Financial Stability Report – First Semester 2020

June 10, 2020

BANCO DE MÉXICO

Introduction

- The COVID-19 pandemic represents the greatest challenge to the global financial system since the 2008-2009 financial crisis.

- Health measures implemented both worldwide and domestically in reaction to the health crisis have helped to contain the virus, but have also affected global economic activity and international financial markets significantly.

- The outlook for Mexico's economy and financial system has deteriorated and become more uncertain.

- Adequately identifying and monitoring in a timely manner the risks that the financial system is facing have become even more important under such conditions.

- This Financial Stability Report analyzes:
  - Mexico's financial institutions as of Q1-2020.
  - The evolution of financial system risks in light of the effects of the pandemic.
  - The measures to foster the sound development of the financial system and to preserve its stability in the current uncertain environment.

Contents
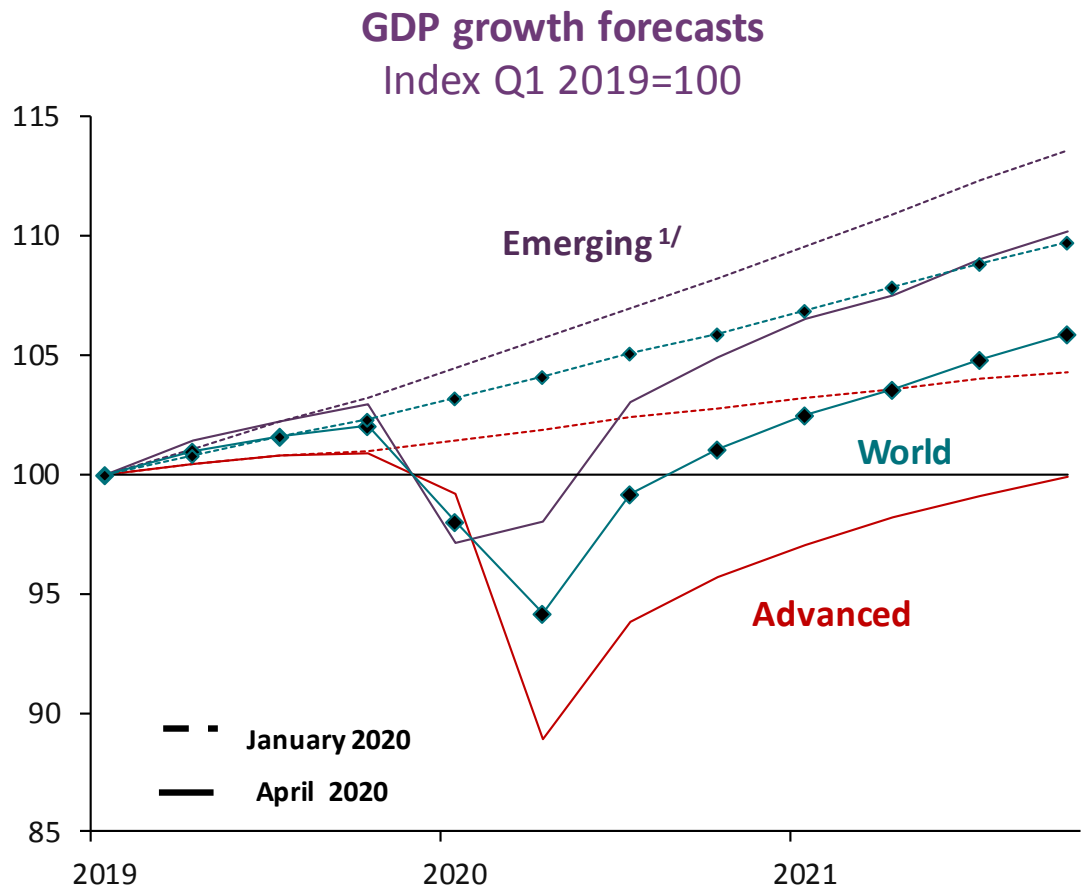
❶ Global economic growth

Global economic activity contracted sharply in Q1-2020 as a result of the COVID-19 pandemic and the measures implemented to contain it. Growth forecasts have been significantly revised downwards, and high uncertainty persists regarding the duration and depth of the health crisis.

GDP growth forecasts
Index Q1 2019=100

Growth forecasts for 2020 and 2021
Annual change in percent

	WEO Forecasts April-20		Change Jan-20-April 20	
	2020	2021	2020	2021
World	**-3.0**	**5.8**	**-6.3**	**2.4**
Advanced economies	**-6.1**	**4.5**	**-7.7**	**2.9**
United States	-5.9	4.7	-7.9	3.0
Euro Area	-7.5	4.7	-8.8	3.3
Japan	-5.2	3.0	-5.9	2.5
United Kingdom	-6.5	4.0	-7.9	2.5
Emerging Markets [1]	**-1.0**	**6.6**	**-5.4**	**2.0**

Risk aversion increased since late February in light of the global spread of COVID-19, affecting international financial markets. This was reflected in the fall of stock markets and increased risk premia.

Global risk appetite index[1]
Index

Legend:
- Global risk appetite
- Panic
- Euphoria

S&Ps 500 volatility index
Annualized percent

Stock market indices performance
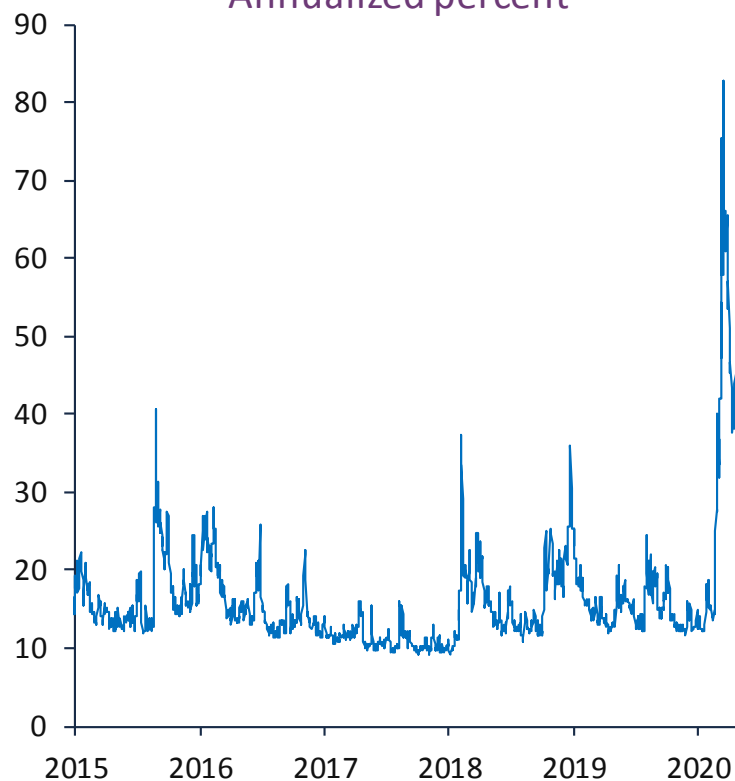#### Index January 2018=100

Legend:
- S&P 500
- DXY Index

Source: Credit Suisse.
1/ The risk appetite index compares various financial assets, taking into account that in periods of high appetite for higher risk assets, such as equity from advanced and emerging economies, these tend to have higher yields, while safe assets, such as US, euro area and Japanese government bonds, tend to have negative yields. Meanwhile, in periods of low risk appetite, the opposite occurs. In this context, the value of the index refers to the coefficient of a regression of the daily yield of 64 assets based on their volatility.
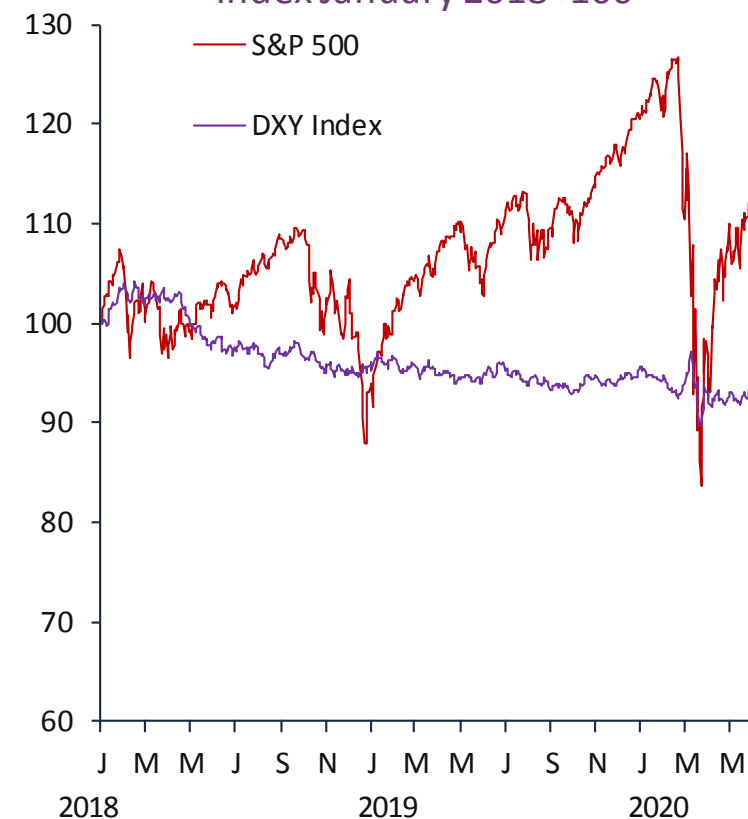
Source: Prepared by Banco de México with Bloomberg data..
1/ The emerging markets FX indices includes the following countries: Peru, the Philippines, Poland, Hungary, South Africa, Russia, Brazil, Colombia, Chile, Malaysia, India and Mexico.
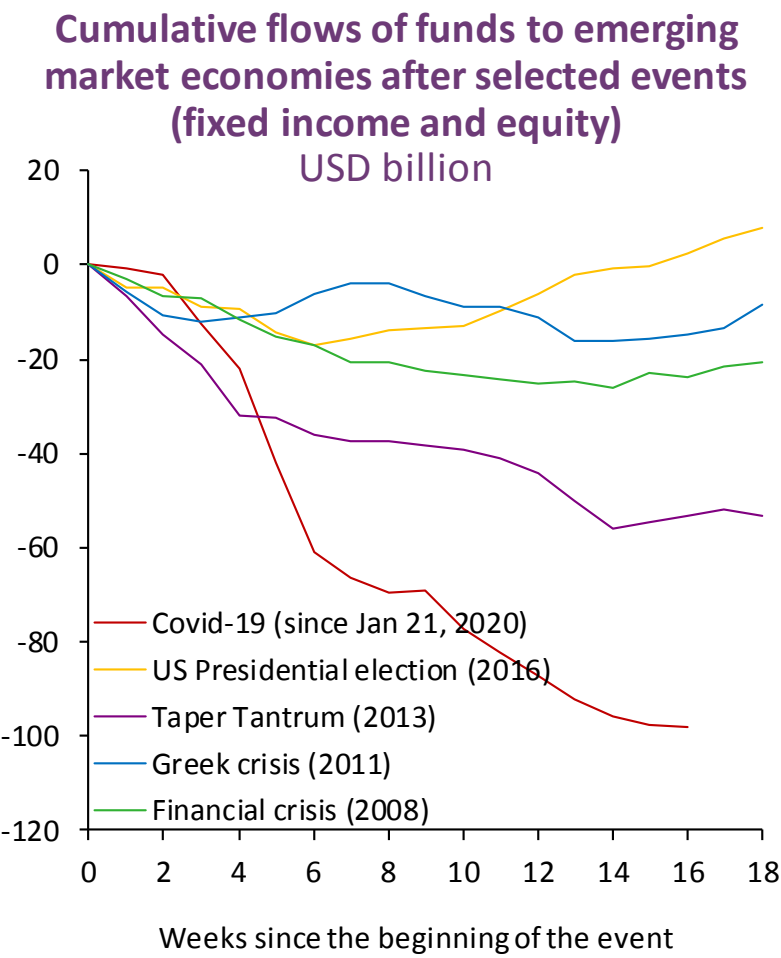.
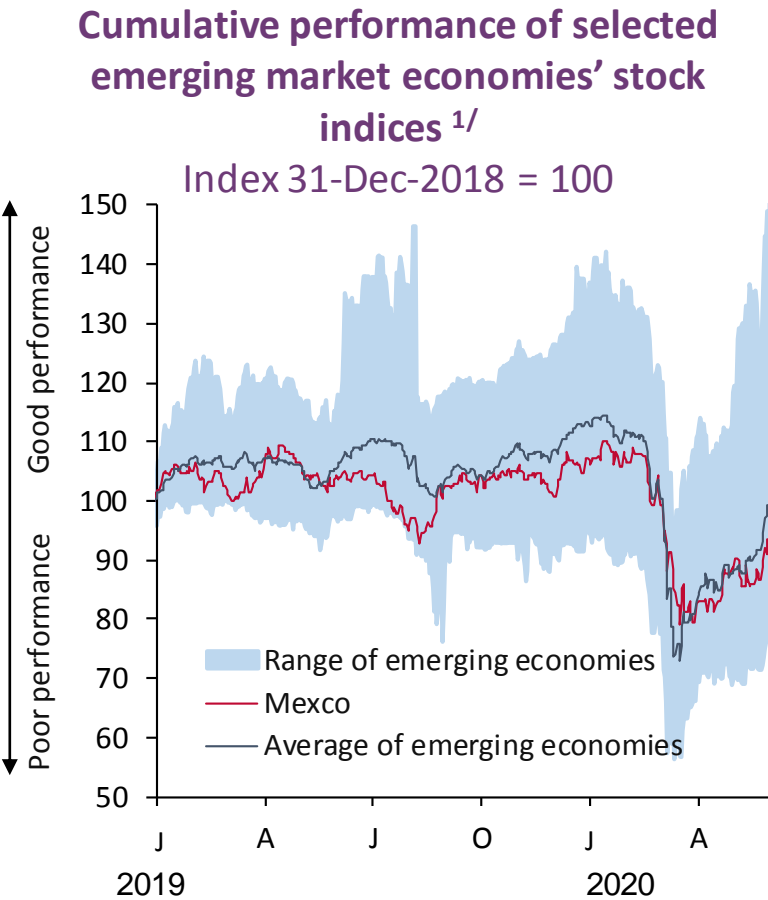
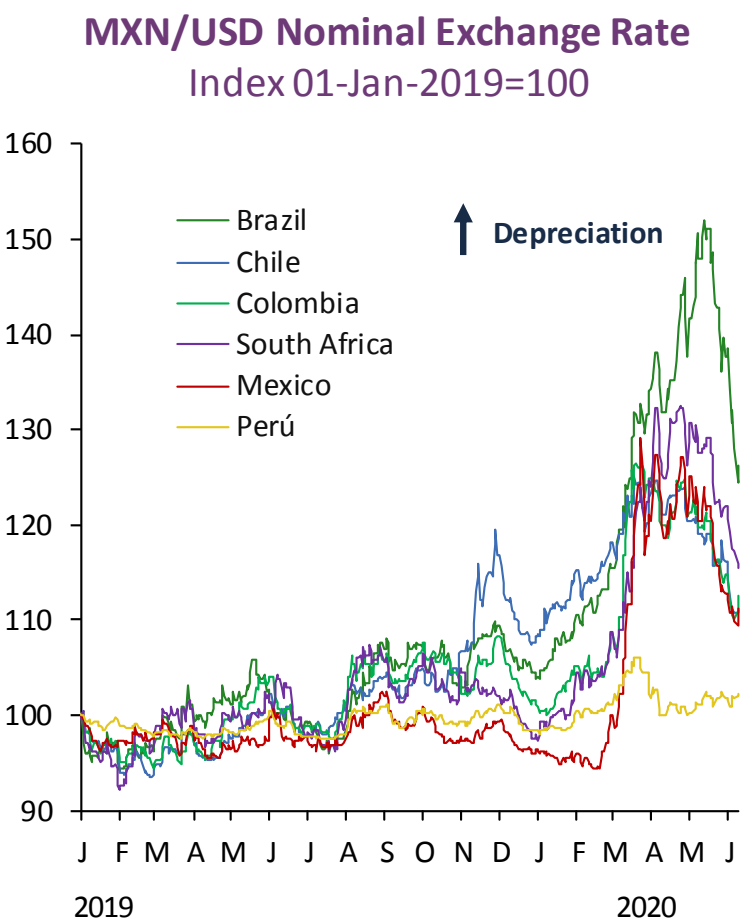Source: Prepared by Banco de México with Bloomberg data.

The increased global risk aversion led to a recomposition of portfolios towards lower-risk assets and to a contraction of holdings of emerging economies' assets. This led to a depreciation and high volatility of these economies' currencies as well as to adjustments in their fixed-income and equity markets.

Cumulative flows of funds to emerging market economies after selected events (fixed income and equity)
USD billion

- Covid-19 (since Jan 21, 2020)
- US Presidential election (2016)
- Taper Tantrum (2013)
- Greek crisis (2011)
- Financial crisis (2008)

Weeks since the beginning of the event

Data as of June 2020.
Source: Prepared by Banco de México with EPFR data.

