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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

OPA: OMO Placement Agent
PFM: Pension Fund Managers
TLS: Temporary Liquidity Support
BAAAFS: Banking Sector Benchmark Curve for Simple Fixed Rate Securities and AAA Rating
BOE: Bank of England
BIS: Bank for International Settlements
BVC: Colombia Stock Exchange
SLC: Savings and Loan Cooperatives
CD: Certificates of Deposit
NSFR: Net Stable Funding Ratio
COP: Colombian Pesos
CCRC: Central Counterparty Risk Clearinghouses
CSD: Central Securities Depository
DSGE: Dynamic Stochastic General Equilibrium
DTF: Fixed Term Deposit Rate
CI: Credit Institutions
ECB: European Central Bank
EUR: Euros
Fed: Federal Reserve of the United States
CIF: Collective Investment Funds
FNA: Fondo Nacional del Ahorro
Frech: Reserve Fund for Mortgage Portfolio Stabilization
FSB: Financial Stability Board
GBP: Pounds Sterling
NG: National Government
BBI: Banking Benchmark Indicator
NPL: Non-performing loan ratio
QIR: Quality Indicator by Risk
ICE: Indicator of Consolidated Short-Term Exposure
FDI: Foreign Direct Investment
IIE: Individual Indicator of Short-Term Exposure
NBFI: Non-Banking Financial Institutions
FEMI: Foreign Exchange Market Intermediaries
LRI: Liquidity Risk Indicator
CPI: Consumer Price Index
IRPR: Indicator of Risk Perception by Rating
IERR: Indicator of Exchange Rate Risk
LRI: Liquidity Risk Indicator
BDBR: Board of Directors of *Banco de la República*
MADR: Ministry of Agriculture and Rural Development
GFM: Gross Financial Margin
MHPC: Ministry of the Treasury and Public Credit
IFRS: International Financial Reporting Standards
OIS: Overnight Index Swap
OPEC+: Organization of Petroleum Exporting Countries and allies
PCMVR: National Plan for the Construction and Improvement of Low-Income Rural Housing
GDP: Gross Domestic Product
NLP: Net Liquidity Position
PCP: Proprietary Cash Position
LSRR: Liabilities subject to Reserve Requirements
TC: Technical Capital
UAP: Unified Accounting Plan
FSR: Financial Stability Report
ROA: Return on Assets
ROE: Return on Equity
IMC: Investment Management Companies
SARC: Credit Risk Management System
SARO: Operating Risk Management System
SBF: Stock Brokerage Firms
FSC: Office of the Financial Superintendent of Colombia
TC: Trust Fund Companies
SMMLV: Minimum Legal Monthly Salary in Effect
SCA: Superintendency of Corporate Affairs
ST: Stress Tests
Sysmo: Systemic Stress Model
TES: Public Debt Securities issued by the General Office of Public Credit and the National Treasury
IBR: Interbank Rate
MER: Market Exchange Rate
USD: US Dollars
UVR: Real Value Units
VAR: Autoregressive Vectors
VeR: Value at Risk
PH: Priority Housing
LIH: Low-Income Housing
WATM: Weighted Average Term to Maturity

Introduction

The main policy goal of *Banco de la República* is to preserve the purchasing power of the currency in coordination with the general economic policy that is intended to stabilize output and employment at long-term sustainable levels.

Properly meeting the goal assigned to the Bank by the 1991 Constitution critically depends on preserving financial stability. This is understood to be a general condition in which the financial system assesses and manages the financial risks in a way that facilitates the performance of the economy and the efficient allocation of resources while, at the same time, it is able to, on its own, absorb, dissipate, and mitigate the appearance of risks that may arise as a result of adverse events.

This Financial Stability Report presents *Banco de la República*'s diagnosis of the financial system's (institutions, markets, and infrastructure) and its debtors' recent performance as well as of the main risks and vulnerabilities that could affect the stability of the Colombian economy. With this report, financial market participants and the public are being informed and public debate on trends and risks affecting the system is being encouraged. The results presented here also serve the monetary authority as a basis for making decisions that will enhance financial stability in the general context of its objectives.

The current situation of financial institutions is evidence of their ability to manage risks and absorb and mitigate the shocks that have affected the Colombian economy since March 2020 in the context of the pandemic. Over the course of recent months, institutions have preserved their liquidity and capital adequacy levels and increased their loan-loss provisions, thus improving risk coverage despite the deteriorating environment. The public, in turn, continues to have confidence in the stability of the system, and financial markets managed to stabilize following *Banco de la República*'s policy response despite the new waves of contagion and extensions of the health emergency.

In this context, the Colombian financial system's main source of vulnerability in the short term is the high uncertainty that still exists regarding the performance of the economy and the non-performing loan portfolio in the near future. In any case, financial institutions still have the ability to absorb and mitigate additional disruptions of the general economic situation.

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.

Leonardo Villar Gomez
Governor

Executive Summary and Risk Map

Little more than a year after the start of a global pandemic, this edition of the Financial Stability Report takes stock of the role of the financial system in the response of the Colombian economy to the health emergency as well as an analysis of its situation with respect to a recovery of economic activity.

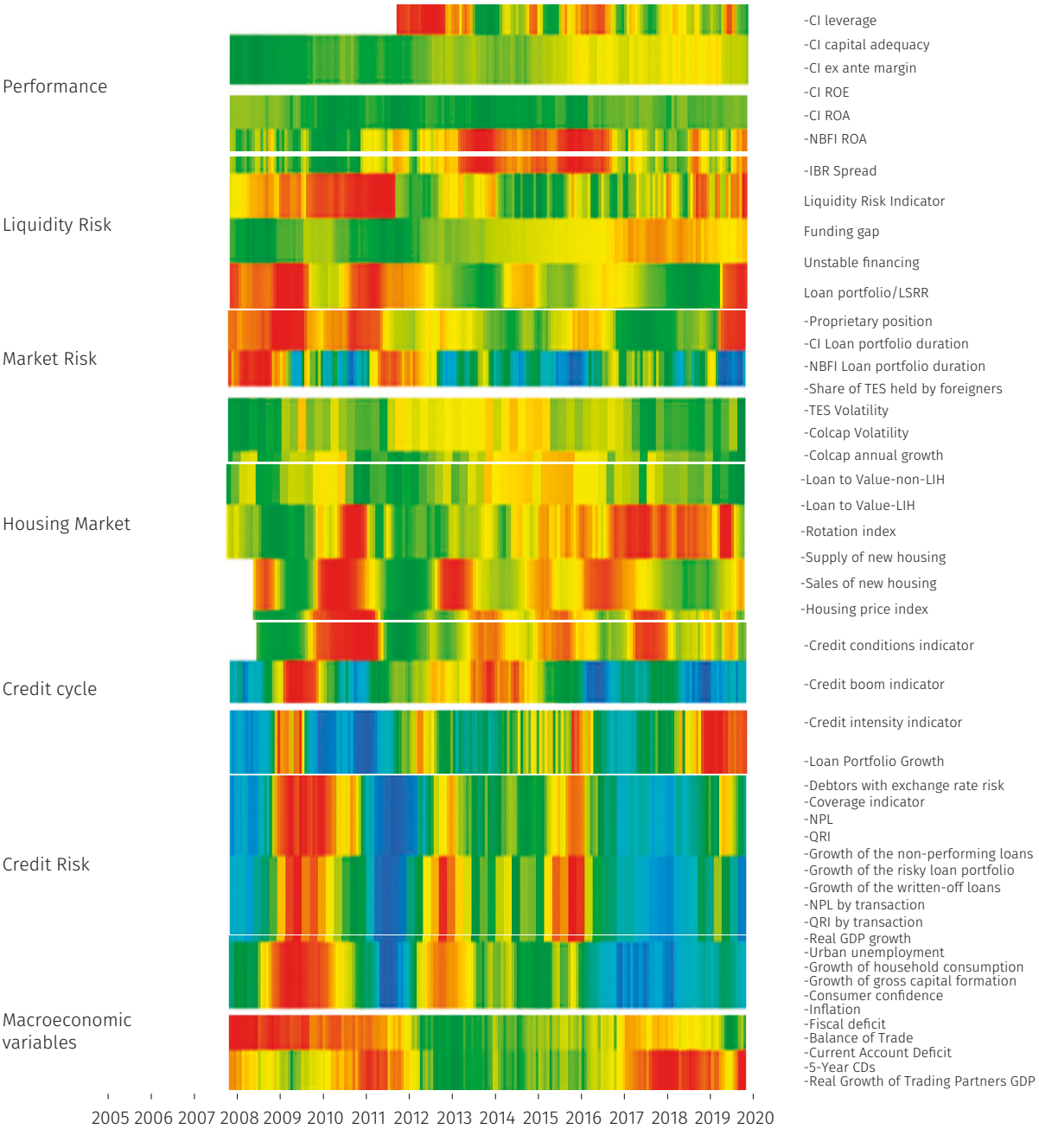
The financial institutions' current situation shows the combined ability of the system and the authorities to manage risks and to absorb and mitigate the disturbances that have affected the Colombian economy since March 2020. In recent months, credit institutions have been able to preserve their liquidity and capital adequacy levels and keep them above the required regulatory minimums. The capital adequacy and liquidity risk variables remain in the green zone on the risk map in Graph A.[1] At the same time, financial institutions welcomed the temporary facilities established by the Office of the Financial Superintendent of Colombia (FSC) to mitigate the risk of defaults on loans and raised the loan-loss provisions in anticipation of the greater risk. As a result, the coverage of these provisions remains high. The public, in turn, has maintained confidence in the stability of the financial system, and this is reflected in credit institutions' growth in funding (although the majority of it is in short-term, demand deposits).

The financial markets for private and public debt instruments and stocks (which at the beginning of the pandemic showed clear signs of instability and threatened to become a major source of risk) managed to stabilize and continue to operate normally after *Banco de la República* implemented their policy response. This has been true despite the appearance of new waves of contagion and the extensions of the health emergency. In Graph A, the volatility segments in these markets, which were in red zones during the first half of 2020, have shifted back to orange or green ones in recent months. This explains the relatively good performance of non-banking financial institutions that manage the pension funds, insurance companies, trust funds, and stock market firms. Even so, investors in open-ended collective investment funds have made withdrawals over the course of 2021 and foreign investors have participated less in the public debt securities market. Stock prices, in turn, have failed to recover after the losses seen in March 2020.

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

Under these conditions, the weak performance of credit has been determined by elements of both supply and demand. In line with the lower economic activity, these have remained relatively low over the past year and only begun to recover in the first quarter of 2021. In the recent past, there has been reduced credit growth (blue zones in the credit-cycle region of Graph A) accompanied by lower interest rates in the consumer, housing, and commercial categories and lower intermediation margins. With the recovery of economic activity, there should be much more growth in credit facilitated by the margin institutions have in terms of capital adequacy: indeed, although the household portfolio has slowed down since the beginning of the pandemic, historically high disbursements of housing loans were registered in the final weeks of March.

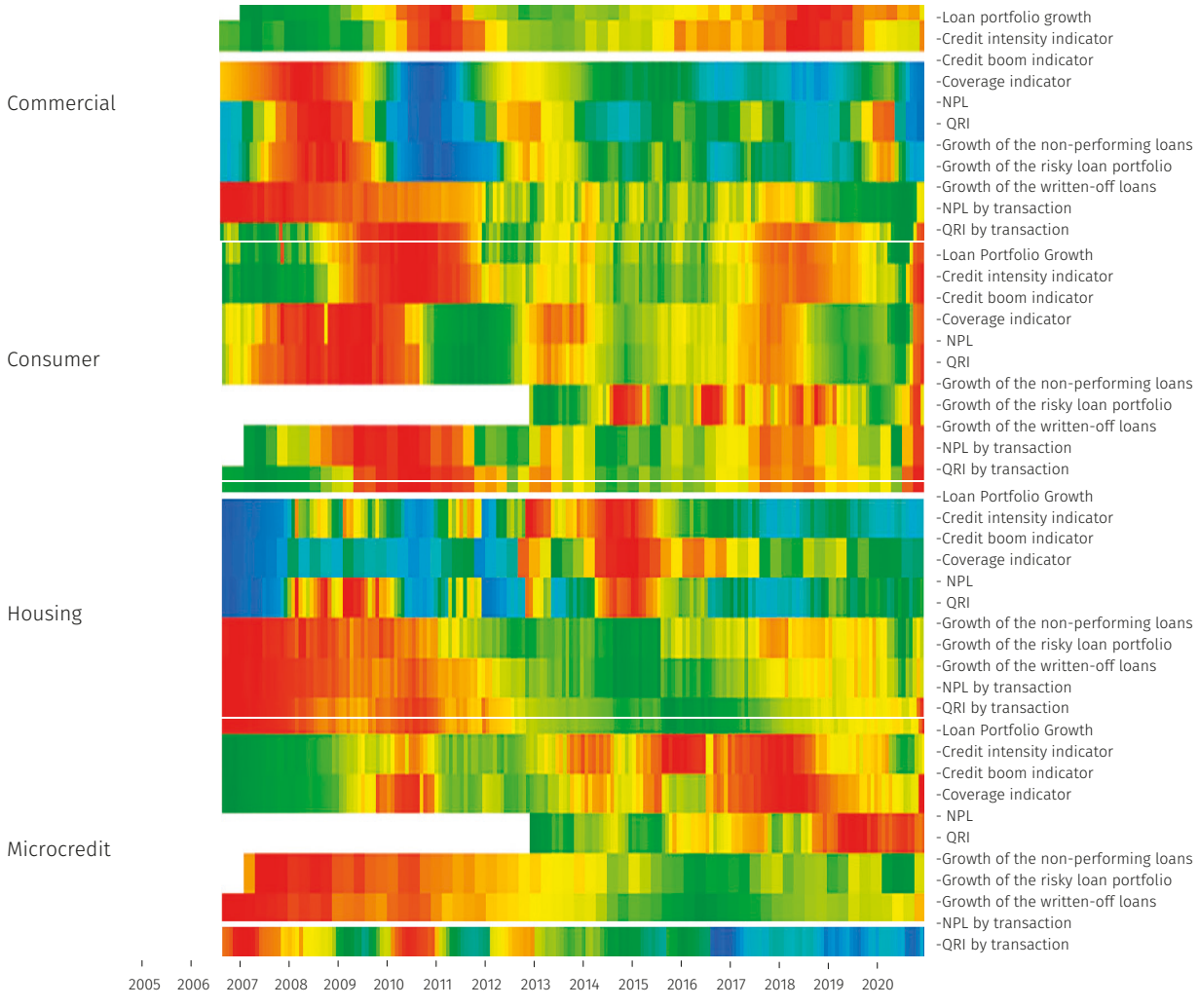
Graph A
Risk Map of the Colombian Financial System



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

The results of this *Financial Stability Report* help us draw the conclusion that the main vulnerability in the stability of the Colombian financial system in the short term is the uncertainty that still prevails about the economic performance in the near future that makes it impossible to discern how the non-performing loan portfolio will change. The second half of 2020 was characterized by a rise in the risky portfolio, especially in housing (this rise is evident in the red zones in all the categories of loan portfolios on the Graph B map). The vulnerability caused by the health crisis is reflected in the next three trends: first, the downturn in the profitability of credit institutions in the recent past which has resulted particularly from the increase in spending on loan-loss provisions and the decline in interest incomes; second, the household financial burden which, based on the measurement presented, is at historically high levels; third, the rise in the percentage of firms that are considered fragile based on various quantitative and qualitative criteria. At the same time, under current conditions, the exposure of credit institutions to sudden changes in prices and conditions in the markets for public debt securities becomes relevant in an environment of fiscal difficulties and lower appetite for risks that could arise in the event of an increase in the medium and long-term interest rates in the global markets.

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 order to study the ability of financial institutions to cope with these vulnerabilities, this *Financial Stability Report* performs top-down stress tests that evaluate the response of credit institutions and open-ended collective investment funds to extreme hypothetical scenarios. The results indicate that, in spite of the decline in profitability, the increase in the risky portfolio, and the reduction in liquidity that is likely to be seen in these scenarios, the aggregate financial system still has the ability to absorb additional shocks. At the same time, the results suggest that the economic situation would have to deteriorate far more than what was considered in the extreme scenarios to significantly affect the ability of the financial system as a whole to provide credit.

In short, it can be stated that, despite the size of the crisis experienced by the Colombian economy over the last year as a result of the pandemic, the financial system has shown remarkable resilience.

01

Macroeconomic environment

After a year of pandemic and its devastating impact on public health as well as on the productive structure of the economy, the outlook for global growth is once again in positive territory given the authorization and production of Covid-19 vaccines that began at the end of 2020. However, the better expectations for 2021 are immersed in the context of the wide disparity between advanced and emerging countries.

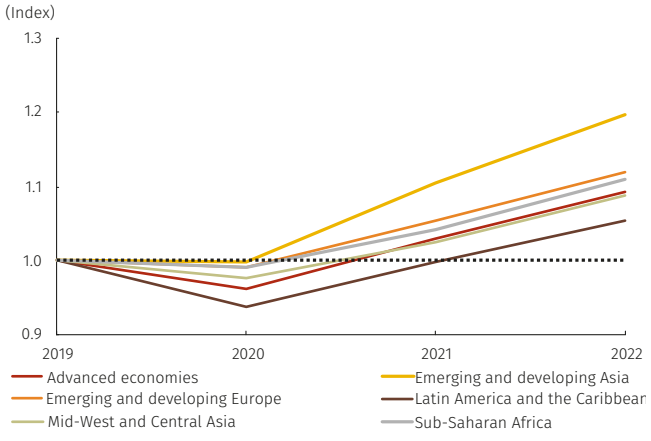
The approval and production of vaccines against the virus, which began in late 2020, a better-than-expected economic performance during the second half of that year, and the approval of new fiscal aid packages in some countries have contributed to improving the global economic outlook. Thus, in their April 2021 World Economic Outlook report, the International Monetary Fund (IMF) raised their outlook for global economic growth by 80 basis points (bp) to 6.0% in 2021 in comparison to their October 2020 report.

Nevertheless, the growth projections are highly heterogeneous among countries where, on one hand, China recovered its 2019 production levels by the end of 2020 and, on the other, the United States will do so in mid-2021 while several developing economies will probably return to those levels after 2021.[1] The data, in turn, suggest that this will occur in the region by the end of the year (Graph 1.1).

Among the groups of countries analyzed by the IMF, the Latin American and Caribbean region exhibited the largest reduction in economic activity in 2020. Along with the above, the lower access to and rate of vaccination, a reduced fiscal margin, and an outlook of a slower recovery compared to the group of advanced economies all pose challenges to consolidating the economic recovery of these countries.

1 Argentina, Ecuador, Mexico, Panama, and Peru are some of the countries that are showing this characteristic according to the IMF's World Economic Outlook (WEO) projections in April 2021.

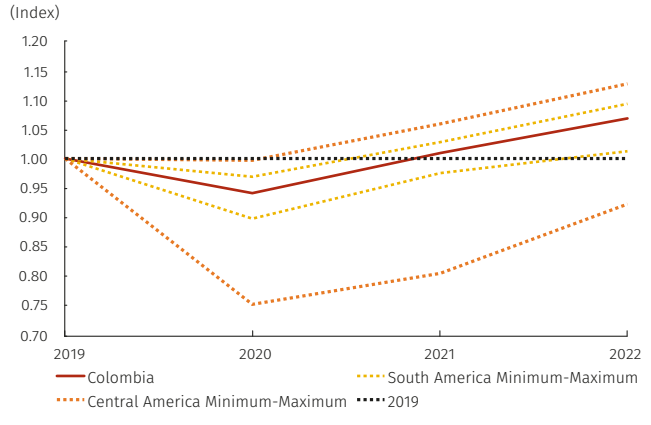
Graph 1.1
Trajectory of the Annual GDP Relative to 2019 by Groups of Economies



Source: April 2021 World Economic Outlook.

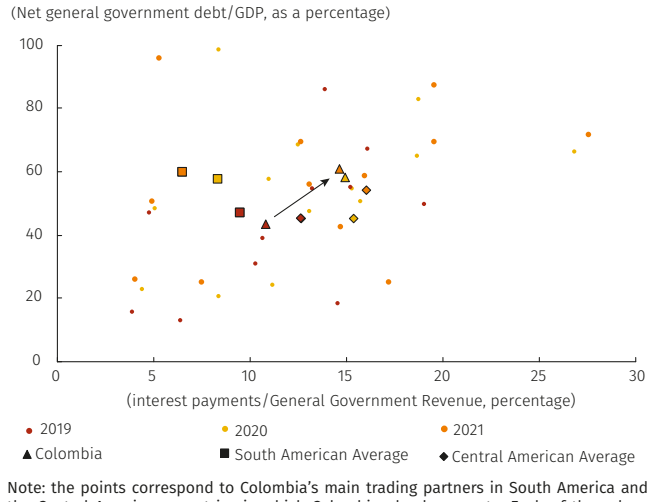
Graph 1.2

A. Trajectory of the Annual GDP Relative to 2019



Note: the yellow and orange dotted lines correspond to the minimum and maximum for Colombia's main trading partners in South America, namely Argentina, Brazil, Chile, Ecuador and Peru, and to the minimum and maximum for the main Central American countries in which Colombian banks operate, which are Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.
Source: April 2021 World Economic Outlook.

B. Sovereign Debt to GDP Ratio and its Financial Burden



Note: the points correspond to Colombia's main trading partners in South America and the Central American countries in which Colombian banks operate. Each of the values from 2019 to 2021 are presented with a different color: red corresponds to 2019, yellow to 2020 and orange to 2021. Also note the figures with different dimensions, where the triangles illustrate Colombia, the squares the South American median, and the rhombuses the Central American median.
Source: Standard and Poor´s Global Ratings.

The production level in Latin America and the Caribbean declined 7.0% in 2020. This was the largest reduction for a specific group of countries (even though some countries outside the region showed more deterioration).[2] In addition to the above, the differences in the virus immunization process in each jurisdiction and the limited fiscal margin that various countries have in order to respond to the need for governmental support caused by the pandemic (Graph 1.2, panel B) is reflected in the prospects of a weak recovery with high inter-regional variability (Graph 1.2, panel A).

The IMF's April 2021 Global Financial Stability Report states that the different rates of economic recovery between advanced and emerging countries may lower the appetite international investors have for assets in jurisdictions with weaker fundamentals. This could result in the latter facing greater restrictions on getting access to funding and a possible increase in their costs in a situation in which the need for financing has risen substantially for the economies in the region (Graph 1.2, panel B).

Colombia's macroeconomic outlook lies within the general characteristics described for emerging countries. Thus, the center of the legislative agenda has become the approval of a fiscal reform that seeks to ensure the sustainability of public finances after the deterioration it suffered due to the unavoidable expenses caused by the crisis. These expenses were intended to mitigate the potential permanent effects of the shock and meet the income needs of the people who were most exposed to the shutdown measures for the pandemic.

After the 6.8% reduction in the Colombian economy's GDP that was seen in 2020, the technical staff at *Banco de la República* estimates that the average value of GDP growth for 2021 will be 6.0%.[3] The effect on the country's economic situation and the weakening of its fiscal indicators,[4] in turn, have caused the main risk agencies to assign a negative

2 Such as France (-8.5%), Spain (-11%), Portugal (-7.6%), Italy (-8.9%), and Greece (-8.2%) etc. (IMF, April 2021).

3 For more details on the development of this forecast, see the May 2021 issue of *Banco de la República*'s Monetary Policy Report.

4 The ratio of net foreign debt to GDP increased by 15 percentage points between 2019 and 2020 and now stands at 59%.

outlook to the country's credit rating.[5] This is in a context in which S&P[6] and Fitch Ratings[7] place Colombia at the bottom of the investment grade category.

Based on statements by the rating agencies and the monitoring of their rating methodologies, it can be inferred that the credibility and ability of a fiscal reform to stabilize public finances as well as the re-establishment of fiscal rules could be decisive for holding on to the country's investment grade rating and thus, the cost of the financing it has access to.

In a context of uncertainty about fiscal stability and consolidation of the Colombian economic recovery as well as the decrease in the credit institutions' profitability, safeguarding the stability of the financial system is considered a first order condition for limiting the permanent effects of the crisis caused by the pandemic.

Credit institutions have increased their spending on loan-loss provisions in line with the increase in non-performing loans and prospect of lower quality in their loan portfolios. The above has been reflected in a lower level of profitability for the system while not affecting the capital adequacy or liquidity of these institutions. However, there is still a high level of uncertainty regarding the impact on economic agents' ability to pay and, therefore, their final impact on the financial health of the banking system.

In a scenario of vulnerabilities such as the one describing the Colombian economy, it is crucial to preserve financial stability since the experience from previous crises suggests that the effects of these events on the level of production tend to be more persistent in the medium term when they are related to disruptions in the normal functioning of the financial systems.[8] Along this vein, Kehoe et al. (2019)[9] have documented the fact that several of the crisis scenarios in Latin America have been preceded by unsustainable conditions in public indebtedness and when these are accompanied by unstable financial systems, they have led to deeper and longer-lasting crises. According to the above, the authors speculate that the prevalence of crises in the region may be one of the reasons for its low growth since 1960.

In this regard, the stress tests described in this report evaluate the resilience of credit institutions and open-ended collective investment

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5 April 22, 2021, the S&P rating agency kept the local currency debt rating at BBB and the long-term foreign currency debt rating at BBB- with a negative outlook. On November 6, 2020, Fitch Ratings affirmed Colombia's long-term debt rating at BBB- with a negative outlook. On December 3, 2020, Moody's rating agency confirmed Colombia's rating at Baa2 and changed the outlook from stable to negative.

6 The rating agency, S&P, downgraded Colombia's sovereign rating to BBB- with a stable outlook on December 11, 2017.

7 Fitch Ratings downgraded Colombia's long-term sovereign debt rating from BBB to BBB- on April 1, 2020 and kept the negative outlook.

8 See *World Economic Outlook*, chapter 2 (IMF, April 2021).

9 Kehoe, T.; Nicolini, J.; Sargent, T. (2019). "A Framework for Studying the Monetary and Fiscal History of Latin America, 1960-2017", Staff Report, no. 607, Federal Reserve Bank of Minneapolis, Research Department.

funds in the event of a hypothetical adverse scenario that involves the materialization of the system's main vulnerabilities. The results suggest that these institutions could continue their normal functions without defaulting on their prudential requirements in aggregate terms.

The resilience of the Colombian financial system is assessed in Chapter 3 of this report using a hypothetical adverse scenario in which the Colombian economy recovers at a slower than expected pace that is in line with the lag in the economic recovery of the emerging economies compared to the advanced ones, and in which, international investors have a lower appetite for local assets that could be associated with the difficulties of retaining the investment grade rating on the sovereign debt in the near future.

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, in this stress scenario, 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 period of the exercise. However, the performance of these indicators would vary widely from one establishment to another. In addition, the loan portfolio and aggregate profitability of the credit institutions could present significant deterioration which would reflect the impact that the hypothetical adverse scenario could have on the ability of the institutions to grant loans and do their intermediation work.

In addition, a reverse stress exercise was done in order to find out how strong the occurrence of the credit risk would have to be for the system to reach a high level of vulnerability when it presents a capital adequacy indicator in aggregate terms that is lower than 11%. The test suggests that the aggregate quality indicator by risk would have to be at levels above 28%, which represents more than two times the current level of the system, in order to show a systemic vulnerability scenario like the one described. Even though the individual analysis is quite heterogeneous, the above implies that the system currently has a substantial cushion for dealing with losses from loan-loss provision costs and the lower income from interest that a deterioration in the quality of the portfolio could cause.

With respect to collective investment funds, withdrawals of more than 4.0% of their managed funds as of March 2021 could jeopardize their compliance with prudential liquidity limits for a set of funds. This is in line with the impact on their resilience caused by close to COP 15 trillion in net withdrawals seen during the period up to March 2021. This shows the relevance of continuing to monitor it.

The results of stress tests are obtained from hypothetical scenarios that use a set of restrictive assumptions and do not consider potential policy responses that the various authorities who share a macroprudential objective could implement. It is, therefore, to be expected that, given the active and timely policy response of the different institutions that the financial system security network is made up of as well as the smaller magnitude of the shock, the impact on financial stability will presumably be lower.

02

Vulnerabilities of the Financial System

The general situation of financial institutions during 2020 as a whole and the first month of 2021 is evaluated in this chapter within the framework of the health crisis caused by Covid-19. An overview of the financial system and an analysis of its exposure to credit, market, liquidity, and interest rate risks are presented below.

2.1 Current Situation of the Financial System

Since April 2020, the balance sheet of credit institutions (CIs) has experienced a downturn mainly due to the performance of the loan portfolio, particularly the commercial and consumer loans.

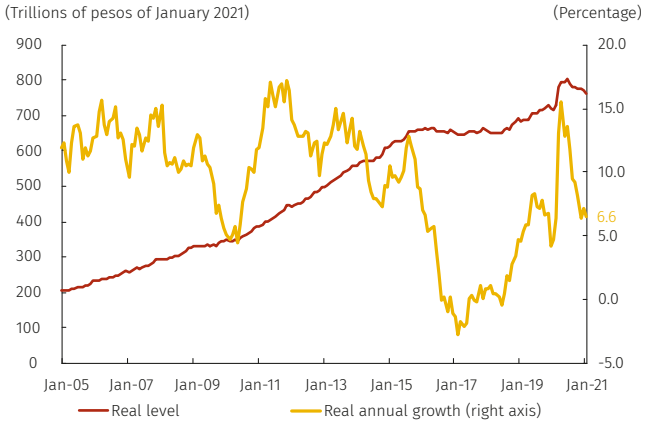
As of January 2021, the CI assets registered a balance of COP 764.3 trillion (t) and their real annual growth rate continued the downward trend they have been showing since April 2020[10] (Graph 2.1, panel A). The weaker performance of assets was mainly caused by the loan portfolio, which accounts for 66.9% of total assets and since the fourth month of 2020, has been slowing down (Graph 2.1, panel B).

The lower growth registered by the total loan portfolio was caused by a widespread slowdown in all the categories, especially in the commercial and consumer ones, which together account for 83.0% of the total loan portfolio (Graph 2.2). This performance could be explained either by an increase in requirements for granting new loans due to the increased perception and materialization of risk in the economy derived from the health crisis, or by a lower credit demand from companies and households. Regarding the supply factor, the *Report on the Colombian Credit Situation* (RSCC in Spanish) for the first quarter of 2021 shows that CI increased their requirements for granting new consumer and commercial loans during 2020 (Graph 2.3). With respect to the demand factor, the same report points out that lending institutions' perception on this front declined for these categories during the same year (Graph 2.4). In spite of the above, the figures

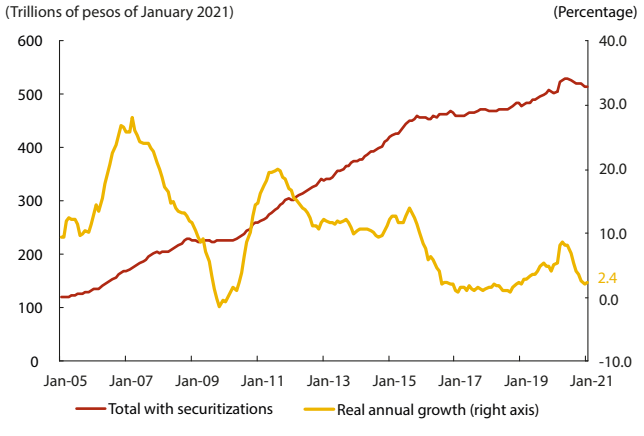
10 Real growth rates were calculated using the consumer price index (CPI) excluding food.

Graph 2.1

A. Credit Institutions' Assets



B. Total Loan Portfolio



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

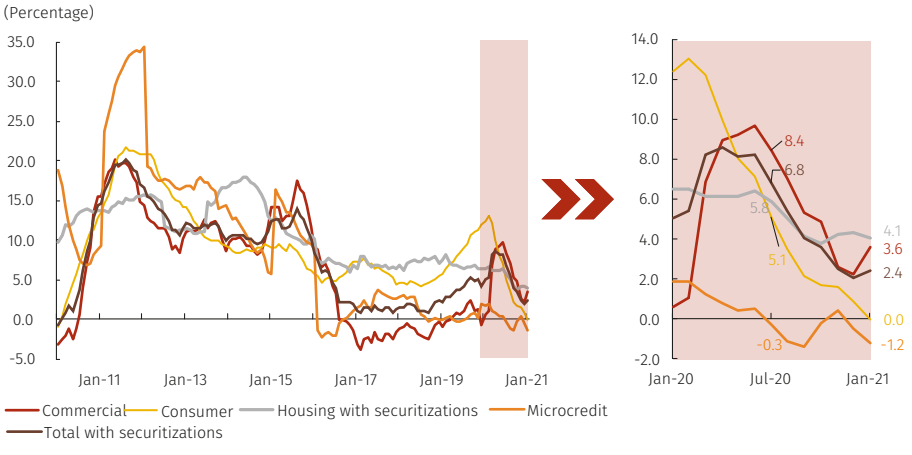
reported in the RSCC for March 2021 also showed an environment of less restrictive requirements for new commercial and consumer loans along with a rise in the perception of demand for these types of loans, factors that project a possible recovery in the growth of these portfolios.

