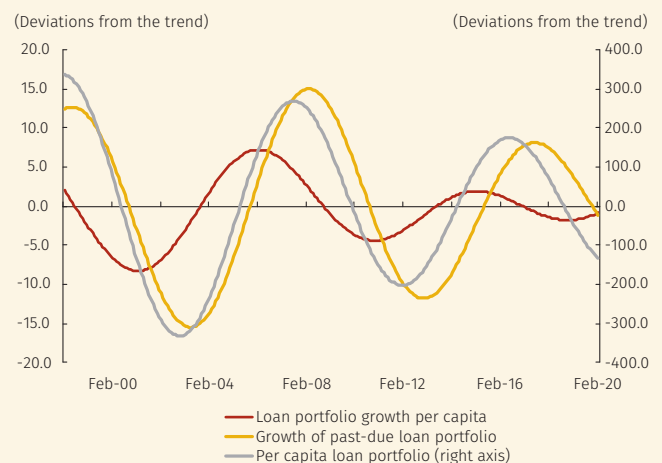
the cycles of the interest variables for short, medium, and long-term periods.

In this document, emphasis is placed on the medium-term cycle due to fluctuations at this frequency are more related to stress events in the sector (Drehmann *et al.*, 2012). The credit-related variables studied are the per capita loan portfolio, its annual growth, and the annual growth of the non-performing loan portfolio. These variables are analyzed both in aggregate terms and for each of the modalities.¹ The assumption in this box is that the duration of the medium-term cycle fluctuates within a range of eight to fifteen years.²

Results indicate that the medium-term cycle of the per capita loan portfolio is highly synchronized with the growth of the non-performing loan portfolio. In general, boom periods in the per capita loan portfolio precede surges in the non-performing portfolio. In the case of the growth of the per capita loan portfolio, the relationship between this and the expansion of loans in default is weaker and has lost relevance since 2014 (Graph B1.1). The above suggests that, in the periods when per capita credit is at the peak of its expansionary phase, conditions for access to credit are relaxed and, therefore, an increase in defaults is evident.

When the credit cycles are analyzed by loan type, mixed results are found with respect to the combined behavior of the per capita loan portfolio and the growth of the non-performing portfolio. The commercial and housing

Graph B1.1
Medium-term Cycles



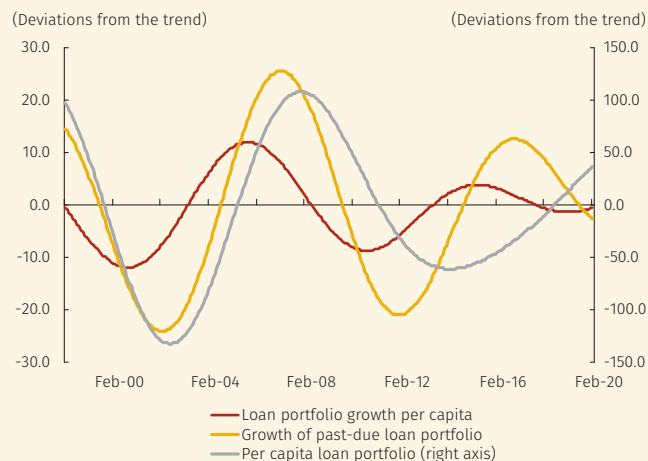
Source: Office of the *Financial Superintendent of Colombia*, calculations by *Banco de la República*.

- 1 The analysis is not done for the microcredit loan type given the shorter length of the series available.
- 2 This cycle time is chosen following the work of Drehmann *et al.* (2012), but the length of the cycle is smaller due to the availability of data in Colombia. To be precise, the authors have data that go back as far as 1960, and they suggest a cycle length that ranges between eight and thirty years while in Colombia the series starts in 1990.

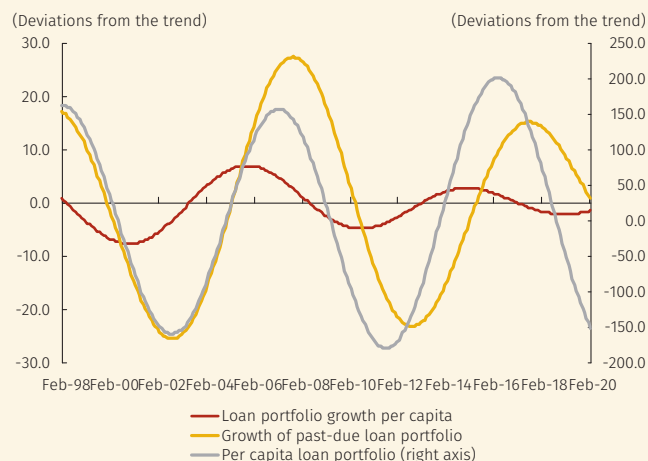
* The authors are part of the Financial Stability Department in *Banco de la República*. The opinions expressed here are the sole responsibility of the authors and do not imply any commitment on the part of the *Banco de la República* or its Board of Directors.

Graph B1.2
Medium-term Cycles by Type

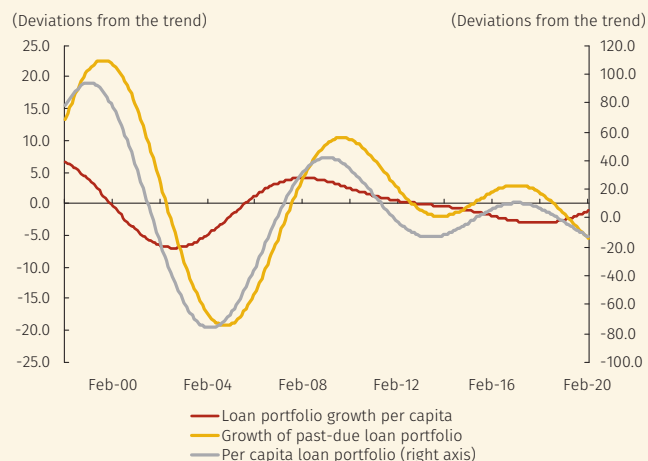
A. Consumer



B. Commercial



C. Housing

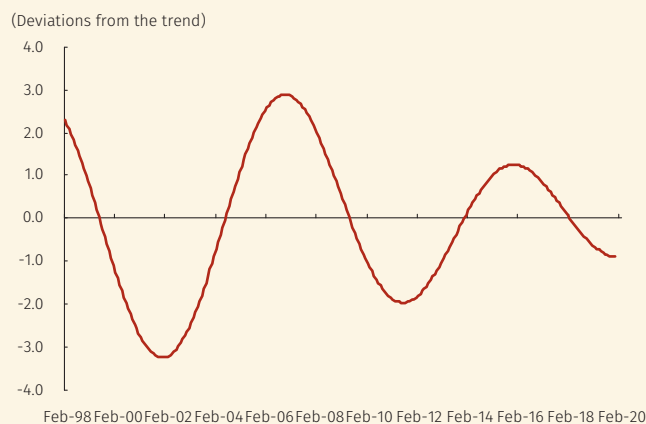


loan portfolios show a performance that is similar to that of the aggregate one (Graph B1.2, panels B and C). In contrast, in the case of the consumer loan portfolio, there is a similar dynamic in the cycles of the per capita portfolio and the growth of the non-performing loan portfolio up to 2008. However, from this date onwards the synchronization between the cycles of both variables decreases significantly. In particular, the cycle of the per capita loan portfolio begins to lag in comparison to the non-performing loan portfolio cycle (Graph B1.2, panel A).

Last but not least, a credit boom indicator, defined as the sum of standardized medium-term cycles of growth of the per capita portfolio and level, is analyzed. This indicator seeks to identify the stage of credit by considering the synchronization between the expansion of per capita credit and its history. Based on the results, the periods of credit boom coincided with the years before the crisis at the end of the last century and with the period preceding the global financial crisis of 2008 (Graph B1.3).

The medium-term cycle indicators for the consumer and housing loan portfolios indicate that, as of February 2020, the CIs did not show any sharp deviation from their medium-term trends. With respect to the commercial portfolio, the per capita loan portfolio cycle was in a contracting phase which was mainly due to a smaller demand according to the recent editions of *Banco de la República's Report on the Credit Situation in Colombia* and to higher prepayments on loans made by certain companies in the real sector. In view of the current economic situation, all the above suggests that the financial system did not foresee the generation of major vulnerabilities at an aggregate level that could further exacerbate recent shocks.

Graph B1.3
Indicator of credit boom



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

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Box 2

Description and Performance of Trust Companies: An Approach Using Machine Learning Techniques

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Javier E. Pirateque Niño*

1. Introduction

When the financial indicators of trust companies (TC) are compared, it is usually assumed that these types of entities belong to a group whose characteristics are similar. However, in practice, each entity adopts a business model that has different features in terms of asset exposure, sources of funding, counterparties, products offered, size, etc.

Farnè and Vouldis (2017) state that, due to this heterogeneity, the financial analysis should be done with regards to the business model and not to the sector. The business model is understood as the strategic decisions related to the set of activities carried out by the organization and the structure of its balance sheet.

In line with the above, a statistical methodology is proposed in this box that combines a technique for identifying *clusters* with a technique for reducing dimensionality to obtain groups of entities with similar business models. For this, several analyses are done as a first step in order to define the optimal number of *clusters*. Afterwards, the proposed methodology is applied, and the resulting classification is validated by comparing some performance indicators among the *clusters* obtained.

* The authors are part of the Financial Stability Department in *Banco de la República*. The opinions expressed here are the sole responsibility of the authors and do not imply any commitment on the part of the *Banco de la República* or its Board of Directors.

2. Description of the data and definition of the optimal number of clusters

For this exercise, the two-digit general balance sheet of each of the TC was taken, including the balances for the managed funds held under management separately by type.¹ Each variable was divided by the asset, and the result obtained was averaged for the entirety of 2019.² In order to reduce the dimensionality and facilitate an analysis of the information, the principal component analysis (PCA) technique was used to obtain the first principal component of the series grouped in three clusters: asset exposure (Asset Exp.), structure and description of funding (Funding) and breakdown of managed funds (Funds).³ Thus, the final database contains three variables for 28 TCs.

In order to have a first approach to the similarities and differences between the entities, the distances between them were analyzed. To do this, the distance of the data between pairs of entities was calculated and, afterwards, progressively grouped to form a hierarchical tree.

The distances serve to indicate how close (similar) the entities are to or far (different) from each other. There are several methods for calculating the distances. The most common is the one for Euclidean distance (d_{ij}). To calculate this measure between a pair of entities i and j , the following expression is used:

$$d_{ij} = \sqrt{\sum_{w=1}^W (x_{iw} - x_{jw})^2}$$

Where W is the total number of variables available to calculate the distance, x_{iw} is the value of variable w for entity i and similarly x_{jw} is the value of the same variable for entity j .

The result of calculating the distances for each pair of entities indicates that the greatest distances are between the TCs from 1 to 22 and TC number 22 and above. Thus, a preliminary identification of two groups can be made.

After calculating the distances between pairs of entities using the hierarchical grouping method, a hierarchical tree or dendrogram is built to provide information on the number of groups that can be identified in the data

1 The types of funds used in the exercise were: an investment trust, a real estate trust, a management trusteeship, a guarantee trust, voluntary pension funds, social security funds, collective investment funds, private equity funds, other social security resources, and assets held in trust.

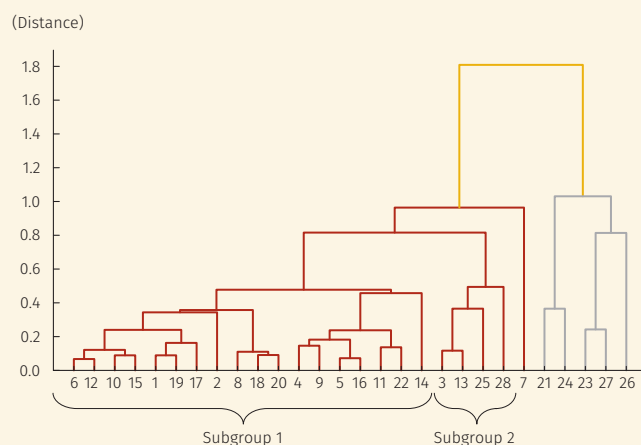
2 Data from prior to 2019 were not taken due to changes made at the beginning of that year in the registration of TC businesses (External Circular 034/2018 of the Office of the Financial Superintendent of Colombia), which made information on managed funds before and after that date not comparable.

3 The first principal component of each group of variables explained 72.6%, 76.8% and 60.7% of the variability for Asset Exposure, Funding, and Funds respectively.

and summarizes the information presented through the distance matrix. The method that was used to build this dendrogram consisted of: 1) pairs of entities with the least distance between them are grouped; 2) calculate the distance between the groups obtained in the previous step; 3) associate groups with quite small distances between them.⁴ The last step was repeated until a single group was obtained.

