

---

# FINANCIAL **STABILITY REPORT**

ISSN - 1692 - 4029



## **SECOND HALF OF 2022**

---



Second Half of 2022

# FINANCIAL STABILITY REPORT

---

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

ISSN - 1692 - 4029







# 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.

  
**Office of the Deputy Technical Governor**

Hernando Vargas

**Deputy Technical Governor****Office for Monetary Operations and International Investments**

Andrés Murcia

**Chief Officer****Financial Stability Department**

Carlos Quicazán

**Director****Liquidity Support and Risk Control Section**

Nathali Cardozo

**Head****Systemic Risk Surveillance Section**

Wilmar Cabrera

**Head**

Jorge Cely

Orlando Chipatecua

Felipe Clavijo

Diego Cuesta

Camilo Gómez

Daniela Gualtero

Juan Sebastián Mariño

Maria Fernanda Meneses

Angelica Lizarazo

Alida Narváez

Hernan Piñeros

Javier Pirateque

Daniela Rodríguez

Camilo Sanchez

Miguel Sarmiento

Mariana Escobar

Álvaro Carmona, Adrián Martínez, and Jorge Niño, members of the Technical and Economic Information Department of the Monetary Policy and Economic Information Office; Michelle Baiter, GianMarco Jiménez, and Einer Steven Jaimes, interns from the Financial Stability Department; and Daniel Osorio, Director of Macroeconomic Policy at the Ministry of Finance and Public Credit participated in the making of this report. The comments from the Research and Development Department of the Office of the Financial Superintendent of Colombia are greatly appreciated.

Suggestions and comments:

+57 (601) 343 1011

atencionalciudadano@banrep.gov.co

# Content

---

Introduction **11**

---

Executive Summary and Analysis of Vulnerabilities **13**

---

Vulnerability Matrix and Heat Map **14**

---

1. Macroeconomic Environment **17**

---

2. Vulnerabilities of the Financial System **23**

2.1 Current Situation of the Financial System **23**

2.2 Credit Risk **35**

2.3 Market Risk **50**

2.4 Liquidity and Trading Book Interest Rate Risk **54**

Box 1: Insurance Industry Performance During the Covid-19  
Pandemic **65**

---

3. Stress Tests **71**

3.1. Stress Test of CI Capital Adequacy and Liquidity **71**

3.2 CIF Stress Test **78**

Box 2: Recent Trends in the Financial Position of Households **81**

---

4. Financial Regulation **85**

4.1 Regulations Related to Financial System Stability Vulnerabilities **85**

4.2 Regulations Related to Structural Changes and Issues of Interest in the  
Medium and Long Term **88**

4.3 Other Regulatory Developments **94**

Box 3: A Description of the Foreign Exchange Risk of Real Sector Firms in  
Colombia in 2021 **99**

# Graphs

---

## **Graph A Risk Map of the Colombian Financial System 16**

### **Graph 1.1 EMBIG 18**

**Graph 1.2** Fiscal Balance, Current Account, and Inflation in Colombia and in the Main Latin American and Caribbean Economies **19**

**Graph 1.3** A. Comparison of WEO Medium-Term Outlooks for October 2021 and 2022 / B. Comparison of WEO Medium-term Outlooks for October 2019 and 2022 **20**

**Graph 2.1** A. Real Annual Growth of CI Assets and their Main Components / B. Share of the Loan Portfolio and Investments in CI Assets **24**

**Graph 2.2** Real Annual Growth of CI Gross Loan Portfolio, by Type **24**

**Graph 2.3** A. Real Annual Growth of the Risky Loan Portfolio / B. Real Annual Growth of Non-Performing Loans **25**

**Graph 2.4** Credit Risk Indicators A. Quality indicator by risk (QIR) / B. Non-Performing Loans indicator (NPL) / C. NPL with 12-month cumulative write-offs net of recoveries **26**

**Graph 2.5** Real Annual Growth of Funding and Contribution to Growth of their Components **27**

**Graph 2.6** A. Return on assets (ROA) / B. Breakdown of ROA / C. Distribution of ROA **28**

**Graph 2.7** Simple Average 30-day Liquidity Risk Indicator (LRI) for CIs **29**

**Graph 2.8** CI Capital Adequacy Indicators **30**

**Graph 2.9** PCP and PP of FEMI **30**

**Graph 2.10** Consolidated and Individual Assets of CIs **31**

**Graph 2.11** Change in Real Annual Growth of NBF Assets / A. In Proprietary Account / B. In Third-party Account **32**

**Graph 2.13** Liquidity Risk Indicator for Collective Investment Funds A. LRI / B. Distribution of LRI per CIF **33**

**Graph 2.12** Open-ended Collective Investment Funds A. Total Assets / B. Cumulative Net Contributions **33**

**Graph 2.14** Real, Annual Growth of Loan Portfolio in Proprietary Position A. Life Insurance / B. General Insurance **34**

**Graph 2.15** Real Annual Growth of Managed Portfolio A. Trust Fund Companies / B. Stockbrokers / C. Pension Fund Managers **35**

**Graph 2.16** ROA of TC, SBF, and PFM **36**

**Graph 2.17** Insurance Company ROA **36**

**Graph 2.18** Corporate Sector Financial Debt as a Percentage of GDP by Instrument A. Private Corporate Sector / B. Public Corporate Sector **37**

**Graph 2.19** Private Corporate Sector Financial Debt as a Share of GDP by Exchange Rate Coverage, FDI, and Debtor's Foreign Trade **38**

**Graph 2.21** Breakdown of the Private Corporate Sector Loan Portfolio by Economic Sector **39**

**Graph 2.20** Public Corporate Sector Financial Debt as a Percentage of the GDP by Currency **39**

**Graph 2.22** QIR of the Private Corporate Sector by Sector A. Quality indicator by risk (QIR) / B. Contribution to QIR by Economic Sector **40**

**Graph 2.23** NPL of the Private Corporate Sector by Sector A. Quality indicator by default (NPL) / B. Contribution to NPL by Economic Sector **41**

**Graph 2.24** Real Annual Growth of the Private Corporate Sector Portfolio by Size of Firm **41**

**Graph 2.25** Credit Risk Indicators by Company Size A. Quality indicator by risk (QIR) / B. Quality indicator by default (QID) **42**

**Graph 2.26** Share of Fragile Companies **42**

**Graph 2.27** Changes in Some Private Corporate Sector Indicators A. Annual Change in Sales / B. Net margin (Profit/operating income) / C. Debt Ratio (financial obligations/assets) **43**

**Graph 2.28** Breakdown and Real Annual Growth of Household Indebtedness **44**

**Graph 2.29** Debt to Available Household Income **45**

**Graph 2.30** Average Financial Burden of Households that Took out New Loans A. Financial Burden on Borrowers of New Loans to Households / B. Average Household Financial Burden **46**

**Graph 2.31** Loan Portfolio Disbursements to Households A. Total / B. Disbursements of the Housing Loan Portfolio by Segment 46 C. Disbursements of the Consumer Loan Portfolio by Segment **47**

**Graph 2.32** Change in Requirements for Granting New Loans A. Housing Portfolio (banks) / B. Consumer Loan Portfolio (banks) **47**

**Graph 2.33** Household QIR **48**

**Graph 2.34** Trend of Non-performing Loan Portfolio and Household NPL **48**

**Graph 2.35** Quality Indicator by Default for each Segment A. Consumer / B. Housing **49**

**Graph 2.36** Quality Indicator by Default per Consumer Loan Harvest A. Consumer / Unspecified Use Loans / C. Credit Cards for Debtors with Incomes of up to 2 SMMLV / D. Credit Cards for Debtors with Incomes Above 2 SMMLV **50**

**Graph 2.37** Peso-denominated TES Market A. Yield Curve / B. Interest Rate Differential Between 10 and 1 Years **51**

**Graph 2.38** UVR-denominated TES Market **52**

**Graph 2.39** Share of TES held by Foreigners A. Historical Performance / B. Cumulative Change **52**

**Graph 2.40** Yield Curves for Private and Public Debt **53**

**Graph 2.41** Variable Income Market Performance A. Regional Stock Market Indices / B. Breakdown of MSCI Colcap Growth **53**

**Graph 2.42** Conditional Volatility of Colombia's Fixed Income and Variable Income Markets **54**

**Graph 2.43** Expectations for Benchmark Rates **54**

**Graph 2.44** 30-day Short-term Liquidity for CIs Acting as FEMI A. Liquidity indicators / B. Excess Consolidated Liquidity outside of Colombia **56**

**Graph 2.45** Components of the LRI A. Liquid Assets / B. Net Liquidity Requirements **56**

**Graph 2.46** Liquidity of CI Funding A. Net Stable Funding Ratio (NSFR) / B. Distribution of NSFR of Group 1 Institutions / C. Distribution of NSFR of Group 2 Institutions / D. Change in ASF Stability (annual growth) / E. Change in RSF Stability (annual growth) **58**

**Graph 2.47** Real Annual Growth of Demand Deposits by Counterparty **58**

**Graph 2.48** A. Real, annual growth by counterparty / B. Breakdown by residual deadline 59 C. Issuance of CDs by Maturity D. Time Deposits as a Percentage of Liquid Assets (LAM) **60**

**Graph 2.49** WATM gap by Maturities **61**

**Graph 2.50** Change in Breakdown of Assets and Liabilities by Type of Interest Rate A. Assets / B. Liabilities **62**

**Graph 2.51** Breakdown of Balance Sheet Contracted at Variable Rates by Type of Rate A. Assets / B. Liabilities **63**

**Graph 2.52** Average Duration of CI Assets and Liabilities **63**

**Graph B1.1** Contribution by Lines of Business to the Real Annual Growth of Annualized Settled Claims **67**

**Graph B1.2** Contribution by Lines of Business to the Real Annual Growth of Annualized Premia **67**

**Graph B1.3** Gross and Net Claims by Line A. Life Insurance / B. General Insurance **69**

**Graph B1.4** Technical Result and Profit for the Year Annualized by Line A. Life Insurance / B. General Insurance **70**

**Graph 3.1** Real Annual Growth of GDP in the Hypothetical Adverse Scenario **72**

**Graph 3.2** QIR Trajectory by Type of Loan Portfolio in the Hypothetical Adverse Scenario A. Commercial / B. Consumer / C. Housing / D. Microcredit **73**

**Graph 3.3** Peso-denominated TES Curve in the Hypothetical Adverse Scenario **75**

**Graph 3.4** Aggregate Quality indicator by Risk (QIR) **75**

**Graph 3.5** Return on Assets (ROA) **75**

**Graph 3.6** Annual Real Growth of Loan Portfolio **76**

**Graph 3.7** Aggregate Capital Adequacy Ratio at the Individual Level A. Total capital adequacy ratio / B. Common Equity Tier 1 ratio **76**

**Graph 3.8** Breakdown of ROA A. Adverse 1 / B. Adverse 2 **77**

**Graph 3.9** Distribution of Individual Capital Adequacy by Share of Loan Portfolio A. Adverse 1 / B. Adverse 2 **77**

**Graph 3.10** Total Consolidated Capital Adequacy Ratio **78**

**Graph 3.11** Results of CIF Stress Test **79**

**Graph B2.1** Main Aggregates of Household Financial Accounts A. Real Growth in Household Disposable Income / B. End Consumption of Households / C. Net household investment / D. Household debt 82 E. Household Financial Assets / F. Household Financial Equity **83**

**Graph B2.2** Accumulation of Financial Assets by Households since 2016 **84**

**Graph B3.1** Negative Exchange Rate Mismatch: accounting information A. Negative Exchange Rate Mismatch / B. Number of Companies with Negative Exchange Rate Mismatches **101**

**Graph B3.2** A. Mismatch/Total Assets / B. Balance of Trade/Operating Income / C. Share of Foreign Capital / D. Total Indicator **102**

**Graph B3.3** Classification by Economic Sector Companies in Risk Groups 1 and 2 **102**

**Graph B3.4** **102**

# Tables

---

**Table 1.1** Changes in the Main Markets of Reference **21**

**Table 2.1** Key Financial Indicators of CIs at the Consolidated Level **31**

**Table 2.2** Financial Institutions' TES Balances (in pesos and UVR), Private Debt Securities, and Shares Exposed to Market Risk **55**

**Table B3.1** **100**

**Table B3.2** Main Results of the Fiscal Year **101**

# Glossary

---

**ACO:** OMO placement agent  
**PFM:** Pension Fund Managers  
**HQLA:** High quality liquid assets  
**LAM:** Liquid assets adjusted for foreign exchange and market risk  
**TLS:** Temporary Liquidity Support  
**BAAAFS:** Banking Sector Benchmark Curve for Simple Fixed Rate Securities and AAA Rating  
**BAS:** Bid-ask spread  
**BOE:** Bank of England  
**BIS:** Bank of International Settlements  
**BVC:** Colombia Stock Market  
**CP:** Collective portfolios  
**SLC:** Savings and Loan Cooperatives  
**CD:** Certificates of Deposit  
**CDS:** Credit default swap  
**IB:** Investment banks  
**FC:** Finance companies  
**NSFR:** Net stable funding ratio  
**COP:** Colombian pesos  
**CCRC:** Central counterparty risk clearinghouses  
**CUD:** System of deposit accounts managed by *Banco de la República*  
**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  
**ASF:** Available Stable Funding  
**RSF:** Required Stable Funding  
**CIF:** Collective investment funds  
**IMF:** International Monetary Fund  
**FNA:** *Fondo Nacional del Ahorro*  
**Frech:** Reserve Fund for Portfolio Stabilization Mortgage  
**FSB:** Financial Stability Board  
**ALC:** Administrative and labor costs  
**GBP:** Pounds sterling  
**NG:** National government  
**CNG:** Central National Government  
**BBi:** Banking benchmark indicator  
**NPL:** Quality indicator by default  
**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-bank Financial Institutions  
**FEMI:** Foreign exchange market intermediaries  
**IPSA:** Stock Index of Chile  
**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  
**LIH:** Low Income housing

**BDBR:** Board of Directors of *Banco de la República*  
**Libor:** London Interbank Offered Rate  
**MADR:** Ministry of Agriculture and Rural Development  
**MEXBOL:** Mexican Stock Exchange Index  
**GFM:** Gross Financial Margin  
**MHPC:** Ministry of the Treasury and Public Credit  
**MSCI COLCAP:** Colombian Stock Exchange Stock Market Index  
**IFRS:** International Financial Reporting Standards  
**OIS:** Overnight index swap  
**OMO:** Open market operations  
**OPEC+:** Organization of Petroleum Exporting Countries and allies  
**OPA:** Takeover bid  
**PAD:** Debtor Assistance Plan  
**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  
**NLR:** Net liquidity requirements  
**ROA:** Return on assets  
**ROE:** Return on equity  
**IMC:** Investment management companies  
**SARC:** Credit 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  
**SPBLPGPT:** Lima Stock Exchange Stock Market Index  
**SPBV:** Retail payment system  
**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  
**TC:** Trading companies  
**IMC:** Investment management companies  
**PFM:** Pension fund managers  
**RI:** Intraday repo  
**IBR:** Interbank rate  
**MPR:** Monetary Policy Interest 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  
**WEO:** World Economic Outlook

# Introduction

*Banco de la República's* main goal 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 evaluates and manages the financial risks in a way that facilitates the suitable performance of the economy and efficient allocation of resources while, at the same time, it is able to absorb, dissipate, and mitigate the appearance of risks that may arise as a result of adverse events.

This *Financial Stability Report* meets the goal of giving *Banco de la República's* diagnosis of the financial system's and its debtors' recent performance as well as of the main risks and vulnerabilities that could affect the stability of the Colombian economy. The Report is intended to inform the public and the participants in the financial markets about the trends and risks affecting the system and it also intends to promote public debate on this subject. The results presented here also serve as a basis for the monetary authority to assess the effects and risks of monetary policy at the current situation and to adopt measures under its purview to promote financial stability.

The analysis presented in this edition of the Report leads to the conclusion that there has been a strong credit trend in Colombia in the last few months that is consistent with the strength of economic activity. Credit continues to grow (in all its categories and especially in consumer loans) while past-due and risky loans continue to decline for the aggregate portfolio. In general terms, the favorable performance of credit establishments (CIs) in a context of tighter financial conditions and greater volatility in financial markets continues to reflect the soundness and stability of the Colombian financial system. In spite of exhibiting a recent decline, CIs are keeping liquidity and capital adequacy indicators well above the regulatory minimums. Its aggregate profitability, in turn, returned to the levels seen before the pandemic shock and showed a positive performance in financial intermediation activities. With respect to non-bank financial institutions, the recent volatility of the financial markets has led to reductions in their level of assets due to the devaluations in their investment portfolios. This has been reflected mainly in reduced profitability for Trust Companies (TC) and Pension Fund Managers (PFM).

In line with the positive performance of economic activity in 2021 and so far in 2022, the rapid surge in household loans in Colombia, especially consumer loans together with the high levels of household debt to disposable income ratio is still considered a source of vulnerability for the stability of the Colombian financial system just as it was in the previous edition of this *Report* (see section 2.2.2). In addition, given the large current account deficit and the foreign financing needs, the exposure of the Colombian economy and financial institutions to changes in financial conditions persists in a global environment of high uncertainty. In any case, the results presented in this *Report* indicate that the financial system has shown to be resilient to the materialization of adverse scenarios (see Chapter 3).

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 financial stability outlook at this juncture and will make the necessary decisions to ensure the proper functioning of the economy, facilitate the sufficient flow of credit and liquidity resources, and promote the smooth functioning of the payment system.

**Leonardo Villar Gomez**  
**Governor**

## Executive Summary and Analysis of Vulnerability

Between the second and third quarter of 2022, credit continued to grow in all categories, especially in the consumer portfolio. The share of the loan portfolio in CI assets increased and, at the aggregate level, past-due and risky loans presented a decline reflecting the improvement in credit quality. The CIs, in turn, have increased their requirements for new loans issuance, especially in the consumer segment which, together with the monetary policy tightening process, could slow down this segment during the last quarter of the year.

CIs' profitability, on an aggregate level, shows levels similar as those seen prior to the pandemic. Furthermore, aggregate liquidity and capital adequacy indicators are above their regulatory limits. However, the latter have shown reductions in the recent period as a consequence of the restructuring of CIs' balance sheets from liquid assets (such as TES) to portfolio ones.

The NBFIs (pension fund managers, brokerage firms, trust companies and insurance companies), in turn, presented reductions in the value of their assets mainly associated with devaluations in their investments and showed a mixed performance in terms of their profitability. Regarding open-ended collective investment funds (CIF), there was an increase in assets under management, mainly due to the strength of the net contributions. Furthermore, their liquidity position remained above the regulatory limits and was at levels higher than those seen prior to the onset of the pandemic.

This edition of the *Financial Stability Report* concludes that the recent trend in consumer credit along with the high levels of household indebtedness and the materialization of credit risk in this segment are the main vulnerabilities for the financial system. This takes place in a context of tighter global and local financial conditions, high uncertainty and volatility in financial markets, and a slower pace of economic activity expected for the coming year.

During the period under analysis, consumer credit continued to expand at high rates aligned with credit boom indicator. In addition, the recovery trend in the risk indicators for this loan has been reversed in the recent period. This is especially relevant considering that, as in the previous *Report*, the ratio of household debt to disposable income continues to be around its historical maximum, and the available measures of financial burden show rises that are reaching historical maximums in some cases. The most recent placements in this category, in turn, have tended to deteriorate more rapidly in comparison to earlier placements. In this context, the Office of the Financial Superintendent of Colombia (FSC) adopted a macroprudential policy measure designed to increase loan-loss provisioning requirements for this loan segment in order to foster a healthy and sustainable growth of this loan portfolio.

Moreover, the Colombian economy and financial institutions are susceptible to changes in global financial conditions in a scenario of high uncertainty. The duration and development of the Russia-Ukraine conflict during the period under analysis remains a highly relevant unknown factor. Moreover, tighter financial conditions were seen in response to a process of monetary normalization by several central banks at the global level in an environment of high inflation. Risk aversion has increased significantly as has volatility in commodities and in

many financial assets. This, together with the high volume of local public debt in foreign investors' portfolios, makes local financial conditions sensitive to a tightening of global financial conditions and changes in investors' risk aversion.

Finally, the exposure of Colombian financial conglomerates to Central America is significant. In some jurisdictions there are significant tax challenges that could affect financial intermediation work.

This *Report* studies the resilience of the financial institutions using stress tests that evaluate the response of the CIs and the CIFs to extreme hypothetical scenarios that reflect the vulnerabilities described. The results show that the financial system has sufficient capacity to face adverse shocks that affect the profitability, capital adequacy, and loan portfolio risk of intermediaries. In addition, the results of the stress test at a consolidated level, that additionally considers the capacity of those CIs with subsidiaries in Central America to face losses in their investments in the region, shows that the aggregate capital adequacy of the entities is above their regulatory minimums in all cases. With respect to the CIFs, the improvement in their liquidity indicators reflects soundness of these investment vehicles under potential withdrawals. In addition, this edition of the *Report* finds that the exposure of the financial and real sectors to foreign exchange risk remains limited.

### **Vulnerability Matrix and Heat Map**

The analysis of the main risks in the Colombian financial system is complemented with a vulnerability matrix analysis that facilitates the interpretation of its status and development. In this edition, the vulnerabilities identified coincide with those documented six months ago. These are the fragility of financial institutions, exposure to sudden changes in international financial conditions, and credit risk. The assessment suggests that exposure to these risk factors remains limited although there have been increases during the period under analysis.

The heat map, in turn, complements these ideas by graphically showing the changes in a set of indicators that were used to assess and identify the system's vulnerabilities. In general, there was a deterioration in the variables related to the economy's fiscal and foreign performance, to those related to lending trends, and market risk. CI performance indicators, liquidity risk, and the housing market continue to perform favorably relative to their history. In particular, Table A and Graph A, respectively, show the vulnerability matrix and the risk map of the financial system. The matrix presents a detailed summary of the development of the main vulnerabilities faced by the CIs. The Table shows the direction of the change in each of the vulnerabilities, their status, and mitigating factors during the past six months. The risk map, in turn, enables us to simultaneously view the changes in different variables grouped into specific categories that include the performance of financial institutions, different financial risks, and macroeconomic risks over time. Each variable is represented using a color scale that assigns shades based on the historical trends of the variables and some expert judgments. Thus, reddish tones indicate times when a variable is at risky levels while green tones indicate periods of lower risk. For some variables, such as asset price indices or credit cycle indicators, which reflect risks when they exhibit

Table A  
Financial Stability Vulnerability Matrix

Vulnerabilities	State	Mitigating factors	Vulnerability management	
			Previous edition of the Report	This edition of the Report
1. Fragility of Financial Institutions	<ul style="list-style-type: none"> <li>The fragility of financial institutions is not particularly relevant at the moment. However, capital adequacy and liquidity indicators have been declining gradually.</li> </ul>	<ul style="list-style-type: none"> <li>Adequate levels of capital adequacy and liquidity.</li> <li>Profitability recovered.</li> </ul>	↓	↑
2. Exposure to sudden changes in global financial conditions	<ul style="list-style-type: none"> <li>Twin deficits.</li> <li>High uncertainty about global financial conditions.</li> <li>Uncertainty about the change in international and local inflation.</li> <li>High volume of public debt in the hands of foreign investors.</li> </ul>	<ul style="list-style-type: none"> <li>Reduced direct exposure to the Russian invasion of Ukraine.</li> <li>Stable access to international financing.</li> <li>Resilience of the financial system to a stress test.</li> </ul>	↑	↑
3. Credit Risk	<ul style="list-style-type: none"> <li>High growth in household credit.</li> <li>High debt to disposable household income ratio.</li> <li>Increasing financial burden on households.</li> </ul>	<ul style="list-style-type: none"> <li>The past-due and risky portfolio of households is at low levels.</li> <li>Progress in measuring their financial burden allows monitoring and timely supervisory actions to be taken.</li> </ul>	→	↑

Source: Banco de la República.

both high values and low ones, blue shades are used to indicate the risk of low activity in the respective markets.<sup>1</sup>

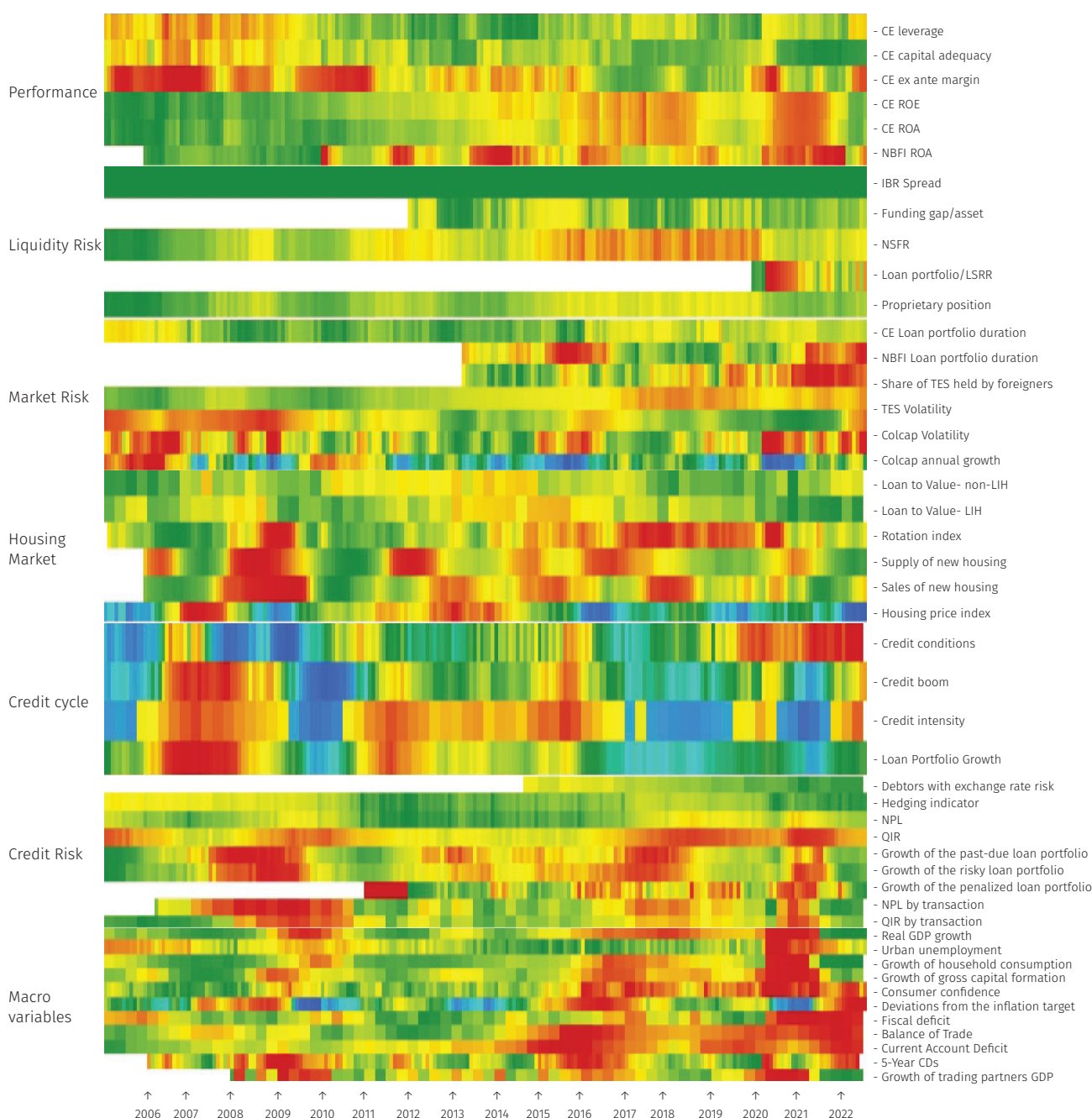
First, although the fragility of financial institutions remains low, it has risen since the last edition of this *Report*. During the last six months, it was noted that profitability had recovered and that liquidity and capital adequacy indicators showed significant increases. Nevertheless, during the period under analysis in this *Report*, liquidity and capital adequacy indicators showed a decline although profitability is at levels similar to those registered prior to the onset of the pandemic. In any case, these indicators are well above their regulatory minimums and, therefore, no relevant threats to the soundness of financial institutions are foreseen in the short term.

Vulnerability associated with sudden changes in global financial conditions continues to rise, thus perpetuating the trend mentioned in the previous edition of the *Report*. In line with the above, the risk map continues to show reddish tones in the fiscal deficit and current account deficit categories and reflects the elevated exposure of the Colombian economy to global financial conditions. Compared to the previous edition, foreign investors' holdings of public debt increased during this period.

<sup>1</sup> 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*.

Finally, with regard to credit risk, as a result of the high rates of growth of credit to households which were documented since the previous version of this Report, the high indebtedness relative to the disposable income of these debtors and the reversal of the trend of recovery in the risk indicators for this modality, the analysis presented in this edition suggests an increase in the exposure of the financial system to this source of vulnerability. (In the risk map, reddish tones are observed in the indicators of boom and credit conditions. In the intensity map, these tonalities are not seen).

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.

# 1. Macroeconomic Environment

**The global economic environment has been characterized by a vigorous recovery that began in 2021 because of massive access to Covid-19 vaccines and a timely policy response during the pandemic. In addition, growth expectations have been affected by new virus mutations, the onset of the conflict between Russia and Ukraine, and the tightening of global financial conditions since the second half of that year.**

Following the approval and mass production of Covid-19 vaccines in late 2020, the global economy began a vigorous recovery process supported by an expansionary monetary and fiscal stance. In the latter case, this implied a significant increase in the debt levels of several economies. However, the resurgence of infections caused by the delta variant of the virus, supply chain disruptions, and problems in the Chinese real estate sector began to impact growth expectations for that year.

The macroeconomic environment described was compounded in early 2022 by Russia's invasion of Ukraine, accentuating the current inflationary pressure. In this context of high uncertainty, there has been increased volatility in the markets and a tightening of financial conditions. In this respect, the prospects for economic growth in 2023 suggest a slowdown and a high exposure to various risk factors.

***The global economic growth outlook for 2022 and 2023 continues to show further downward corrections, and there is a broad set of risk factors. The main drivers underpinning these projections are concentrated in a generalized consensus about a contractionary monetary policy because of the high and persistent inflation, adverse effects stemming from Russia's invasion of Ukraine, and a slower pace of growth in the Chinese economy.***

In their October 2022 report on the economic outlook (World Economic Outlook), the International Monetary Fund (IMF) forecast the real global economic growth rate at 3.2% for 2022 and 2.7% for 2023. Concerning the growth rate for 2022, this value is equivalent to a downward correction of 1.7 percentage points (pp) compared to what was stated in its October 2021 outlook report, while the projection for 2023 corresponds to the lowest estimate since 2001 if the period of the global financial crisis and the Covid-19 pandemic shock are excluded. In addition to the above, the IMF expects a set of economies representing about 35% of global output to exhibit contractions<sup>1</sup> during 2022 and 2023.

The main forces that have driven the reduction in actual and expected economic growth are the following: inflationary pressure that has triggered monetary tightening by the different central banks with significant effects on global financial conditions;<sup>2</sup> the war between Russia and Ukraine, due to the direct effects on these economies, its impact on countries with trade links, the sanctions imposed on Russia, the substantial variations in the prices of some raw materials, and the significant reduction in the flow of gas to Europe which could generate greater

<sup>1</sup> This is understood as the consecutive contraction of its production level during 2022 and 2023.

<sup>2</sup> For greater detail, see Chapter 1 of the *Global Financial Stability Report* published by the FMI in October 2022.

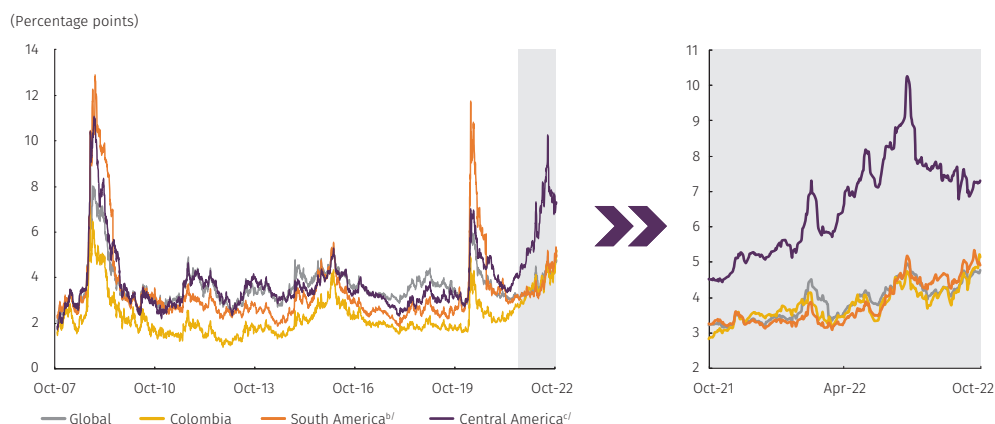
inflationary pressure; and the decrease in China’s growth due to its zero-tolerance policy for Covid-19 cases and the weakness in the country’s real estate sector.

The sources of vulnerability identified by the IMF in its October 2022 report on global economic performance projections, in turn, are summarized as follows: 1) a challenging outlook for monetary policy to establish a credible inflation control stance that minimizes material and unintended impacts on the economy’s productive capacity; 2) inflationary pressure of greater persistence;<sup>3</sup> 3) problems that emerging economies with high levels of indebtedness have in paying their obligations;<sup>4</sup> 4) significant reductions in the flow of Russian gas to Europe; 5) re-emergence of public health concerns in the face of low Covid-19 vaccination rates in some low-income countries or the emergence of other viral diseases, and 6) the potential economic fragmentation brought to the fore by the war between Russia and Ukraine.

***In particular, the Latin American and Caribbean region is exposed to tighter global financial conditions, a change in the risk appetite of international investors, and high levels of debt. This could hinder the timely fulfillment of obligations in some jurisdictions.***

According to the analysis presented in the IMF’s October 2022 *Global Financial Stability Report (GFSR)*, global financial conditions have become more restrictive partly due to the normalization of monetary policy as well as the market volatility and changes in investor risk appetite. Specifically, in the case of the region’s economies, this has resulted in higher costs of access to international markets (Graph 1.1) and financial conditions at levels close to those seen at the beginning of the pandemic.

Graph 1.1  
EMBIG<sup>a/</sup>



a/ The EMBIG (Global Emerging Markets Bonds Index) is a country risk indicator calculated by JP Morgan. It consists of the difference (expressed in percentage points) between the interest rate paid on fixed-income securities in dollars issued by emerging countries and in international markets, and the interest rate paid on U.S. Treasury securities with the latter being considered risk-free assets. An increase in this indicator reflects the higher credit risk of the issuing country.

b/ Refers to the EMBIG daily average for 8 South American countries: Bolivia, Brasil, Chile, Colombia, Ecuador, Peru, Paraguay, Uruguay.

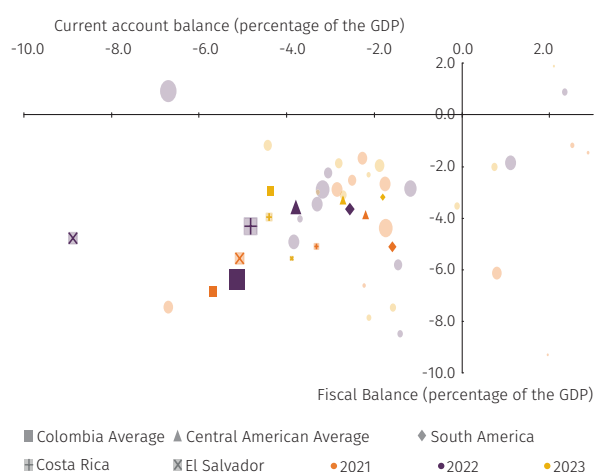
c/ Refers to the EMBIG daily average for: Costa Rica, El Salvador, Guatemala, Honduras, Panama, and the Dominican Republic.

Source: J.P. Morgan Chase.

3 See the special analysis on market dynamics and food inflation fundamentals published in the October 2022 WEO.

4 Six jurisdictions defaulted or were in debt restructuring processes: Belarus, Lebanon, Sri Lanka, Suriname, Russia, and Zambia.

Graph 1.2  
Fiscal Balance, Current Account, and Inflation in Colombia  
and in the Main Economies of Latin America and the  
Caribbean



Note: The dots correspond to seven countries in South America (Bolivia, Brazil, Chile, Ecuador, Paraguay, Peru and Uruguay) and the Central American countries where Colombian banks have a stake (Costa Rica, El Salvador, Guatemala, Nicaragua, Panama and the Dominican Republic). Each of the 2021 values and the outlook for 2022 and 2023 are presented with a different color: orange corresponds to 2021, violet to 2022, and yellow to 2023. The figures are also emphasized with different dimensions, where the squares illustrate Colombia; the crosses represent Costa Rica; X's, El Salvador; rhombi, the South American median; and the triangles, the Central American median. The X axis shows the current account balance as a share of GDP, which represents transactions between the economy and the rest of the world in goods and services, income, and current transfers. The y-axis shows the fiscal balance as a share of GDP and is calculated as the difference between general government revenue and expenditures. Last of all, the figures are determined based on year-end inflation such that larger sizes account for higher inflation rates.

Source: World Economic Outlook Database, October 2022.

The IMF's Western Hemisphere Economic Outlook report<sup>5</sup>, in turn, noted a significant recovery in the economies of Central American and Caribbean countries during 2021 and early 2022, driven by the favorable changes in demand from abroad, the rebound in trade with the United States, the normalization of the services sector (on account of the reactivation of tourism), and the robust flow of remittances that stimulated domestic demand. However, the tightening of global financial conditions, the deterioration in these countries' fiscal metrics, and the strengthening of the dollar at the worldwide level have accentuated the trade-offs between growth and inflation control in the monetary framework and between fiscal adjustment and higher spending to support the most vulnerable households.

For the economies in the region where Colombian banks are present, the fiscal and external deterioration of El Salvador and Costa Rica are the ones that require closer attention (Graph 1.2). In particular, in the last six months, the rating agencies Moody's Investors Service, Standard & Poor's, and Fitch Ratings downgraded El Salvador's sovereign rating as they argued that the country's difficult fiscal and external liquidity situation was exacerbated by its low access to international financing.<sup>6</sup>

As for Costa Rica, once the IMF's Extended Fund Facility (EFF) program was consolidated, the rating agencies Standard & Poor's and Fitch Ratings changed the outlook from negative to stable<sup>7</sup>. However, despite this decision, the country continues to show weakness in public finances and deterioration in the government's financial flexibility. Given the above, local banks' exposure to these jurisdictions is an essential part of the stress tests of the consolidated financial system presented in Chapter 3 of this Report.

Graph 1.3, panel A makes it evident that the materialization of risk factors regarding the global economy so far in 2022 has not generated medium-term effects on the growth of these economies insofar as their growth projections have not been affected during the period under analysis. Moreover, as mentioned in previous editions of this Report, the ongoing effects of the pandemic on economic activity continue to be noticeable (Graph 1.3, panel B).

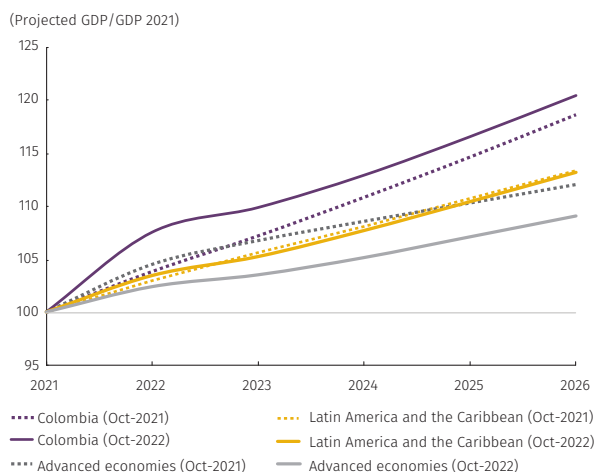
***In this context, Colombia has one of the highest expected growth rates at the global level for 2022, which is supported mainly by very strong domestic demand. Nevertheless, an economic***

5 *Regional Economic Outlook: Western Hemisphere*, published in October 2022.

6 See Moody's Investors Service's 04 May 2022, Standard & Poors' 01 June 2022, and Fitch Ratings' 15 September 2022 communiqués.

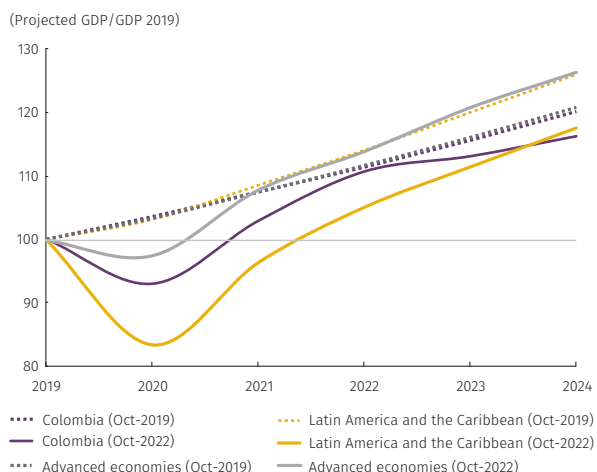
7 See the 11 March 2022 Fitch Ratings and 17 March 2022 Standard & Poor's press releases.

Graph 1.3  
A. Comparison of WEO Medium-Term Outlooks for October 2021 and 2022



Source: World Economic Outlook for October 2021 and October 2022

B. Comparison of WEO Medium-Term Outlooks for October 2019 and 2022



Source: World Economic Outlook for October 2019 and October 2022.

**slowdown is expected in 2023. This, together with the risk factors mentioned above and the deterioration in the current account, could exacerbate the vulnerabilities of the Colombian economy, given abrupt changes in global financial conditions.**

According to the *Monetary Policy Report (MPR)* of *Banco de la República* (Banrep) that was published in October 2022, local economic activity has shown a positive performance so far this year, a trend that is largely explained by the behavior of private consumption, which is well above its 2019 levels, and by investment in machinery and equipment. The technical staff at *Banco de la República* project a 7.9% growth for the current year in Colombia. In contrast, a reduction in the growth rate of our main trading partners, higher and persistent inflation, and tighter international financial conditions that imply a higher risk premium, together with a strengthening of the dollar, are expected. Concerning these last points, Table 1.1 shows the deterioration in the performance of the different markets for the period under analysis in red. On balance, the above has led the technical staff at Banrep to place their growth expectations for 2023 and 2024 at 0.5% and 1.3%, respectively.

For inflation, this trend is expected to follow a downward trajectory during 2023 and converge to Banrep’s target range, which will be above its upper limit at the end of that year<sup>8</sup>. Consumption, in turn, is projected to slow down in line with monetary policy, the reduction of the savings surpluses, and lower confidence levels. At the same time, the trade deficit is expected to widen during 2022 due to the strength of imports. In particular, this metric is expected to be close to 6.0% of the GDP in 2022 and to decline to 3.9% by 2023. The trend of this measurement, the fiscal deficit, and the government’s level of indebtedness are factors of vulnerability for the economy and expose it to abrupt changes in the international scenario.

In addition to the above, the technical staff’s projections are still framed in a context of high uncertainty. They suggest upward biases regarding inflation and the risk premium, while downward biases are seen for the production level.

**The stress tests prepared for credit institutions in this Report regarding both their individual and consolidated balance sheets as well as the test done on open-ended CIFs evaluate an adverse macroeconomic scenario that accentuates the previously described vulnerabilities of the economy. The results suggest that these institutions could continue their normal functions without defaulting on their prudential requirements (in aggregate terms).**

8 *Banco de la República* follows an inflation-targeting system under a flexible exchange rate regime. Under this approach, monetary policy actions are intended to ensure that future inflation is within the target set in the policy horizon. In Colombia, this target was set at 3.0% (with an acceptable deviation margin of  $\pm 1$  pp) by the Board of Directors of Banrep (BDBR).