Credit risk indicators for all types of loans increased, especially for households' loan portfolios, which were the ones that benefited the most from the first stage of mitigation measures authorized by the FSC.

In a context of a contracting economy and rising unemployment during 2020, debtors' ability to pay their obligations has been severely affected. As a result, the traditional credit risk indicators (QIR and NPL) increased (Graph 2.5). This trend has been widespread across all types of portfolios. However, in the case of the consumer and housing loans, the increases have been significant. This was expected considering that the household portfolio was the one that benefited the most from the grace periods authorized by the FSC's external circulars (EC) 007 and 014 which began to expire during the second half of 2020 as reported in the previous issue of the Financial Stability Report (FSR).

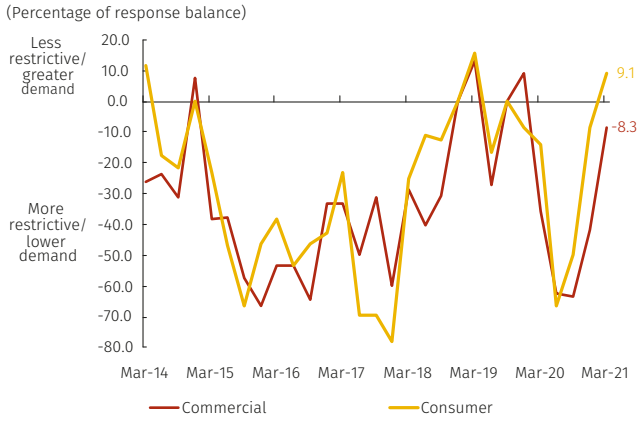
As part of the extension of the FSC's Debtor Assistance Plan (PAD in Spanish) to June 30, 2021 (according to EC 039/2020), as of April 21, 2021, 2,183,516 beneficiaries who had loans for a total value of COP 35.4 t were reported (Table 2.1). In comparison with the first stage of measures

Graph 2.2
Real Annual Growth of the Gross Loan Portfolio by Type



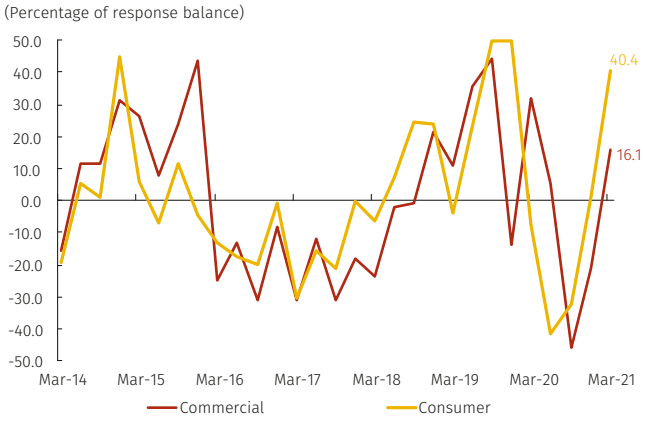
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

Graph 2.3
Indicator of the Change in Requirements for Granting New Commercial and Consumer Loans (banks)



Source: *Survey about the credit market situation in Colombia*, March 2021, calculations by *Banco de la República.*

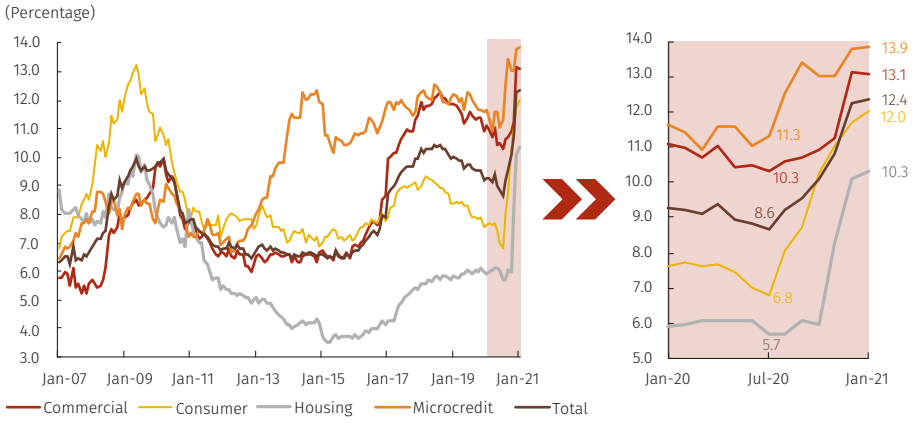
Graph 2.4
Credit Institutions' Perception of the Demand for Commercial and Consumer Loans



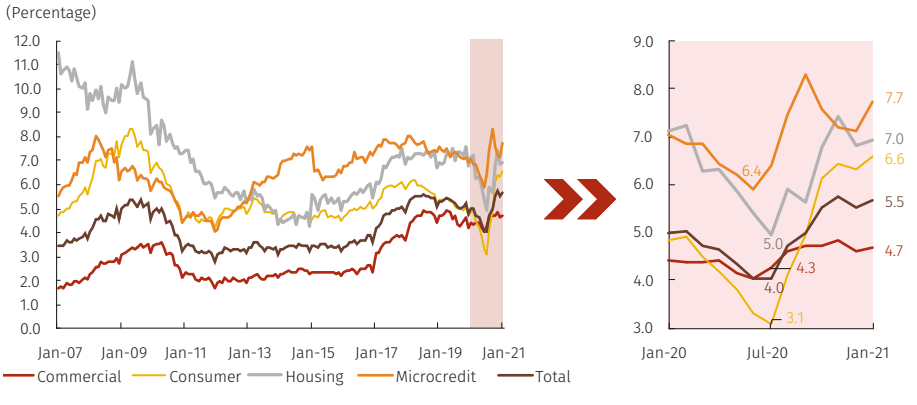
Source: *Survey about the credit market situation in Colombia*, March 2021, calculations by *Banco de la República.*

Graph 2.5

A. Quality indicator by risk (QIR)



B. Non-performing loan Indicator (NPL)



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

Table 2.1
Loan Portfolio Accommodated to the Debtor Assistance Plan as of 21 April 2021.

Category	Balance adjusted to PAD (trillions)
Commercial	COP 12.4
Consumer	COP 18.7
Microcredit	COP 0.9
Housing	COP 3.4
General Total	COP 35.4

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

introduced by the FSC through EC 007 and 014/2020, the grace periods lost relevance during the second stage, and based on the figures given by this entity in Box 1 of the December 2020 *Update on the Colombian Financial System Report*, the expiration of grace periods that were still in effect at the end of that year mostly occurred in the first quarter of 2021. By the end of the first half of the year, 90.2% are expected to expire and only 3.2% will probably reactivate payment in 2022.

The CI's anticipation of increased credit risk in light of the slowdown in economic activity during the first half of 2020, together with the additional general loan-loss provisions introduced by the FSC, made it possible for CIs to absorb credit risk that materialized during the second half of the year without major trauma.

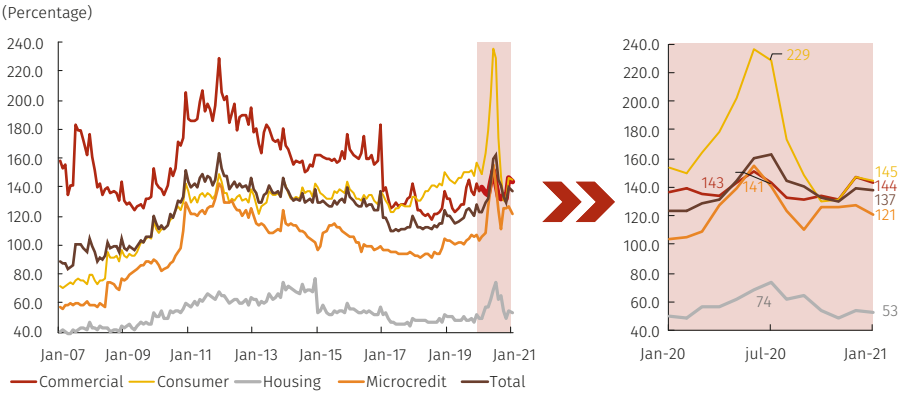
As was evident in the FSR issued for the second half of 2020, while EC 007 and 014 of 2020 were in force, portfolio loan-loss provisions underwent a surge because institutions constituted loan-loss provisions additional to the regulatory ones. This reflected the prospective recognition of an increase in credit risk on the part of CIs in view of the slowdown in economic activity. Subsequently, in EC 022/2020, the FSC introduced two additional general loan-loss provisions. These factors initially led to an increase in the past-due portfolio coverage indicator[11] (CI) for all categories, but once the credit risk began to materialize in the second half of 2020, the indicator adjusted and, as of January 2021, it showed levels that were close to pre-pandemic ones (Graph 2.6).

The growth of CI's liabilities has slowed down after the expansion experienced following the measures adopted by Banco de la República to inject liquidity into the economy, mainly because of the decrease in term deposits and credit with other financial institutions.

After the expansion following the measures adopted by *Banco de la República* to inject liquidity into the economy and the depositors' current greater preference for liquidity, the institutions' funding has gone through a downturn. This has been explained by the decline in term deposits, bank loans, other financial obligations, and bonds, and by the reduction in equity and other liabilities (Graph 2.7).

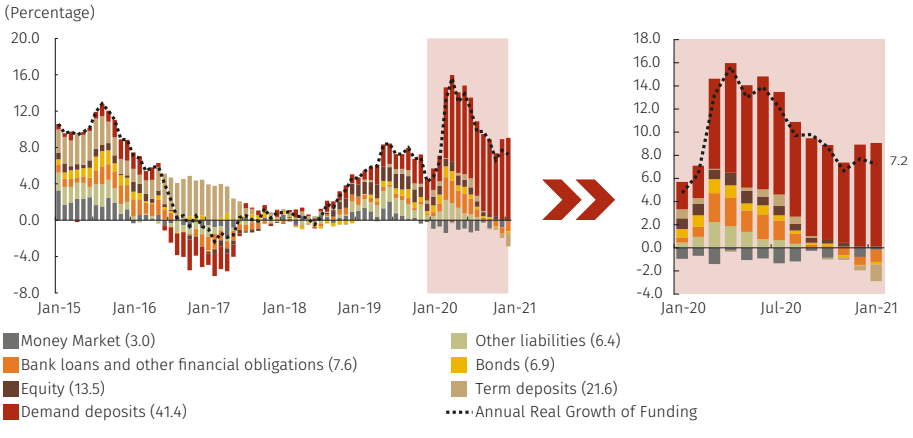
11 Calculated as the ratio between the balance of loan-loss provisions and that of the non-performing loan portfolio.

Graph 2.6
Past-due Loan Portfolio Coverage Indicator



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

Graph 2.7
Real, Annual Growth of Funding and Contribution of its Components



Note: the share each item has in funding (liabilities + equity) as of January 2021 is in parenthesis.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

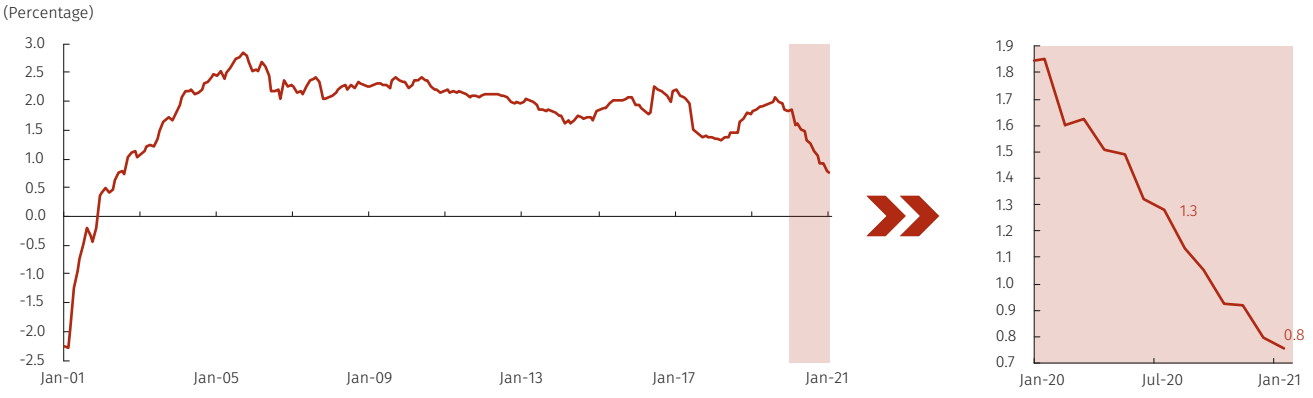
Amidst the current situation caused by Covid-19, the profitability of CIs maintained the downward trend it has been showing since August 2019. In contrast, both capital adequacy and aggregate liquidity continued to stay well above their regulatory minimums.

Between July 2020 and January 2021, CI's return on assets (ROA) continued to decline as a result of profits that decreased in real, annual terms at a rate of 56.7%. As of January 2021, the indicator registered a value of 0.8%, figure that has not been seen since June 2002 (Graph 2.8, panel A). Reduction in profits has occurred as a result of lower income from commercial and consumer loan portfolios and less commissions and fees. Regarding expenses, higher expenditure on loan-loss provisions that came from revelation and materialization of risk has been the main factor pushing earnings down and, to a lesser extent, the increase in other expenses[12] (Graph 2.8, panel B).

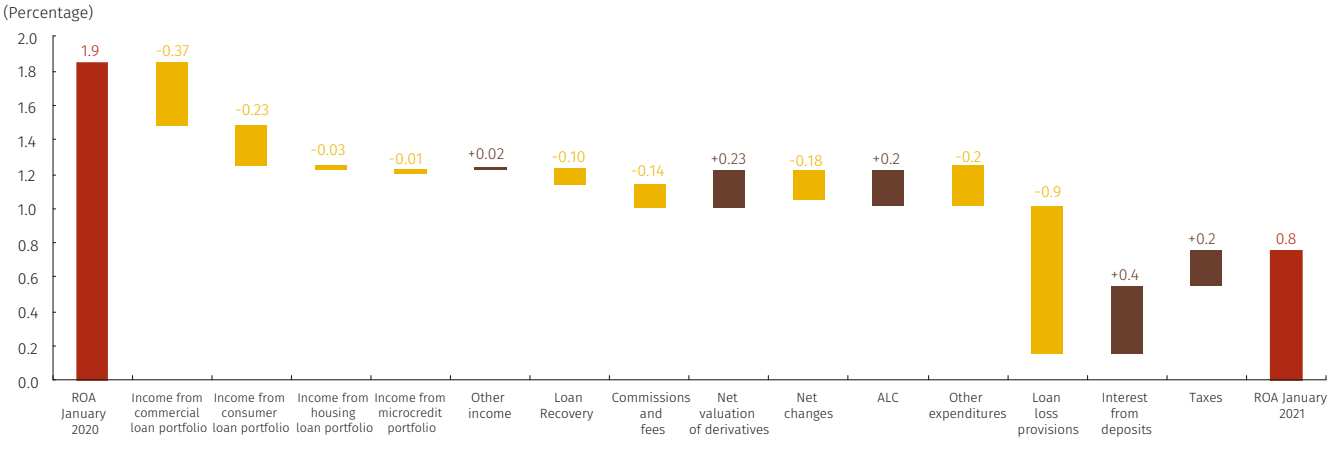
12 This includes interest on bank loans and other obligations, financial interest from money market operations, commissions, expenses due to the valuation of hedging derivatives, and the countercyclical component of individual loan-loss provisions.

Graph 2.8

A. Return on assets (ROA)



B. Breakdown of ROA

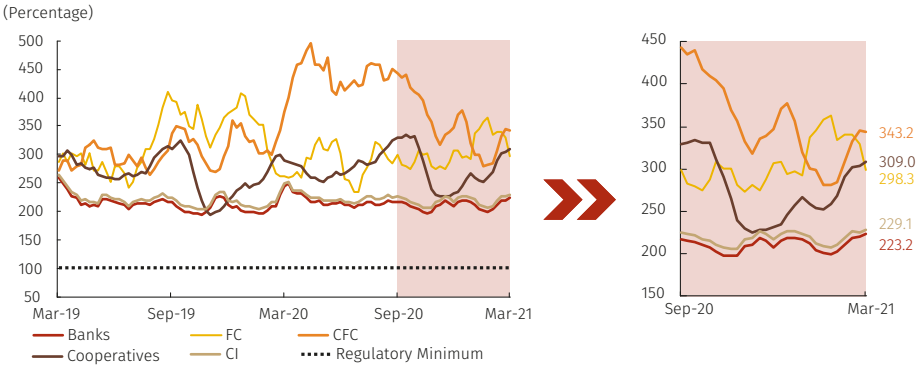


Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

In a context of increasing credit risk and lower profitability levels, CIs have adequate levels of liquidity and capital adequacy as resiliency barriers. Aggregate liquid assets continue to significantly exceed the value of the 30-day net liquidity requirements, and as of March 26, 2021, CIs registered a Liquidity Risk Indicator (LRI) of 229.1%. By type of institution, the LRI for the corporate financing companies (CFC) declined as a result of an increase in their liquidity net requirements. However, their indicator still registers levels that are above the average of recent years (Graph 2.9). Regarding institutions' equity soundness, the levels of total capital adequacy and Common Equity Tier 1 ratios are still well above their regulatory minimums. This, in principle, could make it possible for CIs to absorb the economic impacts generated by the spread of Covid-19. In fact, between December 2020 and January 2021, both indicators registered significant increases (4.3 pp) because of the beginning of the convergence process stipulated by regulation in which CIs must begin to converge with the guidelines established by Basel III[13] (Graph 2.10).

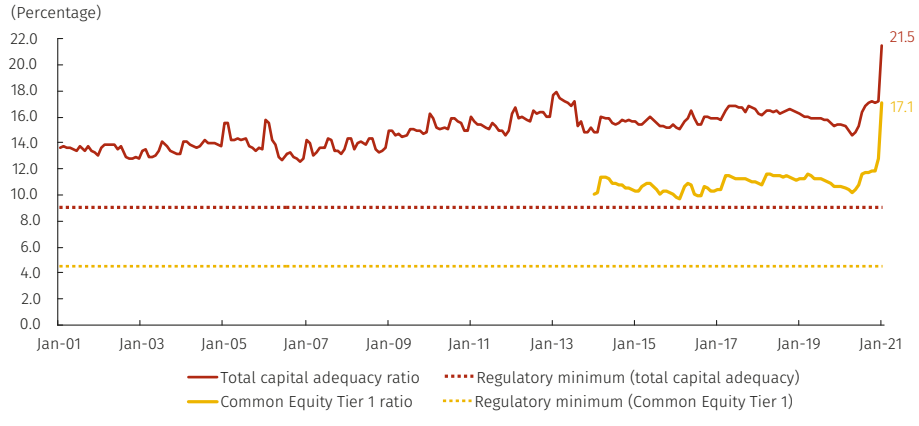
13 With the issuance of Decrees 1477/2018 and 1421/2019, CIs had to begin the process of transitioning to the guidelines established by Basel III regarding capital as of January 2021.

Graph 2.9
Weighted Average 30-day Liquidity Risk Indicator (LRI) for CIs[a/]



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

Graph 2.10
Total Capital Adequacy and Common Equity Tier 1 ratios



Note 1: the figures reported since January 2021 are not comparable to the historical series due to the regulatory change that required credit institutions to start converging to the guidelines established by Basel III. As part of this process, the FSC allowed these guidelines to be adopted early on a voluntary basis by credit institutions starting in the second quarter of 2020. Based on the above, BBVA initiated early alignment in June, Banco Agrario and Tuya in July; Credifinanciera, Bancompartir, GM, Colte-financiera, and Bancoldex in August; and Banco Falabella in September 2020.
Note 2: with the introduction of the new regulation, in 2021 (2022), the limits including the conservation buffer, for total, additional Common Equity Tier 1, and Common Equity Tier 1 capital adequacy ratios are 9.375% (9.75%), 5.25% (6.0%), and 4.875% (5.25%) respectively. For systemically important credit institutions, an additional 25 bps (50 bps) are required. It should be clarified that, in practice, non-compliance with capital buffers does not imply non-compliance with regulatory limits and, therefore, does not constitute a situation of insolvency.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

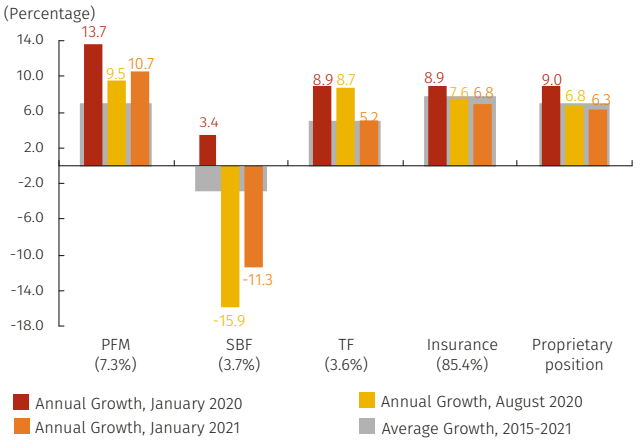
2.1.1 Non-banking Financial Institutions

During the past year, assets in the proprietary and third-party position experienced a slowdown.

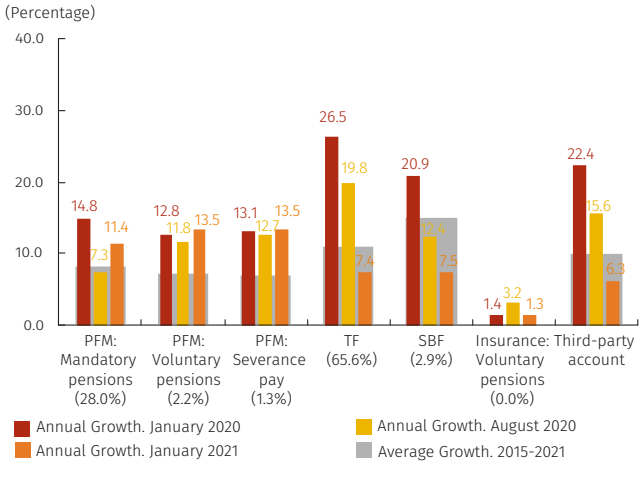
In January 2021, assets of the Non-Banking Financial institutions (NBFI) in their proprietary position, which represented 5.0% of the financial system's total assets, showed a downturn and expanded at a slower pace in comparison with their average in recent years. The above is mainly driven by the performance of the insurance companies' and Brokerage Firms (SBF) assets which account for 89.0% of total assets in their proprietary position (Graph 2.11, panel A). The decline seen in the latter's assets is mainly due to the sharp loss of value of their investments. Regarding the portfolio managed by the NBFI, it represented 52.2% of the financial system's total assets; the growth rate of it, which was mainly driven by SBFs and trust companies (TC) that represented 68.5% of the total assets under management, declined.

Graph 2.11
Real Annual Growth of NBFI Assets

A. In proprietary position



B. In Third-party position



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

Assets of the collective investment funds, which had been growing for the first half of the year, have begun to show decreases due to investor withdrawals.

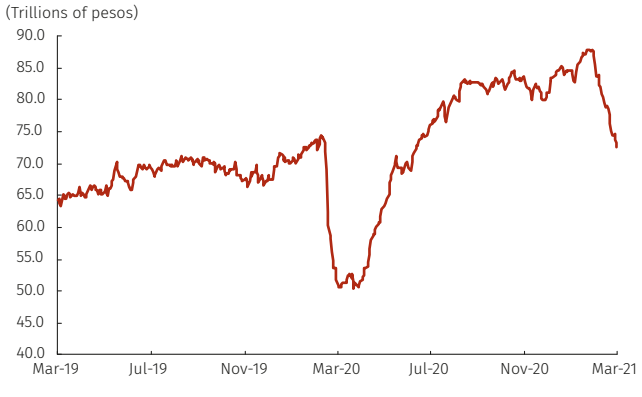
Following the coronavirus shock in March 2020, total assets of open-ended collective investment funds (CIFs) managed by TC, SBF, and IMC rose and hit their highest historical level ever (COP 87.9 t; Graph 2.12, panel A). Nevertheless, at the beginning of 2021 it began to show decreases, mainly due to an increase in investor withdrawals (Graph 2.12, panel B). As of March 26, 2021, these represented 74% of the withdrawals that occurred one year ago and lowered the assets by COP 15.1 t. However, the recent ones occurred over a period of six weeks, in contrast to those that took place during the crisis caused by the coronavirus and happened in only two weeks.

The growth of the NBFI investment portfolio has been spurred by an increase in fixed-income securities.

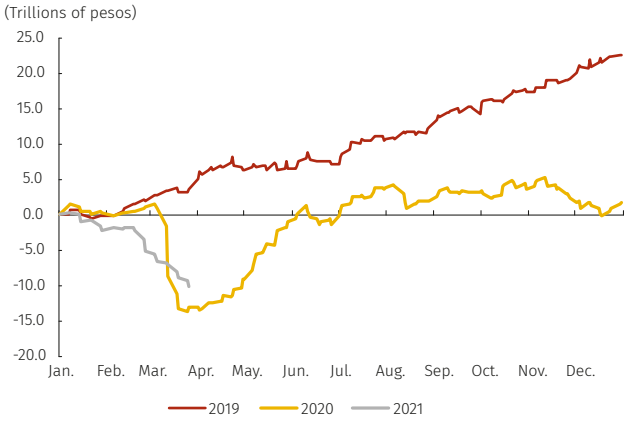
The insurance companies' portfolio in proprietary position grew in the segments related to TES and bonds in contrast to the performance of the CDs, which have been declining since the end of the previous year (Graph 2.13). As for the portfolio managed by third parties, the growth of the TC portfolio has been weak and driven mainly by investments in TES and bonds with a decreasing share in stocks and CDs (Graph 2.14, panel A). Concerning the SBF, TES investments registered their most significant growth in the past two years while bonds and stocks made a substantial contribution (Graph 2.14, panel B).

Graph 2.12
Open-ended Collective Investment Funds

A. Total Assets



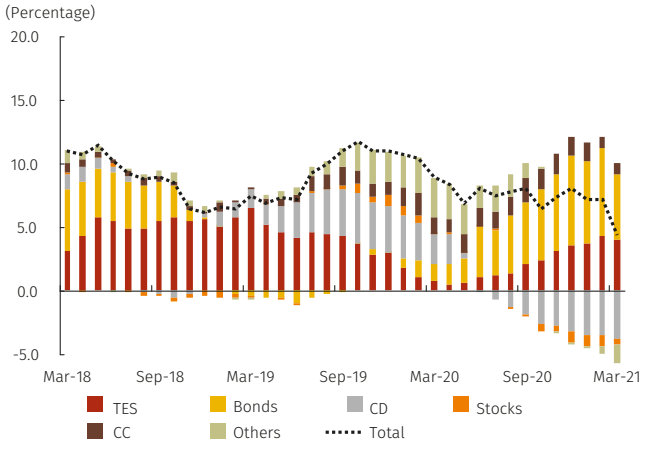
B. Cumulative Net Contributions



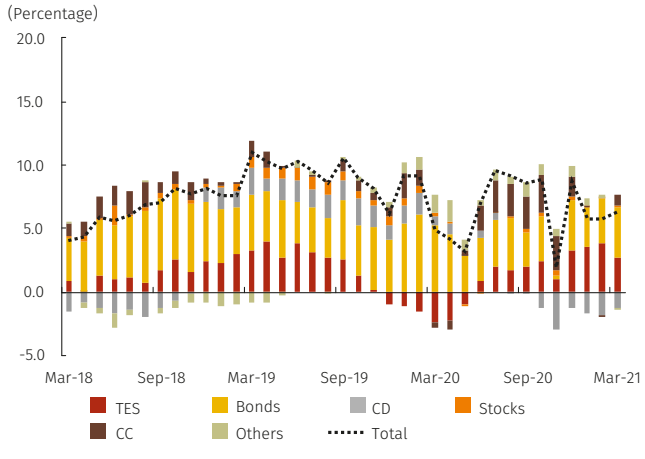
Source: Office of the Financial Superintendent of Colombia (SFC), calculations by *Banco de la República.*

Graph 2.13
Real Annual Growth of Investment Portfolio in Proprietary Position

A. Life Insurance companies



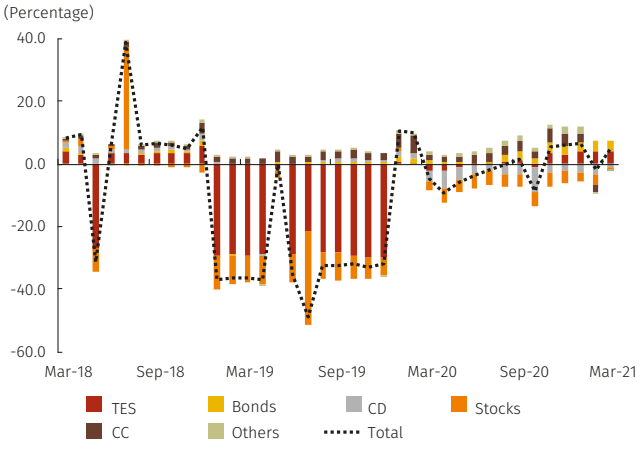
B. General Insurance companies



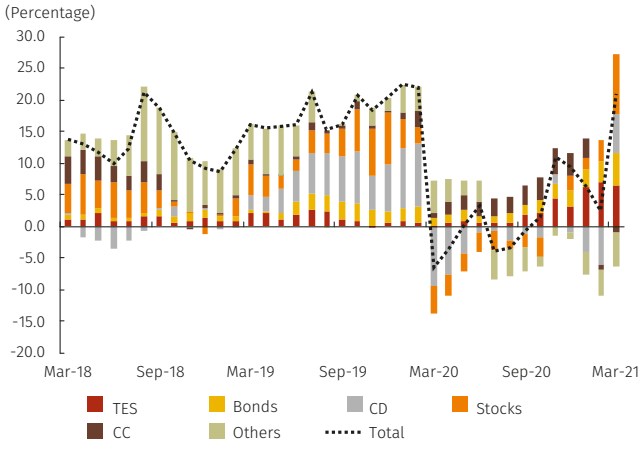
Source: Office of the Financial Superintendent of Colombia (SFC), calculations by *Banco de la República.*

Graph 2.14
Real Annual Growth of Portfolio in third-party position

A. Trust Fund companies

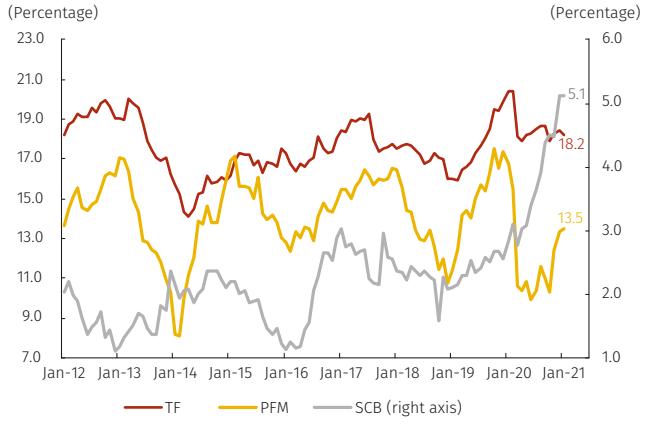


B. Stockbrokers



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

Graph 2.15
ROA of TC, SBF, and PFM



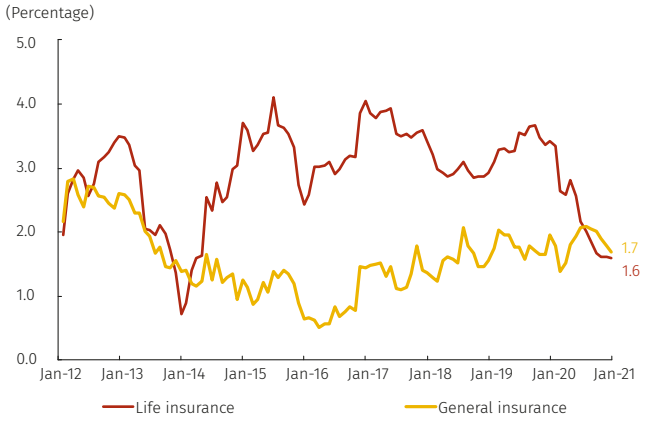
Source: Office of the Financial Superintendent of Colombia (SFC), calculations by *Banco de la República.*

Over the course of the year, ROA for the majority of the NBFI registered mixed performance primarily due to the specific characteristics of their business.

