



Financial Stability Report – First Semester 2022

June 15, 2022



Introduction

- Mexico's financial system **maintains a solid and resilient position**. In particular, commercial banks have capital and liquidity levels that amply exceed regulatory minima.
- However, under the current environment, the system **faces significant challenges**:
 - ✓ The **remaining effects** of the COVID-19 pandemic.
 - ✓ New challenges arising from the **geopolitical conflict between Russia and Ukraine**.
 - ✓ Persistent **global inflationary pressures**, which have led to the withdrawal of monetary stimulus in several economies.
 - ✓ In general, the **tightening of financial conditions**.

The Financial Stability Report describes:

- ✓ The **current state of the financial system**.
- ✓ The **evolution of the most important risks and vulnerabilities**.
- ✓ The **results of credit, liquidity and climate-related physical risk stress tests**.

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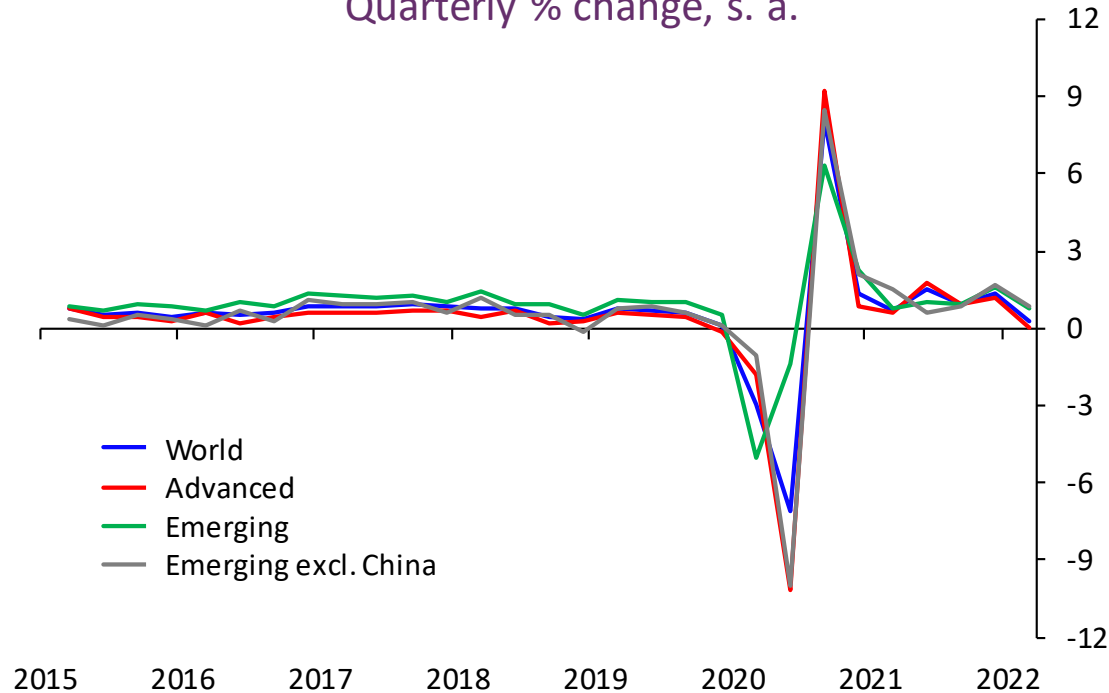
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1 Global economic growth

During the first half of 2022, world economic activity registered a sharper-than-expected deceleration as a result of persistent bottlenecks in global supply chains, a rise in the number of new COVID-19 cases in some countries, and the escalation of geopolitical tensions. Growth forecasts for 2022 have thus been revised downwards.

GDP Growth ^{1/}
Quarterly % change, s. a.



Data as of Q1 2022.

Source: Banco de México with data from Haver Analytics and J.P. Morgan
s. a./ Seasonally adjusted figures.

1/ The sample of countries used for the calculation represents 79% of world GDP measured by the purchasing power parity. Forecasts are used for some countries in the sample in the first quarter.

Global GDP growth forecasts
%

	<i>World Economic Outlook</i> April 2022		Change from January 2022	
	2022	2023	2022	2023
World	3.6	3.6	-0.8	-0.2
Advanced	3.3	2.4	-0.6	-0.2
United States	3.7	2.3	-0.3	-0.3
Euro area	2.8	2.3	-1.1	-0.2
Japan	2.4	2.3	-0.9	0.5
United Kingdom	3.7	1.2	-1.0	-1.1
Emerging	3.8	4.4	-1.0	-0.3
Excl. China	3.4	4.1	-1.4	-0.4
Mexico	2.0	2.5	-0.8	-0.2
China	4.4	5.1	-0.4	-0.1
India	8.2	6.9	-0.8	-0.2
Brazil	0.8	1.4	0.5	-0.2

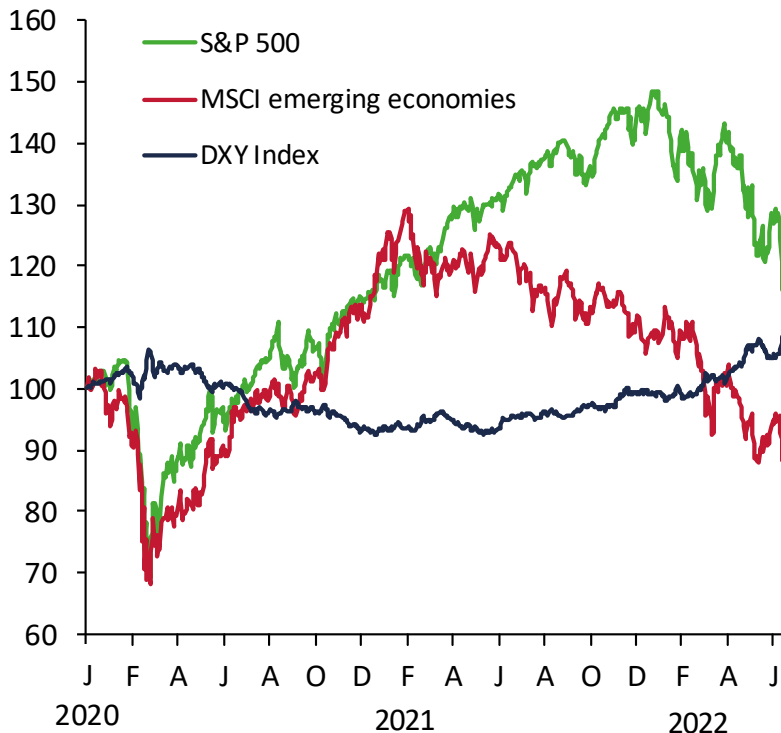
Data as of April 2022.

Source: IMF, World Economic Outlook, January and April 2022.

2 International financial markets

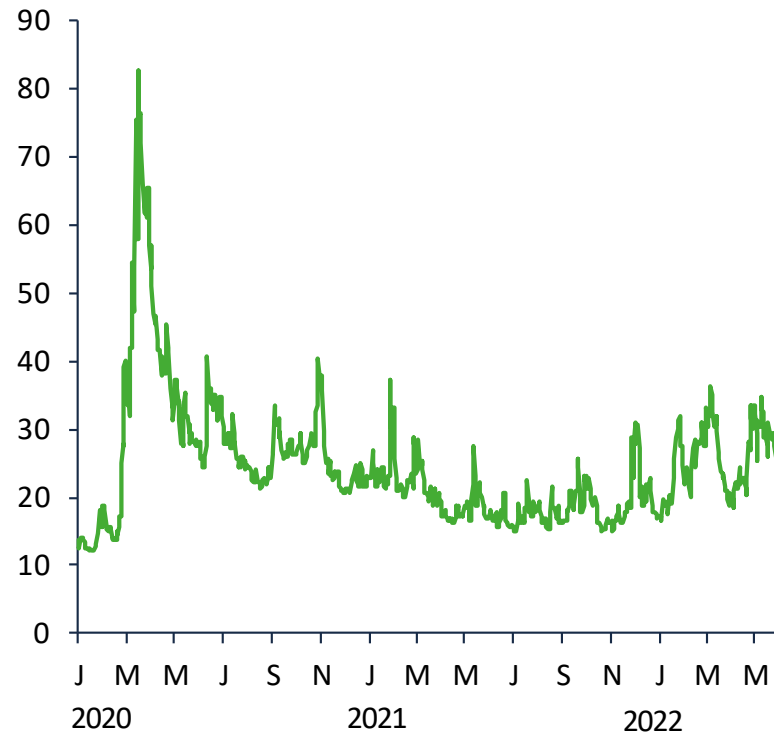
As of H1-2022, international financial markets exhibited volatility and episodes of risk aversion, as a result of lower growth expectations, greater uncertainty regarding the evolution of global financial conditions, and the escalation of geopolitical tensions.

Stock market and FX indices' performance
Index (January 2020 = 100)



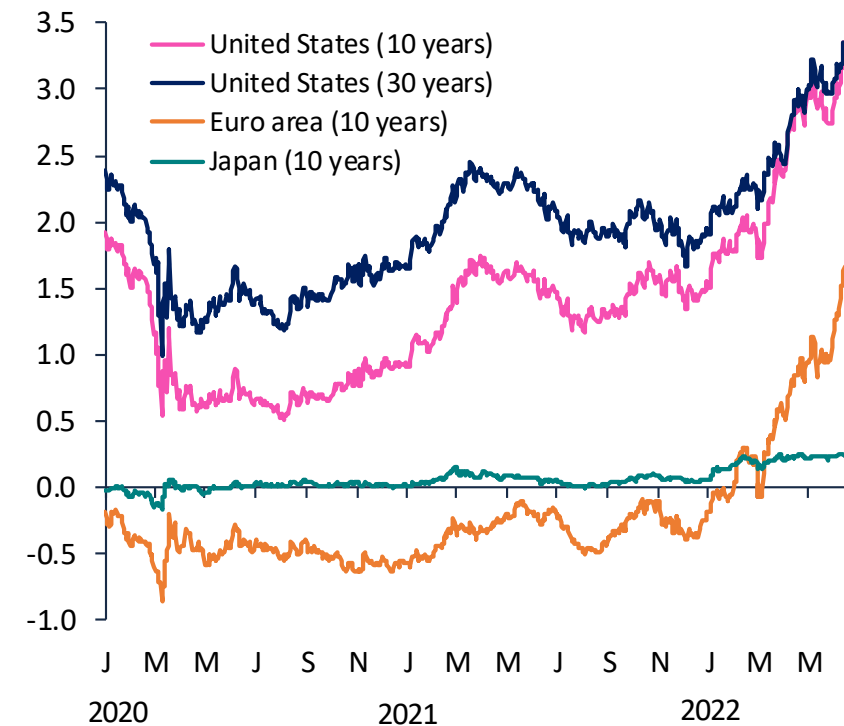
Data as of June 2022.
Source: Banco de México with data from Bloomberg.

The VIX Index ^{1/}
%



Data as of June 2022.
Source: Bloomberg.
1/ The VIX index is a weighted indicator that measures implied volatility in the options market for S&P 500.

Government bonds' interest rates
%

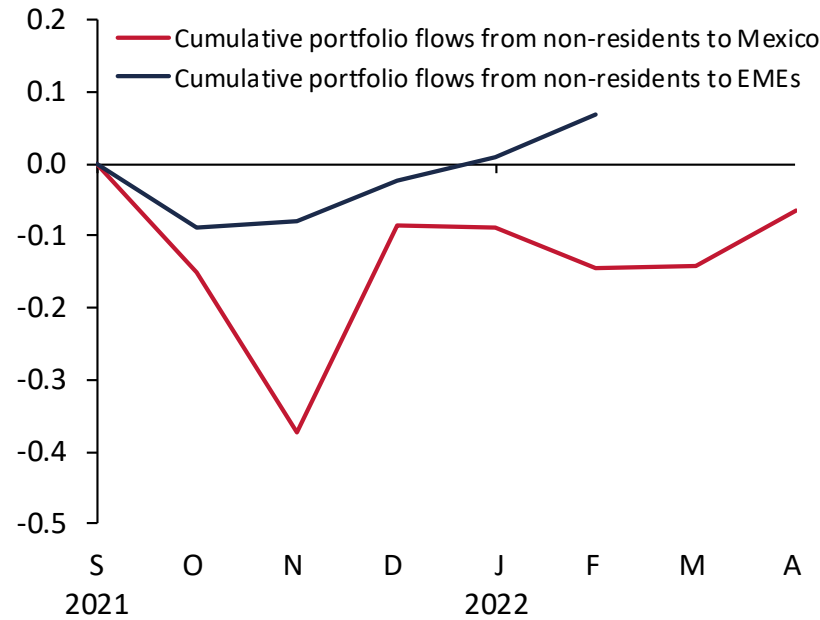


Data as of June 2022.
Source: Bloomberg.