Table 1.1  
Changes in the Main Markets of Reference

	Changes between March 25, 2022 and September 30, 2022									
	Policy rate	Local currency rate		Rate in dollars		Foreign Exchange Rate	Shareholder	CDS for 5 years ahead	EMBI+	Commodity
		2 years	10 years	2 years	10 years					
United Kingdom	150	283	232			-15.3%	-7.9%			
Japan	0	-2	2			-18.6%	-7.9%			
Germany	125	188	153			-10.8%	-14.2%	-1.5		
United States	275	188	126	188	126	13.5%	-21.1%	10.8	16.6	
Colombia	600	291	251	281	289	-21.3%	-29.8%	141	105	-27.1%
UVR		108	168							
Brazil	200	-3	18	242	168	-14.2%	-7.6%	98	-13	-20.2%
Mexico	275	169	101	190	221	-0.5%	-19.5%	93	52	-30.2%
Chile	525	81	47	0	201	-24.5%	3.0%	96	48	-27.2%
Peru	275	166	172	204	198	-6.4%	-23.9%	89	60	-27.2%
Other EM	75	106	63			-7.9%	-22.2%	93	-69	-12.7%

Note: The positive variations in the exchange rate reflect an appreciation of the exchange rate. Risk perception indicators in the United States correspond to the VIX and MOVE while, in Germany, they correspond to the Vstox. Changes in the policy rates, interest on sovereign bonds in local and foreign currencies, 5-year CDS, and EMBI are presented in basis points (bp). The commodities correspond to Brent crude oil in the case of Colombia, WTI in the case of Mexico, copper in Chile and Peru, and soybeans in Brazil. Other EM correspond to Turkey, South Africa, Russia, Indonesia, India, Thailand, China, Malaysia, Poland, and the Czech Republic.

Red (green) shades represent unfavorable (favorable) changes for each variable. For greater variations the color intensifies.

Source: Bloomberg, SEN, and MEC, calculations by DOAM.

The financial system's resilience is evaluated in Chapter 3 of this *Report* using a hypothetical adverse scenario of a downturn in the Colombian economy with high inflationary pressure and tighter domestic and external financial conditions. This scenario seeks to reflect an increase in supply chain frictions and a reduction in the economy's growth rate due to the current geopolitical tensions, the tighter monetary policy stance in major economies, and the economic slowdown in China, Europe, and the United States. In addition, the consolidated stress test, framed within the above scenario, evaluates the resilience of the entities to an exchange rate depreciation shock and different trajectories of devaluation of their foreign investments with greater deterioration in El Salvador and Costa Rica due to the greater current vulnerability of these economies. The usefulness of these tests lies in providing an estimate of the potential losses that might be seen in these scenarios and revealing the possible transmission channels through which the vulnerabilities identified could end up affecting financial stability while considering the fact that a disorderly tightening of global financial conditions may amplify pre-existing vulnerabilities in the region's economies.

The results indicate that, in an adverse scenario, there would be negative effects on aggregate indicators of total and core capital adequacy in both the individual and consolidated balance sheets, although they would probably remain at levels above the regulatory limits throughout the exercise<sup>9</sup>. However, an analysis by en-

9 The core capital adequacy ratio is the ratio between the value of ordinary core equity net of deductions and the value of assets weighted by credit, market, and operational risk (AWRL). The additional core capital adequacy ratio is the sum of the value of ordinary core equity net of deductions and additional core equity and the value of AWRL. In turn, the total capital adequacy ratio is defined as the ratio between the value of technical equity (understood as the sum of ordinary core equity net of deductions, additional core equity, and additional equity) and the value of AWRL. With the regulatory change that required entities to begin convergence to the guidelines established in Basel III, the capital adequacy limits, including the conservation buffer, were set for 2021 (2022) at: 4.875%, (5.25%), 5.25% (6.0%), and 9.375% (9.75) for core capital adequacy, additional core, and total capital adequacy respectively. For systemically important institutions, an additional 25 bp (50 bp) is required (systemic buffer). It should be clarified that, in practice, non-compliance

tity shows a broad variation in the performance of these indicators. In addition, the credit establishments' loan portfolios and aggregate profitability are likely to show significant deterioration. This would reflect the impact that the hypothetical adverse scenario could have on the ability of the entities to grant loans and do their intermediation work.

With respect to the open-ended CIF, it was found that withdrawals of 10% of their managed resources, as of September 2022, could jeopardize compliance with prudential liquidity limits for a set of funds that represented 20% of the total assets of these investments and savings vehicles. This means an improvement in the resilience of these funds compared to what was found six months ago when this same scale of withdrawals would have jeopardized compliance with liquidity measures for a group of funds that manage between 25% and 30% of the assets in this market. This improvement is explained by the increase in their different liquidity indicators, the positive trend in net contributions, and the reduction in the maturity of their portfolio. The results of stress tests are obtained from hypothetical scenarios that use a set of restrictive assumptions and do not consider potential policy responses implemented by the various authorities who share a macroprudential objective. It is, therefore, to be expected that, given the active and timely policy response of the different entities that the financial system security network is made up of, as well as a smaller magnitude of the shock, the impact on financial stability will presumably be lower.

---

with capital buffers does not imply non-compliance with regulatory limits and, therefore, does not constitute a situation of insolvency.

## 2. Vulnerability of the Financial System

The general situation of financial institutions over the course of 2022 in a context of economic recovery, strong inflationary pressures, a tightening of financial conditions, and greater volatility in the financial markets is evaluated in this chapter. 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

#### 2.1.1 Credit institutions: individual balance sheets<sup>1,2</sup>

***The performance of the CI balance sheet in real terms continued the recovery it has been showing since the beginning of the second half of 2021 although at a more moderate pace due to a stabilization in the growth of the loan portfolio, particularly in the consumer and commercial loans. In nominal terms, the consumer loan portfolio continued to surge as it registered levels not seen since mid-2011.***

As of August 2022, the individual assets of CIs amounted to COP 930.7 trillion (t), and their annual real growth rate<sup>3</sup> has stabilized at around 7.0% since January of the same year after showing an upward trend throughout the second half of 2021 (Graph 2.1, panel A). The trend assets are showing has been mainly explained by the performance of the loan portfolio which accounts for 67.5% of total assets. Investments, in turn, continue to show annual declines although their rate of contraction has stabilized in the last month (Graph 2.1, panel B).

Between February and August 2022, the trend in real terms of the total loan portfolio was explained by the performance of consumer and commercial loans which together accounted for 82.8% of the portfolio. The commercial loan portfolio, in particular, has shown a moderation in its rate of expansion while consumer and microcredit have begun to slow down, and housing continues its downward trend (Graph 2.2). In contrast, when figures are analyzed in nominal terms, it can be seen that both commercial and consumer loan portfolios continued their upswing with the latter registering an annual growth rate of 23.0% as of August 2022, a figure not seen since mid-2011.

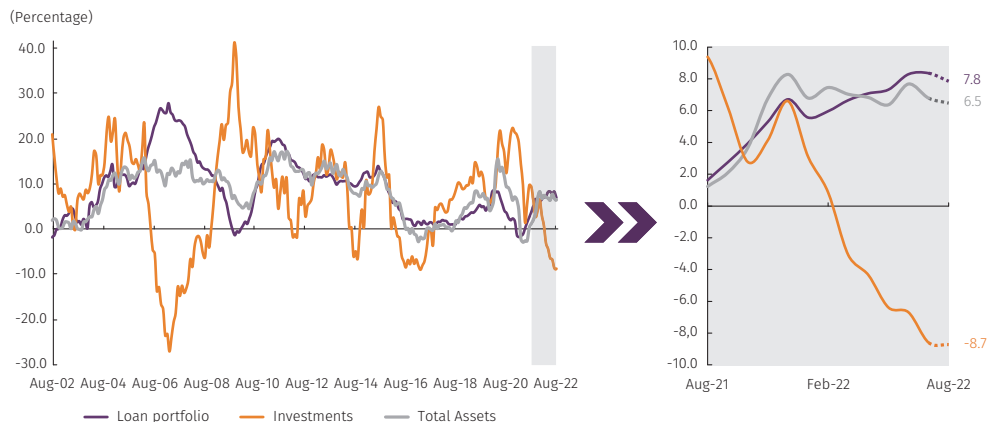
***The past-due and risky portfolios for all types of loans, except consumer loans, registered decreases over the course of the year, which has been reflected in declines on the credit risk indicators. In the case of consumer loans, there has been***

1 Regulations require credit institutions to report their financial statements on an individual basis (that is, only the business of the credit institution considered as an individual legal entity) and on a consolidated basis (that is, including the business of other financial institutions supervised by the FSC with which they maintain ownership links) for those institutions required to do so. This section shall include a separate analysis of vulnerabilities using the financial statements reported individually and those reported on a consolidated basis.

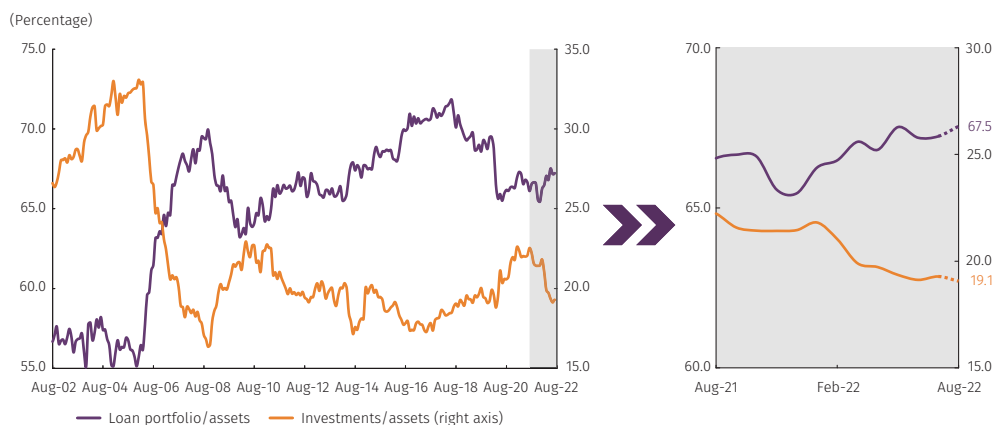
2 As of the date this Report was published, official information on the monthly financial statements of the CIs was available as of July 2022. Therefore, most of the graphs and analysis presented in this subsection have this cut-off date. However, for total assets, investments and loan portfolio balances, preliminary August data from the FSC Form 281 are presented and analyzed. This form has weekly information on some of the accounts on the CI financial statements.

3 The real growth rates presented in this Report were calculated using the consumer price index (CPI) excluding food.

Graph 2.1  
A. Real Annual Growth of CI Assets and their Main Components

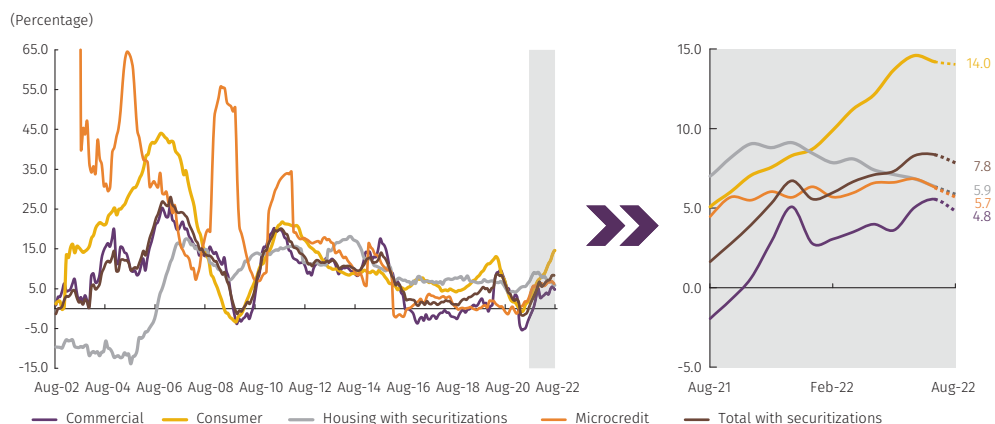


B. Share of the Loan Portfolio and Investments in the CI Assets



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

Graph 2.2  
Real Annual Growth of Credit Institutions' Gross Loan Portfolio, by Type



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

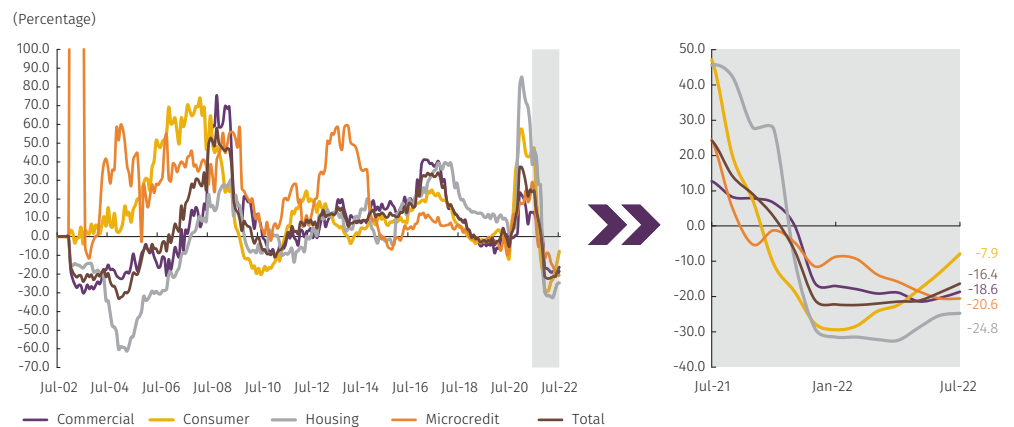
**a marked upswing in the growth of the risky and past-due portfolios recently. This has resulted in the reversal of the trend of its credit risk indicators.**

In line with the economic recovery, the risky and past-due commercial, housing, and microcredit loans have shown a negative growth rate since the end of 2021.

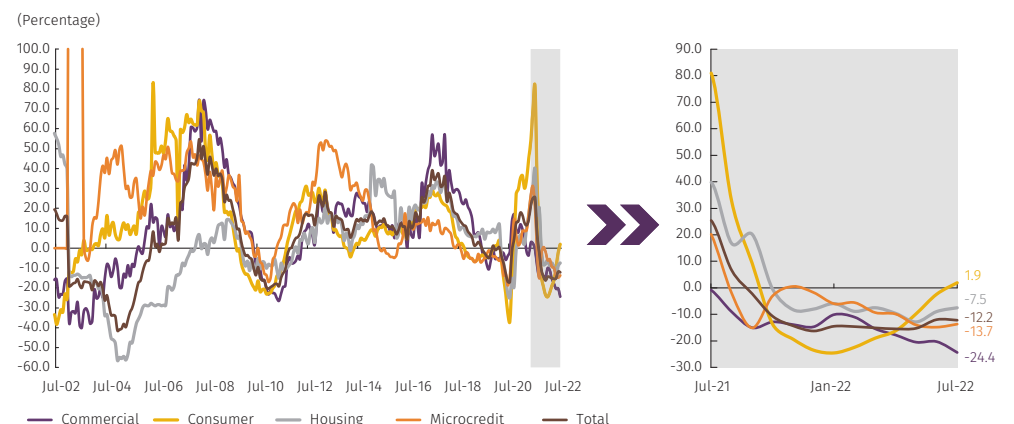
Consumer loans, in turn, have shown a change in trend for both portfolios since January 2022 and, in fact, exhibited a positive growth rate in non-performing loans as of July 2022 (Graph 2.3, panels A and B). It should be noted that, in nominal terms, the balance of consumer loans with a past-due period of more than thirty days went from declining 21.2% annually in January 2022 to expanding at a rate of 13.9% in August of the same year.

The moderate growth of the total gross loan portfolio together with the contraction of the risky and past-due portfolios have resulted in an improvement of the traditional credit risk indicators (QIR<sup>4</sup> and NPL<sup>5</sup>). The aggregate QIR for July, in particular, is the lowest one registered since December 2016, and the NPL has reached lower levels for all types of loans than those registered before the onset of the pandemic (February 2020, Graph 2.4, panels A and B). Although this decrease in the QIR and NPL has occurred for all types of loans, a change in trend has been noticed in the consumer portfolio since April 2022 in line with the trends in its

Graph 2.3  
A. Real Annual Growth of the Risky Loan Portfolio



B. Real Annual Growth of Non-Performing Loans

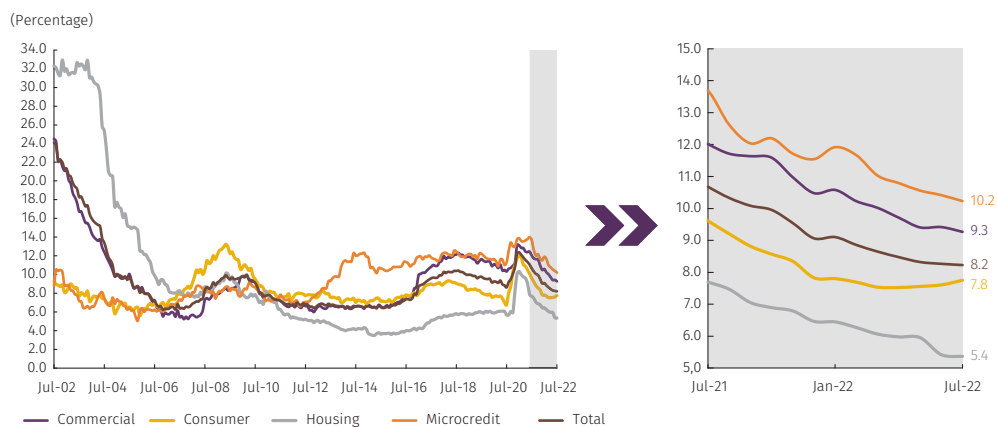


Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

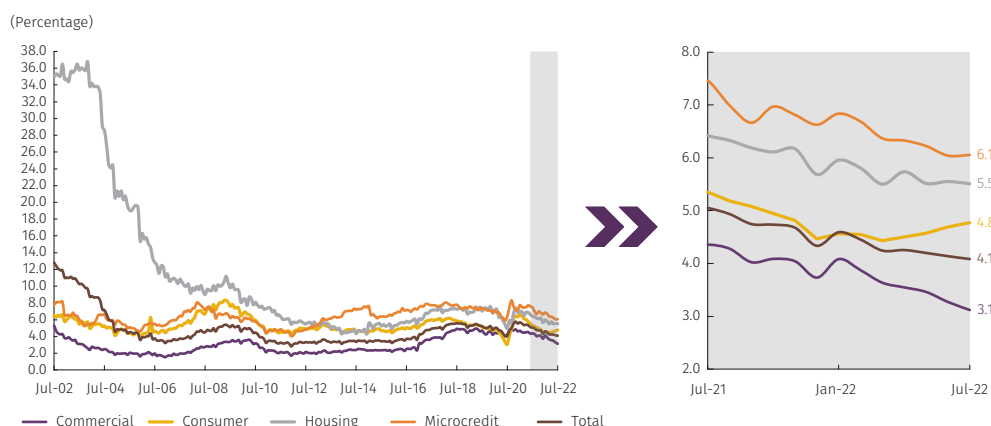
- 4 This is defined as the ratio between the risky and the total gross loan portfolio (the risky loan portfolio corresponds to the balance of the loans with ratings other than A on a scale from A to E where A is the best rating).
- 5 This is calculated as the ratio between the non-performing and the total gross loan portfolio (the non-performing portfolio includes the balance of the loans that have been in arrears for a period of more than 30 days).

Graph 2.4  
Credit Risk Indicators

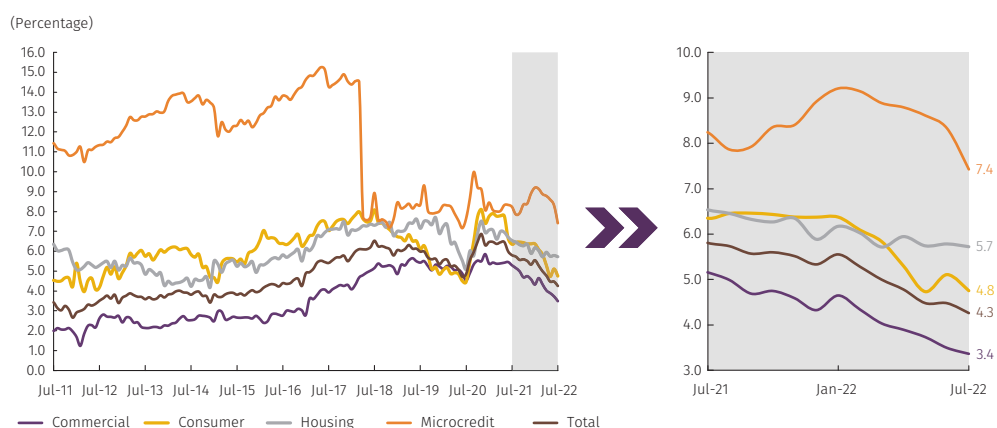
A. Quality indicator by risk (QIR)



B. Non-performing loans indicator (NPL)



C. NPL with 12-month cumulative write-offs net of recoveries



Note:  $NPL\ with\ write-offs = \frac{Non-performing\ loans + Accumulated\ write-offs\ in\ the\ last\ 12\ months\ net\ of\ recoveries}{Gross\ loan\ portfolio + Accumulated\ write-offs\ over\ the\ last\ 12\ months\ net\ of\ recoveries}$

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

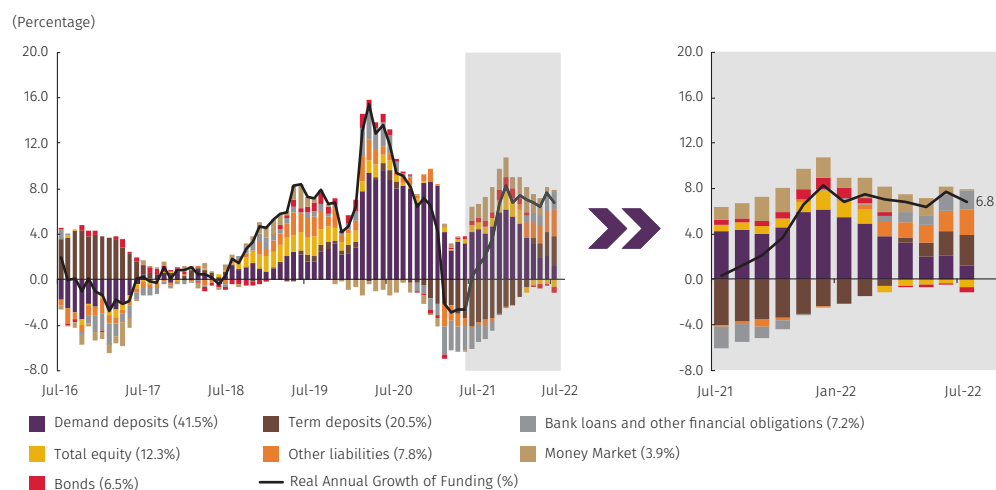
past-due and risky portfolios<sup>6</sup>. When write-offs net of recoveries are included in the calculation of the NPL, the indicator for all categories stands at levels below its average of the last year (Graph 2.4, panel C).

6 See section 2.2.2 for more details on the change in the trend of the credit risk indicators of the consumer loan portfolio.

**The growth in CI funding has been supported mainly by the expansion of term deposits, other liabilities, and loans from banks and other financial obligations. This, together with the moderate growth of demand deposits and the fall in equity, allowed term deposits to gain a larger share in funding.**

Between February and July 2022, funding of CI maintained its expansion rate, mainly due to the fact that term deposits, other liabilities, and loans from banks and other obligations presented a marked surge; demand deposits, in turn, registered moderate growth while bonds and equity showed year-over-year declines (Graph 2.5). In terms of composition, demand deposits and term deposits continued to be the items that accounted for most of the funding. The former together with equity, experimented a decrease of 2.4 pp and 2.0 pp respectively in their share in the six-month period under analysis while the latter experienced an increase of 2.3 pp. Information on funding by counterparty as of September shows that the downward trend in demand deposits continues and is registering annual declines (for more detail, see Section 2.4.1).

Graph 2.5  
Real Annual Growth of Funding and Contribution of its Components



Notes:

- The share each item has in funding is in parenthesis (liability + equity).
- Term deposits include CDTs and CDATS.
- The largest contribution in the other assets component came from outstanding acceptances and derivatives.

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

**The profitability of CIs reversed the upward trend it had been showing although it is still at levels higher than those registered before the onset of the pandemic. Aggregate liquidity and total and core capital adequacy ratios remain well above their regulatory minimums. This is in spite of recent reductions caused by the shrinking of investments, in the case of liquidity, and the expansion of credit risk weighted assets (CRWA) and the handover by Banco de Bogota of direct control of Porvenir to Grupo Aval, in the case of capital adequacy.**

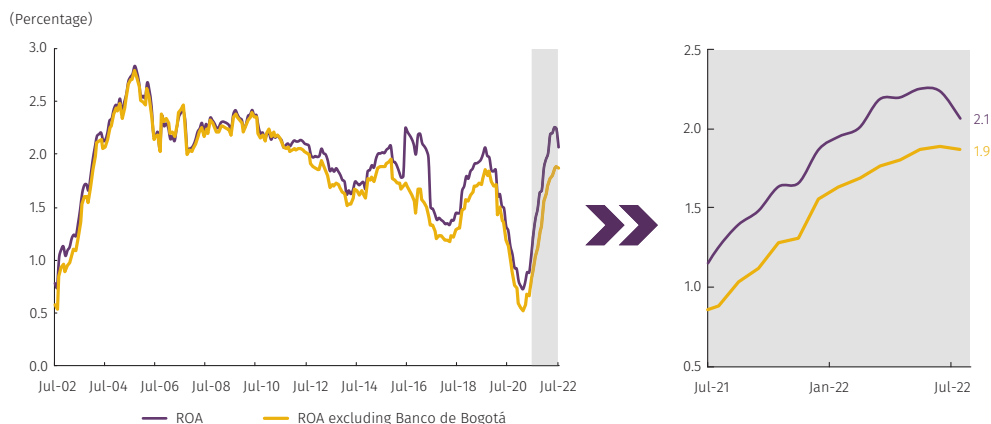
Between January and June 2022, the CIs return on assets (ROA) maintained the rising trend it had been showing since February 2021. Although it slowed as it registered a drop in July, it is still above the figure registered before the onset of the pandemic (1.6% in February 2020, Graph 2.6, panel A). A similar trend is observed excluding Banco de Bogotá, although there is a slight reduction in the last month of analysis.<sup>7</sup> The increase in profitability over the past year was mainly due

<sup>7</sup> This analysis is done in order to exclude the impact faced by Banco de Bogotá after the handover of direct control of Porvenir to Grupo Aval.

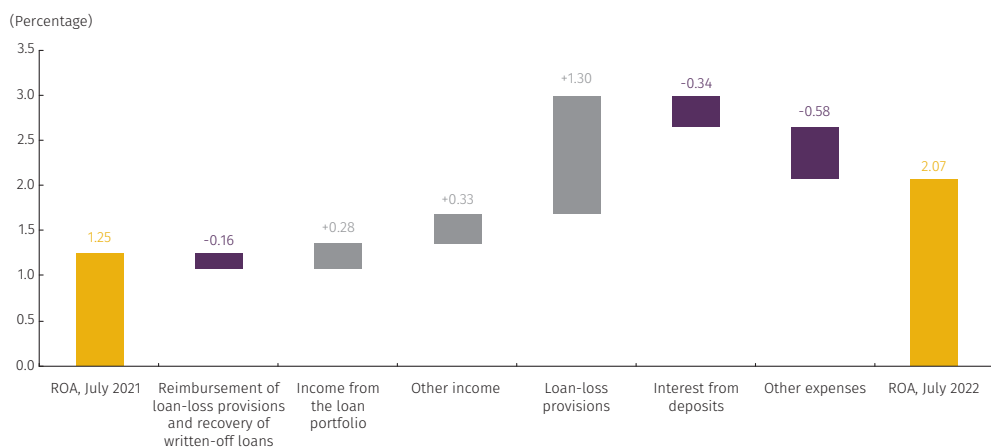
to lower expenses derived from loan-loss provisions (Graph 2.6, panel B). When analyzing the distribution of ROA, a marked degree of disparity is evident among CIs where the gap between the mean and the median has been widening since mid-2021 (Graph 2.6, panel C).

Graph 2.6

A. Return on assets (ROA)

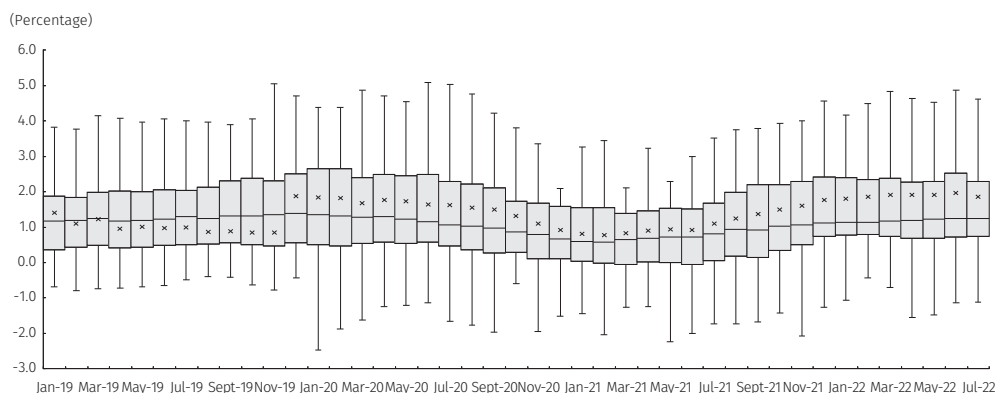


B. Breakdown of ROA



Note: *other income* includes commissions and fees, net valuation of derivatives, net changes, among others. *Other expenses* include administrative and labor expenses, taxes, among others.

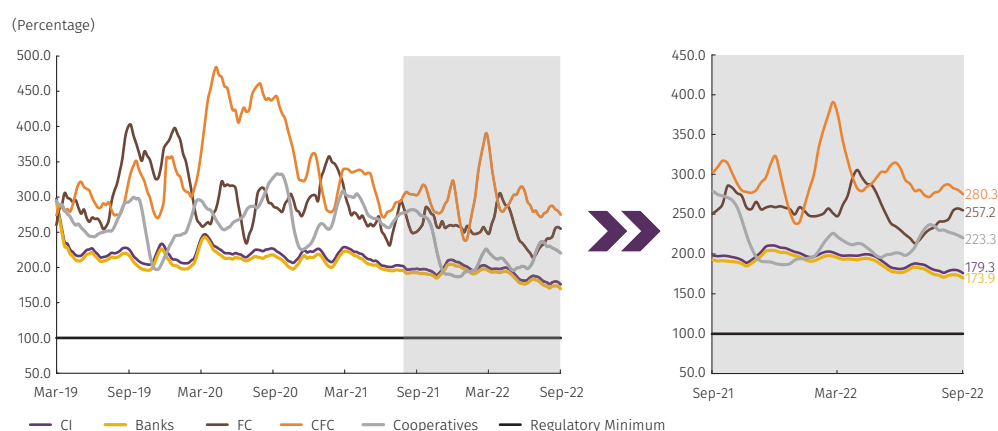
C. Distribution of the ROA



Note: the lower and upper limit of each box denotes the 25th and 75th percentile, in that order, of the distribution of the ROA of the CIs on each date. The horizontal line inside the box and the X correspond to the median and mean respectively.  
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

In terms of liquidity, at the same time as investments contracted in the six-month period from March to September 2022, the thirty-day liquidity risk indicator (LRI)<sup>8</sup> declined for banks, FCs, cooperatives and, consequently, for the aggregate of CIs. Notwithstanding the foregoing, liquid assets continue to significantly exceed the net liquidity requirements both in the aggregate and by type of entity (Graph 2.7). Regarding the financial soundness of CI, the levels of total capital adequacy, Common Equity Tier 1, and leverage ratios also register levels well above their regulatory minimums in spite of the large drop shown by the first two in March 2022 due to the increase in CRWA and the handover by Banco de Bogotá of direct control of Porvenir to Grupo Aval (Graph 2.8).

Graph 2.7  
Simple Average 30-day Liquidity Risk Indicator (LRI) for CI<sup>a/</sup>



a/ Simple average of the last four weeks.

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

**The foreign exchange exposure of foreign exchange market intermediaries (FEMI), measured by the regulatory requirements of Banco de la República, remains low, limited, and close to the levels it has exhibited in recent periods.**

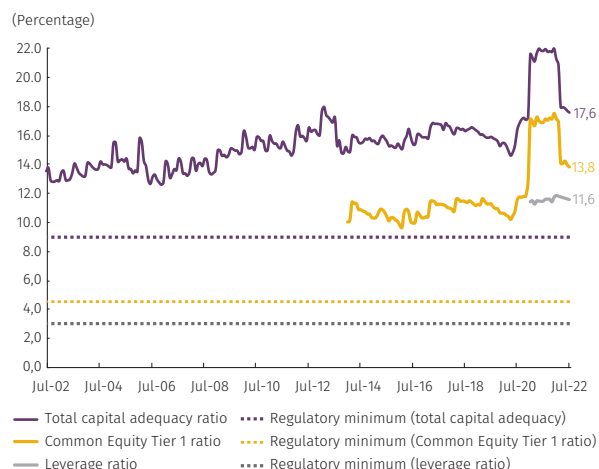
When the exposure of CIs to foreign exchange risk is analyzed, it is evident that their mismatches remain low and limited due, in part, to the prudential requirements of *Banco de la República*, which establish regulatory limits on the FEMI's proprietary position (PP) and their position on controlled investments abroad (PCIA).<sup>9</sup> The proprietary cash position (PCP), in turn, has remained stable (Graph 2.9). In addition to the above, CIs perceive a lower liquidity in dollars in the foreign debt market according to the Survey of Foreign Indebtedness and Quotas of *Banco de la República* for the third quarter of 2022. This has reduced the willingness of correspondents to provide funding in comparison to what they reported in the previous six-month period.

Given the strong devaluation of the Colombian peso against the US dollar in the last few months, *Banco de la República* launched a survey during the week of October 24 to assess the foreign indebtedness of banks. The results of this survey showed that the majority perceived a lower willingness to grant new foreign cu-

8 The LRI is calculated as the ratio of liquid assets adjusted for market liquidity and foreign exchange risk (LAM) to net liquidity requirements (NLR).

9 The arithmetic average of three business days of the PP must be between -5% and 20% of the technical equity of the FEMI. The PCIA may not exceed 150% of the technical equity for controlled investments. The PCP, in turn, has no regulatory limits. For greater detail about these measures see the BDBR's External Resolution 1/2018.

Graph 2.8  
Credit Institutions' Capital Adequacy Indicators



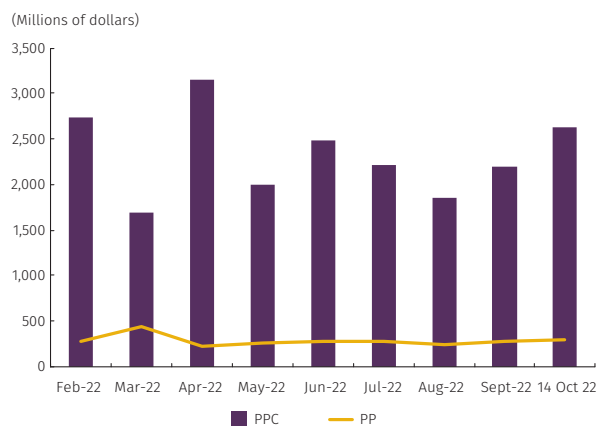
Note 1: the total capital adequacy and common equity tier 1 figures reported since January 2021 are not comparable to the historical series due to the regulatory change that required entities to start converging to the guidelines established by Basel III.

Note 2: the regulatory limits for total capital adequacy and common equity tier 1 ratios are 9.0% and 4.5% respectively. In 2022 (2023) the limits, including the conservation buffer are 9.75% (10.125%), 6.0% (6.75%), and 5.25% (5.625%) for the total capital adequacy, additional common equity tier 1, and common equity tier 1 ratios respectively. For systemically important institutions, an additional 50 bps (75 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.

Note 3: with the issuance of Decrees 1477/2018 and 1421/2019 credit institutions had to start complying with the regulatory leverage ratio requirement as of January 2021. This ratio is defined as the sum of the value of ordinary basic equity net of deductions and additional basic equity, divided by the value of leverage defined as the sum of assets net of loan-loss provisions, net exposures in repurchase/resell agreements, sell/buy backs and TTS, credit exposures in derivatives and contingency exposures. The regulatory limit for the leverage ratio is 3.0%.

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

Graph 2.9  
PCP and PP of FEMI



Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República (end-of-month information).

urrency loans during October, mainly due to capital restrictions in the United States and higher sovereign risk. In addition, all the respondents reported perceiving an increase in funding costs. In this context, half of them indicated that they have not changed their main geographic sources of financing while the rest of institutions stated that, given the reduced availability of banks in the United States, creditors in Europe and other regions are willing to supply these lines of credit, but at higher costs.

### 2.1.2 Current situation of the financial system at the consolidated level<sup>10</sup>

***In a context of tightening financial conditions and greater uncertainty, CIs at the consolidated level continued to carry out their intermediation activity without significant setbacks. In spite of the slight downturn in the assets, the mixed results in the credit risk indicators and the decrease in capital adequacy, there were improvements in profitability.***

As of June 2022,<sup>11</sup> the consolidated assets of CIs amounted to COP 1,072.3 t and represented 81.2% of the GDP (Graph 2.10). They reached a real corrected growth<sup>12</sup> of 8.0% which is lower than the 8.9% registered six months ago. In the last half of the year, this deepening indicator was affected by the spin-off of BAC Holding International by Banco de Bogota in February 2022. This reduced the assets of the bank by 41.1%. Without the effect of this spin-off, the consolidated assets of the CIs would have reached 84.4% of the GDP and would have represented a fall of 9.6 pp in the last six months. This result is mainly explained by the surge in local economic growth.

The growth of assets over the last few months of analysis was mainly driven by the performance of the loan portfolio, which accounted for 68.8% of the assets and reached a corrected real growth of 8.3%. In contrast, investments, which represented 15.6% of the assets, have shown a downward trend since the end of 2020 and reached a corrected real decline of 4.9%.

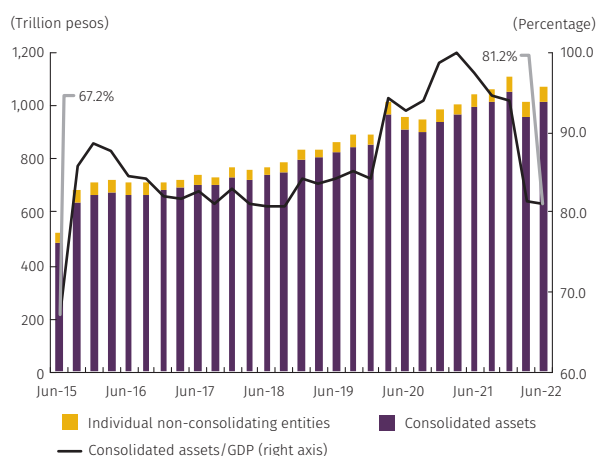
The corrected surge in the loan portfolio was generalized for all the different types of loans. The consumer and microcredit loan portfolios that spurred the growth with real registers of 10.4% and 9.9%, respectively, were noteworthy. Although the

10 For more information on the presence of Colombian banks abroad and the importance of supervising the financial system at the consolidated level, see Shaded area 1 of the *Financial Stability Report* of the first half of 2022 and the supplementary special report on international indicators of that report.

11 The figures contained in this section are the aggregation of the consolidated balance sheets reported by CIs and the individual balance sheets of those CIs that do not consolidate as of 30 June 2022.

12 The corrected indicators analyzed in this section do not include Banco de Bogotá in order to provide a more accurate comparison that does not include the effect of the spin-off of BAC Holding International.

Graph 2.10  
Consolidated and Individual Assets of CIs



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

housing and commercial loan portfolios showed a positive growth, they have slowed down in the last six months.

The corrected NPL, in turn, showed mixed behavior. On the one hand, the corrected indicators of the household loan portfolio registered upswings of 0.4 pp and 0.3 pp in consumer and housing categories. On the other, the corrected indicators for the commercial and microcredit portfolios decreased by 0.5 pp and 0.2 pp respectively.

In terms of profitability, CIs achieved an adjusted ROA at the consolidated level of 1.5%, the highest since December 2016. Last of all, total corrected consolidated capital adequacy was 6 pp above the regulatory minimum and showed sufficient capital in spite of the 2.1 pp drop in the last six months. The gap with respect to the 9.0% regulatory minimum is smaller than what is seen when the indicator is calculated with individual information and reflects the fact that, at the consolidated level, the same capital is backing a greater volume of activity.

Table 2.1 gives a summary of the main financial indicators of the CIs at the consolidated level.

Table 2.1  
Key Financial Indicators of CEs at the Consolidated Level

Indicator	Consolidated			Consolidated excluding Banco de Bogotá			Consolidated Change June-20 to June 22	Consolidado sin Bogotá Change June-20 to June 22
	Dec-21	Jun-22	Change (percentage points)	Dec-21	Jun-22	Change (percentage points)		
Real growth of assets	8.8	-3.2	-12.0	8.9	8.0	-0.9		
Real growth of investments	4.9	-10.8	-15.7	3.3	-4.9	-8.2		
Real growth of the total loan portfolio	8.2	-2.3	-10.5	7.4	8.3	1.0		
Real growth of the commercial loan portfolio	8.4	-1.6	-10.0	8.5	8.1	-0.4		
Real growth of the consumer loan portfolio	7.0	-2.0	-9.0	4.9	10.4	5.5		
Real growth of the housing loan portfolio	10.0	-6.4	-16.4	8.4	5.0	-3.4		
Real growth of the microcredit loan portfolio	7.5	9.2	1.7	8.2	9.9	1.7		
NPL of the total loan portfolio	4.0	4.1	0.0	4.2	4.1	-0.1		
NPL of the commercial loan portfolio	3.2	2.9	-0.2	3.1	2.7	-0.5		
NPL of the consumer loan portfolio	4.7	5.1	0.4	4.7	5.1	0.4		
NPL of the housing loan portfolio	5.4	5.8	0.4	5.6	5.9	0.3		
NPL of the microcredit loan portfolio	6.7	6.4	-0.3	6.4	6.2	-0.2		
ROA	1.4	1.9	0.5	1.2	1.5	0.3		
Total capital adequacy	16.8	15.2	-1.5	17.0	14.9	-2.1		
Common Equity Tier 1 ratio	13.2	12.3	-0.9	13.2	11.8	-1.4		

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

### 2.1.3 Non-bank Financial Institutions

This section presents the main vulnerabilities of non-bank financial institutions (NBFIs), which accounted for 53.01% of the financial system’s assets as of July 2022. Given the market risk exposure of the portfolios managed by these entities in proprietary and third-party positions, they are particularly vulnerable to situations of high uncertainty and volatility such as the current situation of the Colombian economy. Therefore, the primary risks analyzed in this section are mainly related to the performance of the markets and their impact on the profitability of the NBFIs.

**As of July 2022, the proprietary and managed assets of NBFIs showed contractions in real terms for all types of entities.**

The share of NBFIs’ proprietary account assets in the total assets of the financial system was 4.8% as of July 2022. The downward trend in real assets that has been observed since the pandemic exacerbated (Graph 2.11, panel A). Like the above, the portfolio managed by NBFIs, which represents 48.3% of the total financial system assets, is still showing a downward trend (Graph 2.11, panel B). This behavior was widespread as of July 2022 for both proprietary and managed assets, which led to real decreases for all types of institutions and reached levels below the average of the last seven years.