Over the course of the year, the PFM and the SBF have shown recoveries in their profitability while the performance of the TC is stable (Graph 2.15). In the case of the PFM, this is explained by an increase in income that resulted from the investment valuation. For the SBF, in contrast, it was due to a decrease in administrative and labor costs and an increase in their financial income.

Concerning insurance companies there was a decrease in profitability (Graph 2.16). In the case of general insurance companies, this is the result of an increase their accident rates as well

Graph 2.16
ROA of Life and General Insurance Companies



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

as a negative result on their reinsurance balance sheet. For life insurance companies, the expenses for settling accident rates contributed the most to its decline. Finally, in the two groups of institutions, the performance of income from investment remained stable.

2.2 Credit Risk

The analysis of credit risk that is presented below is divided between the corporate sector and households. In the first sub-section, the change in corporate sector indebtedness and the perception and materializing of credit risk for private companies is analyzed by economic sector and the size of the company, and an exercise that seeks to quantify the potential vulnerability of companies in the current situation is included. The indebtedness of households is analyzed in the second sub-section and some risk indicators are presented that are related to the performance of this loan portfolio.

2.2.1 Corporate Sector[14]

2.2.1.1 Change in corporate sector indebtedness

In 2020, the indebtedness of the corporate sector increased as a percentage of GDP. This is explained by an increase in the total debt balance and by the fall in economic activity. As of December 2020, the private corporate sector's debt in foreign currency is still relying, for the most part, on foreign exchange risk mitigation mechanisms.

As of December 2020, the total indebtedness of the corporate sector as a share of the annualized GDP stood at 63.5% and showed a 7.5 pp upswing with respect to what had been seen a year earlier. The private corporate sector[15] contributed 54.2 pp of the total while the public sector contributed the remaining 9.3 pp. The former saw an increase spurred mainly by the greater indebtedness to domestic financial institutions and their parent companies (Graph 2.17, panel A) while the increase for the latter was largely due to a higher balance in bonds issued abroad (Graph 2.17, panel B).

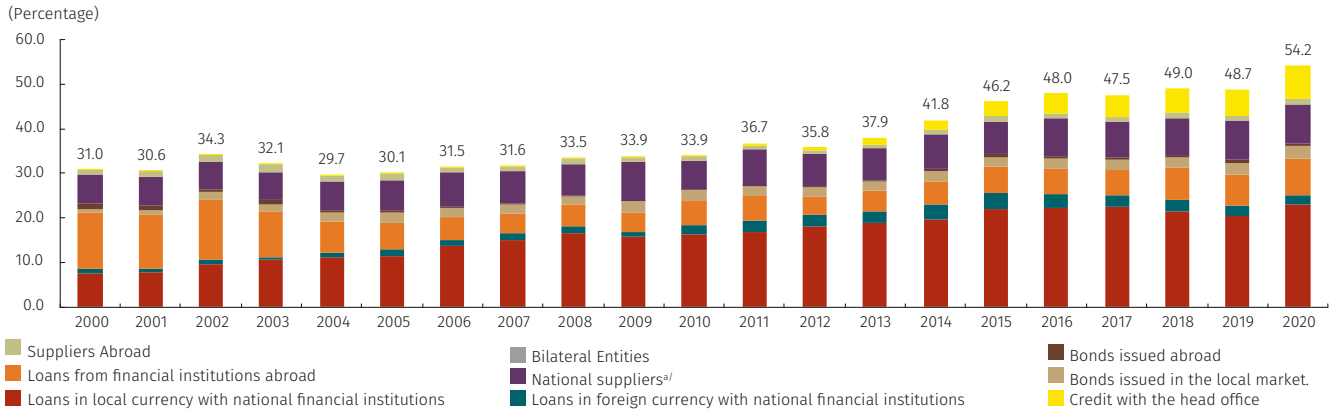
The increase in corporate indebtedness seen in 2020 occurred in a situation in which the level of economic activity was dropping, and the

14 Due to the availability of information from the FSC Format 341, "Individual Information by Debtor: Active Credit Transactions," the figures analyzed this section are presented with a cut-off date of December 2020.

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

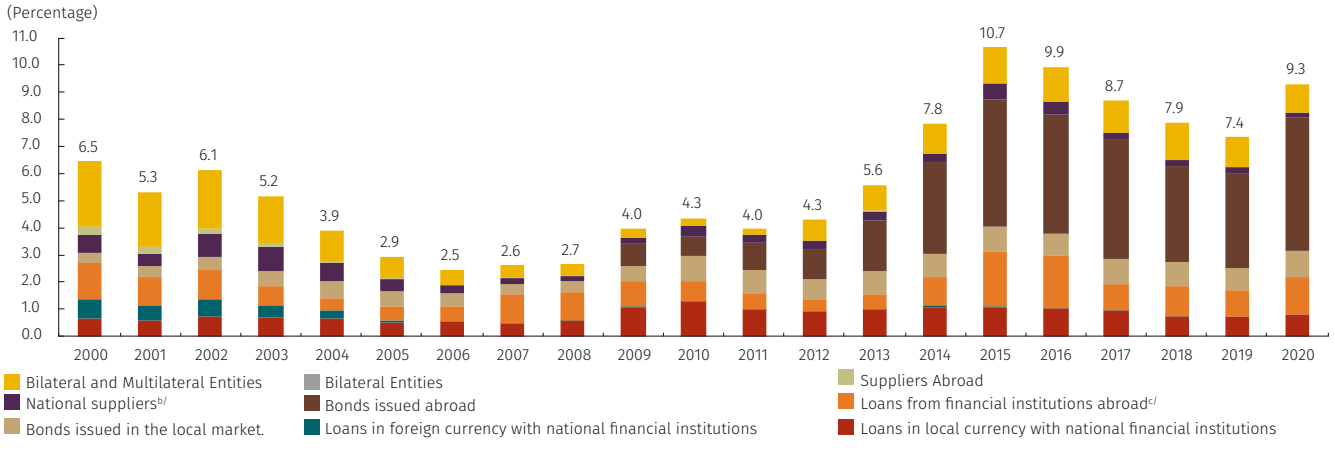
Graph 2.17
Corporate Sector Financial Debt as a Percentage of the GDP by Instrument

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 suppliers. 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 of the impact 2016 was assumed. Due to the fact that the 2020 financial statements had still not been published, the balance was assumed, as of December of that year, to have changed in equal proportion to economic activity.
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, the General Accounting Office, Ministry of the Treasury and Public Credit; calculations by *Banco de la República*.

private corporate sector had greater access to financing.[16] This indicates that companies have been able to obtain resources to soften the shocks faced by the economy. As is explained in more detail below, in the case of loans obtained from local financial institutions, access has been homogeneous by size of company. The above could have been influenced by the actions implemented by the national government in terms of access to credit for firms[17] and by the use of credit lines with CIs.

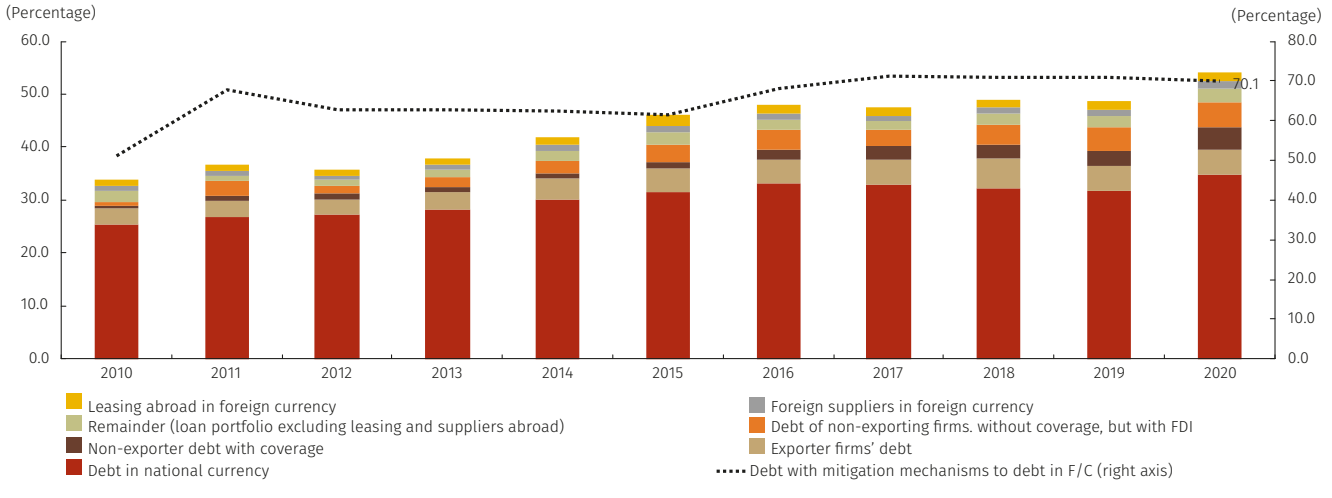
16 If the GDP had remained constant at the value seen in 2019, the total debt of the corporate sector as a percentage of the GDP would have risen 4.4 pp.

17 The national government implemented the special guarantee program "United for Colombia" by means of which the National Guarantee Fund will back loans to SMEs. Moreover, Findeter, Bancoldex, and Finagro were authorized to grant direct loans with an offsetting rate to companies that needed to finance projects or activities in the sectors most affected by the pandemic.

When indebtedness is analyzed by type of currency, private companies continued to keep the majority of their debt in pesos (64.1%). The rise in the aggregate debt as a percentage of the GDP was due to a rise in debt in local currency (2.9 pp) and foreign currency (2.6 pp). The increase in debt denominated in foreign currency is partly due to the effect of the depreciation of the peso in 2020. If the MER had remained constant at the value seen in December 2019, the debt in foreign currency as a share of the GDP would have risen 1.8 pp.

Debt denominated in foreign currency may be a source of vulnerability for the corporate sector to the extent that it exposes CIs 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, FDI).[18] Graph 2.18 shows the private corporate sector's financial debt as a share of the GDP by currency hedging, FDI, and the debtor's foreign trade as of 2020. In spite of the rise in indebtedness in foreign currency, the debt that has some mechanism for mitigating the exchange rate risk still represents the majority of this segment (70.1%). This debt has also had a growth trend since 2010 when it represented 51.1%.

Graph 2.18
Private Corporate Sector Financial Debt as a Share of GDP by Exchange Rate Coverage and Debtor Foreign Trade

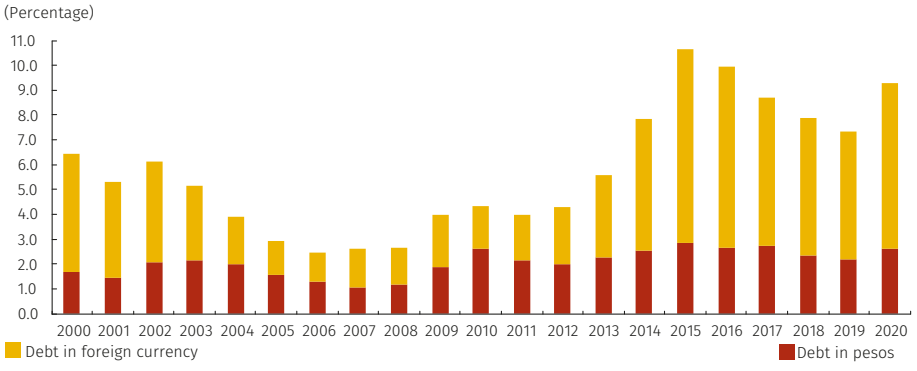


Note: the debt of suppliers in foreign currency and *leasing* with entities abroad is not available by NIT and, therefore, it is not possible to identify whether or not this debt belongs to hedged companies.
Sources: Office of the Financial Superintendent of Colombia, DANE, and *Banco de la República*, calculations by *Banco de la República*.

Public companies continued to keep the majority of their debt in foreign currency. The rise of the debt of public firms as a share of GDP is primarily caused by a higher debt denominated in foreign currency (Graph 2.19) in line with the higher balance of bonds issued abroad.

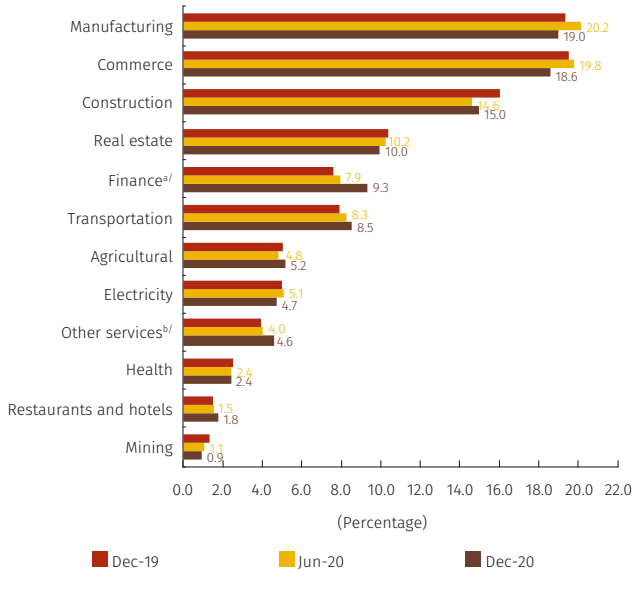
18 When a foreign entity has FDI in a local company the foreign exchange risk for the latter is mitigated due to the fact that it is assumed that the investor has an incentive to support the company in the case of a depreciation in the exchange rate. In addition, the structure of the local firm's foreign currency balance sheet may be a strategy used by the economic group to which the company belongs to reduce the exchange mismatch of the group as a whole.

Graph 2.19
Public Corporate Sector Financial Debt as a Percentage of GDP by Currency



Note: Prepared using the same information as on Graph 2.17, panel B.
Sources: Office of the Financial Superintendent of Colombia, Contaduría general de la Nación (General Accounting Office), Ministerio de Hacienda y Crédito Público (Ministry of the Treasury and Public Credit); calculations by *Banco de la República*.

Graph 2.20
Breakdown of the Private Corporate Sector Portfolio Balance by Economic Sector



a/ In the sector of financial activities and insurance, entities supervised by the Office of the Financial Superintendent of Colombia are excluded.
b/ 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.
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 Analysis by sector[19] and company size[20]

With the expiration of EC 007 and 014 issued by the FSC to mitigate the effects of the health crisis caused by Covid-19, the traditional credit risk indicators analyzed began to show deterioration during the second half of 2020. This was most significant in the case of the QIR and for the hotels and restaurants, mining, and commerce sectors.

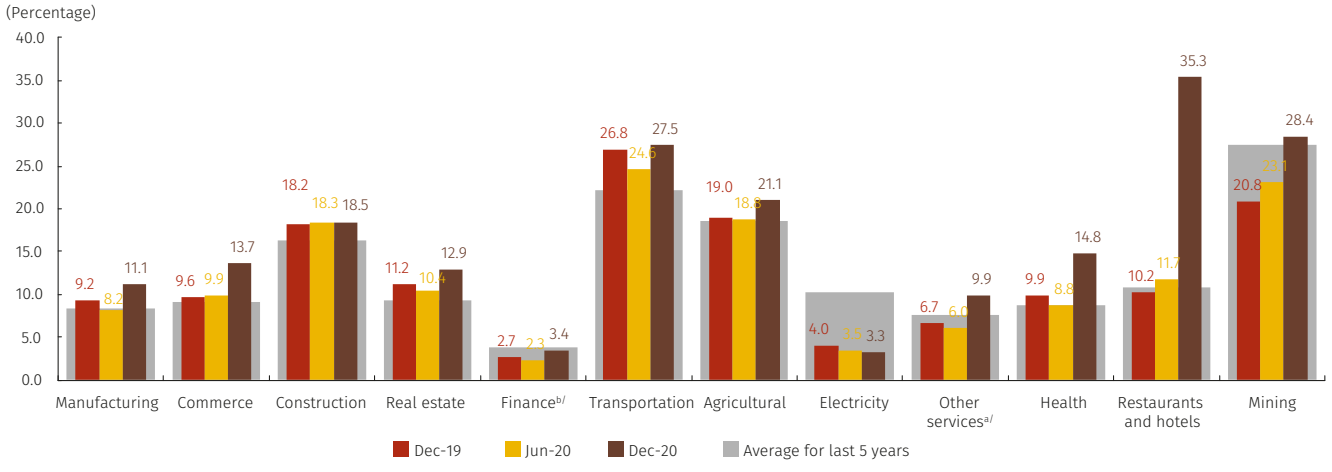
The economic sectors with the largest share of the loan portfolio granted to the private corporate sector were still manufacturing, commerce, and construction which, as a whole, accounted for 52.6% of this portfolio as of December 2020 (Graph 2.20). When the QIR is calculated by economic sector, it is clear that there was an increase in the indicator during 2020 for all sectors except electricity. The increase in hotels and restaurants, mining, health, and commerce sectors was especially notable (Graph 2.21, panel A). In line with the above, the contribution of the latter sectors to the QIR of the commercial portfolio rose during the same period (Graph 2.21, panel B).

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

20 For this subsection, the companies are classified by size using the limits stipulated in Annex 3 of Chapter II of the Basic Accounting and Financial Circular of the Financial Superintendency of Colombia, in which large companies are defined as those with assets exceeding 15,000 current legal minimum monthly salaries (SMMLV), medium-sized companies as those with assets between 5,000 and 15,000 SMMLV, and small companies as those with assets of less than 5,000 SMMLV.

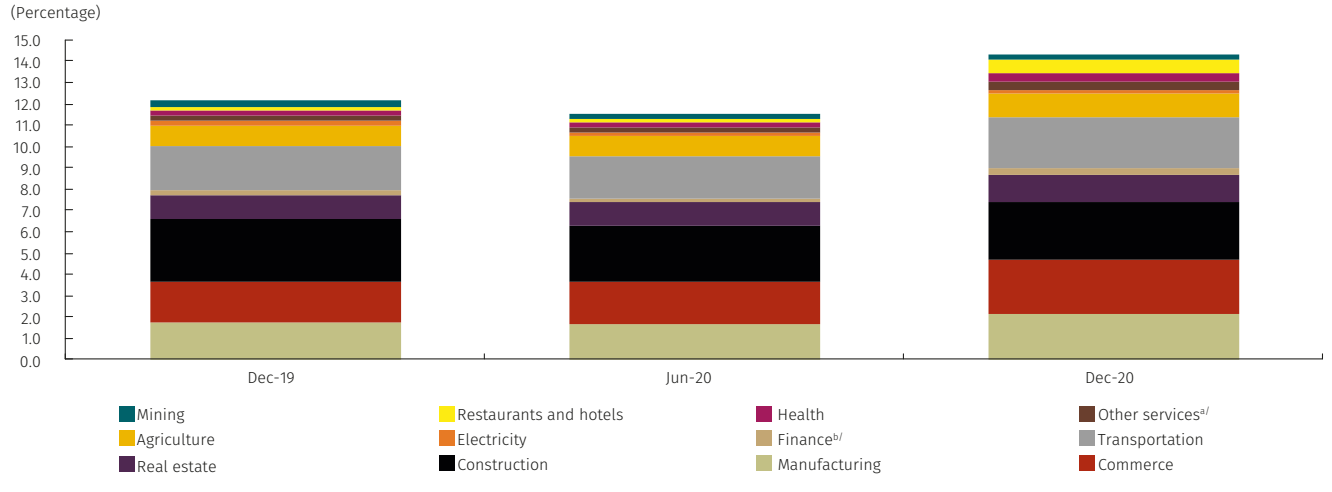
Graph 2.21
QIR of the Private Corporate Sector

A. QIR by Economic Sector



Note: the sectors are organized horizontally (from left to right) from the most to the least representative.

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*.

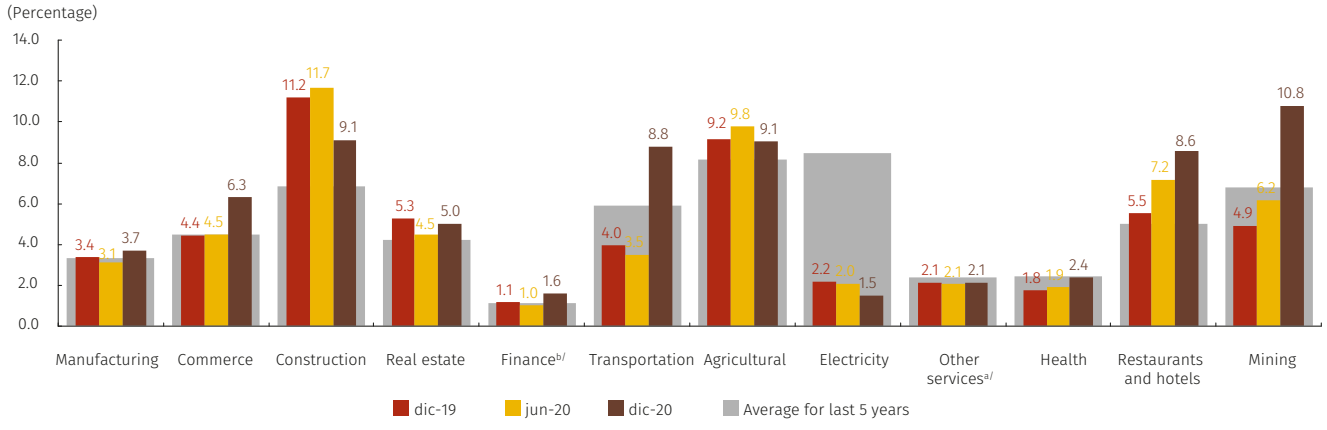
When the sectoral NPL is evaluated, a less generalized performance is seen in comparison to the QIR, which reflects the CIs' prospective credit risk management. With respect to the NPL, there was deterioration in seven of the twelve sectors, and the largest increases were observed in mining, transportation, commerce, and restaurants and hotels. In terms of the contribution to the commercial loan portfolio's NPL, the largest increases came from transportation and commerce (Graph 2.22).

Given the current situation, the traditional credit risk indicators were calculated for the group of subsectors most affected by the health emergency[21] in order to compare their performance with the rest of the

21 This classification was developed by the technical staff at *Banco de la República* and includes building construction, airline transportation, lodging and meal services, textile manufacturing, vehicle maintenance and repair, etc.

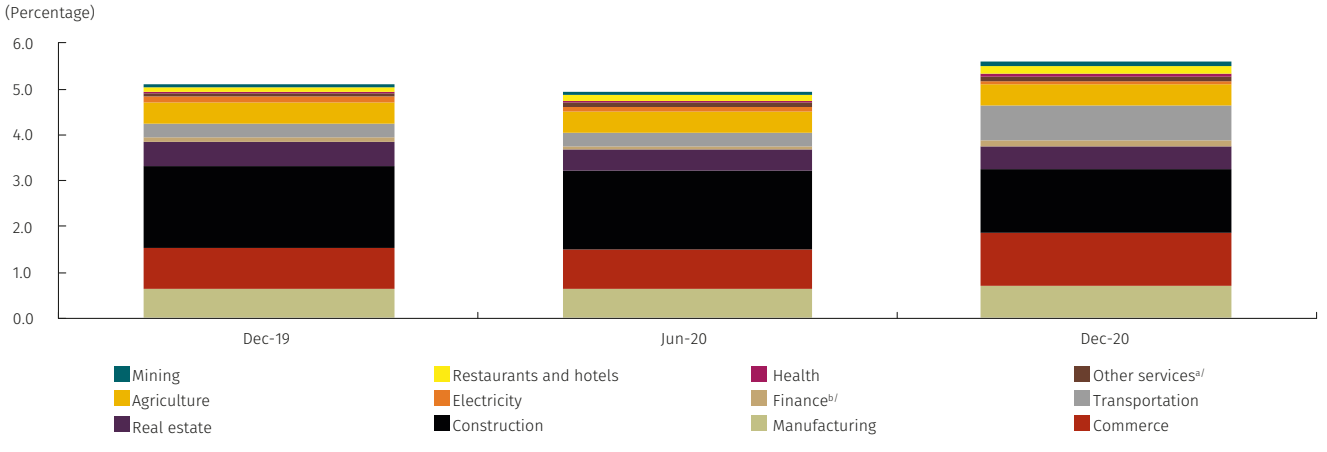
Graph 2.22
NPL ratio of the Private Corporate Sector

A. NPL indicator by Economic Sector



Note: the sectors are organized horizontally (from left to right) from the most to the least representative.

B. Contribution to the NPL ratio by Economic Sector



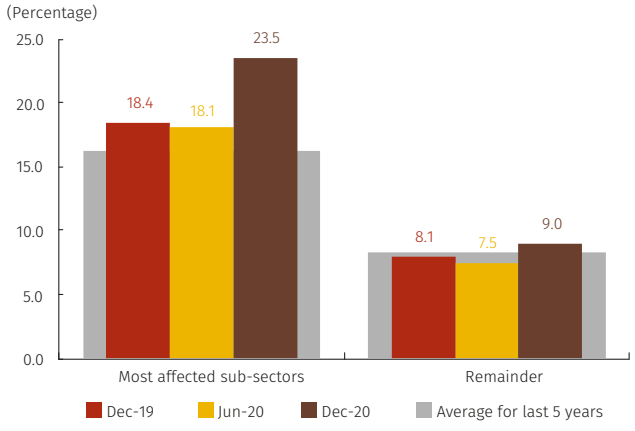
a/ The firms that belong to the following economic sectors are grouped under 'other services': public administration and defense, education, health and social services, other community, social, and personal services, private households with domestic help, and extraterritorial organizations and entities.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

subsectors. Panel A of Graph 2.23 shows the QIR for both groups. As can be seen there, the two divisions presented a deterioration of the indicator during 2020. However, this has been more pronounced for the branches of activity most affected by the health crisis, which represent 24.4% of the commercial loan portfolio granted to the corporate sector. In contrast, the NPL indicator shows mixed trends since the subsectors most affected by Covid-19 show a significant deterioration, while the others show a slight decrease over the last year (Graph 2.23, panel B).

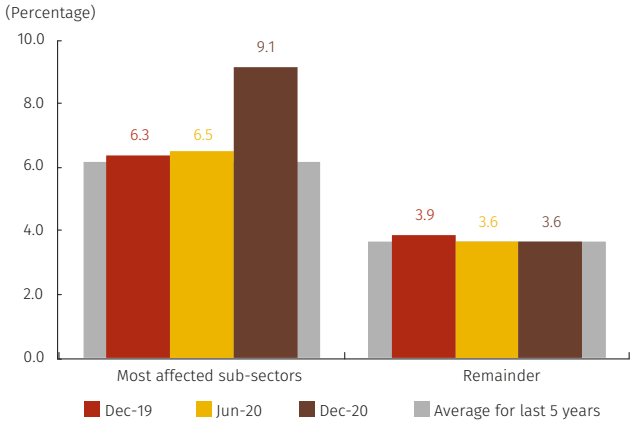
The analysis by company size reveals that all of them showed a growth trend in their loan portfolio similar to the one observed for the total commercial loan portfolio. In terms of credit risk, the three sizes saw a similar materialization of risk. Nonetheless, the rise in risk perception has been more marked in the case of small and medium companies.

Graph 2.23
Traditional Credit Risk Indicators for Most Affected Sub-sectors vs. Remainder

A. QIR



B. NPL indicator

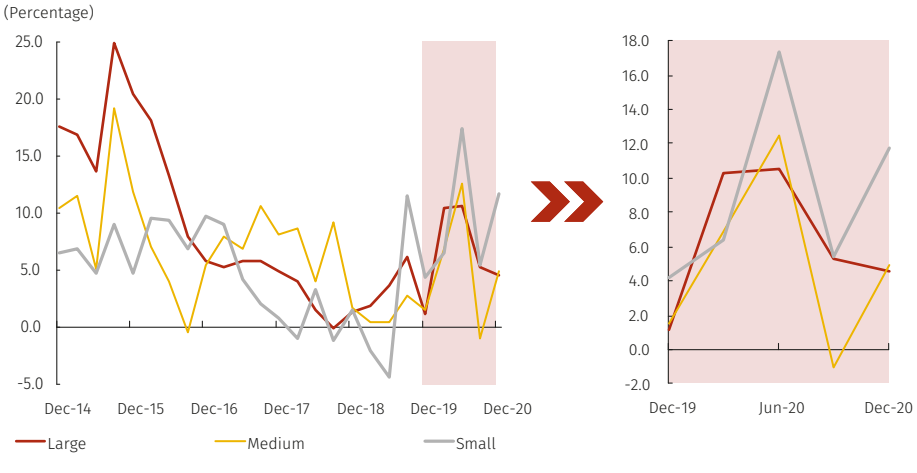


Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

Given the economic situation resulting from the Covid-19 health crisis, it is necessary to analyze the performance of the loan portfolio granted to the private corporate sector by size of company to see if some sizes have been more affected than others. With respect to the loan portfolio dynamics, the performance for the three categories is similar to what is seen for the total commercial portfolio. Thus, as of December 2020 each size registered real annual growth rates higher than those seen prior to the onset of the pandemic (Graph 2.24).

When the traditional credit risk indicators are analyzed by size, it is clear that the QIR for all categories rose during 2020 but the deterioration seen for the small and medium-sized companies (SMEs) was significantly higher than the one observed for the large ones (Graph 2.25, panel A). Likewise, the NPL indicator also rose for the three sizes, but in this case, the increase for both large and SMEs was similar in magnitude (Graph 2.25, panel B). This means that, in the midst of the health crisis, the risk perception that CIs have of SMEs' has increased more than their risk perception of large companies. This is in line with the ability each size has to cope with adverse shocks.

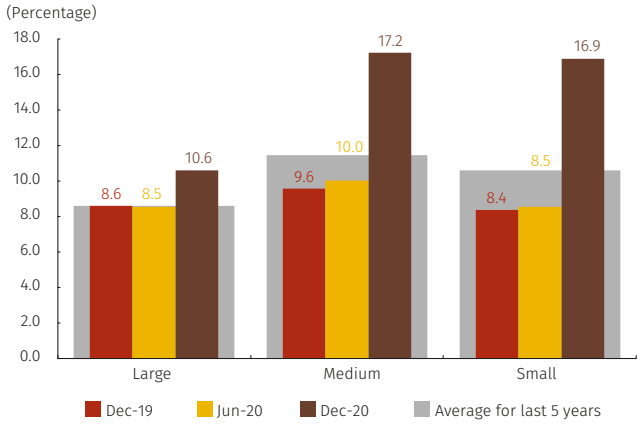
Graph 2.24
Growth of the Commercial Loan Portfolio by Company Size



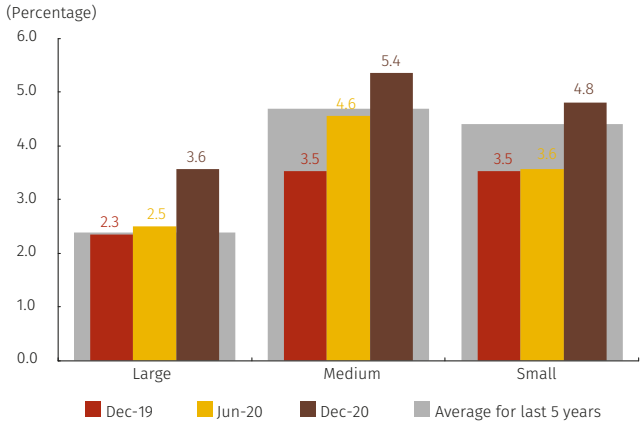
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

Graph 2.25
Traditional Credit Risk Indicators by Company Size

A. QIR



B. NPL indicator



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

2.2.1.3 Balance sheet forecasts and fragility of private corporate sector companies[22]

The balance sheet projection exercise for these companies indicates that an increase in the percentage of fragile companies would be likely as of March 2021, mainly because of the difficulty of covering the financial costs with the operating income.

In order to assess the future trend of companies' credit risk, a balance sheet simulation exercise was carried out for those that report information to the Superintendency of Corporate Affairs (SCA). In this exercise, in general terms, it is assumed that companies' income grows at the same actual rate as the GDP of the sub-sector to which they belong.