Graph B2.1 shows the dendrogram corresponding to the TC data. The height of each horizontal branch shows the distance between the groups that stem from the branch. Thus, two large groups are identified, which are highlighted in blue and red and are consistent with what was found when the distances between pairs of entities were calculated. Within the blue group, two subgroups marked green and orange can be identified.

Graph B2.1.
TC Dendrogram



Source: Office of the *Financial Superintendent of Colombia*, calculations by *Banco de la República*.

3. Methodology

The *k*-means methodology was used to create the *clusters*. This is an unsupervised machine learning classification methodology which is used to find patterns or groups in the data. Membership in a group is determined based on the distance of each point from the center of the *cluster*. The methodology is implemented by using an algorithm that minimizes the sum of squares within the groups (SCDG) for all of the variables. Mathematically, this is given by:

$$SCDG = \sum_{g=1}^G \sum_{j=1}^P \sum_{i=1}^{n_g} (x_{ijg} - \bar{x}_{jg})^2$$

Where G is the total number of groups; P is the total number of variables; n_g is the total number of elements in group g ; x_{ijg} is the value of the variable in element i of

group g , and \bar{x}_{jg} is the mean of this variable j in the group. Under this methodology, the number of groups is prefixed (Peña, 2002).

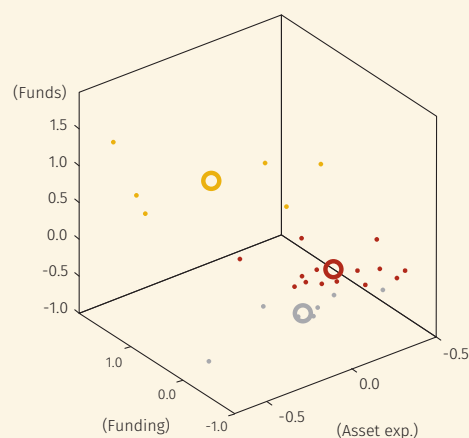
4. Results

Based on the information in the dendrogram, the PCA methodology and *k*-means were applied for TCs with a number of *clusters* equal to three.⁵ The result is presented in Graph B2.2, where each axis represents each of the three variables in the database, each dot is one TC and the rings are the mean for each cluster. *Cluster one* (represented in blue) consists of seven entities, *cluster two* (represented by red) is made up of fourteen entities, and finally, *cluster three* (represented by yellow) contains six entities.

Given the results of grouping through the use of *k*-means, the characteristics that identify each *cluster* and differentiate it from the others are analyzed.

In general, it is clear that the entities in *cluster one* are the largest and most leveraged⁶ followed by the entities in *clusters two and three*. The average assets of the entities in *cluster one* are two and fifteen times greater than the average assets belonging to the entities in *clusters two and three* respectively. The entities in *cluster two*, in turn, are the ones that have the most diversified investment portfolio (Graph B2.3). With respect to income, this mainly

Graph B2.2
Clusters using *k*-means and PCA for TC



Source: Office of the *Financial Superintendent of Colombia*, calculations by *Banco de la República*.

- To corroborate the optimal number of *clusters*, the *k*-means exercise was done with 1, 2 and up to 20 *clusters* and the SCDG of each entity was calculated in relation to the nearest center. As the number of *clusters* increases, the SCDG decreases. The optimal number of *clusters* is one where the SCDG starts to decrease marginally. In this case, that marginal change began to be seen starting from the third *cluster*.
- Leverage is defined as the ratio of assets to equity. The TC liabilities consist mostly of accounts payable, financial instruments, labor obligations, and loan-loss provisions.

⁴ There are several methods for calculating the distance between groups, and the main ones are described in Leon (2017).

consists of commissions for the three clusters. Each is described in more detail below:

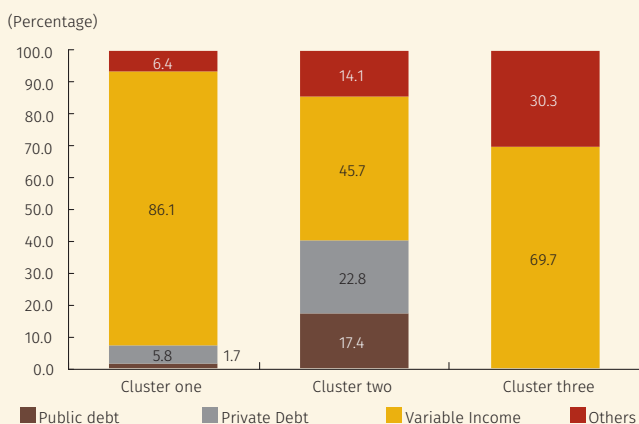
Cluster one: Its assets are formed mainly by investments. These investments are poorly diversified since they are mostly variable income investments. The entities in this cluster are mainly involved in trust management and real estate (Graph B2.4).

Cluster two: These are TCs that are characterized by an asset that is mostly composed of investments. Investments in this cluster are more diversified than those in cluster one since they hold a share of variable income as well as private and public debt. In terms of the funds managed, these entities are, on average, characterized by the fact that they participate more than others in the administration of social security funds.

Cluster three: the assets of these TCs, unlike the other two clusters, are composed of cash to a greater extent. In addition to commissions, they receive income from money market transactions. On average, they work mainly with investment trusts followed by management trusts, and the management of voluntary pension funds. This cluster is also characterized by the fact that it includes relatively new entities that are less than five years old.

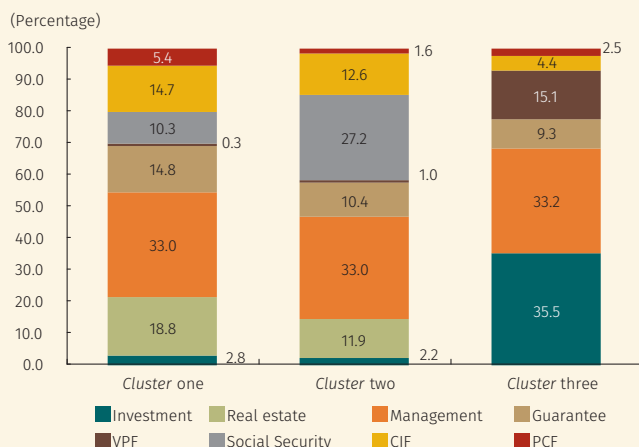
After having described each cluster, four indicators of financial and efficiency performance are analyzed and compared. These indicators are: Ratio of equity to subscribed capital, ROA, operating margin⁷ and coverage ratio.⁸ To do this analysis: 1) the average for each indicator by entity was obtained based on the monthly data since January 2015, and 2) the averages obtained in the previous step were classified by cluster, and then translated in Graphs B2.5 to B2.8.

Graph B2.3. Breakdown of the Investments (average per cluster since 2015)



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

Graph B2.4. Structure of the Managed Funds by Groups (average 2019)

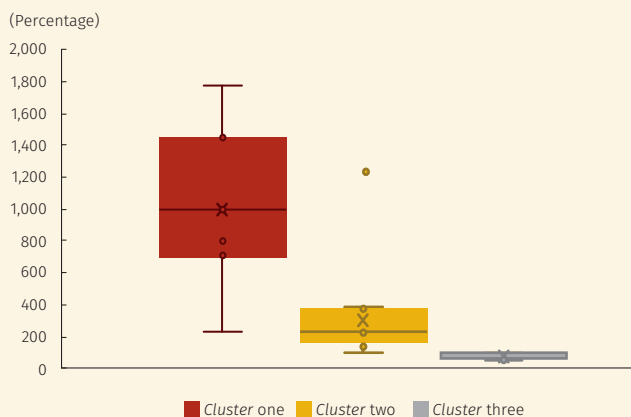


Source: Office of the Financial Superintendent of Colombia, calculations by the authors.

In general, the four indicators perform better for the entities in cluster one; the ROA and operating margin are similar for cluster one and two. Cluster 3, in turn, is characterized by poor performances from all four indicators. Specifically, the following is found:

Equity to subscribed capital: the median of cluster one is higher than the median of the other clusters. It is followed by clusters two and three. This suggests that, on average, the TC in cluster one have a greater ability to create value using their social capital, and also suggests a higher level of financial vulnerability for entities in cluster three.⁹

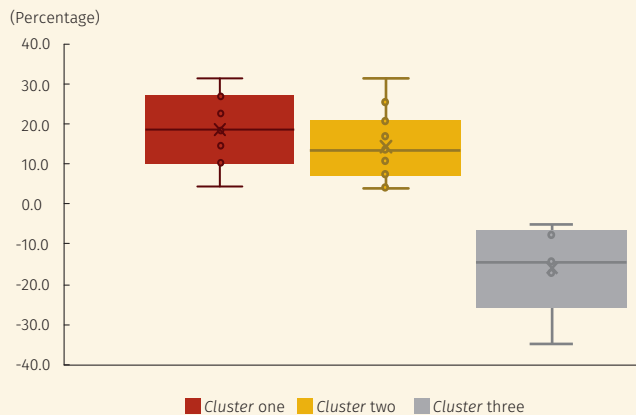
Graph B2.5 Net worth Loss Indicator (average per entity since Jan 2015)



Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

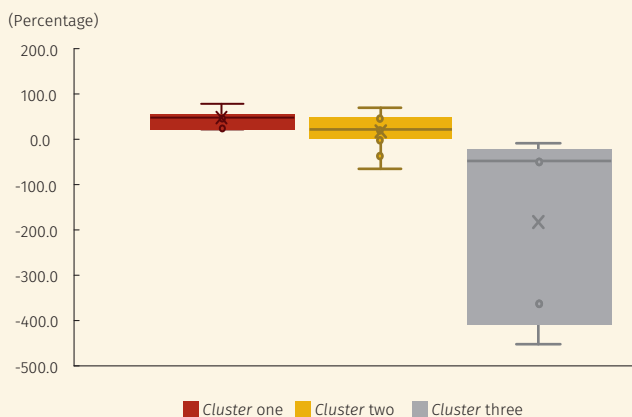
- 7 The operating margin is defined as: $(\text{operative earnings} - \text{operative expends}) / \text{operative earnings}$.
- 8 The coverage ratio is defined as: $\text{commissions} / \text{staff expends}$.
- 9 According to the commercial code, if this indicator is lower than 50%, that is cause for winding up a company.

Graph B2.6
ROA Indicator
(average per entity since Dec 2015)



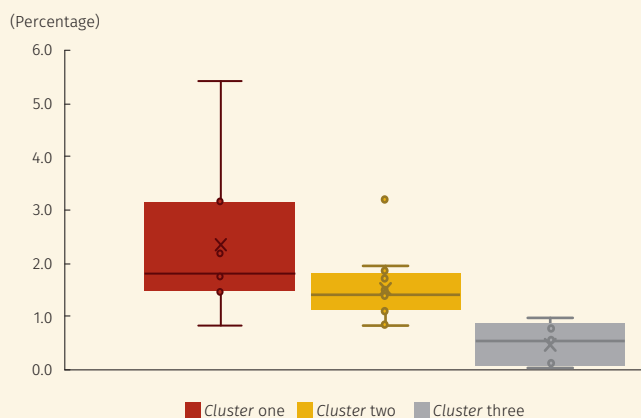
Source: Office of the *Financial Superintendent of Colombia*, calculations by *Banco de la República*.

Graph B2.7
Operating Margin Indicator
(average per entity since Dec 2015)



Source: Office of the *Financial Superintendent of Colombia*, calculations by *Banco de la República*.

Graph B2.8
Coverage ratio indicator
(average per entity since Dec 2015)



Source: Office of the *Financial Superintendent of Colombia*, calculations by *Banco de la República*.

ROA: the entities in *clusters* one and two show similar average ROAs. On the other hand, the median and average of this indicator are negative for the entities in *cluster* three.

Operating margin:¹⁰ the medians of this indicator are similar in *clusters* one and two while some entities in *cluster* two have a negative indicator. All entities belonging to *cluster* three have a negative average operating margin indicator.

Coverage ratio:¹¹ the median of *cluster* three is lower than the median of the others, and its values are less than 1 for each of the TC belonging to it. The above indicates that for entities belonging to this *cluster*, personnel expenses tend to be higher than the commissions they receive.

In order to find empirical evidence to indicate whether the differences between the *clusters* found are significant, the Kruskal-Wallis test was done. This is a non-parametric test to verify whether n samples belong to a single population where the null hypothesis is that the n samples have the same distribution. With a 1.0% significance level, it was rejected for all the performance variables analyzed. The above indicates that there is a statistically significant difference for each of the performance variables between at least two of the three *clusters*.

5. Conclusion:

Using statistical techniques that minimize the influence of the researcher's criteria, three large clusters were found to be associated with three different business models within the TC sector. This classification turned out to be relevant for explaining the financial performance and efficiency of the entities. This contributes to an understanding of the dynamics of this sector and the risks that each individual entity faces.

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¹⁰ The operating margin is defined as: $(\text{operative earnings} - \text{operative expends}) / \text{operative earnings}$.