**During the last six months, collective investment fund assets stabilized in a context of higher contributions, lower devaluations, and high volatility in the financial markets.**

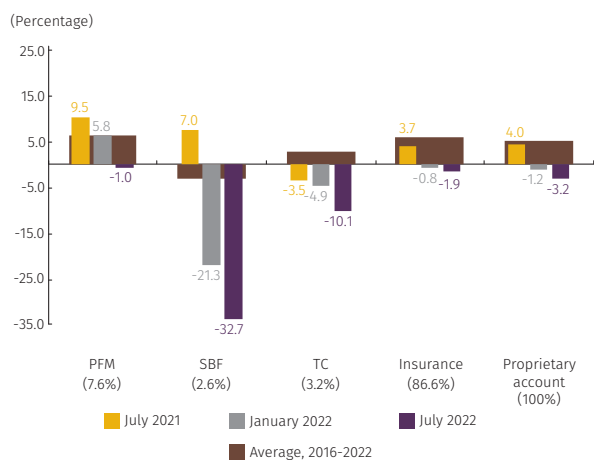
Between March and September 2022, the assets of the open-ended Collective Investment Funds (CIFs) managed by TC, SBF, and IMC rose COP 2.5 t and reached a balance of COP 66.7 t which represents 5.5% of the assets managed by NBFIs. The above is mainly explained by the growth in contributions (Graph 2.12). Up until mid-2022, contributions had been showing the best growth in the last four years but slowed down after June.

Although the portfolio has suffered devaluations of close to COP 0.3 t in the last six months, it should be noted that the liquidity position has remained above the regulatory limits. In fact, since the pandemic, managers of these investment vehicles have shown an increased preference for liquid assets, and this has been reflected in higher LRI averages than those seen prior to 2019 (Graph 2.13, panel A). Despite the above, when the distribution of the CIF indicator is evaluated, some variation is observed with some CIFs close to the regulatory limit (Graph 2.13, panel B).

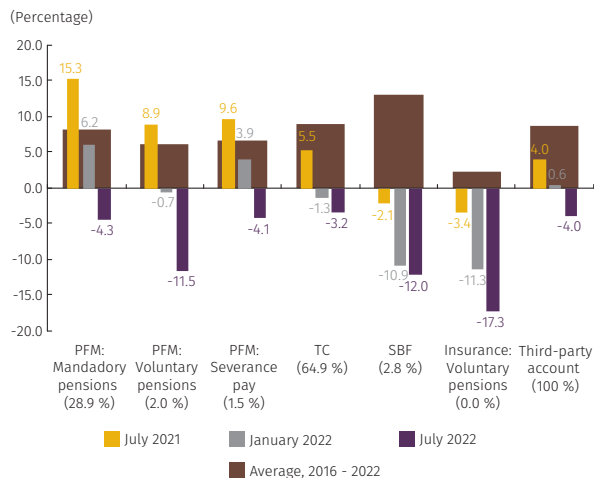
Given the importance of the CIF as an investment vehicle and their rapid growth following the global financial crisis, entities such as the IMF and the Financial Stability Board have made recent recommendations that seek to minimize the liquidity

Graph 2.11  
Real Annual Growth of NBF Assets

#### A. In Proprietary position



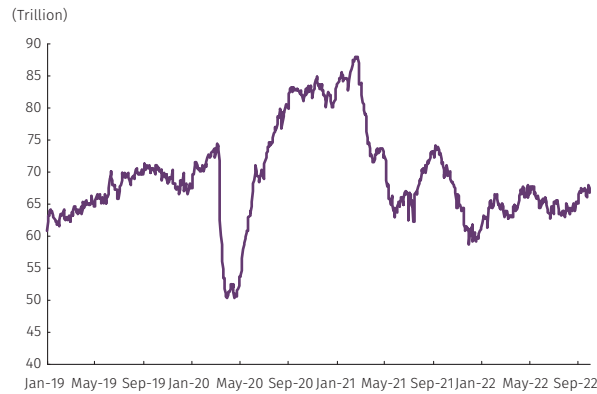
#### B. In Third-party position



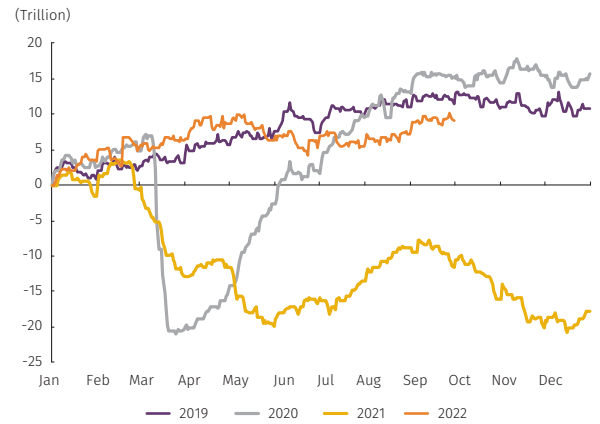
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Graph 2.12  
Open-ended Collective Investment Funds

A. Total Assets



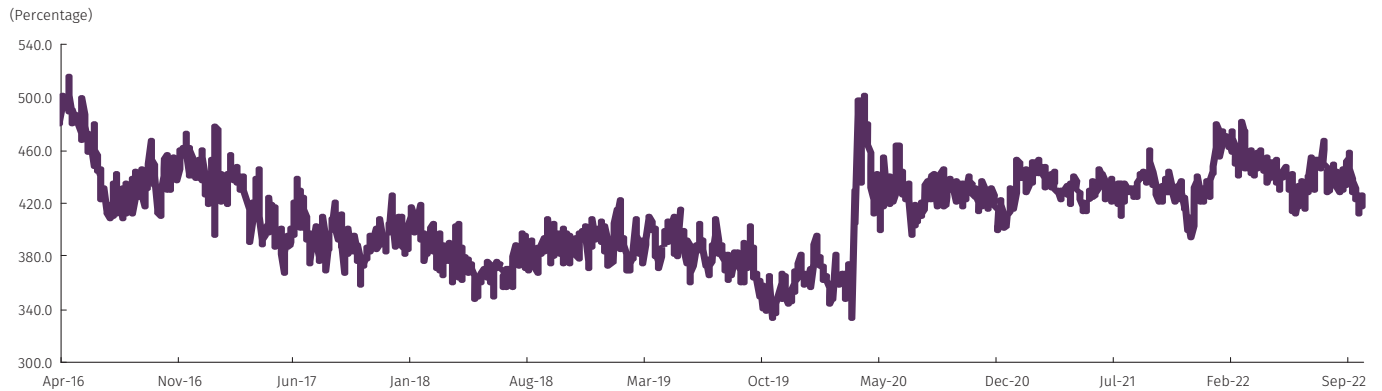
B. Cumulative Net Contributions



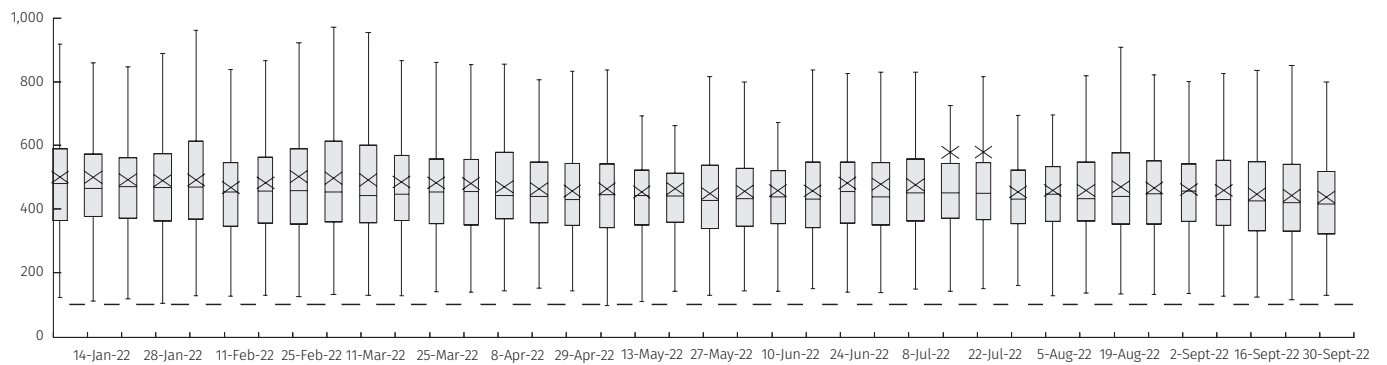
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Graph 2.13  
Liquidity Risk Indicator for Collective Investment Funds

A. LRI



B. LRI Distribution by CIF



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

risk of these funds and the impact of international cross-border effects that may influence investment flows. In particular, there have been recommendations of expansion in the control and monitoring instruments for the liquidity of CIFs, limits on the frequency of redemptions, greater control exercise by supervisors, deepening in local investment markets, and in the use of macroprudential policies in cases of vulnerability.

**The NBFi investment portfolio is still showing a downward trend so far in 2022 despite a slight correction during the first quarter of the year, which was driven by life insurance companies.**

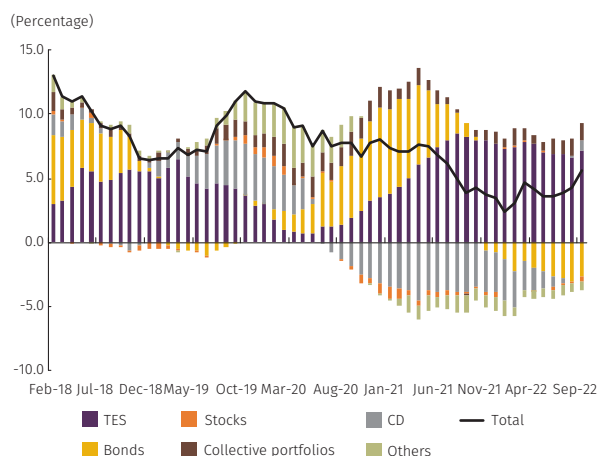
At the end of September, the real growth of the NBFi's proprietary position portfolio was -3.2%, continuing the downward trend seen since the end of 2019. The expansion of the life insurance companies' investment portfolio in proprietary position contributed positively to this growth, which was 5.6% as of the same cut-off date. In contrast, general insurance companies have presented a negative trend since March 2022, closing the quarter at -4.7%. By instrument, for both types of insurers, the positive contribution to growth was attributed to the TES position during the period, while the largest negative contributor was the bond position. However, the size of the latter has been sufficiently large to keep the growth of the general insurance portfolio in negative territory (Graph 2.14).

Moreover, the managed investment portfolio closed September with the lowest growth in the last seven years (-4.0%). The negative growth rates of TC and SBF were caused, particularly in the case of TC, by the reduction in their positions in TES, collective portfolios, and CDs, and in the case of SBF, by a lower position in stocks, CDs, and bonds. Moreover, the investment portfolio managed by the PMF declined 5.7% at the end of September 2022, thus remaining in negative territory for the fourth consecutive month due, in particular, to the reduction of their positions in TES and equities (Graph 2.15). Given the foreign investments held by the PFM and the foreign currency collateral they require, these types of entities could face additional pressure on their assets in a context of depreciation in the face of possible margin calls despite their recent accumulation of dollars. Given the scenario described above, the NBFi assets presented at the beginning of this section would continue to contract in the third quarter of the year.

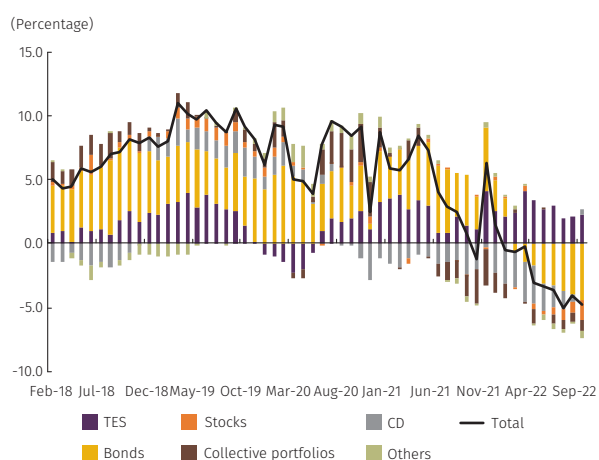
**Over the course of the year, the profitability of life insurance companies has presented a reversal to the negative trend observed since the end of 2019, while the PFM and TC have continued to exhibit lower profitability since mid-2021. In contrast, the SBF and general insurance companies have remained stable in terms of profitability.**

Graph 2.14  
Real, Annual Growth of Loan Portfolio in Proprietary Position

A. Life Insurance



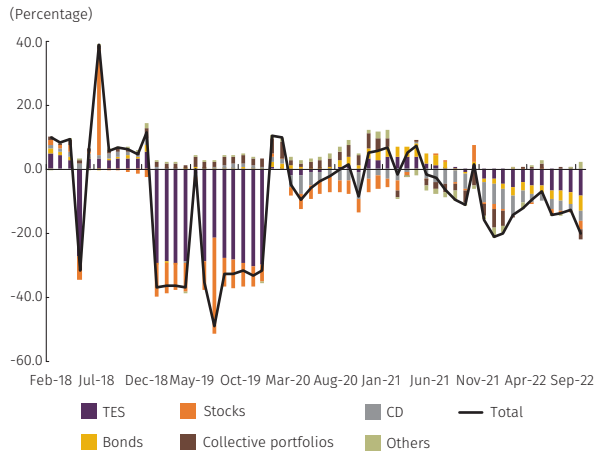
B. General Insurance



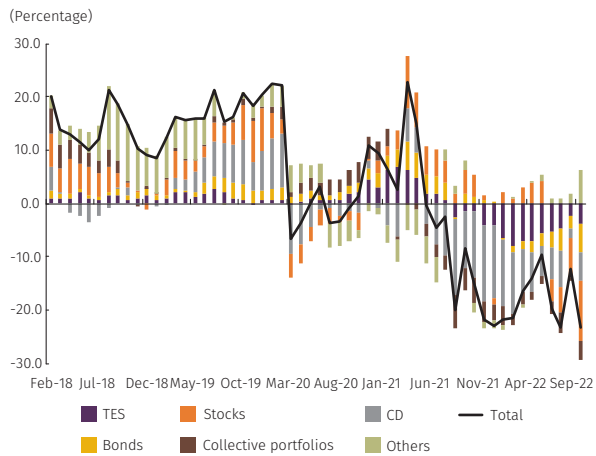
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Graph 2.15  
Real Annual Growth of Managed Portfolio

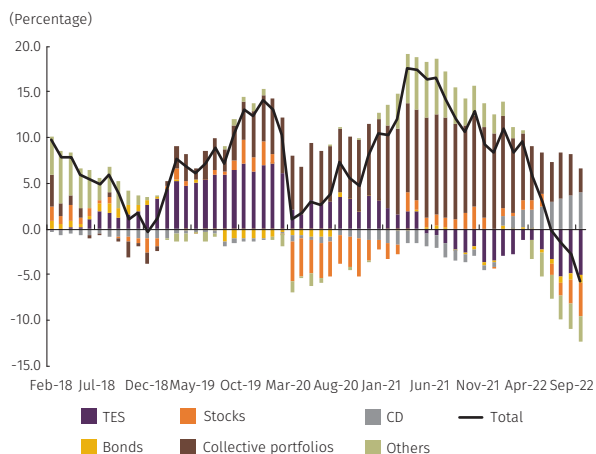
A. Trust Companies



B. Stockbrokers



C. Pension Fund Managers



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

The ROAs of the PFM and TC are still showing a negative trend and are at historical lows. For the former, this is mainly the result of a drop in income from the valuation of the investments while, for the latter, it is attributed to an increase in administrative and labor expenses (ALE). The ROA of the SBF, in turn, has stabilized around 5.0% over the course of 2022 (Graph 2.16).

With respect to life insurance companies, their profitability has shown a positive trend during the year to date, mainly due to an increase in the issuance of premiums and higher income from the valuation of their investments, the latter as a result of a higher exposure to public debt securities and the reclassification of a percentage of their investments to the amortized cost valuation method after the Covid-19 pandemic. The profitability of general insurance companies has not fluctuated much during 2022 because, while they have raised premium issuance, claims have also risen (Graph 2.17). Finally, note that the sharp growth in administrative and labor expenses has prevented a stronger recovery, especially in the case of life insurance.<sup>13</sup>

2.2 Credit Risk

The analysis of credit risk presented below is divided between the corporate sector and households. In the first sub-section, the development of corporate sector indebtedness, the perception and materializing of credit risk for private companies by economic sector and size of debtor, and the private companies' financial situation are analyzed. The indebtedness of households is analyzed in the second sub-section and some risk indicators related to the performance of this loan portfolio are presented.<sup>14</sup>

2.2.1 Corporate Sector<sup>15</sup>

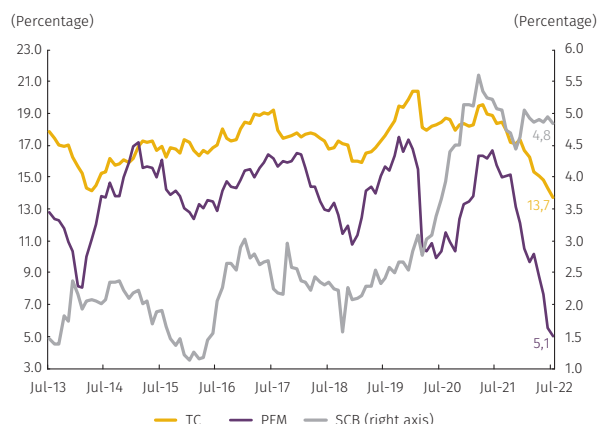
The analysis of the corporate sector presented in this section indicates that debt in foreign currency of the private corporate sector with foreign exchange risk mitigation mechanisms continues to represent the majority of the debt and is a stabilizing factor in a context of sharp Colombian peso depreciations. Likewise, most of the credit risk indicators and companies' financial and fragility indicators showed improvements. Nonetheless, the exposure to private corporate sector

13 For a detailed analysis of the performance of the different lines of insurance during and after the period of the Covid-19 pandemic, see the box "Insurance Industry Performance during the Covid-19 Pandemic".

14 As a complement to this credit risk analysis, the *Special Credit Risk Report* accompanying this semi-annual *Financial Stability Report* will be published in December 2022.

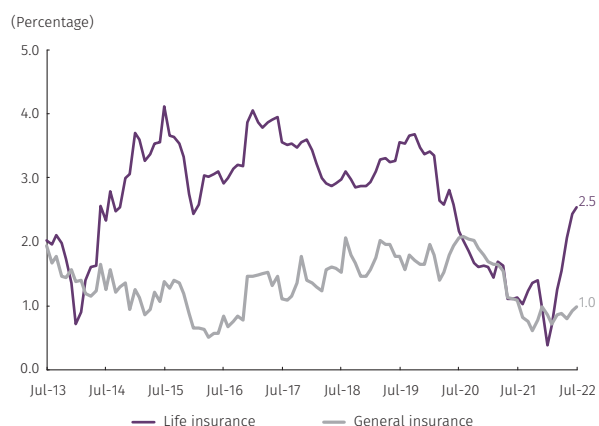
15 Due to availability of information from the Form 341 of the Office of the Financial Superintendent of Colombia, "Individual Information by Debtor: Active Credit Transactions," the most recent figures seen for this section were submitted as of June 2022.

Graph 2.16  
ROA of TC, SBF, and PFM



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

Graph 2.17  
Insurance Company ROA



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

indebtedness continues to stand near historical highs despite improvements in the last six months.

### 2.2.1.1 Trends in corporate sector indebtedness

**In the first half of 2022, the corporate sector lowered its indebtedness as a percentage of GDP. Nevertheless, it continues to stand at historic highs.**

As of June 2022, the total indebtedness of the corporate sector stood at 60.6% of annual GDP and showed a 2.3 pp reduction compared to what was recorded in December 2021. This contraction is a result of the economic recovery during 2022. Nevertheless, indebtedness remains at historic highs.

The private corporate sector<sup>16</sup> contributed with 53.1 pp of the total debt while the public sector contributed the remaining 7.5 pp. The former presented a decline characterized by a lower share of indebtedness with domestic financial institutions and bonds issued in the local market (Graph 2.18, panel A). The public corporate sector, in turn, experienced a reduction in a context of a lower participation of loans with bilateral and multilateral entities and foreign bonds abroad (Graph 2.18, panel B).

**The majority of private corporate sector debt in foreign currency had foreign exchange risk mitigation mechanisms as of June 2022.**

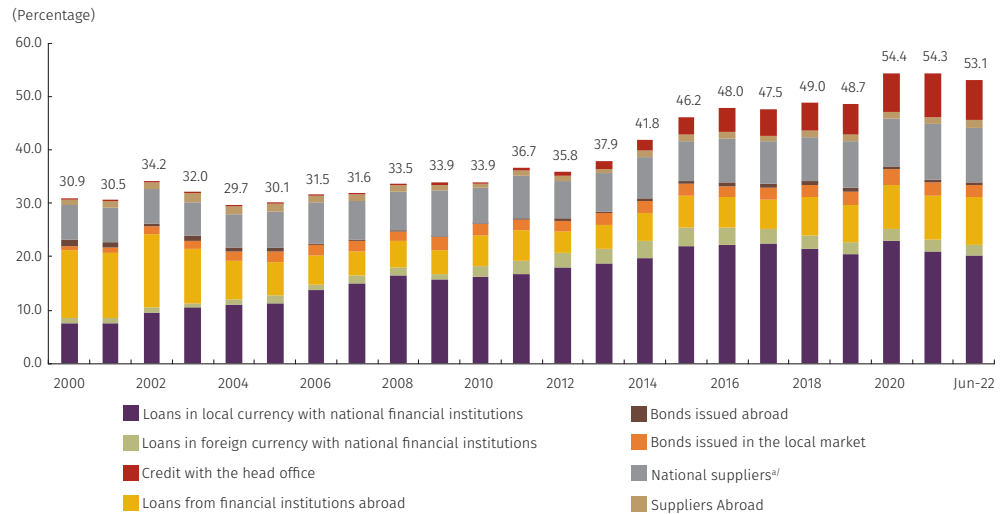
When indebtedness is analyzed by currency, private companies continued to keep most of their debt in Colombian pesos (62.1% of debt and 33.0% of GDP). The decrease in the aggregate debt as a percentage of GDP occurred in a context in which the contribution of debt in local currency (0.9 pp) and foreign currency (0.4 pp) was reduced. However, going forward, the performance of debt in foreign currency could be influenced by the recent depreciation of the Colombian peso. For example, if the exchange rate for June had been the maximum seen as of November 15 of this year (COP 5,061), foreign currency debt as a percentage of GDP would have risen by 3.7 pp.

Given the above, the 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

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

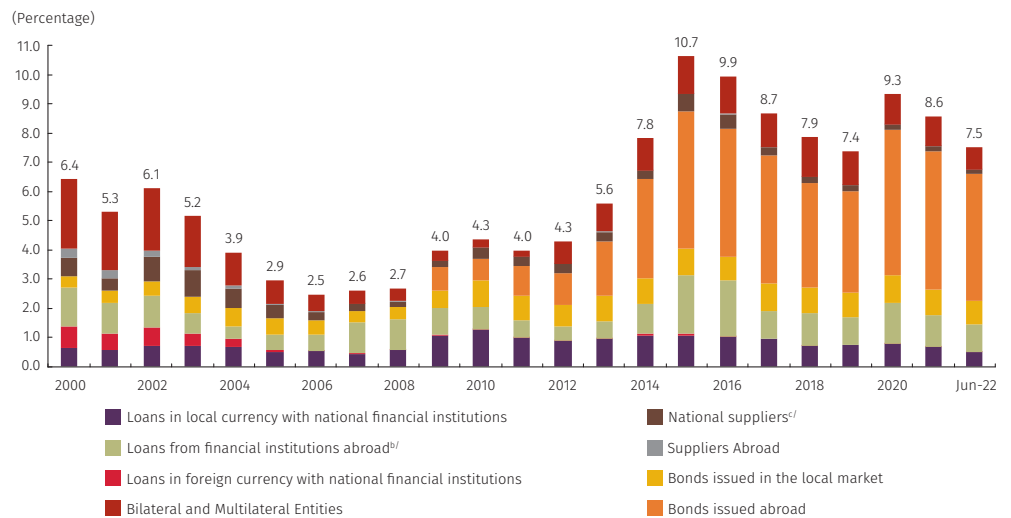
Graph 2.18  
Corporate Sector Financial Debt as a Percentage of GDP by Instrument

A. Private Corporate Sector



a/ This only includes information from companies that report their financial statements to the Superintendency of Corporate Affairs. In 2016, all of the companies registered their financial statements using IFRS which did not make it possible to determine the balance of debt owed to national entities. Therefore, 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 as of 2016 was assumed. Since the financial statements for 2022 have not yet been published, six-month GDP growth is used to project the June 2022 value.  
Source: Office of the Financial Superintendent of Colombia, Private Corporate Superintendence, and *Banco de la República*, calculations by *Banco de la República*.

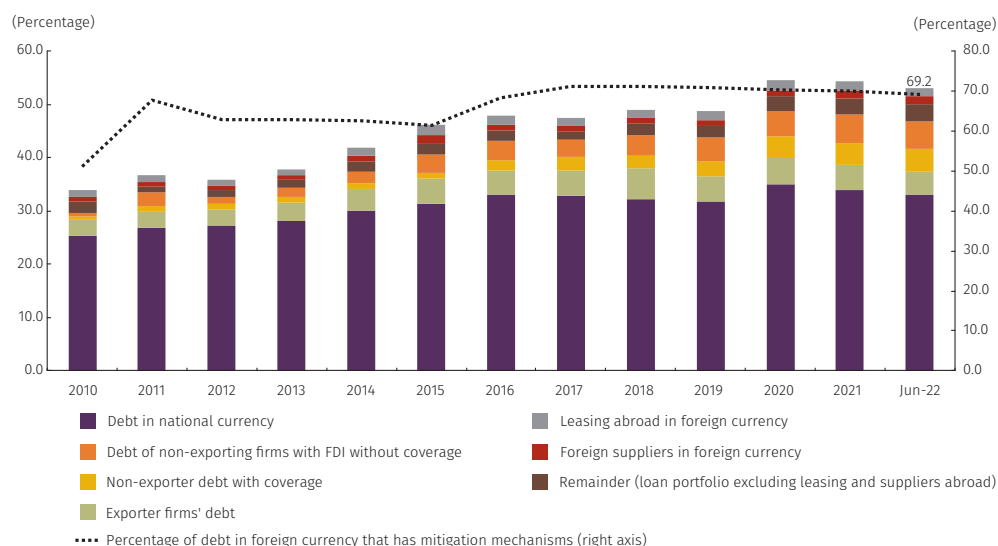
B. Public Corporate Sector



b/ Financial leasing transactions are not included.  
c/ Includes information on the balance of accounts payable of the main non-financial companies in the public sector.  
Source: 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*.

of a foreign entity (i.e.: foreign direct investment, FDI<sup>17</sup>).<sup>18</sup> As of June 2022, Graph 2.19 shows the private corporate sector’s financial debt as a share of GDP by currency hedging, FDI, and the debtor’s foreign trade. As can be seen, the percentage of debt in foreign currency that has some mechanism to mitigate exchange rate risk has remained relatively stable for the last six months. In addition, debt with mitigation mechanisms continues to represent most of foreign currency debt (69.2%).

Graph 2.19  
Private Corporate Sector Financial Debt as a Share of GDP by Exchange Rate Coverage, FDI, and Debtor Foreign Trade



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

Public companies continued to keep the majority of their debt in foreign currency. The reduction in debt of public companies as a share of GDP occurred in a context in which currency composition remained relatively stable (Graph 2.20). Furthermore, the two companies that account for close to 80% of the foreign debt are exporters and, therefore, have mechanisms to mitigate exchange rate movements.

### 2.2.1.2 Credit risk analysis by sector<sup>19</sup> and company size<sup>20</sup>

**During the first half of 2022, credit risk indicators showed an improvement for most economic sectors with the exception of mining.**

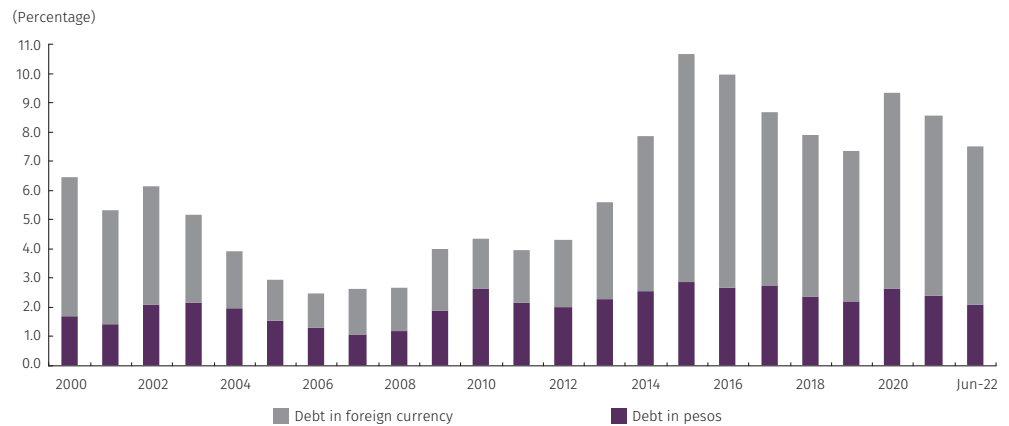
17 When a foreign entity has FDI in a local company, the foreign exchange risk for the latter is mitigated due to the fact that it is assumed that the investor has an incentive to support the company in the case of a depreciation in the exchange rate. In addition, the structure of the local firm’s foreign 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.

18 For further discussion on the vulnerability of companies to exchange rate mismatches, see Box 3 of this Report.

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 agribusiness; 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 Chapter II, Appendix 3 of the Basic Accounting and Financial Circular of the Office of the Financial Superintendent. In this norm 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.

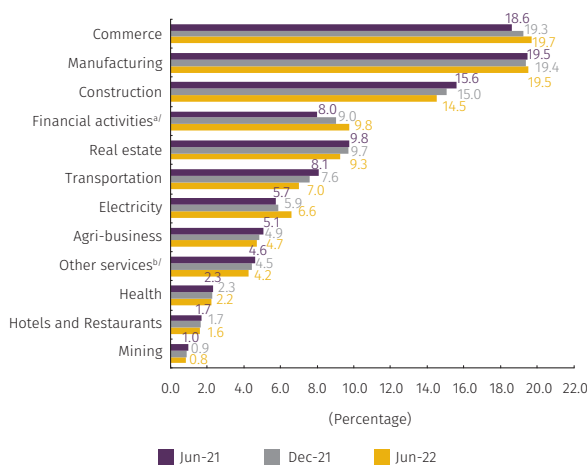
**Graph 2.20**  
Public Corporate Sector Financial Debt as a Percentage of GDP by Currency



Note: Prepared using the same information as on Graph 2.18, panel B.  
Source: 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.

The economic sectors with the largest share of the portfolio of commercial loans granted to the private corporate sector were still commerce, manufacturing, and construction which, as a whole, accounted for 53.7% of this portfolio as of June 2022. Between December 2021 and June 2022, financial activities and electricity were the sectors that saw their share increase the most, while the share held by construction and transportation decreased the most (Graph 2.21).

**Graph 2.21**  
Breakdown of the Private Corporate Sector Loan Portfolio 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.  
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

The QIR of the total private corporate sector continued the gradual decline it had been showing since the end of 2020. By economic sector, most of the sectors showed a decrease or remained relatively stable during the first half of the year with the exception of mining, which is the sector with the lowest share of the commercial portfolio. Although the hotel and restaurant QIR, in turn, is still the highest and well above its average for the last five years, this indicator showed the largest decrease (Graph 2.22, panel A). Likewise, the commercial portfolio's contribution to the QIR of most of the sectors presented a decline (Graph 2.22, panel B).

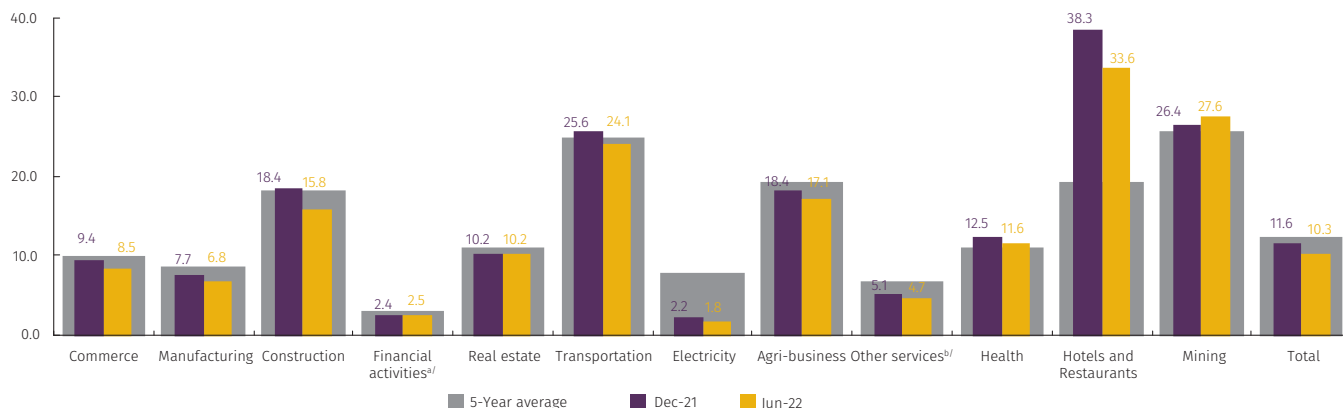
The NPL of the private corporate sector continued to show a downward trend similar to the trend seen in the QIR. Those sectors that lowered their QIR also showed an improvement in their NPL (Graph 2.23, panel A). Among the analyzed sectors, mining showed an increase in its indicator and reached a level that exceeded the average of the last five years (the only sector that meets this condition). In the case of hotels and restaurants, even though the CIs' risk perception of this economic sector remains at high levels, its materialization is still showing a downward trend. In terms of the commercial loan portfolio's contribution to the QIR, most of the sectors showed reductions (Graph 2.23, panel B).

***In terms of credit risk, loans granted to large firms has continued to show improvements in both risk perception and risk materialization, in contrast to SME indicators.***

Graph 2.22  
QIR of the Private Corporate Sector, by Sector

A. Quality indicator by risk (QIR)

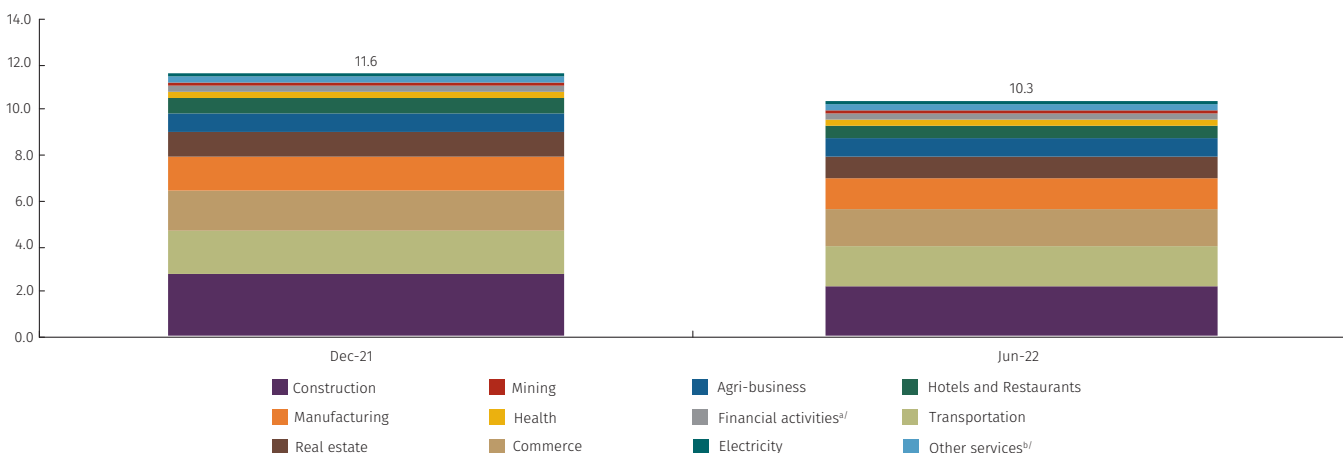
(Percentage)



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

B. Contribution to QIR by Economic Sector

(Percentage)



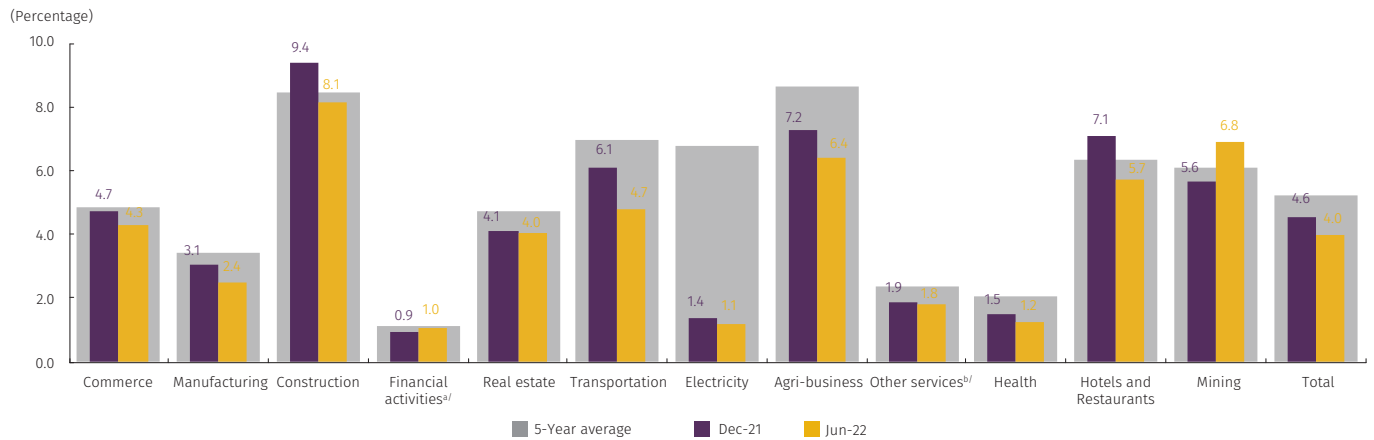
a/ In the sector of financial activities and insurance, entities supervised by the Office of the Financial Superintendent of Colombia are excluded.  
 b/ The firms that belong to the following economic sectors are grouped under 'other services': public administration and defense, education, health and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

Complementary to the sectoral analysis, the performance of loans granted to the private corporate sector, considering the size of firms is provided in this part. So far in 2022, loans granted to large companies, which represents 78.5% of the total, continued to recover, while loans granted to medium and small companies (SMEs) showed a slight deceleration in its growth rate. In addition, loans granted to small companies continues to grow at a high rate compared to previous periods (Graph 2.24).

When credit risk indicators are analyzed by company or firm size, it is evident that as of June 2022, the QIR of all company sizes remained at levels below the average of the last five years. However, the indicator for small and medium-sized companies deteriorated during the first half of 2022 while the QIR for large companies declined (Graph 2.25, panel A). The NPL of large and small companies maintained its downward trend and NPL of medium-sized companies rose slightly (Graph 2.25, panel B). This indicates that the banks have been perceiving SMEs to be riskier than larger borrowers over the last six months.

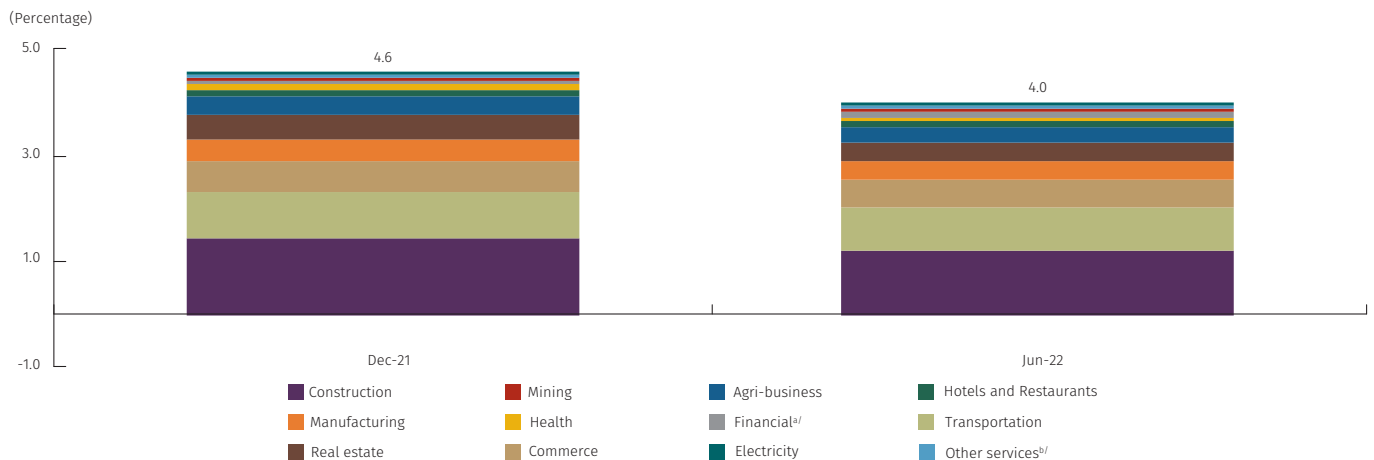
Graph 2.23  
NPL of the Private Corporate Sector by Sector

A. Quality indicator by default (NPL)



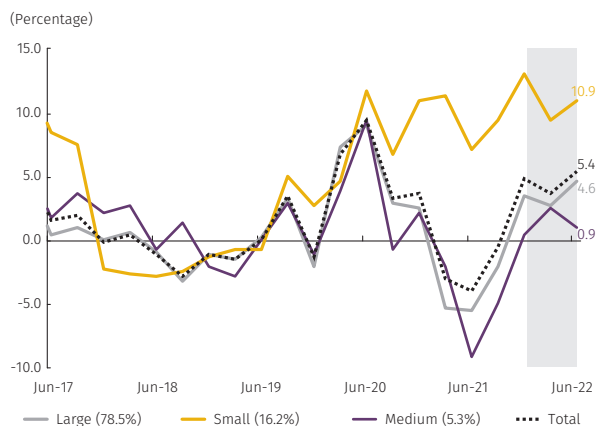
Note: the sectors are organized horizontally from the most representative to the least representative.

B. Contribution to NPL 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.  
Source: Office of the Financial Superintendent of Colombia and Banco de la República, calculations by Banco de la República.

Graph 2.24  
Real Annual Growth of the Private Corporate Sector Portfolio by Size of Firm



Note: the participation of each group is shown in parentheses. Source: Office of the Financial Superintendent of Colombia, Private Corporate Superintendence (SS), and Banco de la República, calculations by Banco de la República.