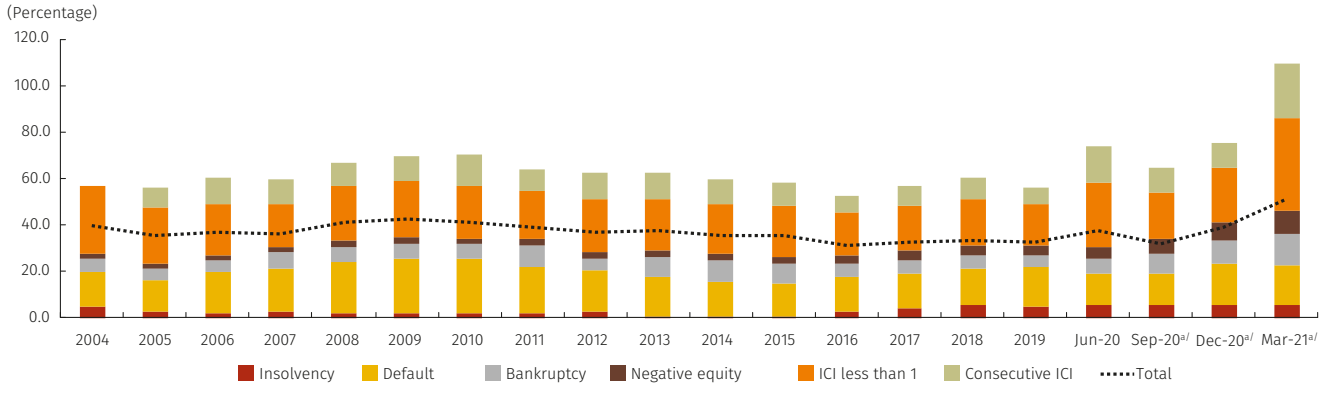
Graph 2.26 shows the proportion of fragile firms found and forecasted based on the exercise carried out.[23] Results indicated that the proportion of fragile companies will probably rise until it reaches its peak at the end of the analysis horizon. Likewise, the factor that is likely to contribute the most to the increase in fragile companies will probably be the difficulty of covering the financial costs with the income from their operations (ICI criterion less than 1). The above is a result of the drop in income that was seen as of the second quarter of 2020 in the context of the health emergency.

The forecast exercise shows that there will probably be a rise in the QIR of the commercial loan portfolio where the most affected sectors are likely to be transportation, manufacturing, construction, and other services.

22 In this subsection, the databases of the companies that report their balance sheets to the Superintendency of Corporate Affairs (SCA) are used together with the data on the FSC's Form 341. The SCA information is usually annual and has a six-month lag. Nevertheless, due to the situation arising from the corona virus pandemic, this entity asked a set of companies to submit their balance sheet information as of June 2020. Therefore, for the current period, the information from the balance sheets as of June 2020 is used for the companies that reported it to the SCA on that date and the balance sheets from December 2019 for those that did not report the information in the first half of 2020. Based on the above, the balance sheets for September and December 2020 and March 2021 are projected using the sector GDP forecast made by the technical staff at *Banco de la República* for the last quarter.

23 A company is defined as fragile if it meets any of the following criteria (the label associated with Graph 2.26 is in parentheses): 1) it enters into an insolvency proceeding with the SCA (*insolvency*); 2) has a credit rating other than A or is thirty or more days in arrears (*default*); 3) registers negative equity (*negative equity*); 4) incurs ratio of subscribed capital to wealth lower than 50% (bankrupt); and 5) shows an interest coverage indicator, calculated as the ratio of after-tax earnings to interest expense, that is less than 1 in the period under analysis (*ICI less than 1*) or for two consecutive years (*consecutive ICI*).

Graph 2.26
Share of Fragile Firms

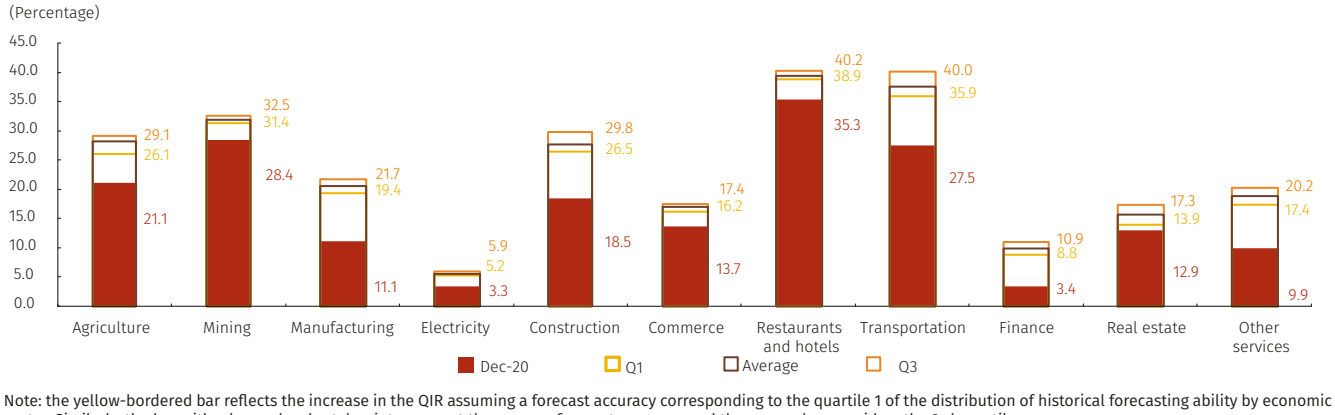


Note 1: definitions of the criteria can be found in footnote 23.
Note 2: a firm may meet more than one criterion, and thus, the height of the bars may be higher than the total criterion.
a/ The dates include the projected balance sheet values. For the default and insolvency criteria, the values reported as of December 2020 remain unchanged.
Sources: Superintendency of Corporate Affairs, DANE, and Office of the Financial Superintendent of Colombia; calculations by *Banco de la República*.

With the companies' projected balance sheets, the methodology proposed by Meneses, Pirateque, and Segovia (2019)[24] is applied to identify, based on three financial indicators (*i.e.*: debt ratio, debt over cash flow, and net margin), non-vulnerable firms that could potentially move to a state of vulnerability within a year.

The information above and the historical ability of the methodology to accurately forecast a firm's state of vulnerability are used to adjust the change in the quality of the commercial loan portfolio, specifically that of the QIR at one year, without considering the measures adopted by the FSC. The results suggest that a 5.5 to 7.9 pp increase in the QIR of the commercial loan portfolio could be expected for December 2021. The sectors that will probably show the largest increases are transportation, manufacturing, construction, and other services (Graph 2.27).

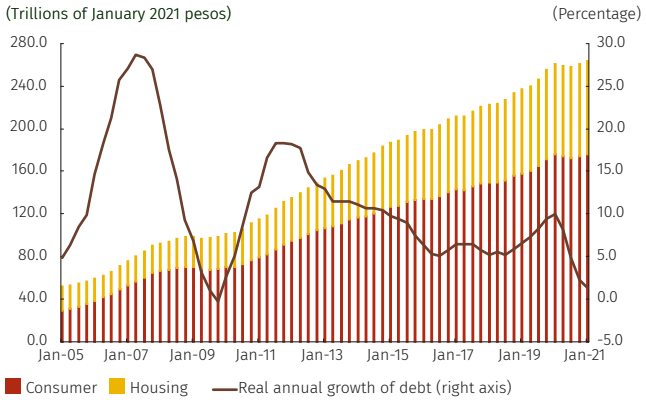
Graph 2.27
QIR Forecasts by Economic Sector



Note: the yellow-bordered bar reflects the increase in the QIR assuming a forecast accuracy corresponding to the quartile 1 of the distribution of historical forecasting ability by economic sector. Similarly, the bar with a brown border takes into account the average forecast accuracy, and the orange bar considers the 3rd quartile.
Sources: Office of the Financial Superintendent of Colombia, and Superintendency of Corporate Affairs, calculations by *Banco de la República*.

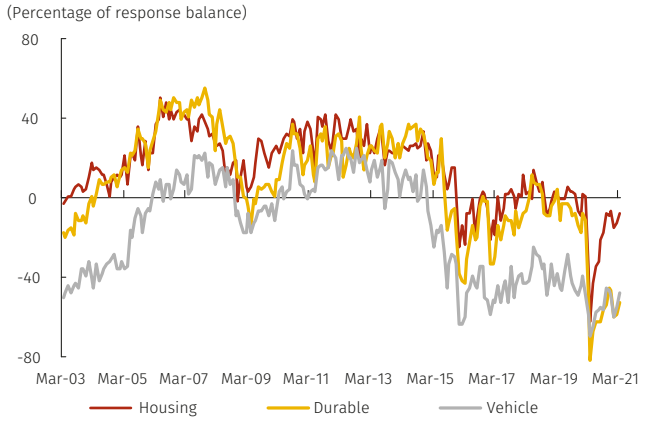
24 Specifically, in this methodology, companies in the private corporate sector are classified as vulnerable and non-vulnerable based on a risk criterion (delinquency or insolvency) and, through the minimization of a loss function, thresholds are calculated for three financial indicators (i.e., debt ratio, debt over cash flow, and net margin) that make it possible to forecast the financial health of the companies. For more detail on the methodology, 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 2.28
Breakdown and Real Annual Growth of Household Indebtedness



Sources: Office of the Financial Superintendent of Colombia, Superintendency of Economic Solidarity, Titularizadora Colombia, calculations by *Banco de la República*.

Graph 2.29
Willingness of Households to Purchase Goods



Source: Fedesarrollo, calculations by *Banco de la República*.

2.2.2 Households

The indebtedness of Colombian households continued to slow down and registered the lowest growth rate in a decade in January 2021. This was mainly due to the performance of the consumer loan portfolio.

The household loan portfolio stood at COP 263.6 t with a real annual growth rate of 1.3% as of January 2021, the lowest seen since November 2009 (0.7%, Graph 2.28). Of total indebtedness, approximately two thirds correspond to consumer loans and the remaining to housing loans. The former type of loan, with a real annual rate of 0.1%, explains the performance of total indebtedness.[25]

In spite of this, a recovery in household disbursements has been seen in recent months that may be the result of a change in household consumption patterns.

The downturn seen in indebtedness has resulted from the adjustment process the economy has gone through due to the shock arising from the spread of the coronavirus. The above has had an impact on household consumption decisions, and this has been reflected in a more pronounced slowdown in the consumer loan portfolio than in the housing portfolio. This performance is in line with the results of Fedesarollo's consumer opinion survey in which the willingness of households to buy housing has been less affected compared to buying durable goods (*i.e.*, TVs, refrigerators, etc.) and vehicles (Graph 2.29).

Likewise, when the trend of disbursements is analyzed, it is clear that, after the fall recorded in March 2020, the levels of both categories recovered and a year later new housing loans reached their highest levels since information has been available.[26] These are, specifically, the ones associated with the housing segment that is not low income housing (non-LIH)[27] (Graph 2.30, panels A and B).

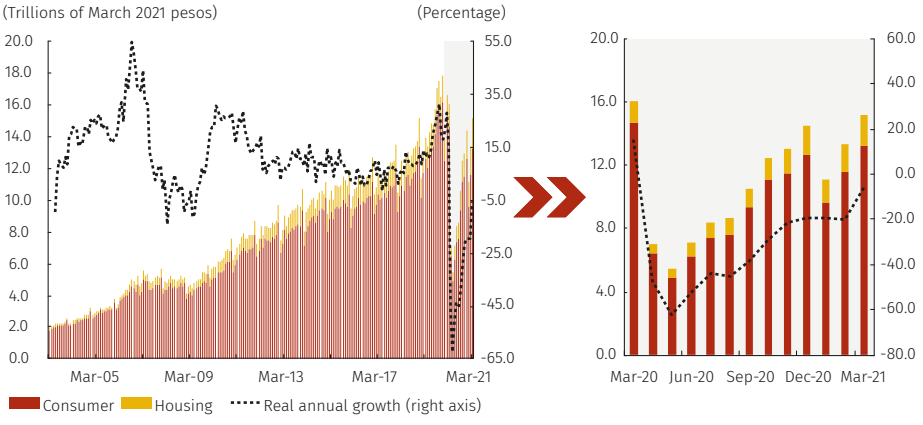
25 This growth rate differs from the one presented in section 2 since the construction of Chart 2.28 also takes into account households' obligations to savings and loan cooperatives and employee funds.

26 The information on portfolio disbursements comes from SFC Form 88, which has been available since 2002.

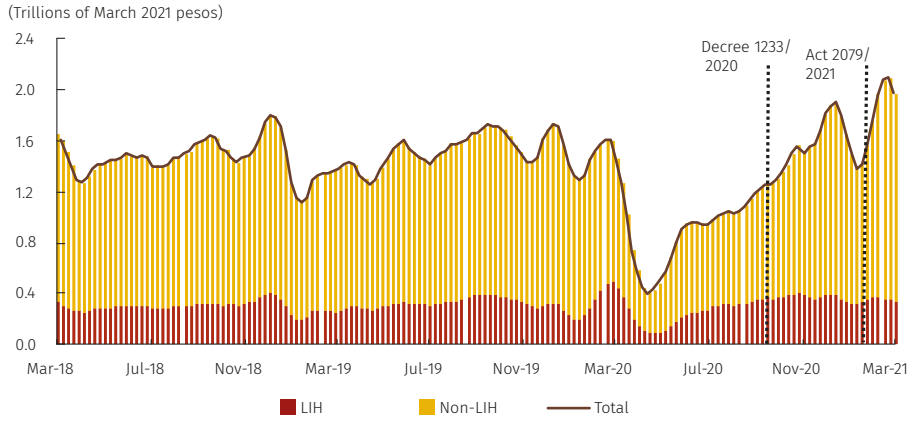
27 Even though the disbursements in the non-LIH segment peaked in March, the performance of the housing loan portfolio balance is mainly explained by the LIH segment. As of January 2021, that segment registered a real, annual growth rate of 15.9%.

Graph 2.30

A. Loan Portfolio Disbursements to Households



B. Disbursements of the Housing Loan Portfolio by Segment



Note: data are presented as four-week moving averages.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

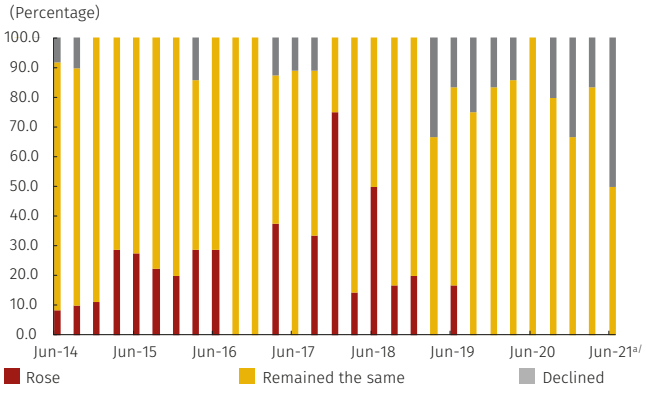
The historically high housing disbursements coincide with a less restrictive stance in granting loans for this segment. However, the QIR is also at its highest level since data has been available, and this creates a riskier outlook for CIs.

Along with the increase seen in housing disbursements, CI's stance on new housing loans of this type has become less restrictive. According to the March 2021 *Survey of the Loan Situation in Colombia*, no institution has said it will tighten its requirements while some have gradually reduced them since the end of 2019. This is in line with credit approval figures, where, on average, 65.6% of housing applications were approved between June 2020 and March 2021 in contrast to 30.2% of the consumer loans.[28]

The highest real, annual growth rate of the risky housing loan portfolio, 85.2%, was seen as of January 2021 while the risky consumer portfolio

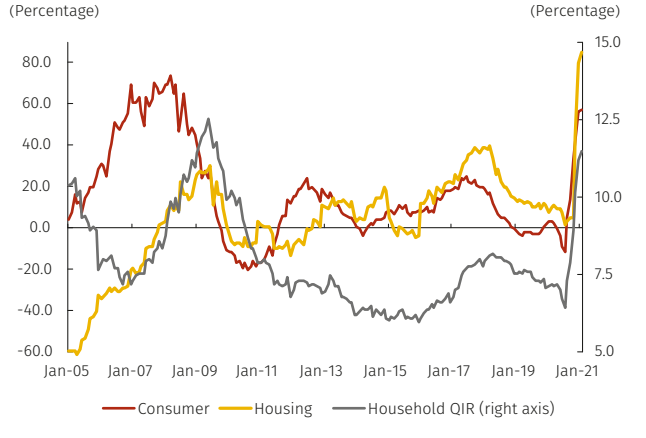
28 Figures calculated from the FSC's *Report on the Financial System during the mandatory quarantine for life*.

Graph 2.31
Change in Requirements for Allocating New Housing Loans



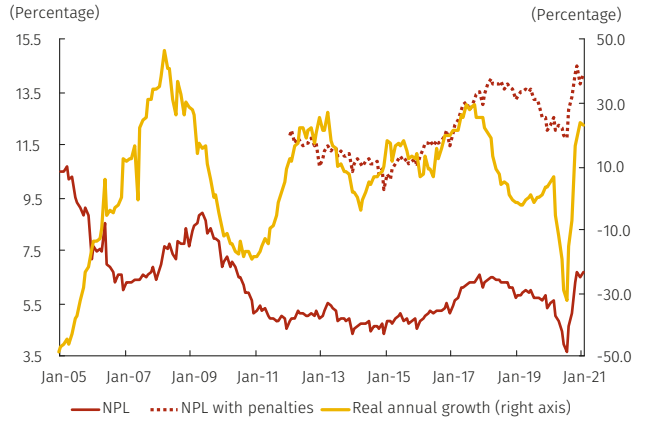
a/ June 2021 data corresponds to the expectations of intermediaries in March of the same year.
Source: *Survey of the loan situation in Colombia*, March 2021, calculations by *Banco de la República*

Graph 2.32
Real Annual Growth of the Risky Loan Portfolio and Household QIR



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

Graph 2.33
Trend of Non-performing Loan Portfolio and Household NPL



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

was at 57.5%. This translated into sharp rises in the QIR for this sector (Graph 2.32). The above information together with the expectations about housing intermediaries' loan granting requirements for the second quarter of the year (Graph 2.31) could indicate a greater appetite for risk in this segment.

The non-performing loan indicator (NPL), in turn, continued to rise as the financial relief that some borrowers received expired, and they could not meet their obligations. The progressive disclosure of credit risk, together with an increased perception of credit risk by the Cis, suggests that further increases in defaults may be seen in the short term.

The portfolio allocated to households was the one that benefited the most from the relief measures provided by the FSC. Along with the implementation of the first stage of these measures,[29] the quality indicators for this sector showed marked downturns up to July 2020. Nevertheless, to the degree that some of the grace periods and extensions granted during the first half of 2020 came to an end and some of the debtors were unable to meet their outstanding debts, the past-due portfolio began to surge in August of the same year. This translated into increases in the NPL (Graph 2.33).

Even though the perception of risk is higher for the housing loan portfolio, the consumer segments are the ones that have registered the highest levels of default. Specifically, credit cards and unspecified use loans, which account for 48% of the consumer portfolio, registered their highest rates of growth for the overdue portfolio since information has been available,[30] and this brought about historically high levels of NPL (Graph 2.34).

In spite of this, credit redefinitions have had a positive impact on the cash flow of debtors, and they have seen their financial burden lowered after the notable increase recorded as of March 2020.

Under PAD,[31] 62.3% of the portfolio that had benefited from the program as of April 7, 2021

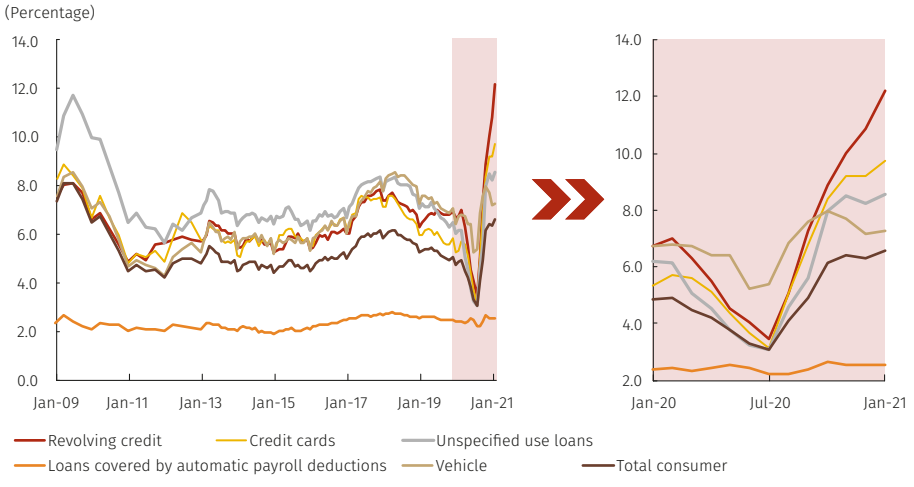
29 For more information see External Circulars 007 and 014/2020 issued by the FSC.

30 The information by portfolio segment comes from FSC Form 453, which has been available since 2008.

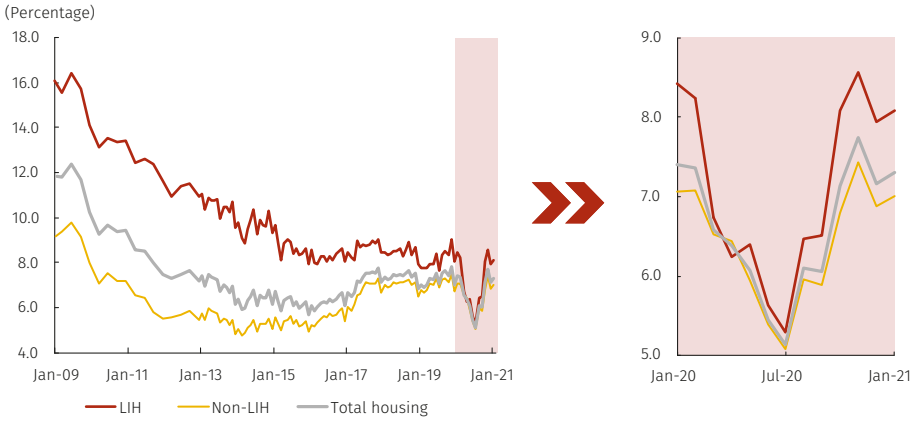
31 For more information see CI 022 and 039/2020 issued by the FSC.

Graph 2.34
Non-Performing Loan Ratio for each Segment

A. Consumer



B. Housing



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

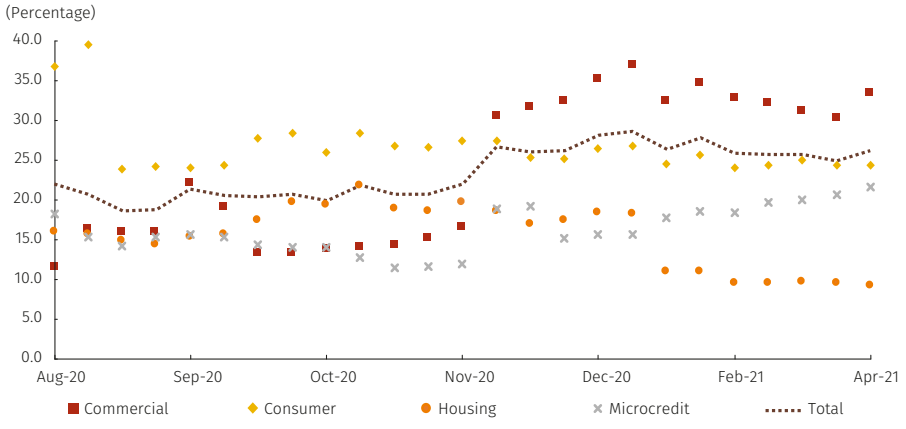
corresponds to households. The consumer portfolio is the most representative and the one that accounts for the highest proportion of the loan portfolio redefined with respect to its total balance (12.4% compared to 4.4%). The redefinition of credit conditions has led to debtors benefiting from the reductions in the installment payments and loan rates, as well as extensions of their due dates (Graph 2.35).

All of this along with the slower growth rate of indebtedness has had a positive impact on the financial burden[32] of these debtors. It was corrected at the end of 2020 after the rise seen in March as a result of the shock to the economy's income. Nonetheless, the indicator is at historically high levels and this poses a higher risk associated with household creditworthiness (Graph 2.36).

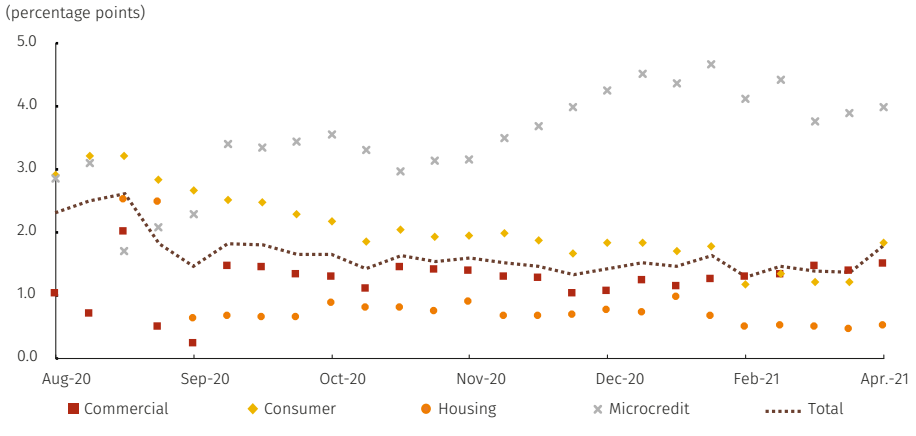
32 This indicator is calculated as the ratio between the amount CIs expect to receive in consumer and housing loan installment payments (principal and interest) and households' disposable income. The numerator is adjusted for one-month credit card use while the 2020 data in the denominator are projected based on the GDP growth rate, given the lag in DANE's national account information.

Graph 2.35
Impacts of PAD on Credit Conditions

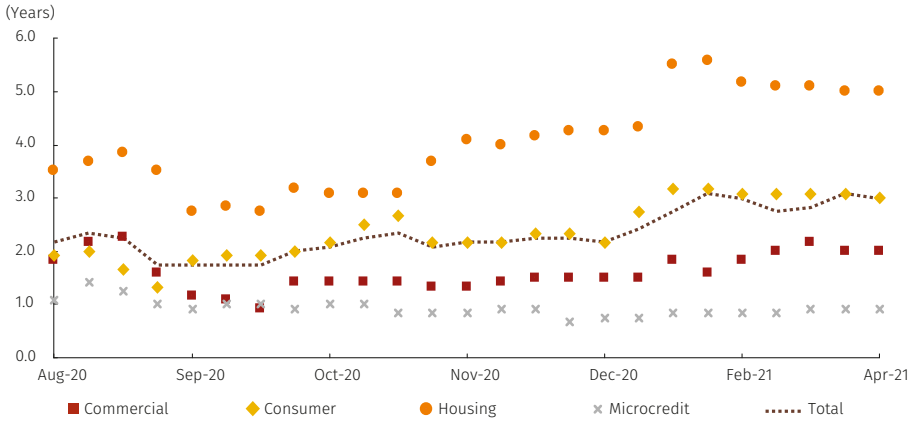
A. Average Decline in Installment



B. Average Decline in Rate

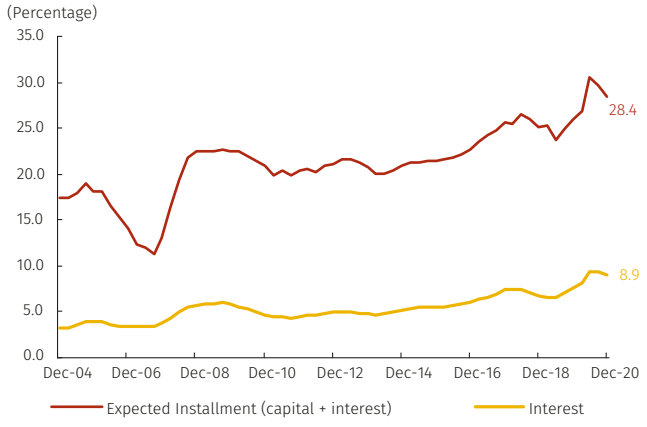


C. Average loan period extension



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

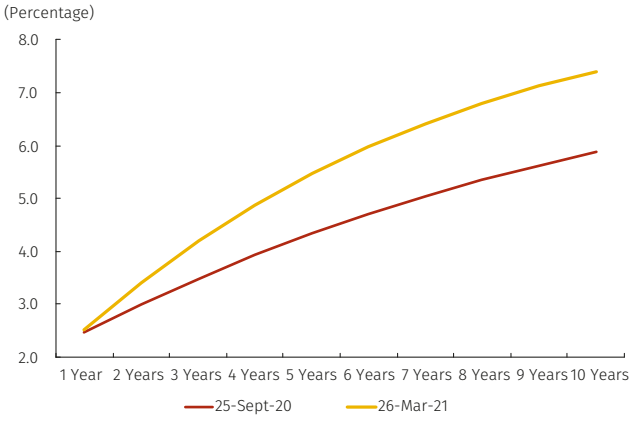
Graph 2.36
Household Financial Burden Indicator



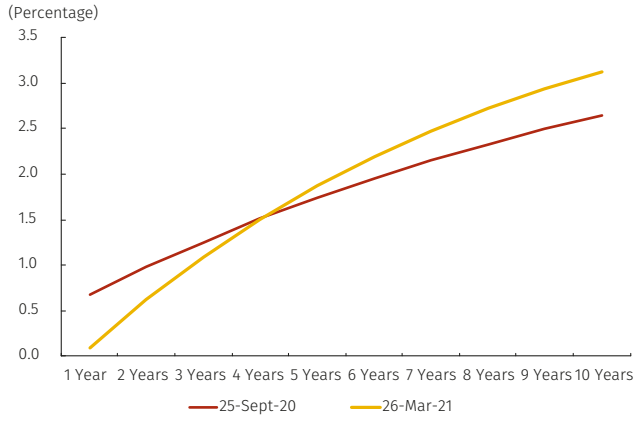
Sources: Office of the Financial Superintendent of Colombia and DANE, calculations by *Banco de la República*.

Graph 2.37
Yield Curve

A. Peso-denominated TES Market



B. UVR-denominated TES Market



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

2.3 Market Risk

The public debt market shows devaluations in the medium- and long-term tranches.

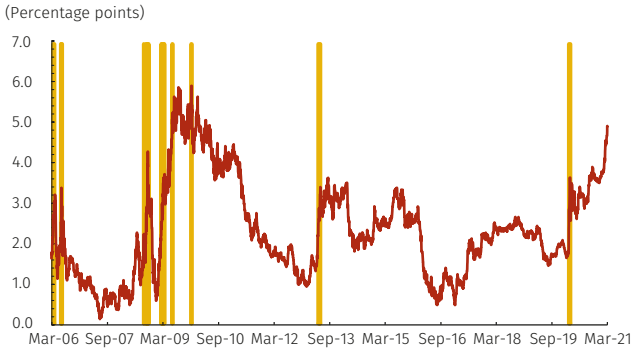
During the second half of 2020, the peso-denominated public debt market appreciated. However, from February to March 2021, the medium and long tranches of the curve have shown devaluations. This has been driven mainly by greater uncertainty in the local market with respect to the foreign market against a backdrop of rising interest rates on U.S. bonds which is in line with the performance of global fixed income markets (Graph 2.37, panel A). Regarding the UVR-denominated public debt market, appreciations are seen in the short term and devaluations in the medium and long-term (Graph 2.37, panel B). The latter, which are lower than the ones seen in the peso-denominated market, probably indicate that the uncertainty is not due to inflationary components.

The steepening of the yield curve, in turn, measured as the difference between the 1- and 10-year peso-denominated TES rates continued the growth trend seen since the beginning of 2020 and was at levels that have not been registered since the end of 2009 (Graph 2.38).

The variable income markets have yet to recover from the shock caused by the coronavirus. Furthermore, there have been increases in the level of market volatility in general.