Cumulative performance of selected emerging market economies' stock indices [1]
Index 31-Dec-2018 = 100

- Range of emerging economies
- Mexco
- Average of emerging economies

2019   2020

Data as of June 2020.
Source: Prepared by Banco de México with Bloomberg data.
1/ The average number of emerging market countries includes Argentina, Peru, Turkey, the Philippines, Poland, Hungary, South Korea, Indonesia, Russia, Colombia, Chile, Malaysia, the Czech Republic, India, Brazil and South Africa.

MXN/USD Nominal Exchange Rate
Index 01-Jan-2019=100

↑ **Depreciation**

- Brazil
- Chile
- Colombia
- South Africa
- Mexico
- Perú

2019   2020

Data as of June 2020.
Source: Bloomberg.

④ Mexican financial markets

The Mexican Financial Market Stress Index (IEMF, for its acronym in Spanish) increased sharply since late February due to the high volatility in global and domestic financial markets, mainly in the foreign exchange markets and country risk indicators. However, this behavior has partially reversed in recent weeks.

Mexican Financial Market Stress Index [1]
Stress level scaled to range[0,1]

Legend: Debt, Stock, Foreign Exchange, Derivatives, Credit institutions, Sovereign risk
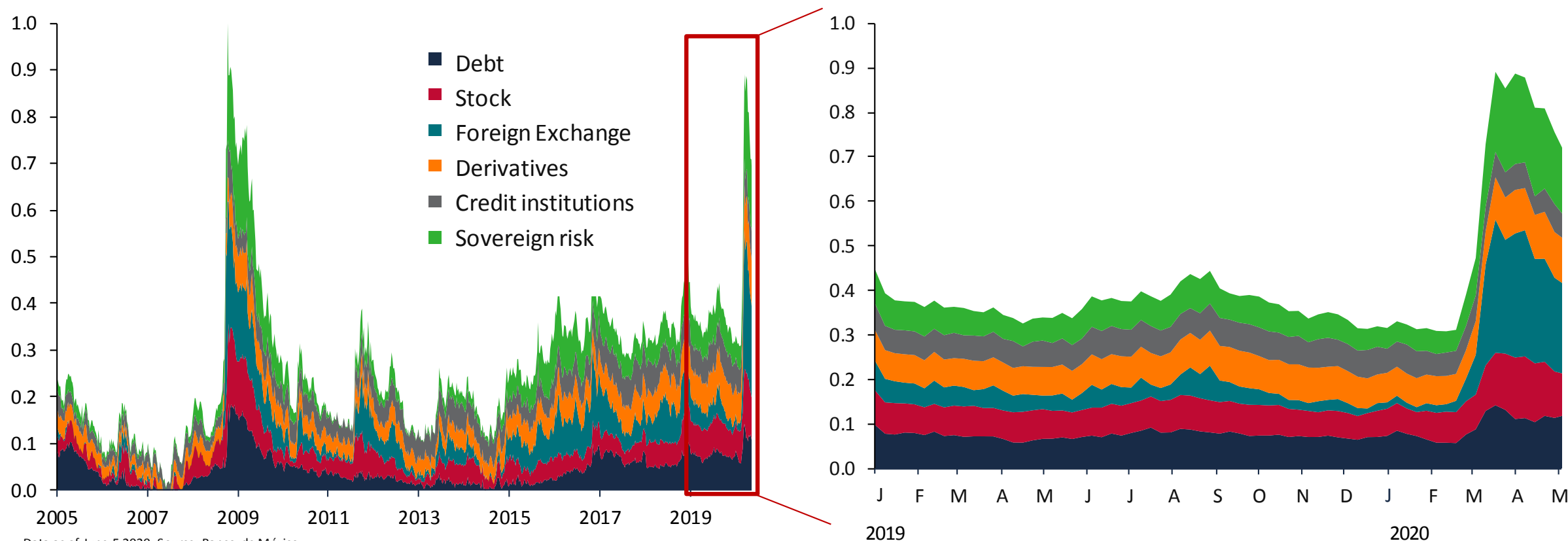
Data as of June 5 2020. Source: Banco de México.

1/ The index was estimated using a principal component analysis on 36 standardized variables of Mexican financial markets grouped into 6 categories (debt market, securities market, FX market, derivatives market, credit institutions, and sovereign risk). The total sum of the components yields an IEMF scaled to range [0,1]. A higher level of the index represents higher financial stress.

Trading conditions in the foreign exchange and fixed-income markets in Mexico deteriorated. However, these markets have recently performed better, with lower interest rates on government securities along the yield curve, and an appreciation and lower volatility of the peso/US exchange rate.

Mexican peso trading range [1/]
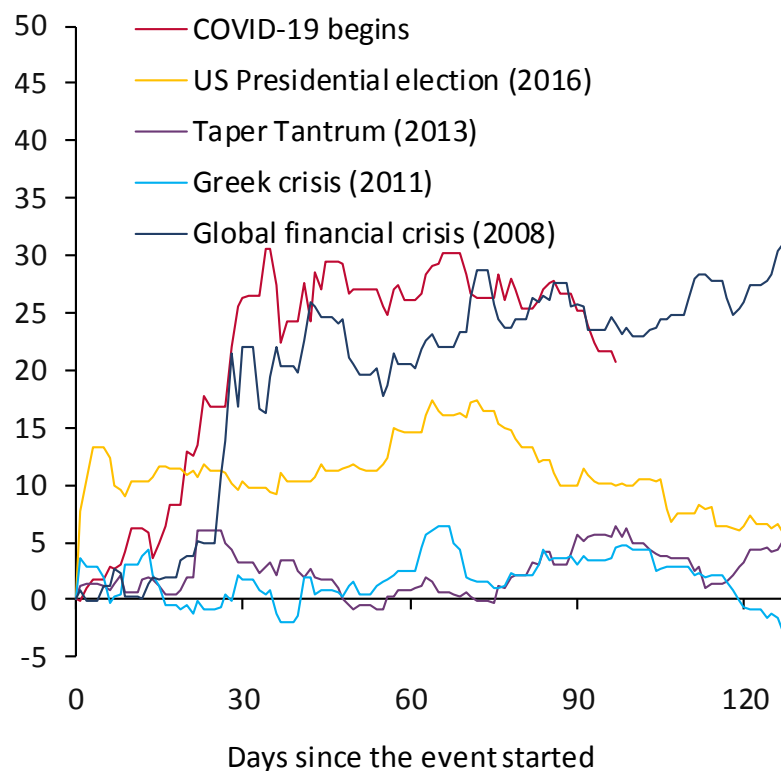MXN/USD exchange rate
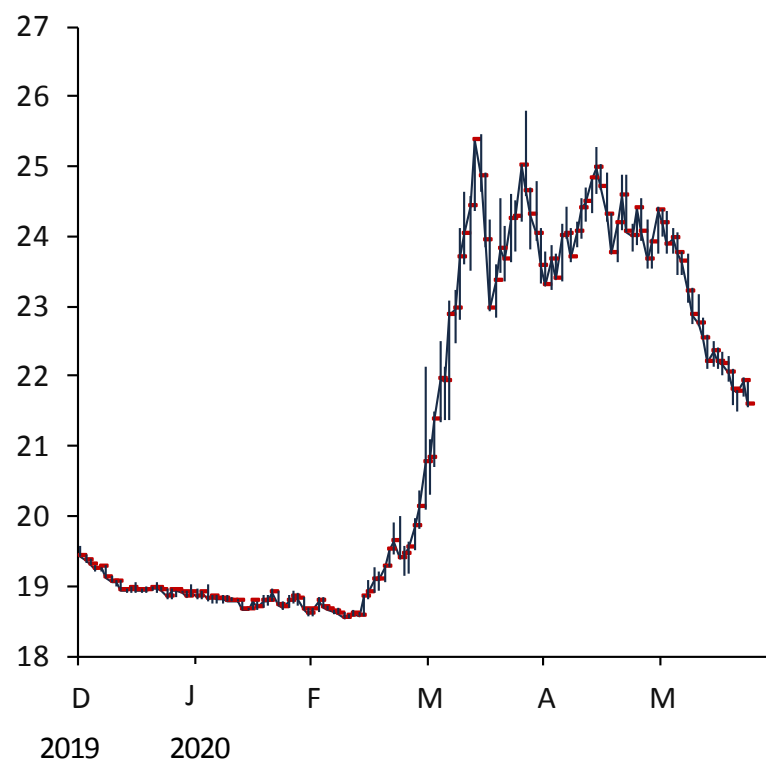
Data as of June 2020.
Source: Bloomberg.
1/ Red lines indicate the exchange rate at closing time whereas blue lines indicate the trading range.

Mexican peso cumulative performance during the year in selected periods
Depreciation percentage

- COVID-19 begins
- US Presidential election (2016)
- Taper Tantrum (2013)
- Greek crisis (2011)
- Global financial crisis (2008)

Days since the event started

Data as of June 2020.
Source: Bloomberg.

Government bond nominal yield curve [1/]
Percent and basis points

- Dec-4-19
- Jun-9-20
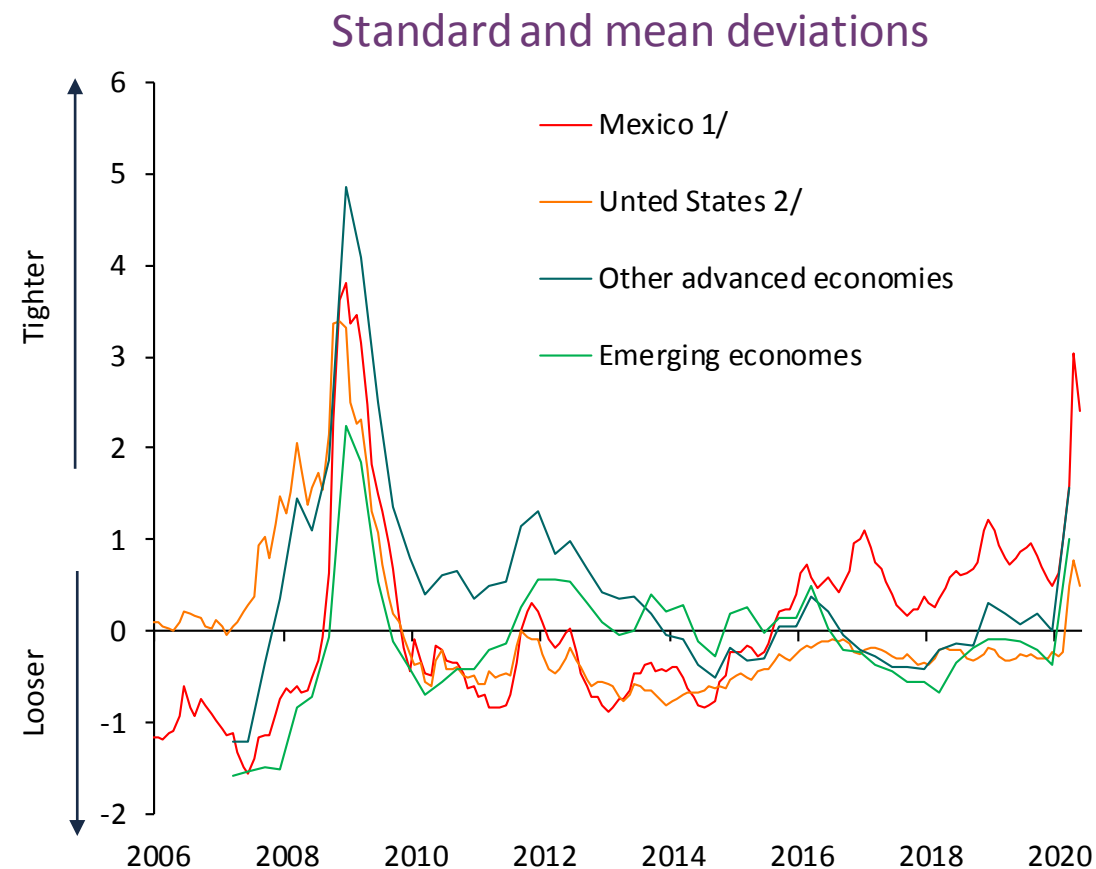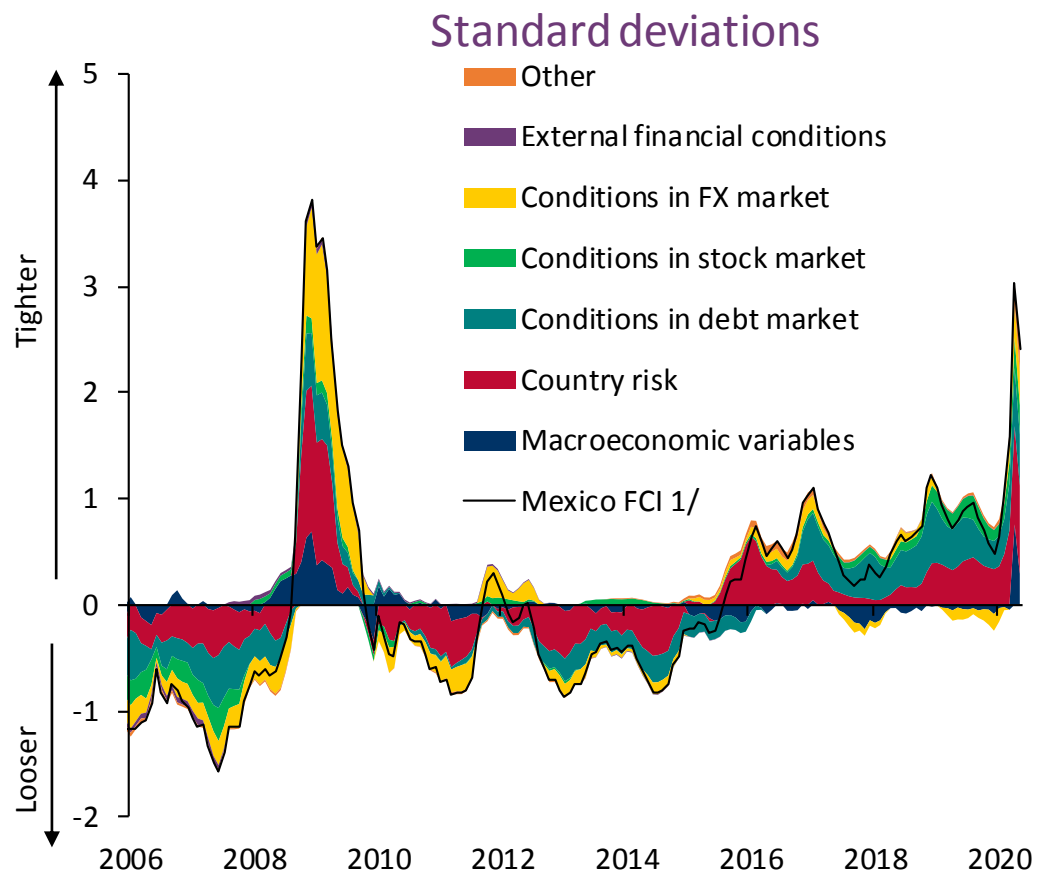- Change (Dec-4-19 -Jun-9-20)
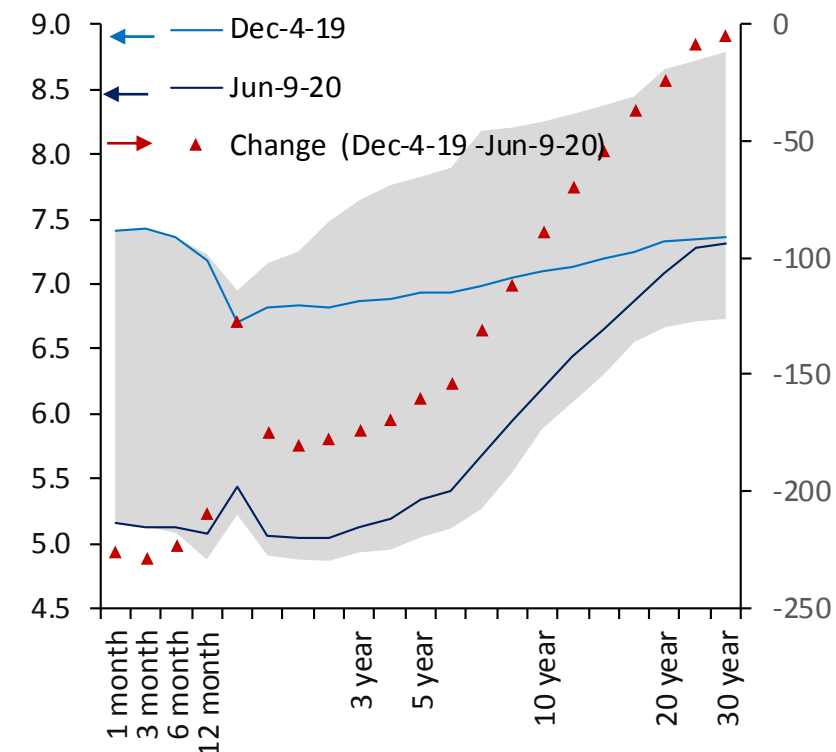
Data as of June 2020.
Source: Prepared by Banco de México with PIP data.
1/ The gray area refers to the range of daily yield curves since December 4, 2019.

Mexican financial markets

In this context, financial conditions in Mexico tightened considerably in March and April, in line with global financial conditions, although exhibiting a certain improvement in May.