3 Financial markets: emerging market economies

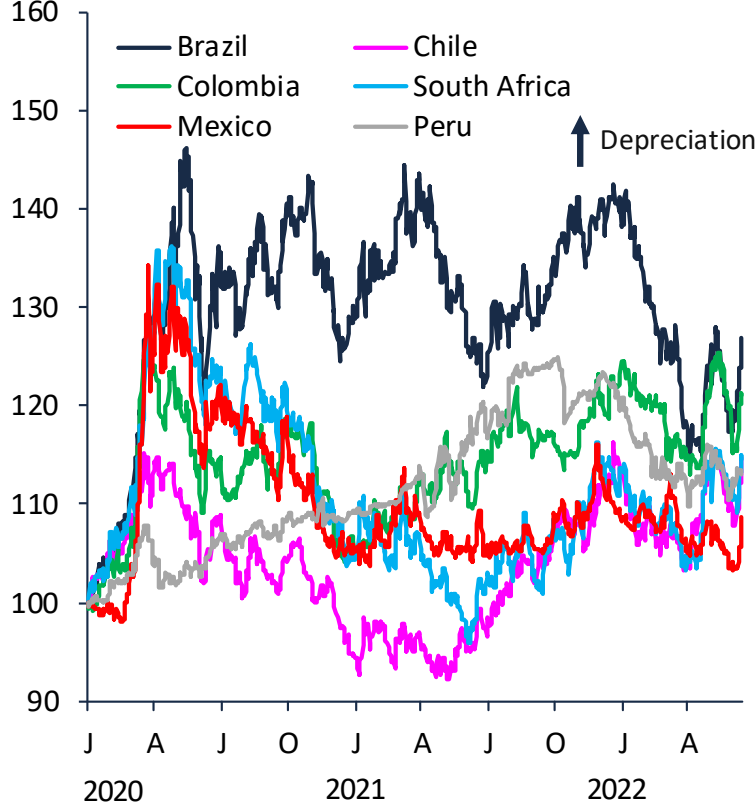
In the current context, given the uncertainty over the future evolution of financial markets and monetary policy stances, the possibility of additional episodes that may cause a further tightening of financial conditions cannot be ruled out. In such a situation, capital flows to emerging market economies could be affected, and firms' financing costs could increase.

Cumulative portfolio flows from non-residents to Mexico and EMEs ^{1/}
% of GDP in 2019



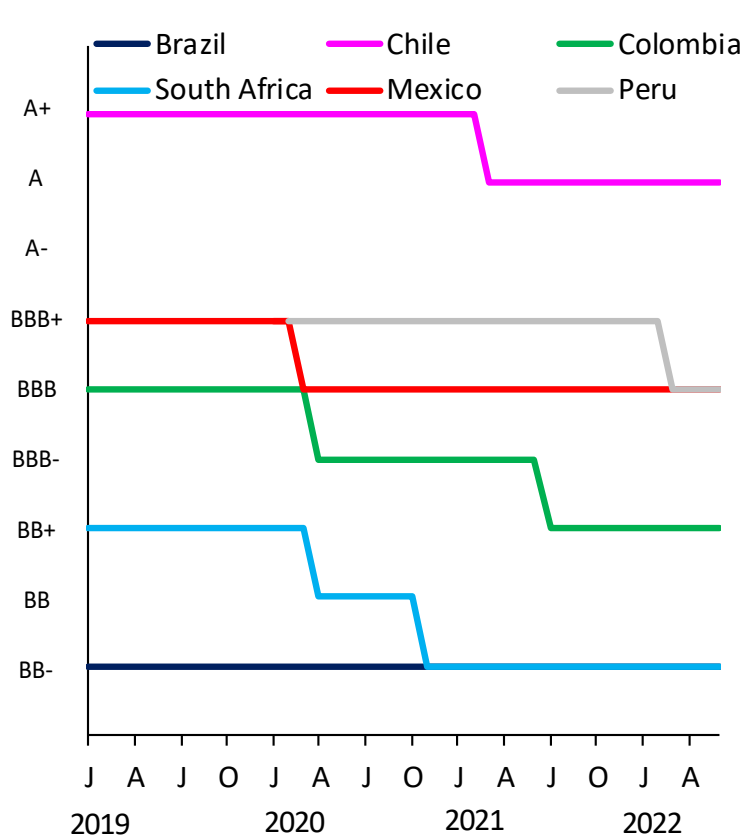
Data as of April 2022.
Source: Institute of International Finance (IIF).
^{1/} The measurement of portfolio flows of emerging economies includes those countries considered in the section "Monetary policy and international financial markets" of the Quarterly Report January-March 2021, for which information was available in the IIF. This measure was obtained by adding the flows of these economies and dividing it by the sum of their GDP in 2019. The flows were cumulative since September 2021. The information for the rest of the EMEs is reported until February 2022 since it is the latest information updated available that allows a sufficiently large number of these countries to be obtained.

Nominal exchange rates against the USD
Index 01-ene-2020 = 100



Data as of June 2022.
Source: Bloomberg.

Credit ratings of emerging market economies ^{1/}

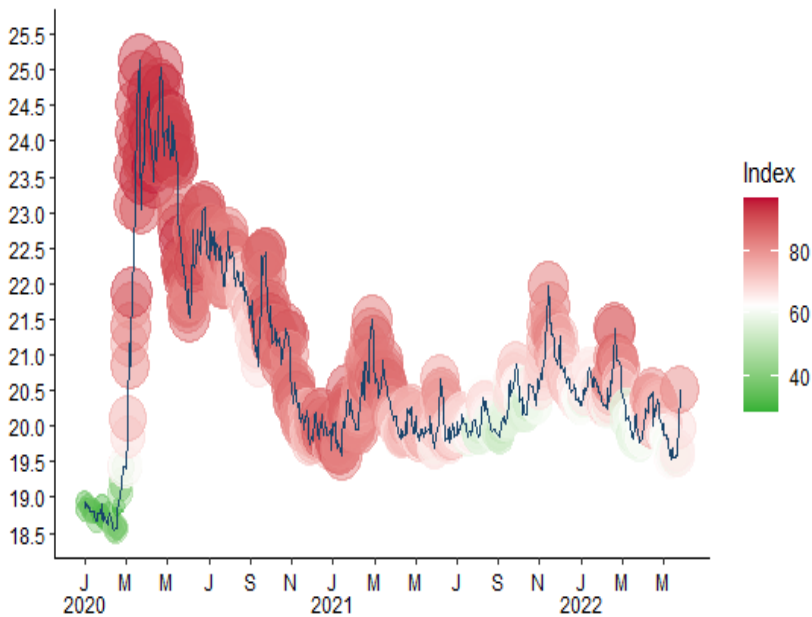


Data as of June 2022.
Source: S&P, Fitch, and Moody's.
^{1/} Includes the median of the long-term rating in foreign currency of 3 credit rating agencies (S&P, Fitch, and Moody's)

4 Mexican financial markets

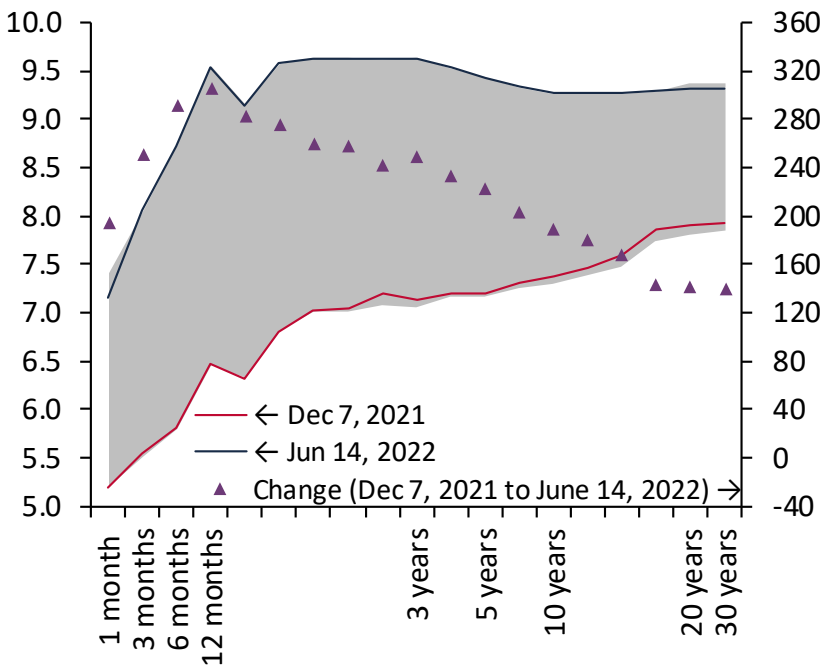
During H1-2022, domestic financial markets displayed a mixed performance overall, with some volatility. The Mexican peso showed positive results and the foreign exchange market operated with resilience. The yield curve of government bonds exhibited generalized increases across all terms, while Mexican stocks had mixed movements.

Trading conditions of the Mexican peso ^{1/}
MXN/USD; Index



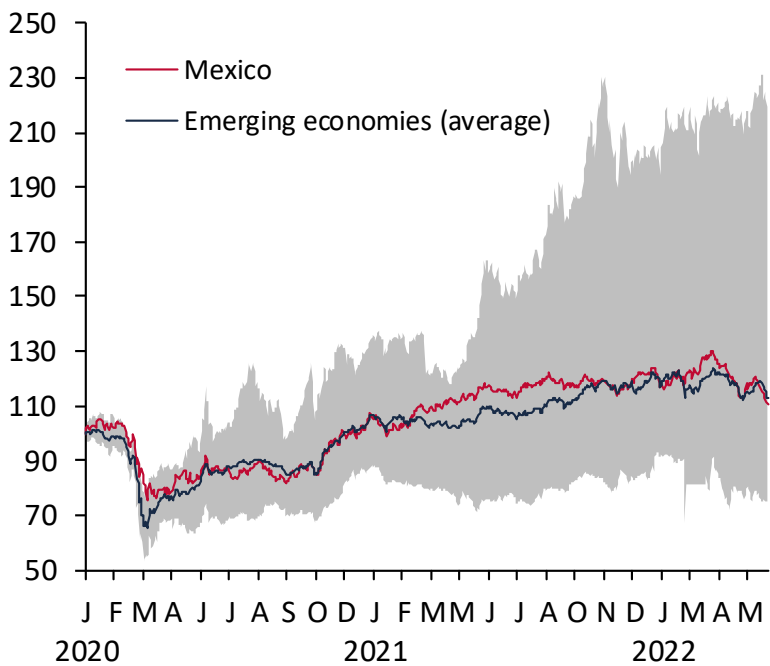
Data as of June 2022.
Source: Banco de México with data from Bloomberg and Refinitiv.
1/ The index is estimated as the average of the percentiles calculated since 2018 of the implicit volatility and skewness at one month, and of the observed volume and spread, where the red (green) color indicates a greater (less) deterioration of trading conditions in the exchange market

Bonds M nominal yield curve ^{1/}
Percent, basis points



Data as of June 2022.
Source: Banco de México with PIP data.
1/ The gray area refers to the range of daily yield data since December 7, 2022.