¹¹ The coverage ratio is defined as: $\text{commissions} / \text{staff expends}$.

Box 3

Analysis of the Measures implemented by Banco de la República from the Perspective of Financial Stability

María Fernanda Meneses
Camilo Eduardo Sánchez*

The Covid-19 pandemic and the fall in crude oil prices have created an unprecedented scenario for the world economy. In less than two months, the projected growth of the global economy for this year went from 3.3% to -3.0%,¹ as a result of the aggregate supply and demand shocks caused by the measures adopted by countries to deal with the health emergency. A reduction in business activity, increased risk aversion, high levels of uncertainty and volatility in the financial markets, and the collapse of oil prices for oil-exporting economies create a challenge for governments and economic authorities whose timely intervention is essential for preserving public health and safeguarding the economy.

In response to this, *Banco de la República* (BR) has implemented a set of measures to provide the system with more liquidity in order to keep the payments system functioning properly in the economy while providing agents with greater certainty. In addition to these objectives, these tools entail a background of financial stability which seeks to reinforce the capability of the financial system to manage and mitigate risk in order to stimulate economic performance and efficient resource allocation. Therefore, the

* The authors are part of the Financial Stability Department of *Banco de la República*. The views expressed here do not represent those of *Banco de la República* nor those of the members of the Board of Directors.

¹ Information from the International Monetary Fund's World Economic Outlook for January and April 2020.

decisions made by the BR in the context of Covid-19 are analyzed from a financial stability perspective in this box.

1. First Signs of Vulnerability

As can be seen in this edition of the *Report*, prior to the outbreak of Covid-19, the financial system was in a sound financial position with an expansion of intermediation activity, levels of capital adequacy, and aggregate liquidity that was above the regulatory minimums and stable profitability indicators. However, external shocks have begun to manifest themselves in financial markets through significant devaluation of debt securities, liquidity pressure on investment funds, tighter foreign financing conditions, and an increased preference for safe high-quality assets.

In the case of the debt securities market in Colombia, the larger devaluations are caused by the increased risk aversion felt by investors who are modifying their investment positions to avoid future price losses or moving into cash. Thus, those financial institutions whose portfolios are concentrated in these assets are more exposed to unexpected price movements, and this will impact their profitability (see Market Risk, pg. X).

In addition to the above, increased risk aversion on the part of investors has also caused drops in the assets of collective investment funds (CIF: see Liquidity Risk, pg. X). These savings and investment mechanisms, which are managed by financial entities, invest the funds of various agents in an asset portfolio. In a scenario of higher devaluations, investors redeem their positions in the fund thus putting pressure on its liquidity and on the asset prices. This may lead to nervousness among investors who remain in the CIF regarding the availability of their investments.

An unexpected and significant withdrawal of CIF investments may result in an unexpected reallocation of resources to bank deposits. For example, investors who withdraw their funds from CIFs could direct these resources to banks in the form of deposits. This reallocation of liquidity can cause shocks to the system, because withdrawals of deposits by CIFs to meet redemptions do not necessarily return to the same entity again as part of the savings of the CIF investor who liquidated his position.

Furthermore, the greater uncertainty and increased country risk together with the deterioration in the local operating environment make it difficult for intermediaries to get access to foreign currency resources. This poses risks to the financial health of the institutions given that it makes it difficult for them to meet their obligations in other currencies and could restrict the supply of credit. Last of all, the tightening of conditions in financing from abroad also means that international agents are less willing to lend funds, and the cost of funding becomes higher.

2. Measures Adopted and Financial Stability

Taking the possible materialization of vulnerabilities into account, the BR has implemented a set of preventative measures and policy actions since March 2020: i) expanded the number of counterparties to the monetary expansion transactions as well as their maturities, and eligible collateral; ii) provided exchange rate hedging and dollar liquidity; iii) lowered the benchmark rate, and iv) reduced the percentage of legal reserve requirements (Graph B3.1),

The adoption of these tools has implications for financial stability to the extent that they strengthen the ability of the financial system to manage and mitigate risks during the situation and contribute to the better functioning of the financial markets while seeking to maintain public confidence in the structure and capability of the system to comply with its obligations. These elements also

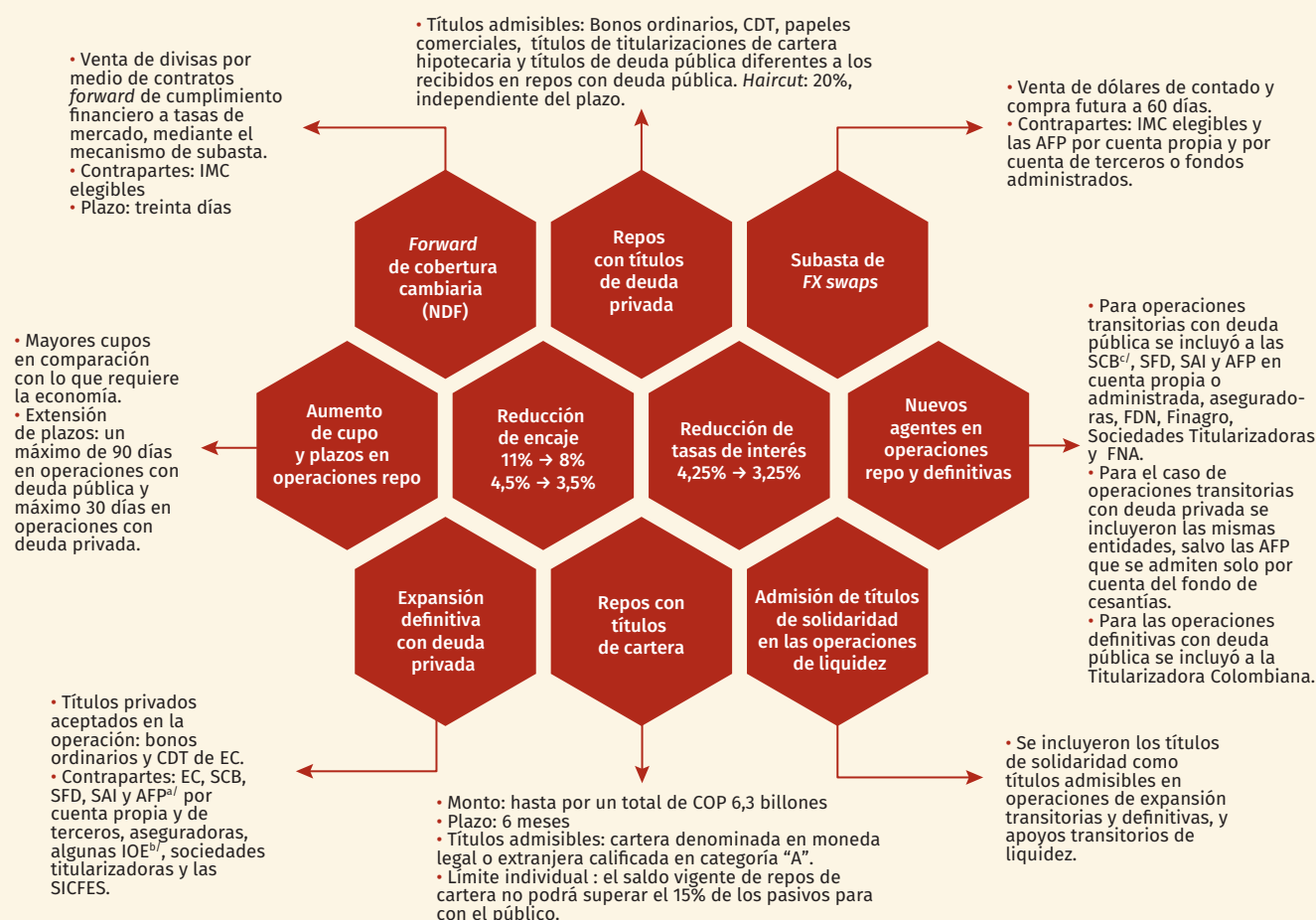
contribute to the monetary policy objectives of preserving price stability and seeking to bring output close to its potential level.

From this perspective, the Financial Stability Board (FSB) recently established four key points that must be addressed in order to preserve financial stability in the current situation: i) the channeling of funds from financial institutions and markets into the real economy, ii) the financing of the intermediaries in dollars, iii) the ability of investment funds to manage their liquidity, and iv) the management of market infrastructure counterparty risk. It follows that, if weaknesses occur on these fronts, the appropriate provision of financial services could be interrupted, and this would affect the stability of the system.

In line with the above, the measures adopted by the Central Bank are related directly or indirectly to these guidelines.

Diagram B3.1

Actions Taken by the BR up to May 8, 2020



Note: The acronyms in this graph correspond to: Foreign exchange market intermediaries (FXMI), Agricultural development securities (TDA in Spanish), Credit Institutions (CI), Stock brokerage firms (SBF), Trust companies (TC), Investment Management Companies (IMC), Pension and Severance Fund Managers (PFM), Special Institutions (IOE in Spanish), Capitalization Companies (CC), National Savings Fund (FNA in Spanish), and OMO Placement Agents (OPA in Spanish).

a/ In final expansion transactions using private securities, only PFM's are admitted on behalf of the severance funds managed.

b/ The IOEs that can access final expansion operations are: the National Savings Fund (Fondo Nacional del Ahorro), Fogafin, Finagro, Findeter, National Financial Development (Financiera de Desarrollo Nacional), Icetex, and ENTerritorio.

c/ Previously, only SBFs that participated in the Market Makers Program for proprietary account public debt securities were included.

Source: *Banco de la República*, drawn up by authors.

For example, the temporary and permanent monetary expansion transactions that are currently being carried out have made the market more tranquil to the extent that agents have certainty about the availability of funds. This contributes to the channeling of these to the economy and to investment fund liquidity management.²

In connection with the second FSB recommendation, the BR adopted a currency hedging mechanism through auctions of financial compliance *forwards*³ and provided temporary liquidity through dollar swap auctions.

Similarly, according to these recommendations, the current situation may exacerbate counterparty risk by generating liquidity pressure on market infrastructure and affecting the normal functioning of the markets in which they operate. However, the increased provision of liquidity helps to mitigate this risk, insofar as it prevents intermediaries from running out of funds to cover their positions or establish guarantees.

While these four pillars meet the needs of the system as a whole, there are individual situations that can generate additional risks. For example, there is the effectiveness and timeliness of the internal risk management system and the management of funds from the increased provision of liquidity. Therefore, from the perspective of financial stability, it is necessary to continue monitoring each entity's individual situation in order to avoid magnifying the shocks and continue to channel resources and financial services to the economy.

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2 In the latter case, the most recent information reflects a recovery in the CIF assets that followed the major redemptions seen in March and confirms the appropriateness of the decisions made by the BR.

3 Up to April 2020, the BR offered USD 2 billion in coverage. BR is expected to offer USD 1 billion more in hedging in May.

03

Stress Test

This section describes the scenario and the results of the Stress Testing model on the credit institutions (CI) that Banco de la República performs every six months. This test, seeks to measure the resilience of the CIs in the event of an unlikely, hypothetical, adverse scenario.

Considering the vulnerabilities that have been identified throughout this *Report*, this chapter presents the impact of an extreme, adverse, hypothetical scenario on the CIs in which the growth rate of the Colombian economy declines significantly, starting in the second quarter of 2020 and continuing until December 2021.³⁴ The scenario has been intentionally designed to reflect an extreme and pessimistic situation for the Colombian economy in the current context of economic slowdown.

The results of this exercise do not constitute any forecast regarding the future development of the economy, nor the financial system, since the adverse scenario reflects an extreme hypothetical situation. The results should be interpreted as a quantitative evaluation of the resilience of the CIs in the event of an extreme scenario based on their current financial conditions and under restrictive assumptions. Likewise, the exercise assumes that the economic authorities respond to the macroeconomic stress, but there is no policy reaction to the deterioration of the entities' financial statements, nor preventive measures in monitoring their risk management. Specifically, the scenario does not consider the mitigating effects of the measures recently taken by *Banco de la República* and the Office of the Financial Superintendent in order to preserve market liquidity and debtors' creditworthiness, with which the impact of the adverse scenario will presumably be lower.

The test is valuable providing an estimate of the potential losses that would be seen if the extreme scenario were to materialize. Furthermore, stress test

³⁴ The exercise takes the preliminary information from the CIs' financial statements as of March 2020 and the macroeconomic information as of December 2019 as its starting point.

models are useful to disentangle the possible transmission channels by means of which the vulnerabilities identified could affect financial stability.³⁵

The results indicate that, in the extreme scenario (and only going into 2021), there could be negative effects on aggregate indicators of total and core capital adequacy although, in any case, they would probably remain at levels above the regulatory limits during the entire period of analysis. This is indicative of the resilience of the credit institutions in the event of an extremely adverse scenario in the short term. In addition, the aggregate profitability of the CIs could present a significant deterioration which would reflect the impact that the hypothetical adverse scenario could have on the ability of the entities to grant loans and perform their financial intermediation activity.