2.2.1.3 Financial situation of the companies in the private corporate sector<sup>21</sup>

**Between 2020 and 2021 the percentage of fragile firms declined in line with the pace of economic recovery exhibited in 2021 and the higher income received by companies. In addition, most of the companies' financial indicators improved.**

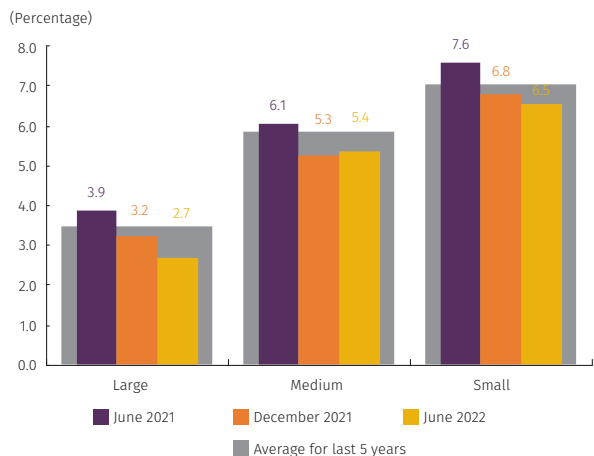
21 In this subsection, the databases of the companies that report their balance sheets to the Private Corporate Superintendence (SS) with a cut-off date as of December 2021 are used together with the data on the Form 341 from the Office of the Financial Superintendent of Colombia with June 2022 as the cut-off date. The information provided by SS is annual and the companies that report information are mainly large and medium-sized ones. The percentage of SS companies that registered information in the SFC base was 64.9% as of June 2022 and represent 43.8% of the total commercial loans of private companies.

Graph 2.25  
Credit Risk Indicators by Company Size

A. Quality indicator by risk (QIR)

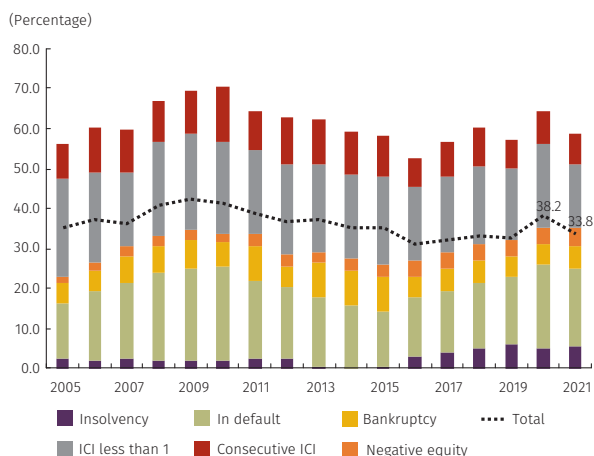


B. Quality indicator by default (NPL)



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

Graph 2.26  
Share of Fragile Companies



Notes:  
 – Definitions of the criteria can be found in footnote 22.  
 – A firm may meet more than one criterion, and thus, the height of the bars may be higher than the total criterion.  
 Source: Office of the Financial Superintendent of Colombia, and Private Corporate Superintendence, calculations by Banco de la República.

In line with the economic recovery, the percentage of fragile firms declined in 2021 after reaching record highs during the economic downturn triggered by the health emergency in 2020. Graph 2.26 shows the share of fragile companies based on five classification criteria<sup>22</sup>. The results demonstrate that the criteria that contributed the most to the reduction of fragility were lower default and an improvement in the capacity to cover financial costs with operating income (ICI criterion less than 1).

In accordance with the above, the indicators of corporate sector activity, profitability, and indebtedness for the total number of companies showed a recovery: annual sales growth increased, profit improved slightly, and, at the same time, indebtedness decreased (Graph 2.27).

**A prospective exercise to simulate the balance sheet of companies faced with a stress scenario suggests that, over a two-year horizon, 6.1% of companies would have difficulty covering their financial costs with their operating income.**

In a context where the Colombian economy continues to face inflationary pressure and interest rate increases, companies may face difficulties when it comes to passing on cost increases to prices. This could lead to a reduction in their profits and a subsequent deterioration in their ability to pay. Therefore, it is important to undertake a prospective study of the vulnerability of companies in an adverse economic scenario that considers such cost increases.

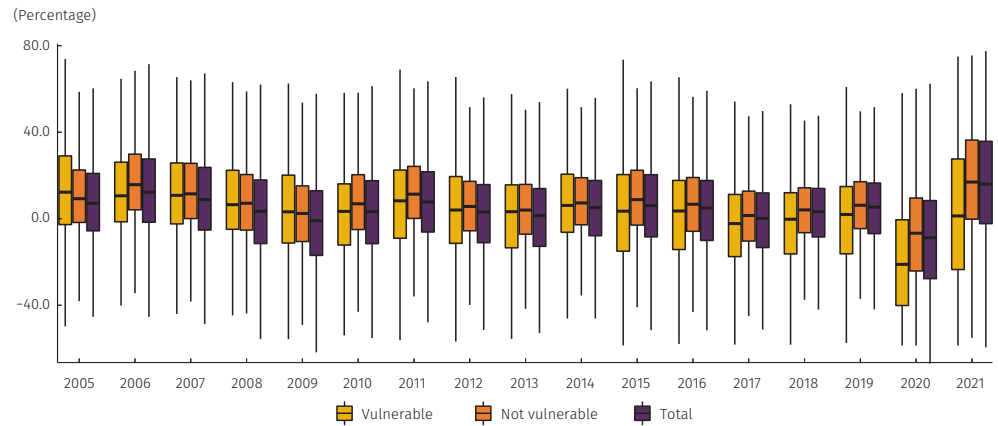
Based on the data observed as of December 2021, a two-year horizon for the companies' balance sheets was simulated based on the adverse macroeconomic scenario presented in Chapter 3 of this report.<sup>23</sup> Based on this simulation, companies are classified as vulnerable if they have an interest coverage indicator of less than 1 over the entire simulation horizon (consecutive ICI criterion). According to this exercise, 6.1% of the companies that account for 5.0% of the portfolio held by SS companies would become vulnerable in the adverse scenario. In addition, these vulnerable companies are concentrated in the construction sector (14.1% of vulnerable companies), and hotels and restaurants (11.6%).

22 A company is defined as fragile if it meets any of the following criteria (the label associated with Graph 2.22 is in parentheses): 1) it enters into an insolvency proceeding with the SS (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 a net worth loss (bankrupt), and 5) shows an interest coverage indicator that is calculated as the ratio of before-tax earnings to interest expense, is less than 1 in the period under analysis (ICI less than 1) or for two consecutive years (consecutive ICI).

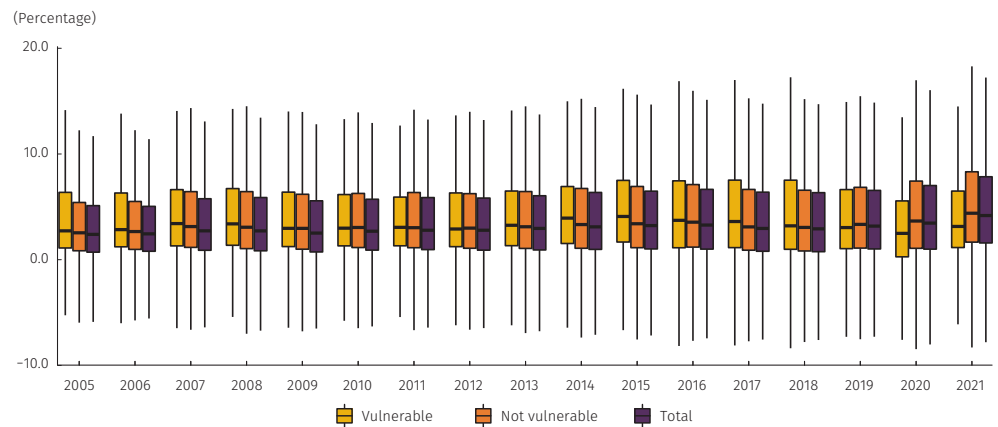
23 In particular, balance sheets were simulated by means of accounting rules and regressions with the main company indicators (sales growth, indebtedness, costs) as dependent variables and macro financial variables (GDP growth, credit boom indicator) as independent variables. For more details on this type of methodological approach, see Tressel and Ding (2021). "Global Corporate Stress Tests: Impact of the Covid-19 Pandemic and Policy Responses", International Monetary Fund.

Graph 2.27  
Changes in Some Private Corporate Sector Indicators

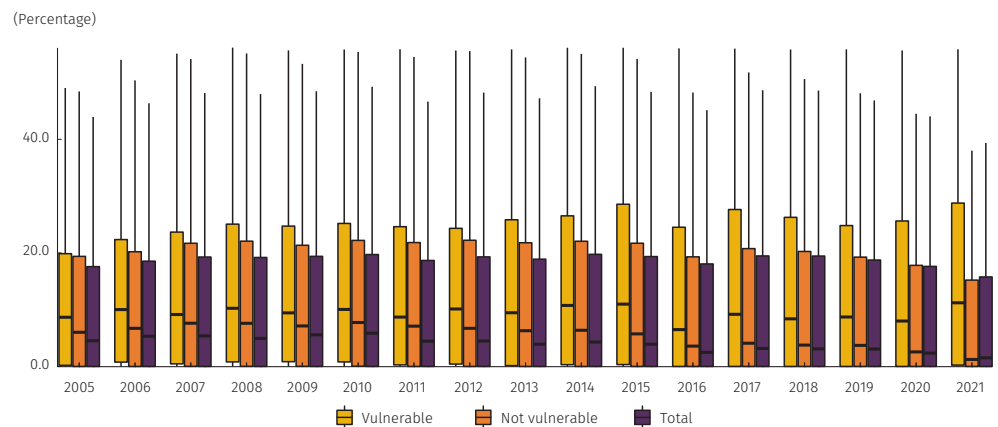
A. Annual change in sales



B. Net margin (profit/operating income)



C. Debt Ratio (financial obligations/assets)



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

The exposure of CIs to the credit risk of these companies will be considered in the stress test presented in Chapter 3 of this Report. The results of this exercise show that the financial system is resilient to a potential default of vulnerable companies. When the financial situation of these companies is described, they showed a weaker performance in 2021 (Graph 2.27). In terms of annual change in sales and

profitability, vulnerable companies showed a smaller recovery compared to non-vulnerable companies between 2020 and 2021. Likewise, companies identified as vulnerable are known to have higher levels of indebtedness.

### 2.2.2 Households

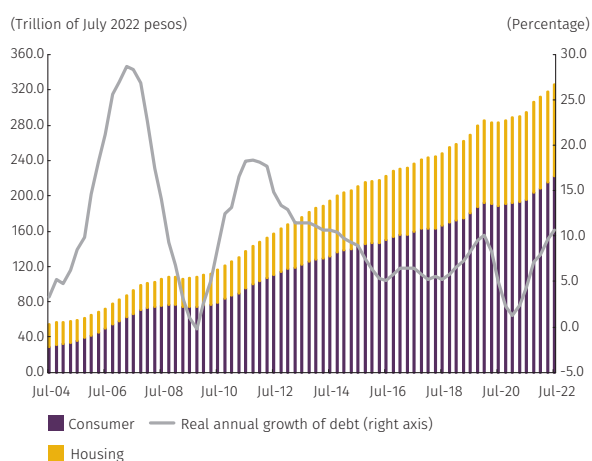
***This section presents the main vulnerabilities faced by households in meeting their financial obligations. In summary, the recent increase in their indebtedness, led mainly by the consumer portfolio, has pushed their debt-to-income ratio to record highs. In this respect, different indicators of financial burden have shown increases in the recent past. CIs have responded to this by tightening their requirements for granting new loans. Although credit risk indicators showed improvements in the last six months, the most recent records make it possible to expect a change of trend in their future performance.***

***Household indebtedness was continuing to rise as of July 2022 and thus consolidated the trend seen during 2021. As a share of their income, the level of leverage for these debtors remains high while their debt service ratio index rose in the first half of the year.***

The household loan portfolio stood at COP 326.6 t with a real annual growth rate of 10.7% as of July 2022. This was the largest expansion since February 2020 (Graph 2.28). Of the total indebtedness, approximately two thirds correspond to consumer loans and the remainder to housing loans, where both types of loans grew in real terms by 13.3% and 5.4% respectively.<sup>24</sup> The expansion of the consumer loan portfolio is the largest since January 2013.<sup>25</sup>

In spite of the recovery in household income following the impact of the pandemic, the ratio of household debt to disposable income<sup>26</sup> has remained at around historic highs so far in 2022. The consumer loan portfolio accounted for the largest share of the total indicator (Graph 2.29). The debt service ratio for new loans of the household loan portfolio, (reported by CIs in the Survey on the credit situation in Colombia), surged for the second consecutive quarter for banks and financial cooperatives with indicators reaching 32.1% and 38.4% respectively.

Graph 2.28  
Breakdown and Real Annual Growth of Household Indebtedness



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

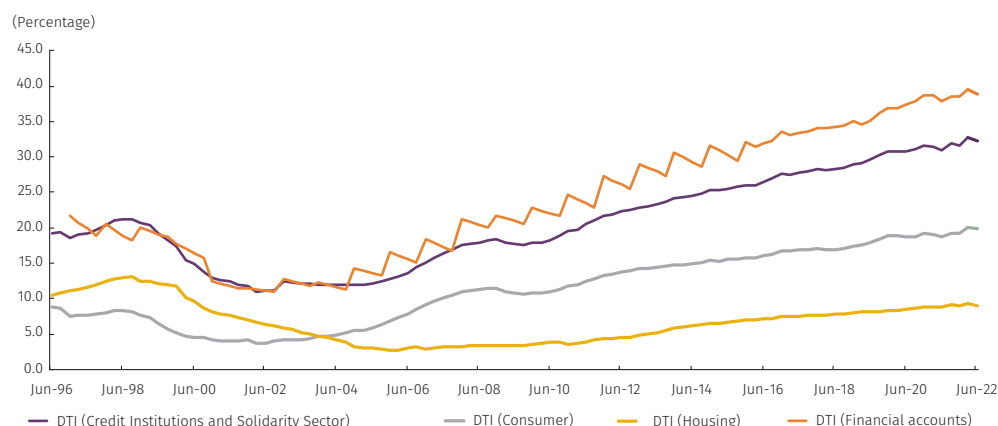
24 These growth rates differ from the ones presented in section 2.1 since, in order to build Graph 2.2, households' obligations to savings and credit cooperatives and employee funds were also taken into account.

25 In response to the recent rapid growth of the consumer loan portfolio, the FSC issued External Circular 026/2022, which provides instructions for the creation of risk loan-loss provisions on the consumer loan portfolio to address the eventual materialization of risks. To this end, the term adjustment factor was modified in the creation of individual loan-loss provisions in this category and the possibility of making additional general provisions was incorporated. For more detail on this regulation see chapter 4 in this Report.

26 Household disposable income comes from DANE's quarterly national accounts classified by institutional sector.

vely (Graph 2.30, panel A). Along the same lines, the financial burden calculated by the FSC based on administrative records of social security payments and individual credit records showed an increase as of June 2022 that reached a value of 26.0%. This is the highest since records have been kept (Graph 2.30, panel B).<sup>27</sup>

Graph 2.29  
Debt-to-Available Household Income



Note: the graph presents the debt-to-income indicator (DTI). The gross adjusted disposable income of households from the national accounts by institutional sector is used for this. Four measures of indebtedness are presented in the graph: 1) Purple line: household debt with credit institutions, savings and credit cooperatives, employee funds, and the Colombian Securitization Company. 2) Orange line: household debt derived from the financial accounts published by *Banco de la República*. In addition to what is included in the purple line, microcredits and commercial loans to individuals are included as well as obligations with other financial institutions. 3) Grey line (yellow): consumer (housing) loans with credit institutions.

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

**Disbursements, in turn, have reached close to all-time highs so far in 2022. In response, CIs have recently raised their lending requirements and expect to continue to do so in the near future, especially for the consumer portfolio.**

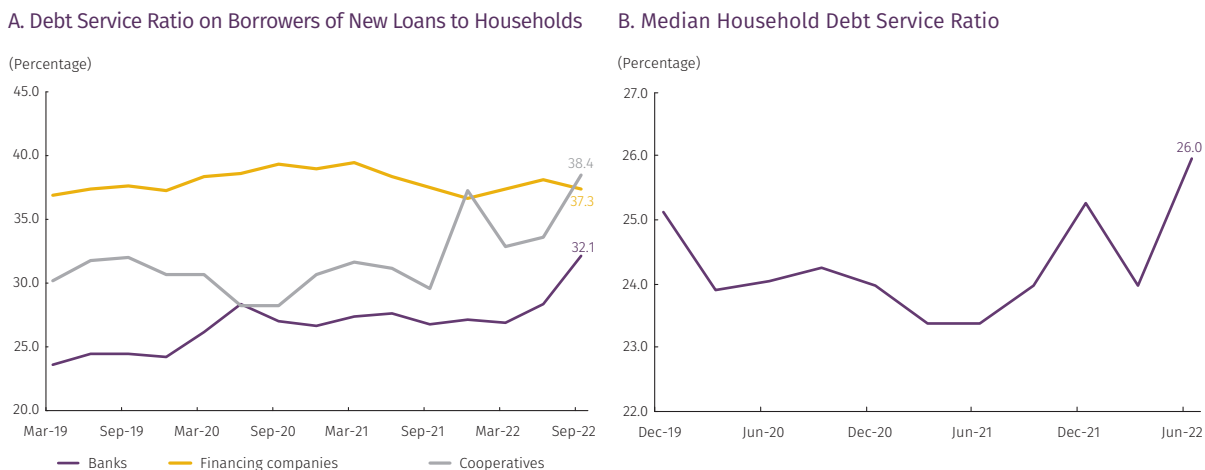
During the first half of 2022, disbursements continued to show a strong growth during the first half of the year and reached their highest historical level in April of the same year<sup>28</sup> (Graph 2.31, panel A). Since that month, disbursements have declined slightly although they remain at levels close to their historical highs. In the case of housing, disbursements remain higher than before the pandemic for both low-income housing (LIH category) and non-LIH (Graph 2.31, panel B). Consumer loans have been driven mainly by other modalities than credit cards (Graph 2.31, panel C).

Along with the increase seen in consumption and housing disbursements, the banks' stance on new loans has become more restrictive. According to the September 2022 *Survey of the Credit Situation in Colombia*, some entities have said they have tightened their requirements for the housing loan portfolio for the first time since the end of 2019 and expect to continue to do so for the next quarter (Graph 2.32, panel A). The percentage of banks, in turn, that raised their requirements for granting consumer loans has shown an upward trend so far in 2022 and reached 57.1% in the latest version of the survey (Graph 2.32, panel B). The percen-

27 For more information, see the box "Description of the Individual Financial Burden of Financial Consumers" in the Report on the Colombian Financial System, as of August 2022. Available at: <https://www.superfinanciera.gov.co/inicio/informes-y-cifras/informes/informe-actualidad-del-sistema-financiero-colombiano-60765>

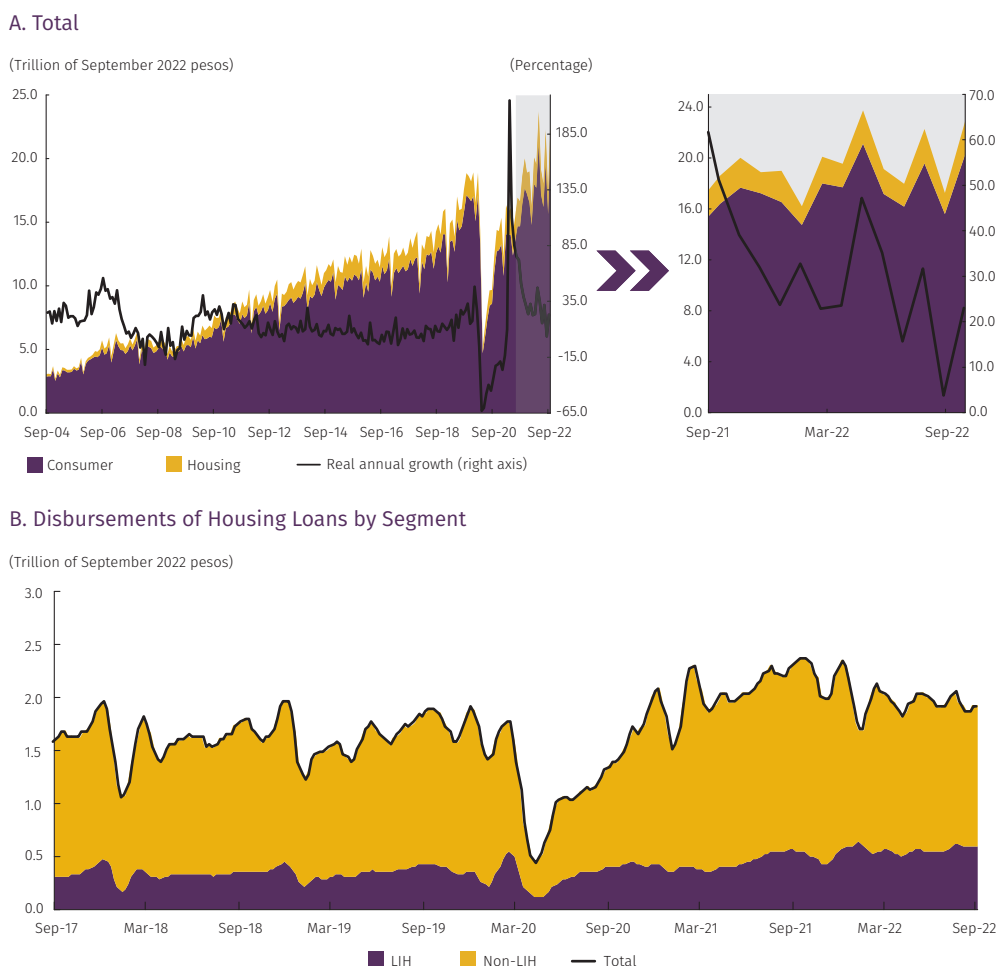
28 The information on portfolio disbursements comes from FSC Form 88, which has been available since 2002.

Graph 2.30  
Average Debt Service Ratio of Households that Took out New Loans



Explanatory note: Starting in June 2022, *Banco de la República* incorporated a question on the financial burden of borrowers with new loans in household portfolios. The credit establishments that were surveyed provided information on the average financial burden of their borrowers at the time the loan originated. Sources: Survey of the loan situation in Colombia, September 2022. Office of the Financial Superintendent of Colombia.

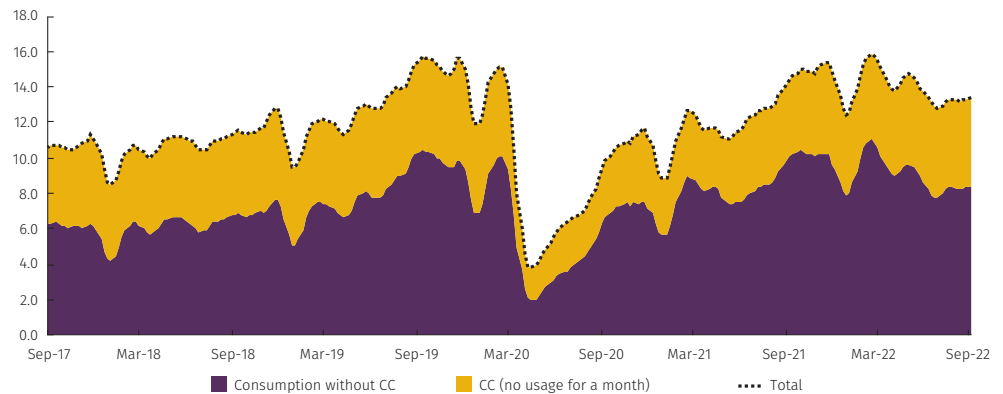
Graph 2.31  
Loan Disbursements to Households



Graph 2.31 (continuation)

C. Disbursements of Consumer Loans by Segment

(Trillion of September 2022 pesos)

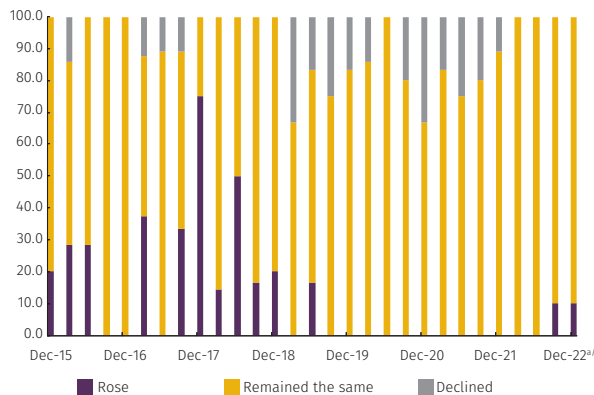


Note: data are presented as four-week moving averages.  
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Graph 2.32  
Change in Requirements for Originating New Loans

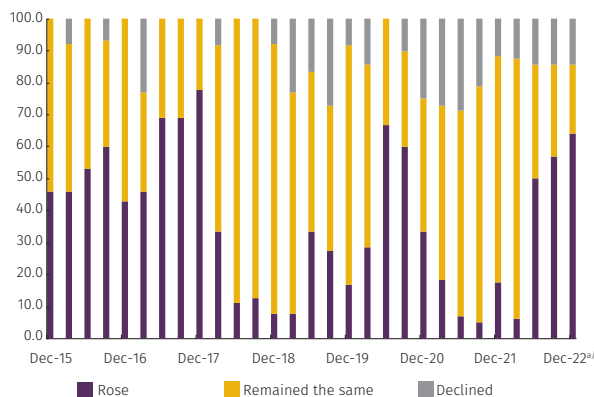
A. Housing Loan Portfolio (banks)

(Percentage)



B. Consumer Loan Portfolio (banks)

(Percentage)



a/ Expectations for next quarter.  
Source: Survey of the loan situation in Colombia, September 2022, calculations by Banco de la República

tage of entities that will probably raise their requirements in the next quarter is around 64.3%.

Expectations of demand for the next three months suggest that high disbursements seen in both categories could slow down. In line with the above, Banco de la República's quarterly survey on economic expectations showed that there is a perception of lower availability of credit in the future (only 14.8% of the respondents expect greater availability over the next six months).

**The risky and non-performing loan portfolios of households are beginning to show signs of a possible turnaround in their growth trend after a period of sharp contractions following the pandemic. Consequently, credit risk indicators have shown the first signs of deterioration in the consumer loan portfolio.**

The risky portfolio granted to households continued to contract in real terms during the first half of 2022. In spite of the above, the risky portfolios of the housing and consumer portfolios had reached their lowest real decreases so far this year (-24.8% and -7.9% respectively) as of July 2022, and this makes it possible to conclude that their growth could change its trend in the near future. The QIR for households, in turn, stopped its downward trend during the period under analysis after going through consecutive decreases since January 2021 (Graph 2.33).

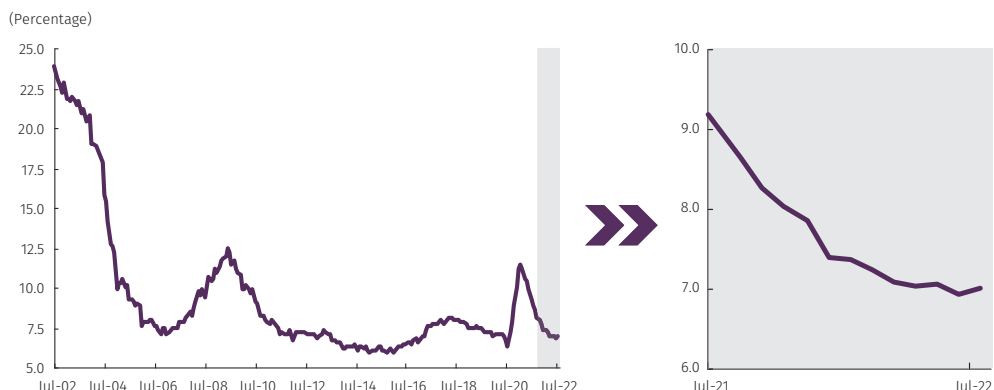
Consistent with the above, the growth rate of non-performing loans to households registered a real 1.5% decline, the smallest one registered since September 2021. In line with this result, the NPL reached a level of 5.0% in July 2022 when it presented two consecutive monthly deteriorations. This could show a change in the trend of the indicator. When the accu-

culated flow of write-offs net of recoveries for the last twelve months is included, the indicator reached a value of 4.6% due to the net recoveries of written-off loans for the last twelve months in the consumer portfolio (Graph 2.34).

When analyzed by type of credit, the NPLs of the consumer portfolio segments decreased in general during the six-month period although they have risen in the last two months for all segments with the exception of vehicles (Graph 2.35, panel A). In the case of housing, the NPL have continued to show a downward trend, driven mainly by the non-LIH segment which accounts for 69% of the loans in this portfolio (Graph 2.35, panel B).

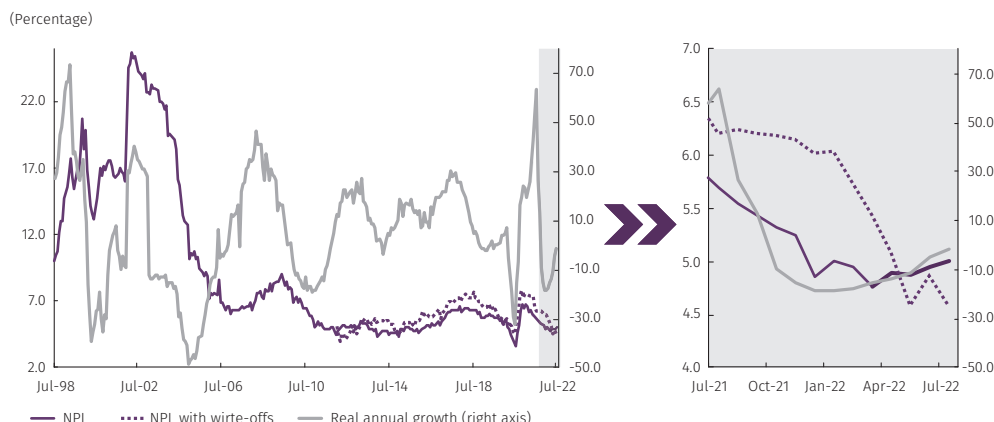
Graph 2.36 depicts the analysis of loan vintages, which consists of monitoring the changes in quality indicators for a group of loans that originated in a specific month. The analysis shows the speed at which loans deteriorated from the time they were originated and the change in the quality of the loans issued at different points in time. In the case of the consumer loan portfolio, the most recently issued loans have been showing a low quality compared to what has been historically registered at equivalent heights. This could be reflecting lower origination standards or shifts to riskier market niches by CIs (Graph 2.36, panel A). The performance of older issuances, in turn, reflects a better quality than what has been seen historically. This leads to the conclusion that the deterioration in recent loans is not

Graph 2.33  
Household QIR



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

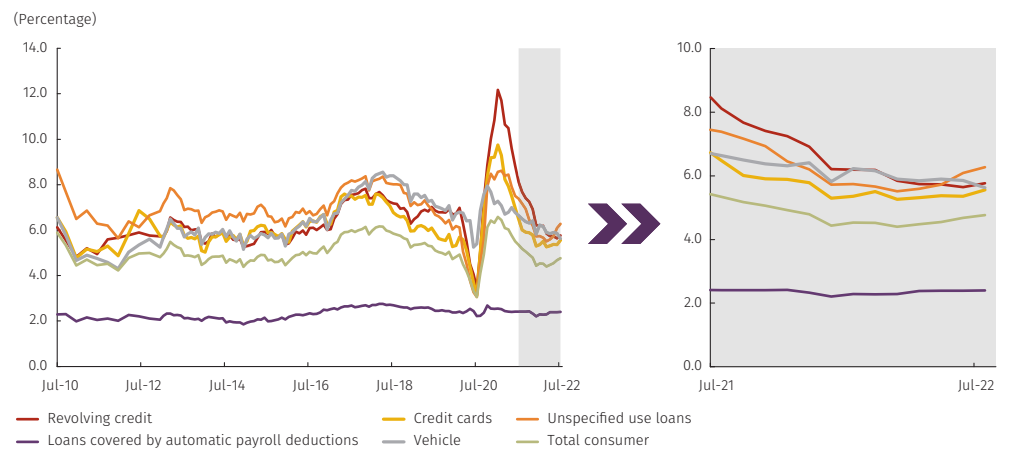
Graph 2.34  
Non-performing Loan Portfolio and Household NPL



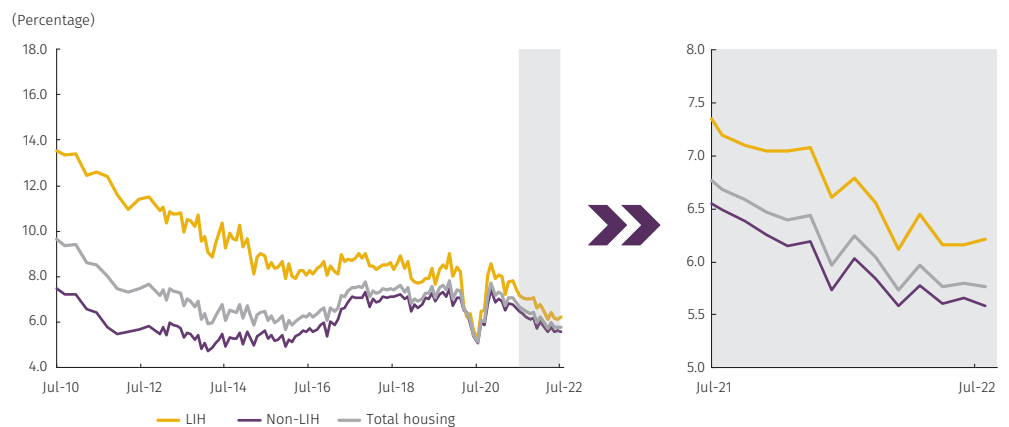
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Graph 2.35  
NPL by segment

A. Consumer



B. Housing



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

explained by widespread economic shocks for all vintages. The deterioration of the recent consumer loan portfolio vintages is the result, in particular, of the performance of the category for unspecified use loans (Graph 2.36, panel B) and credit cards (Graph 2.36, panels C and D).<sup>29</sup>

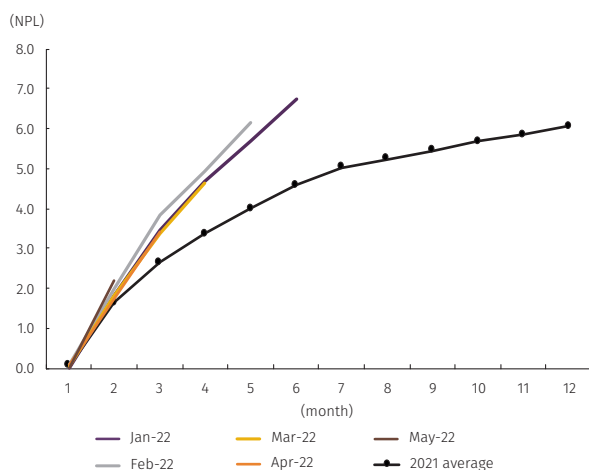
In an environment of tighter financial conditions, high inflation, expectations of economic slowdown, high and increasing levels of indebtedness together with a weakening of credit risk indicators, it is believed that some households may face more difficulties in paying their financial obligations in the future. The continuous monitoring of household indebtedness indicators takes on greater relevance under these circumstances.

In order to evaluate their creditworthiness and financial health, the performance of a series of indicators that evaluate the financial position of households is analyzed in Box 2 and deteriorations in the recent past have been found.

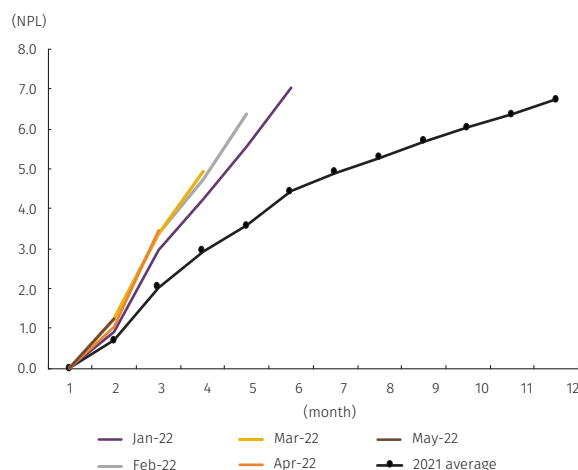
29 The share of the categories of unspecified use loans and credit cards in the total consumer loan portfolio is 35.5% and 16.9% respectively.

Graph 2.36  
Vintage of NPL for Consumer Loan Portfolio

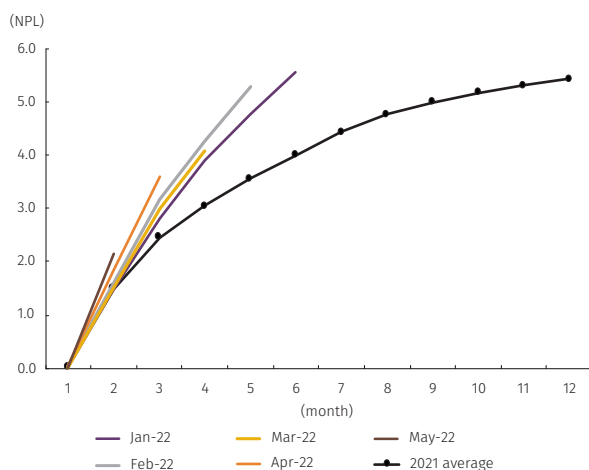
A. Consumer



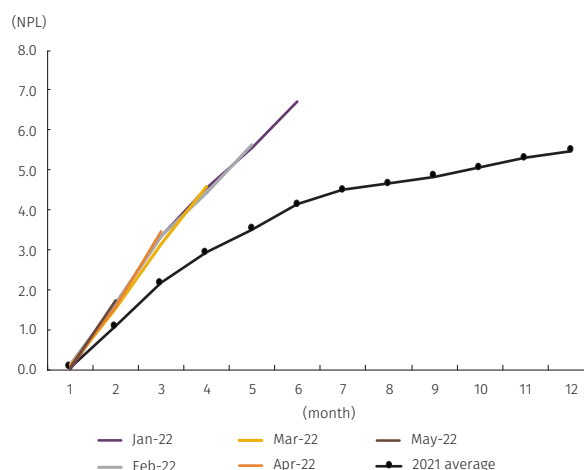
C. Credit Cards for Debtors with Incomes of up to two Legal Minimum Wages



B. Unspecified Use Loans



D. Credit Cards for Debtors with Income Above two Legal Minimum Wages



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

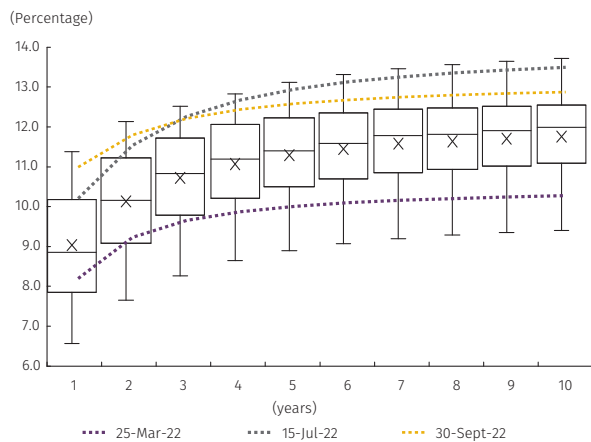
### 2.3 Market Risk

**The public debt market presented sharp devaluations in all the maturities of the curve as it moved in parallel between March and September 2022 and reached levels not seen since November 2008.**

Between the end of the first and third quarters of the year, the peso yield curve depreciated by an average of 320 bp for all maturities. However, it showed mixed performance within the period as can be seen in the yields distribution (Graph 2.37, panel A). The upper limit of the yield curve corresponds to the levels seen in mid-July, when, coupled with a less expansionary local monetary policy in response to inflation levels, the inverted U.S. Treasury curve increased both recession fears in the U.S. economy and expectations of sharper and faster hikes in the Federal Reserve rate, thus impacting the emerging economies' debt market and driving the yield curve to levels not seen since 2008.

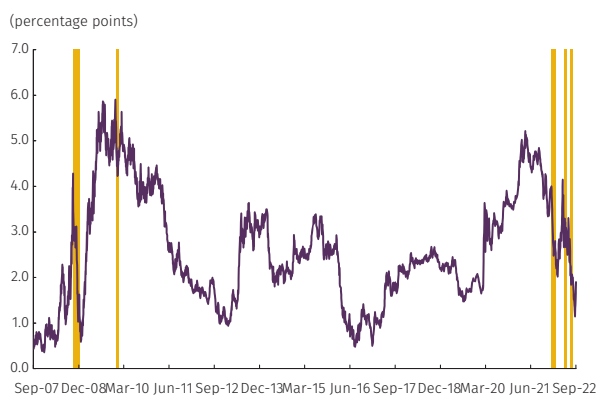
Graph 2.37  
Peso-denominated TES Market

A. Yield Curve



Note: The boxplots in Panel A correspond to the distribution of yields for each maturity between the two dates of analysis. The mean is indicated by an x while the horizontal line inside the box represents the median.

B. Interest Rate Differential between 10 and 1 Years



Note: The yellow bars in panel B indicate the periods in which the decrease in the differential is greater than 1 pp with respect to the previous month.  
Source: DCV and Precia, calculations by Banco de la República.

The spread between ten-year and one-year peso TES rates continued its downward trend, thus reflecting the flattening of the yield curve (Graph 2.37, panel B). This is in line with the performance of the global and regional public debt markets, where countries such as Mexico, Brazil, and Chile have even seen a reversal in their curves.

Going by tranche, the short-term devaluations are mainly the result of increases in the local monetary policy rate that have been made in response to the upward trend in inflation and its short-term expectations. In the long tranche, the devaluations were mainly associated with a global environment characterized by higher interest rates, a possible economic slowdown in 2023, and a negative trend in oil prices. However, the increase in the risk premium reflected in a 140.94 bp increase in the five-year CDS, together with the uncertainty regarding the local developments in the political and fiscal reforms currently underway and their impact on investment, also contributed to these devaluations.

In accordance with the uncertainty derived from the macroeconomic conditions described above and the holdings level reached by foreign investors in TES (as discussed below), a test was done to quantify the potential impact of a sudden devaluation of peso-denominated public debt securities on the portfolios of financial institutions, which consisted of shifting the September 30 yield curve in parallel by 400 bp. In light of this scenario, the entire financial system shows a 5.3% loss on equity<sup>30</sup>. While this would be a significant amount in devaluation losses, it would not have a material implication on the aggregate capital adequacy of the financial system. In addition, these losses are lower than those resulting from applying the exercise in other periods of stress<sup>31</sup>.

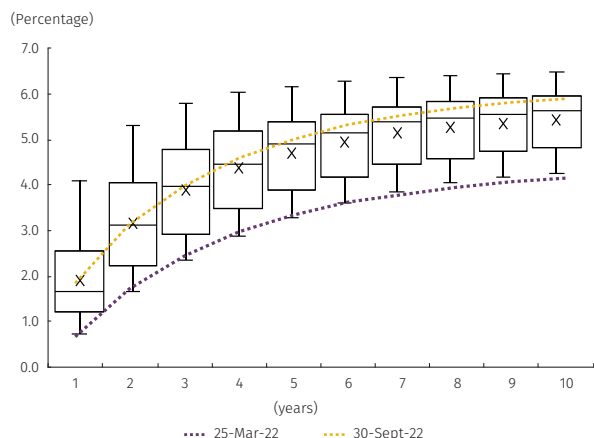
The UVR public debt market shows a steepening of the curve due to devaluations in both the short and the long tranche with the latter being the most significant (Graph 2.38). The performance of the curve was in line with what was seen in the peso curve. Nevertheless, the lower devaluations in the short tranche with respect to the peso curve are due to higher-than-expected inflation data. In general, this market is affected by the same factors described above for the peso yield curve.

**As of September 30, foreign holdings of TES were at an all-time high and the spread between private and public debt rates had widened significantly.**

30 Insurance companies (17.9%) and PFMs in third party position (5.5%) would present the largest losses with an estimated 17.9% and 5.5% respectively.