Cumulative performance of stock market
indexes in emerging economies ^{1/}
Index (Jan 02 2019 = 100)

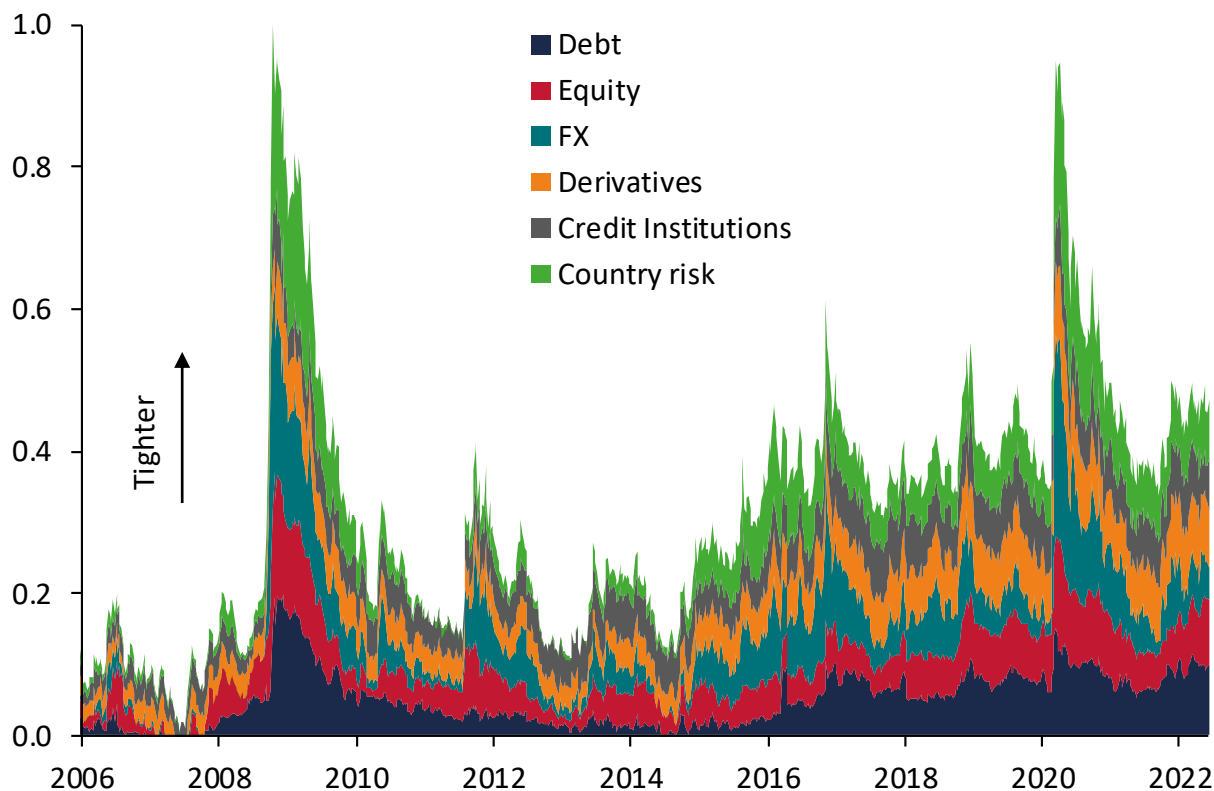


Data as of June 2022.
Source: Banco de México with data from Bloomberg.
1/ The emerging market economies included in the sample are: Argentina, Peru, Colombia, Turkey, the Philippines, Poland, Hungary, Indonesia, South Africa, Russia, Brazil, Colombia, Malaysia, and India.

4 Mexican financial markets

During H1-2022, the Mexican Financial Market Stress Index increased slightly and is above its pre-pandemic levels, although below its average in 2020. The Financial Conditions Index tightened slightly since December 2021.

Mexican Financial Market Stress Index ^{1/}
Stress level 2006-2022

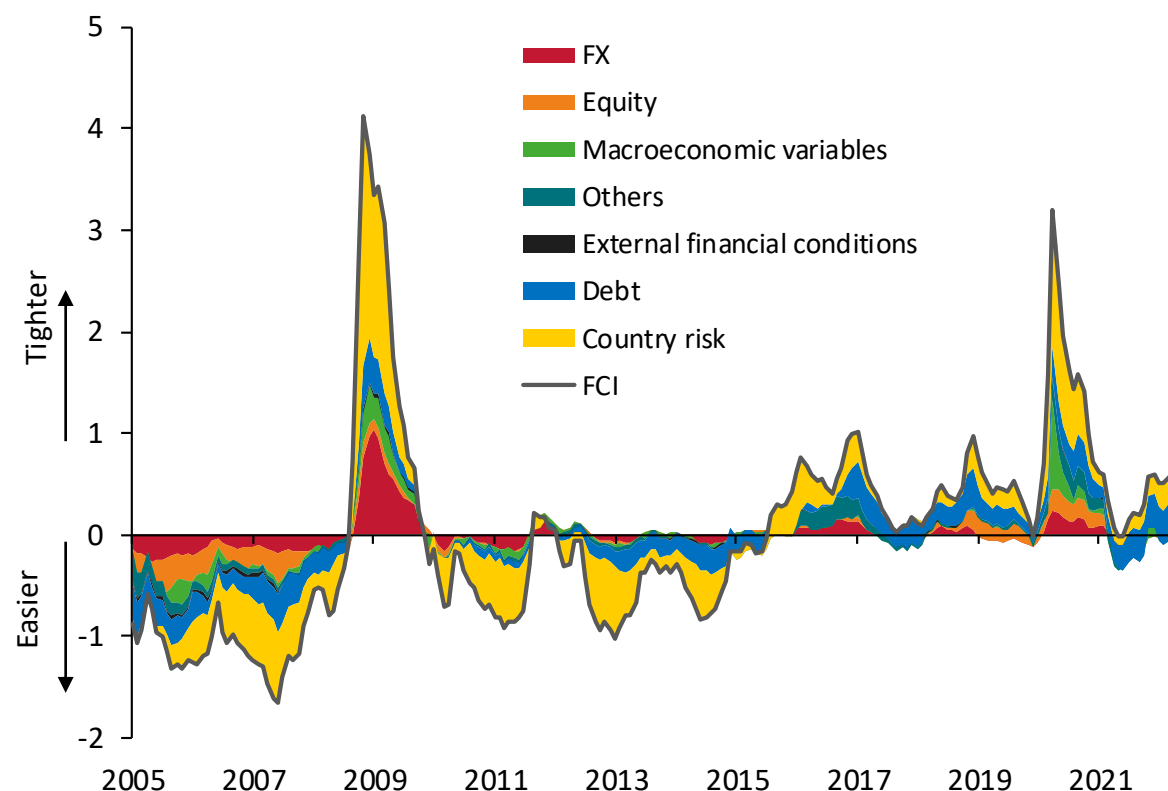


Data as of June 10, 2022.

Source: Banco de México.

1/ The index was estimated using a principal component analysis on 36 standard variables of Mexican financial markets grouped into 6 categories (debt market, securities market, FX market, derivatives market, credit institutions and country risk). Total components yields the IEMF scaled at interval [0,1]. A higher delinquency rate represents higher financial stress.

Mexican Financial Conditions Index ^{1,2/}
Standard deviations



Preliminary data as of May 2022. For May data, preliminary information for IGAE was used.

Source: Banco de México.

1/ For a description of the methodology see Box 2.: Financial Conditions and Growth at Risk, Financial Stability Report, December 2019.

2/ The contributions of each variable to the FCI are estimated using a Kalman filter.

5 Macro-financial risks

- Despite the gradual decrease in certain vulnerabilities and risks that had increased during the pandemic, macro-financial risks prevail which could affect the stability of the financial system. In particular, the following stand out:
 - 1 A faster tightening of global financial conditions.
 - 2 A lower-than-expected world economic growth.
 - 3 That the **weakening of domestic consumption and investment** continues.
 - 4 **Possible adjustments in sovereign and Pemex credit ratings.**
- These risks are considered in the stress test scenarios.

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Measures to promote and preserve the sound development of the financial system

- During the period covered by this *Report*, the **liquidity and financing measures** implemented by the authorities in response to the COVID-19 pandemic **concluded**. When in force, these measures:
 - ✓ **Contributed to promoting a more orderly behavior of financial markets** during the most critical period of the pandemic.
 - ✓ **Provided resources and regulatory exemptions that further supported financial intermediaries.**
 - ✓ Fostered an **orderly operation of financial intermediaries**, even for those who did not directly use the facilities.
- The establishment of **periods to gradually withdraw the measures also contributed to:**
 - ✓ **Avoid abrupt adjustments** in the behavior of financial entities.
 - ✓ **Decrease costs and risks** for viable firms.
 - ✓ **Prevent negative long-lasting effects** on confidence in long-term economic performance.

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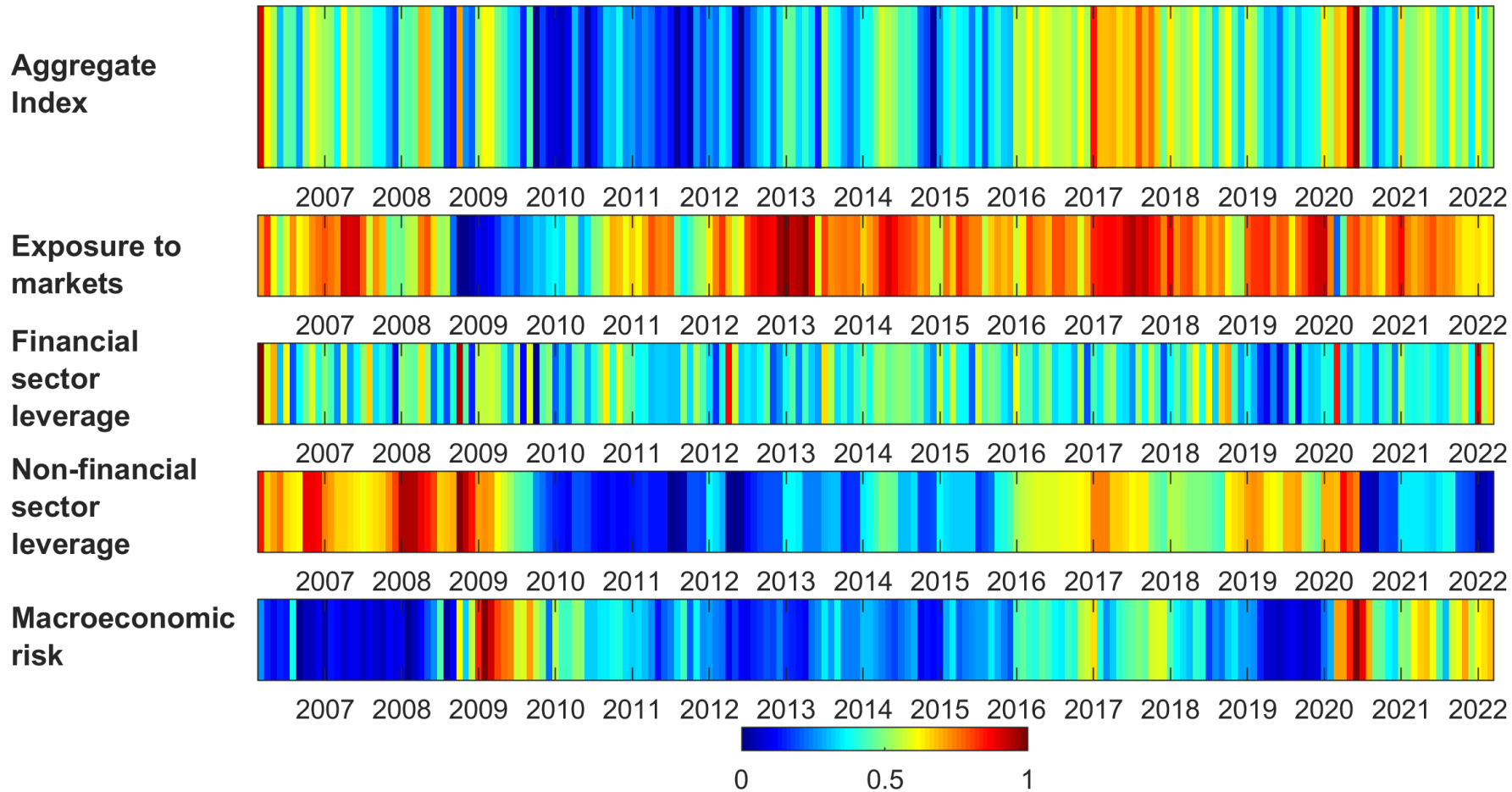
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1 Heat maps of Mexican financial system risks

The aggregate risk of the financial system, as illustrated by the heat map, decreased with respect to that of the previous *Report*, and remained at moderate levels in Q1-2022.

Heat maps of Mexican financial system risks



Preliminary data as of March 2022.
Source: Banco de México.