The variable income market price as measured by the Colcap index,[33] which had shown a recovery over

Graph 2.38
Differential for 1- to 10-year Interest Rates

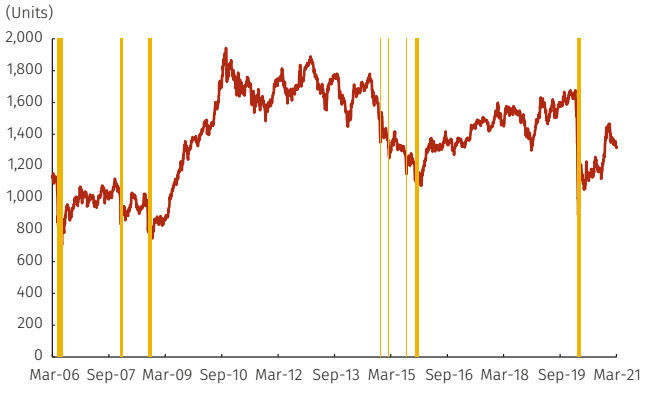


Note: the yellow bars indicate the periods in which the change in the differential is greater than 100 bp with respect to the previous month.
Sources: DCV and Precia, calculations by *Banco de la República*.

33 The MSCI Colcap index will replace the Colcap index at the end of May 2021.

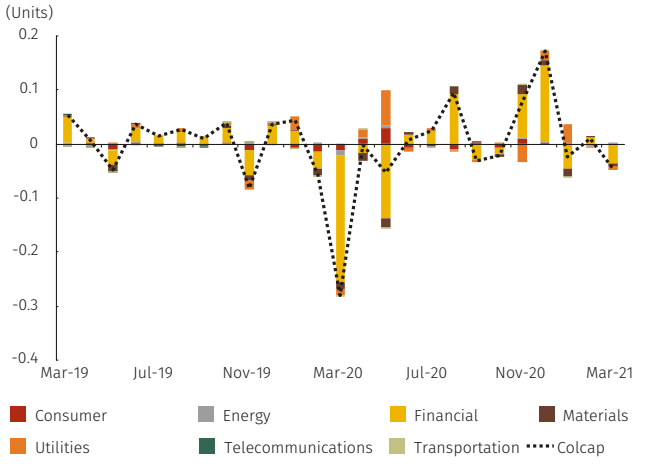
Graph 2.39
Variable Income Market

A. Behavior of Colcap

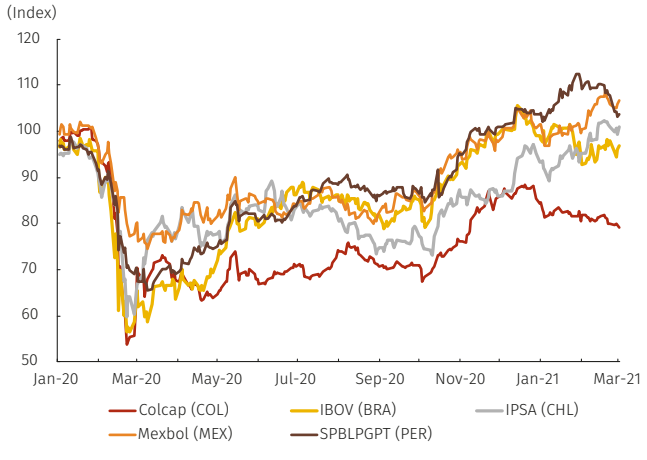


Note: The yellow bars indicate periods in which the Colcap index declined by more than 10% from the previous month.

B. Breakdown of Colcap Growth



C. Regional Stock Market Indices



Sources: BVC and Yahoo Finance, calculations by *Banco de la República*.

the course of the past year, has declined during the first few months of 2021 (Graph 2.39, panel A). This has been largely due to the weak performance of the financial sector stocks (Graph 2.39, panel B). Furthermore, when the stock index is compared to its peers in the region, Peru and Colombia show a declining trend by March 2021 with Colombia being the slowest to recover (Graph 2.39, panel C). The latter may be due, in part, to the low diversification of the Colombian stock market which is primarily concentrated in financial and energy sector shares.

The volatility in the fixed income and variable income markets has declined from the levels seen in March 2020. However, they have not yet returned to the values they had before the pandemic (Graph 2.40). In the case of the volatility in the public debt market, this rose consistently between February and March thus reflecting an uncertain outlook.

To date, the securities held by foreigners in the TES market and expectations regarding Banco de la República's (Banrep) interest rates show a stable trend.

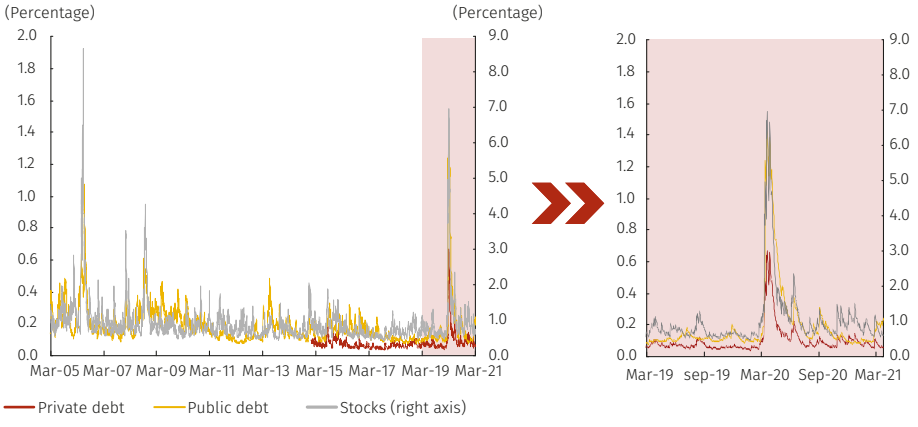
The participation of foreigners in the TES market has fluctuated around 24.0% (Graph 2.41, panel A). At the end of 2020, the foreign investors' holdings of TES recovered and closed with a higher share than what had been seen at the beginning of the year. However, the first data for 2021 shows a decline in holdings much like what was registered in the previous two years (Graph 2.41, panel B).

With regard to the movements of the Banrep benchmark rate, the market analysts have adjusted their forecasts in a situation in which a slower recovery is expected given the persistence of coronavirus infections (Graph 2.42). While in October 2020, an increase was expected in the third quarter of that year, as of April 2021, the first movements in the benchmark rate are expected towards the beginning of the coming year.

Finally, although the financial institutions registered repositions going into variable income securities, the main exposure to market risk is still concentrated in fixed income.

Exposure to fixed and variable income markets measured as an investment in securities exposed to

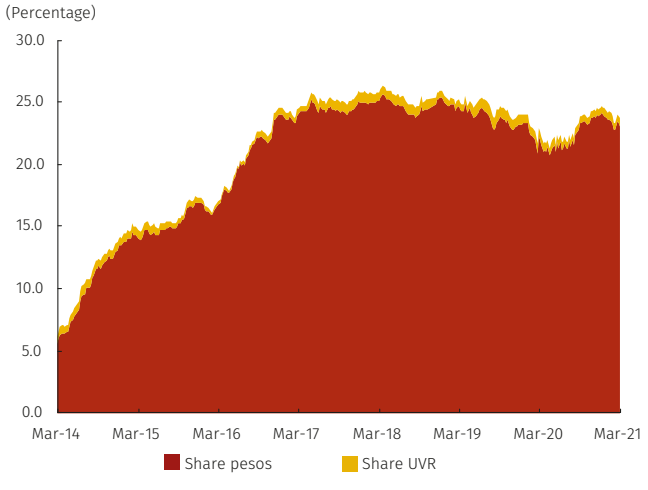
Graph 2.40
Conditional Volatility of Colombia's Fixed Income and Variable Income Markets



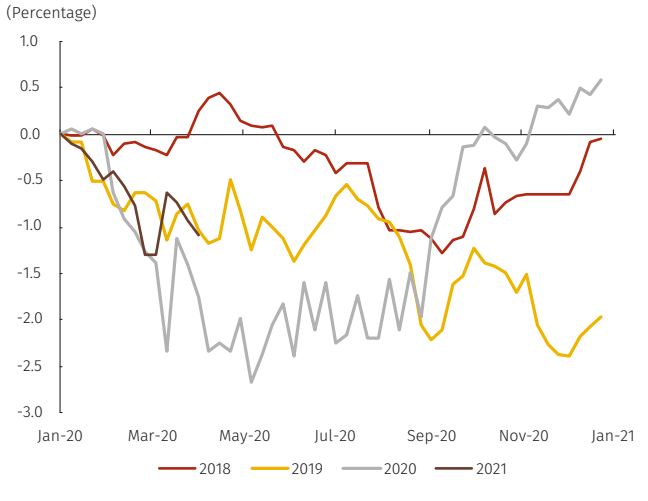
Source: Infovalmer, calculations by *Banco de la República*.

Graph 2.41
Share of TES held by foreigners

A. Historical Performance



B. Cumulative Change

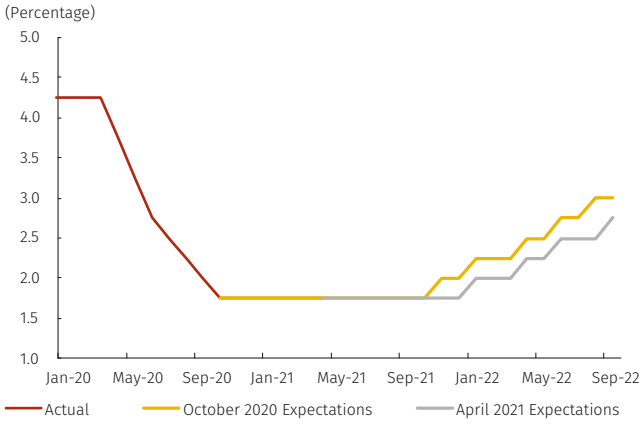


Source: DCV, calculations by *Banco de la República*.

market risk,[34] is concentrated in the fixed income securities where the government bond market represents the largest share (Table 2.2). With the exception of the FCs, the CIs registered a rise in all the segments. Of these, the most important one was stocks.

For NBFIs, there were aggregate decreases in fixed-income securities and a slight growth in variable income. The most significant investment growth is registered in TES for TC and in private debt for PFM while the most relevant declines are found in the PFM TES balance sheets and the TC private debt balance sheets. In terms of the managed position, there were sharp decreases in fixed-income securities.

Graph 2.42
Expectations for Benchmark Rate



Source: *Banco de la República* (*Survey of Economic Analysts' Expectations*).

34 This balance is at market prices and is calculated according to 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.

Table 2.2
TES Balances (in pesos and UVR), Financial Institutions' 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	47.41	4.92	14.59	66.92	7.85	4.44	14.03	8.88
Commercial banks	44.11	4.51	0.00	48.62	9.88	2.34	0.00	9.14
Financial corporations	3.27	0.25	14.56	18.07	2.56	28.93	13.79	11.76
Finance companies	0.04	0.12	0.01	0.17	-94.21	46.34	358.07	-76.26
Financial cooperatives	0.00	0.04	0.02	0.06	0.00	49.99	0.00	125.93
Non-banking Financial Institutions (NBFI)	9.73	11.63	6.55	27.90	-6.89	-7.73	0.01	-5.72
Pension Funds: proprietary position	0.15	0.96	0.13	1.23	-46.22	12.01	-9.88	-2.89
Stock Brokerage Firms: proprietary position	1.31	0.17	0.14	1.63	2.99	5.03	6.60	3.52
Trust Fund Companies: proprietary position	0.24	0.35	1.10	1.69	67.18	-15.43	9.96	8.32
Insurance and Capitalization Companies	8.03	10.14	5.17	23.35	-8.31	-9.15	-1.78	-7.31
System in Proprietary Position	57.14	16.55	21.14	94.82	5.02	-4.42	9.28	4.13
Managed position								
Stock-brokerage firms: third party position	1.02	11.53	8.61	21.17	-19.31	-9.99	16.86	-1.31
Trust Fund Companies: third party position[b/]	92.02	41.57	13.78	147.36	-18.02	-5.39	-5.96	-13.74
System	150.17	69.65	43.53	263.35	-10.56	-5.96	5.23	-7.05

a/ 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.
b/ Pension liabilities managed by trust companies are excluded.
Sources: Central Securities Depository (DCV) and Office of the Financial Superintendent, calculations by *Banco de la República*.

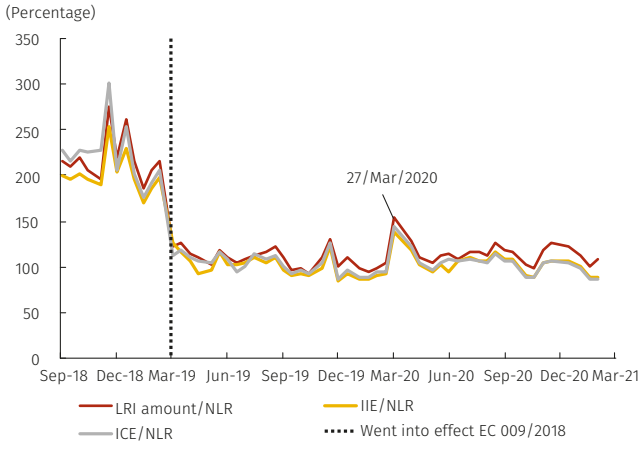
2.4 Liquidity Risk and Interest Rate Risk in the Banking Book

2.4.1. Liquidity Risk

More than twelve months after the beginning of the pandemic, the CIs continue to have a strong aggregate liquidity position.

Aggregate 30-day liquidity measures for CIs (indicator of individual exposure IIE, indicator of consolidated exposure ICE,[35] and liquidity risk indicator LRI) suggest that institutions are holding enough funds to face their net 30-day liquidity requirements, and, at the same time, they far exceed the regulatory minimum. These indicators, which are calculated as a proportion of the 30-day net liquidity LRI requirements, have shown a stable trend since the increase registered in March 2020 (Graph 2.43).

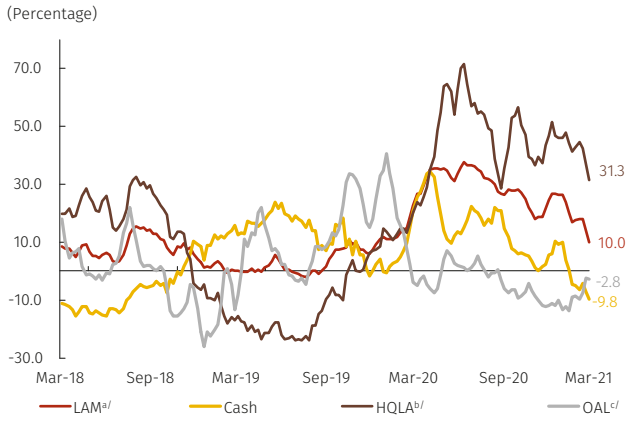
Graph 2.43
Short-term Liquidity Indicators for CIs Acting as FEMI[a/] (at thirty days)



a/ Foreign exchange market intermediaries.
NLR: Net liquidity requirements for 30-day LRI.
Note: when the amount liquidity indicators in the numerator of this measure are used, the regulatory limit in the graph corresponds to zero.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

35 The *IIE* and the *ICE* indicators make it possible to measure the liquidity risk of the foreign exchange market intermediaries (FEMI) while keeping in mind the currency mismatches over a horizon of thirty days. For more information on the calculation of these indicators see *Banco de la República*'s External Regulatory Circular DODM-361.

Graph 2.44
Real Annual Growth of the CI Liquid Assets



a/ Liquid assets adjusted for foreign exchange and market risk.
b/ Investments in high quality liquid assets.
c/ Other liquid assets.
Note: three-week moving average.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

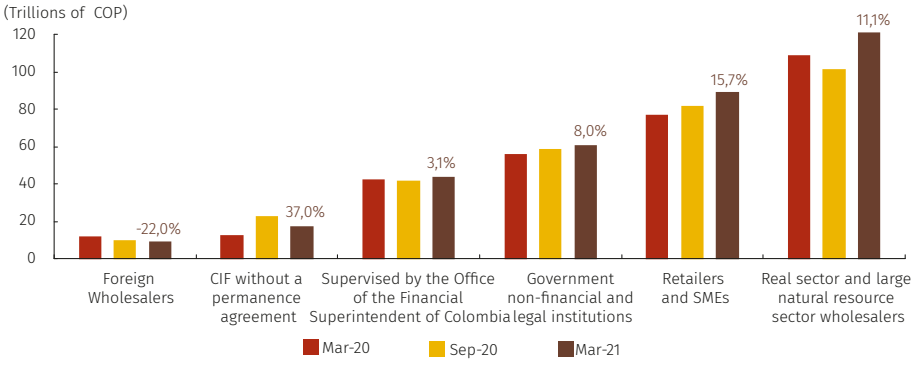
Liquid assets registered a downturn in the last year. Additionally, there was a recomposition from cash to liquid investments

Since December 2020, the CIs' liquid assets have shown a downturn in contrast with the surge that had been registered since March 2020. By component, this performance reflected a decrease in cash holdings (a segment that accounts for 29.8% of the total) and in the remaining assets other than investments in high quality liquid assets (HQLA). Over the last six months, the HQLA have registered a real, annual growth of close to 30% which is the highest rate of expansion seen in the last five years. The above trend may be consistent with lower risk aversion to the extent that there is less preference for more liquid assets compared to the beginning of the pandemic (Graph 2.44).

In terms of structural liquidity, in addition to lower credit growth, the CEs' liabilities and capital slowed down in the last six months. Meanwhile, there has been a shift from term deposits, financial obligations, and bonds to demand deposits.

The downturn in the growth of CI funding (liabilities and capital) was the result of a smaller contribution from term deposits (second most representative instrument), financial obligations, and bond issuance. Demand deposits,[36] in turn, continued to make the largest contribution while, at the same time, their growth rates remained stable. When the trend of these deposits was analyzed, higher growth rates were seen during the past year for most of the counterparties. This was the case with open-ended CIF deposits as well as with retailer and SME deposits. All of these reached their highest growth as of January 2021 (37.0% and 15.7%). In contrast to the above, there was a decrease in deposits from large foreign companies (22.0%) although their share of total deposits is less than 3.0% (Graph 2.45).

Graph 2.45
Distribution of Demand Deposits by Counterparty

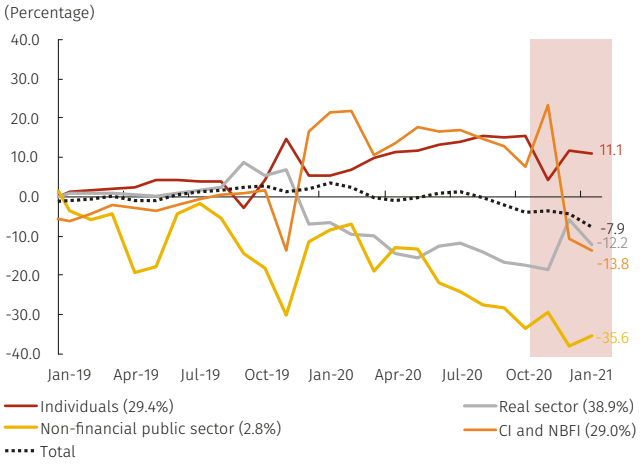


Note 1: the brown label represents the real annual growth of deposits for each counterparty.
Note 2: the balances presented are in trillions of COP as of March 2021.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

36 Demand deposits are the most representative instrument of CI financing. As of January 2021, this item represented 41.4% of the total.

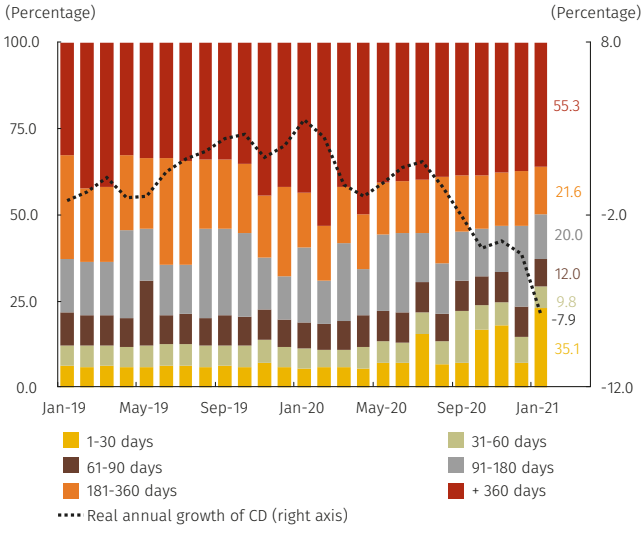
Graph 2.46
Breakdown of the CIs' CDs

A. Real annual growth by counterparty – Demand deposits



Note: the share of each counterparty in the total is shown in parentheses.

B. Term deposits by residual period



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

Over the last year, the CDs of the non-financial public sector, the real sector, and institutions supervised by the FSC declined in contrast with those of individuals which have continued to increase. However, the expansion of the latter was not enough to offset the downward trend of the remaining counterparties and there has been a real decrease in the total for these deposits since August 2020 (Graph 2.46, panel A). There has been a shift towards maturities of less than six months with the one that is under thirty days showing the largest surge (Graph 2.46, panel B).

The structural liquidity of the CEs, measured by the net stable funding ratio (NSFR), registered a rise as a result of lower loans and increases in technical assets.

In line with the downturn in loans, stable funding requirements have decreased and caused a rise in the CIs' aggregate NSFR.[37] This rise, which is significant for some institutions, has been, to a lesser extent, driven by the regulations on technical assets and Basel III going into effect (Graph 2.47, panel A)

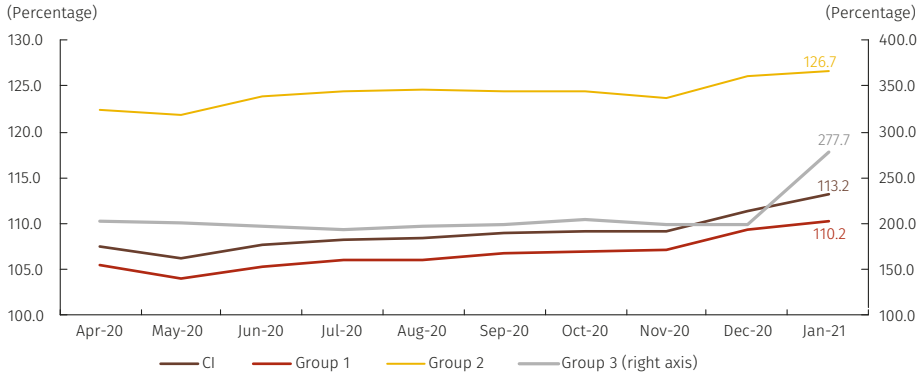
Finally, the weighted components of the NSFR as of January 2021 are given in Graph 2.47, panel B. The most representative component in the required stable funding (RSF) is the loan portfolio with a residual maturity greater than or equal to one year while in the available stable funding (ASF), demand deposits (judicial, wholesalers, retailers, and SMEs), classified by the FSC as more stable, and technical capital are the most representative. As was mentioned, the retailers' and SMEs' demand deposits as well as those belonging to wholesalers and wealthy individuals and companies[38] have shown favorable growth over the last year. This, together with a lower RSF, has strengthened the structural liquidity of the institutions.

37 NSFR is an indicator that makes it possible to identify the structure and strategic management of the CIs' balance sheet in terms of their stability in order to limit the heavy dependence on unstable or illiquid sources of financing. For more information, see Shaded section 2 of the *Financial Stability Report* for the second half of 2020.

38 This includes demand deposits of individuals and legal entities with an average balance higher than 220 SMMLV.

Graph 2.47
Net Stable Funding Ratio (NSFR)[a/]

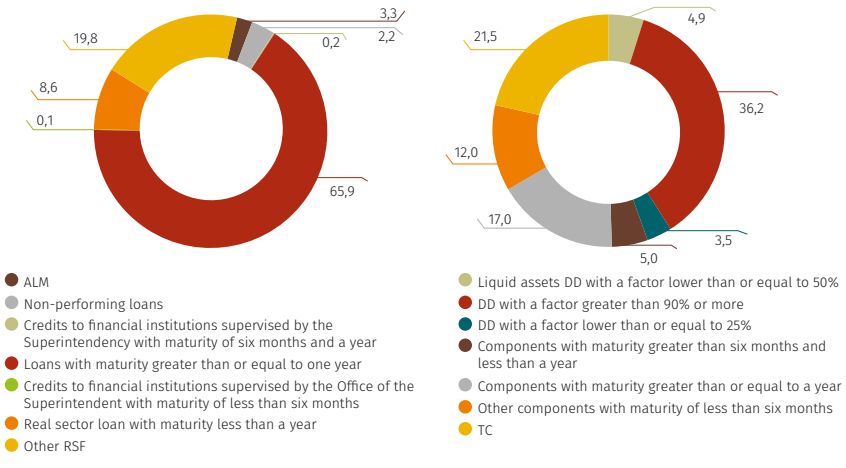
A. Change in NSFR by Group



B. RSF and ASF Breakdown by components and periods

i. Required Stable Funding (RSF)

ii. Available Stable Funding (ASF)



a/ The CIs with assets that are greater than 2% of total bank assets are in group 1. Entities that have loans as an important component of their assets but do not qualify for group 1 are in group 2, and the remaining entities are in group 3. The regulatory limits the entities must comply will be based on their group and will be progressively changed. Thus, starting March 2021, these will be 90% and 70% for groups 1 and 2 respectively and 100% and 80% starting March 2022. Entities belonging to group 3 calculate their indicator as informative for the supervisor.
ALM: Liquid assets adjusted for foreign exchange and market risk.
PP: Non-performing loan
RSF: Required stable funding
DD: Demand deposits
PE: Total regulatory capital
ASF: Available stable funding
Source: Office of the Financial Superintendent of Colombia (FSC), preparation by *Banco de la República.*

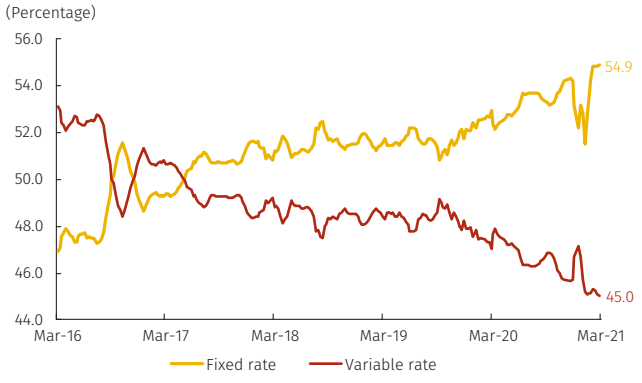
2.4.2. Interest rate risk in the banking book

The structure of the interest rates of the credit establishments' balance sheet is analyzed in this section as is their exposure to the interest rate risk in the banking book.[39] The measurement of this risk seeks to estimate how changes in the interest rates for assets and liabilities affect net interest income.

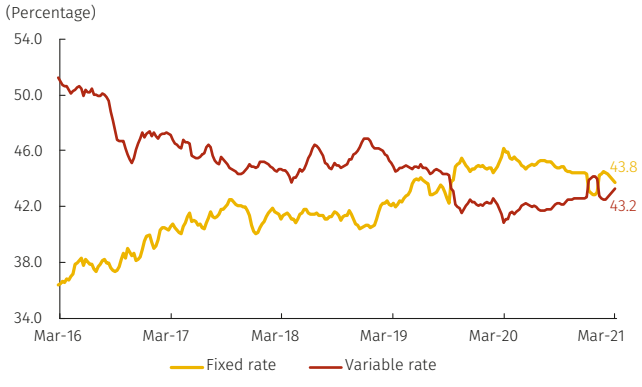
39 The interest rate risk has two dimensions: the first is analyzed in the section on market risk and refers to the risk of devaluation of the assets on the treasury ledger in the event of interest rate movements; the second, which is analyzed in this section, corresponds to the ratio of the risk of interest rate changes to the entities' net interest income based on the information in the banking book.

Graph 2.48
Change in Breakdown of Assets and Liabilities by Type of Interest Rate

A. Assets[a/]



B. Liabilities[b/]



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*.

The proportion of variable-rate assets has decreased over the last six months while the variable-rate liabilities have grown gradually compared to the fixed-rate portion

Between September 2020 and March 2021, the share of assets held by CIs in fixed-rate contracts increased relative to floating-rate assets. The liabilities indexed to fixed rates as a share of assets, in turn, have declined slightly from the levels seen in September 2020, and this has led to the gradual growth of variable-rate liabilities during the last few months. This has put them at levels close to those at the end of March 2021 (Graph 2.48).

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 inflation. This is the opposite of what happens with liabilities contracted at variable rates (Graph 2.49). At the close of March, 76.8% of the asset positions were indexed to benchmark rates (BBI and DTF) while 47.8% of liabilities depended on inflation (CPI and UVR) and, to a lesser degree, the benchmark rates (41.0%). This breakdown remains relatively stable over time. However, the BBI share in lending operations continues to become larger with respect to the share of assets tied to the performance of inflation (panel A *vs.* panel B).

Between September 2020 and March 2021, the CIs lowered the exposure of their assets to DTF and Libor and increased their share of instruments indexed to the BBI. With respect to liabilities, there was an increase in the instruments indexed to the BBI, Libor, and CPI, and a reduction in the DTF share and other rates. The increase in exposure to benchmark rates on both sides of the balance sheet, which has been coming since March 2020, may be due to the outlook for the short-term stability of Banrep's interest rates. An increased exposure to foreign interest rates on liabilities compared to assets is seen. Nevertheless, the share of Libor-linked liabilities and assets is relatively low.

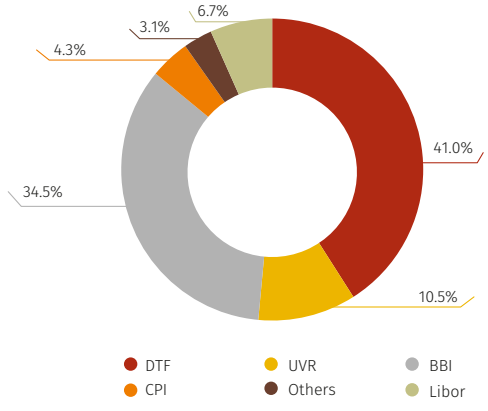
The increase in asset duration and the higher exposure of liability to variable interest rates gradually raised the trading book's exposure to interest rate risk.

To measure the exposure to interest rate risk in the banking book, the *weighted average term to maturity (WATM) gap* was calculated. This is defined as the difference between assets and liabilities that are sensitive to changes in interest rates for different periods. This measurement of interest rate risk depends primarily on two factors: the proportion of assets and liabilities contracted at variable rates and the period of

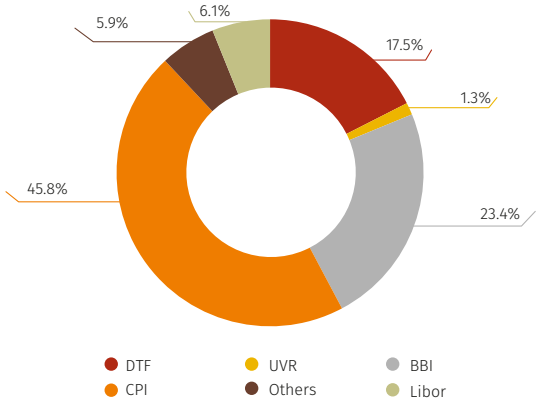
Graph 2.49
Breakdown of Balance Sheet Contracted at Variable Rates by Type of Rate

A. September 2020

i. Assets

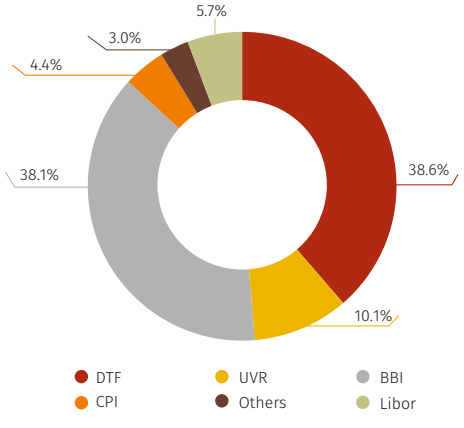


ii. Liabilities

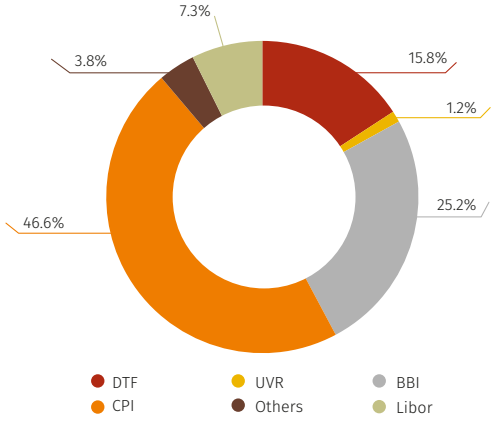


B. April 2021

i. Assets



ii. Liabilities



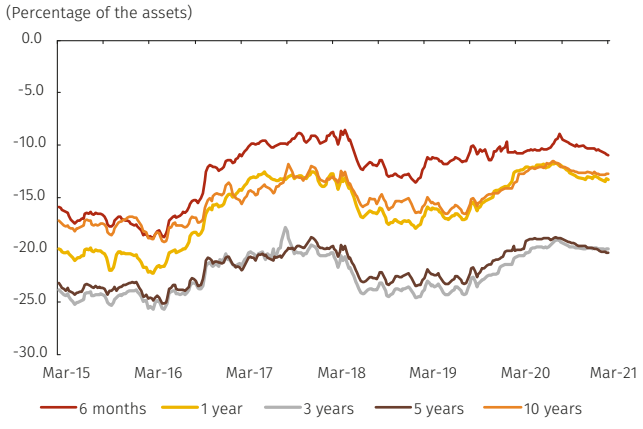
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

fixed-rate assets and liabilities.[40] When this indicator takes on a negative value, it means that an increase of the same magnitude in lending rates and deposit rates would generate a reduction in the net interest income. In this context, a reduction in the interest rates would lead to an increase in the net income from interest.