31 When this same exercise was carried out in April 2013 and March 2020, periods corresponding to the beginning of the Federal Reserve tapering and the coronavirus in Colombia, losses of 5.4% and 6.7%, respectively, on equity were expected.

Graph 2.38  
UVR-denominated TES Market



Note: The boxplots correspond to the distribution of yields for each vertex between the two dates of analysis. The mean is marked with an x while the horizontal line inside the box represents the median.  
Source: DCV and Precia, calculations by Banco de la República.

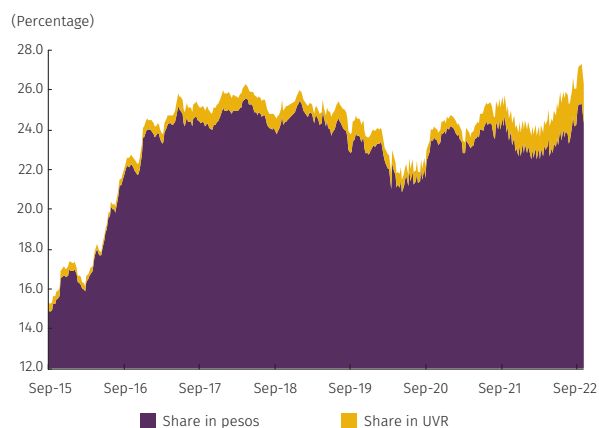
During the second and third quarters of 2022, foreign participation<sup>32</sup> in the public debt market increased by 180 bp with an increase in UVR-denominated securities holdings. Thus, foreign appetite for public debt securities has resulted in their highest ever participation in the market<sup>33</sup> (Graph 2.39, panel A). Compared to the last four years, the cumulative change in holdings of securities by foreigners has shown the greatest rise with a COP 21.4 t increase between January and September 2022<sup>34</sup> (Graph 2.39, panel B).

Moreover, the spread between the AAA-rated fixed-rate private debt curve and the public debt curve widened significantly during the last half-year and went from around 70 bp on average at the end of March for all maturities to around 300 bp as of September 30 (Graph 2.40). This reflects the adverse funding conditions for private debt issuers that has forced them to increase the interest rates of their bonds in order to raise funds. However, it should be noted that issuances have decreased in volume over the last year.

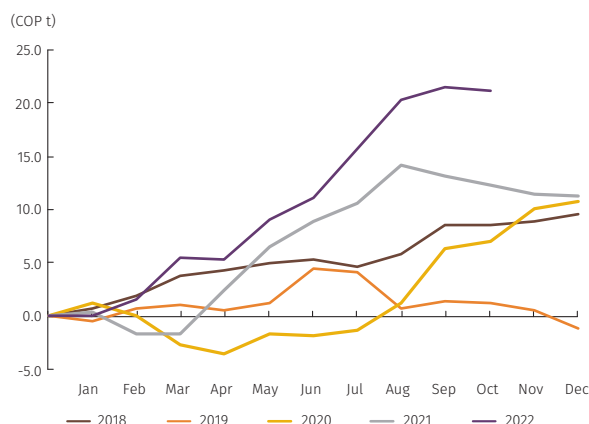
**Since June 2022, the local stock market has been undergoing a continuous devaluation led by the financial and utilities sectors, making it the worst performer in the region. Volatility in the debt and stock markets has increased during the last half of the year.**

Graph 2.39  
Share of TES held by foreigners

A. Historical Performance



B. Cumulative Change



Source: DCV, calculations by Banco de la República.

The region's stock market prices registered a mixed performance in the midst of the global context described above, the continued downward trend in manufacturing production as measured by the PMI, and weaker demand in the Chinese economy (see Q3 2022 Financial Markets Report, Graph 2.41, panel A). In Colombia, the MSCI Colcap, which had shown an appreciation starting in November 2021 as a result of the takeover bids, reversed its trend in June 2022 also due to lower crude oil prices, the debate on the content of the tax reform, and lower liquidity in the market. All of this affected mainly shares in the financial and utilities sector (Graph 2.41). As a result, the local stock index returned to the levels seen during the first few months of the pandemic, and taking January 2020 as the base period, it has been the worst performing stock index in the region as of September 2022.

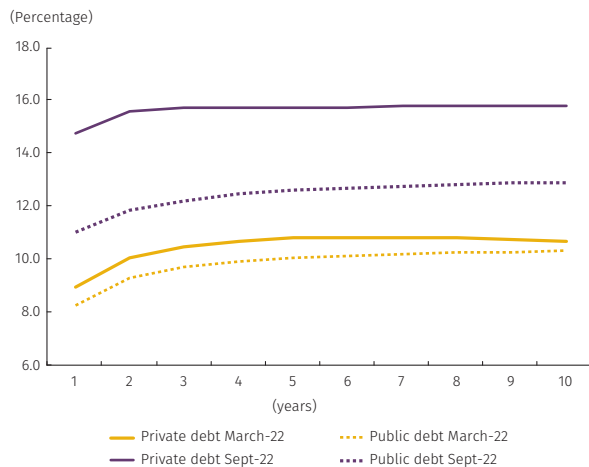
Following the trend documented in the Financial Stability Report for the first half of 2022, there have been continuous epi-

32 The share held by foreigners in the public debt market is analyzed due to the fact that: 1) over the course of the past seven years, they have become the largest players in this market, and 2) in the literature, they are traditionally considered to be the class of investors that is most likely to liquidate their positions in the event of a deterioration in the country's economic conditions or in international financial conditions.

33 In recent months the largest foreign investors have been pension funds, mutual funds, and monetary authorities (see Financial Markets Report, Q2 2022).

34 Data as of October show a slight reversal in the positions accumulated during the year.

Graph 2.40  
Yield Curves for Private and Public Debt



Source: Precia, calculations by Banco de la República.

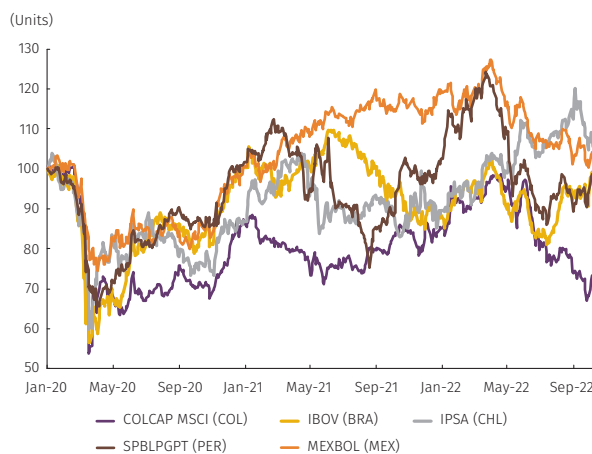
sodes of moderate volatility since May 2022. As for the debt markets, they have shown increases in volatility in line with the devaluations of their markets: private debt registered volatility peaks between March and May which subsequently subsided<sup>35</sup> while public debt registered peaks between June and August, a period characterized by the first national policy announcements, the formation of the new government, and inflationary surprises at the local level, among other factors (Graph 2.42).

**Banco de la República’s interest rate expectations forecast a contractionary monetary policy in an environment of high uncertainty.**

Regarding Banrep’s benchmark rate movements, market analysts have modified their forecasts given inflationary pressure and surprises (Graph 2.43). Compared to the expectations in May 2022, the new forecasts suggest a contractionary monetary policy stance that could reach an 11.5% rate in December 2022 and would only ease three months later.

Graph 2.41  
Stock Market Performance

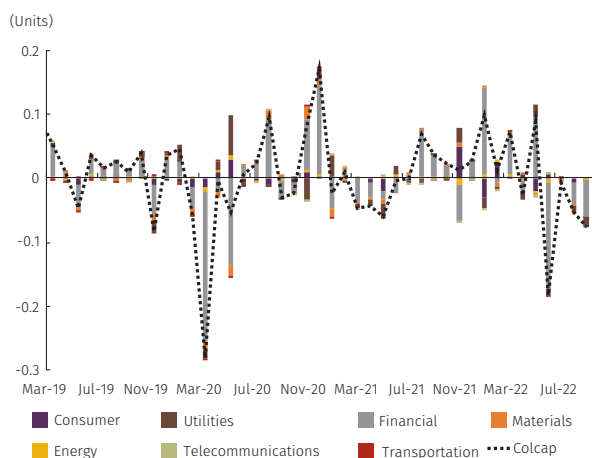
A. Regional Stock Market Indices



**Finally, the market risk exposure of financial institutions was lower in both public debt securities and stocks compared to March 2022. At the same time, the exposure to private debt showed a positive change which was driven by banks and the third-party trust funds’ holdings.**

The investment in securities exposed to market risk<sup>36</sup>, is concentrated in the fixed income securities where the government bond market represents the largest share (Table 2.2). For banks, the shifting of TES towards private debt continues while financing companies have lowered their position in TES and private debt and increased their position in stocks. With respect to the investment banks, their investment portfolio rose in TES and stocks.

B. Breakdown of MSCI Colcap Growth



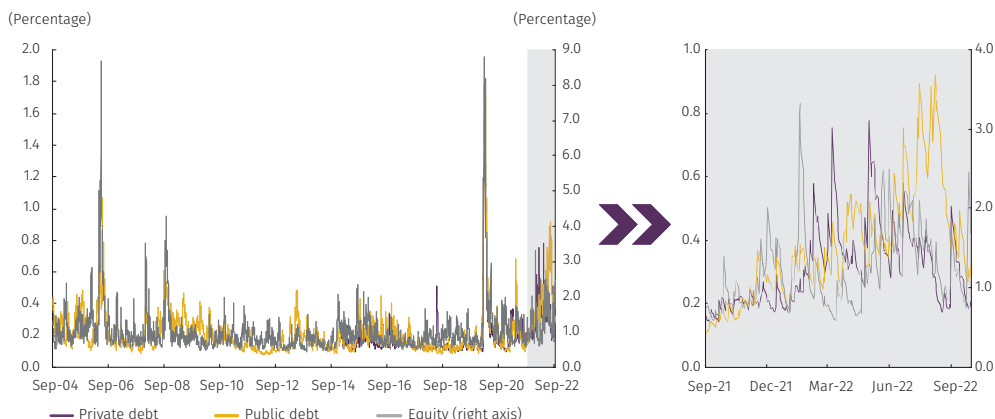
Note: The indices are presented with base 100 as of January 2020 in panel A. Source: BVC and Precia, calculations by Banco de la República.

For NBFIs, there was a generalized decrease in investment in the three types of securities. However, the fall was greater for private debt and stocks due to the positions of insurance and capitalization companies. The SBFs in the proprietary position were the only ones that increased their exposure in TES with respect to March 2022. Finally, for the managed position, there was a reduction in investments in TES and stocks, and an increase in investments in private debt.

35 The decrease in volatility is partly a result of the fact that during the third quarter of the year there were no public offerings of private debt securities on the Colombian Stock Exchange.

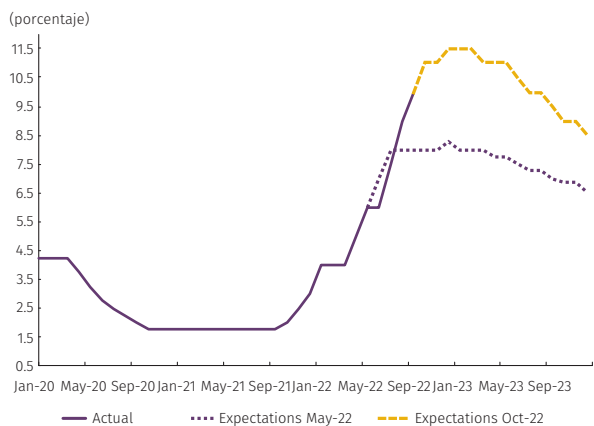
36 This balance is at market prices and is calculated on the basis of the guidelines of the Basic Accounting and Financial Circular. The balance in shares was analyzed for the equity instruments of domestic issuers while, for debt securities, the ones that are marketable and available for sale were analyzed.

Graph 2.42  
Conditional Volatility of Colombia's Fixed Income and Stock Markets



Note: The series is estimated with a GARCH model for conditional volatility.  
Source: Precia; calculations by Banco de la República.

Graph 2.43  
Expectations for Benchmark Interest Rate



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

## 2.4 Liquidity and Trading Book Interest Rate Risk

### 2.4.1 Liquidity Risk

**The CI's short-term liquidity position in local and foreign currencies remains strong although it has shown a decline in the last six months due to a substitution of investments from TES to portfolio.**

Aggregate short-term liquidity measures for CIs —the indicator of individual exposure (*IIE*), the indicator of consolidated exposure (*ICE*),<sup>37</sup> and the liquidity risk indicator *LRI* —, suggest that entities are still holding enough funds to cover their net 30-day liquidity requirements (*NLR*) since they far exceed the established regulatory minimum. However, these scaled indicators on 30-day *LRI NLRs* have shown declines since May 2022 (Graph 2.44, panel A). The excess liquidity, in turn, held by entities that consolidate in Central America has remained stable since April 2022 after *Banco de Bogotá's* spin-off of *BAC Holding International* reduced their exposure in the region.

As of September 2022, the short-term liquidity of the CIs registered a decrease compared to what was seen a year ago due to the higher real growth of *NLR* with respect to liquid assets adjusted for market liquidity and foreign exchange risk (*LAM*) (Graph 2.45). This is mainly due to the performance of investments in high quality liquid assets (*IHQLA*) which, led mainly by the *TES* portfolio, completed a year with negative real growth rates. Based on type of establishment, the aggregate performance is driven by the banks' situation. Along the

37 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-398*.

Table 2.2  
Financial Institutions' TES Balances (in pesos and UVR), Private Debt Securities, and Equity exposed to Market Risk

Type of Entity	TES <sup>a/</sup>	Private debt	Equity	Total	TES	Private debt	Equity	Total
	(balance in trillion of pesos as of 30 September 2022)				(percentage change in the last six months)			
Credit Establishments	47.74	5.98	18.51	72.23	-5.57	10.29	10.08	-0.77
Commercial banks	42.76	5.43	0.00	48.19	-8.51	11.90	0.00	-6.59
Investment banks	4.18	0.38	18.45	23.02	43.72	-0.35	9.87	14.58
Finance companies	0.80	0.14	0.05	1.00	-11.79	-0.75	227.25	-6.57
Financial cooperatives	0.00	0.03	0.00	0.03	0.00	-34.38	0.00	-34.38
Non-bank Financial Institutions (NBFI)	12.90	8.93	5.57	27.40	-0.37	-10.38	-19.71	-8.21
Pension Funds proprietary position	0.18	0.51	0.17	0.86	-19.71	-31.63	25.13	-22.40
Stock Brokerage Firms proprietary position	1.25	0.31	0.11	1.68	6.19	25.92	-25.58	6.33
Trust Fund Companies proprietary position	0.25	0.34	1.02	1.62	-20.34	31.34	-6.69	-3.40
Insurance and Capitalization Companies	11.21	7.76	4.27	23.24	-0.10	-10.83	-23.20	-8.80
System in Proprietary Position	60.65	14.91	24.08	99.63	-4.51	-3.09	1.38	-2.93
Managed Position								
Stock-brokerage firms third party position	1.84	9.07	6.50	17.42	-22.99	-6.02	-33.55	-20.22
Trust Fund Companies third party position <sup>b/</sup>	92.72	38.49	14.83	146.04	-9.88	7.40	-0.49	-4.94
System	155.21	62.48	45.41	263.09	-8.05	2.62	-6.25	-5.40

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.

Note: PFM in third-party positions is excluded since their main investment is in TES (balance is 123.2 t as of September 30, 2022) and these are not considered to be exposed to market risk since they are long-term investments.

Source: Central Securities Depository (CSD), Office of the Financial Superintendent, calculations by Banco de la República.

same lines, between March and September, financing companies and cooperatives saw a decrease in their LRI on account of their liquid assets. In contrast, financial corporations registered an increase driven by cash accumulation.

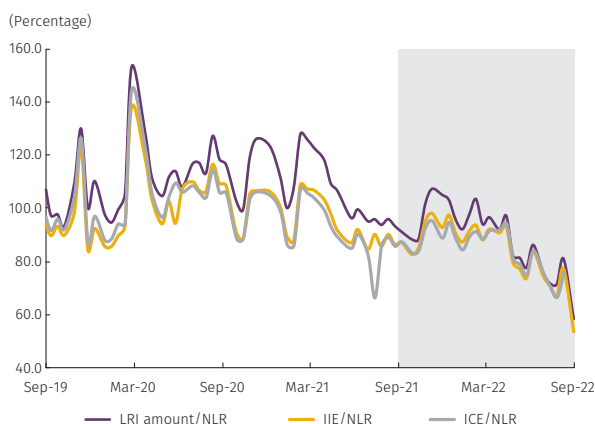
***In terms of structural liquidity, the net stable funding ratio (NSFR) shows slack with respect to the regulatory limits in effect since March 2022. There was greater growth in funding through medium-stability sources such as government demand deposits. In accordance with this, there was greater growth in assets with average funding requirements such as the real portfolio with individuals and legal entities with maturities of less than one year.***

The net stable funding ratio (NSFR)<sup>38</sup> completed another phase in the process of convergence to the international standard in March 2022 with the establishment of

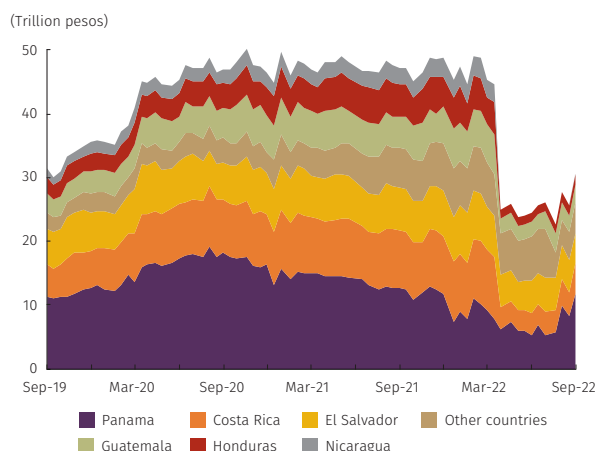
38 The NSFR comes from the Basel III requirements (net stable funding ratio) and is an indicator that seeks to measure long-term funding liquidity risk through strategic balance sheet management to limit excessive dependence on unstable funding sources.

Graph 2.44<sup>a/</sup>  
30-day Short-term Liquidity for CIs Acting as FEMI

A. Liquidity indicators



B. Excess Consolidated Liquidity outside of Colombia



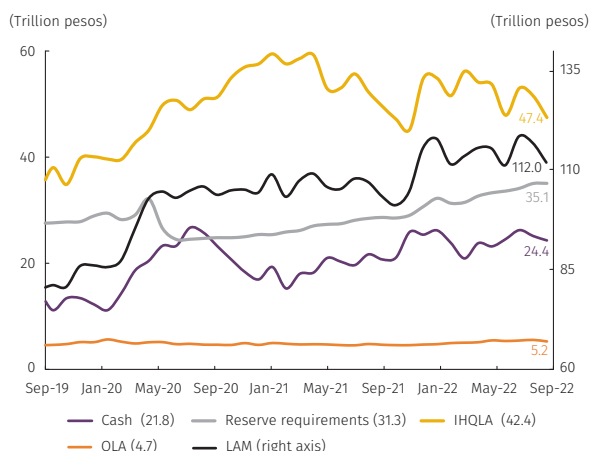
a/ Foreign exchange market intermediaries.

- Notes:
- - IIE: Indicator of individual exposure, LRI: Indicator of Liquidity Risk, ICE: Indicator of consolidated exposure and NLR: Net liquidity requirements for 30-day LRI.
- - When the amount of the liquidity indicators is used in the numerator of this measure, the regulatory limit in panel A is zero. Thus, in the case of individual liquidity, the indicator is: (LAM-NLR)/NLR
- Other countries include: United States, Cayman Islands, Mexico, Paraguay, Peru, Puerto Rico, and other countries.

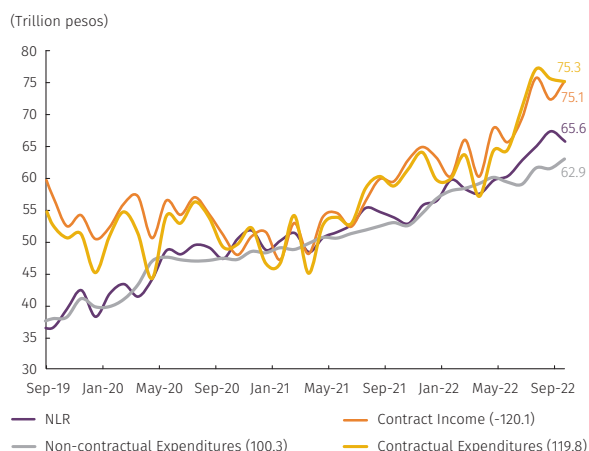
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Graph 2.45  
Components of the LRIA.

A. Liquid Assets



B. Net Liquidity Requirements



Notes:

- OLA: Other liquid assets.
- The data in parenthesis in the labels refer to shares in the LAM or NLR.

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

new minimum limits on the indicator.<sup>39</sup> The aggregate NSFR of the first two groups remains well above these limits despite the slight reductions registered in the

39 As of 31 March 2022, the NSFR regulatory limits went from 90% to 100% for group 1 and from 70% to 80% for group 2. Institutions belonging to group 3, in turn, calculate their indicator as informative for the supervisor. Group 1 includes CIs with assets exceeding 2.0% of the total banking assets. Group 2 includes institutions that have a portfolio as a significant asset, but do not qualify for Group 1, and group 3 includes the remaining institutions (their significant asset group is investments and derivative transactions). See the Basic Accounting and Financial Circular, Chapter VI, Appendix 4.

last half of the year (Graph 2.46, panel A). This performance of the aggregate NSFR and of both groups is explained by higher growth in the required stable funding (RSF) in comparison to the available stable funding (ASF). The higher growth of the RSF was due to a larger contribution of the real portfolio with individuals and legal entities in all maturities and of the housing loan portfolio with a maturity of less than one year. With respect to the ASF, the increase is attributable to a higher contribution from deposits with a less than one-year maturity from wholesalers, loans, and other financial obligations with maturities of more than one year, and government demand deposits. Although the aggregate NSFR and for groups 1 and 2 are comfortably above the regulatory limits, there are marked disparities between entities<sup>40</sup> (Graph 2.46, panels B and C).

In line with the increase in regulatory limits since March for groups 1 and 2, there was an upswing in growth of the ASF and RSF in their sources and categories of medium stability for the six-month period under study<sup>41</sup> (Graph 2.46, panels D and E). This performance is the result of the higher growth in funding through demand deposits from the government and the growth in assets, mainly through the real loan portfolio with individuals and legal entities with a maturity of less than one year. Finally, a higher growth of assets with relatively lower funding requirements compared to those with higher requirements is seen for the RSF.

***The increase in CI funding was mainly driven by the growth of term deposits with the real and financial sectors given the slowdown in demand deposits from the wholesale sector and large individuals.***

The CI funding (sum of liabilities and equity) has risen gradually in real terms since December 2021 in line with the performance of the portfolio. This is explained by the contribution of term deposits given the slowdown in demand deposits (see Graph 2.5). Demand instruments in particular, the main source of funding, fell due to lower deposits from real sector wholesalers and large individuals<sup>42</sup> (the main counterparty of CIs), supervised entities, and foreign wholesalers in that order (Graph 2.47).

In the case of term deposits, these have remained on a trajectory of gradual growth throughout the year while primary issuance rates have increased in line with the monetary policy rate. At the end of July 2022, this performance was mainly due to the contribution of term deposits to the financial sector (CIs and NBFIs). Although non-financial public sector deposits grew by nearly 51% in June 2022, they showed a marked slowdown during the last month (Graph 2.48, panel A). Over the last six months, there has been a stabilization in the average maturity of deposits which contrasts with the trend towards shorter term deposits registered since 2020 with the declaration of the health crisis (Graph 2.48, panel B). Moreover, as of October 25, CDs issuance has been concentrated in maturities of less than one year (Graph 2.48, panel C).

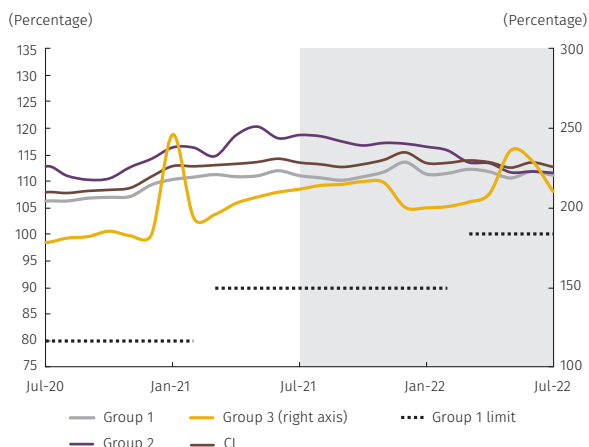
40 For some institutions, the connection between the strength of portfolio lending and high rates for term deposits may limit the growth of the NSFR.

41 The stability criterion for the items comprising the ASF was established based on the weighting assigned by the regulations. Sources with a weighting of less than 25% are classified as having less stability, from 25% to 75% as average stability, and greater than 75% as high stability. RSF items with higher funding requirements, in turn, are classified with a weighting above 75%. Those with average funding requirements between 25% and 75%, and those with lower requirements are grouped in the less than 25% category.

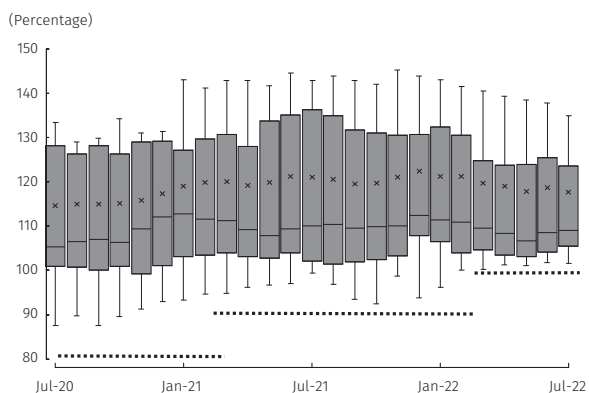
42 This corresponds to counterparties whose deposit amounts are higher than 220 legal monthly minimum wages in effect.

Graph 2.46  
Liquidity of CI Funding

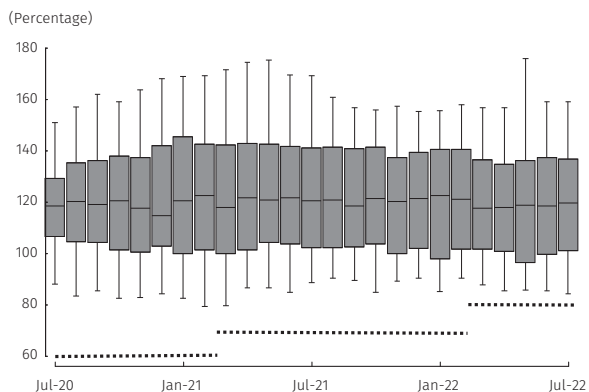
A. Net Stable Funding Ratio (NSFR)



B. Distribution of NSFR of Group 1 Institutions



C. Distribution of NSFR of Group 2 Institutions

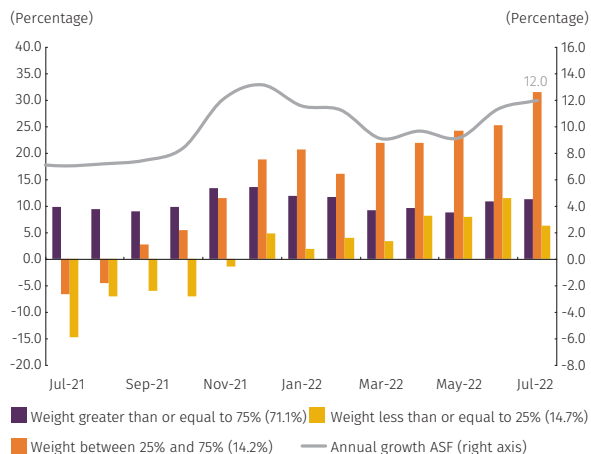


**Notes:**

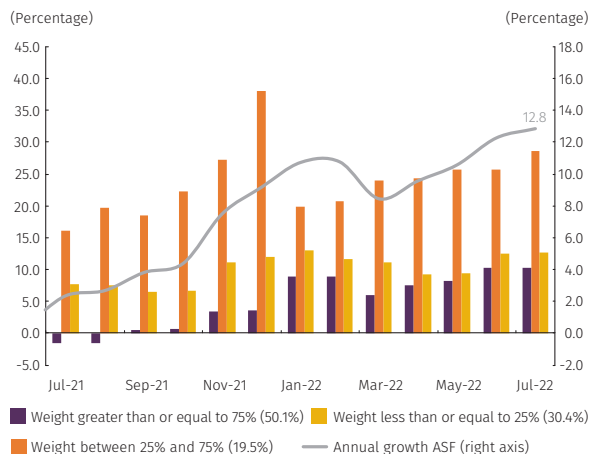
- Information is available for all CIs as of April 2020. Panel A does not show the regulatory limits for group 2 given that they are lower than the ones for group 1 (20 pp lower in each period) and the actual aggregate NSFR is higher.
- Special Official Institutions are included in the calculation of the group 2 indicator.
- In Panel B, "X" represents the group average. The line denotes the median and the range indicates the minimums and maximums registered (excluding outlier data). In panel C the average is not shown since, for group 2, this measure is largely susceptible to outliers.
- Panels D and E show the unweighted aggregate data for group 1 and 2 respectively. The share of the item in the total ASF and unweighted RSF respectively is shown in parentheses on the labels.

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

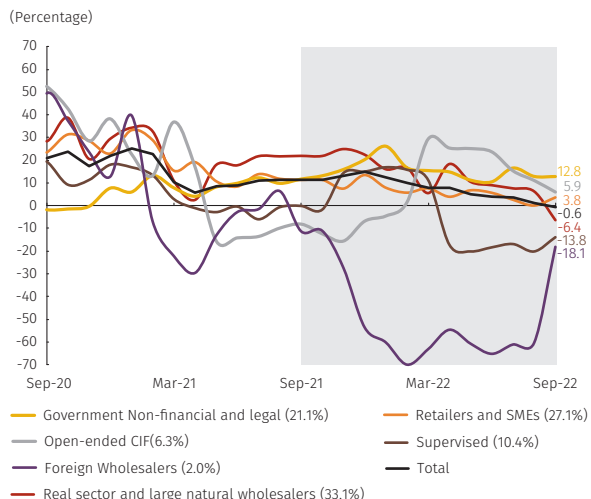
D. Change in ASF Stability (annual growth)



E. Change in RSF Stability (annual growth)



Graph 2.47  
Real Annual Growth of Demand Deposits by Counterparty



Note: the values in parentheses accompanying the legends correspond to the counterparty's share in the demand deposits of CEs.  
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Finally, when the importance of term deposits with a remaining term of less than six months compared to LAMs is analyzed, we find that, when differentiated by size of institution, large CIs are in the lower ranges of the distribution while the rest of the system is mainly concentrated in the middle and upper ranges. No significant changes in terms of composition, in turn, are perceived between July 2021 and July 2022 for any of the groups (Graph 2.48, panel D).

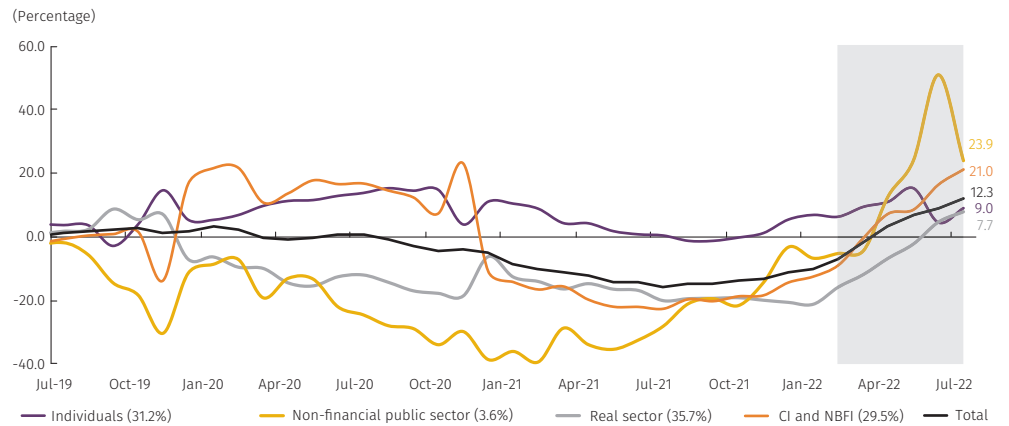
### 2.4.2. Trading Book Interest Rate Risk

The balance sheet structure of the CIs and their exposure to the trading book interest rate risk are analyzed in this section.<sup>43</sup> The measurement of this risk seeks to estimate how changes in the interest rates for assets and liabilities affect net interest income.

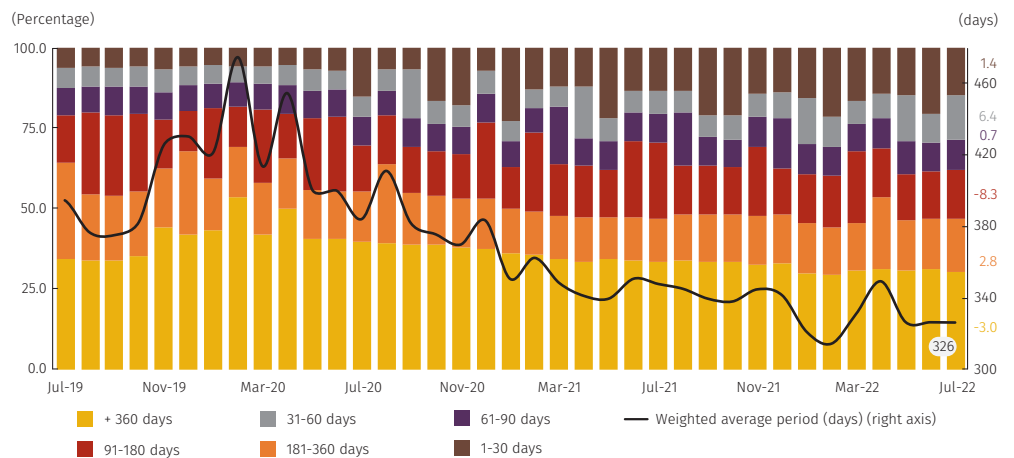
43 The interest rate risk has two dimensions: the first one is analyzed in the section on market risk and refers to the risk of devaluations of the assets in the treasury ledger in the event of interest rate movements; the second, which is analyzed in this section, corresponds to the risk of interest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

Graph 2.48

#### A. Real, annual growth by counterparty<sup>a/</sup>

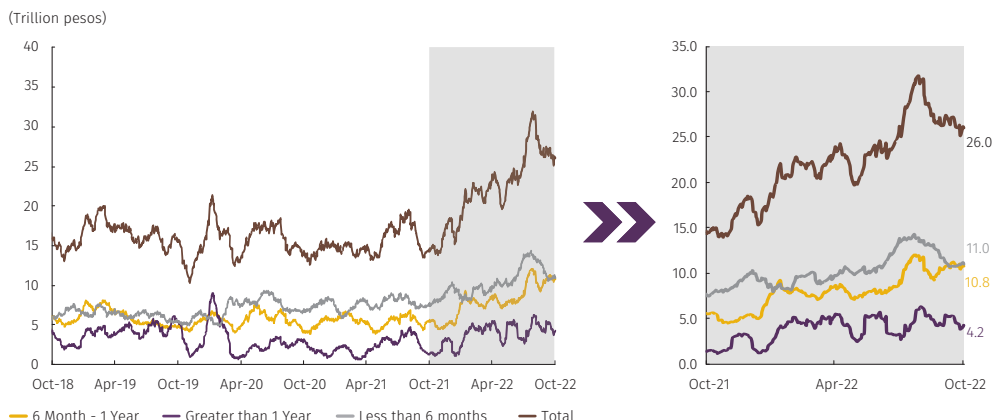


#### B. Breakdown by residual period<sup>b/</sup>

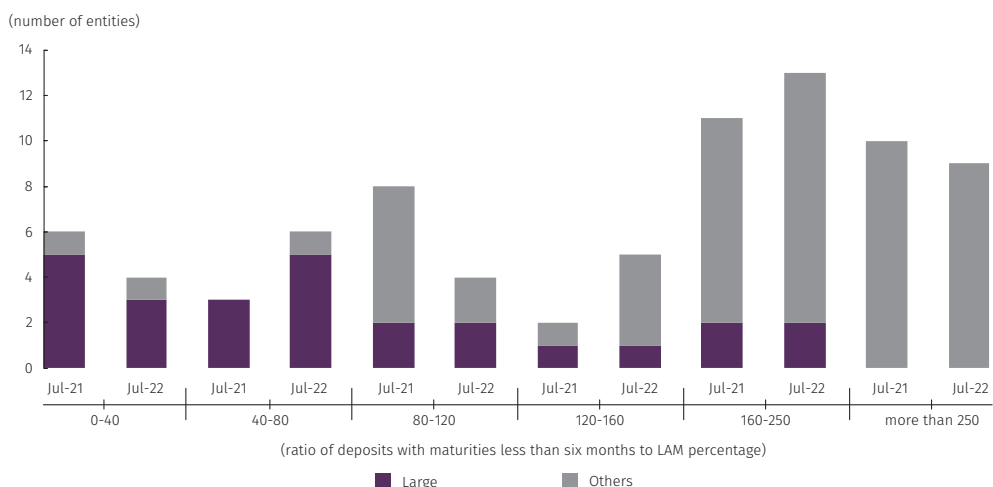


Graph 2.48 (continued)

C. Issuance of CDs by Maturity



D. Time Deposits as a Percentage of Liquid Assets (LAM)<sup>c/</sup>



a/ The share of each counterparty in the total is shown in parentheses.  
 b/ The labels at the bottom of the graph (in colors) represent the annual delta of the share of each of the time periods.  
 c/ Entities that possess a level of assets above the 75th percentile of the CI distribution are classified as large ones. This corresponds to entities that have a share in assets of more than 2.0%, which is the criterion for belonging to group 1 of the NSFR.  
 Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

**During the second quarter of 2022, there was a gradual widening of CIs' exposure to the trading book interest rate risk. This increase was explained, in particular, by the increase in liabilities indexed to variable rates and a reduction in their duration.**

The *weighted average term maturity (WATM) gap* was calculated in order to measure the exposure of the trading book to interest rate risk. This is defined as the difference between assets and liabilities sensitive to changes in interest rates for different periods.<sup>44</sup> This measurement of interest rate risk mainly depends on two factors: the share of assets and liabilities contracted at variable rates and the

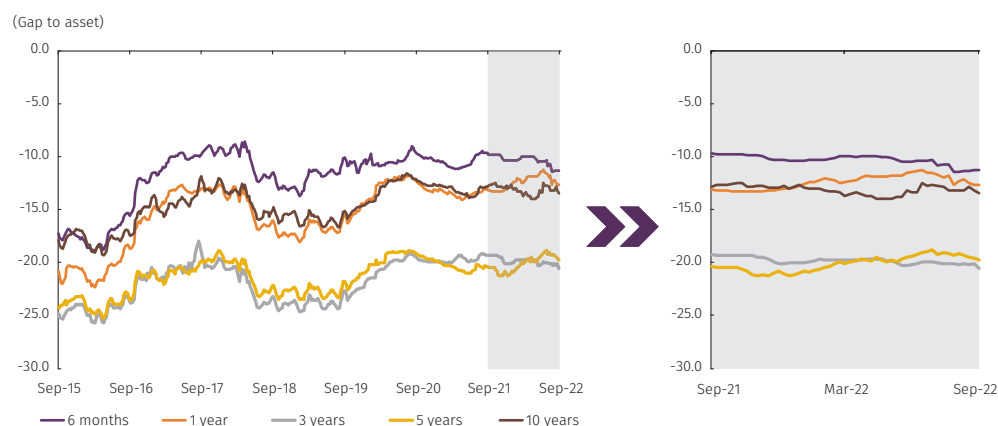
44 The indicator is defined as:  $RSA$ , corresponds to assets  $i$  subject to interest rate risk and  $PSR$ , are liabilities  $j$  subject to interest rate risk.  $D$  is the duration of both the asset  $i$  and the liability  $j$  and  $T$  is the period over which the indicator is evaluated (six months to ten years). In the calculation of the indicator, assets and liabilities at variable rates are weighted at 100% while those at fixed rates are weighted based on the maturity. For more detail on the calculation of the *WATM gap*, see the box "Interest Rate Risk of the Colombian Credit Establishments' Trading Book" in the September 2015 Financial Stability Report.

maturity of fixed-rate assets and liabilities. Meanwhile, the size of this gap is determined by the variable-rate-tied component on both sides of the balance sheet that captures the effect of changes in benchmark rates on the CIs balance sheet. Under a negative WATM gap, an increase in lending and deposit rates of the same magnitude could 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. In other words, the *WATM gap* tends to be negative because banks, due to the nature of their activity (lending and deposit-taking), have a longer duration of their assets with respect to their liabilities. Likewise, the *WATM gap* tends to widen (i.e., bank exposure to interest rate risk increases) to the extent that banks increase their liabilities indexed to variable rates as opposed to the share indexed to fixed rates.

Graph 2.49 presents the *WATM gap* for different maturities following the actual duration of the assets and liabilities of the CIs. This measure remains at negative levels for all time horizons in line with the balance sheet interest rate structure and the longer duration of assets compared to liabilities.<sup>45</sup> Between March and September 2022, the *WATM gap* widened for most maturities, especially for maturities of less than one year. As explained below, this performance is partly due to the increase in liabilities indexed to variable rates and their shorter duration, which contrasts with a gradual increase in the duration of assets.

**Between March and September 2022, the CIs liabilities contracted at variable rates rose in comparison to the share contracted at fixed rates. This has gradually raised their funding costs.**

Graph 2.49  
WATM gap by Maturities<sup>a/</sup>



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

Between March and September 2022, the share of the CIs assets contracted at variable rates gradually increased in comparison to the percentage contracted at fixed rates, an ongoing trend since March 2021. Note that the share of liabilities tied to variable rates, in turn, began to rise in comparison to those tied to fixed rates as of March 2022. This reflects the response of the CIs balance sheet to increases in interest rates and the potential demand for floating rate instruments (i.e., CPI) (Graph 2.50). In a scenario of rising interest rates, a higher exposure to varia-

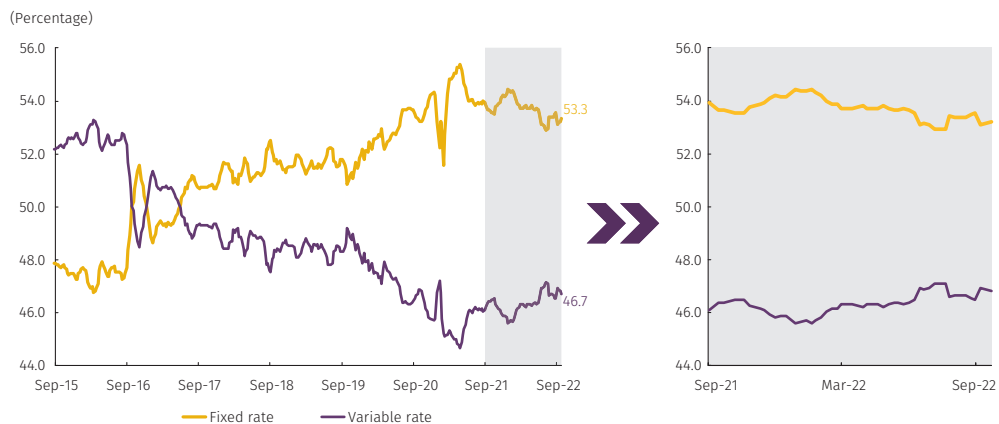
45 The *WATM gap* assumes a greater transmission of the policy rate to the BBI and DTF benchmark rates and a partial transmission to UVR and the CPI. The transmission is based on the calculation of the short-term elasticities between each interest rate and the IBR (taken as a proxy for the monetary policy rate). See details in the Financial Stability Report for the first half of 2021.

ble rate assets increases profitability. Nevertheless, unlike the previous six-month period, the higher exposure of liabilities to variable rates liabilities tends to increase funding costs. The latter explains, in part, the widening seen in the *WATM gap*. This trend may be due to a demand factor given that, in a scenario of rising interest rates, depositors prefer instruments indexed to variable rates.