3.1 Macroeconomic Scenario and Materializing Risks

The trajectories of the adverse scenario include a severe slowdown of the economy over the model horizon.

The stress test seeks to capture the effects of an extreme, adverse, and hypothetical macroeconomic context consisting of a sharp and sustained economic downturn between the second quarter of 2020 and the last quarter of 2021. This scenario could be associated with deeper and more persistent than expected effects of the Covid 19 health emergency. Under this scenario, hypothetical trajectories of high unemployment and declines in the GDP and loan portfolio will probably be seen.³⁶ The trajectories of these aggregate variables in the Colombian economy are constructed in this scenario using a general equilibrium macroeconomic model. Furthermore, to reflect an adverse scenario of great uncertainty, a gradual increase in the spreads between lending interest rates and the monetary policy interest rate is assumed, similar to the levels corresponding to their historic maximums since 2005.³⁷ Finally, the scenario comprises a considerable increase in credit risk.

35 The technical details of the stress testing model used, which include a description of the performance of the entities in a hypothetical scenario and the channels through which their financial health could be affected, are presented in the series Borrador de Economía (Economic Draft) no. 1028: "SYSMO I: A Systemic Stress Model for the Colombian Financial System", *Banco de la República*.

36 This macroeconomic scenario is constructed in such a way as to take into account the effects of feedback between the financial sector and the productive sector of the Colombian economy.

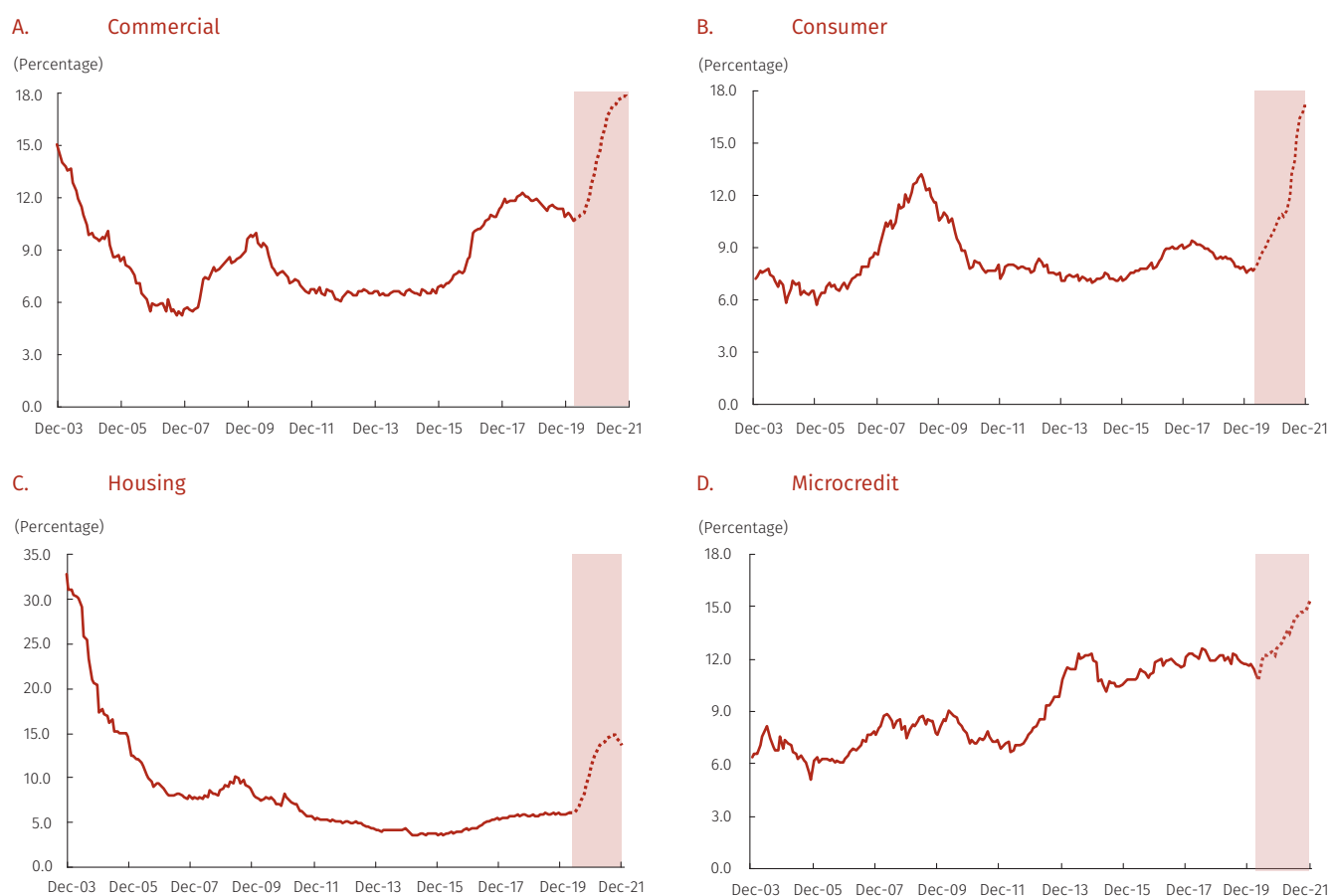
37 *The largest historical spreads of the commercial, consumer, housing, and micro-credit loan portfolios were 7.6 pp (November 2016), 20.6 pp (February 2003), 13.5 pp (May 2004), and 31.1 pp (August 2016) respectively.*

In the adverse scenario, the macroeconomic deterioration will probably cause an abrupt deterioration in credit quality.

A hypothetical scenario of sustained economic slowdown and high interest rates will probably entail the materialization of credit risk that the CIs could face during the first stage. The endogenous response of the CIs to the scenario could, at a second stage, unleash the materialization of additional risks that would be likely to have a direct impact on the financial statements of each entity (financing, liquidity, interest rate, and contagion risks).

With regard to credit risk, the macroeconomic deterioration would be likely to cause a reduction in the ability of the economy's agents to make payments and, consequently, an increase in default rates. The hypothetical trajectories of credit risk quality indicators for the four types of loan portfolios are presented in Graph 3.1:³⁸ the shaded area corresponds to the analysis horizon of the model. The quality of all types of loan portfolios will probably deteriorate sharply in the adverse scenario.

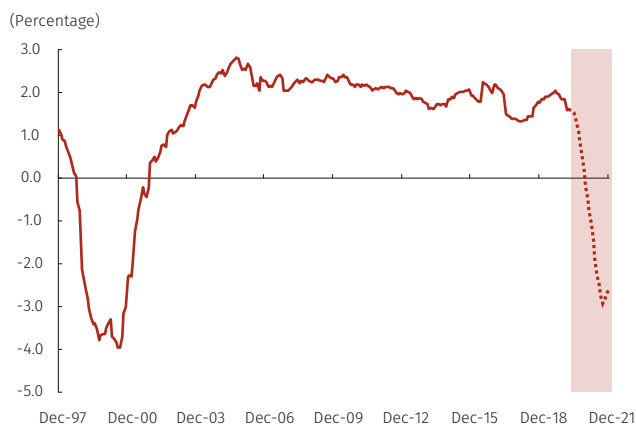
Graph 3.1.
QIR Trajectory by Loan Portfolio



Source: Office of the Financial Superintendent of Colombia (up to March 2020); calculations by Banco de la República (June 2020 to December 2021).

³⁸ To establish these hypothetical trajectories, an autoregressive vector (ARV) model was used for the quality indicator by risk for each one of the types of portfolios.

Graph 3.2
Return on Assets (ROA)



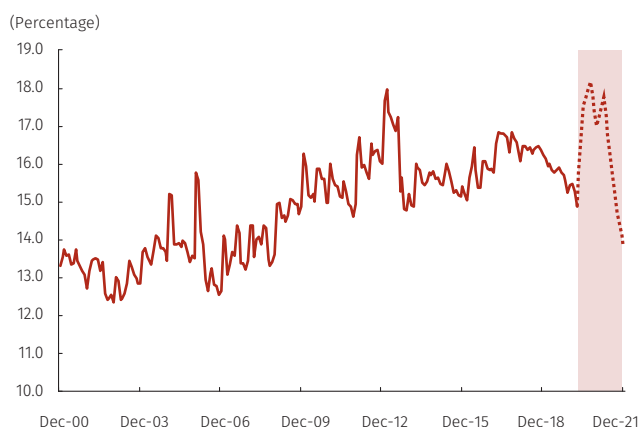
Source: Office of the Financial Superintendent of Colombia (up to March 2020); calculations by Banco de la República (June 2020 to December 2021).

Graph 3.3
Real Annual Growth of the Loan Portfolio



Source: Office of the Financial Superintendent of Colombia (up to March 2020); calculations by Banco de la República (June 2020 to December 2021).

Graph 3.4
Capital Adequacy Ratio



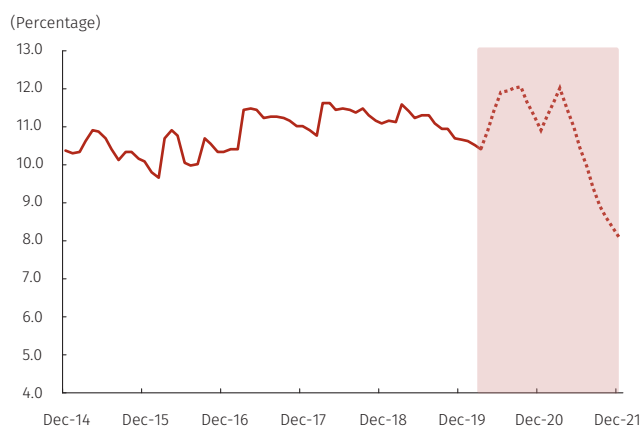
Source: Office of the Financial Superintendent of Colombia (up to March 2020); calculations by Banco de la República (June 2020 to December 2021).

3.2 Results

The trajectories of the aggregate CI variables would perform in the adverse scenario in line with what is shown in Graphs 3.2 to 3.5. Given the severity of the macroeconomic scenario under consideration, the results indicate that, in terms of profitability, ROA would reach negative values starting in 2021 with levels that have not been seen since the financial crisis in the late 1990s. The minimum ROA in the stressed scenario would be seen in the third quarter of 2021 (-2.9%, Graph 3.2). With regard to real loan portfolio growth, there would be greater contractions than those registered in the crisis of the 1990s (Graph 3.3). Given the sharp slowdown in the loan portfolio, the aggregate capital and core tier I adequacy ratios would continue to rise during 2020 and would only decline going into 2021. This reflects the equity resilience of credit institutions in the short term under an extremely adverse scenario. However, these indicators would remain above the regulatory minimums over the analysis horizon (Graph 3.4 and 3.5).

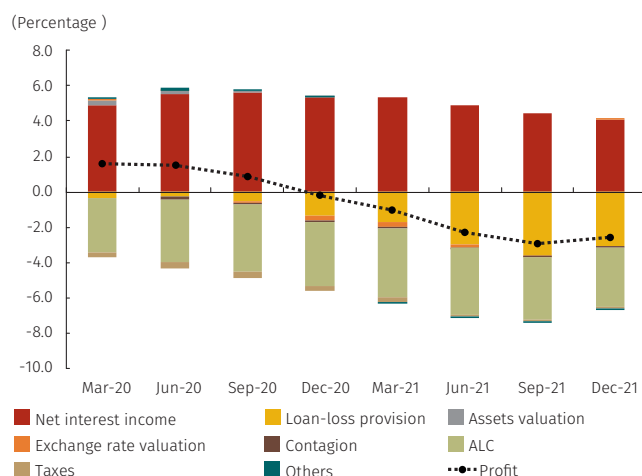
Graph 3.6 shows the breakdown of ROA. The increase in expenditure on loan-loss provisions is the item that mostly explains the decline in the profitability of CIs over the period under analysis. The severity of this item would continue to accumulate until it reaches its greatest impact

Graph 3.5
Core Equity Tier I Adequacy Ratio



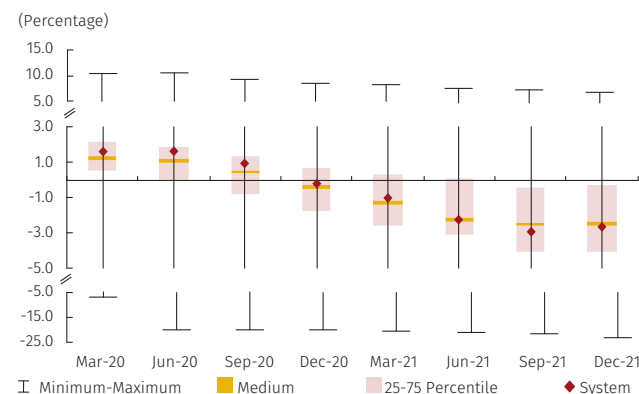
Source: Office of the Financial Superintendent of Colombia (up to March 2020); calculations by Banco de la República (June 2020 to December 2021).