The WATM gap assumes a complete transmission of the policy rate to the BBI and DTF benchmark rates and a partial transmission to UVR and the CPI. This assumption was refined by calculating the short-term

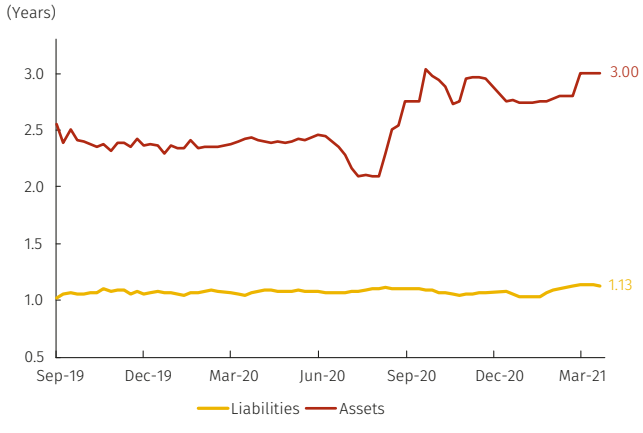
40 For more detail on the calculation of the *WATM Gap*, see the box "Interest Rate Risk of the Colombian Credit Establishments' Banking Book" in the September 2015 *Financial Stability Report*.

Graph 2.50
WATM gap by Maturities[a/]



a/ Corresponds to the total value for the CIs. 4-week moving average.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

Graph 2.51
Average Maturity of CI Assets and Liabilities[a/]



a/ Corresponds to the total value for the CIs. 4-week moving average.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

elasticities between the IBR (taken as a proxy for the monetary policy rate) and the 3-month BBI and the 90-day DTF rate while using daily and weekly information respectively.[41] The elasticity between the policy rate and the BBI was 0.94 and between the policy rate and the DTF was 0.87. These values indicate that for a 100 bp increase in the policy rate, 94 bp is transmitted (*ceteris paribus*) to the 3-month BBI in one day and 0.87 bp to the DTF in one week. The elasticity between the policy rate and the UVR was 0.43 and between it and the CPI, it was 0.38. This suggests that a 100 bp increase in the policy rate is transmitted (one month later) in 0.43 bp and 0.38 bp increases respectively. These elasticities were used to calculate the WATM for the period between September 2020 to March 2021. It should be noted that the inclusion of these elasticities in the WATM gap calculation changes the size of the variable rate adjustment in the event of changes in the policy rate without affecting the margin which captures the actual risk for each instrument.

In Graph 2.50, 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 gradual increase in the WATM gap compared to the levels seen six months ago for all maturities. It is more pronounced in the maturities that are less than one year, and this is partly due to the greater exposure of liabilities to variable rates and the lengthening of asset maturity registered in recent months. Graph 2.51 presents the average maturity of the CIs' assets and liabilities between September 2019 and March 2021. Note that from the end of August 2020 to the close of March 2021, the asset maturity went from 2.54 years to 3.0 years. At the same time, liability maturity remained relatively stable which was partly due to the FSC's Debtor Assistance Program (PAD).

41 In the case of rates indexed to inflation trends, monthly data were used for the UVR and CPI together with the average IBR for the month. Linear regression models, including Banrep's daily repo auction amount and the volume traded in the money market as proxies for short-term liquidity in the system, were used to calculate elasticities. Ordinary least square linear regression models were estimated for 3-month IBR and 90-day DTF benchmark rates using daily data for the August 1, 2012 to March 31, 2021 period, and the CPI and UVR monthly data for the September 2003 to March 2021 period.

Box 1

Commercial Loans Provisions by Company Size

Wilmar Cabrera
Santiago Gamba
Camilo Gómez*

Credit institutions (CIs) in Colombia provision their loans based on the regulations established by the Office of the Financial Superintendent of Colombia (FSC). Specifically, the FSC introduced the Credit Risk Management System (SARC in Spanish), a reference model for determining the minimum loan-loss provisions required for loans based on debtor characteristics, the loan transaction, and the credit cycle phase of the institution.[1]

This box focuses on one of the characteristics that determines the required level of provisions. Specifically, a brief analysis of the relationship between the amount of provisions and the size of the company in the commercial category is presented. The results suggest that the level of the provisions made by the CIs reflects a combination of regulation and internal risk analysis done by each entity. The CIs follow the pattern defined by the regulations that call for greater provisioning for loans to smaller companies and, in general, provision them in excess of what is required. These additional provisions also seem to depend on the size of the borrowers and is thus larger for smaller companies within each size category. This characteristic means that the method used by institutions to determine their level of provisions enables them to soften the impact of shocks that, like the one the Colombian economy went through recently because of the global pandemic, affect small companies particularly.

1. Calculation of the Minimum Regulatory Provisions for the Commercial Category

The FSC's plan mandates a minimum level of provisions for each loan equal to the value of its expected loss, which is calculated as follows:

$$EL=(EXP)(PD)(LGD),$$

where EL represents the expected loss, EXP the amount of credit exposure, PD the probability of default, and LGD the loss given default. The distinctive elements of this approach can be summarized in three points: 1) there are two phases: cumulative and decumulative; 2) the PD changes based on the phase, the days the loan is in arrears, and the size of the company; and 3) the LGD is a function of the number of days in arrears and the quality of the guarantees.

Based on the provisions model, companies must be classified into one of the three categories set out in Table B1.1 and the probability of default is established based on their size, credit rating, and phase in the plan. In general, companies that are larger and have better ratings are associated with a lower risk and, therefore, a lower probability of default. This is reflected in Table B1.2 which, given an AA credit rating, shows the *PD* values in the cumulative phase for the different company sizes.[2]

Table B1.1
Classification of Companies by Asset Level

Size	Asset threshold
Large	More than 15,000 SMMLV
Medium	Between 5,000 and 15,000 SMMLV
Small	Less than 5,000 SMMLV

Note: SMMLV refers to minimum legal monthly salary in effect.
Source: Basic Accounting and Financial Circular (Appendix 3, Chapter 2).

Table B1.2
Minimum Probability of Default in the Cumulative Phase for AA-rated Companies

Rating	Size	PI (percentage)
AA	Large	2.19
AA	Medium	4.19
AA	Small	7.52

Source: Basic Accounting and Financial Circular (Appendix 3, Chapter II).

* The authors are part of the Financial Stability Department of *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 *Banco de la República* or its Board of Directors.

1 For further details, see Chapter II of the Basic Accounting and Financial Circular and its appendices.

2 Chapter II, Appendix 3 in the Basic Accounting and Financial Circular requires entities to assign a credit rating of AA, A, BB, B, CC and default to transactions. With respect to the factors that determine this rating, the number of days that the loan may be in arrears is established by regulation as a minimum criterion, so that the longer the arrears, the lower the rating must be. However, if there are factors that, in the bank's judgment, make a borrower more risky, the bank must take them into account when rating the loan.

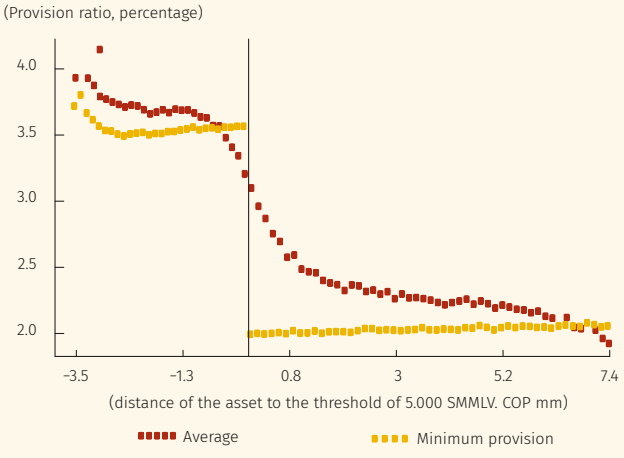
2. Relationship between Provisions and Company Size

In order to study the relationship between company size and regulatory provisions, the annual information on companies with balance sheets filed to the Superintendency of Corporate Affairs[3] and that also appear in the FSC quarterly credit registry that contains individual information of active loan operations by debtor is used.[4] Since the probability of default also varies depending on the loan rating, the analysis presented only considers AA-rated loans, so that changes in the probability of default are presumed to result primarily from the size of the debtor. In addition, the 2008-2016 period is studied to capture the cross-section characteristics of information while keeping in mind the fact that the plan was already fully implemented. Later dates are also excluded due to the stability of the sample and since, starting in 2017, the number of loans with the considered rating that is lower because of the increase in the credit risk seen as of that year in the commercial category.[5]

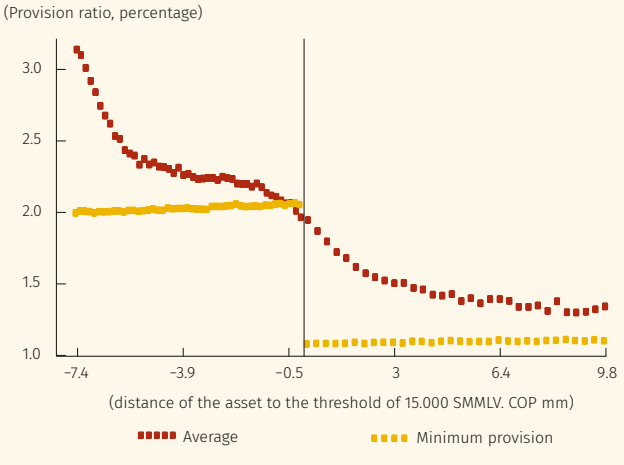
Graph B1.1 shows the average relationship between the provisions ratio, defined as provisions over loan amount, and company size that is near the threshold that separates small from medium-sized firms (panel A) and medium-sized from large firms (panel B). This ratio is compared to the minimum expected provisions by asset size.[6] The results of this comparison suggest that although the actual provisions follow the pattern defined by the regulation, they do so gradually[7] and, in general, remain above the required provisioning.[8] The existence of this buffer of additional provisions underscores the relevance of each financial institution's calculation of expected loss based on its internal risk analysis. Furthermore, this buffer also follows the pattern set by the regulation since it is larger for smaller borrowers in each size category.

Graph B1.2

A. Average Relationship between Provision Ratio and Distance to Asset Threshold for Small and Medium-size Companies



B. Average Relationship between provision Ratio and Distance to Asset Threshold for Medium-sized and Large Companies



Note: the red dots represent the ratio of the average effective provision ratio for different company size segments. The yellow dots indicate the average provisions ratio required by regulation. The provisions required are relatively constant, except for the discontinuous jump induced by regulation around the thresholds that separate small companies from medium-sized ones and medium-sized from large ones.
Source: SFC, authors' calculations.

3 In general, the sample of companies reporting to the SCA is composed of large companies measured by revenue or assets. Based on Decree 1074/2015, the companies with assets or income above 30,000 minimum legal monthly salaries in effect should report their balance sheets to this superintendency along with other criteria.

4 FSC form 341. This form shows the main features of the loan transactions carried out by CIs supervised by the FSC.

5 Due to the fact that the balance sheet information from companies is only available as of December of each year, observations from the second and third quarters of each year are excluded from the sample. Thus, a sample is built by cross-referencing the information from the credit registry with the firms' balance sheets with a time lag of no more than three months. This procedure is done to find a sample with an asset register that should be similar to the one seen by the lending entity at the time the PD was determined for each transaction. In addition, observations with registration problems or outliers were discarded.

6 The latter is defined as the result of multiplying the regulatory PD given the asset of the debtor and its rating, and the registered LGD. Even though the regulatory PD is constant for each size of company, the minimum loan-loss provisions may vary due to changes in the LGD.

7 A specification of regression discontinuities was used, as proposed by Calonico et al. (2014), to confirm that the loan-loss provision function does not show a discontinuous change around the firms' classification thresholds.

8 Segments near the thresholds where the actual loan-loss provisions are lower than what is required could be explained either by the time lag between the credit information and the balance sheet of the companies, or registration problems.

3. Final Considerations

To conclude, the level of provisioning undertaken by the CIs reflects a combination of the parameters stipulated by regulation and each entity's internal analysis of the credit risk. The rules induce higher provisioning for loans to smaller companies, and the CIs set up additional provisions for them since they recognize that this type of debtor imply greater risk. These insights take on relevance at the current context since, as has been documented in different studies[9] related to the impacts of the Covid-19 crisis on the non-financial corporate sector, the smaller companies are likely to be the most affected by the shock of the pandemic and, therefore, so are the CIs most exposed to this type of business. This suggests that at the beginning of the crisis, banks exposed to these companies had a cushion of provisions for their loans that allowed them to soften the shock to their financial statements. In this regard, the decreasing provisions ratio in terms of assets, established since 2007 by the SFC, is in line with the expectations of material impact on smaller companies in the current crisis.

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IMF (2021). *Global Financial Stability Report*.

9 See Banerjee y Hofmann (2020), Carletti et al. (2020), and Chapter I of the April 2021 GFSR.

Box 2

Alternative Indicators to Measure Historical Rates of Business Start-ups and Closures in Colombia

Julian David Castañeda
Felipe Clavijo Ramirez
Camilo Eduardo Sanchez*

1. Introduction

This box offers an analysis of business start-ups and closures in Colombia using information from two sources: The Confecámaras Single Business and Social Registry (RUES in Spanish) and the Integrated Contributions Settlement Form (PILA in Spanish) of the Ministry of Health and Social Protection. Since this analysis is based on sources with representative samples of the business structure that formally operates in the country, it is an important tool for monitoring financial stability due to the high exposure of credit institutions to these agents (54.0% as of January 2021).

The fragility of the corporate sector is usually assessed using traditional indicators related to the financial situation of companies such as those presented in the Corporate sector section of this report (e.g., insolvency, default, and bankruptcy). This information, although quite useful due to the granularity it provides with respect to the financial statements of companies, does not allow for an analysis of business start-ups and includes a reduced sample of companies since it is restricted to those that are monitored by the Superintendency of Corporate Affairs or that have active lending operations with the credit institutions monitored by the Financial Superintendency of Colombia.

The results of this analysis indicate that, between 2019 and 2020, the rate of business start-ups has experienced a decrease at the aggregate level and the closure rate has been on an upward trend since 2015. The tendency of the closure rate was accentuated during the last year and has increased by a greater magnitude compared to the change seen in the start-up rate. In addition, the rate of employment destruction by economic sector exhibits the same behavior as the closure of companies. Finally, we find that the difference between business start-up and closure rates is highly correlated with the real annual growth rate of the gross domestic product (GDP) for the period analyzed.[1]

2. Analysis based on RUES

RUES is a database managed by Confecámaras that contains the business records of all the chambers of commerce in the country and has historical information on the date of issuance, renewal, and cancellation of all the commercial licenses registered in Colombia.

Using the information available as of April 1, 2021, the year each company was created was identified using the oldest registration date, and the year of its closure, using the most recent dates of cancellation and renewal of their associated licenses.[2] Next, for each year *t* of the 1990-2020 period, the companies created, closed down, and in existence were identified using the following criteria:

- *Created*$_t$: companies with year of first commercial registration equal to *t*.
- *Closed down*$_t$: consists of two groups: 1) companies that registered their most recent cancellation in year *t* and for whom the last year in which they renewed any of their licenses was the same or a previous year, and 2) companies that have never cancelled their license(s) and last renewed it in year *t-1*.
- *In existence*$_t$: companies created during a year prior to *t* and that last renewed their license in *t* or a subsequent year.

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

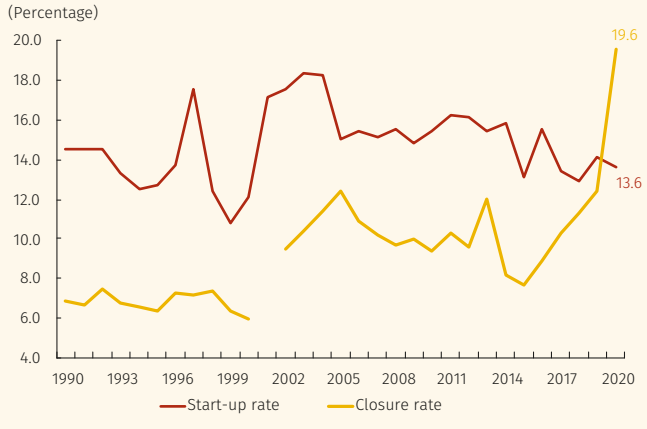
1 The RUES and PILA have information on the companies that operate formally in the country. Thus, the fact that a company is classified as a start-up with the criteria used does not necessarily imply that it is indeed new. Rather it may be reflecting its transition from informality to formality. Similarly, if a company is identified as closed down under the defined methodologies, it does not necessarily imply that it has ceased to operate.

2 In the RUES database, the same company may have several commercial licenses associated with it for different reasons such as the existence of more than one branch (since a license must be processed for each branch) and the transfer of operations to another city.

Once firms were categorized as part of one of these three groups in each year, the following indicators were calculated: 1) the start-up rate as the ratio between the total number of companies created and the sum of companies created and in existence for each year *t*, and 2) the closure rate equal to the number of companies closed down as a percentage of the sum of these same companies with the number of companies in existence for each year *t*.

As can be seen in Graph B2.1, during the period under study, the rate of business start-ups reached its lowest level in 1999 (10.8%) after having peaked in 1997. The rate reached its highest level in 2003 (18.4%) and since 2018, has remained relatively stable. In contrast, the closure rate was at its lowest in 2000 (6.0%), and since 2015, it has been on an upward trend which became accentuated between 2019 and 2020, year in which it registered its highest level.

Graph B2.1
Aggregate Start-up and Closure Rates

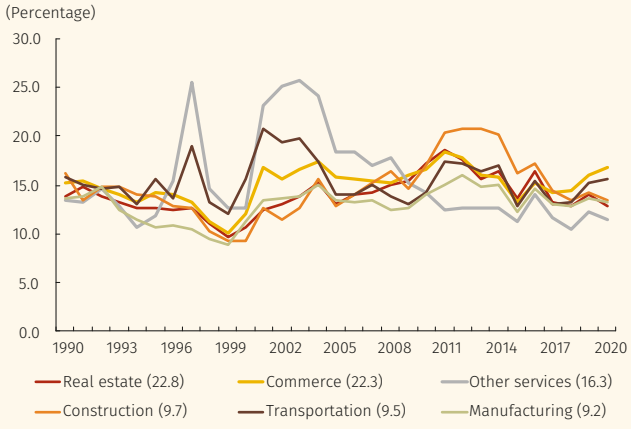


Note: the series for the closure rate is presented with a discontinuity in 2001 because, for this date, the analysis reflects an abrupt increase in the indicator both at the aggregate level and for all economic sectors. This is presumably related to a problem in the registry of information that, if left in the data as it is, distorts the interpretation of the results.
Source: RUES, calculations by *Banco de la República*.

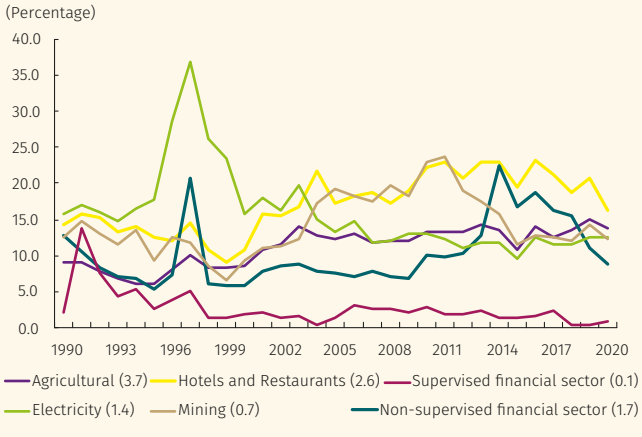
When the trend of the start-up rate is analyzed by economic sector[3], it is clear that the peak seen in 1997 was the result of a higher start-up rate in the sectors of other services, transportation, financial services not supervised by the SFC, and electricity. Meanwhile, the decline in 1999 was more widespread. After the year 2000, most sectors experienced a rebound in their start-up rate. Between 2019 and 2020 in the midst of the health crisis, trade and transportation activities saw rises while financial activities not supervised by the SFC and hotels and restaurants declined (Graph B2.2).

Graph B2.2
Start-up Rate by Economic Sector

A. Six main sectors



B. Remainder sectors



Note: 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 service, and extraterritorial organizations and entities.
The parentheses next to the legends show the percentage of the number of companies created in each sector during 2020.
Sources: RUES and DANE, calculations by *Banco de la República*.

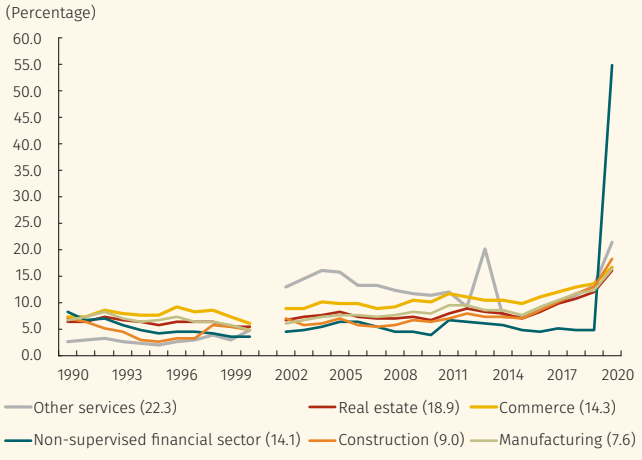
On the other side, the closure rate has shown an upward trend since 2015 for all sectors, except for the financial sector not surveilled by the FSC (Graph B2.3). Between 2019 and 2020, this trend was accentuated and the rate for the latter sector increased registering the highest level seen historically (55.0%), mainly due to insurance agents and brokers, other financial service activities (except insurance and pensions), and financial activities of employee funds and other associative forms of the solidarity sector.

In addition to the above, the correlation coefficient for the 2006-2020 period, between the net rate of business start-ups, calculated as the difference between the rate of start-ups and the rate of closures, and the real, annual GDP growth by economic sector, was computed. As shown in Table B2.1, this correlation is positive for all sectors except for the agricultural one; and for commerce, manufacturing, construction, mining, and hotels and restaurants, it has a

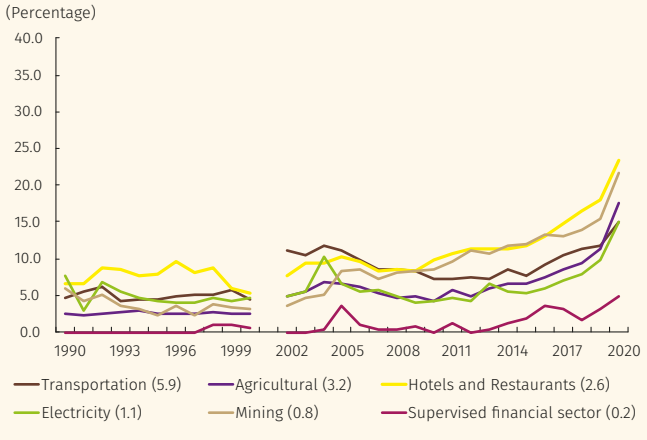
3 In what remains of the box, abbreviations will be used for the following sectors: 1) real estate, rentals and business: real estate; 2) agriculture, animal husbandry, hunting, forestry, and fishing: agricultural; 3) mining and quarrying: mining; 4) electricity, gas and water: electricity; 5) transportation,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

Graph B2.3
Closure rate by Economic Sector

A. Six main sectors



B. Remainder sectors



Note: the series are presented with a discontinuity in 2001 because, for this date, the analysis reflects an abrupt increase in the closure rate both at the aggregate level and for all economic sectors. This is presumably related to a problem in the registry of information that, if left in the data as it is, distorts the interpretation of the results.
The companies 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 service, and extraterritorial organizations and entities.
The parentheses next to the legends show the percentage of the number of companies closed down in each sector during 2020.
Sources: RUES and DANE, calculations by *Banco de la República*.

level greater than or equal to 0.7. At the aggregate level, the correlation is 0.8.

3. Analysis based on social security contributions

Another source that makes it possible to study the performance of companies in Colombia is the PILA. This micro-database of the Ministry of Health and Social Protection compiles anonymized records of social security payments by contributor and company and by economic sector since July 2008. This information makes it possible to obtain measurements of business start-ups and closures between January 2010 and June 2020 by considering the dates in which a company starts and stops making social security contributions for its employees.[4][5]

In addition, having the records of the number of employees in each company added another dimension to the analysis of the real sector: the start-up and closure rates by size of the company and the construction of an indicator of the proportion of employment that is destroyed at the aggregate level and within each economic sector.

The general results show that the highest start-up rate was registered in January of 2010 (21.5%) when 61,895 companies had been created during the previous twelve months, and the lowest rate was seen in June 2020 (13.1%; 50,662 companies). Meanwhile, the 2011-2019 period showed an average start-up rate of 17.5%. As for closures, there has been an increase since April 2017, exceeding the start-up rate. Nevertheless, during the first half of 2020, this trend became accentuated, and in June, 148,157 companies disappeared which meant a 47.7% increase compared to June 2019 (Graph B2.4).

4 It is common for companies to fall behind in their social security payments for a few months without this implying their closure. Therefore, companies that permanently cease to make contributions are considered destroyed.

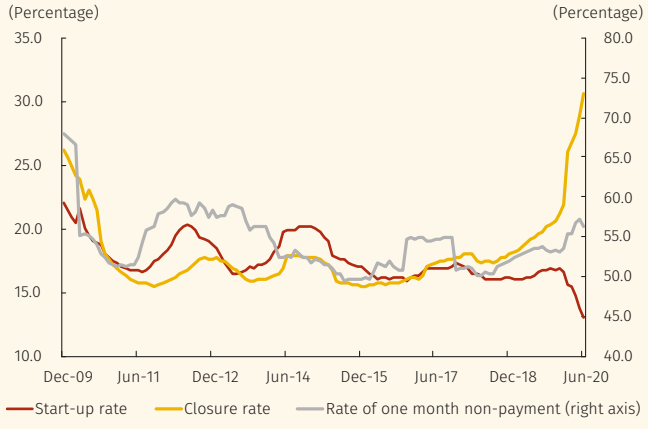
5 For each month, the start-up and closure rates are calculated by considering the number of companies created and closed down in the previous twelve months, including the month of analysis.

Table B2.1
Correlation coefficient: Net Rate of Business Start-ups vs. Real Annual GDP Growth by Economic Sector

Sector	Mining	Construction	Hotels and Restaurants	Manufacturing	Commerce	Electricity
Correlation coefficient	0.9	0.8	0.8	0.7	0.7	0.6
	Transportation	**Real estate**	**Other services**	**Financial**	**Agricultural**	**Total**
	0.6	0.5	0.3	0.3	-0.1	0.8

Source: RUES and DANE, calculations by *Banco de la República*.

Graph B2.4
Aggregate Start-up, Closure, and Non-payment rates



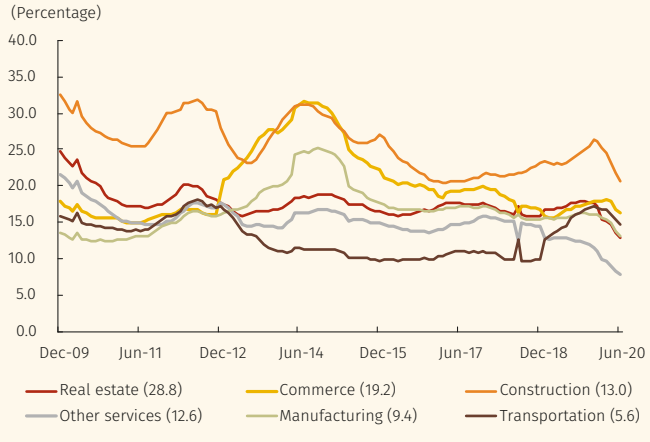
Source: Ministry of Health and Social Protection, authors' calculations

Since the last observation in the sample may include firms that were behind on social security payments during June 2020 but have not necessarily been closed down, we calculated the rate of companies that were behind on social security payments in each month of analysis and we found that the increase in company closure persisted, even when controlling for this effect.

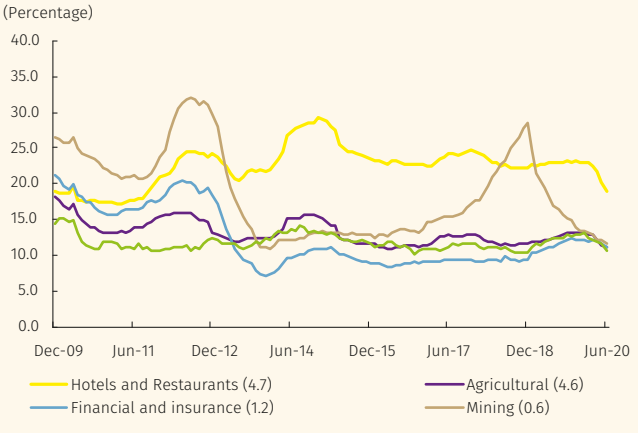
Graph B2.5 shows the evolution of the business start-up rate and the closure rate by economic sector. During the first years of the sample, there was a positive trend in the real estate, mining, and construction sectors, consistent with the economic expansion that took place between 2009 and 2014. After that, sectors maintained relatively stable start-up rates. However, between June 2019 and June 2020, there was an average decrease of 2.5 percentage points (pp), but the largest impact of the health crisis was on the start-up of businesses in the real estate, construction, and hotels and restaurants sectors.

Graph B2.5
Start-up and Closure rates by Economic Sector

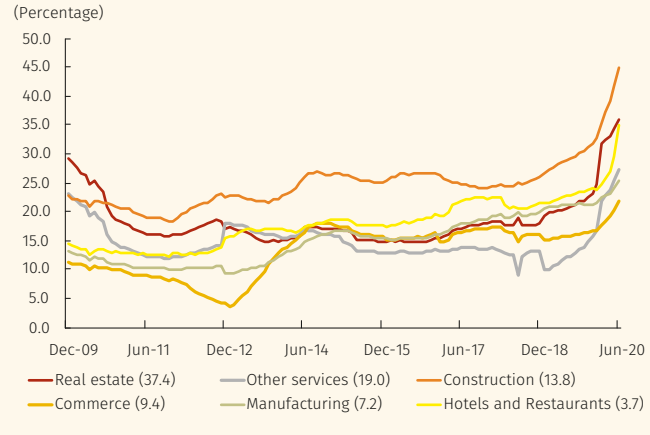
A. Start-up: six main sectors



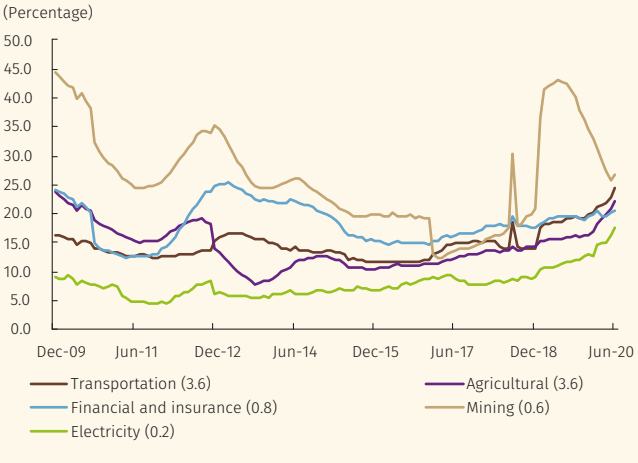
B. Start-up: remainder sectors



C. Closure: six main sectors



D. Closure: remainder sectors



Note: 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 service, and extraterritorial organizations and entities.
The parentheses next to the legends show the percentage of the number of companies created and closed down in each sector in June 2020.
Source: Ministry of Health and Social Protection and DANE, calculations by *Banco de la República*.