Financial conditions index

Standard deviations

- Other
- External financial conditions
- Conditions in FX market
- Conditions in stock market
- Conditions in debt market
- Country risk
- Macroeconomic variables
- Mexico FCI 1/

Standard and mean deviations

- Mexico 1/
- Unted States 2/
- Other advanced economies
- Emerging economes

Preliminary data as of May 2020. Source: Banco de México.
1/ The ICF for Mexico was estimated with a DVT-FAVAR based on 16 financial and 2 macroeconomic variables: interbank spread, overnight bank funding rate, 10-year bond interest rate, slope of the yield curve, interest rate spreads of 3-month and 10-year US-Mexico bonds, spread between short-term corporate paper with high credit quality (AAA -AA) and 28-day TIIIE, EMBI+, CPI variation, CPI 90-day volatility, financial system beta, exchange rate variation, implied volatility in 3-month MXN/USD exchange rate options, financing gap, Mexican oil mix price, US financial conditions, IGAE and CPI annual variations. An IGAE forecast was used for the April and May estimate. Inflation figures for May correspond to the first half of that month. Standard deviatons 2/ Refers to the mean deviation of the adjusted NCFI published by the Federal Reserve of Chicago. 3/ Does not include China.

❺ Macrofinancial risks balance

- The COVID-19 pandemic has represented a significant shock to the economy and the global financial system, and some risks to the domestic economy have materialized.

- The domestic financial system had a strong position at the onset of this adverse episode. However, certain risks could intensify in the future and affect the proper functioning of the financial system.

- This Report considers the following risks to financial stability:

  ❶ **Slowdown of the world economy** and the **uncertainty** associated with its recovery.

  ❷ Higher **volatility in international financial markets** and **recomposition of flows** towards lower risk assets.

  ❸ **Greater contraction of the Mexican economy** and the uncertainty associated with its depth and duration.

  ❹ Additional **adjustments to the sovereign debt and Pemex's credit ratings.**

Contents

Challenges posed by the pandemic and measures implemented

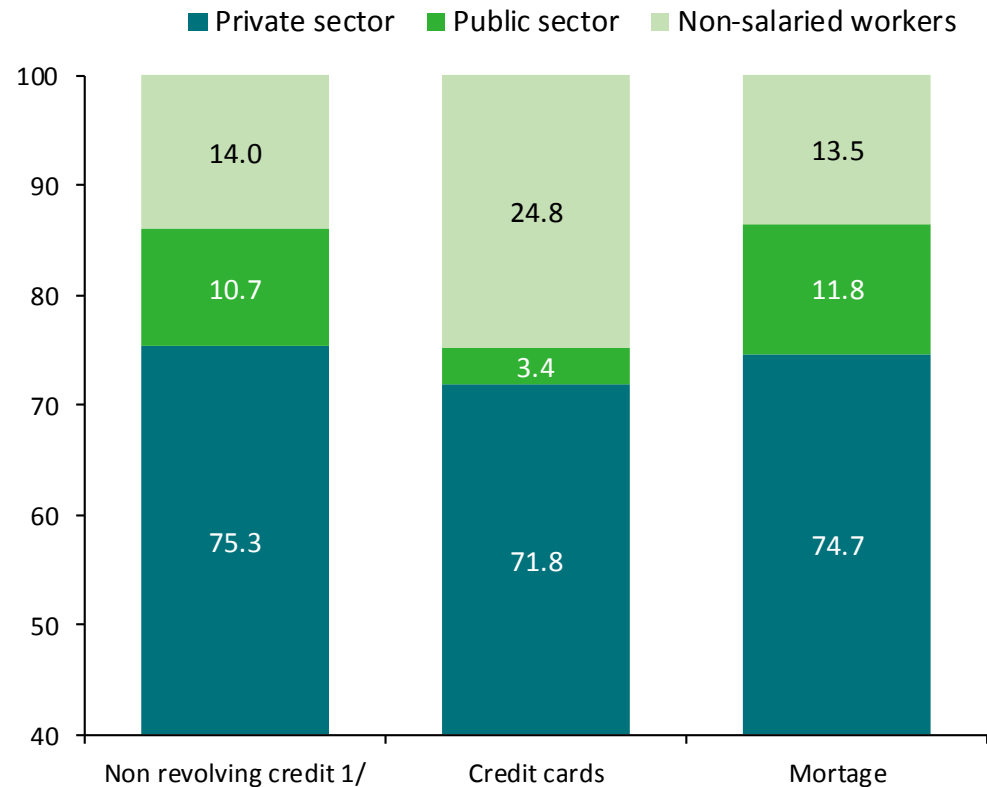## *Challenges faced by the financial system under the current complex situation:*

① To have good trading conditions in domestic financial markets, and to foster the proper functioning of the payment systems.

② To prevent financial institutions' response to the crisis from aggravating any liquidity and operational problems that economic agents might face.

③ To maintain the flow of credit required by firms, households, and certain financial intermediaries and guarantee adequate liquidity conditions, both in domestic and foreign currency, thus ensuring the financial system's stability.

④ To prevent solvent economic agents from becoming financially overstretched by temporary liquidity problems.

⑤ To adequately manage financial institutions' increase in market, credit and operational risks.

Challenges posed by the pandemic and measures implemented

The effects of the health crisis on households and firms will be differentiated depending on the economic sectors to which they belong. Non-salaried workers and firms in the sectors directly affected could face greater challenges in their payment capacity.

Credit to households by employer

Percentage structure

Legend: ■ Private sector ■ Public sector ■ Non-salaried workers

Non revolving credit 1/: Private sector 75.3, Public sector 10.7, Non-salaried workers 14.0
Credit cards: Private sector 71.8, Public sector 3.4, Non-salaried workers 24.8
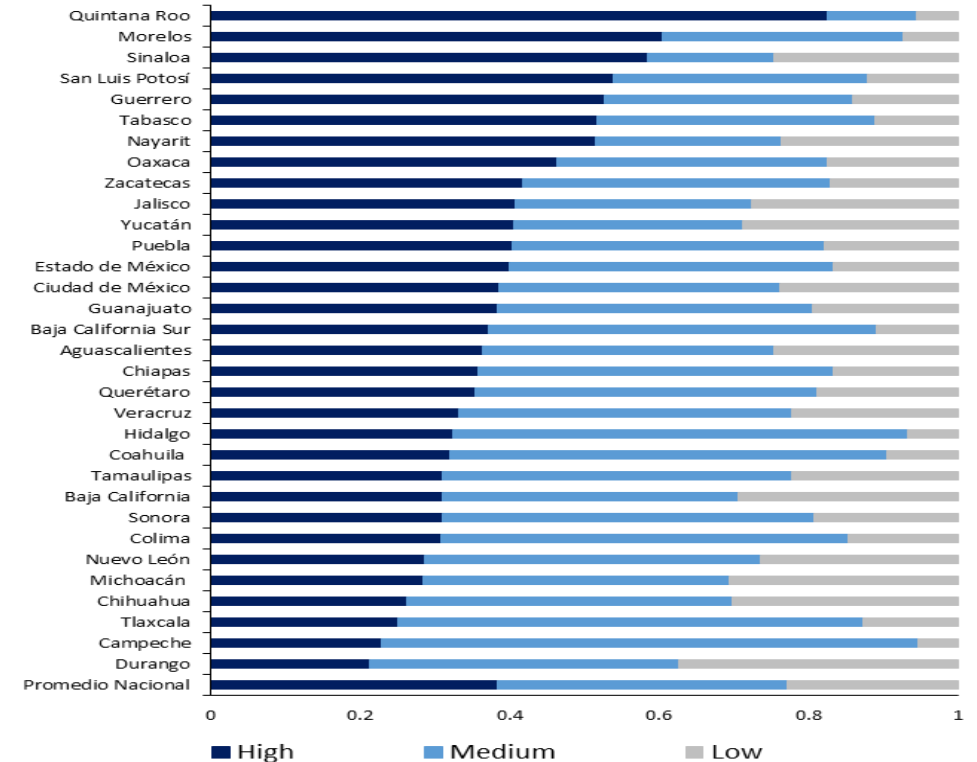Mortage: Private sector 74.7, Public sector 11.8, Non-salaried workers 13.5

Data as of February 2020 for credit cards and as of March 2020 for mortgage credit.
Source: Banco de México.
1/ Includes car, payroll and personal loans.

Percentage of credit portfolio of sectors affected by COVID-19 by state [1]

Percent

Legend: ■ High ■ Medium ■ Low

States (top to bottom): Quintana Roo, Morelos, Sinaloa, San Luis Potosí, Guerrero, Tabasco, Nayarit, Oaxaca, Zacatecas, Jalisco, Yucatán, Puebla, Estado de México, Ciudad de México, Guanajuato, Baja California Sur, Aguascalientes, Chiapas, Querétaro, Veracruz, Hidalgo, Coahuila, Tamaulipas, Baja California, Sonora, Colima, Nuevo León, Michoacán, Chihuahua, Tlaxcala, Campeche, Durango, Promedio Nacional

Data as of January 2020, reflecting the exposure previous to the pandemic and thus a possible affectation by COVID-19.
Source: Banco de México, Moody's.
1/ Highly affected: apparel, automotive manufacturing, automotive suppliers, consumer durables, construction, gambling facilities (casinos, electronic game houses), recreation and tourism, non-food retail, and global shipping. Moderately affected: beverages, chemicals, manufacturing, mining and metals, oil and gas, agriculture, service companies and steel producers. Less affected: security, transportation and equipment, leasing, pharmaceuticals, food, telecommunications, and waste management.

Measures to support lending and credit provision

Banco de México and other financial authorities have implemented measures aimed at **stabilizing financial markets** and **strengthening credit provision for firms and households**.

Measure	Eligible intermediaries			Direct beneficiaries		
				Firms		
	Banks [1]	Funds	Other	Big	Micro & SMEs	Households
1. Reduction of the Monetary Regulation Deposits	✓			✓	✓	✓
2. Temporary accounting flexibilities	✓	✓	✓	✓	✓	✓
3. Voluntary dividend suspension	✓		✓	✓	✓	✓
4. Provision of resources to banking institutions to channel credit to micro, small-, and medium-size enterprises and individuals affected by the COVID-19 pandemic	✓				✓	✓
5. Collateralized financing facility for commercial banks with corporate loans, to finance micro, small-, and medium-size enterprises	✓				✓	

1/ Includes commercial and development banks.

Measures to provide liquidity

To **tackle** the **liquidity and depth-related problems** in various financial instruments and markets generated by the financial shock that affected the Mexican economy, the following **measures** were implemented.

Measure	Eligible intermediaries			Direct beneficiaries		
				Firms		
	Banks [1]	Funds	Other	Big	Micro & SMEs	Households
6. Reduced interest rate on the Ordinary Additional Liquidity Facility (FLAO)	✓			✓	✓	✓
7. Extending the securities eligible for the FLAO, foreign exchange hedging program operations, and USD credit operations	✓			✓	✓	✓
8. Extending the counterparts eligible for the FLAO	✓			✓	✓	✓
9. Government securities term repurchase window	✓			✓	✓	✓
10. Corporate Securities Repurchase Facility	✓			✓		

1/ Includes commercial and development banks.

Market functioning measures

Measures to **promote an orderly behavior of government securities and corporate securities markets**.

Measure	Eligible intermediaries		
	Banks [1]	Funds	Other
11. Expansion of foreign exchange hedging program	✓	✓	✓
12. US dollar auctions funded with swap line	✓		
13. Liability management operations	✓	✓	✓
14. Strengthen the Market Makers program for government debt	✓		✓
15. Increasing liquidity during trading hours to facilitate the optimal functioning of financial markets and payment systems	✓		
16. Temporary securities swap window	✓		
17. Swaps of government securities	✓		
18. Foreign exchange hedges settled by differences in US dollars with non-resident counterparts, to be traded during hours when Mexican markets are closed	✓		

1/ Includes commercial and development banks.

Regulatory flexibilities

Measures through which, either directly or by participating in different government entities, Banco de México has contributed to face the health contingency.

Measure	Eligible intermediaries			Direct beneficiaries		
				Firms		
	Banks [1]	Funds	Other	Big	Micro & SMEs	Households
19. Use of capital buffers by banks	✓			✓	✓	✓
20. Temporary flexibilities on liquidity requirements	✓			✓	✓	✓
21. Temporary reporting flexibilities	✓		✓			
22. Temporary exemptions to credit card minimum payments	✓		✓			✓

1/ Includes commercial and development banks.

Operational and business continuity

- Measures **to foster the operations and business continuity** in the financial system.

Measure	Eligible intermediaries			Direct beneficiaries			
				Firms			
	Banks [1]	Funds	Other	Big	Micro & SMEs	Households	
23. Oversight and inspection flexibilities by CNBV	✓	✓	✓				
24. Cash handling operations	✓					✓	
25. Operational and business continuity for retirement savings institutions		✓				✓	

1/ Includes commercial and development banks.

BANCO DE MÉXICO

Contents

The heat map of financial system risks deteriorated as compared to that of the previous *Financial Stability Report.*

Heat map of Mexican financial system risks [1/]
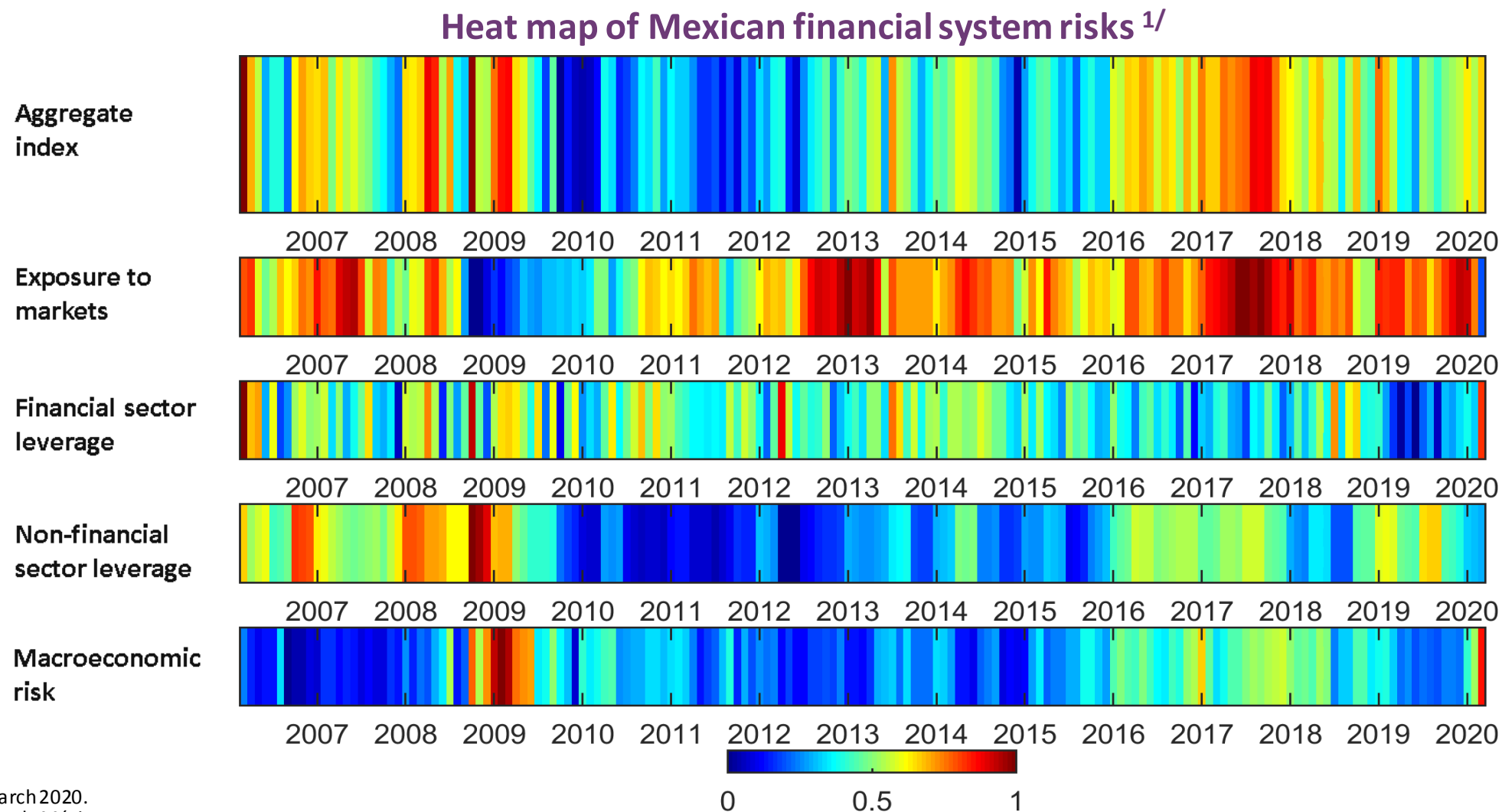
Data as of March 2020.
Source: Banco de México.
1/ For a description of the methodology, see Box 3: Heat maps of Mexican financial system risks, *Financial System Report 2018*. The category *Risk of Market Exposure* corresponds to the category *Risk Appetite* of the *Financial System Report* 2018.