Graph 3.6.
Breakdown of ROA



Nota: los componentes del ROA se presentan anualizados.
 Source: Superintendencia Financiera de Colombia (hasta marzo de 2020); cálculos del Banco de la República (junio de 2020 a diciembre de 2021).

Graph 3.7.
Distribution of ROA



Source: Office of the Financial Superintendent of Colombia (up to March 2020); calculations by Banco de la República (June 2020 to December 2021).

in the third quarter of 2021. Lower net interest income is the second largest contributor to the decline in profitability over the horizon. This is a consequence of the increases in lending and borrowing interest rates combined with the materialization of credit risk. The areas of investment valuation, foreign exchange risk, and contagion would exhibit limited magnitudes.

Finally, even though the aggregate indicators of the CIs would present moderate levels of deterioration with respect to the regulatory requirements, individual results are mixed. In terms of ROA, note that by the end of 2020 half of the CIs would register losses, and this group of institutions would exceed 75% of the CIs by September 2021 (Graph 3.7).

Regarding capital adequacy, some institutions (which account for 25.4% of the total loan portfolio) would drop below the regulatory limit (Graph 3.8). Based on these results, to keep the entire financial system solvent³⁹ over the horizon of the stress exercise, a capital injection of COP 5.7 t would be required throughout the seven simulated quarters.

3.3 Final Comments

The results of the exercise suggest that the majority of the CIs would be able to keep their aggregate indicators of total and core capital adequacy above the regulatory minimum in spite of the severity of the macroeconomic scenario and the resulting reduction in their profitability and ability to grant credit. That reflects the short-term resilience of the institutions in the event of a macroeconomic scenario like the one described.

As discussed before, the stress test presented in this section is built on the basis of a set of assumptions that, by incorporating various shocks that occur simultaneously, reflects an adverse situation and one that is very unlikely for the Colombian economy. For one thing, it assumes that the economic authorities do not take action in response

³⁹ This means that the capital adequacy for each one of the CIs remains above 9%, core equity tier I adequacy is above 4.5%, and a ratio between equity and subscribed capital is above 50%.

to the deterioration of the CIs' financial situation. At the same time, the institutions' shareholders are presumed to be excessively passive to the degree that they only capitalize the profits without taking any other kind of strategic initiative in order to face the financial stress.⁴⁰ If, any one of these assumptions is eliminated, the size of the losses to the system would be expected to be cushioned so that the impact of the adverse scenario would presumably be smaller. Last of all, the starting point for the analysis is the individual capital adequacy ratio of financial institutions without considering consolidated capital adequacy ratios. Therefore, the consolidated results may differ from those presented here.

⁴⁰ Specifically, the shareholders do not inject outside capital into the business operation, they do not seek synergies or mergers between the entities, nor manage them in order to increase the efficiency of their operations.

Box 4

Sustainable Finances: Climate Change and Financial Stability

Felipe Clavijo Ramírez
Santiago Gamba Santamaría
Mariana Escobar Uribe*

The concept of *sustainable finance* is used to refer to financing and institutional and market arrangements that contribute to strong, balanced, and inclusive growth by means of direct and indirect support to the achievement of the Sustainable Development Goals (SDG; SFGS, 2018). The changes needed to meet the goals set by the SDG are enormous and require a massive reallocation of both public and private capital, which presents significant risks and opportunities. The United Nations has calculated that between at least USD 5 and USD 7 trillion will be needed annually in certain industries and sectors until 2030 to be able to reach the SDG (UN, 2019). Meanwhile, the International Energy Agency (IEA) estimates that the energy sector alone requires around USD 3.5 trillion in investment in the coming decades to be able to make the transition to a low-carbon economy (IEA, 2017). These required amounts could increase considerably if all the industries or sectors are added together, but this could likewise increase business opportunities for the financial sector.

Taking this into consideration, one of the strategies developed by the financial system is related to the development of products and services for channeling resources to projects associated with SDG. Many banks have created business units to serve the poorest population, designed instruments to enhance impact financing, and generated strategies to support environmental goals for countries and businesses. Nevertheless, these strategies will turn out to be insufficient if financial institutions and investors

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do not develop systems that allow them to identify, measure, and manage environmental and social impacts of their businesses. The first ones to identify this need were banks. Through the Equator Principles, the major global banks established a series of voluntary guidelines for the management of environmental and social risks of certain transactions such as the financing of mega-projects or infrastructure projects. These guidelines were followed by the Principles for Responsible Investment, a United Nations-led initiative that seeks to ensure that institutional investors and other asset managers include environmental, social and corporate governance¹ (ESG) issues in their investment decision-making processes.²

Recently, discussions among financial institutions and authorities on environmental issues have focused on climate change (CC). There is concern about not only the impact that society has on the environment, and especially global warming, but also about how the change in temperature can affect people's lives, the functioning of companies, and financial intermediaries' and investors' businesses. The concern increases when one considers that only now a consensus is being built on how to measure the economic costs of CC and that its economic impact will not materialize within the time horizon of the traditional economic analysis and will accelerate, though unevenly, across countries/regions.

1. Climate change: physical and transition risks

Increased global recognition of the impact of CC on the financial system has been achieved through four major events. First, climate finance was put on the global agenda in 2012 by the G20 Green Finance Study Group and was subject of analysis by the Financial Stability Board (FSB) Working Group on Climate-Related Financial Disclosures (TCFD) which developed a series of guidelines for climate risk reporting as an effective tool for proper valuation and efficient capital allocation. Second, the Paris Agreement, reached in 2015 by the members of the United Nations Framework Convention on Climate Change, recognized the need for financial capital flows to be consistent with the goal of reducing greenhouse gas emissions. Third, the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) was created in December 2017. This advocates for the implementation of environmental

1 Environmental issues are the ones related to topics such as air pollution, water use, waste management and, of course, climate change. Social issues are related to human rights, child labor, management of human talent and labor relations. Corporate Governance issues are related to anti-corruption policies and executive compensation, etc. For a consolidated list see the PRI website www.unpri.org

2 The strategy used to respond to the principles of responsible investment or to have a responsible investment strategy may vary. Institutional investors may have an exclusion list, a mandate to make impact investments, develop thematic products or those based on best-in-class investment, or may simply include analyzing ESG issues in the strategic and tactical asset selection and allocation processes.

risk management processes in the financial system and the mobilization of capital to support the transition to a sustainable economy. Finally, in April 2019, more than fifty finance ministers made a commitment to take steps to support green financial sectors by subscribing to the principles shared by the Coalition of Finance Ministers for Climate Action (“the Coalition”).

Two main channels through which CC can affect the stability of the financial system have been identified in literature: physical risks and transition risks (Bolton *et al.*, 2020; FMI, 2019). Physical risks are represented by the economic costs and financial losses derived from the increased occurrence and severity of natural disasters (*e.g.*, hurricanes, floods, frosts, and droughts), and from the effects of permanent changes in weather patterns (*e.g.*, rising sea and ocean levels). As these natural phenomena increase, uninsured losses, that according to the International Association of Insurance Supervisors (IAIS) account for 70% of weather-related losses (IAIS, 2018), could threaten financial solvency of households, firms, and governments and, consequently, of financial institutions. In addition, the increase in claims may push insurers and reinsurers into situations where they become fragile. Therefore, exposure of financial institutions to climate risks could lead them to face situations where they do not have sufficient capital to absorb losses.

Transition risks, in turn, are associated with the uncertain financial impacts that would probably be produced as a result of the transition to a low-carbon economy, notably including abrupt changes derived from regulatory modifications, public policies, technological innovations, and the emergence of new social norms. Green taxes and subsidies, the use of efficient and less expensive technologies for the exploitation of renewable energy as well as more conscious consumers will affect the demand for products and services that are dependent on non-renewable environmental resources or have high carbon emissions. This change in demand affects the financial system when institutions in it are highly exposed to companies that lose value either because of increases in their costs, a reduction in their income, or a decline in expected cash flow due to their inability to innovate and seek an organized transformation aligned with a more sustainable economy.

Usually, physical and transition risks are analyzed independently. Nevertheless, they are interconnected and must be understood as part of the same framework. Radical and immediate measures to mitigate CC will probably increase the materialization of transition risks but limit the physical ones. In contrast, weak and delayed policies could result in a sharp and potentially catastrophic materialization of physical risks without completely eliminating transition ones. However, belatedly implementing strategies and then, taking radical action in an effort to catch up with global standards or avert an imminent catastrophe could result in high physical and transitional risks.

Physical and transition risks translate into financial risks through the following mechanisms:

- **Credit Risk.** The risks associated with CC could cause a deterioration in debtors’ ability to pay their obligations, which in turn would increase default probabilities and, consequently, losses given default. In addition, the potential devaluation of assets used as collateral (*e.g.*, real estate) might also contribute to increased credit risk.
- **Market Risk.** In a scenario of abrupt transition to a sustainable economy, some financial assets could become less attractive to investors and, therefore, would experience devaluations which could lead to fire sales of these assets.
- **Liquidity Risk.** Banks highly exposed to credit and market risks affected by CC may experience financing problems in the short term, which could potentially lead them to default on their obligations.
- **Operational Risk.** Those financial institutions whose offices or information centers are affected by the materialization of physical risks will be likely to experience problems in carrying out their operational procedures, and this could translate into reputational risk.

2. What is the role of central banks and supervisory agencies in the transition to a sustainable economy?

Bolton *et al.* (2020) call on central banks and financial supervisors to contribute to the transition to a carbon-free economy by leading the change through their own example. These institutions can begin to integrate ESG factors into their operations. In the particular case of central banks, they recommend including “green” financial instruments as an additional tool in both the management of their international reserves and the set of assets they receive as collateral when implementing monetary policy. Such a practice could encourage the purchase of these kind of assets by all private financial institutions and thus contribute to the “greening” of the financial system.

However, the most important role of financial system regulators lies in implementing policies that allow financial institutions to mitigate the adverse effects of risks associated with CC. In this respect, it is crucial that they advocate for the integration of these risks into financial stability monitoring and micro-supervision through four mechanisms (Bolton *et al.*, 2020): 1) ensure that financial institutions incorporate CC risks into their long-term strategies, their risk management procedures, and their investment portfolios. Among the policies that could be applied to meet this goal, the inclusion of a “brown penalty factor”

stands out.³ This measure would increase capital requirements for entities that are highly exposed to sectors that extract fossil fuels or use them intensively. 2) Require supervised institutions to systematically and transparently disclose their level of exposure to environmental risks. 3) Develop and integrate environmental scenarios into stress tests in order to ensure that institutions and the financial system as a whole are resilient in the event of risks related to CC materializing. 4) Explore non-traditional methodologies that make it possible to understand and quantify the effects of climate risks such as disequilibrium models, sensitivity analyses, and case studies.

In order to lay the foundations for the proper implementation of the above policies, regulators should develop a taxonomy that allows all actors involved to identify which assets are “green” and which are “brown.” In addition, given that traditional financial risk management methodologies are, to date, generally based on the extrapolation of historical patterns, and that the horizon over which the physical impacts of CC might materialize is much longer than the decision horizons of investors and policy makers (discordance known as tragedy of the horizon), central banks and supervisors face the challenge of developing new approaches that fit the time horizon of CC risks, their level of uncertainty, and the impossibility of looking backwards since these risks are just beginning to materialize and are still at a low level of intensity.

3. What is the state of the art in Colombia?

For the financial supervisor and the central bank, CC and environmental issues are considered important sources of risk for the financial sector. With regard to physical risks, the National Planning Department (DNP in Spanish), through the National Climate Change System (Sisclima), has reported that the country has

[...] one of the highest levels of catastrophic risk with annual losses in excess of USD 3.3 billion expected from multiple hazards (earthquakes, floods, cyclonic winds, storm surges and tsunamis) and is among the 20 most flood-prone emerging countries [...] The distribution of the exposure level shows that 36% of its territory has a high potential for hydrometeorological events such as floods and landslides (DNP, 2018).

In fact, some risks have already materialized and added significant costs for the country, its productivity, and the financial system. According to the DNP, the financial costs

of the effects of *La Niña* in 2010-2011 and *El Niño* in 2015-2016 reached trillions of pesos, and in the case of the former, insurers reported the payment of COP 771 billion in claims, a value that represented only 7.3% of the total cost of the emergency (Fasecolda, 2011).