2 Survey on systemic risk perception among financial institutions

According to financial intermediaries, the disorderly adjustment in foreign interest rates is the main external financial risk, while domestically, the deterioration of the growth outlook for the Mexican economy remains the most frequently mentioned. Regarding non-financial risks, the most notable are political, geopolitical and social risks.

Main sources of financial system risks Percent of total institutions

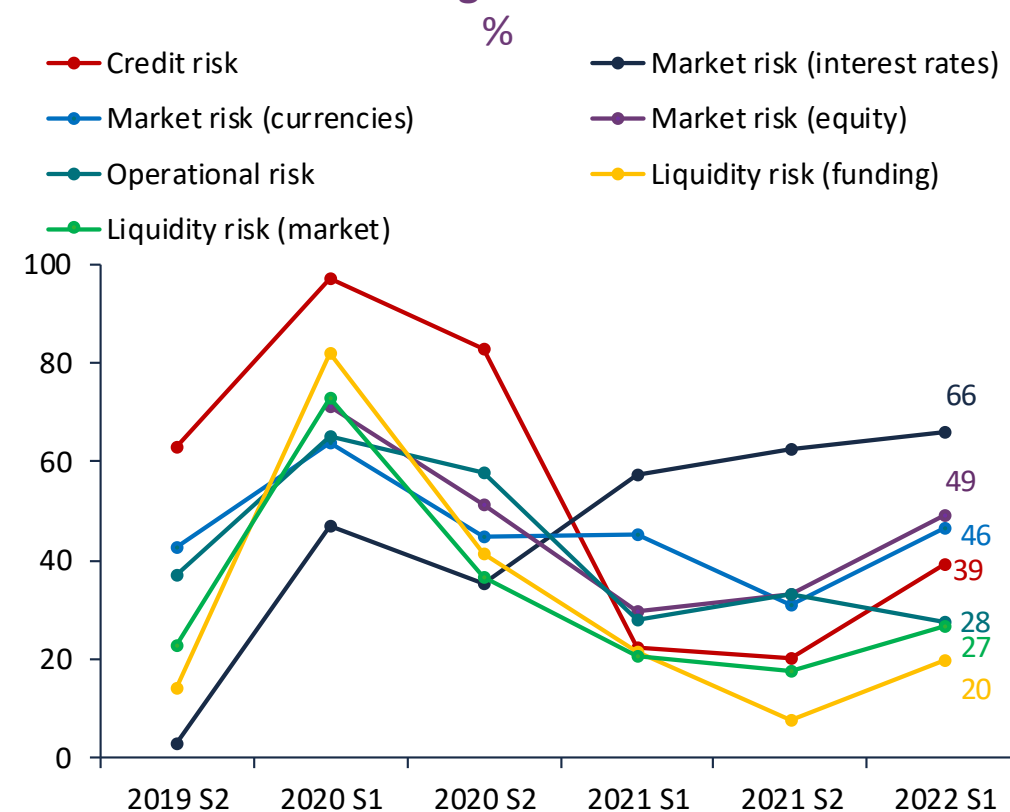
	May 2022 ^{1/}	November 2021 ^{2/}
External financial risks		
Disorderly changes in foreign interest rates	70	56
Deterioration of global economic growth outlook	69	70
Volatility in commodity prices	62	63
Inflation higher than expected	60	43
Deterioration of foreign market conditions*	59	72
Domestic financial risks		
Deterioration of the domestic economic growth outlook	68	79
Deterioration of public finances	59	62
Deterioration of sovereign credit rating	57	60
Fiscal, financial and economic policies	54	59
Inflation higher than expected	54	51
Non-financial risks		
Political, geopolitical and social risks	89	70
Cybersecurity and IT risks	84	71
Violence and insecurity	71	56
COVID-19 (new wave, pandemic extension)	65	63
Deterioration of the rule of law and impunity	56	38

1/ In the last survey 112 institutions participated.

2/ In the previous survey 112 institutions participated

* Exchange rate volatility, depreciation and lack of liquidity.

Expectations regarding the evolution of risks in the following six months

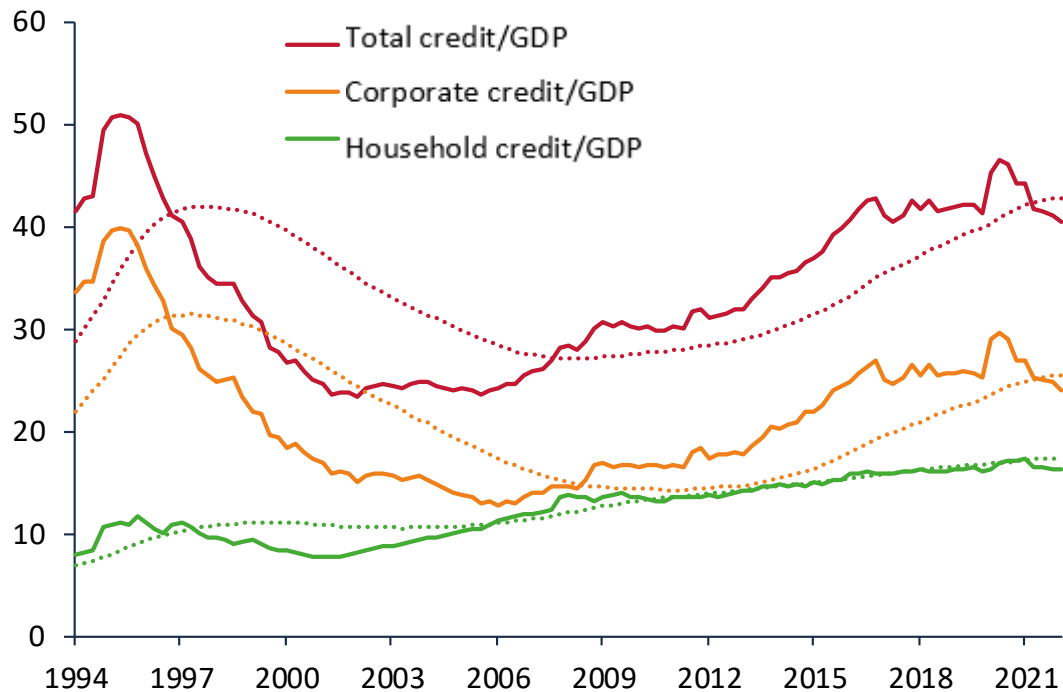


Fuente: Banco de México.

3 Total financing to the non-financial private sector

Total financing to the non-financial private sector remains below trend, registering four consecutive quarters with a negative credit gap.

Credit to the non-financial private sector as a proportion of GDP ^{1/}
%

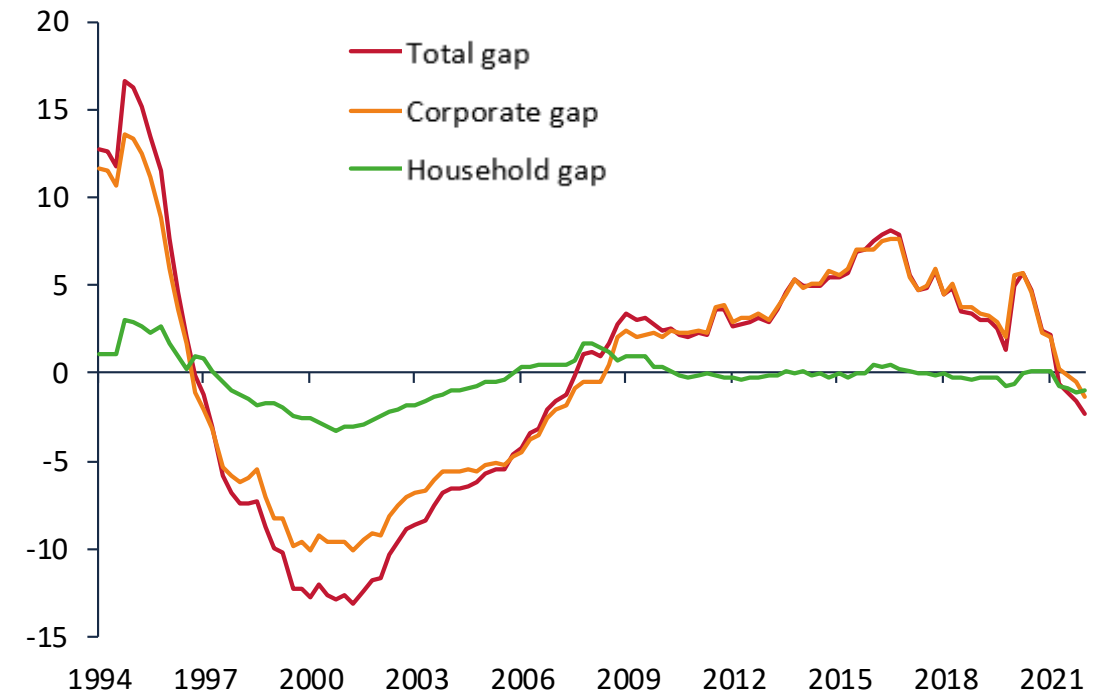


Data as of March 2022.

Source: Banco de México.

1/ The dotted lines correspond to the long-term trend.

Credit gap^{1/}
%



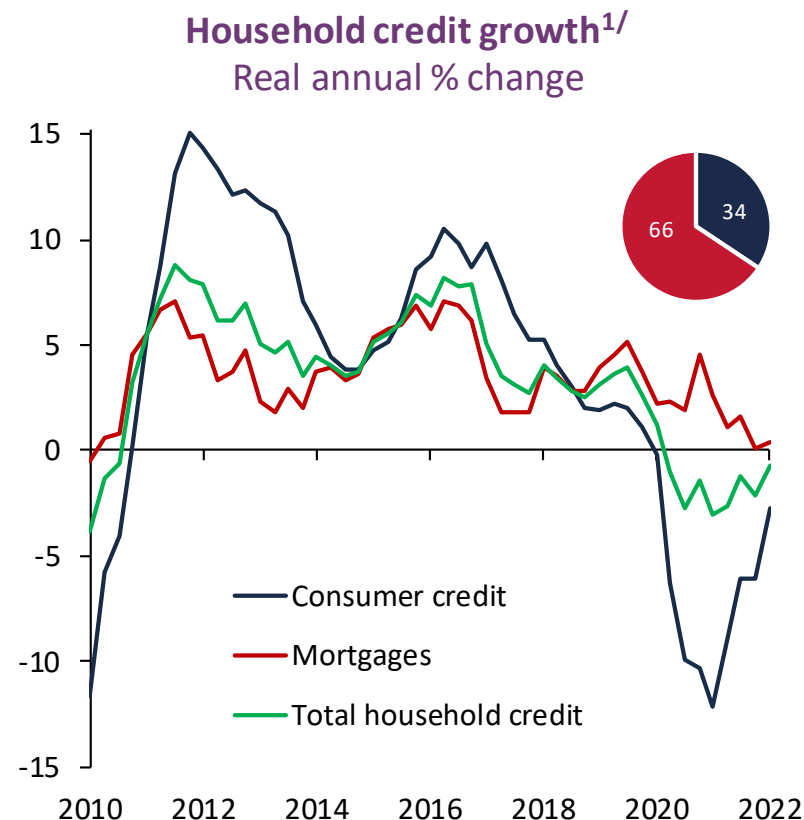
Data as of March 2022.

Source: Banco de México.