Prior to the pandemic, the Mexican economy's financing and financial cycle were slowing down. However, in the Q1-2020, financing increased. The external financing increased due to the depreciation of the exchange rate while domestic financing increased due to the use of credit lines.

Financial cycle [1] [2]
Medium-term cyclical component,
Percent of GDP

Credit gap (total, domestic and external)
Percent

Credit gap by sector [3]
Percent

Data as of the first quarter of 2020.
Source: Prepared by Banco de México with data from INEGI, Drehman et al. (2012), and from Laeven and Valencia (2012).
1/ The medium-term cyclical component was obtained with a band-pass filter assuming that, according to the literature, financial cycles last between 8 and 30 years.
2/ Drehmann et al. (2012) and Borio (2014) show that peaks in the medium-term cyclical component of the credit-to-GDP ratio occur up to one year before or one year after the onset of systemic banking crises. Using this result, the shadow area shows the time range delimited by one year before and one year after the beginning of the banking crisis in Mexico which, according to Laeven and Valencia (2008, 2012 and 2018), was in 1994.
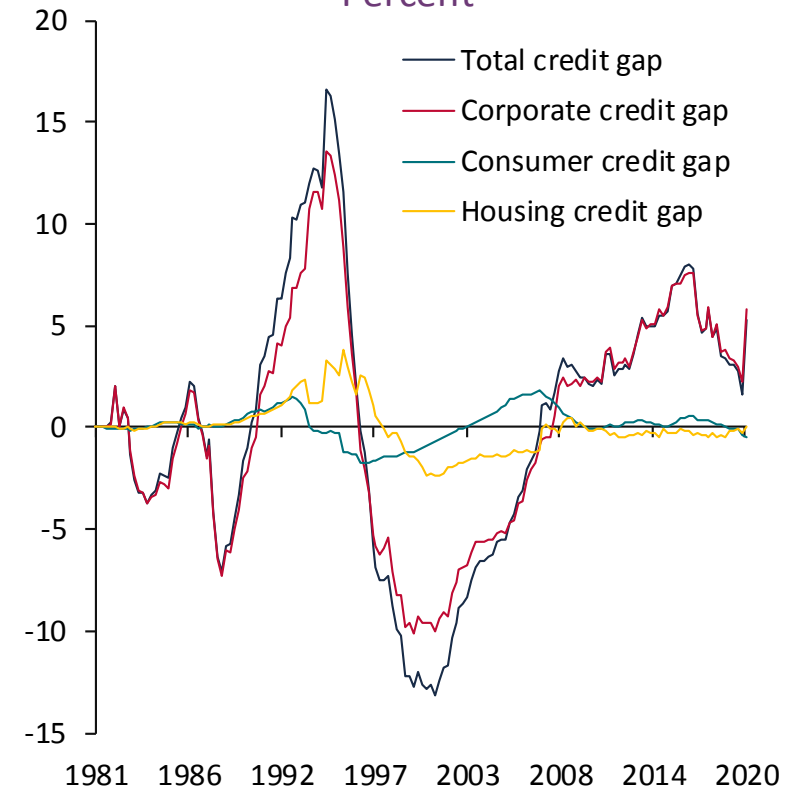
Data as of March 2020.
Source: Banco de México.
1/ The credit gap is calculated as the difference between the credit-to-GDP ratio and its long-term trend. The long-term trend is estimated with a one-sided Hodrick-Prescott filter with a smoothing parameter of 400,000 using data from the fourth quarter of 1980.
2/ Data on external credit prior to 1995 was estimated as the difference between total credit and bank credit.
3/ In the case of data corresponding to credit prior to 1995, the difference between total credit and bank credit was allocated to enterprises.

During Q4-2019 and Q1-2020, household credit growth slowed down, in both consumer credit and mortgages.

Households' indebtedness relative to their financial assets
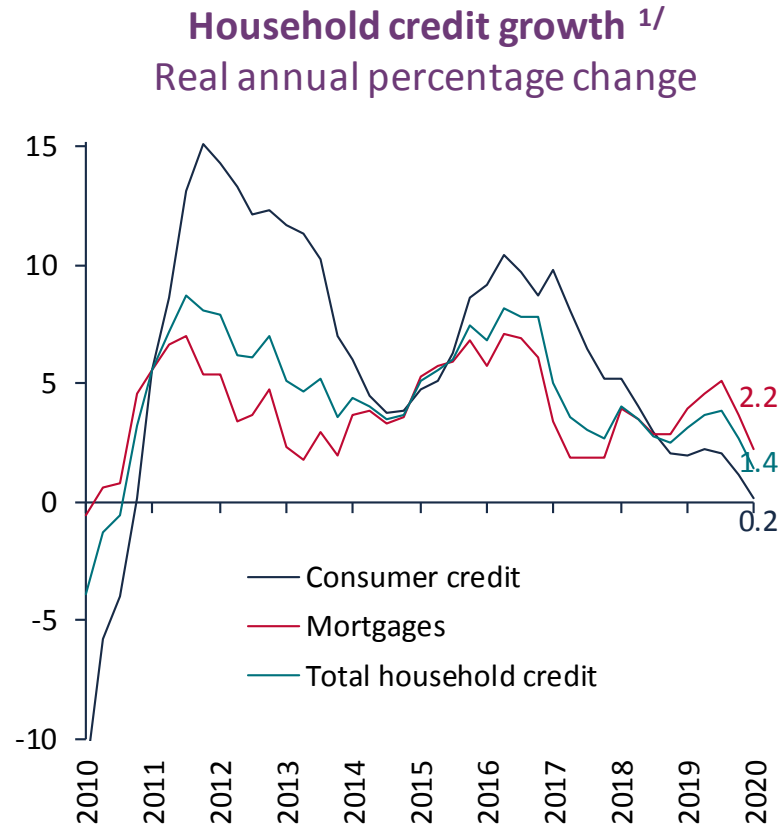### Balance as percentage of GDP
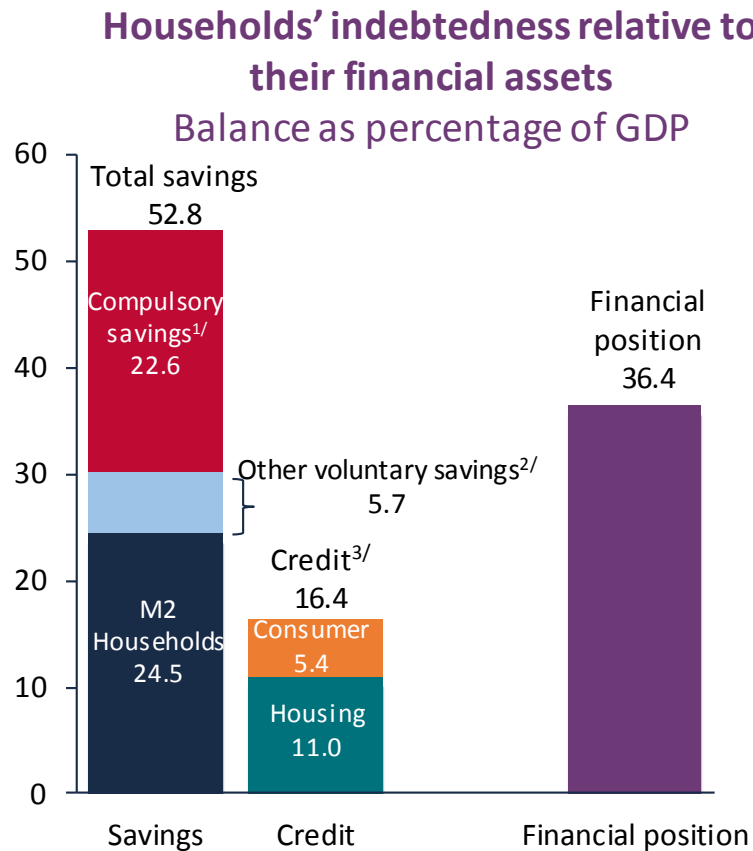
Data as of March 2020.
Source: Banco de México.
1/ Includes housing and pension funds.
2/ Includes public and private securities, securities issued by states, municipalities, public entities and state-owned companies, the National Infrastructure Fund (Fonadin, for its acronym in Spanish), and other bank liabilities held by households.
3/ Includes credit from commercial banks, development banks, popular loan entities and credit unions, and regulated Sofomes.

Household credit growth [1]
Real annual percentage change

- Consumer credit
- Mortgages
- Total household credit

Data as of March 2020, except for figures for unlisted non-regulated Sofomes which are available as of December 2019.
Sources: Banco de México, BMV and Condusef.
1/ Considers credit granted by the country's banks, regulated Sofomes with links with banks, Socaps, Sofipos and credit unions as well as financial entities that legally disappeared such as Sofoles, leasing companies and factoring companies. For housing loans it also includes those granted by Infonavit and Fovissste. Consumer credit data include credit granted by the Institute of the National Fund for Workers' Consumption (Infonacot, for its acronym in Spanish). It also includes financing granted by non-regulated entities, such as non-regulated Sofomes and that granted by financial companies specializing in credit or leasing, which issue debt but are not financial entities under Mexican law. The growth series are adjusted to consider the beginning of availability of the data on financing by non-regulated entities and regulated Sofomes that issue debt in the period in which they appear in the sample (2015-2016).
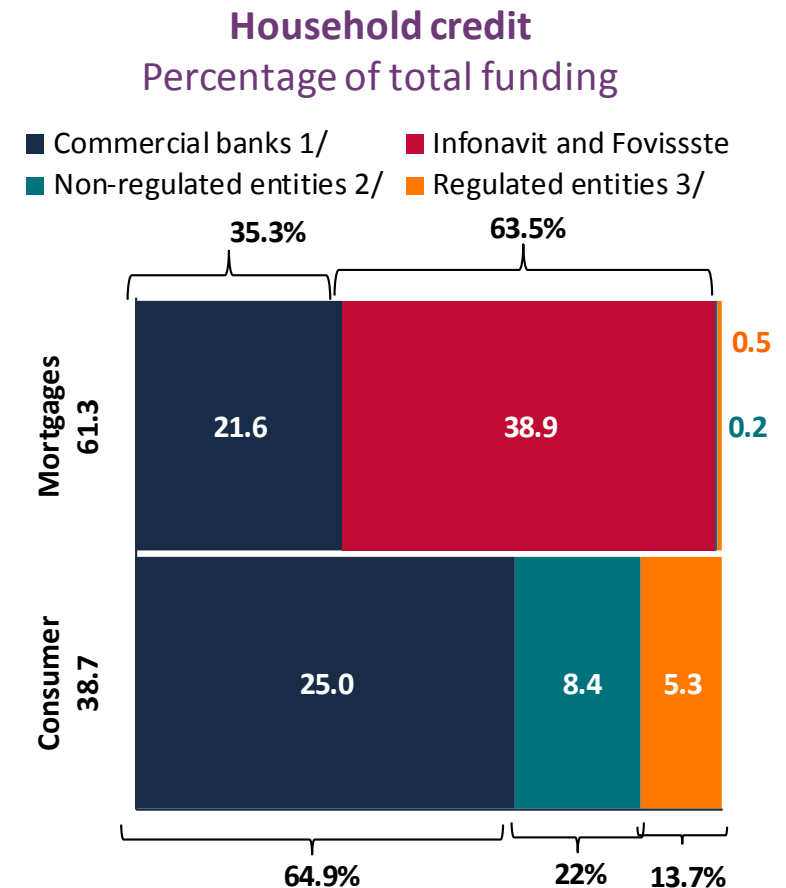
Household credit
Percentage of total funding

Data as of March 2020, except for figures for unlisted non-regulated Sofomes which are available as of December 2019.
Sources: Banco de México, Mexican Stock Exchange (BMV, for its acronym in Spanish), and Commission for the Defense of Financial Services Users (Condusef, for its acronym in Spanish)
1/ Includes the portfolio of regulated Sofomes that have a patrimonial link with a bank. 2/ Includes financing granted by non-regulated Sofomes, debt-issuing companies that grant financing (i.e. automotive) and credit granted by listed department stores to their customers.
3/ Includes development banks, Institute of the National Fund for Workers' Consumption (Infonacot, for its acronym in Spanish) as well as other regulated non-bank financial entities such as Socaps, Sofipos, and Sofomes regulated as debt issuers.
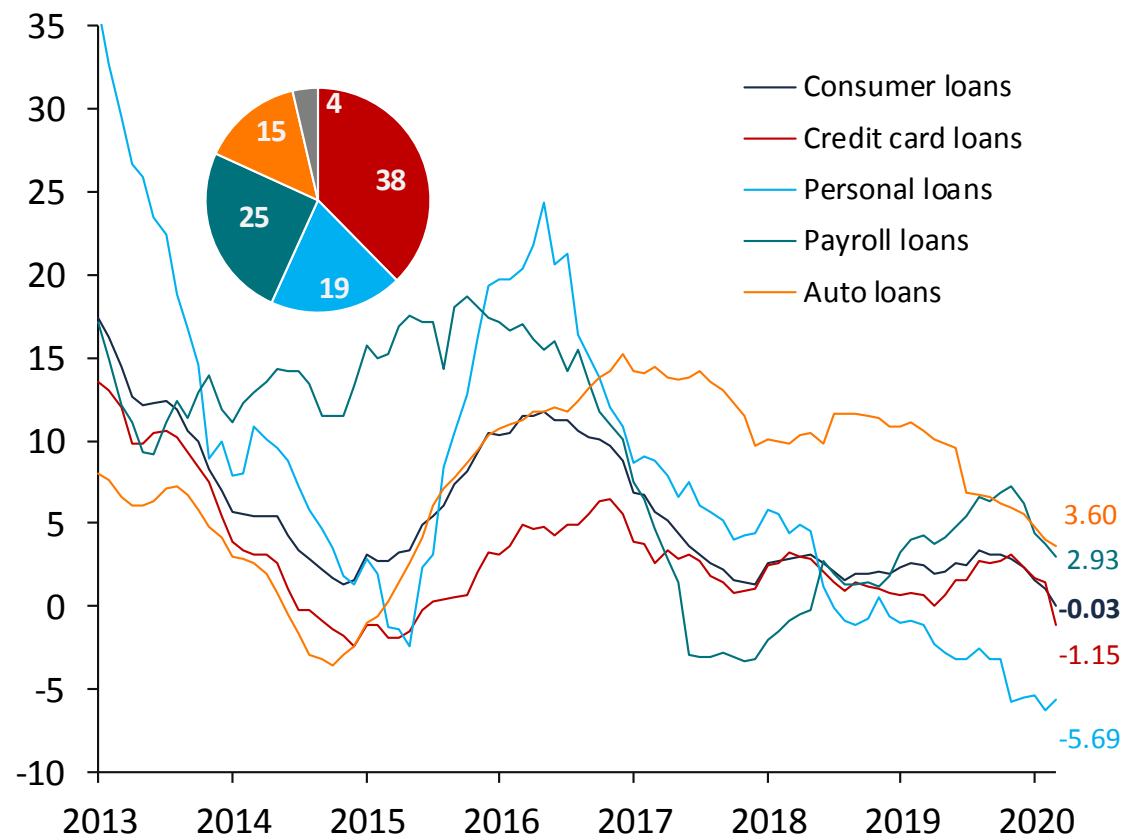
All types of consumer loans granted by banks and their subsidiaries slowed down, although the personal loan segment fell to a greater extent.