The country is not immune to transitions risks either. In addition to having targets of 20% to 30% reductions in CO₂ emissions stated in its national defined contributions (NDC), Colombia has designed economic instruments and regulatory responses, in recent years, to address the impacts of climate change. One of the main economic instruments was implemented in 2016 within the framework of the Structural Tax Reform where a carbon tax of USD 5 per ton of CO₂ and an income tax exemption for fifteen years for projects related to clean energy development were included, tariffs were eliminated, and VAT was reduced from 19% to 5.0% for electric and hybrid vehicles. Likewise, the Ministry of Mines and Energy has been preparing the sector for a possible energy transition. In 2019, the country not only reiterated its commitment to developing unconventional, renewable energy sources and to increasing its installed capacity 50 times going from less than 50 megawatts in 2018 to 2,500 megawatts in 2022,⁴ but also publicly stated that Colombia might become carbon neutral by 2050.⁵

In this respect, the Office of the Financial Superintendent of Colombia (FSC), the supervising authority of the financial system, has a work plan that seeks, on the one hand, to reduce barriers/obstacles to the mobilization of resources towards projects that contribute to sustainable development, or, to be specific, the mitigation of and adaptation to CC; and on the other, support the management of risks derived from it. In 2018, the FSC sent a survey with External Circular Letter 67 to different entities under supervision to identify how they were addressing environmental, and especially climate, issues. The results showed that, in spite of the progress made by banks under the voluntary initiative known as the “Green Protocol,” the financial system has not yet strategically integrated these risks. To begin with, few entities have carried out analyses of their business exposure to the risks arising from CC. The survey revealed that 50% of the banking institutions, 73% of the trust companies and 66% of the life insurance companies and the pension fund management companies reported that they had not identified tangible financial impacts from CC. Only in the case of the general insurance companies have the majority thought about the risks of CC as entailing a material financial impact. The results of this survey were published in a report where the FSC’s official

3 In global discussions (or international jargon), the “brown” assets or industries are those that are carbon intensive (*i.e.*, refineries, carbon mines). In this context, “green” assets or industries, which are characterized by positive impacts on the environment are also spoken of (*i.e.*, renewable energy projects, buildings that are highly energy-efficient). For more examples see: <https://www.climatebonds.net/files/reports/cbi-greening-the-financial-system-20191016.pdf>

4 See <https://www.minenergia.gov.co/en/historico-de-noticias?idNoticia=24167852>

5 See <https://id.presidencia.gov.co/Paginas/prensa/2019/Intervencion-del-Presidente-Ivan-Duque-en-la-Cumbre-sobre-el-Cambio-Climatico-en-Naciones-Unidas-190923.aspx>

position and the work plan on how to have a more sustainable financial system were also established.⁶

In 2019, FSC decided to align itself with international supervisory authorities and start creating the conditions for the “greening” of the Colombian financial system. To this end, it is working on the following aspects:

First, establishing a common definition or standardization of “green” definitions based on international taxonomies.

Taxonomy is a system for classifying economic activities and their respective technologies and asset conditions that are eligible to be financed with “green” financial instruments. The development of this rating mechanism not only provides clarity and reduces costs for issuers and investors, but also allows to close data gaps and, possibly, to implement public, regulatory, and supervisory policy intervention. This taxonomy will be instrumented through a good-practice guide that will adjust the Colombian regulation to the best international practices for the issuance of thematic instruments.

Second, building knowledge in the industry, especially for those entities that were further behind in the implementation of policies and systems for environmental risk management.

In this respect, the development of good practice guides for institutional investors and, in particular, for pension fund managers was prioritized. These guidelines establish the supervisor’s expectation with respect to integrating ESG issues into investment decision making processes. While these guidelines are generally applied to environmental issues, emphasis is placed on physical and, especially, transitional risks.

Third, promoting greater transparency and disclosure in accordance with what is stipulated in the TCFD

in order to have information related to the risks and opportunities derived from CC and to support the financial system in understanding its impact on the markets. Although Colombia has widely adopted the issuers’ sustainability reports,⁷ in many cases, the information is not comparable and there is no external verification. In this respect, in order to consolidate potential systems for integrating ESG issues into investment decisions, the FSC seeks to standardize key indicators and baseline environmental data, thus improving their quality and comparability.

Finally, developing new analytical and monitoring approaches based on prospective scenario analysis.

⁶ The results of the survey are available at:

<https://www.superfinanciera.gov.co/descargas/institucional/pubFile1036183/20190307riesgosyopportunidadescambioclimatico.pdf>

⁷ According to the Colombian Stock Exchange (BVC), 27 of 32 issuers have reports that follow the standards in the Global Reporting Initiative (GRI) standards. Information available at: <https://bvcsostenible.bvc.com.co/contenido/41>

allows to measure the impact of climate-related risks on the stability of the system and to identify the transmission channels of climate-related risks to the financial system more precisely. For the development and testing of these new tools, it is necessary to: first, identify the main impacts of CC on the financial system; second, measure the impact of climate-related risks on the stability of the system; and third, identify the channels for transmitting these risks to the financial system more accurately. The results of this first exercise will make it possible to identify areas where more information, further research, and new tests are required.

Banco de la República (the Central Bank of Colombia, BR), in turn, has long reiterated its corporate commitment to sustainable environmental management, and this has been embodied in the 2011, 2013, and 2015 *Sustainability Reports*. The first of these states that “[...] we work based on three fundamental pillars: managing resources effectively, generating environmental knowledge that adds value, and reinforcing society’s environmental culture.” In developing the above, the Bank’s recent Strategic Plans have contemplated: replacement of electrical equipment, implementation of sustainable models in new installations to reduce water and energy consumption, adequate waste management, monitoring of discharges and atmospheric emissions, environmentally sustainable management of banknotes taken out of circulation, etc. In the efficient management of resources, the entity has sought to prevent and control environmental impact at the source where they are generated. The Bank’s achievements serve as an example to inspire other public and private organizations.

In addition to the above, the BR announced on November 22, 2019⁸ the assembly of a team made up of researchers from the Office of the Technical Governor and the regional branches in order to work on the development of an analytical framework to assess climate-related risks, incorporate various climate impact scenarios into macroeconomic models, and work out on the understanding of the transmission channels and feedback loops of such risks within the economy and on the financial system. By establishing this team, the institution, in turn, intends to contribute to the discussion on the design of public policies that are credible and consistent with a structural and long-term perspective and to arrange coordination and collaboration plans with other state entities (especially the Ministry of the Treasury and Public Credit, the Ministry of the Environment, the National Planning Department and the Office of the Financial Superintendent) as well as with academia and the private sector. They also announced that they will encourage the incorporation of the country’s Economic Research Network to this initiative. Finally, in the same statement, they said the entity would apply for admission to NGFS, and this was approved in December 2019.

⁸ The press release published by *Banco de la República* is available at: <https://www.banrep.gov.co/es/el-banco-republica-reforzara-su-investigacion-para-evaluar-el-impacto-del-cambio-climatico-economia>

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04

Financial Regulation

Hereafter, Table 4.1 presents the main legal changes with respect to financial regulation between September 2019 and March 2020.⁴¹ Regulations marked with an asterisk have an additional explanation at the end of the table.

Table 4.1
Compendium of Main Laws Issued in the Area of Financial Regulation

Entity	Rule		Topic	Date of issue
BDBR	Changes to External Resolution 2/2015 and External Resolution 1/2018*	Measures to ensure liquidity	In the context of extreme global volatility, the BDBR adopted changes in the corresponding regulations to ensure the liquidity of the economy in both pesos and dollars. This was to facilitate the flow of sufficient credit funds and the smooth functioning of the payment system and the financial markets.	March, April, and May 2020
	External Circular 020*	CE solvency ratio	Gives instructions relating to the solvency ratio and other equity requirements of credit institutions.	9/25/2019
SFC	External Circular 022	Instructions related to Act 1908/2018	Act 1908/2018 empowered FSC to guarantee access to the financial system for convicted members of armed groups or organized crime who have been granted alternatives to imprisonment. It also ensured that the entities it monitors comply with these provisions. Consequently, the FSC issued this external circular in order to give special instructions as to how these supervised entities must handle the case when they have this type of clients.	9/25/2019
	External Circular 023	Modifies the FCS forms for Agricultural Development securities, classes A and B	In consideration of the provisions of the BDBR's External Resolution 6/2019, this external circular changes forms 518, "Reassessment of mandatory investments in Agricultural Development securities, classes A and B" and 462, "Report on primary investment in Agricultural Development securities" in order to register investments in Agricultural Development securities (TDA), classes A and B, separately in both BBI and DTF.	10/1/2019

⁴¹ Some specific changes took place in April 2020.

Table 4.1 (continued)
Compendium of Main Laws Issued in the Area of Financial Regulation

Entity	Rule	Topic	Date of issue	
	External Circular 024	Temporary Liquidity Support (TLS)	Creates Form 401, "Credit Rating Report on the Loan Portfolio Delivered and Endorsed to <i>Banco de la República</i> – TLS" and Form 402, "Report on Shareholders and Associates with a greater than 1.0% Share of the Capital Stock of the Credit Establishment as well as of its Directors and Related Persons and of Entities that are affiliates, subsidiaries or parent companies." These forms must be reported by Cis when a TLS is accessed.	10/1/2019
	External Circular 027*	Resolution mechanisms	The supervised entities must present resolution plans that are focused on furthering the stability of the financial system and preventing a systemic impact in situations of material financial stress. Based on the above, instructions are given regarding resolution mechanisms.	11/27/2019
	External Circular 030*	Methodology for the identification of systemically important entities (SIE)	This presents the methodology for identifying SIEs which takes the Basel 2018 Committee's proposal into account. The list of CIs identified as SIEs is published through the FSC's Circular Letter 088.	12/12/2019
	External Circular 031	Financial instruments	In order to foster the development of the derivative financial instruments (DFI) and structured product (SP) market through the adoption of better international standards, the formula for calculating the credit exposure of the transactions with DFI and SP is updated to incorporate the recognition of the guarantees granted and/or other factors that mitigate credit risk. Instructions are also given in relation to risk management and the definition and minimum contents of the contract for carrying out transactions with DFIs in the over-the-counter market (OTC).	2/19/2019
	External Circular 002*	Credit institutions' liquidity risk	In order to establish guidelines that allow CIs to get access to sources of liquidity and ensure that liquidity risk management is in line with the regulations issued by <i>Banco de la República</i> with respect to TLS, the CIs must keep dematerialized or immaterialized promissory notes, which represent at least the maximum quota for TLS defined by the Bank, dematerialized or immaterialized.	2/13/2020
SFC	External Circular 003	Financial services	In December 2019, Act 2009 was enacted whereby entities authorized to collect funds from the public and that charge management fees for savings accounts, debit cards and credit cards must guarantee a package of financial products and/or services on a monthly basis without additional cost. This includes products such as withdrawals on the proprietary banking network, advances at proprietary ATMs, booklets or passbooks for savings accounts, etc. Given the above, this external circular gives instructions related to the disclosure to financial consumers of this minimum package of products and/or services.	2/28/2020
	External Circular 004	Trading and valuation of securities	This gives instructions related to the trading and valuation of participating securities issued by closed CIFs, private capital funds, autonomous equities, and/or in securitization processes, registered on the National Registry of Securities and Issuers (RNVE in Spanish) and listed on stock exchanges and/or stock trading systems. This is in order to recognize the dynamic nature involved in trading these securities.	3/6/2020
	External Circular 006	Over-the-counter Market	In order to guarantee the continuity of transactions on the variable income market in Colombia, and to guarantee the right that stock market investors have to move ahead on transactions to sell the securities they own, instructions are given with respect to the authorization of acquisition and/or divestiture of stock registered on over-the-counter market stock exchanges. In particular, SBFs are authorized to move ahead on the management and execution of their clients' orders for the cash purchase and/or sale of registered shares.	3/13/2020
	External Circular 007*	Prudential instructions	It gives prudential instructions to mitigate the effects derived from the economic conditions of the financial market and the health emergency declared by the National Government. Particularly, it enacts the measure to establish grace periods for the payment of loans.	3/17/2020
	External Circular 008	Reinforcement operational risk management	This gives instructions related to the reinforcement of operational risk management in the face of events arising from the connection between the financial market and the health emergency situations. Among these instructions are the establishment of short- and medium-term action plans: anticipating that the situation could last at least 120 days; informing the FSC about the materialization of risks that affect the implementation of these plans; strengthening the technological infrastructure; envisioning possible increases in the use of cash, and adopting measures to guarantee its distribution and collection.	3/17/2020

Table 4.1 (continued)
Compendium of Main Laws Issued in the Area of Financial Regulation