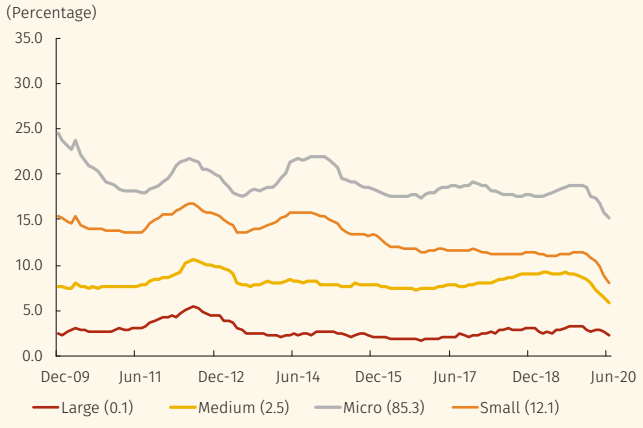
Moreover, construction and mining are sectors in which a higher percentage of companies tend to close down. In the case of the former, the business closure rate increased 16.2 pp as a consequence of the health crisis and registered its maximum value as of June 2020. As for the latter, its closures had increased during 2019. However, the crisis does not seem to have had an influence, and closures decreased during 2020. The real estate and hotels and restaurants sectors, whose sensitivity to measures of temporary and total economic shutdowns is notable, have experienced the materializing of historical closure rates of 36.0% and 35.0% respectively. As for the destruction of employment, it is a reflection of the closure of companies.

The analysis by company size[6] shows that for the period under analysis, both the business start-up and closure rates are consistently higher for those that are smaller in size (Graph B2.6, panel A). Nonetheless, the economic crisis affected business start-ups equally for all company sizes. However, micro and small businesses have clearly suffered the most from the consequences of the economic crisis since their closure rates showed significant increases (Graph B2.6, panel B). During the last year of analysis, 757,754 jobs had disappeared, 81.0% of which belonged to micro and small companies. This implies that the number of jobs in Colombia decreased by 12.0% between June 2019 and June 2020.

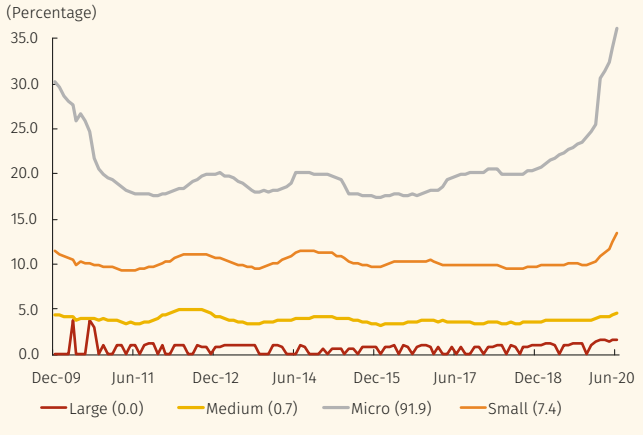
From the results presented, it can be concluded that between 2019 and 2020, in the context of the health crisis caused by Covid-19, the business start-up rate has experienced a decrease at the aggregate level for all company sizes and the vast majority of economic sectors. At the same time, the closure rate has risen by a larger magnitude compared to the change in the start-up rate, a trend that holds true for most economic sectors and for micro and small firms. In contrast to what has been seen for the start-up rate, some sectors have been more affected in terms of closures (e.g., construction, non-supervised financial services, and restaurants and hotels) just like micro and small businesses. Finally, we consider that the analyses derived from the sources of information used in this box can provide additional valuable perspectives on the state of fragility of the Colombian business sector and thus, it is important to constantly monitor them.

Graph B2.6
Start-up and Closure rates by Company Size

A. Business start-ups



B. Closure of companies



Note: The parentheses next to the legends show the percentage of the number of companies created or closed down by size in June 2020.
Source: Ministry of Health and Social Protection, calculations by *Banco de la República*.

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Crane, L.; Decker, R.; Flaaen, A.; Hamins-Puertolas, A.; Kurz, C. (2020). "Business Exit During the Covid-19 Pandemic: Non-Traditional Measures in Historical Context," Finance and Economics Discussion Series, no. 2020-089, Washington: Board of Governors of the Federal Reserve System.

Ministerio de Salud y Protección Social (2020). *Planilla Integrada de Liquidación de Aportes (PILA).*

6 In accordance with Act 590/2000, companies with up to ten employees were classified as micro-companies. The companies that have a staff of ten to fifty employees were classified as small. The companies that have up to two hundred employees were classified as medium-sized and companies with a higher workforce were classified as large.

03

Stress Test

Considering the vulnerabilities identified throughout the Report, two exercises that measure the ability of the financial system to face adverse scenarios in terms of credit and liquidity risk, and to continue providing its basic functions over a short- and medium-term horizon are presented in this chapter.

This chapter presents two exercises to assess the resilience of the financial system in the event of a hypothetical materialization of relevant sources of risks, in line with the analysis of vulnerabilities presented in previous chapters. The first exercise, which is known in international literature as a stress test and corresponds to the one usually presented in this chapter of the Report, measures the ability of CIs to deal with a hypothetical, adverse, and improbable scenario by using a model that considers both solvency and liquidity risks. In this edition of the report, this model is also used to: 1) perform a reverse stress test in order to determine how strong the materialization of the credit risk would have to be for reaching a high level of vulnerability in the financial system, and 2) determine the ability of the CIs to grant credit to the economy in the short term if higher default rates are seen in the economy.

The second exercise is intended to measure the effect that different withdrawal shocks could have on the liquidity position of CIFs. This test seeks to evaluate the capacity of these institutions to meet their short-term obligations under a stressful scenario.

3.1. Capital and Liquidity Stress Test of CIs

This section describes the scenario and the results of the CIs stress test that Banrep carries out every six months. This test seeks to measure the resilience of CIs in the event of an unlikely, hypothetical, adverse scenario.

This section seeks to calculate the impact on CIs of a hypothetical adverse scenario in which the Colombian economy recovers at a slower than expected pace between the first quarter of 2021 and the fourth quarter of 2022. The scenario considered reflects a situation in which, over the next two years, the output does not return to the levels seen before the Covid-19 pandemic.

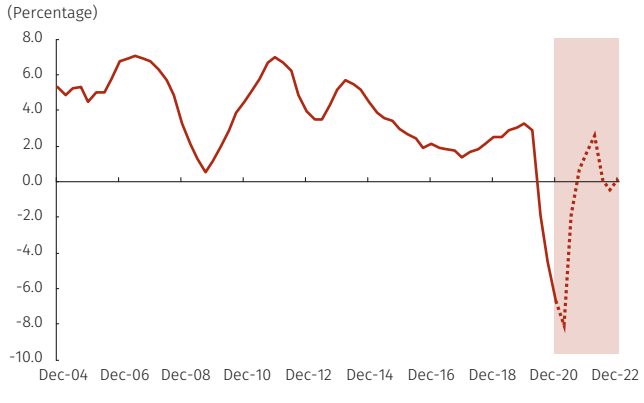
The results of this exercise do not constitute any forecast regarding the future development of the economy or the financial system since the scenario considered is intended to reflect a hypothetical adverse situation. Therefore, these should be interpreted as a quantitative evaluation of the resilience of the CIs in the event of an adverse scenario based on their current financial conditions and under restrictive assumptions. Likewise, the exercise does not consider policy reaction to the deterioration in the institutions' financial statements nor preventive actions to follow up on their risk management. Finally, the exercise includes the regulatory changes in capital requirements resulting from decrees 1477/2018 1421/2019 going into effect in January 2021.

The usefulness of this test lies in providing an estimate of the potential losses that would be seen if the adverse scenario were to materialize. Furthermore, it helps shed light on the possible transmission channels by means of which the vulnerabilities identified could affect financial stability.[42]

Results suggest that credit and market risks would be the main sources of losses in the adverse scenario. The above would generate negative effects on aggregate common equity tier I and tier II ratios, but they would remain at levels above the regulatory limits during the entire period analyzed. Although individual results are heterogeneous, the above implies that the system currently has a sufficient buffer to absorb potential losses in the adverse scenario.

3.1.1. Macroeconomic Scenario and Materializing Risks

Graph 3.1
Real Annual Growth of GDP in the Hypothetical Adverse Scenario



Source: Office of the DANE (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

The trajectory of the adverse scenario assumes a slower economic recovery and tighter global financial conditions than were expected by the technical staff at Banrep.

The stress test seeks to capture the effects of an adverse and hypothetical macroeconomic context that, starting from the recession of 2020, assumes that the Colombian economy recovers at a slower than expected pace in 2021 and stagnates in 2022. This scenario was built using the central GDP forecast of the technical staff at Banrep that was published in the May 2021 *Monetary Policy Report* and the distribution of future GDP growth based on the GDP-at-risk methodology.[43] The adverse scenario considers 1.6% growth for 2021 and 0.1% for 2022 (Graph 3.1), an unemployment rate of 15.3%

42 The technical details of the model used in this test 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 *Borradores de Economía* No. 1028: "SYSMO I: A Systemic Stress Model for the Colombian Financial System," *Banco de la República*.

43 Specifically, Banrep's central GDP forecast is taken and the difference between the median and the 3rd percentile of the distribution of future GDP growth is subtracted based on the GDP-at-risk methodology. For more detail on this methodology, see Box 1 of the *Financial Stability Report for* the first half of 2018.

at the end of the stress test horizon, an inflation that converges with its long-term target, and a policy monetary rate that trends towards the levels seen prior to the pandemic. In addition, a gradual depreciation of the peso's exchange rate with respect to the US dollar (21.4%) and the sale of 50% of foreign investor holdings in the public debt portfolio during the two-year period are included.

Furthermore, to reflect an adverse scenario of great uncertainty, a gradual increase in the *spreads* between lending interest rates and the policy interest rate is assumed, reaching maximum observed levels since 2002[44] This could be associated with a situation in which credit risk has a high probability of materializing.

This scenario would cause an increase in portfolio defaults and devaluation of the public debt portfolios.

A hypothetical scenario of low economic growth, high interest rates, and higher risk aversion would trigger an increase in credit and market risk for the CIs in a first stage. The endogenous response of the CIs to the scenario would, at a second stage, unleash the materialization of additional risks that would have a direct impact on the financial statements of each entity (financing, liquidity, interest rate, and contagion risks).

Concerning credit risk, two elements are incorporated. First, the natural consequence of a macroeconomic deterioration would decrease economic agents' capacity to make their payments and thus there would be an increase the default rates. The hypothetical trajectories of the quality risk indicators for the four types of loan portfolios are presented in Graph 3.2: the shaded area corresponds to the horizon of the test. Second, in line with the exchange rate depreciation trajectory of the adverse scenario, a default of the portfolio granted to firms exposed to foreign exchange risk is assumed.[45,46]

Concerning market risk, two elements are considered. First, the exchange rate depreciation trajectory related to the macroeconomic scenario would generate a shift of the zero-coupon TES yield curve and the private fixed income yield curve. Second, the gradual and permanent

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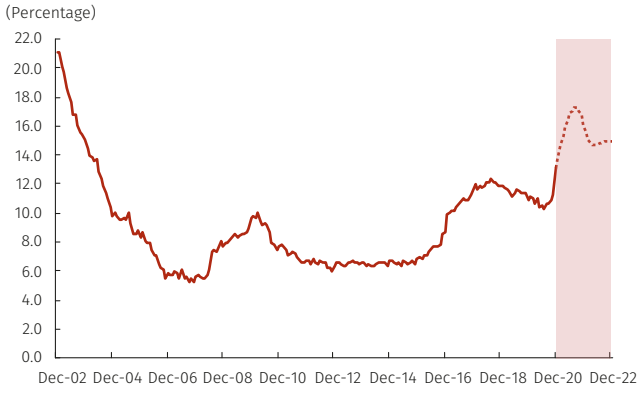
44 The largest historical spreads in the commercial, consumer, housing, and microcredit loan portfolios were 7.4 pp (May 2002), 22.7 pp (June 2002), 14.7 pp (December 2002), and 33.2 pp (January 2020) respectively.

45 The companies exposed to exchange rate risk are the ones that show a negative exchange rate mismatch (liabilities in foreign currency greater than assets in foreign currency) and are classified as vulnerable taking into account four indicators: 1) the value of the currency mismatches to total assets, 2) trade balance to operating income, 3) share of foreign capital in the total capital of the company and 4) depreciation of the equity in the event of a 15% depreciation. Each one of these indicators is classified from 1 to 3 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 the exchange rate mismatch is less than or equal to -20.0% of total assets, the company is considered to be vulnerable. Companies without public accounting information are ordered from highest to lowest mismatches and those that accumulate 90% of the total mismatch are considered vulnerable.

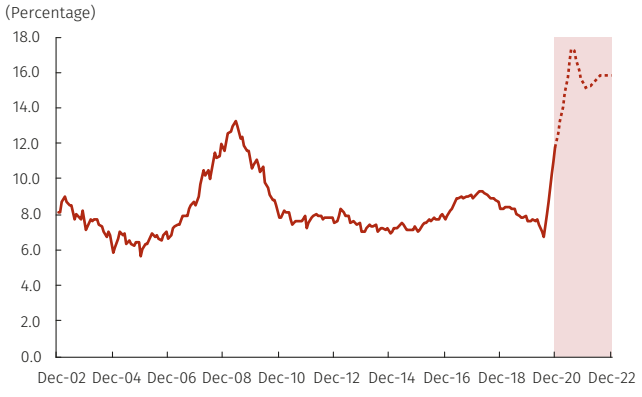
46 As of December 2020, the portfolio of loans granted to firms that are vulnerable to foreign exchange risk represents 8.4% of the commercial loan portfolio.

Graph 3.2
QIR Trajectory by Type of Loan Portfolio

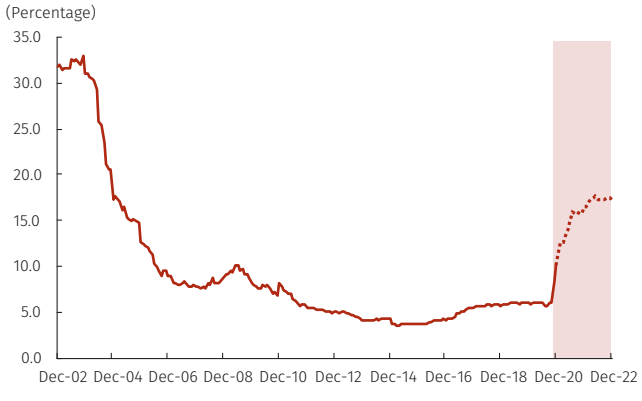
A. Commercial



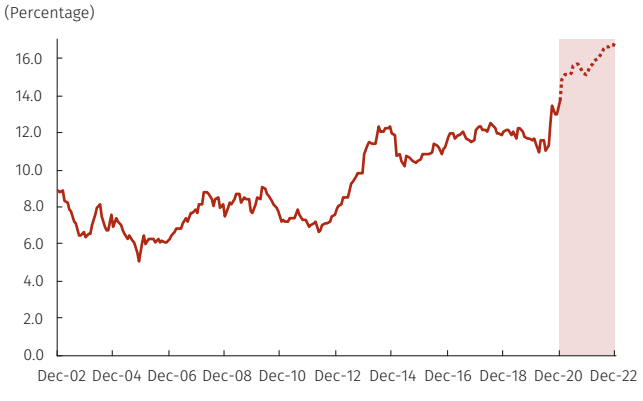
B. Consumer



C. Housing

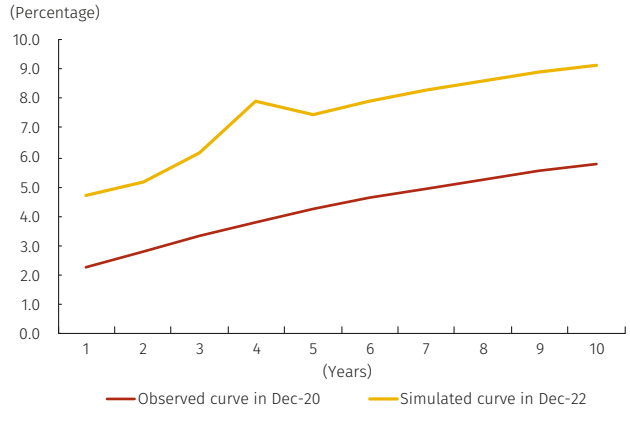


D. Microcredit



Source: Office of the Financial Superintendent of Colombia (up to December 2020); calculations by *Banco de la República* (March 2021 to December 2022).

Graph 3.3
TES Curve in the Hypothetical Adverse Scenario



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

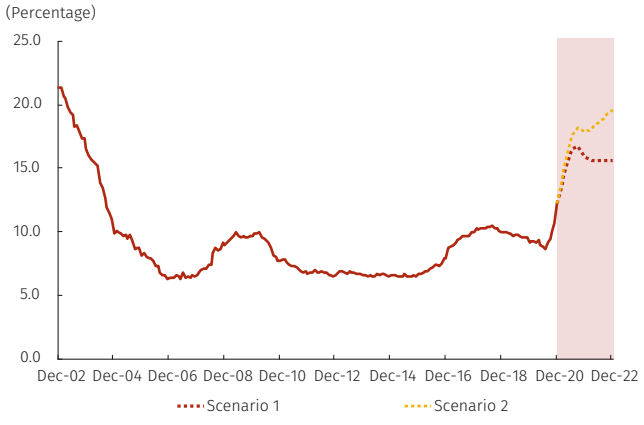
sales made by foreign holders in the public debt market could have a direct impact on debt securities' prices given the lower liquidity in this market. Since part of this second transmission mechanism may be contained in the first one, only the component with the greatest impact is taken at each vertex of the yield curves. Therefore, a widespread shift in the curves would be generated with the highest magnitude in the longer periods thus causing them to spike (Graph 3.3).

3.1.2 Results

In the adverse scenario, a negative aggregate profitability for CIs, a shrinking of the portfolio, and a fall in the capital adequacy ratio would be observed, although this ratio is likely to remain above the regulatory minimums.

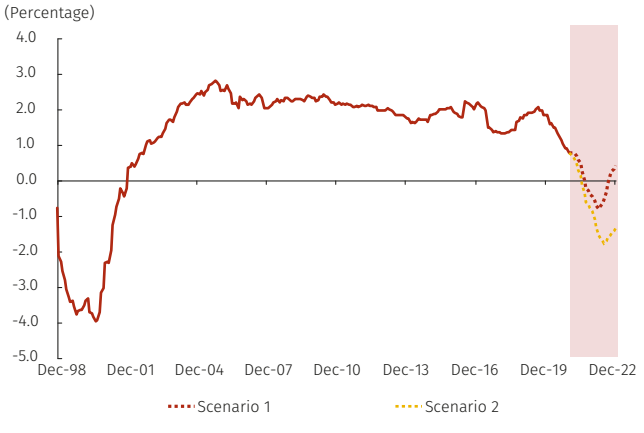
The trajectory of the CIs' aggregate variables are presented in Graphs 3.4 to 3.8. The scenarios considered are: 1) only the deterioration associated

Graph 3.4
Aggregate Risk QIR



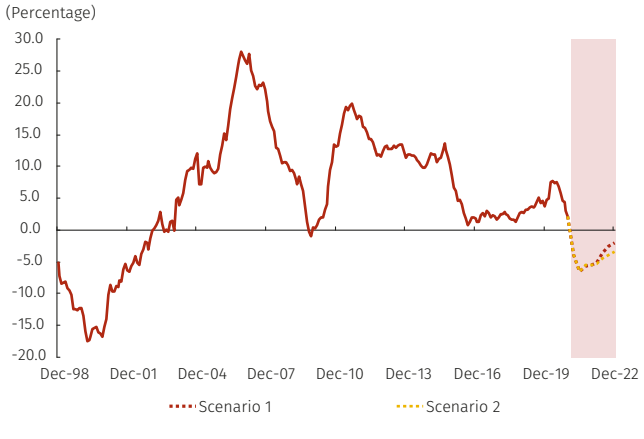
Source: Office of the Financial Superintendent of Colombia (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

Graph 3.5
Return on Assets (ROA)



Source: Office of the Financial Superintendent of Colombia (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

Graph 3.6
Real Annual Growth of the Loan Portfolio



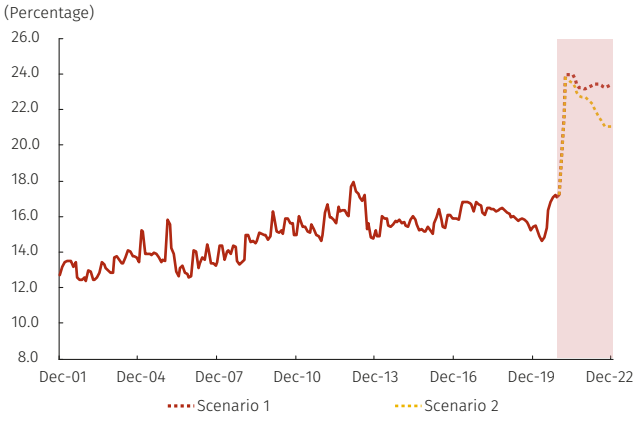
Source: Office of the Financial Superintendent of Colombia (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

with the macroeconomic scenario (dotted red line), and 2) default of firms exposed to exchange rate risk in addition to macroeconomic deterioration (dotted yellow line).

In both scenarios, a deterioration in loan portfolio quality not registered since the post-crisis period at the end of the century would be seen. However, in scenario 2 there is a sustained increase in the indicator while in scenario 1, it stabilizes during the second year of the stress test (Graph 3.4). Given the severity of the macroeconomic shocks, ROA would reach negative values as of the third quarter of 2021. In scenario 1, ROA would reach its lowest level in the first quarter of 2022 (-0.8%) and recover by the end of the test, closing in positive territory. In scenario 2, ROA would register its minimum in June 2022 (-1.8%), and its recovery is lower at the end of the exercise (Graph 3.5).

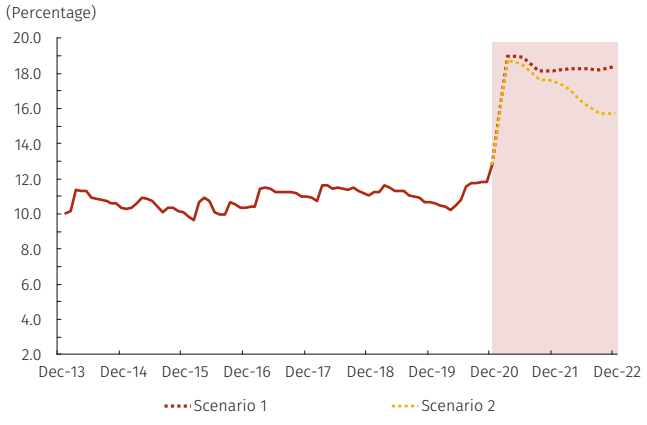
With regard to loan portfolio real growth, reductions in line with the lower rate of economic recovery would be seen (Graph 3.6). Due to the regulatory changes in CI capital requirements that went into effect at the beginning of 2021 and the sharp slowdown in the loan portfolio, the capital and core equity Tier I adequacy ratios of the whole financial system will probably continue to rise significantly until March 2021. Starting in the second quarter of this year, losses due to spending on loan-loss provisions and the devaluations of public debt securities would lower these indicators, with a greater impact in scenario 2, which is consistent with the lower profitability seen in this case. However, the aggregate capital adequacy ratios would stand above the regulatory limits and even above the levels seen in December 2020 (Graphs 3.7 and 3.8).

Graph 3.7
Capital Adequacy Ratio



Source: Office of the Financial Superintendent of Colombia (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

Graph 3.8
Core Equity Tier I Adequacy Ratio



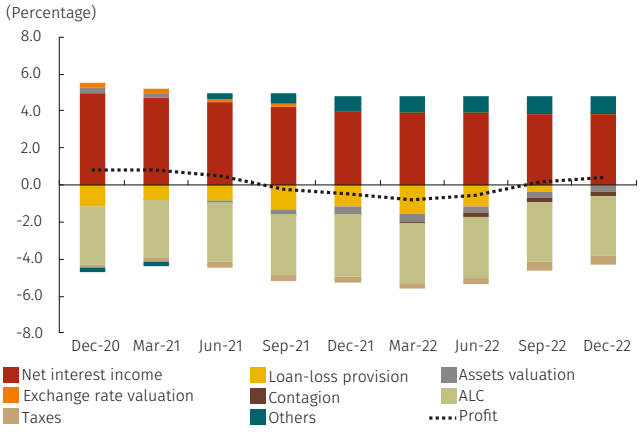
Source: Office of the Financial Superintendent of Colombia (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

Graph 3.9 shows ROA decomposition. In both scenarios, spending on loan-loss provisions is the item that contributed the most to the drop in ROA. This is followed by bonds portfolio losses and the drop in net interest income, which declined as a consequence of the interest rate risk in the banking book and the occurrence of credit risk. The additional default of firms exposed to foreign exchange risk in scenario 2 would imply that the expense of loan-loss provisions would become even more relevant, generating an increase in contagion losses at the end of the exercise horizon.

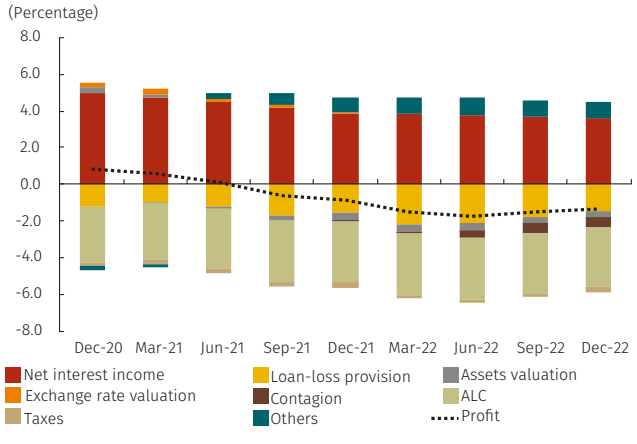
Finally, even though the aggregate indicators of the CIs may have presented moderate levels of deterioration with respect to the regulatory requirements, the results at individual level are heterogeneous. With respect to capital adequacy, the group of institutions that would fall below 9.0% in scenario 1 accounted for 2.4% of the total loan portfolio as of

Graph 3.9
Breakdown of ROA

A. Scenario 1



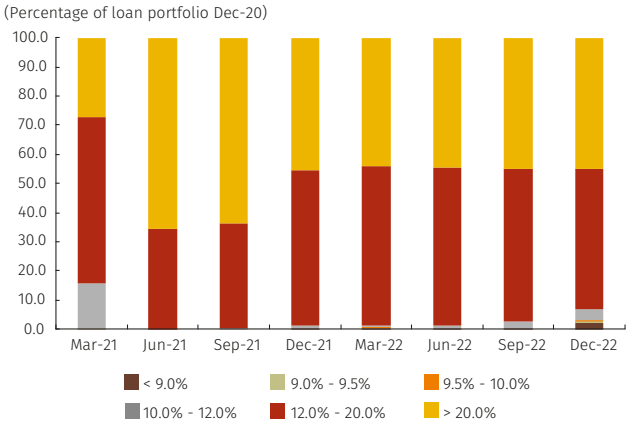
B. Scenario 2



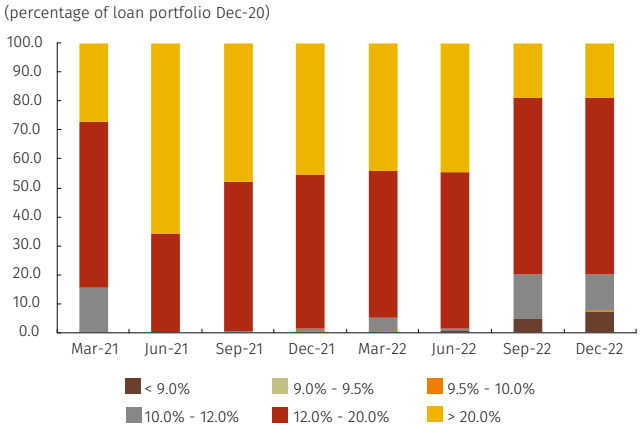
Source: Office of the Financial Superintendent of Colombia (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

Graph 3.10
Distribution of Capital Adequacy Ratio by Share of Loan Portfolio

A. Scenario 1



B. Scenario 2



Source: Office of the Financial Superintendent of Colombia (up to December 2020), calculations by *Banco de la República* (March 2021 to December 2022).

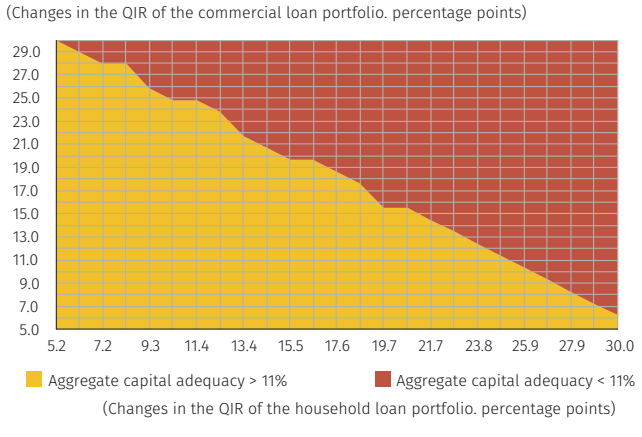
December 2020. This figure rises to 7.2% for scenario 2. In neither scenario do these CIs belong to the group of systemically important institutions (Graph 3.10). Based on these results, to keep the entire financial system solvent and in compliance with the capital buffers required[47] throughout the stress test horizon, a capital injection of COP 1.2 t would be required in scenario 1 and of COP 3.0 t in scenario 2.

3.1.3 Reverse stress test

Given the current situation, a reverse stress test is evaluated in order measure how strong the materialization of credit risk would have to be for the system to reach a high level of vulnerability.

As presented in the Financial Stability Report for the Second Half of 2020, two reverse stress tests are evaluated in order to measure how strong the materialization of credit risk would have to be for the system to reach a high level of vulnerability when the aggregate capital adequacy indicator is lower than the regulatory one. In these stress tests, the assumption is that a fraction of the debtors will have stopped paying what they owe starting in March 2021 and therefore, will accumulate past-due days over time. The above will probably be reflected in a sudden jump in the QIR and in successive rating adjustments for the portfolio. This would then cause an increased flow of loan-loss provisions in accordance with SARC instructions for each category with a peak in the first quarter of 2022.

Graph 3.11
Total Capital Adequacy for Different Shocks from QIR by Type

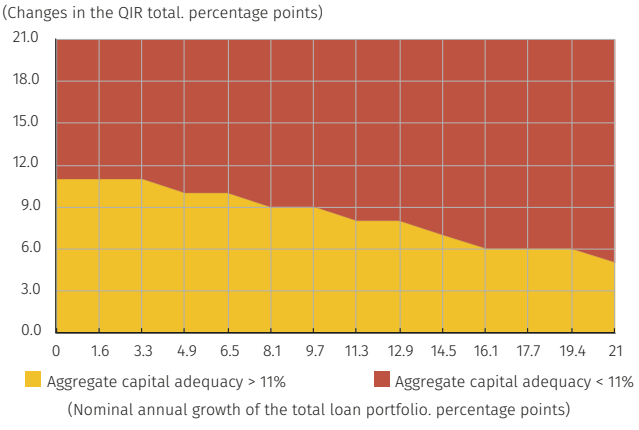


Source: calculations by *Banco de la República*.

Graph 3.11 shows the result of the aggregate capital adequacy for different combinations of increases in the QIR of the commercial loan portfolio and the household portfolio. The results suggest that there are multiple scenarios in which the system would present systemic vulnerability based on the emergence of credit risk in the categories described. Assuming that the two loan portfolios receive an impact of equal magnitude, the aggregate QIR would have to reach levels above 29.8% (an increase of 17.8 pp) for a vulnerability scenario to occur. This represents more than two times the level seen in January 2021. Specifically, the aggregate capital adequacy would reach 11.0% in December 2022 and the shock would generate a nominal annual -25.6% growth of the loan portfolio on the same date. Although the individual analysis is mixed, the aggregate results imply that the system currently has a sufficient cushion to absorb losses due to loan-loss provisions.