Consumer credit by source
Percent

Commercial banks' consumer loan portfolio
Annual real percentage change
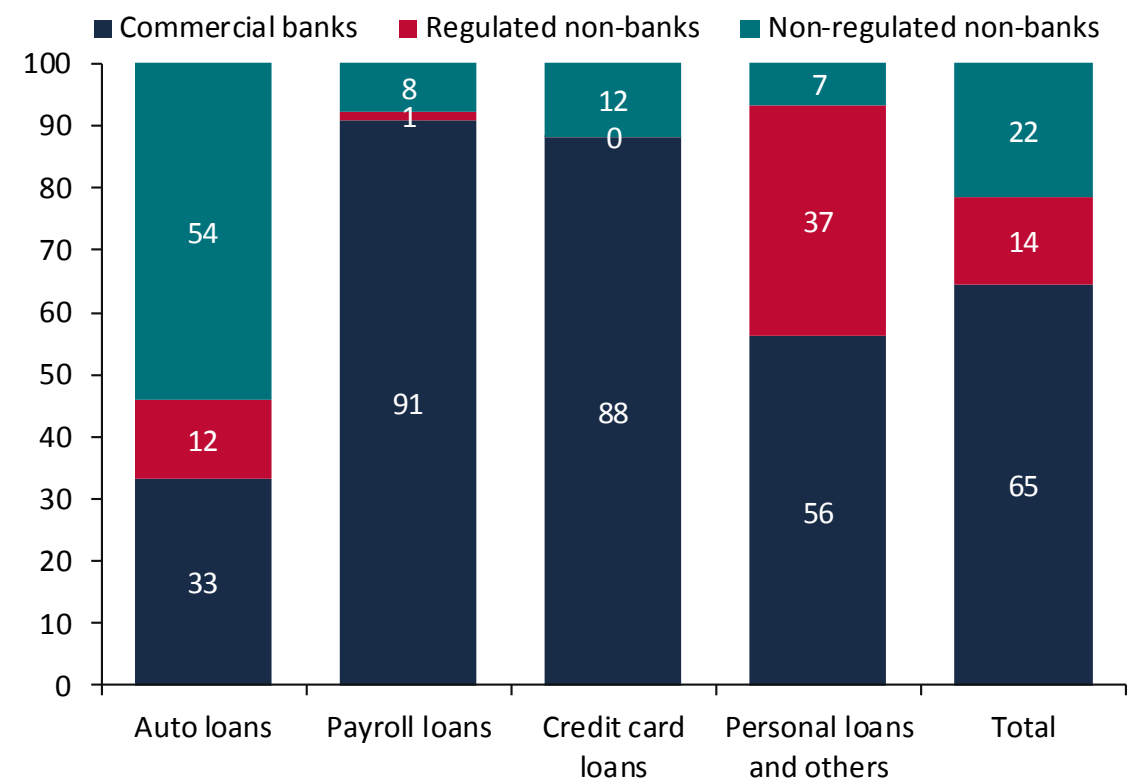
Data as of March 2020 for commercial banks, except for unlisted non-regulated Sofomes where data is available as of December 2019.
Sources: Banco de México, National Banking and Securities Commission (CNBV, for its acronym in Spanish) and Condusef.
1/ Includes credit portfolio of regulated Sofomes that are entities related to a bank.
2/ Includes portfolio of Infonacot in the segment of personal loans and others, which accounts for 1.1% of total consumer portfolio as of year end 2019.
3/ Includes portfolio of non-regulated Sofomes, credit cards issued by department stores that report to the BMV as well as financial companies that grant credit predominantly as part of their business line, such as financial leasing or some financial areas of automotive companies.
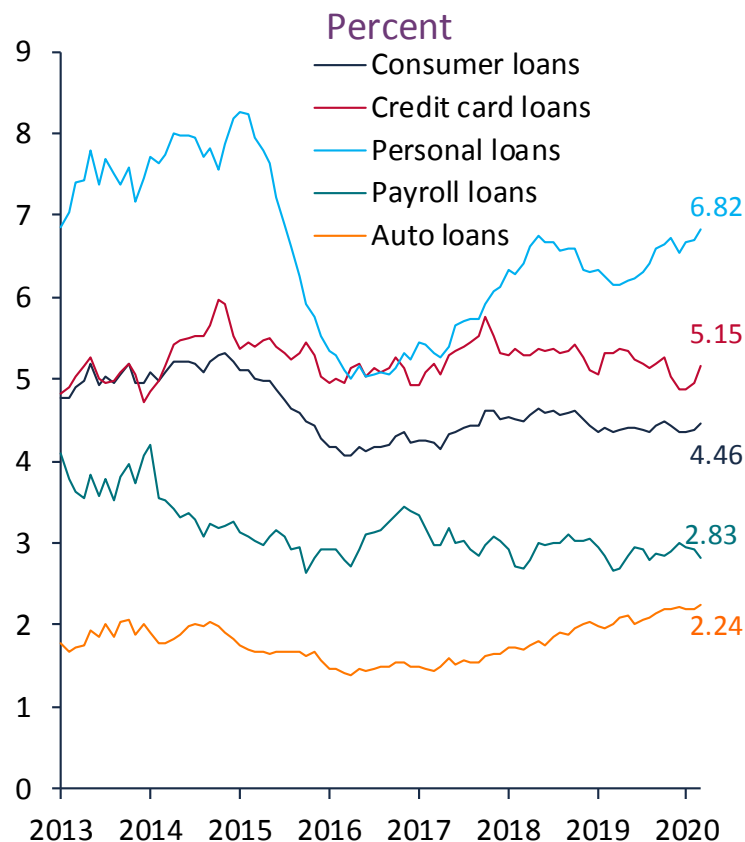
Data as of March 2020.
Source: CNBV.

Delinquency rates on bank's consumer loans did not change significantly in Q1-2020 as compared to 2019; however, in some cases they increased at the end of the quarter. Delinquency rates on consumer loans from non-bank financial entities also remained relatively stable, although Sofipo's non-performing loans continued to increase.

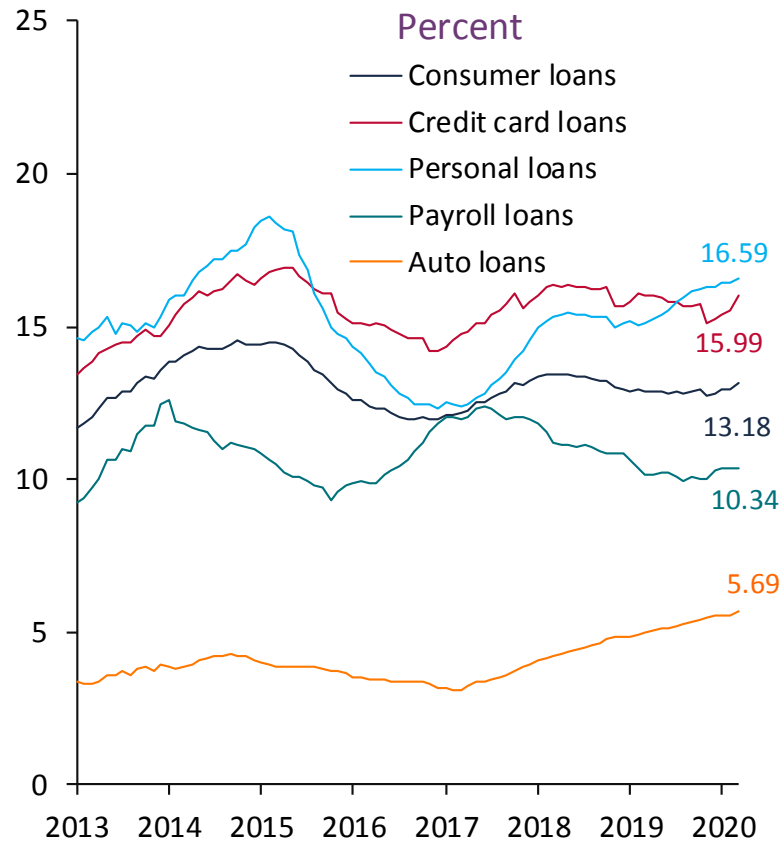**Delinquency rate of banks' consumer loan portfolio [1/]**

Percent

Data as of March 2020.
Source: CNBV.
1/ Includes regulated Sofomes with links to banks.

Adjusted delinquency rate of banks' consumer loan portfolio [1/]
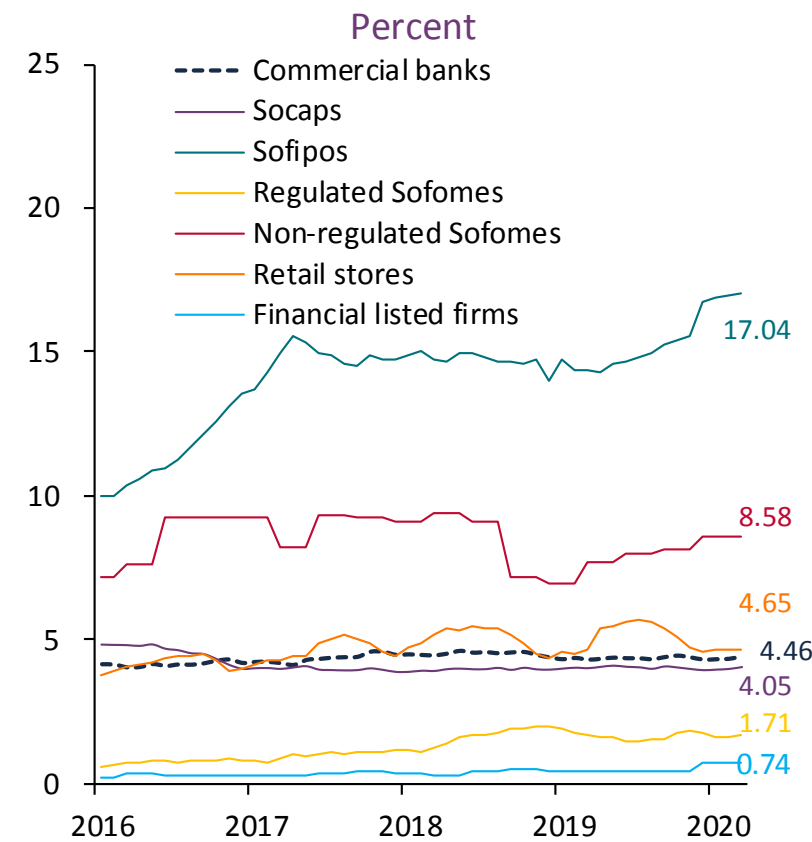
Percent

Data as of March 2020.
Source: CNBV.
1/ Includes regulated Sofomes with links to banks.

Delinquency rate of non-bank financial entities' consumer loan portfolio
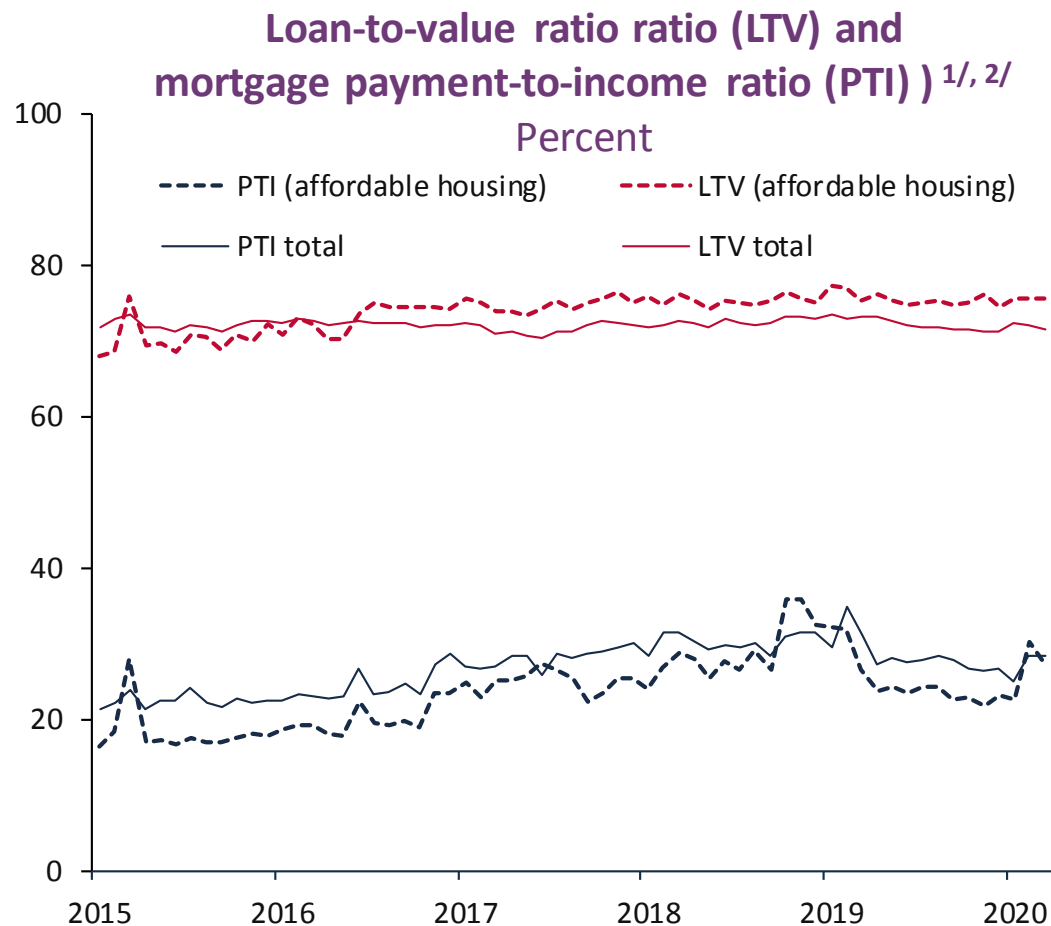
Percent

Data of regulated entities is as of March 2020, while data of non-regulated entities is as of December 2019.
Source: Banco de México (SIE), BMV, Condusef and Credit Bureau.

In general, housing credit conditions and delinquency rates on mortgages have remained relatively stable.

Loan-to-value ratio ratio (LTV) and mortgage payment-to-income ratio (PTI)) [1,2]

Percent

- - - - PTI (affordable housing)   - - - - LTV (affordable housing)
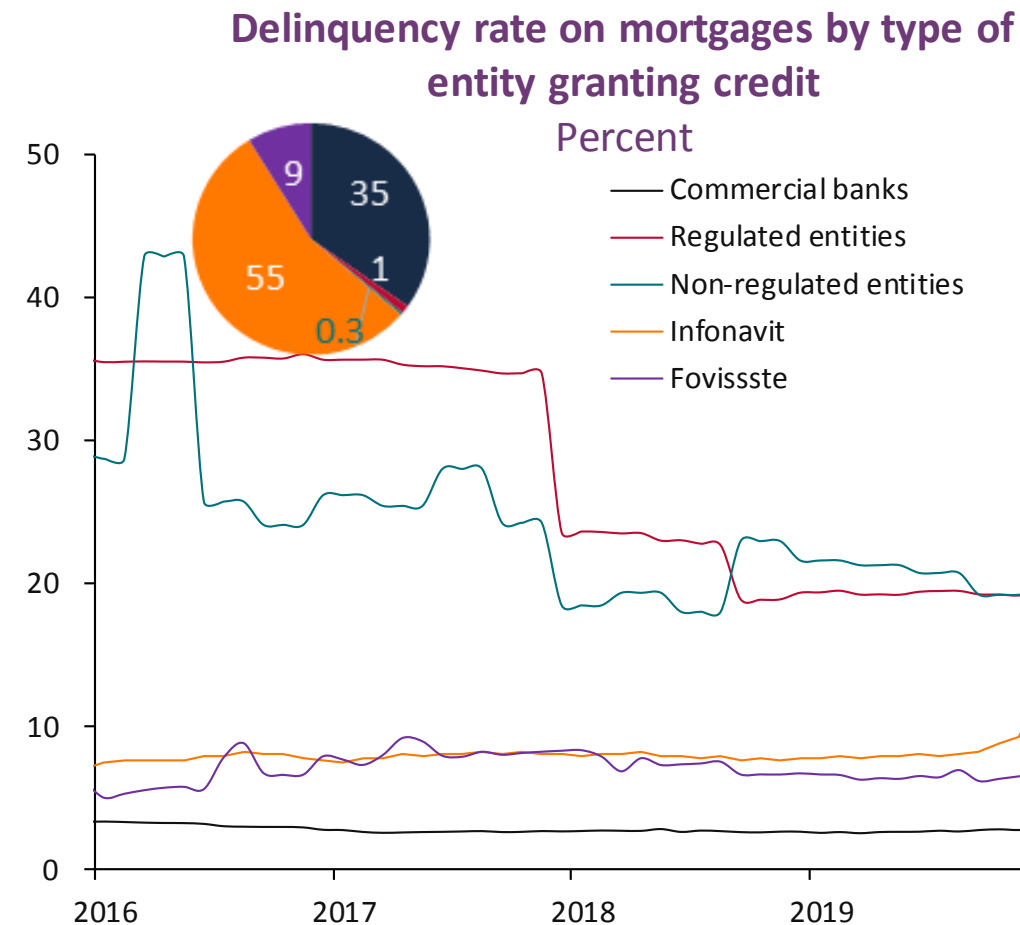——— PTI total   ——— LTV total

Data as of March 2020.
Source: CNBV.
1/ LTV refers to the ratio of the loan's amount to the property's value.
2/ PTI refers to the share of income destined for mortgage payments.