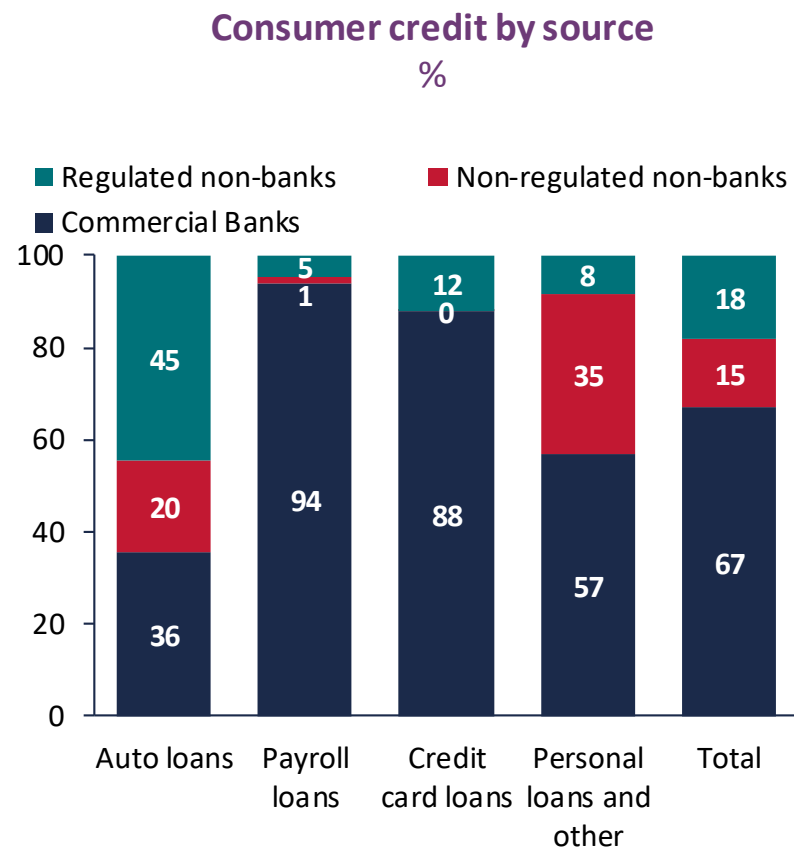
1/ It refers to the difference between the credit and its long-term trend.

4 Households' financial position

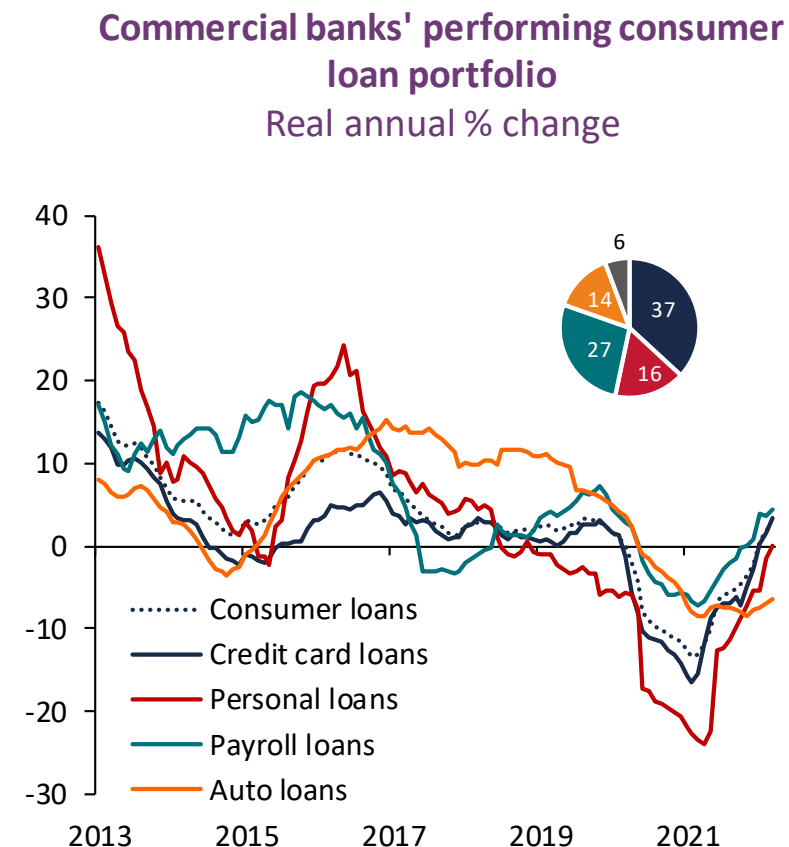
Total financing to households continued contracting in real annual terms during the period, albeit at a lower rate. This reflected the trend followed by consumer credit, while mortgages kept registering positive rates. Consumer credit granted by commercial banks show positive growth rates for the first time since the beginning of the pandemic in practically all segments.



Sources: Banco de México, BMV and Condusef.



Sources: Banco de México, CNBV, BMV and Condusef.

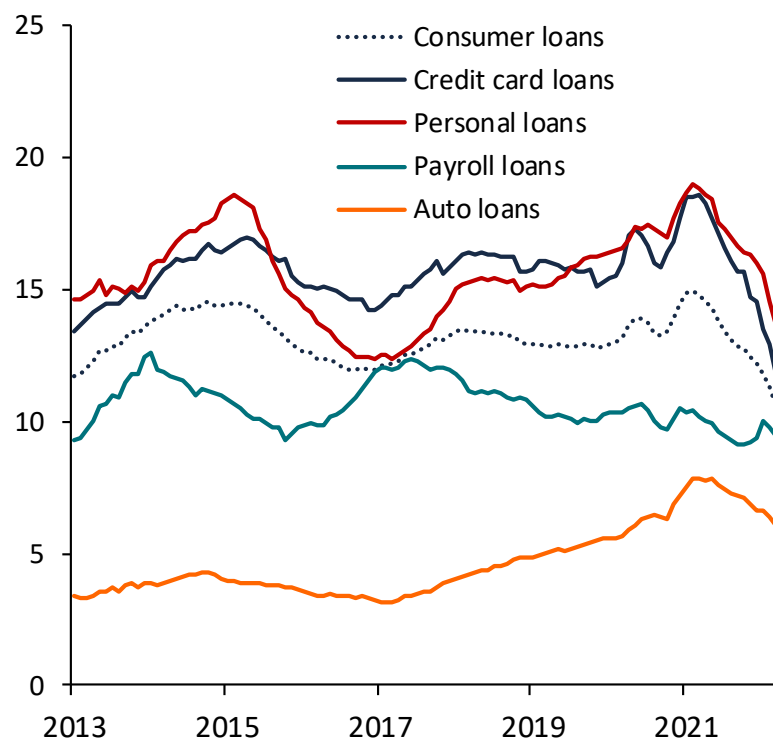


Source: CNBV

4 Households' financial position

The delinquency rate of the consumer bank loan portfolio continued with the decrease observed since the beginning of 2021 in all segments, and that of other lenders has declined as well. Meanwhile, the delinquency rate of the mortgage portfolio has continued to increase for some lenders.

Adjusted delinquency rate of banks' consumer loan portfolio ^{1/}
%

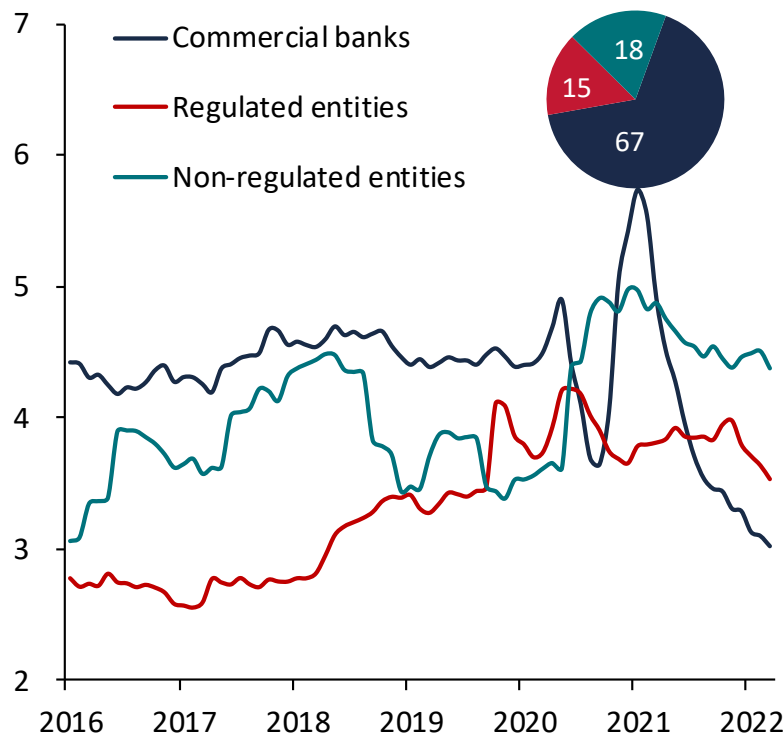


Preliminary data as March 2022.

Source: CNBV

1/ Includes regulated sofomes with equity links to banks.

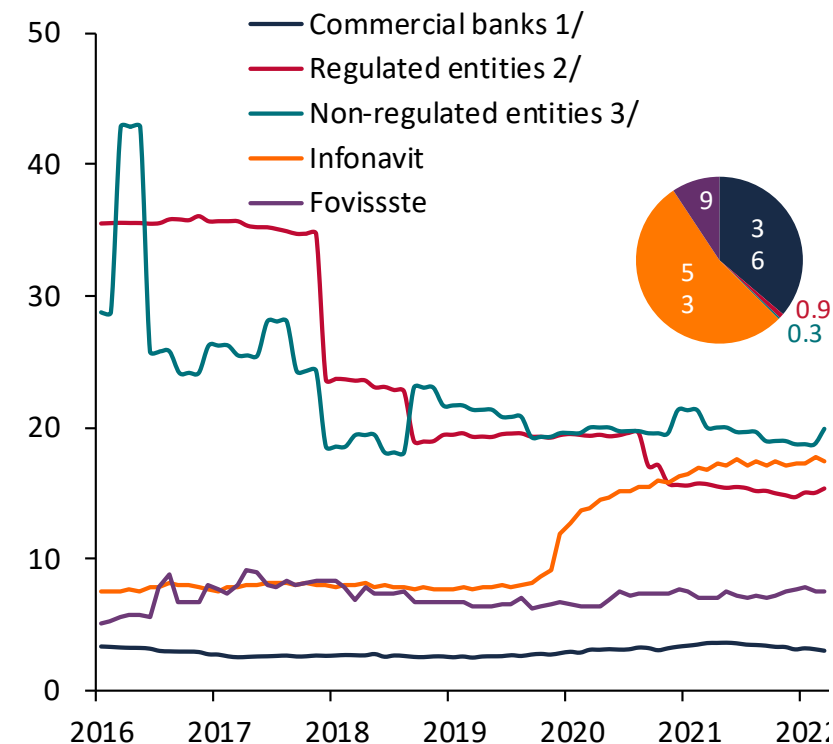
Delinquency rate of consumer loan portfolio
%



Preliminary data as of March 2022.

Source: Banco de México (SIE), CNBV, BMV and Condusef.

Delinquency rate on mortgages by type of granting entity
%



Preliminary data as of March 2022.

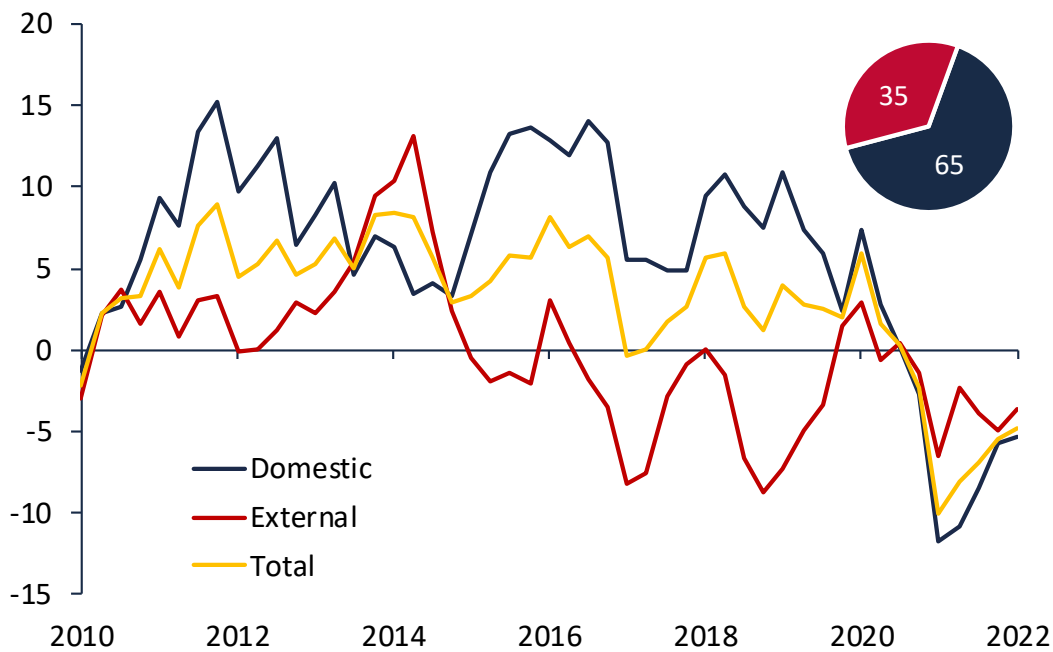
Source: Banco de México (SIE), CNBV, BMV and Condusef.