Entity	Rule		Topic	Date of issue
SFC	External Circular 011*	Liquidity Risk	It gives instructions regarding complementary measures to reinforce liquidity and operational risk management in the securities market.	3/19/2020
	External Circular 014	Information on credit conditions	In accordance with the provisions of External Circular 007/2020, instructions are given regarding the minimum details regarding modifications made to credit conditions and basic information that financial consumers need to make an informed decision. This includes not increasing the interest rate, not charging interest on interest, measures on the securities and payment of the installments and duly informing the consumer about the changes in the conditions for loans.	3/30/2020
MTPC	Decree 1997	Economic Solidarity Coordination Commission	Creates the Intersectoral Coordination Commission of the Economic Solidarity Sub-sector that provides savings and credit services (CCAC) as a technical body for coordination, analysis and evaluation of situations relevant to the stability of economic solidarity organizations that are part of the savings and credit sub-sector. The CCAC seeks to optimize the monitoring of the sub-sector and the adoption of such actions that each entity that participates within the commission should undertake.	11/1/2019
	Resolution 4933	Market Makers	Designates the market makers in the Public Debt Securities Market Makers Program for the 2020 period.	1/13/2020
	Decree 222	Correspondents, savings accounts, and electronic deposits.	Act 1955/2019, through which the 2018-2022 National Development Plan was enacted, orders the National Government to regulate the way in which microcredits are extended through financial sector entities as an instrument for formalizing the generation of employment and to combat "drop-by-drop" (in Spanish, "gota a gota"), or "pay-as-you-go loans." Taking this into account, Decree 222 amends Decree 2555/2010 by providing guidelines on the institutions that may offer small and ordinary deposits as well as the characteristics of these deposits. Instructions are also given on the granting, follow-up, and reporting to risk centers on low-value consumer loans, etc.	2/17/2020
BVC	Decree 466	National Guarantee Fund	Amends Decree 2555/2010 with respect to the National Guarantee Fund (FNG) The minimum capital adequacy ratio for the FNG is changed from 11% to 9%, instructions are given regarding deductions from technical assets, classification and weighting of assets and contingencies, structured products, and targeting of guarantees granted by the FNG. Likewise, Decree 492/2020 establishes measures for the strengthening of the FNG and other measures regarding resources are enacted.	3/23/2020
	Decree 468	Findeter and Bancoldex	Authorizes Findeter and Bancoldex to carry out new transactions within the framework of the Economic, Social and Ecological Emergency. Formerly these two entities could grant direct loans with a compensated rate ^{a/} in order to finance projects and activities in the eligible sectors to avoid the crisis or prevent the extension of its effects within national territory.	3/23/2020
BVC	BVC Regulatory Bulletin 027	BVC General Regulations	This amends several articles of the BVC General Regulations to provide that cash and temporary transfer of securities (TTV) transactions undertaken the BVC system shall be cleared and settled at the CCRC.	10/16/2019
	BVC Regulatory Bulletin 029	BVC General Regulations	This sets out the operating procedure so that the SBF can, if they so wish, replace the 182,000 ordinary shares of the BVC with any of the other mandatory investments required to operate the BVC. ^{b/} The requirement to establish and maintain mandatory investments will be enforceable only until cash and TTS transactions begin to be cleared and settled through the CCRC.	10/31/2019
	Regulations MEC 014	REPO and TTS risk model criteria	This modifies the single circular of the MEC ^{c/} related to the criteria of the risk model and the eligibility requirements for sell/buy-backs, REPO, and TTS.	3/12/2020
	MEC Regulations 017	Purchase and sale transactions on the secondary CD market	This changes the MEC single circular regarding the possibility of carrying out purchase and sales transactions on the secondary CD market in the CDTs sessions. The BVC will enable secondary market trading of CDs in the MEC system through a trading session that will allow the disclosure of bids prior to the generation of a trade match.	3/17/2020

a/ According to Decree 4808/2010, the final interest rate for loans with a compensated rate will be as much as the DTF plus one percent per quarter in advance (DTF+1% q. a.) with periods of up to twelve years, and up to two years of grace.

b/ The mandatory investments are: 182,000 BVC ordinary shares (BOS) or TES in an amount equal to the closing price of 182,000 BOS or money deposited in an account designated by BVC in an amount equal to the closing price of 182,000 BOS.

c/ MEC refers to the Centralized System of Trading and Registration Operations (MEC: Mercado Electrónico Colombiano). In this system, trading and registration of securities other than shares and bonds that are convertible into shares is carried out.

Table 4.1 (continued)
Compendium of Main Laws Issued in the Area of Financial Regulation

Entity	Rule	Topic	Date of issue	
BVC	BVC Newsletter 091	Transactions for CIF	As part of the improvements included within the variable income clearing and settlement project through the CCRC and, in order to generate benefits within the internal processes of the BVC's affiliates, the process by which each new CIF manager or custodian will be able to have an independent CUD ^{d/} account to carry out their operations through the custodian for variable income transactions as it currently takes place for fixed income transactions is presented.	3/25/2020
	BVC Newsletter 096	Variable Income TTS Registry	The main technological and operational adjustments implemented by the BVC for intermediaries that decide to make use of the OTC variable income TTS registration mechanism to make loans on variable income securities in this market, which will be enabled by Deceval, are explained.	3/30/2020
Ministry of Agriculture	Decree 211/2020.	Agricultural insurance	Act 69/1993 establishes agricultural insurance in Colombia as an instrument to encourage and protect food production, seek economic improvement in the agricultural sector, and further the economic structuring of the agricultural sector, etc. Thus, this decree defines the coverage of agricultural insurance, the indemnity when such insurance is offered under the category of parametric insurance, ^{e/} and the budgetary appropriations and expenditure frameworks of the insurance.	2/14/2020

d/ Deposit Account System. This is the large-value payment system managed and operated by *Banco de la República*.

e/ Parametric insurance, unlike traditional insurance, uses a parameter or index to determine the occurrence of a claim. The security is only activated if a parameter or index is met. Sources: FSC, MHCP, BVC, and the Ministry of Agriculture.

Decisions made by the BDBR in March, April, and May 2020: measures to ensure the liquidity of the financial system.

In the context of extreme global volatility, the following changes were established: i) changes to the regulation on the international exchange system given by External Resolution 01/2018; ii) changes to the rules for *Banco de la República's* intervention in the foreign exchange market given by External Regulatory Circular DOAM-143; iii) changes to the rules of operation for regulating the liquidity of the economy and facilitating the normal functioning of the payment system given by External Resolution 02/2015; and iii) changes to the standards for risk control in open market operations and liquidity operations for the normal functioning of the payment system given by External Regulatory Circular DEFI-354.

Changes to External Resolution 01/2018 and External Regulatory Circular DOAM-143:

- *Banco de la República* was allowed to intervene in the foreign exchange market by selling foreign currency through financial compliance forward contracts at market rates through the auction mechanism. Previously, they were only allowed to do this by buying or selling currencies at market rates, selling put or call options at market rates, and selling currencies through FX Swap contracts.
- Pension and severance fund management companies were included on the list of entities from or to which the Bank may buy or sell currencies at spot or future prices. This is done to regulate the liquidity of the financial market and the normal functioning of internal and external payments in the economy, avoid undesirable fluctuations in the currency exchange rate, and accumulate and reduce international reserves.

- Pension and severance fund management companies, For the account of their own funds and for the account of third parties or managed funds, were included on the list of authorized agents for the sale of cash dollars through FX swap contracts.
- The following were authorized as exchange market intermediaries: Financiera de Desarrollo Territorial (Territorial Development Fund) (Findeter), Fondo para el Financiamiento del Sector Agropecuario (Financing Fund for the Agricultural Sector) (Finagro), Instituto Colombiano de Crédito Educativo y Estudios Técnicos en el Exterior (Colombian Institute for Loans for Educational and Technical Studies Abroad) (Ice-ter), Empresa Nacional Promotora del Desarrollo Territorial (National Company to Support Territorial Development) (ENTerritorio), and the National Savings Fund (FNA).⁴² Likewise, CIs, financial corporations, financing companies, financial cooperatives, the National Development Fund (FDN in Spanish), Bancoldex, and the SBF were allowed to carry out purchases and sales of foreign currency, of securities representing them, and the purchase and sale of balances in compensation accounts held by the BR. Previously they could only do so with the exchange market intermediaries.⁴³

Changes to External Resolution 02/2015 and External Regulatory Circular DEFI-354:

- *Banco de la República* was authorized to buy ordinary bonds and CDs issued by credit institutions with maturities that are lower than or equal to three calendar years (private debt securities).
- The inclusion of Solidarity Securities (SS)⁴⁴ on the list of securities eligible for open market operations (OMO) and liquidity transactions was authorized to enable the normal functioning of the payment system.
- Authorization was given to include securities with credit content from loan portfolio transactions (promissory notes) on the list of securities eligible as collateral for temporary expansion transactions.
- The following OMO placement agents (OPA) were authorized for *Banco de la República's* liquidity transactions specified below:
 - the SBF, trust companies (TC), and investment management companies (IMC), for the account of their own funds and accounts for third

⁴² This change was implemented before the context of the global volatility presented itself.

⁴³ This applies only to SBFs with technical equity equal to or greater than the minimum capital that must be accredited for the incorporation of a financing company. It also applies exclusively to the rest of the entities named that have technical assets below the minimum capital that must be accredited for the incorporation of a financial corporation.

⁴⁴ The SS are defined by MHCP decree 562/April 15, 2020. The SS will be freely negotiable internal demand public debt securities and will have a maturity of one year from the date of their issue. This may be partially or totally extended automatically for equal periods at the request of the MHCP until 2029. Likewise, they will be dematerialized instruments administered by *Banco de la República* through a trust management contract and their interests will be recognized annually.

parties or their managed funds, and insurance companies to carry out transitory expansion auctions with public and private debt securities, and a liquidity window with public debt securities.

- Pension and severance management companies (P and SMC) to get access to the temporary expansion auctions and the liquidity window with public debt securities through their proprietary and third-party accounts or their managed funds.
- The P and SMC to carry out auctions for the final purchase of private debt securities and temporary expansion auctions with private debt securities through their severance pay funds.
- The National Savings Fund (FNA), the National Development Fund (FDN), and FINAGRO have access to the temporary expansion auctions using public and private debt securities as well as to the auctions for the final purchase of private debt securities.
- Banking institutions, financial corporations, financing companies, financial cooperatives, the FNA, the FDN, and FINAGRO have access to temporary expansion auctions using securities from loan portfolio operations (promissory notes).
- The Securitization Companies were included on the list of OPA entities. Specifically, they were authorized to get access to temporary and final expansion auctions using public and private debt securities as well as to transitory (deposits) and definitive shrinkage transactions.

Tables 4.2 and 4.3 show the entities authorized as OPAs and the transactions each one is authorized to carry out. Table 4.3 compared to Table 4.2 reflects the abovementioned changes.

Table 4.2
OPA Entities and Authorized Transactions (as of February 2020)

Group	Entities authorized to act as OPA	Expansion		Contraction			RI	ROC
		Temporary	Definitive	Temporary		Definitive		
				Repos	Deposits			
	Banking institutions	X	X	X	X	X	X	X
	Investment banks	X	X	X	X	X	X	X
A	Finance companies	X	X	X	X	X	X	X
	Financial cooperatives	X	X	X	X	X	X	X
	Stock Brokerage Firms (SBF) that participate in the program of Market Creators for Public Debt Instruments (SCBM in the proprietary account).	X	X	X	X	X	X	
	Stock Brokerage Firms (SBF, in the proprietary account or third-party account, or managed funds)		X	X	X	X	X	
B	Trust Companies (TC, in the proprietary account or third-party account, or managed funds)		X	X	X	X	X	
	Investment Management Companies (IMC, in the proprietary account or third-party account, or managed funds)		X	X	X	X	X	

Table 4.2 (continued)
OPA Entities and Authorized Transactions (as of February 2020)

Group	Entities authorized to act as OPA	Expansion		Contraction			RI	ROC
		Temporary	Definitive	Temporary		Definitive		
				Repos	Deposits			
B	Financial Institution Guarantee Fund (Fogafin)		X	X	X	X	X	
	Financing Fund for the Agricultural Sector (Finagro)		X	X	X	X	X	
C	Territorial Development Fund (Findeter)		X		X	X		
	National Development Fund (FDN)		X		X	X		
	National Savings Fund (FNA)		X		X	X		
	Colombian Institute for Loans for Educational and Technical Studies Abroad (Icetex)		X		X	X		
	National Company to Support Territorial Development (Enterritorio)		X		X	X		
	Foreign Exchange and Financial Intermediation Special Service Companies (Sicfes)		X		X	X		
D	Central Counterparty Risk Clearinghouse (CCRC)						X	

Source: External Regulatory Circular DEFI-354

Table 4.3
OPA Entities and Authorized Operations (as of 8 May 2020)

Group	Institutions authorized to act as OPA	Expansion					Contraction			RI	ROC
		Public debt securities ^{a/}	Private debt securities ^{b/}	Temporary		Definitive		Temporary			
				Securities from loan portfolio transactions ^{c/}	Public debt securities ^{a/}	Private debt securities ^{b/}	Repos	Deposits			
	Banking institutions	X	X	X	X	X	X	X	X	X	X
	Investment banks	X	X	X	X	X	X	X	X	X	X
	Finance companies	X	X	X	X	X	X	X	X	X	X
	Financial cooperatives	X	X	X	X	X	X	X	X	X	X
	National Savings Fund (FNA)	X	X	X	X	X		X	X		
	National Development Fund S.A. (FDN)	X	X	X	X	X		X	X		
A	Financing Fund for the Agricultural Sector (Finagro)	X	X	X	X	X	X	X	X	X	
	Territorial Development Fund (Findeter)			X	X	X		X	X		
	Colombian Institute for Loans for Educational and Technical Studies Abroad (Icetex)			X	X	X		X	X		
	National Company to Support Territorial Development (Enterritorio)			X	X	X		X	X		