47 The regulatory limits for the capital adequacy ratio and the core equity Tier I are 9.0% and 4.5% respectively and the limit for the equity-to-subscribed capital ratio is 50%. In 2021 (2022) the limits, including the conservation cushion, are 9.375% (9.75%), 5.25% (6.0%), and 4.875% (5.25%) for the adequacy, additional core, and core equity Tier I ratios, respectively. For systemically important entities, an additional 25 bps (50 bps) is required. In practice, failure to comply with capital buffers does not imply non-compliance with regulatory limits and, therefore, does not constitute a situation of insolvency.

Graph 3.12
Total Capital Adequacy for Different Shocks from Total QIR and Portfolio Growth



Source: calculations by *Banco de la República.*

Finally, the ability of CIs to continue extending credit without jeopardizing their financial soundness in the wake of various credit risk shocks is estimated.

In the context of the pandemic, it is relevant to examine the extent to which CIs are able to provide an adequate flow of credit and, thus, support households and businesses in the economic recovery expected in 2021 and 2022 without jeopardizing their financial soundness. In view of this dilemma, the institutions could take defensive actions by limiting the supply of credit to the real sector in order to avoid potential damage to their capital adequacy caused by a high deterioration in the quality of the portfolio.

Graph 3.12 shows the result in terms of aggregate capital adequacy for different combinations of portfolio growth and increases in total QIR. Specifically, the vertical axis corresponds to the increase in the QIR for the total loan portfolio and the horizontal axis consists of the nominal annual growth as of December 2022. The area in red encompasses the set of scenarios in which total aggregate capital adequacy is likely to reach levels that are below 11.0% over the course of the exercise and the yellow region, the scenarios that result in a capital adequacy that is above that threshold. The results indicate that, starting with the current capital available to CEs, there is sufficient space for them to contribute to nominal loan portfolio growth equal to or greater than the pre-pandemic period (9.0%) without generating problems in the financial system's capital adequacy as long as the increase in the total QIR is below 9.0 pp.

3.1.4 Final Comments

The results of the exercise suggest that the majority of the CIs would be able to keep their 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 resilience of the institutions in the short term in the event of a macroeconomic scenario like the one described above.

As has been discussed, 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 for the Colombian economy. For one thing, it assumes that the economic authorities do not take any additional action in response 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.[48] If, however, any one of these assumptions is eliminated, the size of the losses to the system

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

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 ratio of these institutions' individual capital adequacy apart from any consolidated capital adequacy. Therefore, the consolidated results may differ from those presented here.

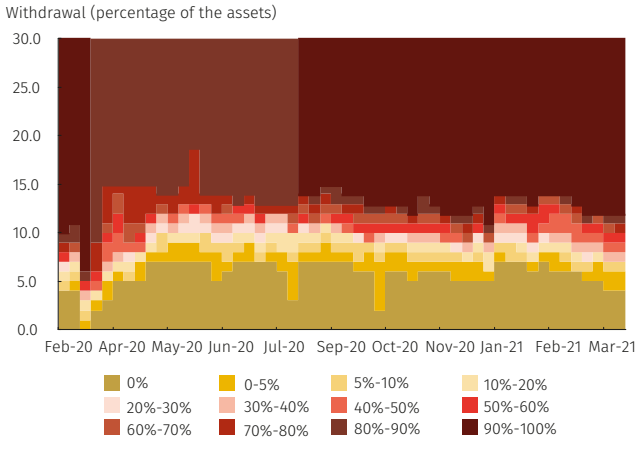
3.2 CIF Liquidity Test

Collective investment funds have a greater percentage of liquid resources, so they are better prepared for a withdrawal shock in comparison to what was seen at the beginning of 2020.

The open-ended CIFs are susceptible to withdrawals by their investors, so it is important to simulate hypothetical withdrawal events they may face. In this respect, a stress test has been designed to ascertain the soundness of the funds belonging to this market.

Based on information with respect to the cash level of each of the funds,[49] different withdrawal shocks were simulated in order to calculate the LRI that the CIFs would probably present in each scenario. For each level of withdrawal, those funds that would be likely to register non-compliance[50] on their liquidity indicator were identified, and their share of total assets was calculated. Therefore, higher values correspond to the level of withdrawals having a greater impact on the CIF market (Graph 3.13).

Graph 3.13
Results of CIF Stress Test



Note: each color represents the share of the assets of open-end CIFs with no permanence agreement that could be affected by non-compliance in their LRI.
Source: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

The results indicate that after last year's liquidity shock, the funds reinforced their positions in liquid assets, and this caused their sensitivity to these shocks to be lower for most of 2020. So far in 2021, the resilience of the CIFs has been affected by the increase in withdrawals mentioned in chapter 2. This has had an impact on their cash position and made them more sensitive to sudden withdrawals by their investors. In that same vein, withdrawals of 7.0% as a percentage of total assets (26% as a percentage of cash) as of March 26, 2021 could trigger an LRI default for funds which have a 30% share in the total assets.

49 The information on cash is obtained from FSC's Form 519.

50 A default corresponds to an LRI value of less than 100% which is the regulatory limit according to the FSC.

Shaded section 1: **Climate Change and Financial Stability**

According to Bolton *et al.* (2020)[1] and the FSB (2020),[2] over the next few decades the physical and transition risks arising from climate change are going to have an impact on financial system institutions mainly due to the adverse effects of the agents to which they are exposed and, to a lesser extent, to the damaging effect on their physical infrastructure (e.g., offices, correspondent facilities, ATMs). A general analysis of the actions taken up to that point by *Banco de la República* and the FSC with regard to sustainable finance is presented in Box 4 of the Financial Stability Report for the first half of 2020. In line with the above, the technical staff at *Banco de la República* continues to study the macroeconomic effects of climate change in Colombia and to evaluate the financial system's resilience to the risks derived from climate change.

1 See Bolton, P.; Despres, M.; Pereira Da Silva, L.; Samama, F.; Svartzman, R. (2020). "The Green Swan. Central Banking and Financial Stability in the Age of Climate Change," Bank for International Settlements and Bank of France, available at: https://www.bis.org/publ/othp31.pdf.

2 See FSB (2020). "The Implications of Climate Change for Fin ancial Stability," Financial Stability Board, available at: https://www.fsb.org/wp-content/uploads/P231120.pdf.

04 Financial Regulation

This chapter presents the main legal changes with respect to financial regulatory standards between November 2020 and March 2021. First, the changes in the regulations issued by *Banco de la República* are presented. After that, Table 4.1 shows the changes in regulations issued by other regulatory entities. Regulations marked with an asterisk within the table have an additional explanation at the end.

Regulatory changes implemented by *Banco de la República* between November 2020 and March 2021

- The methodology for calculating the representative market exchange rate (MER) was updated. The changes were made to bring the MER in line with the operation of the foreign exchange market and international standards. Thus, clarifications were incorporated regarding the inclusion of transactions negotiated through authorized foreign currency trading systems, where trading is blind due to the interposition of a central counterparty risk clearinghouse as the counterparty. Additionally, peso-dollar transactions settled in cash were excluded.
- From November 27, 2020 to April 30, 2021, the central counterparty risk clearinghouses were allowed to manage the foreign currency clearing and settlement systems under the terms and conditions set forth in External Resolution No. 4/2006 of the Board of Directors of *Banco de la República*.
- On December 22, 2020, the maximum time for registering the foreign currency transactions subject to that obligation was extended from 15 to 45 minutes on a transitory basis from January 1, 2021 to March 31, 2021. This was due to the operational difficulties that the entities subject to the obligation to register could have in the midst of the isolation measures. The same time extension was granted on a transitional basis from April 1, 2021 to July 2, 2021.
- In order to qualify and keep the status of OMO placement agent (OPA), the CIs (including Bancoldex, the FDN, Findeter, the FNA, and Finagro) must now comply with the individual and consolidated leverage ratio in addition to the individual and consolidated (basic and total) capital adequacy ratio in accordance with the corresponding regulations.
- The early and voluntary termination of expansion repo transactions backed by loan portfolio securities (promissory notes) was authorized since March 2021. OPAs may ask for the early termination only if the original period of the transaction was greater than 45 calendar days and at least 30 calendar days have elapsed since the operation was settled. The early termination must be asked for the total for amount awarded in the same auction. The OPA must notify Banrep of its intention to access to early termination of repos at least six business days prior to the day of termination.

- The OPAs were allowed to voluntarily advance the maturity of remunerated deposits that have an original maturity that is equal to or greater than fourteen days. OPAs can ask for this advance up to one business day prior to the maturity date initially agreed upon in the transaction. A discount will be applied to the original rate of remuneration that will depend on the number of days between the date it was created and the new date when the deposit is redeemed.

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

Entity	Rule	Topic
MHCP	Resolution 2166 (November 17, 2020)	Resolutions 1263/2013 and 0201/2016 were amended in order to establish the maximum projected monthly amount to be recognized and paid for interest rate coverage of the Frech III-Contracíclico-2013 and Frech non-LIH programs. This applies until the effectiveness of each of the housing loans or home leasing contracts with the benefit of interest rate coverage that have been granted grace periods or extensions under the framework of FSC external circulars 007 and 014/2020.
	Decree 1692 (December 18, 2020)*	Decree 2555/2010 was modified with respect to retail-value payment systems. The amendments mainly sought to: 1) specify the system activities and define the participants and the duties applicable to them; 2) strengthen the corporate governance standards of the payment system administrators, and 3) raise the standards of transparency and interoperability in the system.
	Resolution 0239 (February 2, 2021)	Resolution 4211/2019 was amended with respect to the procedure for placing the class B treasury bonds (TES) up for auction in the primary market intended to finance temporary treasury transactions. It was established that the MHCP may make additional allocations in the auctions for up to 30% of the amount initially called, as long as the indicator of the ratio of the amount offered to the amount initially called is equal to or greater than 2. Likewise, an additional allocation in the auction for as much as 50% of the amount initially called may be made, only if the ratio indicator of the amount offered versus the amount initially called is equal to or greater than 2.5. Previously, making additional allocations with this type of securities was not allowed.
	Decree 151 (February 10, 2021)*	Decree 2555/2010 was amended with respect to the disclosure of information by issuers of securities.
	Decree 257 (March 9, 2021)	A new title was added to Decree 1077/2015 regarding the conditions of long-term individual housing credits. The decision was made that the first installment of the loan may not represent more than 40% of the family's income for loans intended to finance low-income housing. Previously, it could not represent more than 30% of the family income.
	Decree 270 (March 11, 2021)	This decree amended Decree 2555/2010 with respect to the method for calculating the minimum mandatory return that PFM must guarantee for the short-term severance pay portfolio. Specifically, the minimum mandatory return for this portfolio will be the lesser of these two: a 25% decrease or a 75 bp decrease of a short-term benchmark portfolio. Previously, the minimum profitability was a 25% decrease in the benchmark portfolio.
FSC	External Circular 031 (November 5, 2020)	There were changes regarding the reporting of information on repo transactions backed with loan portfolio securities (promissory notes) CUIF (catalog of financial information) accounts and subaccounts were eliminated and edited. Thus, the instructions given in External Circular 020/2020 were complemented.
	External Circular 032 (November 6, 2020)	The instructions related to the treatment of subsidy funds paid by the State through credit institutions or specialized electronic deposit companies (Sedpe) within the framework of the Solidarity Income Program were modified. Specifically, there was a modification to aspects related to debits for payments to third parties that were made to the beneficiaries of such subsidies.
	External Circular 033 (November 17, 2020)	Instructions were given regarding the unique taxonomy of cyber incidents (UTCI), regarding the report form for information security and cybersecurity metrics, and the traffic light protocol (information exchange tagging protocol). The objective is to continue encouraging the adoption of best practices in cybersecurity and information security risk management as well as to standardize the report of information by supervised entities.

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

Entity	Rule	Topic
FSC	External Circular 034 (November 23, 2020)	Form 443 "Statement of the legal reserve in legal currency" and Form 460 "Statement of mandatory investments in agricultural development bonds (TDA)" were amended to bring them in line with the updated regulations on the reserve requirements for credit institutions issued by *Banco de la República* through External Resolution No. 20/July 31, 2020.
	External Circular 035 (December 11, 2020)	Instructions related to the mechanisms of resolution were given (bridge bank). Specifically, in order to incorporate a bridge bank, a checklist established by the FSC must be attached, and the people who will be shareholders of the bridge bank must be indicated. Instructions are also given to Fogafín to follow up on the process of electing the corporate governance of the bridge bank, and the possession process with an abbreviated procedure[a/] is defined as equally applicable to the legal representatives and members of the board of directors of the bridge bank.
	External Circular 036 (December 14, 2020)	Instructions were issued in connection with the operation of a real estate annuity (REA) [b/]. Specifically, the criteria for eligibility and valuation of the investment in non-productive real estate that life insurers (REA managers) must comply with were established. Given the above, modifications were made to the methodology for calculating the asset shortfall reserve and to the respective form used for reporting the information. Instructions were also given regarding the mortality tables that apply to this product, the management of liquidity risk, and the insurance companies' compliance with their duty to provide advice to REA clients.
	External Circular 038 (December 15, 2020)	Forms 102 "Daily Report: purchase and sale of U.S. Dollars" and 395 "Purchase and sale of U.S. dollars: breakdown of transactions" were modified. The above takes into account the provisions of the External Regulatory Circular DOAM-146/November 4, 2020 on the methodology for calculating the MER issued by *Banco de la República* (regulatory change explained above).
	External Circular 039 (December 15, 2020)	Instructions are given regarding the extended duration of the Debtor Assistance Plan (PAD) and complementary credit risk management measures for credit institutions. The FSC decided to continue applying PAD until June 30, 2021 under the same terms as established in External Circular 022/June 30, 2020.
	External Circular 040 (December 22, 2020)	New items were included in the list of Abusive Clauses and Practices of the Basic Legal Circular (CBJ in Spanish) with respect to the offer of group insurance policies. The purpose of this is to ensure adequate protection of financial consumers by providing them with adequate information regarding coverages, exclusions, and other conditions in group insurance policies in which persons not supervised by the FSC act as policyholders on behalf of third parties.
	External Circular 041 (December 22, 2020)	Form 406 "Report on Parties Linked to a Financial Conglomerate and Operations for the control of aggregate exposure limits," and Form 403 "Report on exposure limits and risk concentration between entities of the financial conglomerate and its linked parties" were modified. The objective is to facilitate the registry of information in accordance with the requirements set forth in the FSC External Circular 030/2020. This establishes rules on transactions and exposure limits between entities that constitute financial conglomerates.
	External Circular 042 (December 23, 2020)	Pursuant to the provisions of Decree 222/2020, instructions were issued about low amount deposits, ordinary deposits, and low amount consumer loans. Specifically, certain parts of the CBJ related to the definition, the conditions for opening up, and special instructions regarding the management of money laundering and terrorist financing risk and operational risk as well as special rules with regard to information and security for low amount deposits and ordinary deposits were modified. The Basic Accounting and Financial Circular was also amended to establish the maximum amount or ceiling for low amount consumer loans. In addition, Form 459 "Degree of concentration of deposits and bonds" and Form 530 "Daily control of transactions by Companies Specializing in Electronic Deposits and Payments (Sedpe)" were modified along with their respective forms in order to adjust them to the provisions contained in the aforementioned decree.

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

Entity	Rule	Topic
FSC	External Circular 002 (March 10, 2021)	Instructions were issued regarding the system of offices and the provision of financial services through banking agents (bank correspondents). Certain sections of the CBJ were amended to define the requirements and conditions for providing services through mobile and digital correspondents and to add the types of insurance that may be marketed through digital networks, etc. Form 534 "Use of financial products and services," together with its proforma, was also amended in order to bring the information requirement into line with the provisions contained in Decree 222/2020.
	External Circular 004 (March 12, 2021)	The instructions for form F.0000-104 (format 341) "Individual Report by Debtor" were modified: active credit transactions" and proforma F.1000-141 (form 239) "Capital adequacy margin information report and other equity requirements and capital adequacy margin law control statement." Specifically, the obligation to report form 341 after reporting the balance sheet was reduced from twenty to ten days, and account 161070 "Credit card management fees" was eliminated from this form. The changes were made in order to: 1) get information related to debtors' active credit transactions in a timely manner and optimize the validation related to other items and provisions contained in Form 341, and 2) adjust the presentation of the subtotals with respect to the basic ordinary equity of the supervised entities in Form 239.
	External Circular 005 (March 18, 2021)	Instructions were issued regarding the operation of the registry of non-supervised merchant acquirers (RANV). This is in line with Decree 1692/2020 (explained above), which establishes that merchant acquiring activities may be carried out by credit establishments, corporations specializing in electronic deposits and payments (Sedpe), and by firms not supervised by the FSC. Likewise, instructions were issued regarding the modifications to the contracts of the retail-value payment system managers (EASPVB) that must be authorized by the FSC and rules regarding transparency that apply to merchant acquirers.
	External Circular 006 (March 29, 2021)*	Instructions were issued regarding the processes of issuance and valuation of equity securities issued by closed-end collective investment funds (CIF), private equity funds (PEF), autonomous equity, or in the process of securitization registered in the National Registry of Securities and Issuers.
BVC	BVC Regulations 54 (November 17, 2020)	The BVC Unified Circular (Circular Única) was amended in relation to the minimum fixed amount established for price marking on orders and spot transactions on equity securities issued by closed-end CIF, PCF, autonomous equity, or securitization processes. New price marking criteria were defined based on the type of variable-income security.
	BVC Regulations 55 and financial derivatives Regulations 032 and 035 (November 20, 2020)	The BVC Unified Circular and the Unified Derivatives Circular (Circular Única de Derivados) were amended in connection with the implementation of the Master Trader project. This project will provide users with new functionalities for trading in the variable income securities and derivatives markets. It will allow access to trading in these markets as an additional alternative to the current X-Stream Workstation (XW) trading screen.
	MEC Regulations 52 (November 27, 2020)	The MEC regulations[c/] were amended with respect to the correction[d/] of transactions made in the system on behalf of foreign investors. Rules were established to allow the correction of cash transactions entered into in the system when an SBF does not know the name of the final beneficiary-foreign investor at the time the respective transaction is finalized and completed so that once the SBF knows the name of the foreign investor, they can make the respective correction.
	BVC Regulations 001 (January 8, 2021)	Technical conditions or criteria were established for the liquidity makers program in relation to certain variable-income securities (specified in the regulatory bulletin). The maximum margins or spreads between the best offer to sell and the best bid to buy, the minimum amount for sale and purchase orders, the amounts and opportunities in which the liquidity creator must intervene, and the duration of the program were determined (December 31, 2021).
	MEC Regulations 005 and 006 (February 15, 2021)	The MEC's regulations and circular were amended in connection to the implementation of the new liquidity makers program for debt securities other than those issued by the national government. All the rules related to this new program were specified.

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

Entity	Rule	Topic
BVC	Regulations 009 and 010 (March 12, 2021)	Amendments were made to the unified circular and to the general regulations of the stock exchange related to the new requirements for the registration of equity securities on the stock exchange.
Congress of Colombia	Act 2071 (December 31, 2020)*	Measures were adopted for financing the reactivation of the agricultural, fishing, aquaculture, forestry and agro-industrial sectors.
	Act 2079 (January 14, 2021)*	Housing and habitat provisions were issued to guarantee the effective exercise of the right to decent housing and habitat for all Colombians. In the financial area, rules were included on maximum periods for financing housing loans, guarantees for their financing, and National Savings Fund rates, etc.
DIAN	Resolution 15	By means of this resolution, DIAN created and regulated the operation of the registry of the electronic sales invoice as a security (Radian). This is an IT platform for the registration of events related to electronic invoices as securities. The requirements for registration on this platform, the events to be registered as well as the users and technical mechanisms of Radian were defined. In addition, the technical attachment for the registration of the electronic sales invoice as a security was issued.

a/ FSC External Circular 036/2017 established an abbreviated procedure for assuming management positions in the entities supervised by the FSC.
b/ The REA is an instrument designed to achieve the purpose of a reverse mortgage operation. This allows Colombian households to use their real estate assets to increase an elderly person's normal income. REAs must be offered by life insurance companies. The main guidelines of REA are established in Decree 1398/2020.
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.
d/ The trade correction process allows the SBF to modify the completion data of one or more items directly or through the BVC after the compliance date.

Decree 1692/2020 of the MHCP: modification to the regulations for retail-value payment systems

The decree seeks to modernize the regulation of the existing retail-value payment system (SPBV in Spanish) (Decree 2555/2010, part 2, Book 17) as well as define the different tasks done within the SPBVs and the duties of the stakeholders of the system that are subject to this regulation. This is because the SPBV is essential for properly operating the financial sector, increasing the efficiency and formality of the economy, facilitating financial inclusion by creating a digital ecosystem that leads to the reduction of cash, encouraging the use of financial products, and generating transactional information that can serve as a credit history. In general, the decree: 1) updated the glossary related to the SPBVs of Decree 2555/2010; 2) defined the merchant acquiring activities (*actividad de adquirencia* in Spanish) together with rules applicable to this, and 3) established new rules applicable to the manager institutions of the retail-value payment system (EASPBV in Spanish) that included rules designed to mitigate possible conflicts of interest and encourage giving access to the systems as well as rules intended to guarantee the security and stability of the system. Each point is briefly explained below:

i. Glossary and new definitions

The glossary in Decree 2555/2010, part 2, book 17 was updated in order to clarify the terms relevant to the SPBV industry, specifically the description of the EASPBV and that of merchant acquiring activities. The mathematical formula for differentiating between the SPBV and the high value payment systems was eliminated, and now the SPBV is defined as the system where payment or transfer orders other than those processed by the high value system are handled. Furthermore, the previous glossary did not include other terms related to the SPBV such as, for example, "aggregator," "beneficiary," "access technology provider," "payment service providers," etc.

In addition, in order to guide the operation, regulation, and supervision of the SPBV, certain guiding principles were defined to ensure the sustained development of the system but had not been included in the previous regulations. These are: to encourage access, transparency, efficiency, and innovation in the provision of payment services; to ensure the protection and interests of the users and the stability of the retail-value payment system as well as encourage the adoption of global standards that would enable interoperability within the payment system. These principles did not exist in the previous regulations.

ii. Merchant acquiring activities

The decree defines acquiring activities as the carrying out and completion of the following responsibilities: 1) linking businesses to the retail-value payment system; 2) providing businesses with access to technologies that enable them to use payment instruments; 3) processing and handling payment or fund transfer orders that were initiated through the access technologies; 4) paying to the business or to the aggregator the proceeds from the sales made through the access technologies supplied under the terms agreed upon with them as well as managing the adjustments arising from disputes, refunds, claims or chargebacks, and notifying the user of the confirmation or rejection of the payment or transfer order.

A new specific section is created in Decree 2555/2010 with the rules applicable to these activities. Among these rules there is a new registration process for merchant acquirers not supervised by the FSC. Previously, non-supervised institutions could carry out these transactions, but there were no specific regulations applicable to them. This new title of the decree also includes rules on the denial of the application for registration, on the registration and access to payment systems, on the registration of funds, and on merchant acquirers supervised by the FSC.

iii. Rules applicable to EASPBV

A new section was included in Decree 2555/2010 with the rules applicable to the EASPV. This section that specifies the regulations related to the authorization to operate, contributions, clearing and settlement, duties of the EASPVs, operation of the boards of directors, the access committee and its functions, the exchange rate and its publicity, the fee for access to the system, adoption of a regulation, rules on providing other services, rules on conflicts of interest, and on contracting payment service providers and interoperability.

The previous regulations on EASPBV only specified the rules related to obtaining the certificate and authorization and to operating the SPBVs, the duty to provide information, rules on the adoption of a regulation, contributions, and principles of access and use.

Regarding conflicts of interest and the fostering of access to the systems, new rules were issued to facilitate the sale of shares by the financial institutions that own the EASPBVs, rules on the membership of boards of directors, the access committee and the fee-setting process, rules to provide transparency in the operation of the system as well as the obligation of the EASPBVs to notify participants and the public in general about the system's characteristics and rates. This applies to those events in which there is mutual shareholder participation by the participants of an SPBV and the EASPBV.

Decree 151/2021 of the MHCP: regulation regarding disclosure of information by issuers of securities

In accordance with the provisions of Act 964/2005 on furnishing the securities market with timely, complete and accurate information, Decree 151/2021 implements changes to Decree 2555/2010 in order to develop a general framework for the disclosure of information by issuers of securities. The main features of the new regulatory framework are as follows:

- Subjects that are required to comply with the standards for the disclosure of periodic and relevant information were reviewed. The determination was made that these will be issuers that have securities registered in the main market[51] and the CIF that have securities registered on the stock exchange (previously only the formers had this obligation).
- A materiality criterion[52] was established for the facts to be disclosed. The circumstances should only be disclosed when they will probably be kept in mind by a prudent and diligent investor upon purchasing, selling, or holding the issuer's securities or when exercising the voting rights attached to such securities.
- About the relevant information: The disclosure of legal situations was specified, modifications to the ratings and guarantees of the issues were introduced as relevant facts, etc.
- About the periodic information: a periodic disclosure framework was developed for issuers in general that requires them to prepare quarterly and year-end reports with a robust analytical content which will allow investors and the market in general to have updated information on the business and financial situation of securities issuers.

FSC External Circular 006/2021: processes for the issuance and valuation of corporate securities

In order to reflect the dynamic nature of the secondary market for equity securities issued by closed-end CIF, PCF, autonomous equity, or those in securitization processes registered in the RNVE, changes were made to the valuation methodology for equity securities issued by these vehicles. Thus, the following changes were made:

- Modification of the Basic Accounting and Financial Circular (CBCF in Spanish) with respect to the valuation of equity securities registered in the RNVE. This valuation methodology was to be implemented by the valuation price providers by May 31, 2021. Likewise, the institutions monitored by FSC were required to value such securities based on the price reported by the price vendors as of June 1, 2021.

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51 The main market includes the transactions in which the general public buys and sells securities. In contrast, the second market includes transactions involving the purchase and sale of securities by professional investors. The two terms are different from primary market and secondary market.

52 Material information that has been disclosed to a person or group of people who are not under any legal or contractual duty to respect the issuer's confidentiality.

- Modification of the CBCF with respect to valuation methodology for new issuances of shares in closed-end collective investment funds registered in the RNVE.
- Change in the CBJ regarding the disclosure of information in the investors' statements from the collective investment fund.

During the six months after June 1, 2021, the monitored institutions that had investments in the respective securities in their portfolios could apply an adjustment period in order to gradually incorporate the change in valuation.

Act 2071/2020: financing measures to reactivate the agriculture, fishing, aquaculture, forestry, and agro-industrial sectors.

To adopt measures to alleviate the financial and non-financial obligations of those small and medium agricultural, fishing, aquaculture, forestry, and agro-industrial producers affected by phytosanitary, zoosanitary (generated by pests and diseases in crops and animals), biological phenomena, and a severe and sustained drop in income in accordance with Act 1731/2014, article 12, and adverse phytosanitary, animal health, and climate effects and any other phenomenon not generally under the control of the producer, Act 2071/2020, etc. decrees the following:

- Given the adverse effects on the aforementioned sectors, Banco Agrario de Colombia and Finagro, as administrators of the Agricultural Guarantee Fund (FAG in Spanish), were empowered to enter into agreements, when appropriate, for the recovery and payment of loans in arrears (in arrears before November 30, 2020). These agreements may include the cancellation of current and overdue interest as well as reductions of capital[53] under the terms and limits set by the National Government (NG) in favor of those who have qualified as small or medium-sized producers at the time the respective loan was processed in accordance with the agricultural credit regulations.
- Debtors who owe money as of November 30, 2020 to the Agricultural Solidarity Fund created by Act 302/1996 (Fonsa in Spanish), debtor who owe money to the National Agricultural Reactivation Program (PRAN in Spanish), and to other institutions also included in Act 1504/2011,will be able to cancel their debt up to December 31, 2021 in accordance with the conditions and under the terms set by the NG and as applied by the administrator or creditor of the loans
- Finagro or the entity that acts as manager or creditor of the Fonsa and the PRAN obligations shall refrain from pursuing legal collection during the period between December 31, 2020 and up to December 31, 2021.
- The National Agricultural Credit Commission was empowered to establish the definition of small farmers and other types of producers. In Resolution 6/2021, the Commission defined: 1) a small agricultural producers as an individual with a gross income that is greater than forty minimum annual legal monthly salaries in effect (SMMLV in Spanish) and up to 103 SMMLV, and who also has total assets of no more than 350 SMMLV; 2) the medium-sized agricultural producers as one whose gross

53 Capital reductions are agreements between the creditor and debtor in which part of the debt is forgiven.

income exceeds 103 SMMLV without exceeding 2,717 SMMLV, and 3) the large agricultural producers as one whose gross income is greater than or equivalent to 2,717 SMMLV.

- The program to alleviate financial and non-financial obligations granted by financial intermediaries under Finagro conditions as well as loans for agricultural and livestock work and those contracted with suppliers of agricultural products, associations, trade associations and cooperatives was created. To this effect, the NG shall regulate the matter. In addition, the Ministry of Agriculture and Rural Development will regulate a program which will only benefit small and medium-sized agricultural producers, including artisanal fishermen, who have loans that were in arrears before November 30, 2020.
- The Rural Development Agency was authorized to grant the total or partial remission of the principal amount for rendering the public service of improving the land in the districts that belong to this entity as required in 2020 and the total remission of any interest defaulted on for the same reason. The NG, headed by the Ministry of Agriculture and Rural Development, will regulate the relevant conditions for the recovery of the loan portfolio or its total or partial cancellation.
- The Rural Development Agency will manage the write-off of the obligations owed by users of the State-owned land in reclamation districts. This is limited to debt with a due date that is more than five years after December 31, 2021.

Act 2079/2021: housing and habitat provisions

Act 2079/2021 has four sections in which new housing and habitat provisions are made: 1) instruments to support access to urban housing; 2) measures for the development of rural housing; 3) land use and land planning, and 4) other provisions. The most relevant financial measures are presented below:

- The interest rates for mortgage loans and leasing for housing granted by the *Fondo Nacional del Ahorro* for the purchase of low-income housing may not be higher than or equal to the interest rates offered by other financial institutions, only if this does not affect the financial sustainability of the entity.
- Households that have received a family housing subsidy in the category of housing improvement will be able to get access to a family housing subsidy in the category of home purchase. Likewise, if after ten years of receiving the subsidy for purchasing a house, there is a qualitative deficit, a family subsidy for housing improvement will be available.
- Long-term individual housing loans must have a minimum five-year repayment period, and the NG will set the maximum period which may not be less than thirty years. Previously, the debt repayment period was between five years minimum and thirty years maximum.
- The Ministry of Housing, City, and Territory and the National Housing Fund (Fonvivienda in Spanish) may, with the resources allocated in the General Budget of the Nation for housing investment, finance guarantees granted by the National Guarantee Fund (FNG in Spanish) to cover mortgage loan or home leasing operations. The maximum value of these loans and home leasing operations will be established by the NG.
- The NG will grant guarantees through the FNG for mortgage bonds to finance the mortgage portfolio, home leasing, and securities issued by credit institutions through mortgage portfolio securitization and home

leasing processes. Previously, under Act 1955/2019, it had been established that these guarantees would be granted only for mortgage bonds to finance subsidizable LIH portfolio and securities issued in processes of securitization of subsidizable LIH portfolio.

- The NG will grant benefits through Fonvivienda, the FNA, or Banco Agrario de Colombia for the purchase of new or used housing, construction on lots that are already owned or home improvement in rural or urban areas to teachers or school administrators in the official sector who do not have their own housing (along with other requirements). The benefits include a reduction in the interest rate on housing loans, the granting of family housing subsidies or the easing of housing loan application requirements.
- The family housing subsidy in the rent or rent with option to buy categories may be applied to new or used housing that has a value that exceeds the price limit established for low-income housing (LIH) provided that the monthly rent fee agreed upon does not exceed 1.0% of the LIH ceiling value of the year in which it is granted, as established in the rules governing this.
- The main source of funding for rural LIH will be the funds allocated in the General Budget of the Nation without prejudice to other sources of financing that may be implemented for this purpose.
- Mechanisms to encourage mortgage loans and leasing of housing will be included among the actions taken to develop the rural LIH policy. The NG shall regulate the matter.
- The Financing Subsystem of the National Low Income Housing System will now also include organizations for economic solidarity, employee funds, and savings and loan cooperatives that are monitored by the Superintendency of Economic Solidarity. Previously, the subsystem only consisted of institutions supervised by the FSC, Findeter, Banco Agrario, and some family compensation funds.

This law does not repeal in its entirety the provisions of Act 546/1999 but only those provisions that are contrary to it. Thus, that law continues to uphold the framework of essential elements for financial stability such as the determination of ceilings for the value-to-loan ratio and for the value of the down payment as a percentage of the debtor's income.