1/ Includes the loan portfolio of sofomes regulated that have an equity link with a bank. 2/ Includes the loan portfolio of development banks and regulated non-bank financial institutions such as socaps, sofipos, and sofomes regulated issuing debt. 3/ Includes non-regulated sofomes.

5 Non-financial private firms' financial position

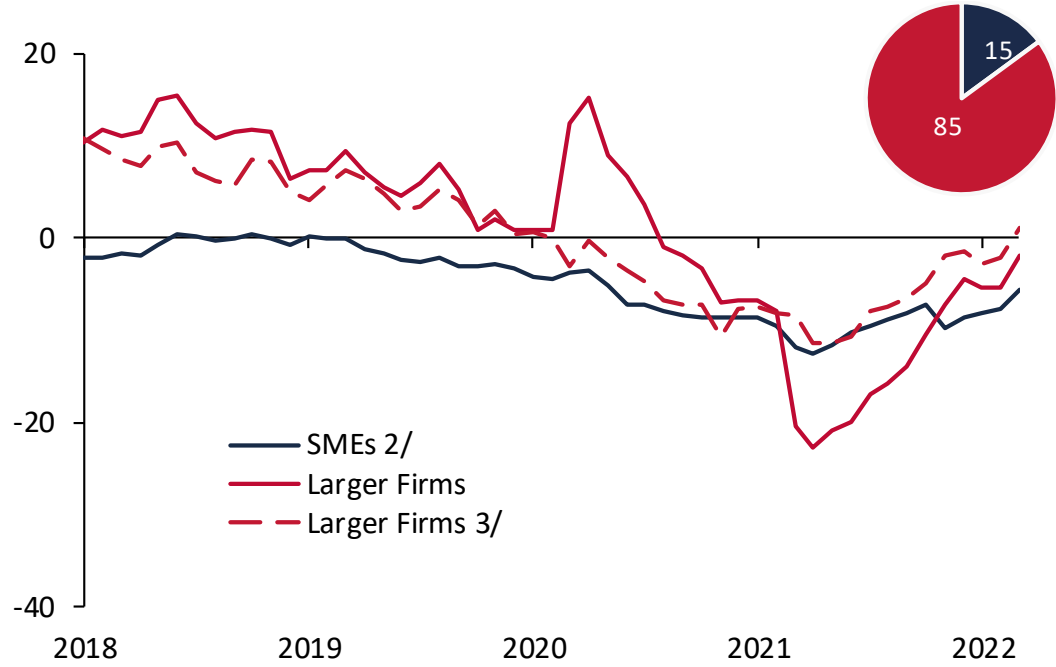
Total lending to non-financial private firms in Mexico continued declining in real annual terms, although at more moderate rates, both in its domestic and external components. During Q1-2022, bank lending to larger firms has stabilized, as its rate of contraction has declined, thus showing a more moderate deterioration than that to small- and medium-size enterprises (SMEs).

Total financing to private non-financial firms^{1/}
Real annual % change



Data as of March de 2022.
Source: Banco de México, BMV and SHCP.
1/ The percentages consider the figures related to non-regulated entities granting financing, which are included at the bottom of Table 2 (Memo) and therefore differ from those shown at the tip of the same Table..

Real annual portfolio growth by firm size^{1/}
Real annual % change

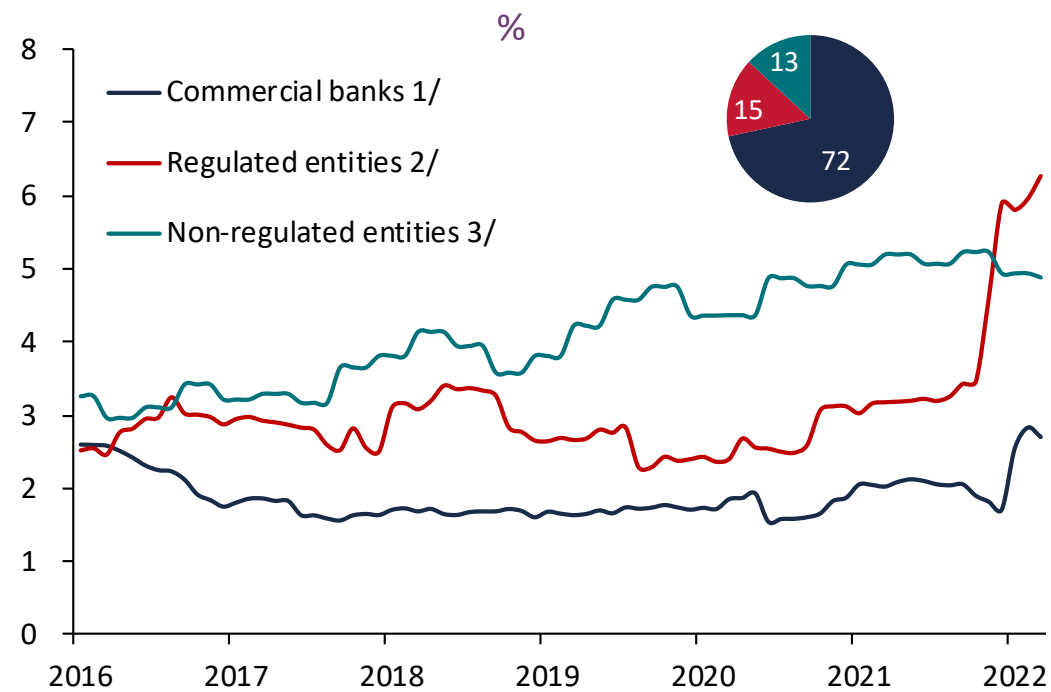


Preliminary data as March 2022.
Source: CNBV.
1/ Bank portfolio. The pie chart shows the total percentage of the portfolio for each segment.
2/ Non financial private companies not listed on the Mexican Stock Exchange with historical maximum credits of less than 100 million pesos.

5 Non-financial private firms' financial position

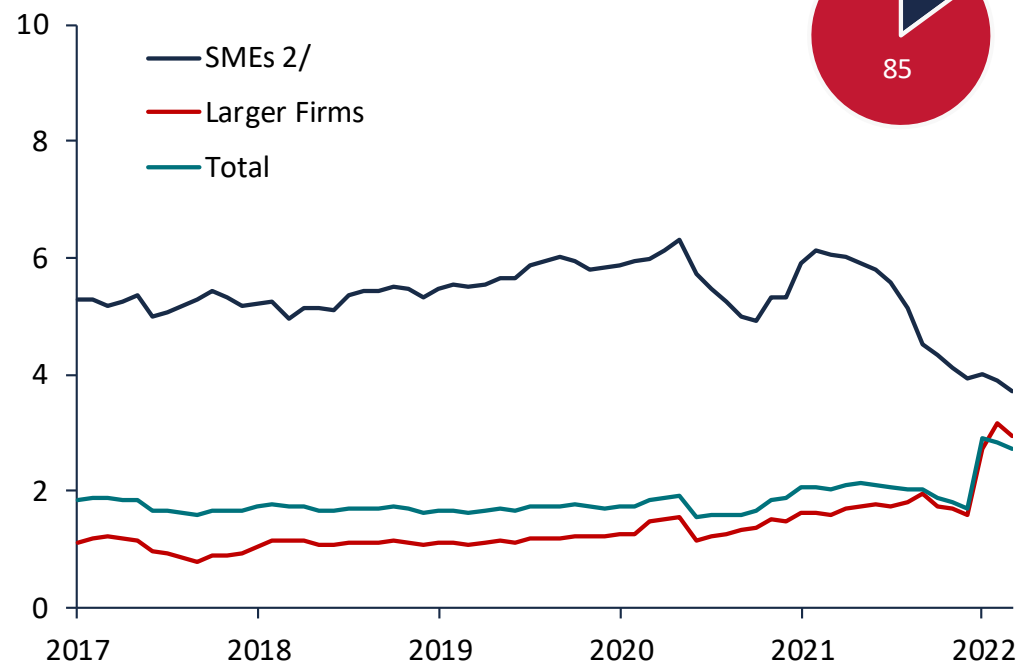
The delinquency rate of the commercial loan portfolio increased considerably in January 2022 after new international accounting standards (IFRS9) came into effect. This adjustment is expected to represent a one-time increase in delinquency rates, but not in its trend, an effect that has been most evident for larger firms. The delinquency rate of the commercial loan portfolio of other regulated entities also increased considerably.

Delinquency rate of non-financial firms' loan by lender



Preliminary data as of March 2022.
Source: Banco de México (SIE), CNBV, BMV and Condusef.
1/ Includes the loan portfolio of sofomes regulated for having an equity link with a bank, whether they are subsidiaries of the bank or not.. 2/ Includes the loan portfolio of development banks and regulated non-bank financial entities such as socaps, sofipos, credit unions, and sofomes regulated issuing debt. 3/ Includes the portfolio of non-regulated sofomes and that of financial companies that mainly grant credit as part of their line of business, such as financial leasing companies or some financial arms of automotive companies.

Delinquency rate by firm size 1/

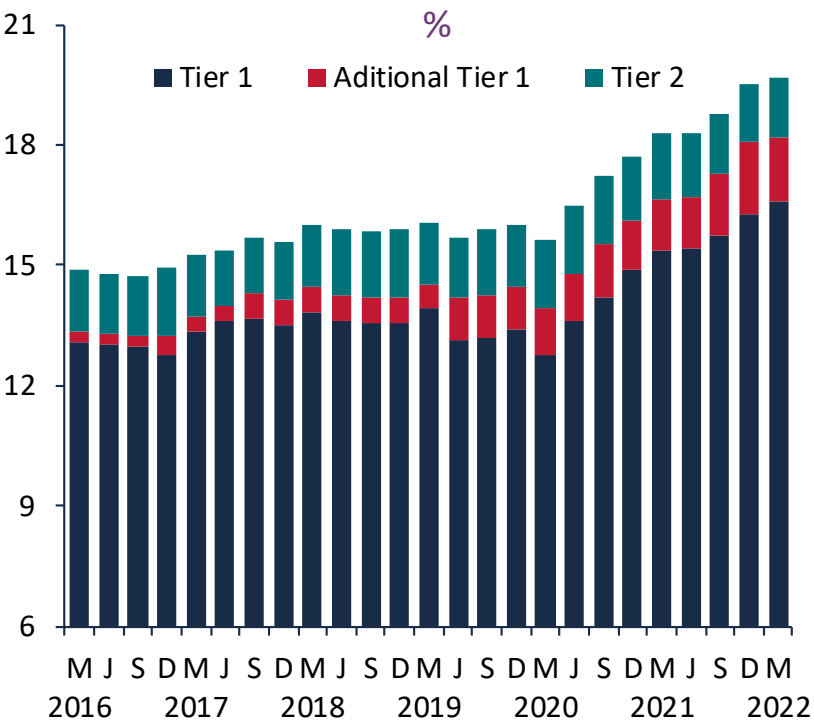


Preliminary data as March 2022.
Source: CNBV.
1/ The pie chart shows the total percentage of the portfolio for each segment.
2/ Non financial private companies not listed on the Mexican Stock Exchange with historical maximum loans of less than 100 million pesos.