Delinquency rate on mortgages by type of entity granting credit

Percent

——— Commercial banks
——— Regulated entities
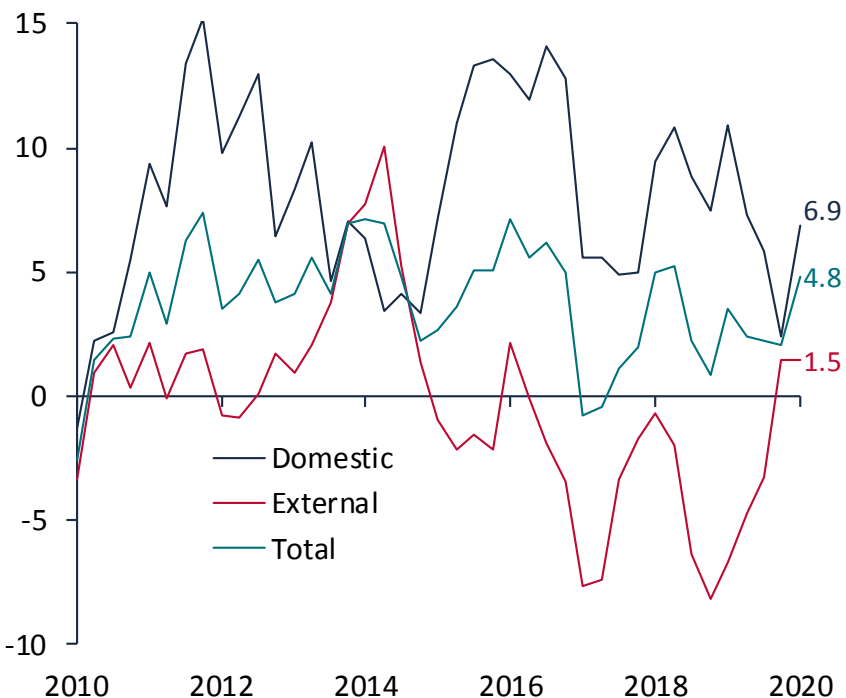——— Non-regulated entities
——— Infonavit
——— Fovissste

Data as of March 2020 except for figures for unlisted non-regulated Sofomes, which are as of December 2019. Sources: Banco de México (SIE), BMV and Condusef. 1/ Includes credit portfolio of regulated Sofomes that are related banks. 2/ Includes credit portfolio of regulated non-bank financial entities, such as development banks, Socaps, Sofipos, and regulated Sofomes issuing debt.
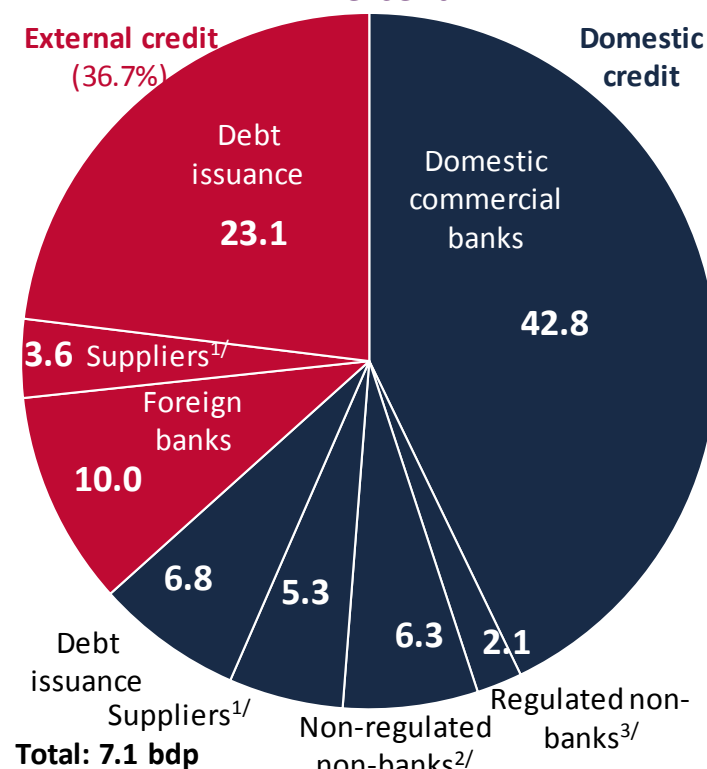3/ Includes non-regulated Sofomes.

④ Households' financial position

Credit to non-financial private firms increased during Q1-2020. This is mainly explained by the increase in financing from domestic sources, particularly from domestic banks.
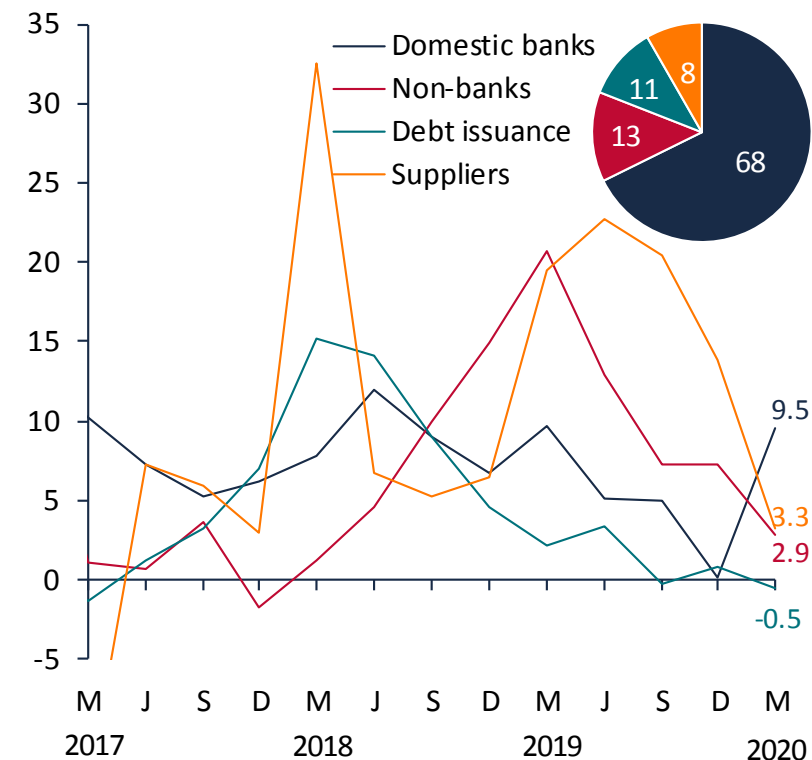
Total financing to non-financial private firms [1]
Real annual percentage change

Data as of March 2020, except for non-regulated sofomes and suppliers , which are as of December 2019. Source: Banco de México, BMV and SHCP.

1/ Includes financing from suppliers, both domestic and external, to firms listed in Mexico's stock exchange. It also includes financing granted to firms by non-regulated entities, such as non-regulated sofomes and financing granted by financial firms specialized in credit or leasing, which issue debt but are not financial entities under Mexican law. The growth series is adjusted to the beginning of available data of financing for non-regulated entities and regulated sofomes for issuing debt in the period in which they appear in the sample (2015-2016). External financing data are adjusted due to the exchange rate effect.

Sources of financing for non-financial private firms
Percent

External credit (36.7%)

Debt issuance **23.1**

3.6 Suppliers[1]

Foreign banks **10.0**

Debt issuance **6.8**

Suppliers[1] **5.3**

Non-regulated non-banks[2] **6.3**

Regulated non-banks[3] **2.1**

Domestic credit

Domestic commercial banks **42.8**

Total: 7.1 bdp

Data as of March 2020, except for non-regulated sofomes and suppliers which are as of December 2019.
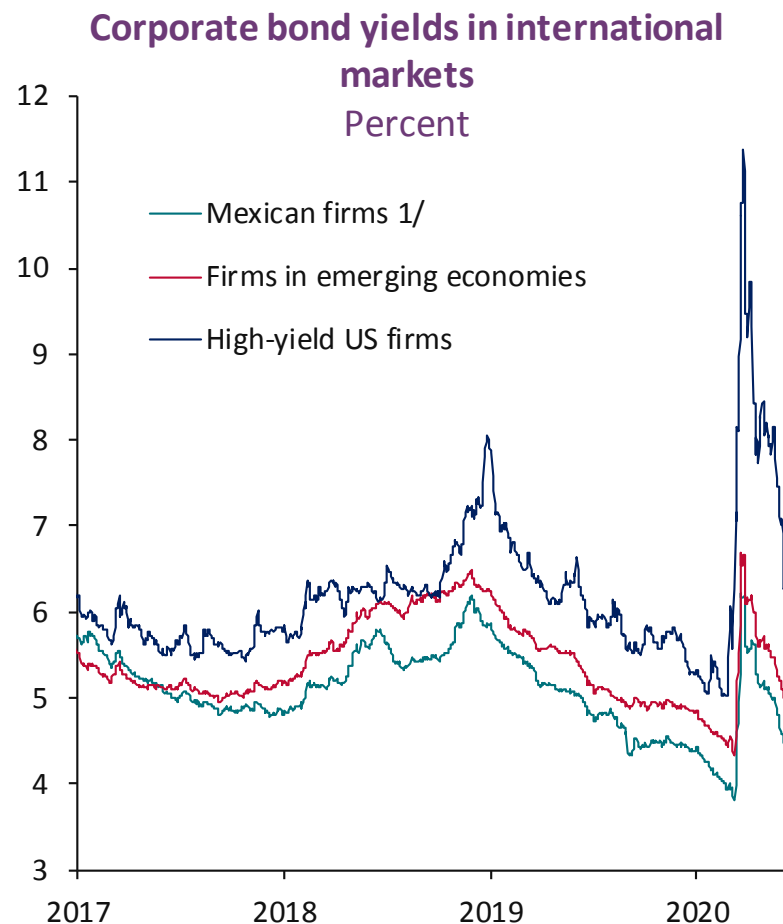Source: Banco de México, BMV and Condusef.
1/ Includes only financing to firms listed in Mexico's stock exchange.
2/ Includes financing granted to firms by non-regulated entities. These include non-regulated sofomes and financial firms specialized in credit or leasing, which issue debt but are not financial entities under Mexican law.
3/ Includes socaps, sofipos, credit unions and regulated sofomes that issue debt.

Domestic sources of financing for non-financial private firms
Real annual percentage change

- Domestic banks
- Non-banks
- Debt issuance
- Suppliers

Risk aversion and volatility in financial markets have affected the corporate debt market, although recently, a decline in risk premia has been observed.

Corporate bond yields in international markets
Percent

— Mexican firms 1/
— Firms in emerging economies
— High-yield US firms

Data as of June 5, 2020.
Sources: Bloomberg and ICE-BofAML.
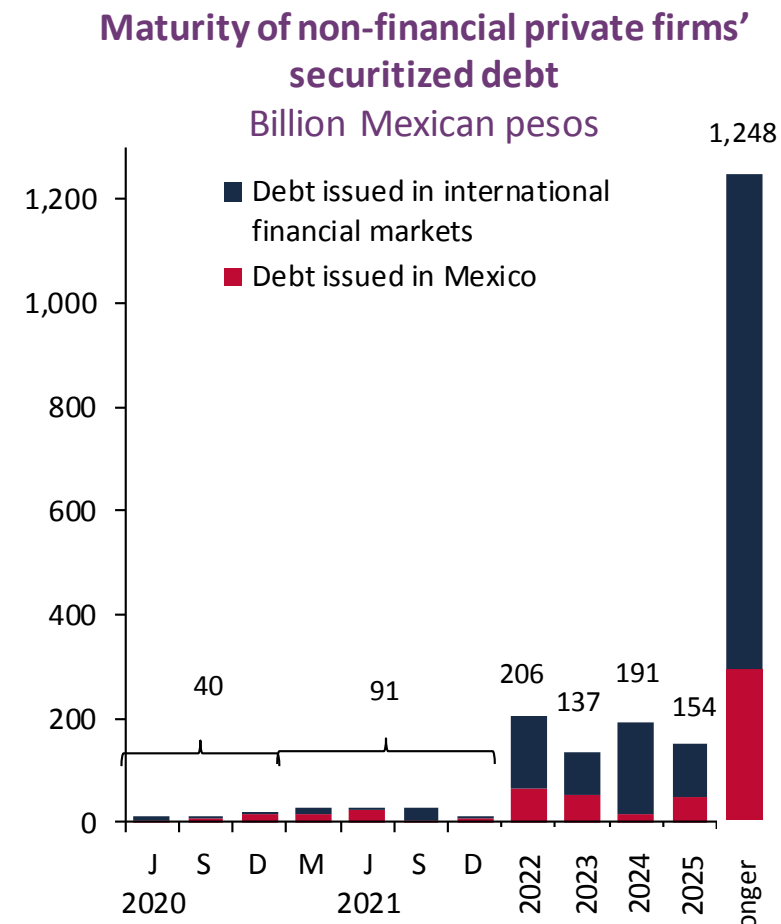1/ JP Morgan Corporate Emerging Markets Bond Index (CEMBI) for Mexico. The average rating of Mexican issuers is BBB on a global scale.

Net quarterly issuances of long-term debt [1]
Billion Mexican pesos

■ Debt issued in Mexico
■ Debt issued in international financial markets

Data as of June 5, 2020.
Sources: Banco de México, Bloomberg and Indeval.
1/ Constructed from the differences in the outstanding balance of each quarter. For debt issued in international markets, a single exchange rate was used (that of the current quarter) to avoid exchange rate effects.

Maturity of non-financial private firms' securitized debt
Billion Mexican pesos

■ Debt issued in international financial markets
■ Debt issued in Mexico

Data as of June 5, 2020.
Source: Indeval and Banco de México.

Private non-financial firms' financial position

Before the pandemic, private firms' delinquency rates had been adjusting slightly upwards from relatively low levels, standing out the upward trend in SMEs. Credit provided by non-bank financial entities registered delinquency rates above those of commercial banks. However, in most of these entities, delinquency rates have remained stable in recent months.

Delinquency rate by firm size [1/]
Percent

Delinquency rate on non-financial firms loans at non-bank financial entities
Percent
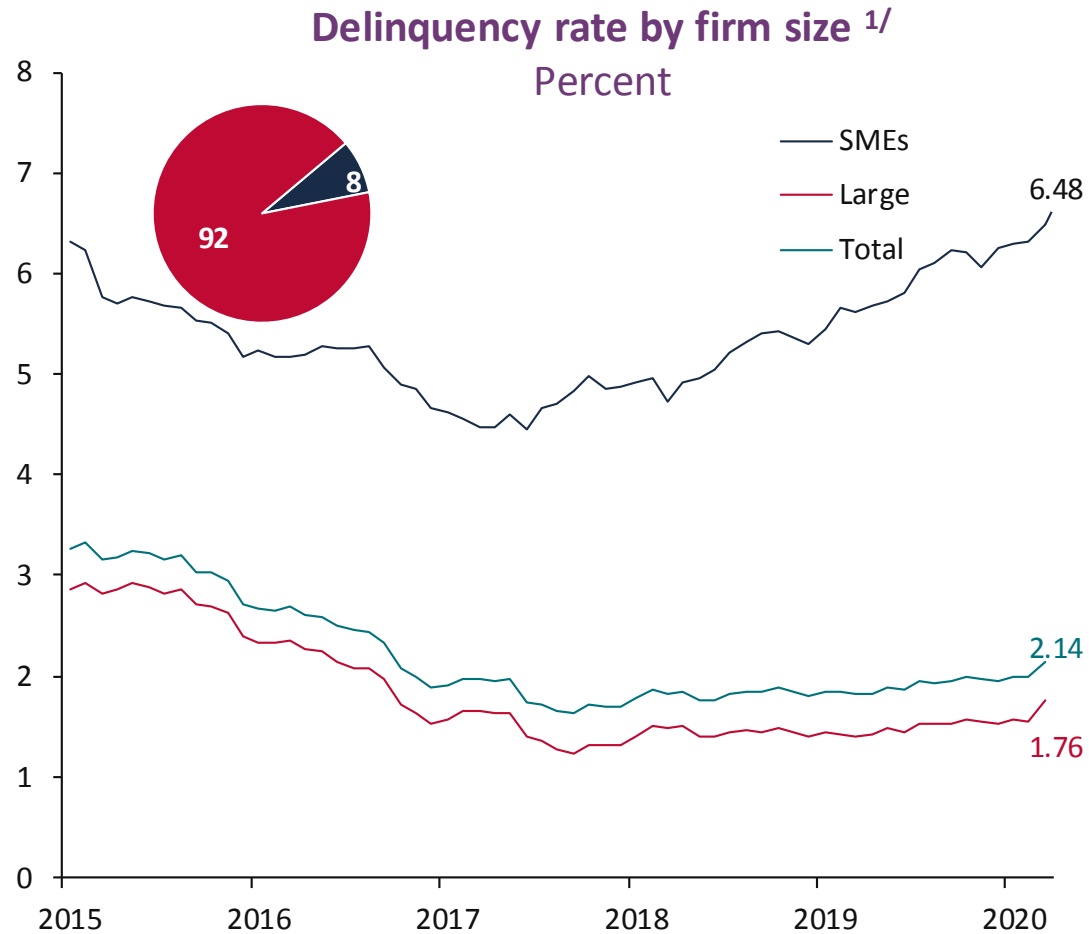
Data as of March 2020.
Source: CNBV.
1/ The pie chart shows the total percentage of portfolio by firm size.

Data as of March 2020, except for non-regulated sofomes, which are as of December 2019.
Source: Banco de México (SIE), BMV and Condusef.