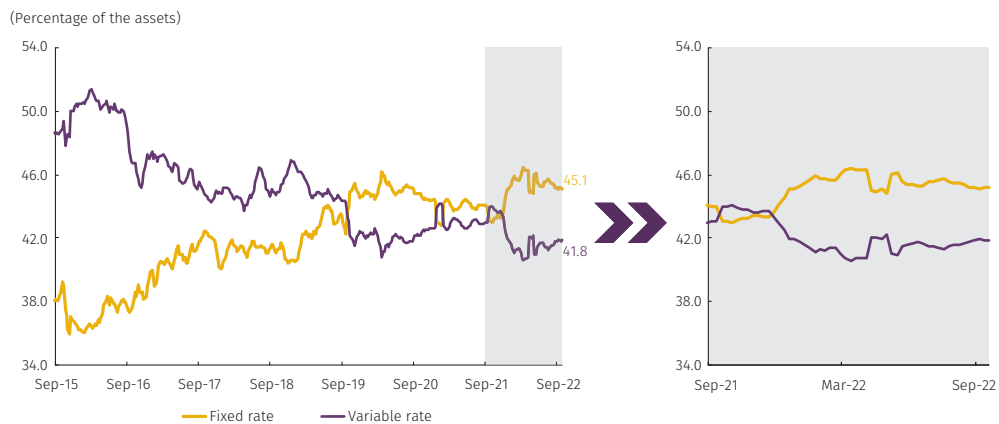
The structure and breakdown of the balance sheet items contracted at variable rates reveals that the positions indexed at the benchmark rates are more relevant than the ones associated with inflation on both sides of the balance sheet, especially on the asset side. In September 2022, 76.9% of the asset positions were indexed to benchmark rates (BBI 51.1% and DTF 25.8%) while 14.1% depended on inflation (CPI and UVR). At the same time 43.4% of liabilities were tied to benchmark rates and 39.7% to inflation (Graph 2.51). Between March and September 2022, the CIs lowered the exposure of their assets to DTF and gradually increased their share in instruments indexed to the BBI. With respect to liabilities, the participation in the instruments indexed to the BBI remained the same while the share of the instruments tied to DTF and CPI was lowered. Exposure to foreign interest rates

Graph 2.50  
Change in Breakdown of Assets and Liabilities by Type of Interest Rate<sup>a/, b/</sup>

A. Assets



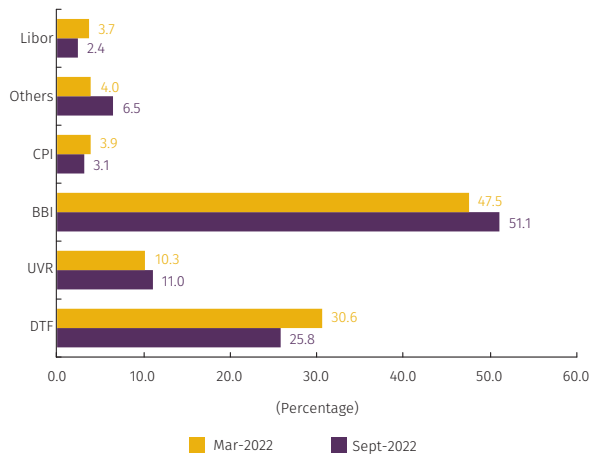
B. Liabilities



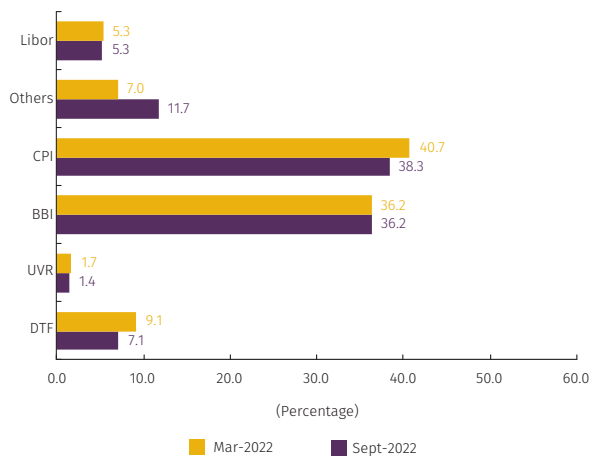
a/ The balances of liabilities at fixed rates and at variable rates are presented as a proportion of the total assets.  
b/ The balance of liabilities at a fixed rate incorporates demand deposits of individuals while the demand deposits of legal entities and government entities are included in the liabilities contracted at variable rates. 4-week moving average.  
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

Graph 2.51  
Breakdown of Balance Sheet Contracted at Variable Rates by Type of Rate

A. Assets



B. Liabilities

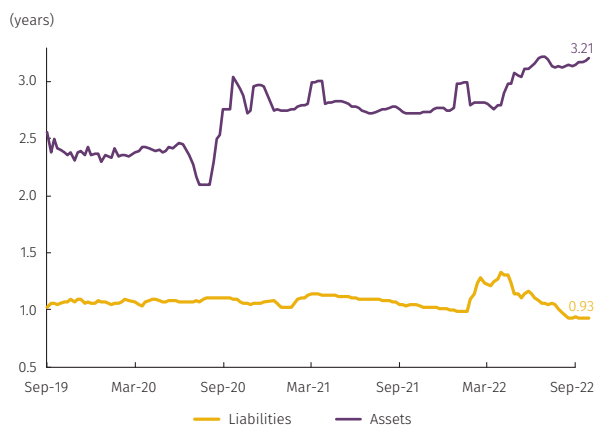


Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.

shrank on the asset side and remained stable on the liability side continuing to be a low share of the CIs' balance sheet (panel A vs. panel B). The increase in CI exposure to BBI on both sides of the balance sheet suggests a greater reaction on the part of their balance sheet to the performance of the monetary policy rates.

The average duration of liabilities went from 1.27 years in March 2022 to 0.93 years in September 2022. At the same time, the average duration of assets went from 2.80 years to 3.21 years during the same period (Graph 2.52). The increase in asset duration and decrease in liability duration for CIs suggests a maturity mismatch that contributes in part to the widening seen in the *WATM gap*.

Graph 2.52  
Average Duration of CE Assets and Liabilities<sup>a/</sup>



a/ Corresponds to the total value of assets and liabilities in legal and foreign currency for CEs. 4-week moving average.  
Source: Office of the Financial Superintendent of Colombia; calculations by Banco de la República.



# Box 1: Insurance Industry Performance During the Covid-19 Pandemic

**Daniela X. Gualtero Briceño**  
**Javier E. Pirateque Niño\***

As a complement to the analysis presented in Chapter 2 for insurance companies with respect to the development of their portfolio, profitability, and capital adequacy, this box provides an account of the performance of insurance policies issuance, claims, and operational profitability by line of insurance in the aftermath of the Covid-19 pandemic.

During the pandemic, there was an increase in settled claims, especially for business lines (BL) of the life insurance group,<sup>1</sup> a trend that has reversed itself since February 2022. In contrast, the settled claims for the BL that make up the general insurance group decreased. Also, note that the first two peaks of Covid-19 deaths coincided with a slowdown in premium issuance which, together, resulted in a decrease in operating income, mainly for BL in the life insurance group.

Although the pandemic caused by Covid-19 had a negative effect on the profitability of the insurance industry due to the claims and lower revenue from premiums and a decrease in the value of investments, the industry has proven to be resilient and is currently on a trajectory of gradual recovery, which is evident in a decrease in claims, an increase in premiums, and in its technical and financial results for the year. The decrease in the occurrence of claims in the BL of the general insurance group may have helped to offset the losses caused by the increase in claims in the BL of life insurance. This suggests that the industry benefits from diversification.

In the future, the insurance sector could face some challenges related to: 1) the potential increase in the cost of settling claims due to factors such as currency devaluation and inflation; 2) the expected deterioration of the macroeconomic environment. This could have an impact on the creditworthiness of households and companies and thus affect the acquisition of new premiums and the payment of premiums for policies already purchased, and 3) the upward cycle of interest rates, which could affect its aggregated results.

## 1. Claims and premiums issuance

The Covid-19 pandemic generated different types of expectations regarding the performance of these two variables for the different BL of insurance.<sup>2</sup> On the one hand, an increase was expected in the loss ratio for the BL of life insurance due to the nature of the virus, and a decrease for those lines where claims would cease to materialize due to the social isolation measures experienced by the majority of the population (e.g. automobiles, compulsory insurance against traffic accidents (SOAT in Spanish), aviation, occupational risks, etc.). On the other hand, these restrictions could have led to a decrease in operating income, mainly represented by lower premiums for the BL of general insurance since the insured's risk would decrease, and there would be less interest in hiring new insurance policies.

\* 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 The life insurance group consists of several lines of business such as: group life, collective life, individual life, health, personal accidents, disability and survivorship, funeral, etc.

2 Throughout this box, Covid-19 deaths in Colombia are used as a proxy variable for the intensity of the pandemic at each point in time.

Graphs B1.1 and B1.2 show the contribution of each BL to the annual growth of annualized settled claims (SC) and annualized premium issuance.<sup>3</sup> Since 2016, the year when detailed sector information began to become available by BL, no shock of the magnitude observed during Covid-19 pandemic had been recorded.

As shown in Graph B1.1, the growth of the SC surged shortly before the peak of Covid-19 deaths occurred in June 2021.<sup>4</sup> As was to be expected, group life BL<sup>5</sup> and disability and survivors' benefits BL<sup>6</sup> were the main contributors to this growth. Prior to the pandemic, these BLs showed a downward trend in their SC which then reversed as of December 2020 (second peak of deaths) and stabilized as of February 2022.

It is noteworthy that the contribution of health insurance to the growth of SC began to increase after the highest peak of deaths because once the lockdowns ended, individuals once again started going to medical appointments and were able to undergo other medical procedures (such as surgery and other treatments) that were again available. This increased the number of claims for this type of insurance.

The increase in the contribution from the BL of contractor all risk insurance<sup>7</sup> seen before the pandemic, in turn, corresponds to the indemnities made to *Empresas Publicas de Medellín* (insured) for the loss of *Hidroituango*, another of the major events that has affected the loss ratio throughout history.<sup>8</sup>

The insurance lines that presented the greatest declines in terms of SC were in BLs of compliance,<sup>9</sup> vehicles, and SOAT. Although, in the BL of compliance insurance, there was an increase in the SC for lease insurance, this was not enough to generate an increase in the total SC for that line compared to the pre-pandemic period.<sup>10</sup> In any case, by June 2022, lease insurance only accounted for 8.0% of total premiums written in the BL of compliance while compliance of contracts with state-owned entities accounted for 51.6%.<sup>11</sup>

With respect to premium issuance, there was evidence of a slowdown during the first two peaks of Covid-19 deaths. The BLs that contributed most to this reduction were Act 100 pensions (life annuities),<sup>12</sup> health, vehicles, SOAT, and occupational risks. This performance can be attributed to factors such as: 1) health insurance was not taken out due to the impossi-

3 Claims settled or paid are the value of claims incurred and paid by insurers. The reinsurance portion is not deducted nor are claims reserves included.

Premiums issued are the main income of insurers and represent the cost of the insurance coverage granted by the insurer for each policy issued.

4 The increase in SC occurs after the first peak of deaths, since these are registered some time after the loss occurs and the policy claim is made.

5 Group life is a BL that belongs to the groups of life insurance.

6 In this BL, the PFMs are the policyholders. The insurance covers the amounts necessary to complete the resources of the member's individual savings account required to finance the disability and survivor's pension.

7 This line is designed to cover construction projects. It covers damages suffered at the construction site due to fire, explosion, construction errors, short circuits, hurricane winds, floods, rain, etc.

8 This event only affected one insurance company that paid the claim in December 2019, September 2020, August 2021, and January 2022 with the last one having the highest value.

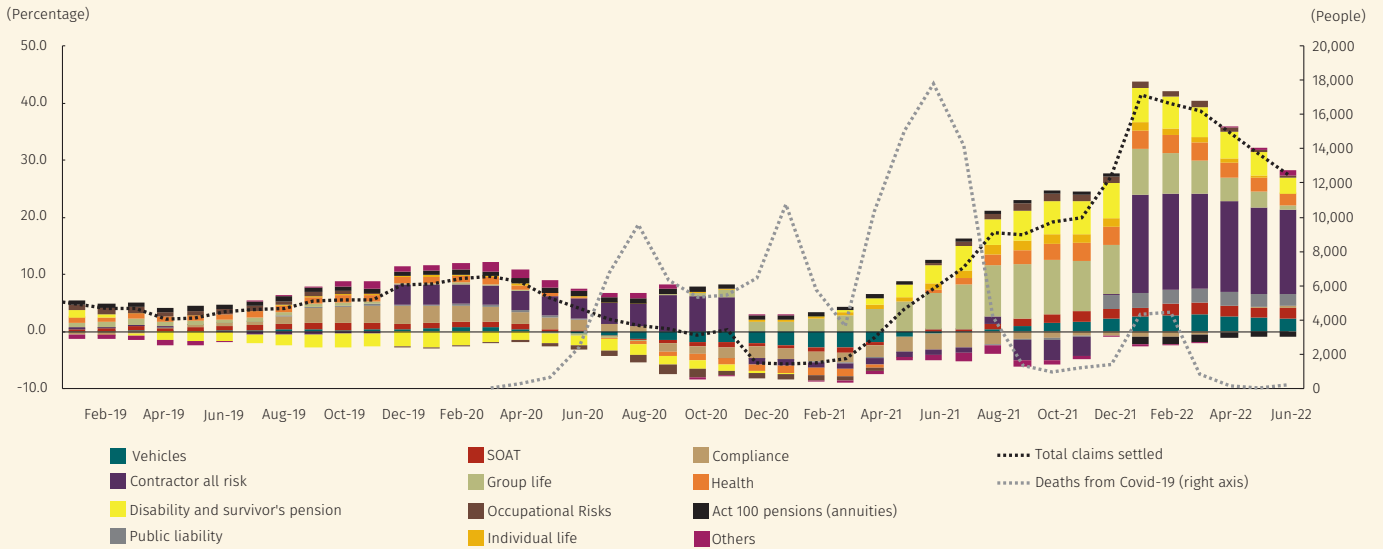
9 Insurance in this BL guarantees the fulfillment of obligations contained in the law or in a contract. For example, a lessee may purchase compliance insurance, and in the event that the lessee defaults on payment as stipulated in the lease, the insurer will pay the lessor compensation for the default.

10 According to Fasecolda figures, lease insurance contributed to the increase in the SC of the compliance BL during the pandemic. Specifically, as of October 2021, at least COP 200 thousand million had been paid to support the payment of rental obligations for housing and commercial properties.

11 This information is not available for the pandemic period given that disaggregated data for the compliance BL had not been reported until February 2022 on the FSC Form 290.

12 The performance of Act 100 pension BL premia is due, in part, to structural aspects that existed prior to the pandemic and that have had an impact on the life annuities offered under this BL. See the study "Subasta del seguro previsional en Colombia", URF (Unidad de Regulación Financiera), May 2022.

Graph B1.1  
Contribution by BL to the Real Annual Growth of Annualized Settled Claims

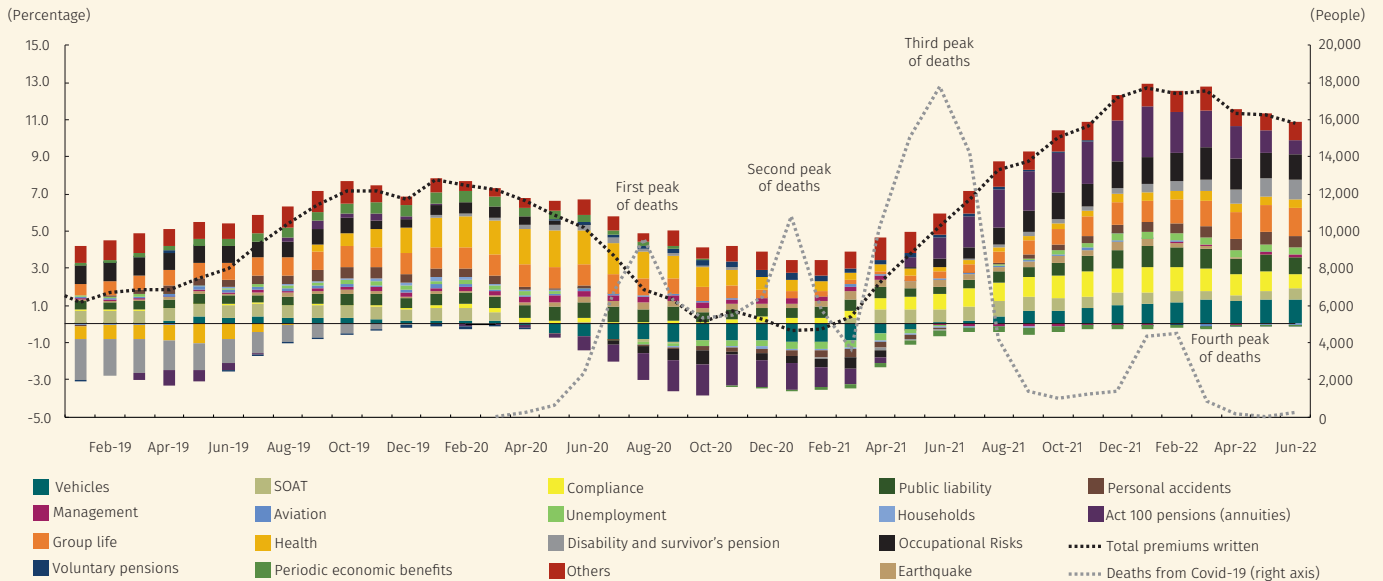


Notes:

- Public liability insurance covers the insured for indemnity expenses for damages to third parties (injury or death) or for property damage caused by the insured to the property of third parties.
- Occupational risk insurance is offered by occupational risk management companies and is responsible for insuring the working and productive population against occupational accidents.
- Under the BL of Act 100 (life annuities), individuals who have the capital to retire may choose the life annuity pension mode and thus authorize the PFM to transfer the balance accumulated in their individual savings account (ISA) so that the insurer will be responsible for paying the pension benefits for life. The payment of the premium (premium issue) occurs when the transfer of resources from the ISA to the insurer is generated. This payment is known as the single premium.
- The category "others" includes 21 categories, among which are the BLs: fire, theft, transportation, weak current, contractor all risk, loss of profit, machinery assembly and breakdown, navigation, glass, commercial credit, etc.

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

Graph B1.2  
Contribution by BL to the Real Annual Growth of Annualized Premia Issued



Notes:

- Like the pension insurance under Act 100 (life annuity), voluntary pension insurance is paid with a single premium, but the insurer pays a monthly allowance for the period agreed upon with the insured (not life annuity).
- The Periodic Economic Benefits BL consists of transferring the resources to the Periodic Economic Benefits Program (BEPS in Spanish) when the retirement age is reached and the pension requirements are not met. Under BEPS insurance, insurers pay the value of the BEP on a bimonthly basis until the death of the insured.
- Management BL covers the insured for fraud, theft, forgery, etc. by its employees.
- The category "others" includes 21 categories, among which are BLs: fire, theft, transportation, weak current, contractor all risk, loss of profit, machinery assembly and breakdown, navigation, glass, commercial credit, etc.

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

bility of carrying out certain medical procedures; 2) restrictions on automobile traffic, and 3) the increase in unemployment generated a reduction in the demand for occupational risk insurance. After the second peak of deaths when the lockdown measures were relaxed, these lines showed recoveries and there was an increase in premiums written for group life BL (Graph B1.2).

Given the lockdown measures, the risk for those insured was expected to decrease for other lines of general insurance such as, for example, public liability, transportation, machinery erection and breakdown, contractor all risk, and aviation. Therefore, the FSC issued External Circular 21/05 June 2020, which required insurance companies to establish internal policies and methodologies in order to: 1) identify the products for which there could be a decrease in the insured's risk as a result of the preventive isolation measures, and 2) quantify the decrease in risk and the corresponding reduction in the premium in order to reimburse it through the return of sums of money, the extension of insurance coverage, or any other contractually defined mechanism. Likewise, for the SOAT BL, Decree Act 800/2020 ordered insurers to transfer the funds equivalent to the lower value of the claims resulting from the reduction in the use of vehicles and traffic accidents to the Resources Administrator of the General System of Social Security in Health (ADRES in Spanish).

## 2. Loss ratios

Graph B1.3 shows gross and net loss ratios for the BLs that were most affected by the pandemic<sup>13</sup>. Gross loss ratio had increased starting at the beginning of the crisis for BLs of the life insurance group (panel A), especially for the pension disability and survivorship and group life BLs. With respect to the general insurance group (panel B), gross loss ratio rose during the first two peaks of the pandemic for the BL of unemployment and fell for vehicle and SOAT BLs. The claims and the loss ratio indicator, in turn, decreased for the BL of compliance and rose for the contractor all risk BL due to the impact generated by the *Hidroituango* case (Graph B1.3).

In terms of net loss ratio, a similar behavior was observed for most of the analyzed BLs. The exception was the contractor all risk line since the operation related to *Hidroituango* was reinsured (the net loss ratio deducts the amounts payable by the reinsurers). In addition, the difference found between the net and gross loss ratio for the vehicles BL is due to an increase in the build-up of claims reserves<sup>14</sup> for this BL.

## 3. Operational profitability

The above results had a negative effect on the operational profitability indicators of the insurance business. Graph B1.4 shows that since the beginning of the pandemic, all BL belonging to the group of life insurance (with the exception of the health BL) registered a drop in their technical and fiscal year results<sup>15</sup> and only began a slow recovery as of June 2021

$$^{13} \text{ gross loss ratio} = \frac{\text{claims settled}}{\text{premiums written}}$$

$$\text{net loss ratio} = \frac{\text{claims incurred}}{\text{premiums earned}}$$

$$\text{claims incurred} = \text{claims settled} - \text{reinsurance portion} + \text{claims reserves}$$

$$\text{premiums earned} = \text{premiums withheld} - \text{buildup of technical reserves (TR)} + \text{release of TR}$$

$$\text{premiums withheld} = \text{premiums written} + \text{premiums accepted} - \text{premiums ceded}$$

<sup>14</sup> Claims reserves (reported and not reported) are established to cover payments for claims that have occurred once they have been reported or for possible claims that have occurred but have not yet been reported.

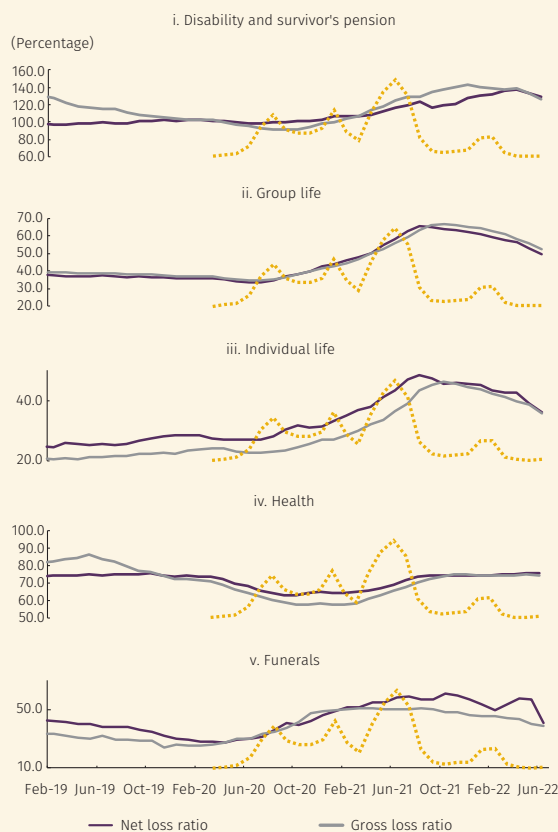
<sup>15</sup> The technical result and the fiscal year results inform about the insurer's operating income and are calculated as follows:

$$\text{technical result} = \text{insurance and reinsurance income} - \text{insurance and reinsurance expenses} - \text{commissions and overheads}$$

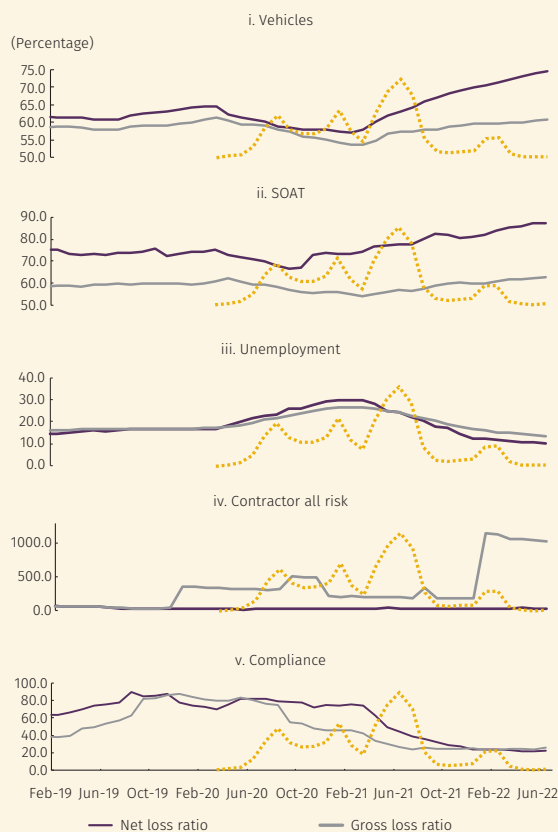
$$\text{fiscal year results} = \text{technical result} + \text{investment income} + \text{other income} - \text{other expenses}$$

Graph B1.3  
Gross and Net loss ratios by BL

A. Life Insurance Group



B. General Insurance Group



Notes:

- Annualized settled claims and annualized written premiums are used to calculate the gross loss ratio. Annualized incurred claims and annualized earned premiums are used to calculate the net loss ratio.
- The dotted line represents deaths from Covid-19. Each BL has its own scale.

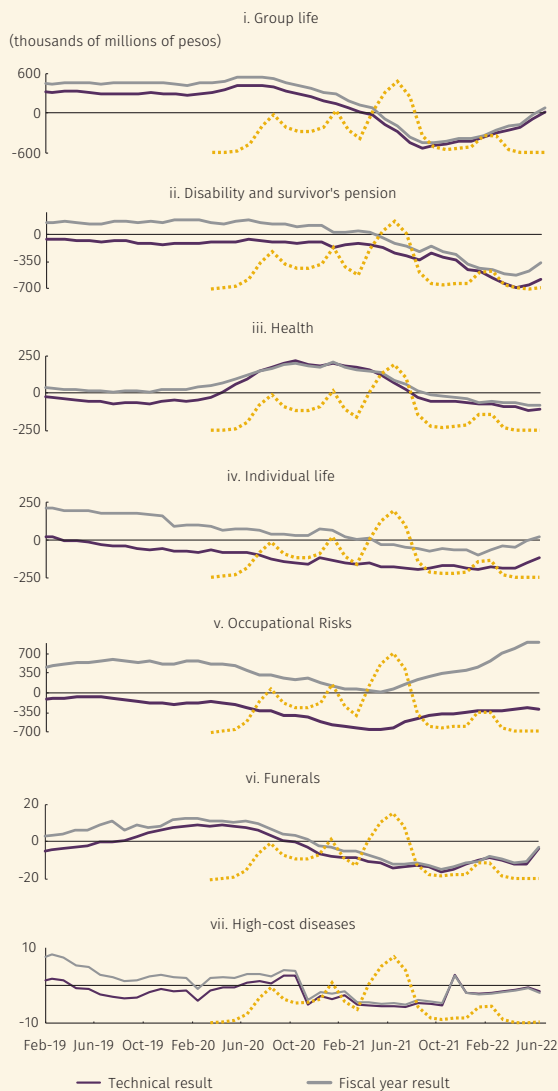
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

(panel A). With regard to the BLs in the general insurance group (panel B), the technical and fiscal year results for vehicles and SOAT have shown a downward trend since the beginning of the pandemic. Although BLs of unemployment, commercial<sup>16</sup> and household credit fell in 2020, they began to recover after the largest peak of deaths, i.e., when vaccination plans were implemented, lockdown measures were reduced, and economic reactivation policies were introduced.

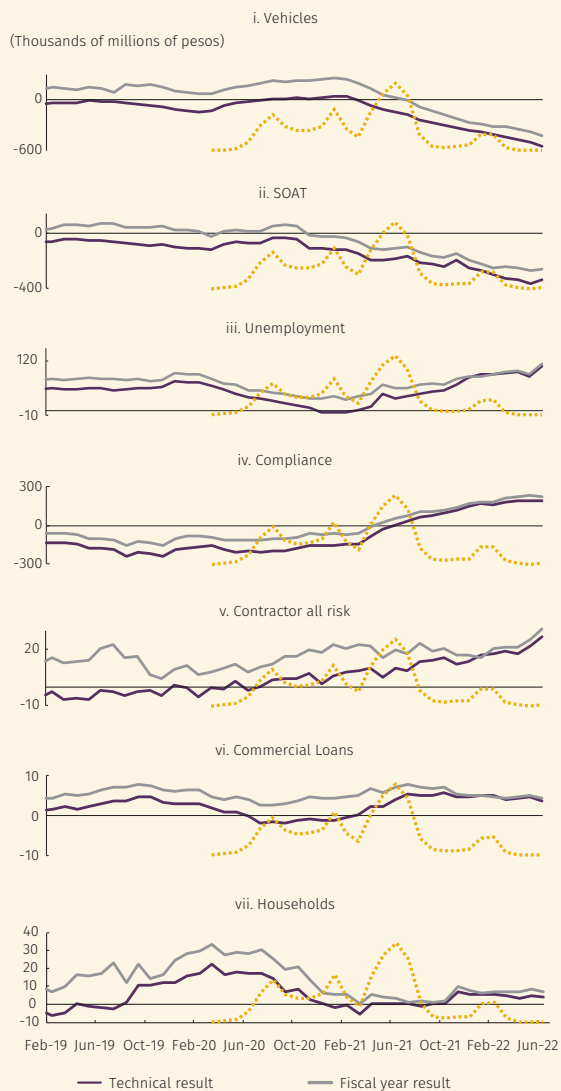
16 Credit insurance indemnifies businesspeople who sell their products on credit for non-payment of such credits.

Graph B1.4  
Annualized Technical and Fiscal Year Results by BL

A. Life Insurance Group



B. General Insurance Group



Note: the dotted line represents deaths from Covid-19. Each BL has its own scale.  
Source: Office of the Financial Superintendent of Colombia, calculations by Banco de la República.

## 3. Stress Test

**Considering the vulnerabilities that have been identified throughout the Report, this chapter presents two exercises to measure the capacity of the financial system to face adverse scenarios and continue providing its basic functions over a short- and medium-term horizon.**

This chapter presents two exercises to assess the resilience of the financial system in the event of a hypothetical materialization of relevant sources of risk, in line with the analysis of vulnerabilities presented in previous chapters. The first exercise, which is known in international literature as a stress test, is intended to measure the ability of CIs to deal with a hypothetical, adverse, and improbable scenario by using a model that considers both capital adequacy and liquidity risks together. The second test, in turn, estimates the effect that different withdrawal shocks could have on the liquidity position of open-ended mutual funds. This test aims to evaluate the capability of these funds to meet their short-term obligations in a stress scenario.

### 3.1. Capital and Liquidity Stress Testing of CIs

**This section describes the scenario and the results of the stress testing of the CIs carried out every six months by Banco de la República. The objective is to measure the resilience of the CIs under a hypothetical, adverse, and unlikely scenario.**

The stress test evaluates the impact on CIs of a hypothetical, adverse scenario of the Colombian economy with persistently high inflationary pressure and more restrictive global and local financial conditions. The above would be accompanied by sales of foreign investors' holdings in the local public debt market and a strong depreciation of the Colombian peso against the U.S. dollar. The scenario considered aims to reflect the persistent frictions in the global supply chain due to the prolongation of the war in Ukraine and the slower growth of the global economy given China's zero-Covid policy, the slowdown in Europe and the United States, and the outlook for a more contractionary global monetary policy. In a context such as the one described above, the deterioration of the quality of the portfolio granted to companies in sectors that are vulnerable to interest rate, inflationary, and exchange rate risks and to households with a high financial burden is also considered, given the vulnerability associated with the high growth of their indebtedness.

The results suggest that an increase in the loan-loss provisions and a decrease in the net interest income would be the main drivers of the decline in the CIs aggregate profitability under the adverse scenario considered. The above would generate negative effects on aggregate common equity tier 1 and 2 ratios, even though they would remain at levels above the regulatory limits during the entire horizon of the exercise. Although the impact on individual CIs is heterogeneous, the above implies that the system currently has enough capital buffers to absorb the potential losses in the adverse scenario.

Furthermore, the resilience on the consolidated basis of those entities that have positions in Central America is also evaluated under a scenario characterized by the devaluation of their subsidiaries' assets in each region, and an exchange rate shock, which comes from the adverse scenario described above. This is performed

considering the uncertainty regarding the fiscal sustainability of some of these Central American countries in an extreme scenario.

These tests do not constitute any prediction regarding the future development of the economy or the financial system since the scenarios considered reflect a hypothetical, adverse situation. Therefore, the results should be interpreted as quantitative evaluation of the resilience of the CIs in the event of adverse scenarios based on their current financial conditions and under restrictive assumptions. Likewise, the tests do not consider possible policy reactions to the deterioration in the entities' financial statements nor preventive actions to follow up on their risk management.

The usefulness of the tests 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.<sup>1</sup>

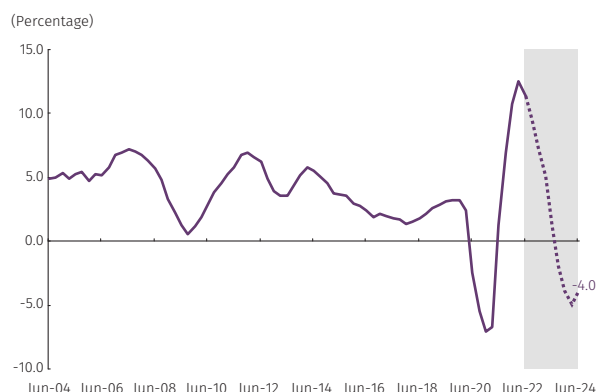
### 3.1.1 Macroeconomic Scenario and Materializing Risks

**The trajectories of the adverse scenario include a contraction of the economy in a context of high inflationary pressure and tighter financial conditions.**

The stress test seeks to capture the effects of an adverse and hypothetical macroeconomic context that reflects various supply shocks that could be caused by the negative effects of persistent supply chain frictions given the resurgence of the war between Ukraine and Russia. Furthermore, given the possible impact on the local economy of risks from abroad, the scenario also envisions an aggregate demand shock in the country.

The combination of these elements is likely to generate an economic slowdown that would result in a 4.0% contraction of output in June of 2024 (Graph 3.1, the shaded area corresponds to the analysis horizon of the exercise) and a 12.4% inflation peak. This would trigger an upward reaction of the monetary policy rate and an increase in unemployment. This scenario was constructed using the distribution of future GDP growth based on the GDP-at-risk methodology.<sup>2</sup> In addition, to reflect tighter financial conditions, the scenario considers the gra-

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



Source: DANE (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

- 1 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.
- 2 In particular, the 5-percentile path of the distribution of future GDP growth based on the GDP-at-risk methodology is taken. For more detail on this methodology see Box 1 of the *Financial Stability Report* for the first half of 2018.

dual sale of 50% of foreign investors' holdings in the public debt portfolio during the two years of the test and a reduction in the intermediation margin<sup>3</sup> in the first few quarters that would reflect greater difficulties in obtaining funding.

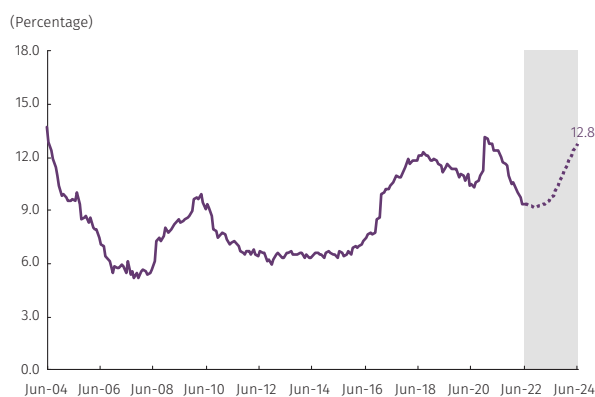
**This scenario would cause an increase in portfolio defaults and losses in the public debt portfolios.**

A hypothetical scenario of economic shrinking would imply the appearance of credit and market risk for the CIs in a first stage. Their endogenous response to such scenario would generate, at a second stage, the materialization of additional risks that would depend on the financial statements of each entity (funding, liquidity, interest rate, and contagion risks).

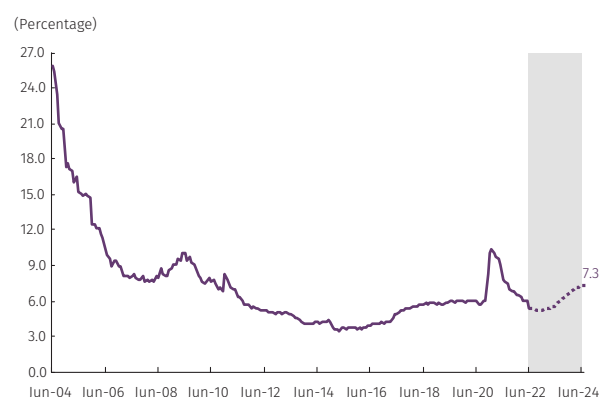
Concerning credit risk, two elements are incorporated. First, the natural consequence of a macroeconomic deterioration would be to lower the ability of economic agents to make their payments and thus increase the default rates. The hypothetical trajectories of the quality indicators by risk for the four categories of loan portfolios are presented in Graph 3.2. The results suggest that in a scenario such as the one described above, the quality of the consumer portfolio would be particularly affected.

Graph 3.2  
QIR Trajectory by Type of Loan Portfolio in the Hypothetical Adverse Scenario

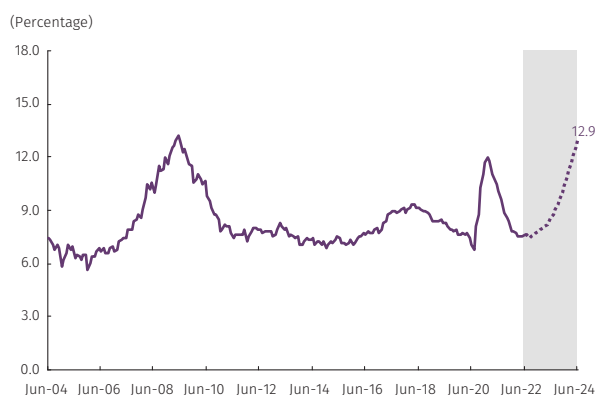
#### A. Commercial



#### C. Housing



#### B. Consumer



#### D. Microcredit



Source: Office of the Financial Superintendent of Colombia (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

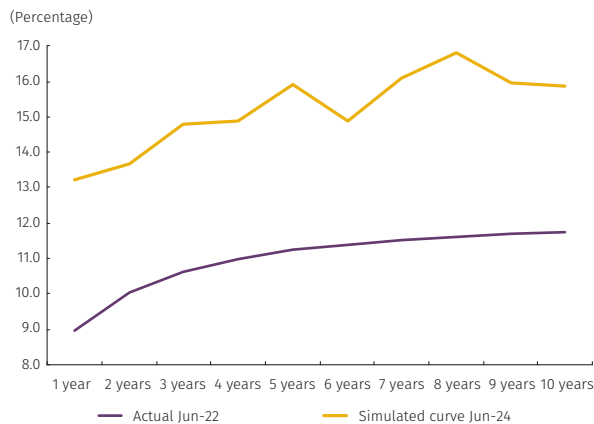
<sup>3</sup> Details of the interest rate models used are presented in Box 4 of the *Financial Stability Report* for the second half of 2021.

Second, the adverse scenario is assumed to trigger a two-level rating downgrade<sup>4</sup> of vulnerable debtors in the commercial, housing, and consumer loan portfolios. On one hand, the increase in interest rates and the fall in output could lead to the deterioration of companies with a low stressed interest coverage indicator (see section 2.2.1 in this Report).<sup>5</sup> Moreover, the high inflation levels in the adverse scenario would probably raise the costs of certain segments of the construction and electricity sectors where contracts were agreed to before the price shock and, therefore, their earnings could be affected, and this would make it difficult for them to meet their loan obligations.<sup>6</sup> At the same time, funding difficulties and depreciation would cause a deterioration in the credit quality of a number of companies exposed to exchange rate risk.<sup>7, 8</sup> On the other hand, considering the increasing indebtedness of households (see section 2.2.2 of this Report), it is assumed that debtors with a high stressed financial burden will stop repaying their loans.<sup>9</sup>

Regarding market risk, two elements are considered. First, the macroeconomic variables and the interest rates in the stress scenario would generate shifts in the zero-coupon TES curve and the corporate fixed-income curve. Second, since the literature considers foreign investors to be more susceptible to asset fire sales in the event of a deterioration in the country's economy or in the international financial conditions,<sup>10</sup> a gradual and permanent exit of 50% of their holdings in the local public debt market (COP 57.7 t as of October 2022) is assumed. This would generate a direct impact on the price of securities. The combination of these two factors would generate an almost parallel shift of the curve with a greater impact on the eight-year securities (520 bp, Graph 3.3).