6 Institutions: commercial banks

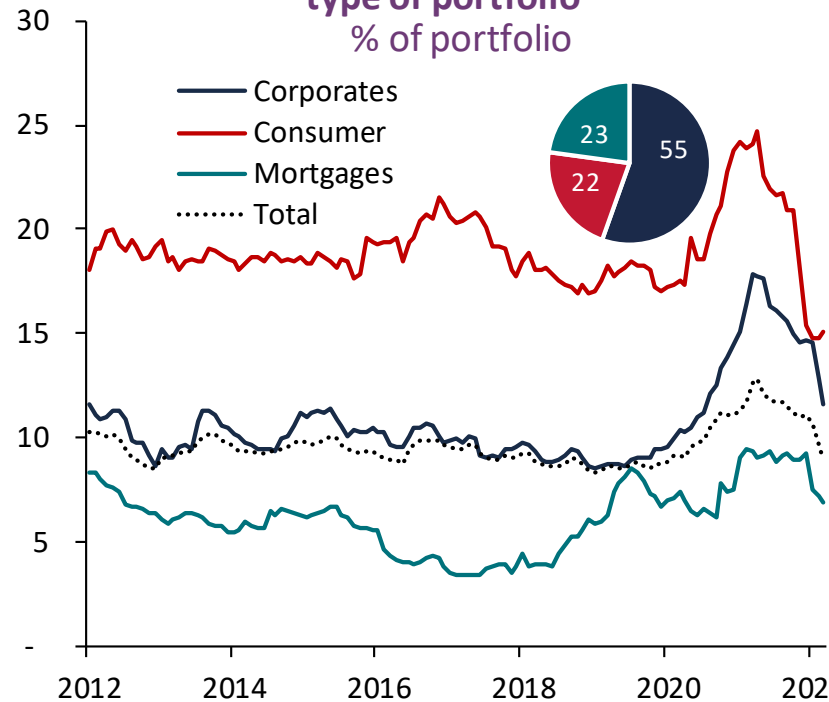
The capitalization level of commercial banks was adequate and increased between September 2021 and March 2022. Credit risk decreased, keeping banks in a solid position to face possible adverse scenarios.

Structure of banks' Capital Adequacy Ratio (CAR)^{1/}



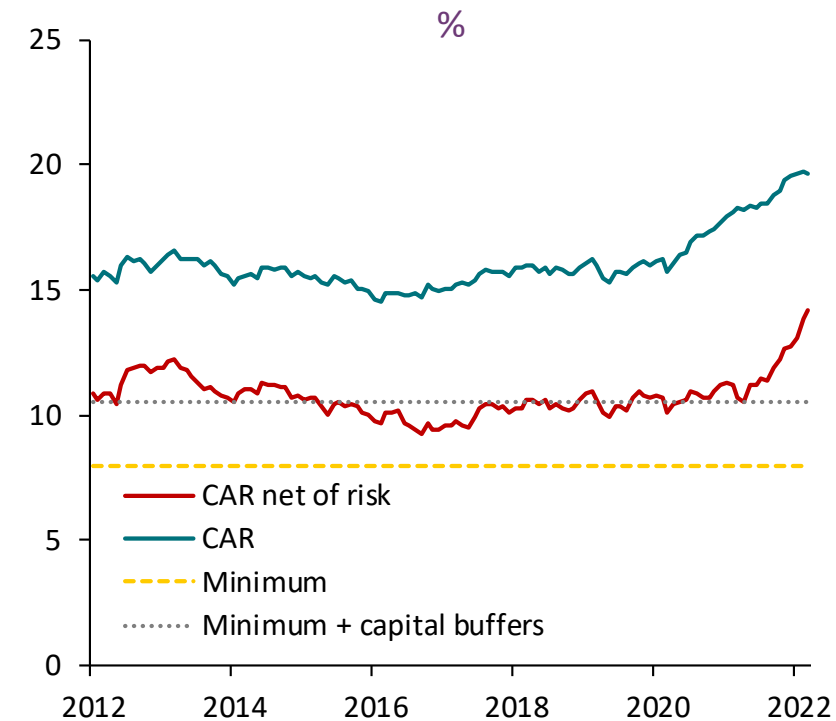
Data as of March 2022.
Source: Banco de México.
1/ The capital adequacy ratio (CAR) is calculated by dividing the net capital by the risk weighted assets. The net capital is the regulatory capital that includes the Tier 1, Additional Tier 1, and the Tier 2 capital.

Credit Conditional Value at Risk (CVaR) by type of portfolio^{1/}



Preliminary data as March 2022.
Source: Banco de México, CNBV and Credit Bureau.
1/ Using the time horizon of a year, and the 99.9% confidence level. The pie chart shows the percentage of the total performing balance for each segment of portfolio.

Capital Adequacy Ratio Net of Risk^{1/}

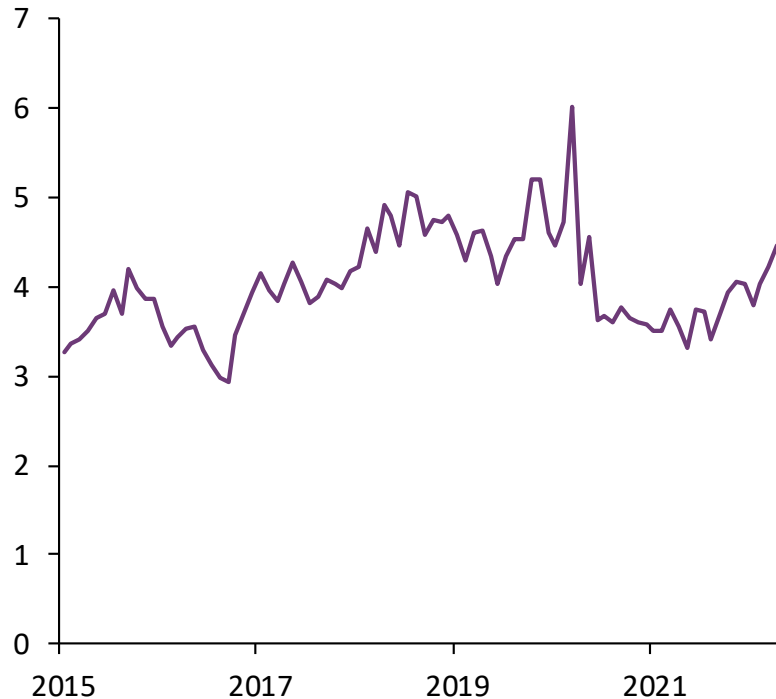


Preliminary data as March 2022.
Source: Banco de México, CNBV and Credit Bureau..
1/ Estimated as the capitalization ratio that results from reducing the CVaR at a 99.9% confidence level, both of the net capital and risk weighted assets.

6 Institutions: commercial banks

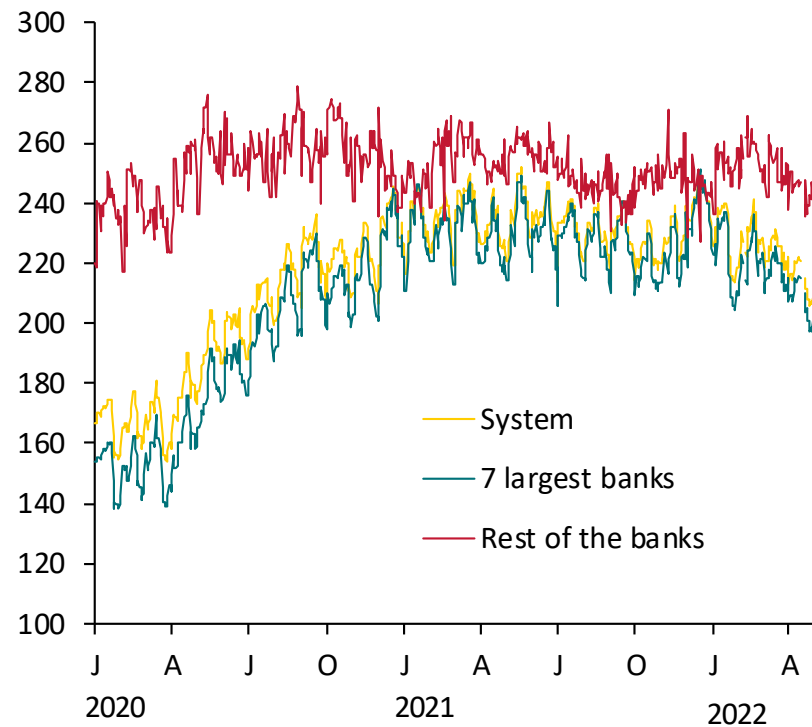
During the analyzed period, commercial banks' market risk increased, while liquidity levels (both in local and foreign currency) amply exceed regulatory minima. Liquidity risk is therefore considered to be contained.

Market Conditional Value at Risk (CVaR) of Commercial Banks at 99.9% confidence level
% of net capital



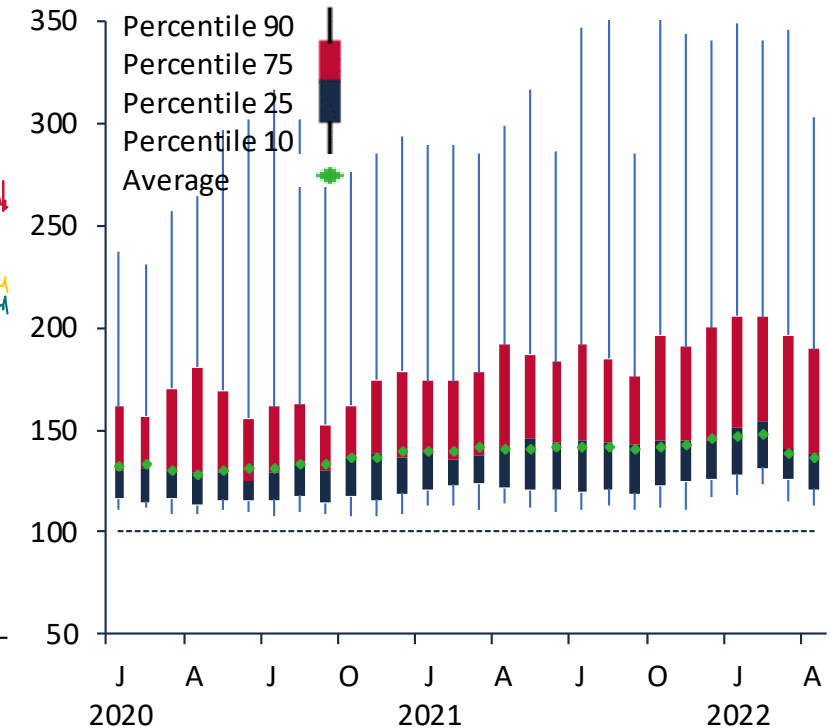
Data as of April 2022.
Source: Bancode México, CNBV, BMV, Bloomberg, Valmer.

Liquidity Coverage Ratio (LCR)
%



Data as of May 15, 2022.
Source: Bancode México.

Distribution of Net Stable Funding Ratio (NSFR)
%



Data as of April 2022
Source: Bancode México.

7 Other risks: operational continuity risks

- The **availability of financial market infrastructures** and payment systems managed and operated by Banco de México **has remained high**. In the case of SPEI, its nearly-full availability (99.99%) at the end of the first quarter of 2022 stands out.
- In order **to preserve operational continuity**, as well as to maintain SPEI service and performance standards in view of the sustained increase in the number of processed transfers, **a new transfer-processing facility was implemented** and began operating in May 2022.
- Worth mentioning is that **payment system services have not been interrupted by any incident**.

7 Other risks: cyber risks

- **Cyber risks have continued increasing worldwide**, and have recently exacerbated as a result of the military conflict.
- During the period analyzed in this Report, **no cyber incidents were reported by banks in the Mexican financial sector**.
- Banco de México has implemented various actions to further develop financial institutions' capabilities to face potential cyber incidents, for instance:
 - ✓ It coordinated **cyber-resilience exercises** to simulate scenarios of cyber-attacks to critical central bank processes.
 - ✓ It released a **Decalogue to Prepare Forensic Evidence**, which is a guideline for institutions to gather, preserve, and share evidence on cyberattacks. These guidelines will allow to generate **reports with clear and solid evidence** that will be incorporated into investigation files that judicial authorities can use to prosecute and capture cyber-attackers.

7 Other risks: environmental risks and sustainable investing

- Banco de México continues working actively to improve the financial system's resilience to **climate-related risks**, extending the analysis of **environmental risks and sustainable investing**, focusing on **financial stability**.
- In this *Report*, the analysis of environmental risks expands and now includes other loan portfolios in addition to that to corporates, such as consumer and mortgage loan portfolios.
- The thematic bond market has continued developing, allowing firms and other issuers to further diversify their long-term financing sources considering sustainability criteria.
 - ✓ Between September 2021 and March 2022, sustainable thematic bonds continued to be issued by domestic private and public issuers in both domestic and international markets.
 - ✓ On May 2, 2022, variable-interest rate **Federal Government Development Bonds**, aligned with environmental, social and corporate governance criteria (**BONDES G**), were auctioned for an amount of 20,000 million pesos. The main purchasers of this issuance were banking institutions (with around 47% of the total amount) and investment funds (around 36%).