Commercial banks' capitalization levels provide a margin for them to expand their activities and face the pandemic contingency starting from a strong position. This is of the utmost importance when facing an environment of economic weakness and to sustain funding to firms and households.
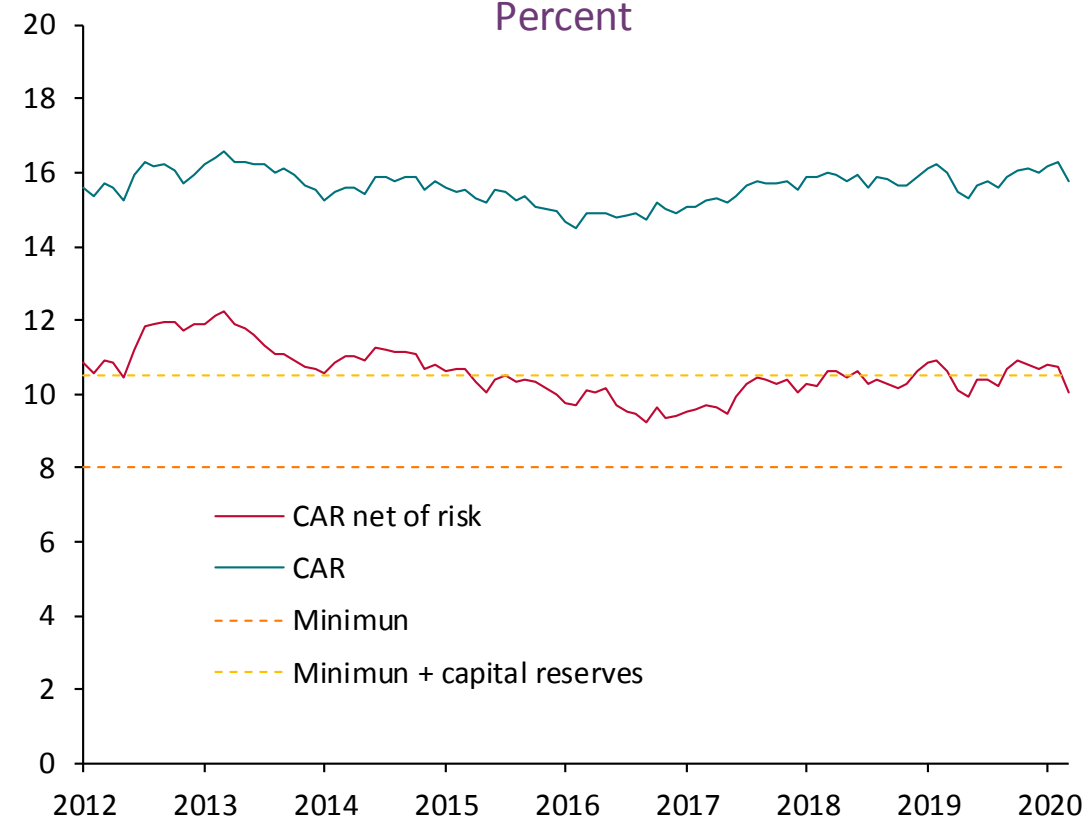
Structure of banks' Capital Adequacy Ratio (CAR) [1]
Percent
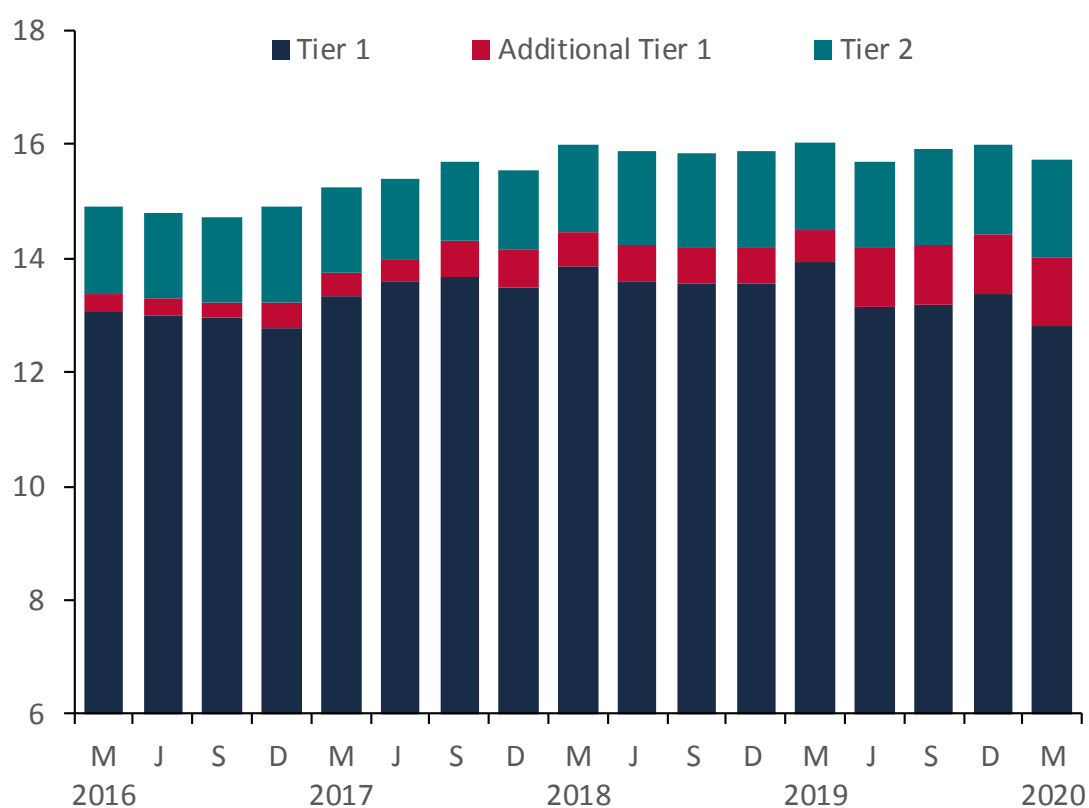
Data as of March 2020.
Source: Banco de México.
1/ The capital adequacy ratio (CAR) is estimated by dividing the net capital by the risk-weighted assets. The net capital is the regulatory capital that includes the Tier 1, Additional Tier 1, and the Tier 2 capital.
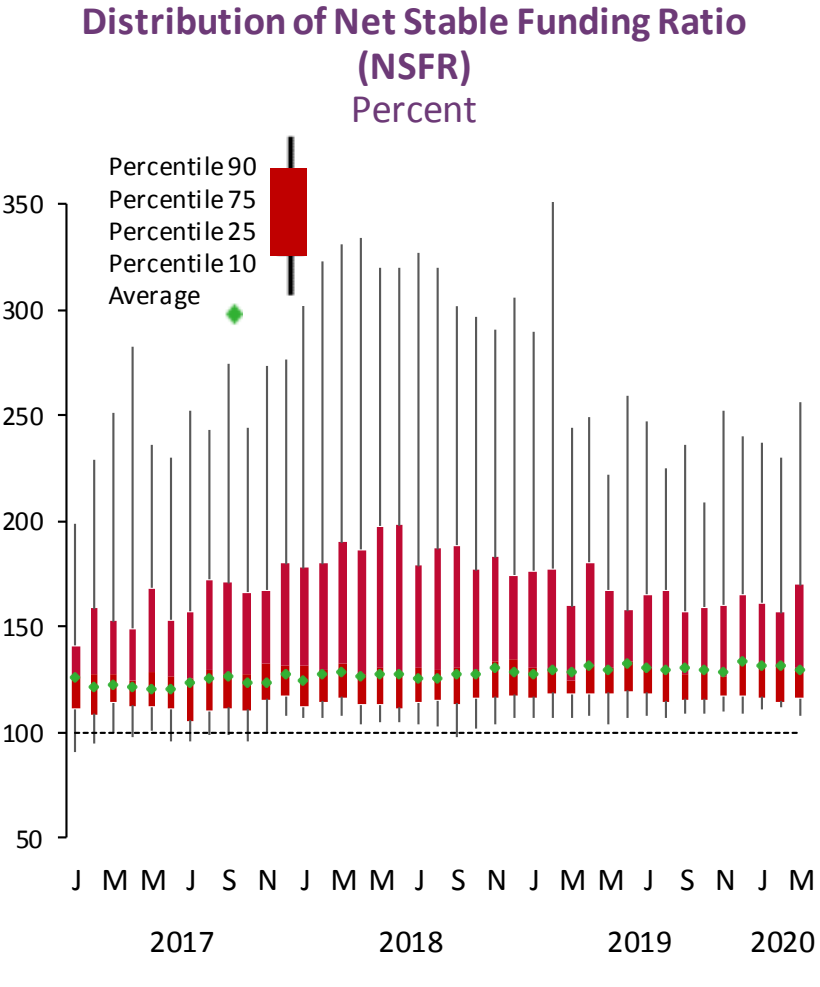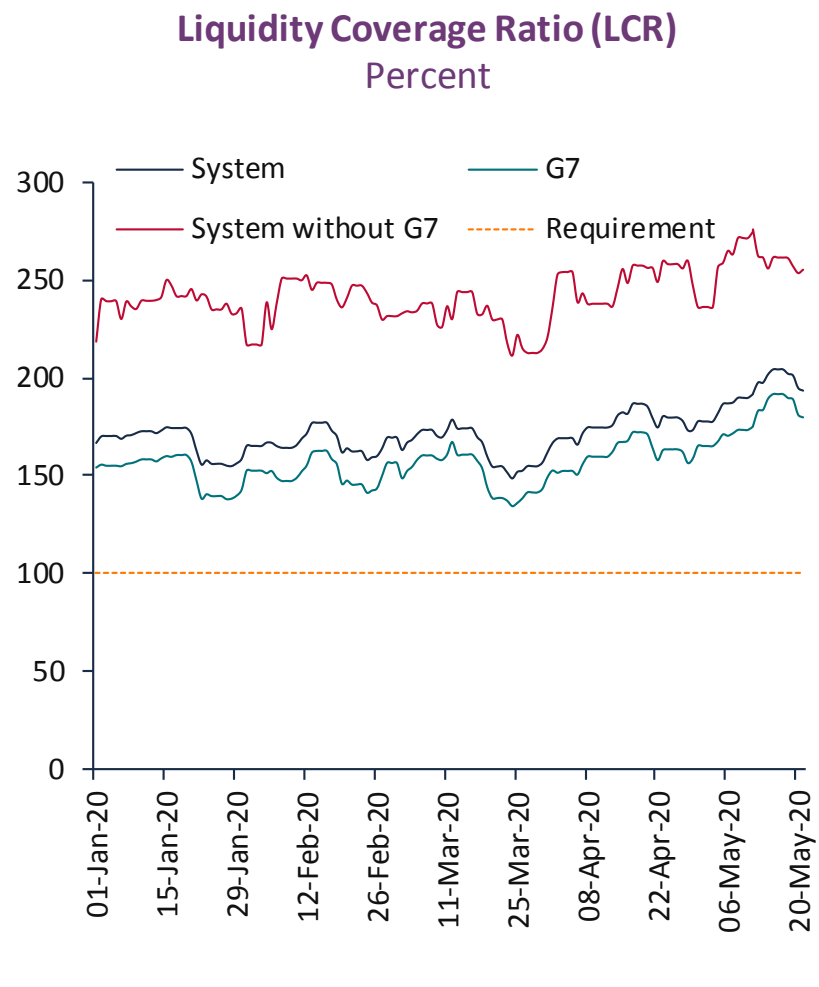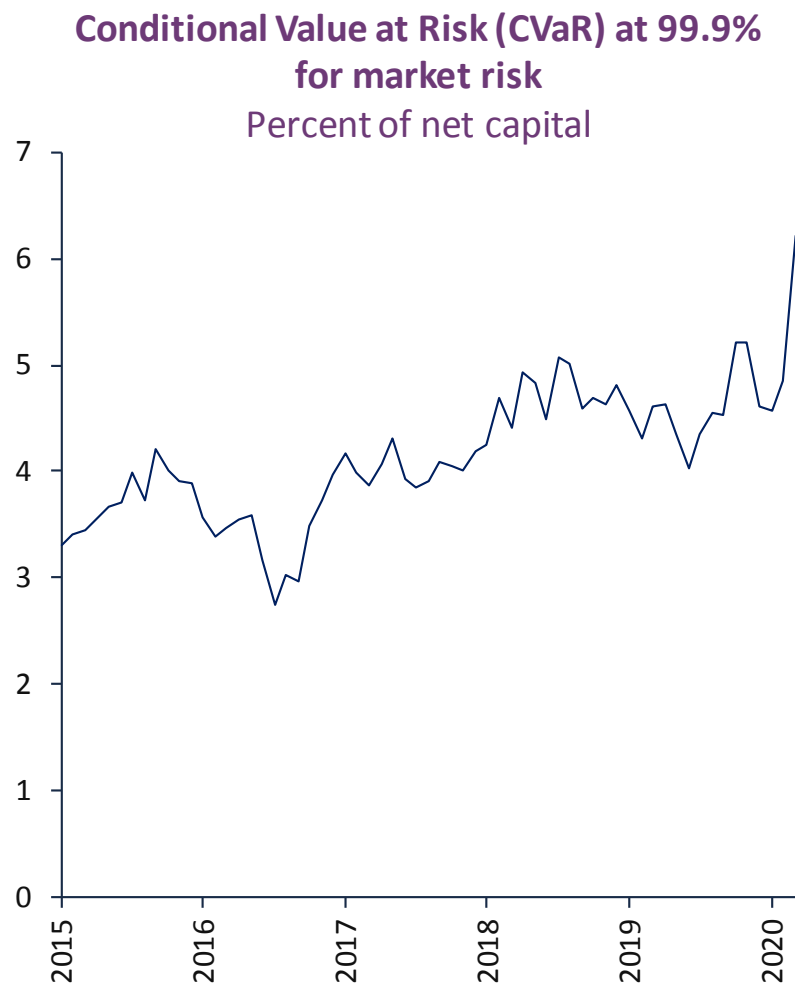
CAR net of risk [1]
Percent

Data as of March 2020.
Source: Banco de México.
1/ Estimated as the capitalization ratio that results from reducing the CVaR at 99.9% of both net capital and risk-weighted assets. This indicator assumes that credit portfolio has losses for an amount equal to the CVaR at 99.9%, which the bank assumes as directly reflecting capital loss without affecting its reserves and that such portfolio is weighted in order to determine capital requirements at 100%.

Banking institutions' market risk increased significantly in March. Average liquidity coverage ratio in the banking system decreased in March, mainly explained by the use of the credit lines granted to firms; however, this indicator recovered in April.

Conditional Value at Risk (CVaR) at 99.9% for market risk
Percent of net capital

Liquidity Coverage Ratio (LCR)
Percent

Distribution of Net Stable Funding Ratio (NSFR)
Percent

Data as of March 2020.
Source: Banco de México.

Data as of May 11, 2020.
Source: Banco de México.

Data as of May 11, 2020.
Source: Prepared by Banco de México.
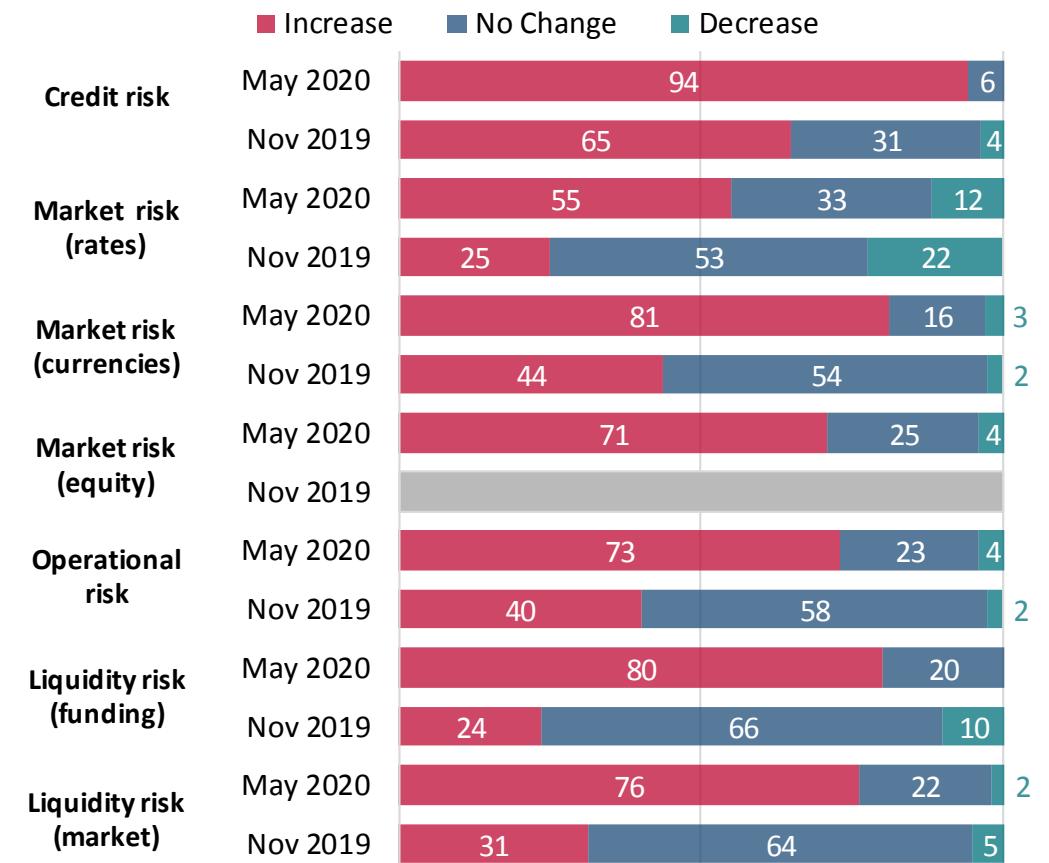Fuente: Banco de México.

There is a recomposition of risks that reflects an increase in credit and funding risk.

Main sources of financial system risks
Percent of total institutions

	May 2020	Nov 2019[1]
External Financial Risks		
Deterioration of global economic growth outlook	84	96
Deterioration of foreign market conditions *	81	60
Volatility in commodity prices	76	59
Deterioration of commercial agreements and protectionist policies	70	93
Disorderly changes in foreign interest rates	31	56
Internal Financial Risks		
Deterioration of the domestic economic growth outlook	70	75
Fiscal, Financial and economic policies	49	45
Deterioration of public finances	46	65
Deterioration of domestic risk appetite	42	59
Deterioration of credit risk	39	29
Non-financial Risks		
Cybersecurity and IT risks	70	86
COVID-19 second wave	67	-
Political, geopolitical and social risks	65	89
Deterioration of the rule of law and impunity	43	61
Violence and insecurity	42	41

1/ 80 institutions participated in the survey. The most recent version of the survey was sent in April 2020 to 137 financial institutions (afores, insurance companies, commercial banks, development banks, stock exchange companies and investment funds), from which the response was received from 83. *Exchange rate volatility, depreciation and lack of liquidity.