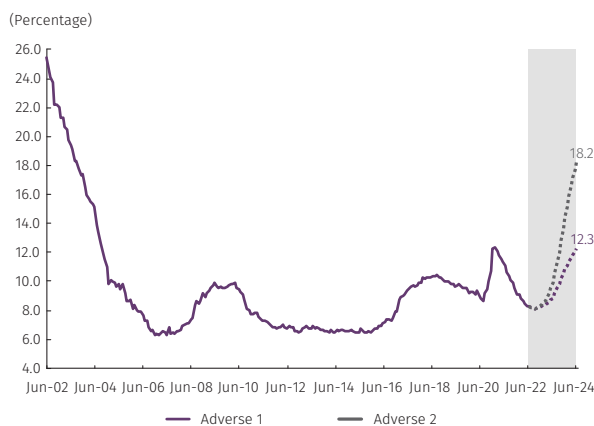
- 
- 4 In Colombia, loans granted by the institutions supervised by the FSC are rated on a scale ranging from A to E, where A is the best rating.
  - 5 The stressed interest coverage ratio is calculated as the ratio of operating income to interest expense, where the numerator is reduced in line with the fall in the adverse scenario output, and the denominator is raised following the interest rate trajectories. Companies with a stressed ICI of less than 1 represented 2.0% of the commercial portfolio as of June 2022.
  - 6 The following are considered vulnerable: 1) small and medium-sized residential and non-residential construction companies, and 2) energy distribution companies (from the Asocodis list); particularly those that serve users directly, that do not belong to a corporate group with generators as well as those whose non-technical losses (due to fraud and illegal connections) are higher than those of the market average.
  - 7 The companies exposed to exchange rate risk are the ones that show a negative currency mismatch (liabilities in foreign currency greater than assets in foreign currency) and, taking into account three indicators, are classified as vulnerable: 1) the value of the currency mismatches to total assets, 2) trade balance to operating income and 3) share of foreign capital in the total capital of the company. 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 classified as vulnerable. For companies without public accounting information, those with the largest gross mismatch that have accumulated 90% of the total mismatch for this group are taken. As of June 2022, 1,099 companies that are vulnerable foreign exchange risk and which represent 8.3% of the commercial portfolio, were identified. For more details, see Box 3 in this Report.
  - 8 Overall, the exercise assumes a drop of two rating levels for 11.3% of the commercial portfolio.
  - 9 A stressed financial burden greater than 30% or one showing deteriorations of more than 10 pp for those with initial burdens greater than 30%. The stressed financial burden analysis was done in conjunction with the FSC. These debtors account for 3.0% of the consumer loan portfolio and 4.4% of the housing portfolio.
  - 10 See M. C. Ebeke and M. A. Kyobe (2015). *Global financial Spillovers to Emerging Market Sovereign Bond Markets.* International Monetary Fund; and D. Park, K. Taniguchi, and G. Tian (2018). "Foreign and Domestic Investment in Global Bond Markets," ADBI Working Paper, no. 535.

**Graph 3.3**  
Peso-denominated TES Curve in the Hypothetical Adverse Scenario



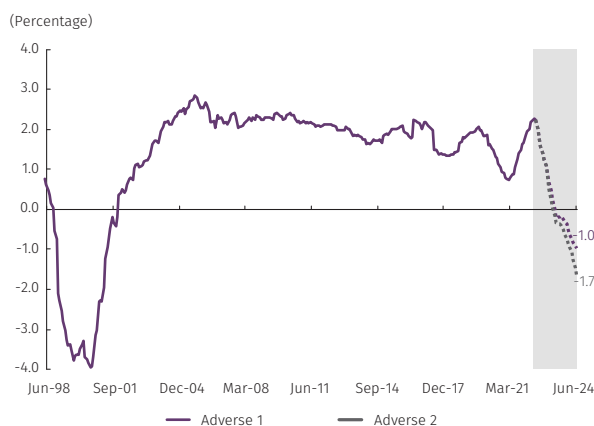
Source: DCV and Precia, calculations by Banco de la República.

**Graph 3.4**  
Aggregate Quality indicator by Risk (QIR)



Source: Office of the Financial Superintendent of Colombia (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

**Graph 3.5**  
Return on Assets (ROA)



Source: Office of the Financial Superintendent of Colombia (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

### 3.1.2 Results

***In the adverse scenario considered, would be observed a negative profitability, a shrinking of the portfolio, and a drop in the total and core capital adequacy ratios for the aggregate of the CIs although the latter would remain above of the regulatory minimums.***

The results of the stress test on the aggregate paths of the CIs' are presented in Graphs 3.4 to 3.7. Based on the adverse scenario described, two possible scenarios are analyzed to assess the magnitude of the credit risk shock: 1) the deterioration associated solely with the macroeconomic scenario (purple dotted purple line), and 2) the macroeconomic and idiosyncratic deterioration of vulnerable debtors in the commercial, consumer, and housing loan portfolios (gray dotted line).

In the first scenario, the deterioration of the quality loan portfolio is comparable to what was observed during the pandemic shock, while in the second scenario, the QIR would reach levels close to those registered after the financial crisis at the end of the century (Graph 3.4). Given the severity of the macroeconomic shocks considered, return on assets (ROA) would reach negative values as of June 2023. In scenario 1, this indicator would register a minimum of -1.0%, while for scenario 2 a level of -1.7% (Graph 3.5).

Regarding the real annual portfolio growth, significant contractions would be observed according to the hypothetical drop in the GDP. This behavior would deepen in scenario 2 due to the higher volume of losses, which would limit the capacity of CIs to disburse credits (Graph 3.6). The accumulated losses for the year would cause reductions in the aggregate capital adequacy indicators with a greater impact in the most adverse scenario in terms of credit risk (Graphs 3.7 and 3.8). Nevertheless, the aggregate capital adequacy ratios would stand above the regulatory limits<sup>11</sup>, although in the most adverse scenario, the total capital adequacy would fall to levels close to 11%<sup>12</sup>.

In both scenarios, the items that contribute the most to the drop in the profitability indicator are the loan-loss provision costs and the reduction in the net interest income (Graph 3.8). The latter is due to the effect of the trading book interest rate risk and the materialization of credit risk. The additional default of vulnerable debtors in scenario 2 would imply a higher relevance of loan-loss provision costs, anticipating a materialization of the risk of contagion of intermediaries<sup>13</sup>.

11 The regulatory limits for total and core capital adequacy are 9.0% and 4.5% respectively.

12 Threshold considered as a prudential limit in this stress exercise.

13 The contagion component of the exercise includes two elements. The first corresponds to direct contagion and is determined by direct exposures between CIs. The second element corresponds to indirect contagion, which involves the write-down losses generated by the abrupt sale of

Graph 3.6  
Real Annual Growth of Loan Portfolio



Source: Office of the Financial Superintendent of Colombia (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

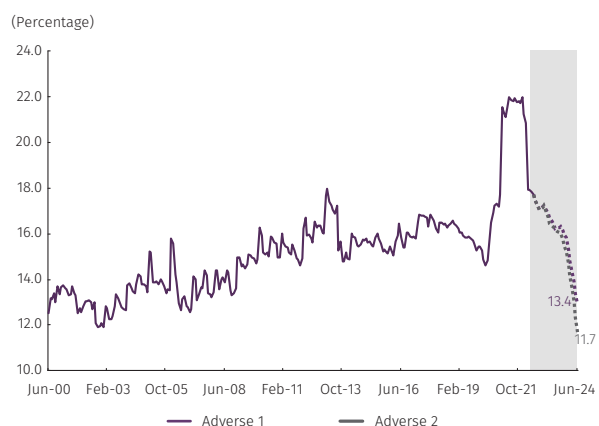
Finally, although the aggregate indicators of the CIs would remain above the minimum regulatory requirements, the results per entity are heterogeneous and some individual entities could face problems to meet those levels. Regarding total capital adequacy, in the least acid scenario, the group of entities that would have a level below 9.0% account for 32% of the total loan portfolio as of June 2022 (Graph 3.9), while for the most adverse scenario, this would rise to 36%. To keep the entire financial system solvent and in compliance with the capital buffers required<sup>14</sup> in these extreme scenarios, a capital injection of COP 19.9 t could be required in scenario 1 and COP 23.7 t in scenario 2 during the eight simulated quarters.<sup>15</sup>

### 3.1.3 Stress test of investments in Central American subsidiaries

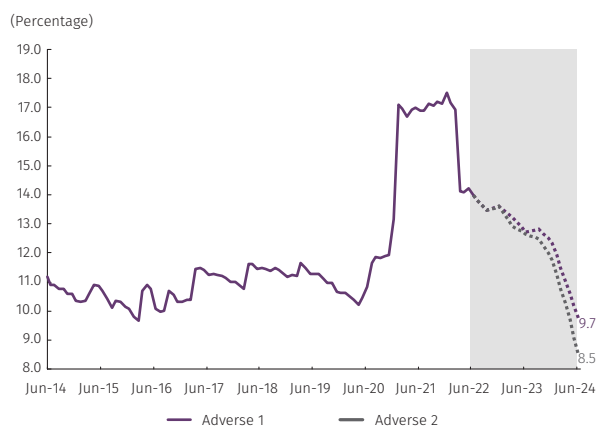
In the last decade, the Colombian financial system has experienced a significant expansion in terms of the participation of the main financial conglomerates abroad, especially in Central America (assets of subsidiaries in this region represent 16.8% of the aggregate consolidated assets as of June 2022). This shows the importance of evaluating the resilience of the CIs to devaluations of these assets in adverse scenarios.

Graph 3.7  
Aggregate Capital Adequacy Ratio at the Individual Level

#### A. Total capital adequacy ratio



#### B. Common Equity Tier 1 ratio



Source: Office of the Financial Superintendent of Colombia (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

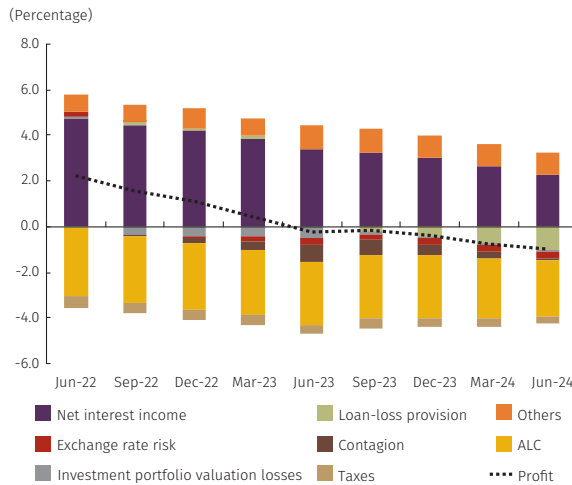
Considering the above, an additional stress test was performed on CIs with consolidated financial statements and subsidiaries in Central America, using the results of section 3.1.2 as a starting point. Specifically, two aspects are considered: 1) devaluations between 10% and 50% of the dollar-denominated assets of the subsidiaries in this region; and 2) the depreciation of the exchange rate registered in the adverse scenario, whose effect on the peso-denominated assets is positive. Regarding the first point, El Salvador and Costa Rica are the economies considered the most vulnerable to an adverse scenario due to their fiscal and external liquidity situation (see Chapter 1 of this Report). Therefore, for these jurisdictions, devaluations are assumed to range between 20% and 50%, while for exposures in the other countries of the region, a range between 10% to 25% is considered. The exercise assumes the materialization of this shock would occur gradually starting in the first quarter of the simulation horizon.

assets by institutions that are close to the regulatory capital adequacy limits.

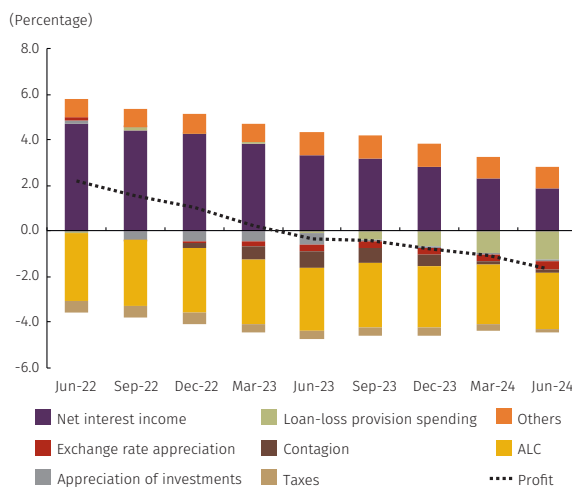
- 14 The regulatory limits for total and core capital adequacy are 9.0% and 4.5% respectively and the limit on the net worth loss is 50%. In 2023 the limits, including the conservation cushion are 9.75%, 6.0%, and 5.25% for the total, additional core, and core capital adequacy respectively. For 2023 (2024) these limits are modified to 10.125% (10.5%), 6.75% (7.5%), and 5.625% (6.0%). For systemically important entities, an additional 75 bp, 112.5 bp, and 150 bp are required for 2022, 2023, and 2024 respectively. 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.
- 15 Fogafin's deposit insurance reserve as of June 2022 reached COP 26.7 trillion, which implies that the capital required in the most extreme stress scenario represents 89% of said reserve.

Graph 3.8  
Breakdown of ROA

A. Adverse 1



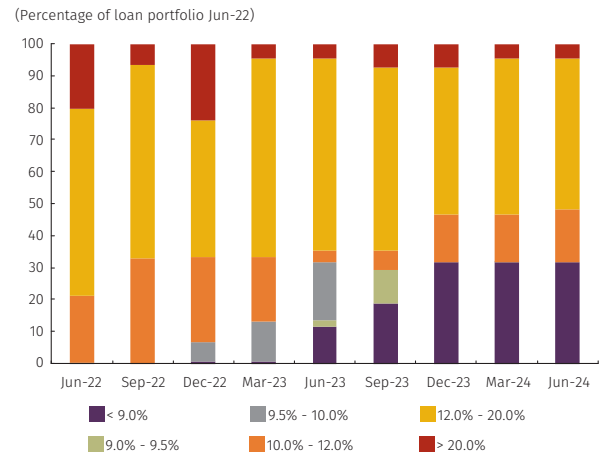
B. Adverse 2



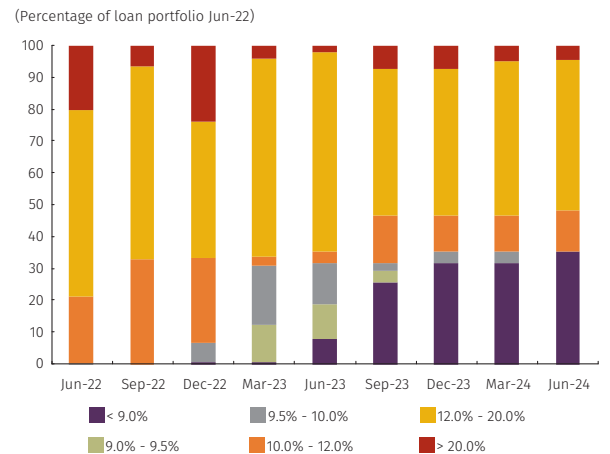
Source: Office of the Financial Superintendent of Colombia (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

Graph 3.9  
Distribution of Individual Capital Adequacy by Share of Loan Portfolio

A. Adverse 1



B. Adverse 2



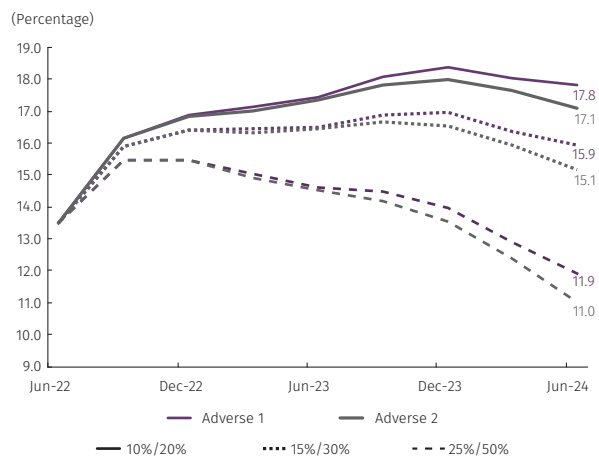
Source: Office of the Financial Superintendent of Colombia (up to June 2022), calculations by Banco de la República (September 2022 to June 2024).

In Graph 3.10, the total consolidated aggregate capital adequacy under an exchange rate shock and different magnitudes of devaluation is shown. In both scenarios, the entities are resilient to any of the exercises considered. Moreover, for low magnitude devaluations, the positive effect of the exchange-rate depreciation enhances the aggregate consolidated capital adequacy. Forehead to major shocks, reductions up to levels close to 11% in capital adequacy levels would be observed.

3.1.4 Final Comments

The results of the exercise suggest that most of the CIs would be able to keep their aggregate indicators of individual and consolidated capital adequacy above the regulatory minimum despite the severity of the adverse scenarios. This reflects the resilience of the entities in the short term to an adverse macroeconomic scenario as described.

Graph 3.10  
Total Consolidated Capital Adequacy Ratio



Source: calculations by Banco de la República (September 2022 to June 2024).

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. On the one hand, the exercise assumes that the economic authorities do not take any additional action in response to the deterioration of the CIS' financial situation. On the other hand, it is assumed that the entities' shareholders are excessively passive to the extent that they only capitalize the profits without taking any other kind of strategic initiative to face the financial stress.<sup>16</sup> If, however, any one of these assumptions is eliminated, the magnitude of the losses on the system would be expected to be cushioned so that the impact of the adverse scenario would presumably be smaller.

### 3.2 CIF Stress Test

***During the last six months, open-end collective investment funds (CIF) increased their liquid resources, therefore their resilience to withdrawals shocks rose.***

The CIFs are susceptible to investor withdrawal shocks, so it is relevant to simulate hypothetical withdrawal scenarios that they might face. This section presents the results of a reverse stress test exercise that provides a prospective view on the resilience of these funds to different levels of withdrawals without considering possible mitigation measures or second round effects.

Based on information on the cash level of each of the funds,<sup>17</sup> different withdrawal shocks, ranging between 1.0% and 60% of the cash available, are simulated in order to calculate the LRI that the CIFs would present in each scenario. For each level of withdrawal, those funds that would register non-compliance<sup>18</sup> on their liquidity indicator are identified, and their share of total assets is calculated. The results are presented in Graph 3.11. Each color represents the share of total assets of the CIFs that would fail to meet the liquidity requirement, thus higher values (dark purple tones) correspond to a greater impact of the level of withdrawals on the liquidity of the CIFs.

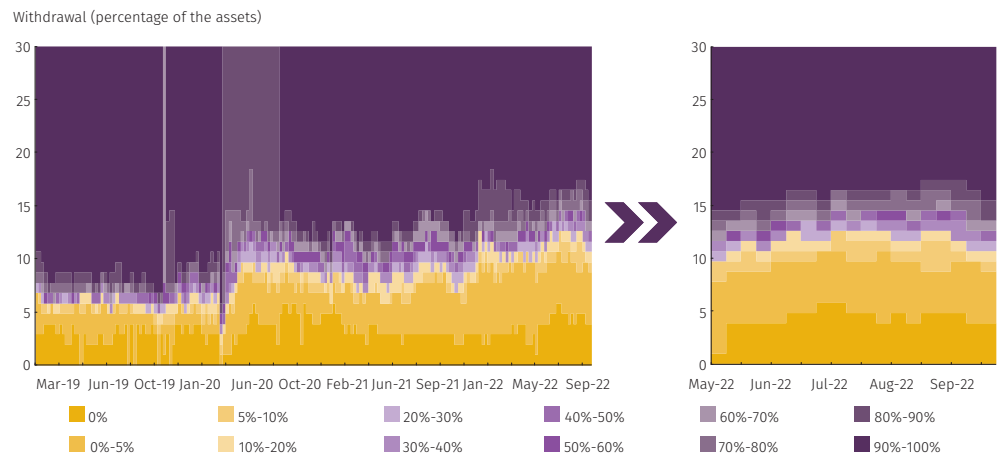
The results indicate that the resilience of the funds has risen in comparison to what was registered at the beginning of 2022 and remains at a higher level than observed prior to the pandemic, although a slight deterioration was registered during September 2022. In general, the favorable performance

16 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.

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

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

Graph 3.11  
Results CIF Stress Test



Note: The shades in the graph correspond to the share in total assets of the CIFs that do not comply with the LRI regulatory limit in the event of different withdrawal shocks (vertical axis). Thus, the darker purple indicates that the non-complying funds represent between 90% and 100% of total assets.

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

during the last six months is mainly due to the growing net contributions, the low portfolio devaluations given the shorter duration, and the high level of liquidity indicators registered since May 2022 (see section 2.1.3 of this *Report*). Consequently, a withdrawal shock of 10.0% as a percentage of assets (25.2% as a percentage of cash) would be required as of September 2022 for funds representing 20.0% (yellow shading) of total assets to fail to comply with the LRI. These CIFs include two variable-income, three money market, and fifteen balanced funds. These results contrast with those seen during May 2022, a period in which withdrawals had to be 8.0% to achieve a similar effect.



## Box 2: Recent Trends in the Financial Position of Households

Camilo Gómez  
Juan Sebastián Mariño  
Daniel Osorio\*

This box analyzes the recent changes in a battery of indicators on the financial position of households and their trends with respect to their historical behavior. These indicators were calculated based on the quarterly national accounts by institutional sector published by DANE and the financial accounts published by *Banco de la República* with a cut-off as of June 2022.<sup>1</sup> The following conclusions can be drawn from the analysis: 1) household consumption has risen significantly in the recent past, and this has placed it above its long-term trend, 2) the above has occurred in a context of recovering in the disposable income and higher indebtedness, and 3) the accumulation of equity by households during the pandemic appears to have not been sufficient to finance the increase in their consumption in the recent period. In an environment in which a slowdown, high indebtedness, and lower accumulation of financial equity are expected, it is important to monitor the vulnerabilities that households may generate for CIs in the near future.

### Household income, expenditures, assets, and debt

Graph B2.1 describes the changes in the main aggregates of household financial accounts (solid line) and compares them to their long-term trends (dotted lines).<sup>2</sup> Over the course of 2021 and so far in 2022, the growth of household disposable income has surged hand in hand with the economic recovery that occurred after the Covid-19 shock (panel A). Household income has been accompanied by a sustained increase in consumption as a percentage of disposable income, which is at historical highs and above its long-term trend (panel B). Likewise, recent months have seen a recovery in household investment as a percentage of income. However, this item is below its pre-pandemic values (panel C). The above household flows have occurred in a context of a growing debt-to-income ratio, a lower ratio of financial assets to income, and lower financial equity as a percentage of available income (panels D to F).

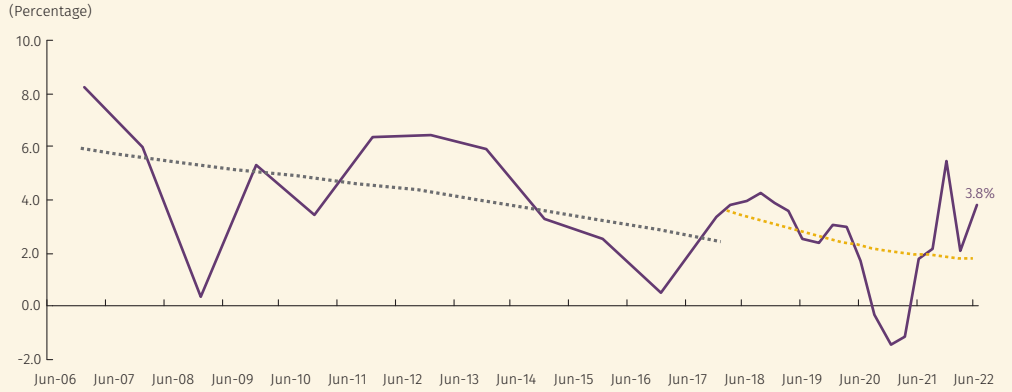
\* At the time this box was written, the authors worked in the Financial Stability Department of *Banco de la República*. The opinions expressed here are the sole responsibility of the authors and do not imply any official position on the part of *Banco de la República* nor the Ministry of Finance and Public Credit.

1 For more information on the quarterly financial accounts calculated by *Banco de la República*, see <https://www.banrep.gov.co/es/contenidos/cuentas-financieras>. For more information on DANE's quarterly national accounts by institutional sector see <https://www.dane.gov.co/index.php/estadisticas-por-tema/cuentas-nacionales/cuentas-nacionales-trimestrales-por-sector-institucional-ctnsi>

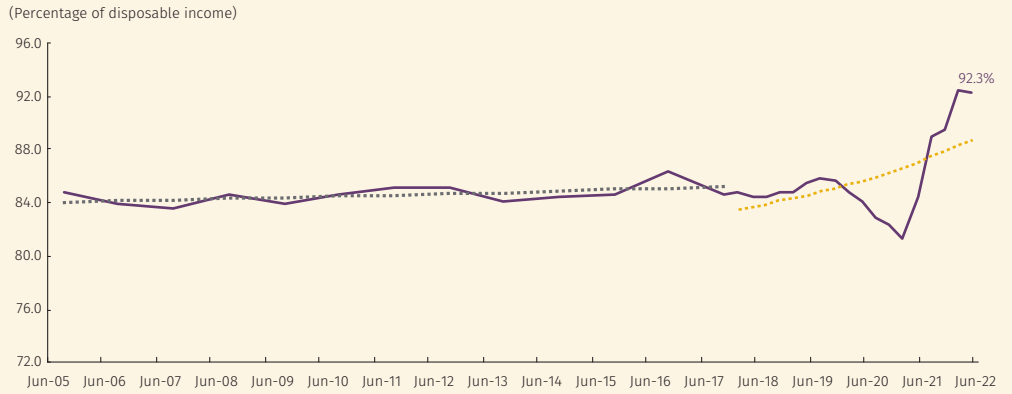
2 Calculated with a Hodrick-Prescott filter.

Graph B2.1. Main Aggregates of Household Financial Accounts

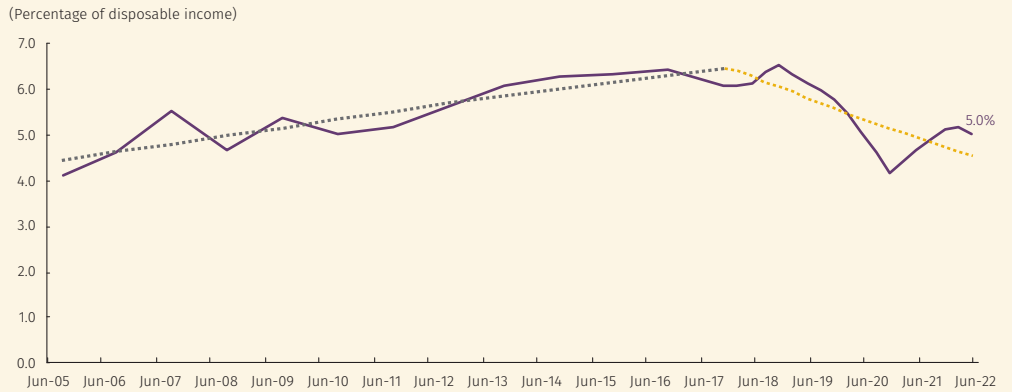
A. Real Growth in Household Disposable Income



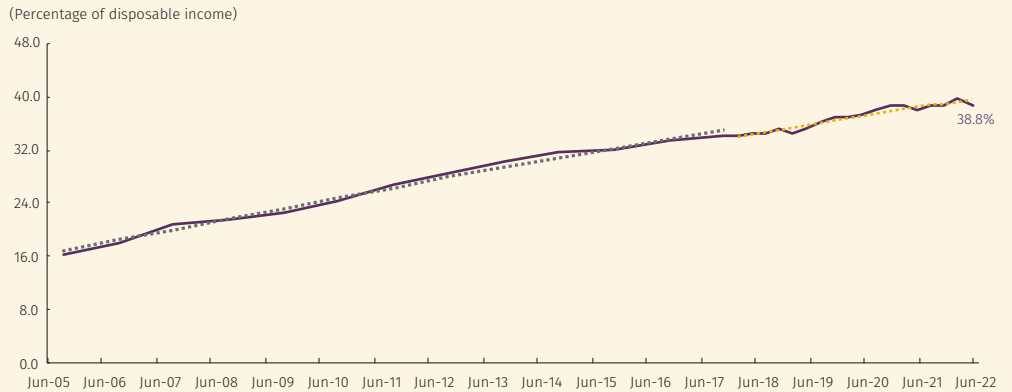
B. Consumption of Households



C. Net household investment



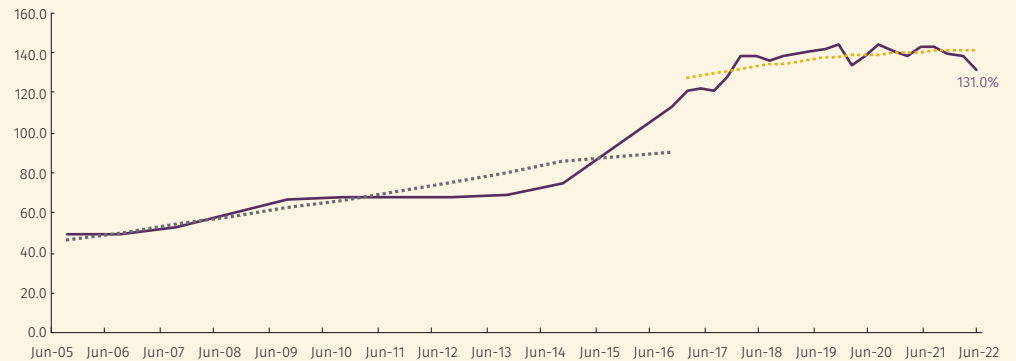
D. Household debt



Graph B2.1. Main Aggregates of Household Financial Accounts (continuation)

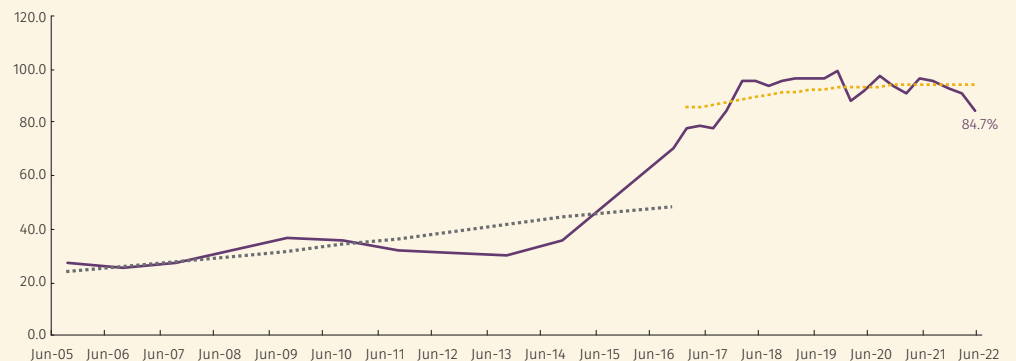
## E. Household Financial Assets

(Percentage of disposable income)



## F. Household Financial Equity

(Percentage of disposable income)

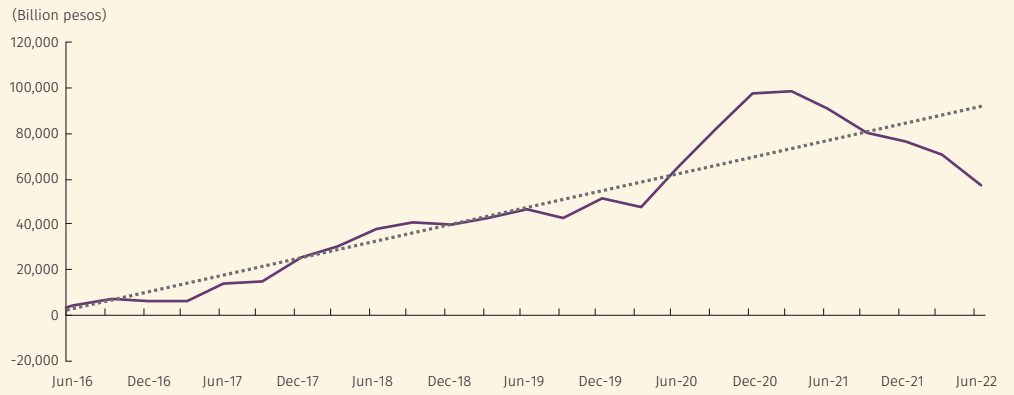


Note: the dotted lines indicate the trend of the series calculated with a Hodrick and Prescott filter. Up to 2016, the series had an annual frequency and from this date onwards they have a quarterly frequency. Therefore, two trend lines were drawn to differentiate between the two periods with their change in frequency.

Source: DANE, calculations by Banco de la República.

Last of all, Graph B2.2, shows the nominal accumulation of financial assets by households since 2016. As can be seen, the series has a growth trend that surged significantly during the pandemic. This performance was to be expected given that, in a context of greater uncertainty, households had incentives to accumulate more assets to face times of financial difficulty. Once the most restrictive period of the health emergency had been overcome, households began to increase their consumption as was shown previously. The recent behavior of financial asset accumulation leads to the conclusion that households not only used the assets they had accumulated during the pandemic but continued to disaccumulate financial assets to finance their consumption, and this took the indicator below its long-term trend.

Graph B.2.2 Accumulation of Financial Wealth by Households since 2016



Note: the dotted line corresponds to the linear trend of the series.  
Source: Banco de la República, calculations by Banco de la República.

## 4. Financial Regulation

This chapter presents the main legal changes with respect to financial regulatory standards enacted between May and November 2022. First of all, there are the standards that relate to the financial stability vulnerabilities described in this report. Second, regulatory changes to encourage economic development and facilitate convergence to international standards in the areas of risk management, financial inclusion, and capital market development are presented. Last of all, other regulatory adjustments and issuances are presented.

For the analyzed period, the most important regulations associated with the vulnerabilities for the stability of the financial system are: tax reform, changes in the rules on individual credit ceilings and risk concentration limits, changes in the calculation of the Net Stable Funding Ratio (NSFR)<sup>1</sup>, and the regulation on the creation of risk provisions for the consumer portfolio. Other developments related to open finance regulations, permanent adoption of some instructions issued during the Covid-19 emergency, disclosure of information, and instructions for foreign clearing houses are also presented.

### 4.1 Regulations Related to Financial System Stability Vulnerabilities

As discussed throughout this report, the main vulnerabilities for the stability of the financial system are associated with credit risk and internal and external imbalances of the economy that will be influenced by expectations of an economic slowdown by 2023, higher inflation, exchange rate depreciation and higher financing needs to cover the fiscal and current account deficits. In this context, the creditworthiness of households and companies may deteriorate and have an impact on the portfolio quality. Likewise, the availability of funding within the financial system becomes relevant in a scenario in which there are fewer incentives for investment given the expectations regarding the economy's performance.

First, with regard to covering the fiscal deficit, the markets have been attentive to the discussions surrounding the implications of the tax reform that is in the process of being approved. The reform seeks to raise approximately COP 20 trillion in 2023 by increasing taxes on companies, individuals, and the mining and energy sector. Although the final impact of the reform on the economy is uncertain, the main concerns<sup>2</sup> expressed by different agents in the economy have revolved around: 1) the possible impact on investment and savings due to lower incentives for the creation of companies, investment in portfolios of foreign agents, and operations in the capital markets; 2) disincentives to individual savings; 3) compliance with the fiscal regulations, and 4) possible significant policy changes in the crude oil and gas sectors that would reduce the fiscal contribution of the petroleum industry in this country.

Secondly, with respect to credit risk, the government has made progress on reforms related to the identification and management of large exposures and risk con-

1 "Coeficiente de Fondeo Estable Neto (CFEN)" in Spanish.

2 Based on reports from financial system analysts and the working paper "Potenciales impactos de la reforma tributaria sobre el mercado de capitales", published by the AMV (Autorregulador del Mercado de Valores in Spanish) on 22 August 2022.

centration of CIs and maximum ceilings for active credit operations of the entities supervised by the FSC. To this end, Decree 1533/04 August 2022 amended Decree 2555/2010 in order to update the dispositions and converge with the Basel standard and thus reinforce and complement the risk-based capital rules. Mainly, the rules on individual credit limits and risk concentration limits were updated and unified for CIs, and for the other entities supervised by the FSC, the rules on individual credit allowances were updated.<sup>3</sup> Among the main changes in this decree are:

- The calculation basis for the individual credit limits and risk concentration limits is no longer the technical equity but is now the sum of the ordinary basic equity (net of deductions) and the additional basic equity (hereinafter: new basis).
- With respect to the individual credit limit:
  - It was determined that no entity subject to control and surveillance by the FSC may have credit limit exposures<sup>4</sup> with a counterparty or with a connected group of counterparties, directly or indirectly that, together or separately, exceed 15% of the new basis. Previously, the regulation dictated that no entity supervised by the FSC could carry out active credit operations with any person, directly or indirectly, that jointly or separately, exceeded 10% of its technical equity if the only guarantee for the operation was the debtor's equity.
- Regarding the risk concentration limit for CI:
  - A definition of large exposure was established for CIs. This situation occurs when the sum of all the values of exposure held with a counterparty or connected group of counterparties (directly or indirectly) equals or exceeds 10% of the new basis. CIs may not hold large exposures that in the aggregate exceed eight times the amount of the new basis. Large exposures must be reported on an individual and consolidated basis to the FSC.
  - It has been decided that CIs may not have exposures<sup>5</sup> to a counterparty or with a connected group of counterparties, directly or indirectly that, together or separately, exceed 25% of the sum of the new basis. Previously, the risk concentration limit was equivalent to 30% of the CI's technical equity except in the case of financial corporations for which it was 35% of technical equity.
  - In addition to the large exposures, the CIs must report information on an individual and consolidated basis to the FSC about: 1) exposures to a counterparty or connected group of counterparties that exceed 10% of the new basis without considering the effect of the respective collateral;

---

3 The FSC has 18 months starting from the date of publication of the Decree to issue instructions and the financial entities have 36 months to implement them.

4 For the individual credit limit, in addition to mutual or money lending transactions, the acceptance of bills of exchange, the granting of guarantees and other collateral, the opening of credit, loans of any kind, the opening of letters of credit, discounts, financial leasing and other active credit transactions by entities subject to the control and supervision of the FSC shall be computed. The net exposures in repurchase or repo transactions, sell/buy-back transactions and temporary transfer of securities, and credit exposures in transactions with derivative financial instruments will also be computed.

5 For the risk concentration limit, all assets, exposures, contingencies, and guarantees used in the calculation of assets by credit risk level based on their value and weighting used to determine the capital adequacy ratio shall be computed.

2) the twenty largest exposures to risk with respect to a counterparty or connected group of counterparties, irrespective of equity, and 3) all risk exposures exempted under the new regulations. Previously, only situations of risk concentration exceeding 10% of the technical equity were reported, regardless of the existing guarantees.

According to the technical document on this decree prepared by the Financial Regulation Unit (FRU),<sup>6,7</sup> the updating of the aforementioned provisions is based on the objective of financial stability. When the limit structure is simplified and the equity basis for its calculation is defined, concentration risk is reduced, and the maximum loss of an institution is limited when its counterparties default. In addition, the use of more accurate measurements of exposure properly reflects the risk and allows financial entities to have better information on their interconnections and to provide better information to the supervisor, thereby reinforcing the monitoring and management of large exposures.

This, in turn, allows for a more rigorous management of risk concentration, for example, using an appropriate level of capital, defining objective criteria for the formation of connected groups of counterparties, incorporating specific measurement of large risks and reinforcing disclosure mechanisms and internal systems for managing concentration risk.

Third, regarding liquidity risk management, in External Circular 021/04 August 2022, the FSC issued instructions related to the calibration of the factors applicable to calculating the NSFR and incorporated the treatment of interdependent transactions in calculating the NSFR in accordance with the international standard applicable to such transactions. The changes were:

- Transactions involving the interdependence of an asset and a liability were excluded from the calculation of available stable funding and required stable funding.<sup>8</sup> This was because such operations minimize the exposure of the entities to general funding sources.
- In the event that interdependent transactions other than rediscount transactions have been included in the calculation of the indicator prior to the issuance of the External Circular, the entity must submit a report detailing the amount and impact of their exclusion on the NSFR.
- A methodology was established to calculate the weighting factors applicable to demand deposits of guarantee trusts, management trusts, and real estate trusts<sup>9</sup> that go into effect as of the issuance of the circular. Likewise, the concepts included in demand and time deposits of supervised financial entities were clarified, and this goes into effect as of 31 March 2023.

6 “Unidad de Regulación Financiera (URF)” in Spanish.

7 Technical document: “Límite a las grandes exposiciones de los establecimientos de crédito y cupos individuales de crédito de las demás entidades sometidas a control y vigilancia de la Superintendencia Financiera de Colombia” dated August 2022.

8 Interdependent transactions are those made up of interrelated liabilities and assets. Consequently, the liability cannot be settled as long as the asset remains on the CE’s balance sheet. For example, in a rediscount operation, the resources are earmarked for a specific purpose and must be recognized on the balance sheet under both liabilities and assets.

9 On this subject, the FSC published a box entitled “Comportamiento de los depósitos a la vista de los negocios de fiducia en garantía, de administración e inmobiliaria administrados por las Sociedades Fiduciarias” in the *Colombian Financial System Update Report* (“Informe de Actualidad del Sistema Financiero Colombiano” in Spanish) from May 2022.

- The factor applicable to term deposits (less than six months) of supervised financial entities and of open-ended CIFs will be 0% as stipulated as of 31 March 2022. This External Circular established that these factors would be 50% and 25% respectively. This went into effect as of 31 August 2022.

Fourth, the FSC published External Circular 026 on 29 November 2022 by which instructions were issued for the creation of risk provisions on the consumer portfolio to promote the healthy and sustainable growth of this portfolio and to recognize the potential impact on debtors' ability to pay in a context of economic slowdown and persistent inflation. Instructions were specifically given to: 1) adjust individual consumer provisions in order to include a factor that recognizes the risk associated with the higher level of leverage on debtors with longer terms, and 2) create an additional general provision based on a prospective analysis of the potential deterioration of the consumer loan portfolio.

With respect to the first point, a factor that recognizes the risk arising from the higher leverage of the debtors is incorporated into the calculation of the expected loss in the reference model for the consumer loan portfolio. Regarding the second point, CIs must do an internal prospective analysis of the potential deterioration in the consumer loan portfolio and take into account a possible rise in the levels of debtor default and the potential use of contingent credit limits due to the impact on debtor income. Those entities that, as a result of the analysis, identify the need to prospectively recognize this risk, must establish an additional general provision. This provision must be approved by the financial entity's Board of Directors and must be established no later than 31 December 2022.

#### 4.2 Regulations Related to Structural Changes and Issues of Interest in the Medium and Long Term.

During the period under analysis, the issuance of regulations on financial inclusion, prudential issues, capital market development, sustainability, and risk management continued. These changes are presented below.

##### 4.2.1 Regulations issued by the Congress of Colombia

**Act 2250 (11 July 2022):** this law established a special legal framework for the legalization and formalization of mining as well as for its financing, marketing, and special environmental regulations. In terms of financing, the mining development fund was created as an agency attached to the Ministry of Mines and Energy. One of the purposes of the fund will be to provide the national mining industry, both legal and in the process of formalization, with economic resources, technical and financial assistance, technology transfer and adoption, business development, and improvement of the social and economic conditions of the mining activity. The resources of the fund will be distributed equally in percentage terms among the different regions involved in the activity.

The fund may receive, administer, contract, manage, and allocate national and international resources for the financing of mining activities. These resources, in addition to those established at their creation, shall be as follows: 1) those that may be allocated through the General Budget of the Nation; 2) those liquidated as a result of transactions with the resources of the same fund; 3) those originated in financial operations and technical or financial operation agreements entered into with other governments, with national or foreign individuals or legal entities, and with national and international organizations; 4) contributions assigned to it in any form; and 5) the proceeds from the issuance of bonds. Furthermore, the fund will

have an advisory committee that will consist of Bancóldex, Banco Agrario de Colombia, the Ministry of Mines and Energy, and representatives of the mining sector.

#### 4.2.2 Regulations issued by the FSC

**External Circular 012 (27 May 2022):** instructions were issued to establish the period, form, and detailed content of the parts and chapters of the periodic year-end report and the quarterly periodic report of securities issuers entities in accordance with the provisions of Decree 151/2021<sup>10</sup> which has been incorporated into Decree 2555/2010. Specifically, Appendix 1 “Periodic Information on Issuers” was created in the Basic Legal Circular (BLC)<sup>11</sup> and the chapter, “National Registry of Securities and Issuers (NRSI)<sup>12</sup>” in that Circular was modified. The main features of this new regulatory framework are as follows:

- The parties that are obligated to comply with the standards for the disclosure of periodic information were reviewed. The decision was made that these would include issuers that have securities registered in the main market<sup>13</sup> and CIFs whose securities are registered on a stock exchange (previously only the former were required to do so).
- A materiality criterion<sup>14</sup> was established for the facts in the information to be periodically 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.
- Regarding relevant information: this was developed in accordance with the powers granted by Decree 2555/2010, article 5.2.4.3.3 as amended by Decree 151/2021.
- Regarding 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.