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Stress tests to commercial banks

- The stress tests carried out by Banco de México are simulations performed to **assess the resilience of the Mexican banking system** under extreme, but plausible, economic scenarios.
- The scenarios considered **should not be taken as a forecast** of the expected performance of the economy, nor should they be associated with a probability of occurrence.
- The purpose of **credit stress tests** is to assess if, under extreme economic conditions, the banking system could continue performing its financial intermediation functions, maintaining a **capital adequacy ratio** above the regulatory minimum.

Stress tests

Scenarios^{1/}

Assumptions on macrofinancial variables

Additional assumptions:

A

Tightening of global financial conditions due to increases in AEs' interest rates in response to inflationary pressures



- Higher volatility in financial markets.
- Adjustments in risk premia.
- Higher financing costs to non-financial private firms and to households.
- Fall in credit growth rates.

B

Lower-than-expected world economic growth (supply chain disruptions and escalation of the military conflict)



- Lower-than-expected world economic growth.
- Adverse effects on Mexico's economic recovery, higher levels of unemployment, and peso depreciation.
- Increased volatility in financial markets.

C

Long-lasting and marked weakening of domestic consumption and investment



- Impact on unemployment and household income levels and on firms' economic outlook.
- Interest rates and peso exchange rate remain stable.
- Inflation converges to its medium-term target.

D

Higher risk premia, for both sovereign and Pemex credit ratings



- Higher volatility in financial markets, portfolio recomposition, and capital outflows.
- Peso depreciation and upward pressures on interest rates.
- Contraction of aggregate demand.

① The exercise is common to all institutions and does not consider idiosyncratic problems related to loan origination.

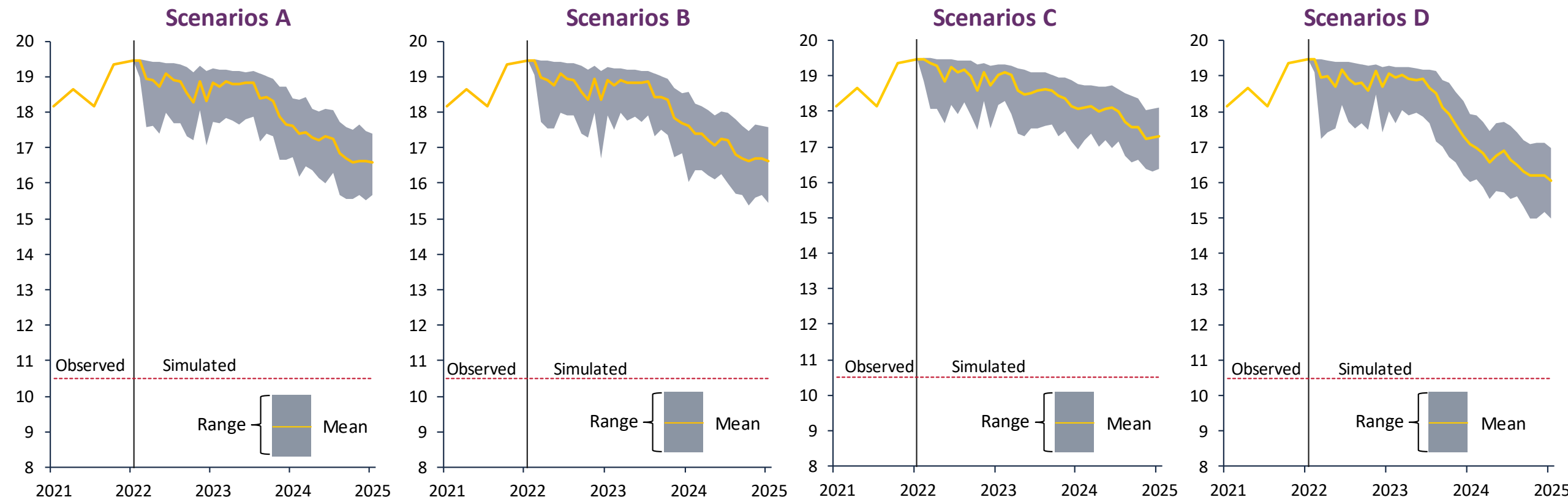
② It does not consider possible mitigation measures that could be implemented by the institutions in the simulation (counterfactual simulation of partial equilibrium, and not general equilibrium).

1/ For more detailed information on these scenarios, refer to the complete version of this *Report*.

Credit stress tests

Stress test results suggest that the Mexican banking system has sufficient capital levels to face the simulated stress scenarios.

Financial system Capital Adequacy Ratio (CAR)^{1/2/3/} %



Data as of March 2022 and 3-year simulations starting from that date. Source: Banco de México.

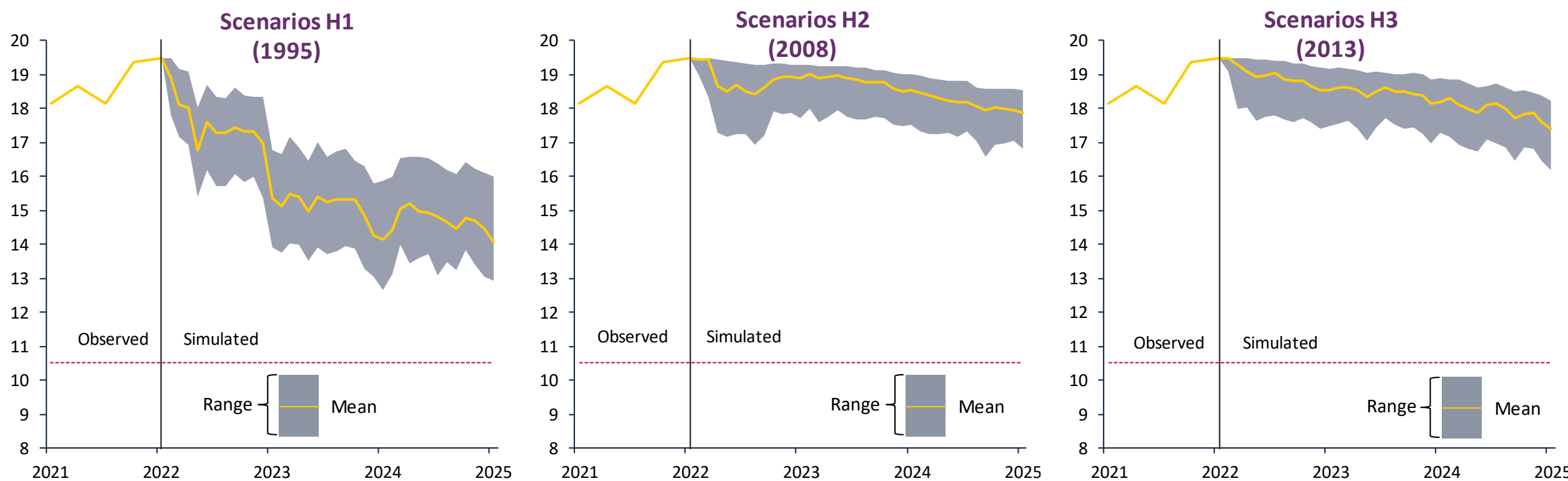
1/ The horizontal line corresponds to minimum CAR plus capital buffers. 2/ These results should in no way be interpreted as a forecast for the 3 years analyzed.

3/ Blue lines represent the mean CAR of each scenario of the system. The gray areas define the range of capitalization indexes observed in all trajectories of simulations.

Credit stress tests

Additionally, a set of historical scenarios are considered that replicate situations similar to those faced by the Mexican economy in the past were considered. Simulations indicate that the banking system would also end the stress horizon with capitalization levels above the regulatory minimum.

Financial system Capital Adequacy Ratio (CAR)^{1/, 2/, 3/}
%

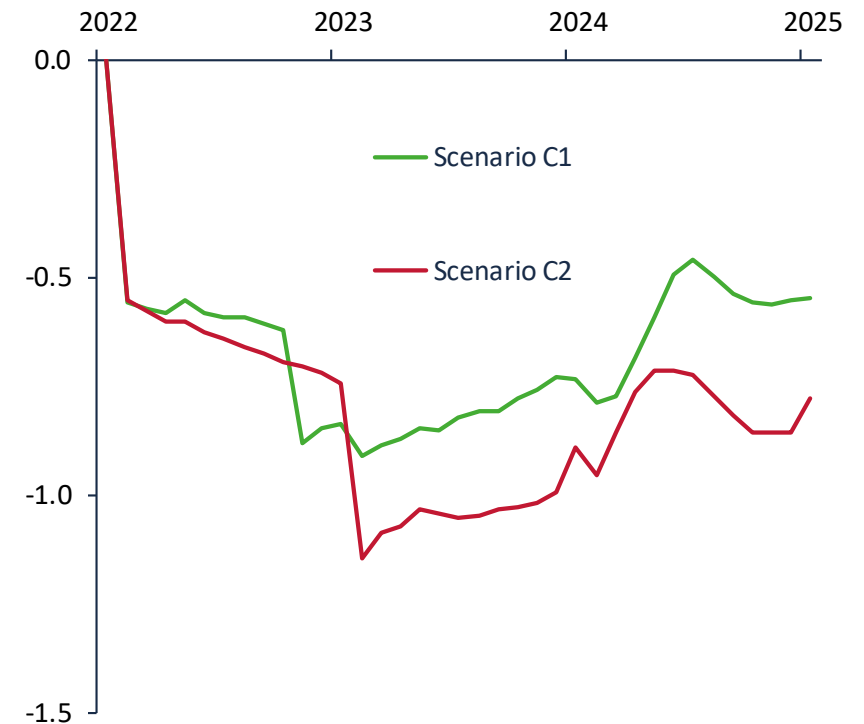


Data as of March 2022 and 3-year simulations starting from that date. Source: Banco de México.
1/ The horizontal line corresponds to minimum CAR plus capital buffers. 2/ These results should in no way be interpreted as a forecast for the 3 years analyzed.
3/ Blue lines represent the mean CAR of each scenario of the system. The gray areas define the range of capitalization indexes observed in all trajectories of simulations.

Environmental stress tests

- The purpose of these tests is to evaluate the system's resilience to severe but plausible adverse shocks triggered by **extreme environmental (hydrometeorological) events**.
- Its severity lies on **assessing the impact of several extreme weather-related events taking place simultaneously in the country**.
- The exercise consisted of:
 - 1 Determining the **characteristics of the environmental shock** that could put the financial system at risk.
 - 2 Estimating **direct losses and, by estimating the effect that the shock could have on the main macro-financial variables, estimating potential losses** using the stress test methodology.
 - 3 The **impact on GDP was estimated to be equivalent to a fall of one percentage point (Scenario C1)**. Additionally, to evaluate a greater impact, results are reported assuming that **GDP would fall 2% (Scenario C2)**.

Financial system Capital Adequacy Ratio (CAR)
with respect to the base scenario
Percentage points



Data as of March 2022 and 3-year simulations starting from that date.

Source: Banco de México

Contents

1 Macro-financial conditions

2 Measures implemented

3 Financial system risks

4 Stress tests

5 Final remarks

Final remarks

- 1 Although the Mexican financial system faces significant challenges in the current global environment, it has maintained a solid and resilient position.
- 2 Given an environment of lower growth expectations, greater uncertainty about the evolution of global financial conditions and geopolitical tensions, it is important to monitor the financial system's development, as this Central Institute has been doing, in order to implement, if necessary, the appropriate measures to maintain its stability.
- 3 Certain vulnerabilities and risks for banks, including those related to liquidity, credit and contagion that had increased since the pandemic, have now declined, while market risk has increased at the margin.
- 4 In this context, banks' current capital and liquidity levels, as well as the major risks they face, would allow for a robust and widespread, but prudent, expansion of bank lending.

Boxes

- 1 Relationship between sovereign risk and commodity prices
- 2 Co-financed mortgages: effect on households' leverage and default
- 3 Remittances, retail banking, and gender
- 4 Global financial conditions, risk premia, and external financing
- 5 Implementing the IFRS9 standard
- 6 Risk metrics for bank and credit indicators
- 7 Loan portfolio credit risk metrics using Monte Carlo simulation
- 8 Ecosystem of Fintech institutions

Annexes

- 1 Disaggregated heat map of the Mexican financial system



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