Table 4.3 (continued)
OPA Entities and Authorized Operations (as of 8 May 2020)

Group	Institutions authorized to act as OPA	Expansion					Contraction			RI	ROC
		Public debt securities ^{a/}	Temporary		Securities from loan portfolio transactions ^{c/}	Definitive		Temporary			
Private debt securities ^{b/}	Public debt securities ^{a/}		Private debt securities ^{b/}	Repos		Deposits					
	Stock Brokerage Firms (SBF, in the proprietary account or third-party account, or managed funds)	X	X		X	X	X	X	X	X	
	Trust Companies (TC, in the proprietary account or third-party account, or managed funds)	X	X		X	X	X	X	X	X	
	Investment Management Companies (IMC, in the proprietary account or third-party account, or managed funds)	X	X		X	X	X	X	X	X	
B	Pension and Severance Fund Management Companies (PSMC, in the proprietary account or third-party account, or managed funds)	X			X		X	X	X	X	
	Pension and Severance Fund Management Companies (PSMC, in the severance fund account)	X	X		X	X	X	X	X	X	
	Securitization Companies (SC)	X	X		X	X		X	X		
	Insurance entities	X	X		X	X		X	X		
	Financial Institution Guarantee Fund (Fogafin)				X	X	X	X	X	X	
	Capitalization Companies				X			X	X		
	Foreign Exchange and Financial Intermediation Special Service Companies (Sicfes)				X			X	X		
D	Central Counterparty Risk Clearinghouse (CCRC)									X	

* Public debt securities for temporary expansion and contraction operations: Security Bonds, Peace Bonds, Agricultural Development Securities (TDA in Spanish), Class B TES, SS, Foreign Debt Securities of the Nation, Securities issued by FOGAFIN, and Securities issued by *Banco de la República*.

** Private debt securities for temporary expansion and contraction operations: CD, commercial papers, securities from portfolio securitizations and public debt securities other than those listed in the previous paragraph.

*** Securities from loan portfolio transactions (promissory notes) denominated in legal currency (l/c) or in foreign currency (f/c) acquired upon the granting of loan portfolio credit or financial leasing transactions rated as class "A" based on the relevant standards of the FSC.

**** Public debt securities for definitive expansion and contraction operations: TDA, Class B TES, SS, Foreign Debt Securities of the Nation, and Securities issued by *Banco de la República*.

***** Private debt securities for definitive expansion and contraction operations: Ordinary bonds and CDs issued by CIs with a period to maturity of three calendar years or less.

Source: External Regulatory Circular DEF1-354

FSC External Circular 020/September 6, 2019: instructions relating to the capital adequacy margin and other equity requirements of credit institutions.

In conformity with decrees 1477/2018 and 1421/2019 of the Ministry of the Treasury and Public Credit (MHCP) in which guidelines for proper equity and appropriate equity requirements for operational risk are established, the Office of the Financial Superintendent of Colombia (FSC) issued External Circular 020 in order to adjust the instructions and related formats so that entities can comply with the new regulatory framework and report financial information related to their technical equity and capital adequacy margin.

In this respect, the Basic Accounting and Financial Circular (CBCF) created: i) chapter XIII-16:

- i. “Capital adequacy margin and other equity requirements” and its appendices 1 and 2 which indicate the criteria and parameters that institutions must observe in order to comply with the capital adequacy margins and other equity requirements established in Decree 2555/2010, and
- ii) Form 239 “Report on the capital adequacy margin information and other equity requirements and the declaration of the authority of the Capital Adequacy Margin Act” and its corresponding instructions, which will go into force as of January 1, 2021.

FSC External Circular 027/November 27, 2019: resolution mechanisms

In order to continue converging with the international standards with regards to the resolution frameworks that are applicable to supervised entities,⁴⁵ these entities must present resolution plans that are intended to further the stability of the financial system and prevent a systemic impact under situations of substantial financial stress.

Based on the above, through this circular, the FSC:

- i. Creates Basic Legal Circular (CBJ in Spanish), part I, title I, chapter VII related to resolution mechanisms to include that which refers to resolution plans and to transfer and incorporate the bridging bank instructions that were found in CBJ, part I, title I, chapter I, number 3. This new chapter specifies the supervised entities selected to present resolution plans, how material financial stress is defined, what the

⁴⁵ Decree 923/2018, which added title 6 to Decree 2555/2010, part 2, book 35, incorporated prudential regulation, provisions on prevention with strategies, resources, action guides, processes, and procedures that allow the respective entities to plan actions focused on achieving a rapid, orderly, and structured resolution when these entities face situations of material stress.

duties of the board of directors are, and other aspects related to the resolution plan.

With respect to the definition of tangible financial stress, according to the guidelines issued by the Intersectoral Resolution Commission (CIR in Spanish), it is understood that a supervised entity is in a situation of significant financial stress when the alternatives that are intended to achieve the recovery of the entity or the reestablishment of its normal functioning have been exhausted and one or more of the following situations arise: i) when the value of their assets is highly likely to be less than the value of their liabilities, ii) when they are very likely to default on their obligations, iii) when they are highly likely to fail to comply with the prudential rules governing their operation or iv) that they will not be able to continue to fulfill their purpose.

Regarding the obligations of the boards of directors of the supervised entities who are required to submit resolution plans, the external circular states that they must issue guidelines and instructions to the respective areas of the organization to ensure the preparation and submission of the resolution plan for approval. They must also approve and follow up on that plan.

Instructions on the preparation of the resolution plan, its contents, the procedures to be followed under this plan, and instructions on their review, adjustment, and updating are described in this circular. The FSC will inform the supervised entities selected to present these plans on an annual basis by the end of April.

It amends the provisions relating to the authorization of the establishment of the bridge bank so that, through this same act, its registration in the National Registry of Stock Market Agents (RNAME in Spanish) is authorized.

- ii. These modifications specify the incorporation of a bridge bank, its nature, duration, minimum requirements, how it should be incorporated, the transactions that this bridge bank may carry out, the people who its corporate governance will be made up of, and instructions on authorizing its activation.

Instructions are also given on the operation of the bridge bank, its supervision, and relevant adjustments in the regulations for the infrastructure providers for this type of bank.

FSC External Circular 030/December 12, 2019: methodology for identifying systemically important credit institutions

Appendix 3 to Chapter XIII-16 of the CBCF presents the methodology for the identification of CIs that are systemically important entities (SIE). CIs identified as SIEs based on this methodology will be systemic at both the individual and consolidated level.

The paragraph in Decree 1477/2018, article 2.1.1.4.3 that stipulates that the FSC shall publish the list of SIEs annually based on a methodology that contains, at a minimum, the following categories – size, interconnection, substitutability, and complexity – shall be taken into account to establish said methodology. The first step of the identification methodology is to define different indicators with weights that add up to 25% for each category as shown in Table 4.2.

Table 4.4.
Indicators by Category and their Weighting

Category (weighting)	Indicator	Indicator weighting (Percentage)
Size 25%	Total exposure calculated as the leverage value referred to in Decree 2555/2010, article 2.1.1.3.6	25
	Assets in the financial system	8,3
Interconnection (25%)	Liabilities in the financial system	8,3
	Securities in circulation	8,3
Substitutability (25%)	Payments settled and cleared through the payment system	12,5
	Volume traded	12,5
	Derivatives (OTC)	8,3
Complexity (25%)	3 rd level assets ^{a/}	8,3
	Investments that are tradable and available-for-sale	8,3

a/ Assets that do not have observable market information for valuation based on the reasonable value hierarchy of the International Financial Reporting Standard (IFRS).
Source: External Circular Appendix FSC 030

After identifying the value of the nine indicators presented in Table 4.4 using information as of June of each year, the systemcity score (SS) for each CI is calculated as follows:

For each CI, calculate:

$$PS = \left(\sum_{i=1}^9 \frac{x_i}{suma_i} * P_i \right) \times 100$$

Where:

x_i : value of indicator i

P_i : weighting of indicator i presented in Table 4.4

$suma_i = \sum_{b=1}^B x_{ib}$: sum of the values of indicator i of all CIs (B is the total number of CIs)

Once the SS is established for each CE, two criteria are calculated. The first criterion is to identify two groups of entities – SIEs and non-SIEs – using the Diana methodology for clustering. The second is to define whether each CI had a SS equal to or greater than 6.45%. If the entity meets both criteria, it is defined as an SIE. Finally, the FSC will publish the scores of CIs identified as SIEs by November at the latest of each year.

In addition to calculating the SS, this external circular specifies that the capital buffer for the CIs identified as SIE which are defined in Decree 2555/2010 applies to EISs identified in accordance with the methodology described above.

FSC External Circular 002/February 13, 2020: liquidity risk of credit institutions

In order to establish guidelines that allow CIs to access sources of liquidity and ensure that liquidity risk management is in line with the regulations issued by the Bank with respect to TLS, Chapter VI, sub-paragraph 6.1.2 in CBCF was amended. Specifically, a requirement was added regarding dematerialized promissory notes that must be met by CIs to mitigate liquidity risk.

According to this amendment, CIs must hold dematerialized or immaterialized promissory notes that represent at least the maximum quota for TLS as defined by the BR. CIs that do not have a portfolio that allows them to meet the minimum percentage must dematerialize or immaterialize promissory notes up to the percentage that is possible while taking the amount of their portfolio into account. Dematerialized or immaterialized promissory notes must meet the eligibility requirements established by the BR for access to the TLS.

They must also do a risk assessment at least once every six months to determine the need for this type of promissory note above the minimum established within their contingency plans. The results of the evaluation should be kept available to the FSC.

CIs must comply with these changes by December 31, 2020 at the latest.

FSC External Circular 007/March 17, 2020: prudent instructions in the situation generated by the health emergency

External Circular 007 gives the following temporary instructions related to the loans granted by the CIs.

- CIs must establish policies and procedures to identify clients who will be the subject of the expeditious application of special measures to deal with the situation generated by the health emergency. The CIs may establish grace periods that address the client's particular situation. For that period, these credits will retain the rating they had on February 29, 2020.
- For a period of 120 days, the entities must update the risk ratings of debtors that meet the following conditions: i) they are in arrears as a result of the situation and ii) whose loans had been modified or restructured as of February 29, 2020.

- When CIs establish the policies and procedures defined in the first point, they may take the following actions:
 - For the commercial and consumer loan portfolio: the ECs will be able to enter a non-accumulation stage of the individual countercyclical component (ICC)⁴⁶ without having to meet the other conditions for entering this phase. Likewise, CIs will not put the ICC together based on the loan portfolio that was set up starting March 17, 2020. After 120 calendar days, the FSC will establish a gradual regeneration mechanism that will make it possible to re-establish the ICC.
 - For the housing and microcredit portfolios: CIs may use the balance of the general loan-loss provisions to cover the net recovery provision expense⁴⁷ for a period of 120 calendar days starting from March 17, 2020. During these 120 days, no overall loan-loss provisions may be set up on the loan portfolio. Once this time is up, the FSC will establish a mechanism for gradual reconstruction that will make it possible to re-establish general loan-loss provisioning.

FSC External Circular 011/March 19, 2020: liquidity risk

External Circular Letter 011 gives the following three temporary instructions that tend to complement the measures for managing liquidity and operational risk:

- The CIF management companies may enter into final sales transactions, for the funds they manage, of CD instruments whose issuer or buyer is an entity related to the managed fund.
- The CIF management companies may invest, directly or indirectly, in shares of CIFs they administer or manage for up to 15% of the value of the fund. These new investments should be held for a period of at least 120 days given the temporary and contingent nature of the purpose for the investment. Investor assemblies may change the terms of such transactions.
- In order to ensure continuity in the provision of their services, securities and foreign exchange market intermediaries may:
 - Use their trading tables in remote sites or work at home. To do this, the current policies, procedures, and mechanisms defined by the entities must be adapted in such a way as to allow them to operate in safe conditions as well as to manage the risks associated with these scenarios.

⁴⁶ The ICC is a portion of individual portfolio loan-loss provisioning that is used to mitigate increases in credit risk.

⁴⁷ The net expenditure on loan-loss provisions for recovery is the difference between the expenditure on loan-loss provisions for recovery and their reimbursement when the risk of debtor non-payment decreases.

- Receive and execute orders and trades remotely using mechanisms, including e-mail, that allow them to ensure traceability and compliance with their obligation to execute their clients' trades in the best possible fashion.
- They must inform their customers about the channels they will enable to carry out the respective operations.

This Report was coordinated, edited, and designed by the Publishing Management Section of the Administrative Services Department, with font Fira Sans, 10.5.

Printed by Nomos

June 2020