The purpose behind this is to enhance the depth of the securities market and provide timely, complete, and sufficient information for market participants to make investment decisions. Securities issuers shall transmit the periodic year-end report and the quarterly periodic report to the NRSI as of 10 February 2023 in accordance with the deadlines and instructions set forth in the BLC, Part III, Title V, Chapter I, Appendix 1, number 6 pursuant to the provisions of Decree 151/2021, Article 7.

<sup>10</sup> This decree made changes in relation to the system of information disclosure by securities issuers entities.

<sup>11</sup> “Circular Básica Jurídica (CBJ)” in Spanish.

<sup>12</sup> “Registro Nacional de Valores y Emisores (RNVE)” in Spanish

<sup>13</sup> 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.

<sup>14</sup> 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.

**External Circular 014 (16 June 2022):** some instructions issued during the Covid-19 pandemic were permanently adopted in the BLC and in the Basic Accounting and Financial Circular (BAFC)<sup>15</sup> in order to continue expanding the coverage of the provision of financial services in conditions of safety and quality, reinforce risk management standards, ensure the integrity and transparency of the market, and guarantee suitable protection for financial consumers. The changes in the circular incorporate:

- The duty of supervised entities to encourage the use of digital channels for the provision of financial services.
- Obligations regarding the publication of information on the websites of supervised entities and the addition of a list of abusive practices in the provision of financial services.
- The duty of the severance fund management entities to enable non-face-to-face channels to carry out the procedures for the withdrawal of severance payments, affiliation, and transfer of funds.
- The rules for the return of the stipulated premium value due to generalized circumstances of decreased risk.
- Additional requirements for business continuity plans of supervised entities.

Last of all, it was stipulated that the self-regulatory bodies had to establish the minimum standards of policies, procedures, and controls to be implemented by securities market intermediaries for the proper management of the risks inherent in operations under the remote or mixed work model and considering the best international practices and, in general, any other risk that may affect the transparency and integrity of the securities market. The permanent adoption of these instructions went into effect after the end of the State of Health Emergency.

**Resolution 0826 (05 July 2022): replaces and repeals Resolution 684/2019.** The policies and guidelines of the functional plan for the monitoring of supervised entities or financial conglomerates are defined by applying the Integrated Supervision Framework (ISF)<sup>16</sup> in order to enhance coordination among the agencies that participate in the FSC's oversight activities. Specifically: 1) the responsibilities of the supervising and integrating cores<sup>17</sup> necessary for the achievement of the supervision objective are established and defined, and 2) The roles and responsibilities of the review panel, the monitoring panel and the oversight committee are defined as deliberative bodies for the achievement of oversight objectives.

**External Circular 019 (29 July 2022):** the BLC was modified in order to: 1) define the criteria that foreign central clearing houses (FCCH) must meet in order to be recognized as equivalent by the FSC SFC; 2) point out that FCCH recognized by the FSC for the trading of derivative financial instruments and structured products for hedging or investment purposes are equivalent to local CCH authorized by the FSC; and 3) clarify the scope of the duties of securities market infrastructure providers to com-

<sup>15</sup> "Circular Básica Contable y Financiera (CBCF)" in Spanish.

<sup>16</sup> "Marco Integral de Supervisión (MIS)" in Spanish.

<sup>17</sup> Supervisory cores are interdisciplinary groups of supervisors that define the risk profile of supervised entities and financial conglomerates (ES/CF). The integrator is part of the supervision core and is designed to guide the activities of the supervision core and achieve a comprehensive evaluation of the ES/CF.

ply, to the extent applicable, with PFMI<sup>18</sup>. The BAFC was also modified in order to: 1) establish the credit risk weight percentage for exposures where the counterparty is a FCCH recognized as equivalent by the FSC, and 2) include the concept of FCCH recognized by the FSC.

This seeks to ensure proper counterparty risk management and to continue the convergence towards the best international practices and standards defined by the Bank for International Settlements (BIS) and the International Organization of Securities Commissions (IOSCO).

**External Circular 020 (29 July 2022):** instructions were issued to define the content of the information prospectus for the authorization of specific purpose bond issues using the international standards of the *International Capital Market Association* (ICMA) as a reference for bond issues whose resources are exclusively earmarked for financing or refinancing projects that contribute to the achievement of environmental, social and/or orange economy objectives. The purpose of the above is to mobilize resources for projects that promote the achievement of sustainable development objectives and facilitate the transition to a low-carbon and resilient economy.

**External Circular 022 (22 August 2022):** instructions were issued to the insurance companies related to the occupational disease reserve in the BLC to indicate the methodology for calculating the minimum and maximum amounts for the occupational disease reserve as well as the applicable guidelines for the exchange of information on claims and affiliation. Part II, Title IV, Appendix 16 of the BLC entitled “Statistical information on the trend of the occupational disease accident rate” was also created and must be kept at the disposal of the FSC starting on 31 March 2024.

As of the issuance of this circular, insurance companies must adopt the necessary measures to exchange information in order to identify the benefits for occupational disease and the amounts subject to reimbursement in accordance with the provisions of the BLC. They must also submit a document by 31 July 2023 containing: 1) the calculation of the minimum and maximum accumulation amounts in the occupational disease reserve with information as of 31 December 2022; 2) a plan to achieve the minimum amount, detailing the actions to be taken and the time frame for implementation, if applicable, and 3) a quantification of the funds in excess of the maximum amount of accumulation in the occupational disease reserve and, if applicable, the entities may release said excess with the prior approval of the FSC.<sup>19</sup>

**External Circular 023 (30 September 2022)** As part of the policy of regulatory improvement and standardization, the FSC stipulated in the BLC for the SBF: 1) the instructions they must follow when granting loans to their employees with their own resources; 2) that the instructions on the criteria for classification of derivative financial instruments and structured products as complex products apply to standardized derivatives and structured products involving securities; and 3) duties of securities intermediaries and internal instruction book requirements. Moreover, instructions were updated for CIs regarding the conditions for opening deposits

<sup>18</sup> Principles for Financial Market Infrastructures established by BIS.

<sup>19</sup> In the event that after 31 July 2023 an insurance company has additional information on claims, members, and reimbursements actually paid and received and, based on said information, it becomes evident that the accumulated balance of the reserve as of the calculation date is lower than the minimum amount estimated with the new data, the company must inform the FSC and submit a plan to reach the minimum amount or an updated plan including the adjustments foreseen to reach said amount. This plan must be submitted within eight business days following the date on which the changes in the minimum amount were quantified.

in checking and savings accounts in connection with the collection and storage of biometric data as an electronic authentication factor.

**External Circular 025 (17 November 2022):** The entities supervised by the FSC that carry out financial intermediation are exposed to the Interest Rate Risk in The Banking Book (IRRBB).<sup>20,21</sup> Pursuant to the best practices of the Basel Committee on Banking Supervision, the FSC incorporates, through this circular, the instructions for supervised entities to adopt specific strategies, policies, and procedures for the proper management of the IRRBB within the Integrated Risk Management System (IRMS).<sup>22</sup> Specifically: 1) Chapter XXXI, Appendix 15 – IRMS of the BAFC (Standard Methodology for Determining the IRRBB) is created, 2) definitions related to the trading book are added to the definitions of Chapter XXXI, Part V - IRMS of the BAFC, 3) Form 419 (Mapping of Flows in Time Bands for IRRBB-Sensitive Instruments) and Form 420 (Interest Rate Shock Scenarios for the Economic Value of Equity and Net Interest Margin), etc., are created.

#### 4.2.3 Regulations issued by the Ministry of the Treasury and Public Credit

**Decrees 766 (16 May 2022), 957 (04 June 2022), and 1532 (04 August 2022):** Through these decrees, resources are added to three Findeter compensated rate<sup>23</sup> rediscount lines. According to each decree, the lines seek to: 1) finance infrastructure for sustainable development; 2) provide working capital, debt replacement, and investment resources to health service provider institutions and to health promoting entities (IPS and EPS in Spanish) to mitigate the effects of the pandemic caused by Covid-19, and 3) for financing programs and projects in the water and basic sanitation sector.

**Decree 1297 (25 July 2022):** Considering the fact that open finance<sup>24</sup> contributes to furthering competition, inclusion, and efficiency in the provision of services to the extent that it allows financial entities to better profile users and develop strategies and alliances with entities from other sectors, Decree 1297 amends Decree 2555/2010 in order to facilitate: 1) data processing by financial institutions; 2) the development of digital ecosystems and the marketing of technology and financial infrastructure by supervised financial entities; 3) the initiation of payments<sup>25</sup> as a new activity of the payment system, and 4) the creation of standards that promote interoperability in the open financial architecture.

**Decree 1387 (28 July 2022):** Decree 053/2022 authorized CIs to invest in the capital of national or international parent companies resulting from the integration of

20 “Riesgo de Tasa de Interés del Libro Bancario (RTLIB)” in Spanish.

21 Present or future risk to capital and earnings that may result from the impact of adverse interest rate movements on trading book positions.

22 “Sistema Integral de Administración de Riesgos (SIAR)” in Spanish.

23 The rediscount credits with a compensated rate are credits subsidized by the government that are offered at lower interest rates than the commercial ones to strengthen sectors of the economy or to support the solution of specific situations.

24 According to the FRU’s technical document “Open Financial Architecture in Colombia,” open banking or open finance refers to the practice in which banking establishments and other types of financial entities respectively open their systems so that consumer information can be shared in a standardized fashion with other financial entities or third parties with the client’s authorization, and in order for said entities to provide services to said clients.

25 Sending a payment order or transfer of funds by a third party to the entities issuing the means of payment with prior authorization from the originator and must be processed through a low value payment system administration entity.

stock exchanges. With this in mind and in order to continue contributing to the construction of a regulatory framework conducive to market integration, and to expand the possibility for other entities supervised by the FSC to participate in the capital of the parent company resulting from the integration, Decree 1387 amended Decree 2555/2010 to enable the possibility for Trust Companies and SBFs to be investors in said capital.

**Decree 1459 (03 August 2022):** Decree 2555/2010 was amended with respect to four issues:

- Leasing was expressly recognized as a business financing instrument and for micro-SMEs in particular, it was specified that financial leasing may be carried out on tangible and intangible assets in order to encourage the use of this financing instrument in the acquisition of intangible assets (such as software or copyrights), and the restriction to lease back<sup>26</sup> only on productive fixed assets was eliminated, thus allowing its use for non-productive fixed assets.
- Low-amount consumer credit as a credit formalization mechanism: the restriction that those accessing this product must not have had a credit product in the financial system other than another low-cost consumer credit was eliminated, and it was specified that the procedure of opening this type of credits will be simplified and will not require the physical presence of the financial consumer to open it.
- Requirements for the marketing of mass insurance through the use of networks and correspondents (*corresponsalía* in Spanish): Previously only certain classes of insurance could be marketed through the CI network. Now it is allowed as long as the policy (regardless of the business insurance line) complies with the established conditions. Likewise, the condition of remission of network use contracts is made equal to that of correspondent contracts, thus requiring that the content of the contract always be available to the SFC, but without the need to submit them before entering into operation.
- Fogafín deposit insurance payments and low value deposits: For a deposit to be considered of low amount, there are limits to the balance and the accumulated amount of debit transactions made in a calendar month. Decree 1459 established that the proceeds from the payment of the deposit insurance that Fogafín may make will not be taken into account in calculating the aforementioned limits.

**Decree 1458 (03 August 2022):** in July 2021, Act 2112 of 2021 was enacted.<sup>27</sup> This mandated the investment of a minimum of 3.0% of the funds of mandatory pension funds in private equity and/or private debt funds that invest in companies and productive projects in Colombia. To comply with this, Decree 1458/2022 adds a new chapter to Decree 2555/2010, Part 2, Book 6, Title 12, which establishes the conditions for compliance with the minimum investment requirement imposed by the aforementioned law (e.g., investment value and investment policies). The Pension Fund Managers (PFM) have up to nine months after the date of publication of this

<sup>26</sup> A leasing transaction in which the supplier of the asset and the lessee are the same person. Lease back allows the lessee to finance himself by selling an asset to a financial institution and then make use of the same asset sold in exchange for the payment of a royalty. At the end of the operation, the lessee may exercise the repurchase option agreed upon at the outset, return the asset, or renew the lease operation.

<sup>27</sup> The purpose of this law is to encourage entrepreneurship and the growth of the Colombian business community through the reinforcement of private equity funds.

Decree to make the modifications to their investment policies and procedures to comply with the stipulations.

**Decree 1531 (04 August 2022):** amended Decree 2555/2010 with respect to the technical reserves' regime for insurance companies in order to ensure a prudential framework in accordance with the different business insurance lines offered. Modifications were made, in particular, to the reserve for occurred but not reported claims, the reserve for reported claims, the reserve for unearned premiums, and the calculation of reserves for the earthquake insurance line. Insurance companies will be required to implement these changes eighteen months after the publication of the Decree.

#### 4.2.4 Regulations issued by the BVC (Colombian Stock Exchange)

**BVC Regulation 022 (Normativo BVC in Spanish) (04 May 2022):** the conditions or technical criteria were established for the program of liquidity builders on the participation securities issued by CIFs, private capital funds, autonomous equity funds, and those in securitization processes that are traded in the variable income market subject to this program. These conditions and technical criteria were in effect until 31 December 2022.

**BVC Regulation 027 (Normativo BVC in Spanish) (26 May 2022):** amendments were made to the BVC's Unified Circular to include clarifications on the stock exchange registration and disclosure requirements applicable to sustainable instruments in order to implement the regulatory updates made by the SFC for the issuance of these types of securities.

**MEC Regulation 020 (Normativo MEC in Spanish) (24 August 2022):** amendments were made to the MEC (Colombian Electronic Market) regulations to enable the clearing and settlement through the Central Clearing House (CCH)<sup>28</sup> of sell/buy-back operations carried out in third party positions and CIFs. For this amendment to go into effect, the conditions it must meet are that the required operational and functional developments are completed. This is estimated for the third quarter of 2023.

#### 4.2.5 Regulation issued by Fogafin

**External Circular 002/05 August 2022:** updates the methodological guide in order to carry out the process of calculating and settling the deposit insurance premium for the entities registered (banks, investment banks, and financial corporations). It also specifies the different accounts of the Unified Financial Information Catalog (UFIC)<sup>29</sup> for supervisory purposes, the formats and other information used in calculating the financial indicators of capital, assets, management, profitability, liquidity, and concentration that make up the rating of the entities registered, and in calculating the deposit insurance premium.

#### 4.2.6 Regulations issued by Banco de la República (BanRep)

**Bulletin 44, 45, and 46 (26 August 2022):** all foreign exchange market intermediaries FEMI were authorized to carry out financial derivative transactions stipulated in pesos with authorized foreign agents. This includes products such as non-delivery forwards on TES and swaps denominated in local interest rates such as the BBI.

<sup>28</sup> "Cámara de Riesgo Central de Contraparte (CRCC)" in Spanish.

<sup>29</sup> "Catálogo Único de Información Financiera (CUIF)" in Spanish.

Furthermore, the foreign agents who are authorized to carry out these operations with the FEMI were specified, the conditions for providing information and reports to BanRep on these operations were updated, and clarification was made that the CCHs may carry out clearing and settlement as counterparties to these transactions.

### 4.3 Other Regulatory Developments

In addition to the standards described above, other operational standards were issued during the period under analysis to improve the efficiency of regulatory processes and to align current standards with directives from higher levels. These changes are presented below.

#### 4.3.1 Regulations issued by the FSC

**External Circular 010 (02 May 2022):** Form 416 (applications for access to credit) was created to provide information on approvals and rejections of credit applications in the categories of commercial, consumer, microcredit, and housing loans from credit establishment and special official institutions. The first official transmission of this format was done as of 31 October 2022.

**External Circular 011 (20 May 2022):** instructions were given to the supervised entities to: 1) fully accept the recommendations of the Financial Action Task Force (FATF) as well as the legal definition of the final beneficiary provided for in the Tax Statute<sup>30</sup>; 2) for insurance companies: recognize the specific characteristics of money laundering and terrorist financing (MLFT) risk management in the course of their business activities; and 3) adjust the frequency of the fiscal auditor's and internal audit reports. The purpose of the foregoing is to obtain a re-qualification by the Latin American Financial Action Task Force (Gafilat in Spanish).

The supervised entities will have until 06 January 2023 to adjust their Money Laundering and Terrorist Financing Risk Management System (MLFRMS)<sup>31</sup>.

**External Circular 013 (10 June 2022):** in accordance with the functions and responsibilities established in Act 1328/2009,<sup>32</sup> instructions were given with respect to: 1) the provision of information to the public regarding the Financial Consumer Ombudsman (FCO)<sup>33</sup>; 2) the exercise of the legal functions assigned to the FCO, and 3) the criteria to be followed by supervised entities in the designation of the FCO, etc. This is to reinforce the FCO and actively contribute to the proper performance of its functions and the guarantee of fair treatment that supervised entities must give to financial consumers. These instructions shall go into effect as of 01 January 2023.

**External Circular 015 (17 June 2022):** instructions on disclosure of financial information were issued to amend the UFIC and enable *Banco de la República* to appropriately disclose the transfer of holdings in international organizations that do not constitute international reserves to the national government. The above is needed to comply with the provisions in Act 1955/2019, article 50 that regulated the aforementioned transfer and Resolution 216/2021 of the National General Accounting

30 "Estatuto Tributario" in Spanish.

31 "Sistema de Administración del Riesgo de Lavado de Activos y Financiación del Terrorismo (SARLAFT)" in Spanish.

32 This Act establishes among others, financial, insurance, and securities market regulations.

33 "Defensor del Consumidor Financiero, (DCF)" in Spanish.

Office by means of which a special account was incorporated into its General Catalog of Accounts in order to enable *Banco de la República* to disclose said transfer.

**External Circular 017 (01 July 2022):** instructions were issued in order to specify the information that supervised entities must report to the FSC; to this effect, the following proformas were modified: F.3000-72 (form 363) “Policies issued” and F.3000-73 (form 364) “Claims paid”, in order to require and incorporate the different identification documents of Venezuelan migrants, pursuant to the provisions issued by the national government on this matter; 2) F.3000-32 (form 290) «Technical and statistical results» and F.1000-145 (format 416) «Applications for access to credit» in order to allow the monitored entities to properly submit the information requested therein, and 3) F.1000-145 (format 416) «Applications for access to credit» in order to modify the information transmission system.

**External Circular 018 (08 July 2022):** in order to have more information to monitor the effectiveness of the MLTFRMS of the entities monitored by the FSC, Form 417 was created in Appendix 1 of the BAFC so as to collect the average number and frequency for managing alerted, unusual, and suspicious transactions by supervised entities.

**External Circular 024 (28 October 2022):** form 418 “Participation and income” was created in order to ascertain the trends and development of the entities involved in the payment ecosystems in which various players and activities that contribute to financial inclusion converge as well as the efficiency and formality of the economy. The first official transmission will be made with information as of 31 January 2023.

#### 4.3.2 Regulations issued by the BVC (Colombian Stock Exchange)

**BVC Regulations 029 and 030 (Normativo BVC in Spanish) (14 June 2022):** the General Regulations and Unified Circular of the BVC were amended to include the repurchase of shares issued by closed CIFs, private equity funds, autonomous equity, and/or securitization processes through the Stock Exchange as new transactions.

**BVC Regulations 036 (Normativo BVC in Spanish) (09 August 2022):** modifications were made to the BVC Unified Circular to clarify the requirements that apply to securities with variations of a financial and/or structural nature<sup>34</sup> related in particular to bonds, commercial paper, and debt securities issued within the framework of securitization processes linked to sustainable performance and syndicated bond issues.<sup>35</sup>

**Regulations for Derivatives 014 and 015 (18 August 2022):** the Unified Derivatives Market Circular was amended to include the new exchange rate futures micro contract<sup>36</sup> and Appendix 13 on the addition of the TRX exchange rate futures contract. Among other things, the micro-contract will have a face value of USD 1,000 and will be negotiated by price. The settlement of operations on this contract is financial, i.e., it will be done in Colombian pesos on the maturity date of the respective contract, and the maximum number of contracts for the entry of an order on the exchange rate futures micro-contract will be 1,000 contracts.

34 These securities include those that contain the possibility of debt swap, prepayment of the issue, payment of additional returns, partial or total debt repayment, replacement of securities, early redemption of the issue, payment to foundations, etc.

35 Syndicated bonds are bonds issued by several agents that establish the basic conditions of the issue by means of an agreement entered into among themselves.

36 “Micro-contrato de futuros de tasa de cambio” in Spanish.

As soon as the Exchange Rate Futures Micro-contract is available for trade, the BVC will publish by means of a newsletter the date on which mini contracts for the exchange rate futures that do not have open positions will no longer be available for trade.<sup>37</sup>

**Regulation for Derivatives 017 (26 October 2022):** the Unified Circular of the Derivatives Market (*Circular Única del Mercado de Derivados*, in Spanish), Appendix 12, was amended in order to: 1) eliminate the 70% weekly screen display requirement provided that the participant meets the required minimum of 70% permanent screen display during the trading month; 2) modify the quotation contract from a mini-contract to an exchange rate futures micro-contract, and 3) add the quotation of the second nearest maturity from the week prior to the contract maturity.

#### 4.3.3 Regulations issued by *Banco de la República (BanRep)*

**Bulletin 31 and 32 (17 May 2022):** the External Regulatory Circular (ERC) DOAM-316 and ERC DOAM-595 were amended to update the instructions on the qualifications that must be met by the liquidity providing agents of the CCHS and of the foreign exchange clearing and settlement systems.

**Bulletin 35 (02 June 2022):** since 13 June 2022, the twelve-month maturity BBI has been calculated (previously it was calculated only for overnight, one-, three-, and six-month maturities). In view of this, the ERC DOAM-305 was amended to include the new 12-month deadline in the bid submission format used in case of contingency in accordance with the stipulations of BBI Regulation, article 2.

**External Operational and Service Circular (EOSC)<sup>38</sup> DCIP-78 (30 June 2022):** the EOSC DCIP-78 was modified to specify that with the implementation of the new Payment Engine, the FEMI and authorized agents (AA)<sup>39</sup> are responsible for recording their permanent instructions (PI),<sup>40</sup> activating, and deactivating them. This work was previously done by BanRep.

**Bulletin 37 (30 June 2022):** ERC DOAM-143 was modified in order to:

1. establish that BanRep may make a call for the FX swap window on the same day as the transaction if they consider it necessary. Previously, they were only called on the preceding business day.
2. Update the conditions for the validity of permanent instructions (PI)<sup>41</sup> to participate in foreign exchange intervention transactions. The entity was made specifically responsible for ensuring that the PI information is up to date and active to comply with the intervention instruments. This is in connection with the change of EOSCDCIP-78.

<sup>37</sup> Having no open positions means that there are no purchases or sales in that contract.

<sup>38</sup> “Circular Externa Operativa y de Servicios (CEOS)” in Spanish.

<sup>39</sup> The authorized agents are non-FEMI entities that are authorized to carry out foreign exchange operations with BanRep.

<sup>40</sup> The PIs correspond to payment instructions to a USD correspondent abroad. The FEMI and AA must register their foreign correspondent, USD account number and routing codes, etc., in these PIs in order to be able to make the corresponding payments.

<sup>41</sup> Agents authorized as counterparties to BanRep intervention operations must maintain permanent instructions in accordance with what is stipulated in ERC DOAM-143. Each TIN shall keep a single standing instruction active in the payment engine on the date the transaction is completed. This is one that is associated with a COP account in the Deposit Accounts System (CUD in Spanish).

**Bulletin 40 (21 July 2022):** the ERC DCIP-83 was amended to include specifications of the foreign exchange statement when the payment on imported merchandise is done with debit cards or fund transfers. It indicates that when the payment of imports of merchandise is made with credit or debit cards issued in Colombia and charged in Colombian legal currency, the record of the use of the card constitutes the exchange declaration. If the payment is made with credit cards issued abroad or in Colombia charged in foreign currency, the record of card use constitutes the exchange declaration. If payment is made by transfer of funds in legal currency, the provisions for the payment of imports of merchandise in legal currency shall be followed (literal a, of numeral 3.1.1. of the same circular letter).

Likewise, a new paragraph was added to Chapter 10 of the Circular to indicate the procedure for refunds in the payment of export or import of services through payment service providers. Specifically, if all or part of what has been received or paid is to be refunded, the exporter, importer or payment service provider must provide the minimum data information of the exchange transactions for services, transfers, and other concepts (exchange declaration) to register the refund.

**EOSC DFV-56 (01 August 2022):** the EOSC DFV-56 (Central Securities Depository: CSD)<sup>42</sup> was amended to incorporate the interposition of a CCH in the clearing and settlement of TTV (temporary transfer of securities) transactions between issuers of securities and direct depositors.<sup>43</sup>

**EOSC DSP-157 (05 August 2022):** the EOSC DSP-157 (deposit accounts) was amended to: 1) centralize the procedure for linking to deposit accounts in the document called “Manual para la vinculación a los sistemas de pago administrados por el Banco de la República), and 2) describe the procedure for transferring funds for interbank loans in order to meet cash provisions in disaster events in which *Banco de la República* has activated its third technological node at the branch in Barranquilla.

**EOSC DSP-158 (05 August 2022):** EOSC DSP-158 (CUD deposit account systems) was replaced in its entirety in order to: 1) update the definitions of “Payment System,” “High Value Payment System,” and “Suced”;<sup>44</sup> 2) specify the security aspects provided by the CUD system with respect to access, information, and traceability of operations; 3) describe the functionalities offered by the CUD system for dedicated channel and Internet access, and 4) include the procedure for processing the transfer in CUD for the reversal of interbank credit during disaster events declared by *Banco de la República*.

**EOSC DFV-56 (31 October 2022):** EOSC DFV - 56/16 December 2020 and 01 August 2022 was replaced in its entirety. Adjustments were made to include the amendments to the CSD regulations authorized by the FSC and managed by BanRep through Resolutions 1279/21 September and 1434/14 October 2022. The changes are related to the implementation of the purpose principle under the terms of the Unified Regulatory Decree 2555/2010 as amended by Decree 151/10 February 2021.

42 “Depósito Central de Valores (DCV)” in Spanish.

43 This functionality will allow the issuer of securities (originator) to transfer ownership of securities to the direct depositor (receiver) with the agreement to retransfer them on the same date or at a later date. The receiver shall place at the disposal of the originator a sum of money or securities equal to or greater than the amount of the securities involved in the transaction.

44 Unified digital certification system used by Banrep. “Sistema unificado de certificación digital (SUCED)” in Spanish.

## Box 3: A Description of the Foreign Exchange Risk of Real Sector Firms in Colombia in 2021

Álvaro David Carmona Duarte  
Adrián Martínez Osorio  
Jorge Niño Cuervo\*

### Introduction

The existence of an exchange rate mismatch can increase the economy's external vulnerability through the investment, growth, liquidity, and capital adequacy of the firms subject to this phenomenon. In Box 1 of the Financial Stability Report for the first half of 2022, an overview of the situation of negative currency mismatches of Colombian companies was presented. This is the second part of the exercise, which estimates the level of risk faced by Colombian firms based on their balance sheets. The results suggest that the majority of the firms evaluated are classified as medium risk (83%) and have accumulated the highest total mismatch value (64%). A small proportion of companies (5.0%) belong to the group with the highest exchange rate risk, whose total mismatch represents 18% of the total amount of negative mismatch. The companies classified in these two groups belong to economic sectors that produce tradable goods and have a supply of products for export (mining and quarrying, manufacturing, trade) as well as to regulated sectors and those with a market share limited to a few companies (electricity and gas supply and communication).

Thus, this paper first presents the data sources and the methodology used to calculate the risk indicators for companies with negative exchange rate mismatches and availability of accounting information. It then describes the results obtained for the sample of companies and ends with a general conclusion.

### Methodology for calculating the mismatch

Box 1 of the Financial Stability Report for the first half of 2022 defines the methodology and data sources for the nominal exchange rate mismatch. The exercise in this box is based on those calculations. Based on the results of the firms' nominal dollar mismatch and their accounting information, three risk indicators have been calculated which take discrete values from 1 to 3. Those indicators are then synthesized into an overall exchange rate mismatch risk score that classifies the firms into three risk levels. The source of information for balance sheets is the Superintendency of Corporate Affairs. The source of information for foreign trade is the National Bureau of Statistics (DANE) and the National Tax and Customs Agency (DIAN) while the source for foreign equity is *Banco de la República*. The data on flows correspond to the total for 2021 and those on the position as of December 31 of that year.

The dollar value of a company's mismatch does not allow us to interpret the true magnitude of the phenomenon. Therefore, we need to express the mismatch as a proportion of the size of the firm to incorporate the ability to classify and compare the results between different companies. Consequently, three indicators are calculated in this analysis, which means that three levels of risk are determined based on the relative size of the mismatch: low (3), medium (2) and high (1) (Table B3.1). The first indicator corresponds to the level of negative mismatch<sup>1</sup> in dollars as a share of the firm's total assets (Mismatch/Total Assets). This reflects a scale measure of the firm's mismatch level.

\* The authors are members of the Technical and Economic Information Department of *Banco de la República*.

1 The foreign exchange mismatch is defined as the difference between foreign currency (f/c) assets and f/c liabilities. If f/c liabilities are greater than f/c assets, the FX mismatch is defined as "negative" due to the sign in the mathematical operation.

The second indicator is the dollar value of the trade balance (*exports - imports*) as a percentage of the company's operating income (*trade balance/operating income*). The company's trade balance shows how many net dollars it can generate from its economic activity and potentially use to cover its foreign currency obligations. The higher the dollarization of income, the greater the hedge the company has against foreign exchange risk. Conversely, a net importer faces greater risks from these events, and the higher the ratio of net dollar outflows to total operating income, the greater these risks will be.

The third indicator corresponds to the share of foreign capital held by the firm in its total equity. This is based on the premise that an enterprise with more foreign capital share may be better protected against the risk of exchange rate depreciation because its foreign parent company may be able to absorb part of the shock on a consolidated basis through international trade in foreign currencies (see Table B3.1).

Table B3.1<sup>a/</sup>

Risk Group	(a) Negative mismatch/Total assets	(b) Trade balance/ Operating income	(c) Share of Foreign Capital
1	$x \geq 60\%$	$x \leq -50\%$	$x \leq 20\%$
2	$60\% \geq x \geq 20\%$	$0\% \geq x \geq -50\%$	$60\% \geq x \geq 20\%$
3	$x \leq 20\%$	$x \geq 0\%$	$x \geq 60\%$

a/ Trade balance = exports - imports  
Source: Prepared by authors

Once the three indicators have been calculated and the individual scores (1 to 3) have been determined for each, a simple average of the scores is calculated to obtain the overall indicator and its corresponding risk level. If the calculated average is greater than 2.5, the company is considered low risk or risk group 3; if this value is between 1.5 and 2.5, the company is considered medium risk or risk group 2; finally, if the value is less than or equal to 1.5, the company is considered high risk or risk group 1 (see Table B3.2).

### Rating results for negative foreign exchange mismatch risk

#### Real private sector companies in Colombia

This section presents the implications of the risk indicators calculated on the relevance of the negative exchange rate mismatch of private companies in Colombia. This analysis does not include companies in the financial sector, neither depository (banks) nor non-depository (other financial companies). It also excludes some companies that have financial leasing liabilities because they are secured by a real asset (capital asset) of the same value. The inclusion of the latter could distort the foreign exchange risk analysis.

It is estimated that in 2021 8,231 Colombian companies had negative exchange rate mismatches<sup>2</sup> of USD 29.804 billion (USD b). Of the total number of companies, balance sheet information is available for 2,631 (32%), and these account for 62% (USD 18.603 b) of the total negative exchange rate mismatch. These percentages are similar to those observed in recent years (see Graph B3.1). The indicators presented here are calculated with the information for this sample of companies and classified according to their level of risk.

The results of the components (see Graph B3.2) indicate that the main risk factors for the companies are the ratio of mismatch to total assets and the firm's foreign capital share. Although most of the firms are classified in the lowest risk level on the basis of the first indicator, the sum value of their mismatches is significantly lower in relation to the companies with a higher risk level on the basis of this indicator. With respect to the share of foreign capital, on the other hand, most of the companies are classified in the highest risk level and their level of mismatch is slightly higher than that of the other two risk groups (levels 2 and

<sup>2</sup> The values vary with respect to the results presented in the first half of the year because of the updating of the information sources.

Table B3.2  
Main Results for Fiscal Year

Risk Group	Total indicator
1	$y \leq 1,5$
2	$1,5 < y \leq 2,5$
3	$y > 2,5$

$$y = \frac{a + b + c}{3}$$

Source: Prepared by authors

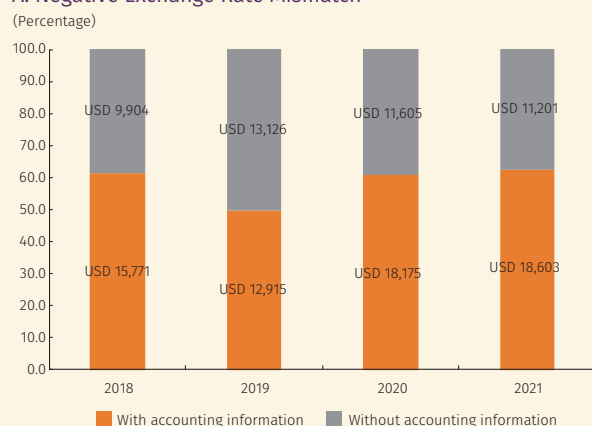
3), where a proportionally smaller number of companies are classified. Moreover, the commercial balance indicator shows that 40% of the number of companies and the value of the mismatch are classified in the lowest risk level. This suggests that some companies, although exposed to higher risk in terms of the first two indicators, may be hedged by their low exposure to foreign exchange fluctuations.

The three components are used to construct the overall risk indicator, which averages the resulting ratings. Level 1 is interpreted as the highest risk, while level 3 is the lowest. The results suggest (see Graph B3.2) that, both in terms of the level of mismatch and the number of companies, the main classification obtained for the companies analyzed is the medium level. Companies with high exposure, which could end up having liquidity or capital adequacy problems that could jeopardize their stability in the event of exchange rate depreciations, represent a low percentage both in terms of the number of companies and the amount of mismatches, a ratio that is very similar to the level of risk defined as low.

Since levels 1 and 2 could be at risk in situations of economic volatility, these companies are classified by economic sector for further analysis. The top three sectors, accounting for 61% of the companies and 52% of the mismatch value, are the production of tradable goods and the supply of goods for export (see Graph B3.3). This suggests that these firms have some degree of hedging against depreciation events due to their ability to earn income in dollars. This is particularly evident in mining and quarrying, where a large proportion of output is destined for export and is concentrated in a limited number of companies.

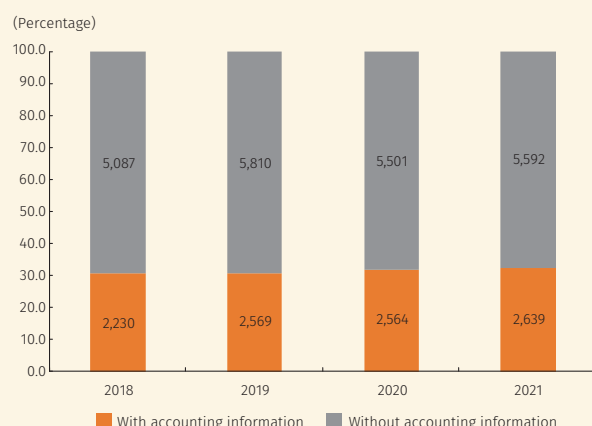
Graph B3.1  
Negative Exchange Rate Mismatch: accounting information

A. Negative Exchange Rate Mismatch



Note: Figures in millions.

B. Number of Companies with Negative Exchange Rate Mismatches



Source: Prepared by authors Based on the sources described in the methodology.

Public sector Colombian companies

In 2021, the negative mismatch of public sector companies, a total sixteen corporations, amounted to USD 21.104 billion, of which 98% is accounted for by three conglomerates belonging to the mining-energy and electricity, gas, and water supply sectors. Those companies are actively involved in the export of goods and therefore have natural hedges. In general, these companies have significant direct investments abroad, especially in Central and South America, and have a high market share in their respective markets. This allows them to pass on the higher costs associated with a depreciation of the peso to their consumers (see Graph B3.3 in the *Financial Stability Report* for the first half of 2022).

With respect to 2020, the increase in the mismatch is 28% (USD 4.443 b), mostly due to the debt incurred by these companies to finance investments in the electricity sector.

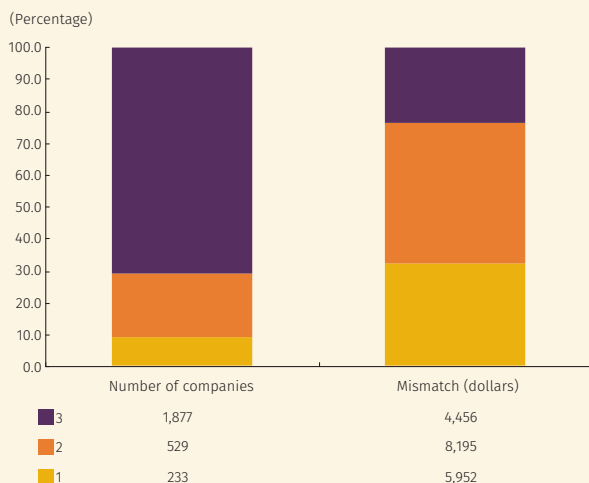
Scaling the mismatch to total assets in 2021, it reaches 23%, 4 pp more than in the previous year (Graph B3.4).

As for the risk indicator, the sixteen public companies analyzed showed a uniform performance and were in the lowest risk group.<sup>3</sup> The same can be said when the information is grouped by business conglomerates. The low level of risk is due to the fact that they do not have foreign trade deficits or have a mismatch relative to assets of less than 20%.

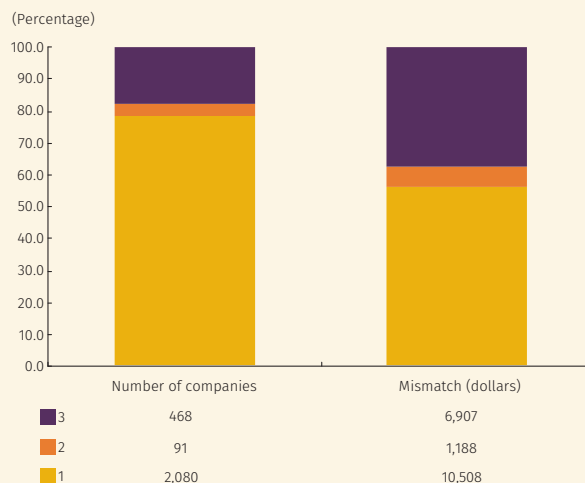
3 The results are not reported in this section, which focuses on the private sector.

Graph B3.2

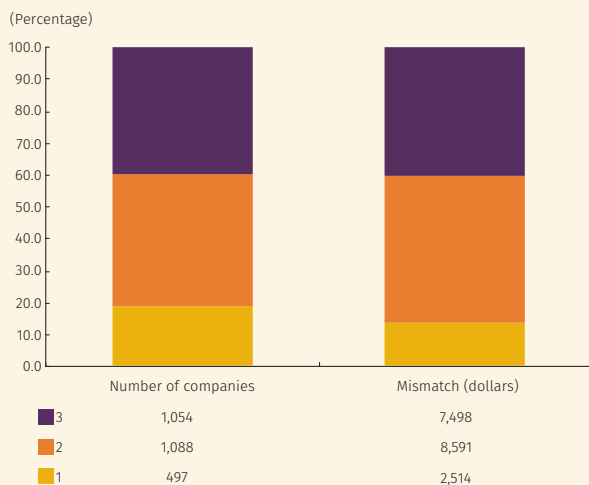
A. Mismatch/Total Assets



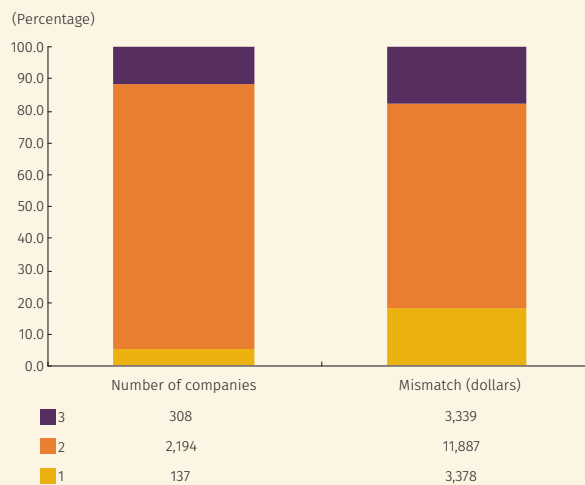
C. Share of Foreign Capital



B. Balance of Trade/Operating Income

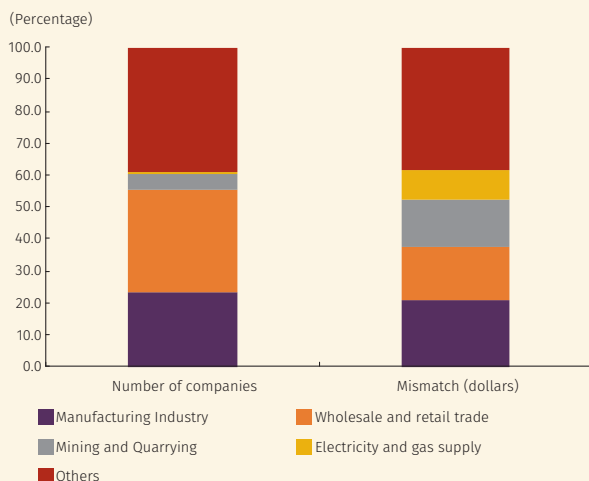


D. Total indicator



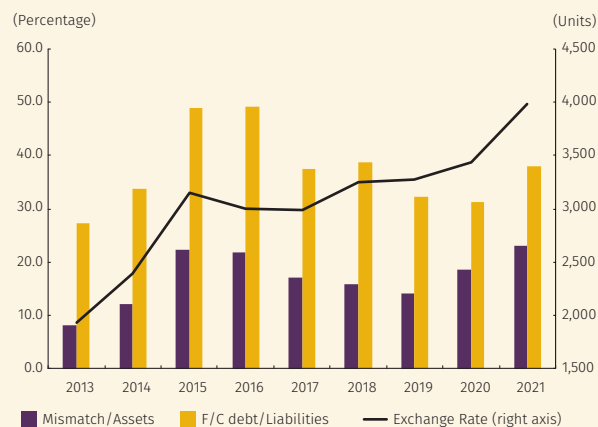
Source: Prepared by authors Based on the sources and calculations described in the methodology.

Graph B3.3  
Classification by Economic Sector Companies in Risk Groups 1 and 2



Source: Prepared by authors Based on the sources described in the methodology.

Graph B3.4



Source: Prepared by authors Based on the sources described in the methodology.

**Conclusion:**

The results indicate that the majority of the evaluated firms are classified as medium risk and accumulate the highest total mismatch value. A small portion falls into the group with the highest foreign exchange risk, with a total mismatch that represents 18% of the total amount of negative mismatch. These companies (both groups) belong to economic sectors that produce tradable goods and have a supply of export products (mining and quarrying, manufacturing, trade) as well as to regulated sectors with a market share concentrated in a limited number of companies (electricity and gas supply, and communications). Given the current exchange rate situation, some companies may have suffered a deterioration in these indicators as their vulnerability has increased. Finally, the companies that account for the public sector mismatch are in the lowest risk group, as they have natural hedges, high participation in their respective markets, and low levels of mismatch relative to assets.