Expectations on the evolution of risks [1]
Percent

- Increase
- No Change
- Decrease

		Increase	No Change	Decrease
Credit risk	May 2020	94	6	
	Nov 2019	65	31	4
Market risk (rates)	May 2020	55	33	12
	Nov 2019	25	53	22
Market risk (currencies)	May 2020	81	16	3
	Nov 2019	44	54	2
Market risk (equity)	May 2020	71	25	4
	Nov 2019			
Operational risk	May 2020	73	23	4
	Nov 2019	40	58	2
Liquidity risk (funding)	May 2020	80	20	
	Nov 2019	24	66	10
Liquidity risk (market)	May 2020	76	22	2
	Nov 2019	31	64	5

Source: Banco de México.
1/ This survey added the expectation of equity market risk so there is no comparison with the last survey for this risk.

- **Operational continuity risks** are among the most relevant risks currently faced by the financial system as a result of the lockdown and remote work measures implemented by several financial institutions.

- **Cybersecurity** is particularly relevant in episodes such as the one we are currently facing.

- Banco de México has continued its efforts to reinforce the payments systems' operational continuity and security in order to allow Mexicans to carry out electronic transactions without setbacks.

- Some of the measures implemented over time include:

  ➢ *Operational continuity and multiple redundance schemes for systems operated by Banco de México.*

  ➢ *Requirements for market participants regarding continuity measures and operation protocols in case of pandemics.*

  ➢ *Market participants' obligation to have redundance and high availability schemes in place.*

Contents

Commercial banks' stress tests

- Stress tests **assess the banking system's resilience** to specific macroeconomic and financial shocks.

- These exercises **are not a forecast** by Banco de México. These tests are a tool to analyze -subject to a considerable impact and under unique circumstances- the effect on banks' capital levels under the assumptions of each stress scenario.

- The results indicate that **capital adequacy ratios** of banking institutions in Mexico **are of utmost importance when facing an external adverse environment**. In some of the simulated scenarios, banking institutions' capital levels would be eroded.

- This exercise is common to all institutions and **does not consider idiosyncratic problems** regarding loan origination, thus the **results are only relevant at the systemic,** rather than the individual bank, level.

- The **scenarios simulated could become more complicated or worsen** depending on the interaction and feedback among the different vulnerabilities, whether they take place jointly or become deeper given the environment of marked uncertainty we are currently facing.

Commercial banks' stress tests

Scenarios	Assumptions on macrofinancial variables	Additional assumptions

Scenarios

Assumptions on macrofinancial variables

Additional assumptions

A — **Economic slowdown due to health crisis**

- Lower level of investment and sharp fall in GDP growth.
- Lower demand for credit and higher unemployment rates.
- Reduction in interest rates around the world.
- In the medium term, the recovery of the global economy boosts the domestic economy.

B — **Greater contraction of the domestic economy**

- Low levels of domestic and foreign investment due to the health crisis.
- Higher unemployment levels.
- Depreciation of the exchange rate.
- Contraction of economic activity in the country.
- Domestic economy does not recover at the same pace as the rest of the economies.

C — **Higher volatility with a recomposition of flows towards lower risk assets**

- Exchange rate depreciation and inflationary pressures.
- Higher risk premia and interest rates.
- Lower levels of investment and fall in demand for credit.
- Lower levels of GDP growth and higher unemployment rates.

D — **Historic scenarios**

The dynamics of the main variables during:
- The 1995 crisis (H1).
- The global financial crisis of 2008 (H2).
- The volatility episode of May 2013 (H3).

Additional assumptions

❶ *The exercise is common to all institutions and does not consider idiosyncratic problems related to credit origination.*

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

❸ *Simulated stress scenarios are not associated with a probability of occurrence.*

The variables modelled in the scenarios are constructed considering the initial shocks previously described, and stem from a set of simultaneous shocks in all variables. In particular, in the set of scenarios A, shocks fluctuate between -6.12 and 7.6 standard deviations for all variables, highlighting a 7.6 standard deviation shock for unemployment and a 4.62 standard deviation shock for the exchange rate. On the other hand, in the set of scenario B, the shocks have a variation between -6.63 and 8.22 standard deviations for all variables, highlighting a shock of 8.22 standard deviations for unemployment and a shock of 7.45 standard deviations for the exchange rate. Finally, in the set of scenario C, the shocks fluctuate for all variables between -6.59 and 7.58 standard deviations, highlighting a shock of 7.58 standard deviations in unemployment and a shock of 7.43 standard deviations in the exchange rate.
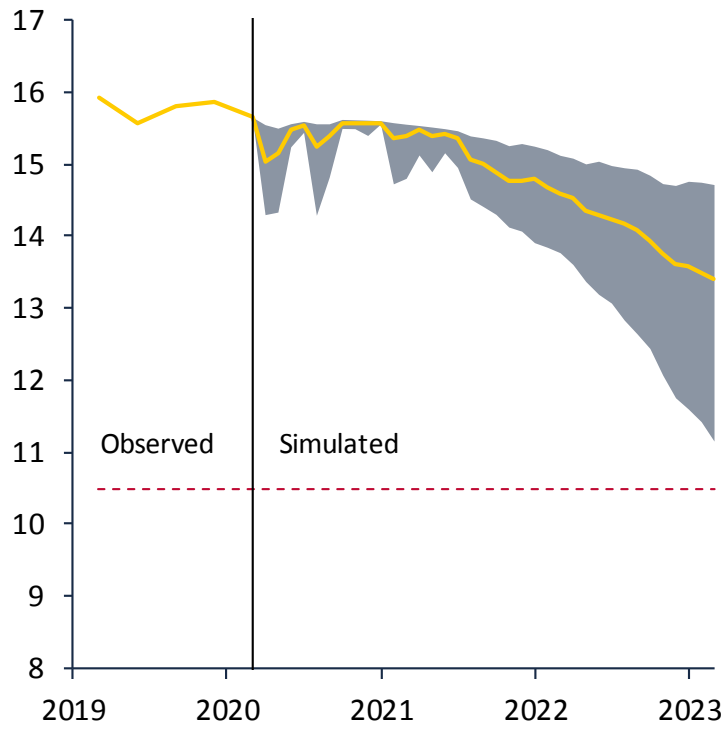
Commercial banks' stress tests

The results of the stress exercises suggest that the banking system's average capital adequacy ratios remain above regulatory minimum plus capital buffers, even in the most adverse scenarios.
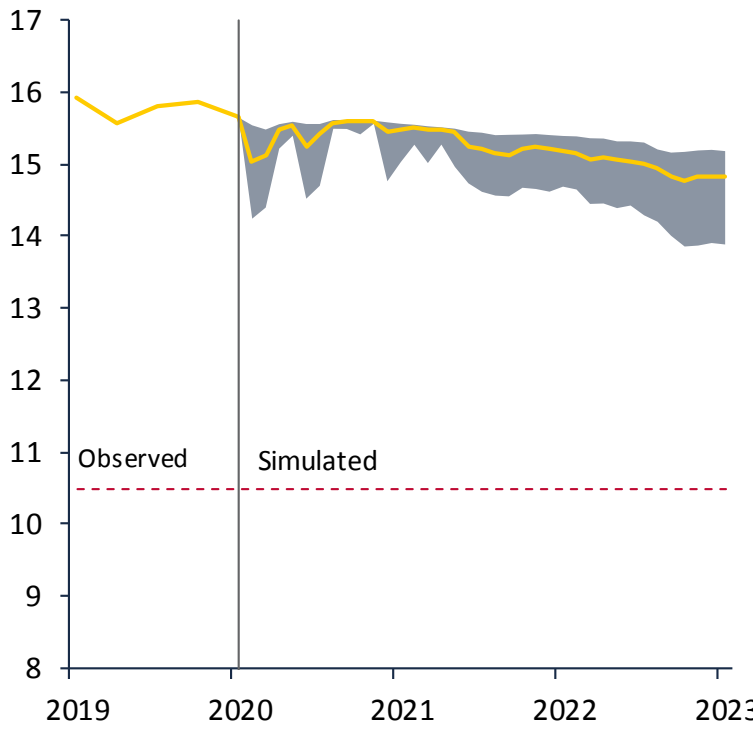
Financial system Capital Adequacy Ratio (CAR) [1,2]
Percent

Scenario A | **Scenario B** | **Scenario C**
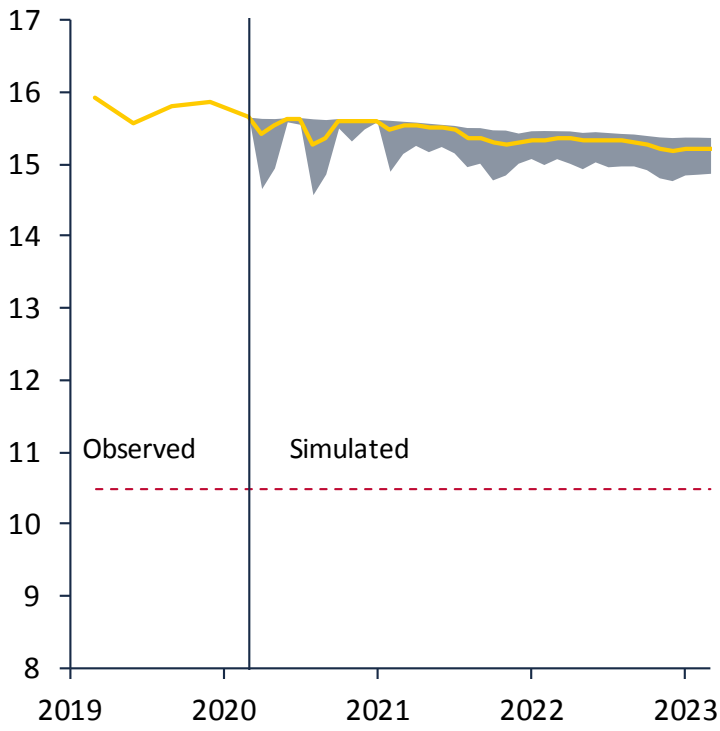
Observed / Simulated

Commercial banks' stress tests

In the set of historical scenarios analyzed, the banking system would remain resilient, maintaining capital adequacy ratios above the regulatory minimum throughout the stress period.

Financial system Capital Adequacy Ratio (CAR) [1/2/]
Percent
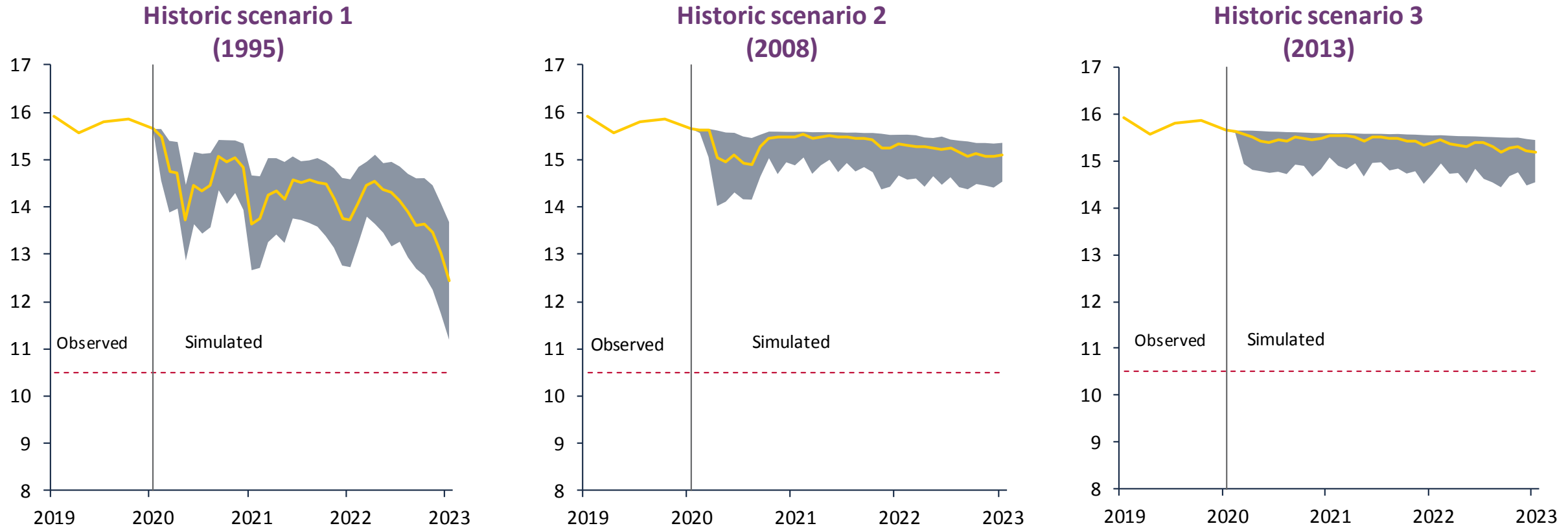
Historic scenario 1 (1995) / Historic scenario 2 (2008) / Historic scenario 3 (2013)

Data as of March 2020 and 3-year simulations starting from such date.
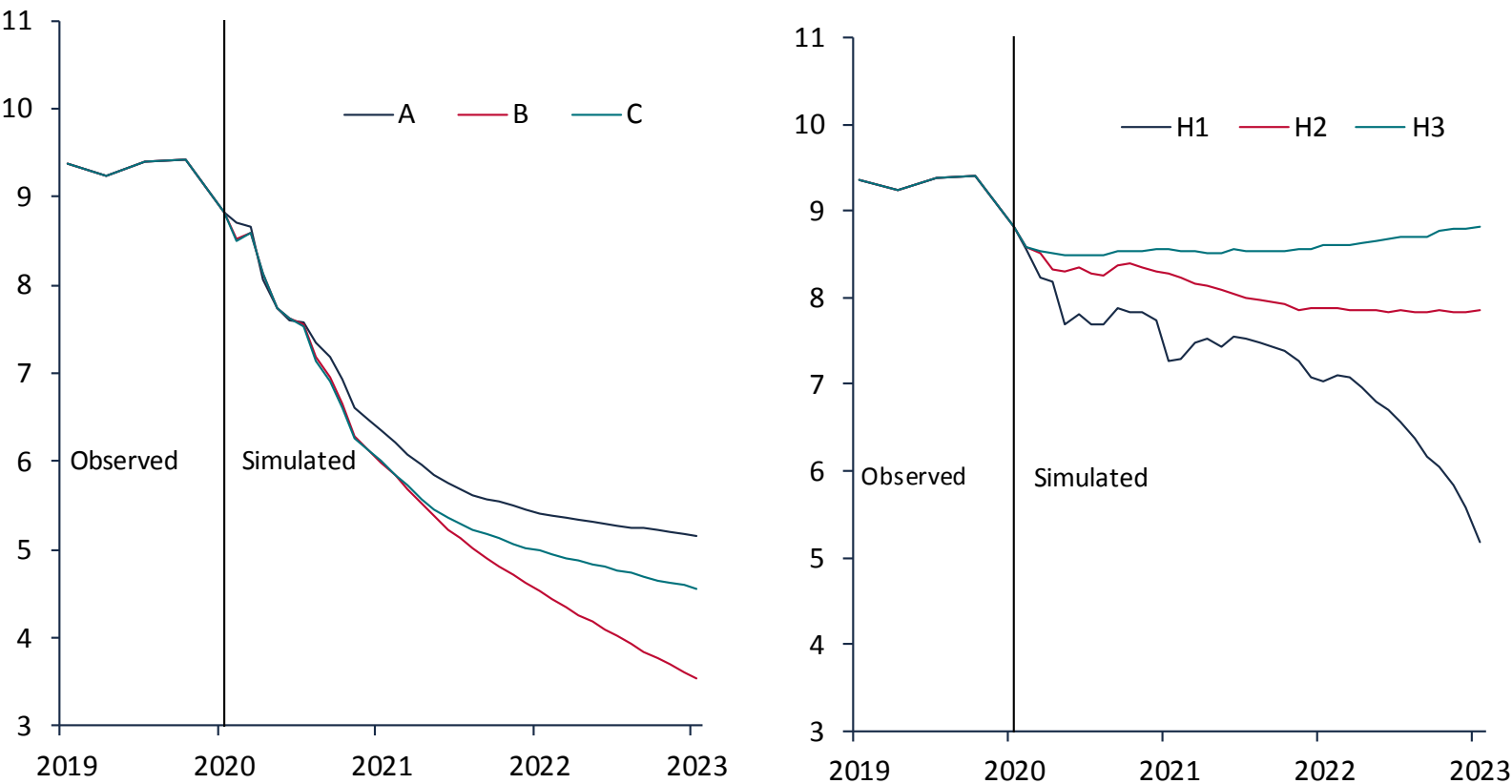Source: Banco de México.
1 / The horizontal line corresponds to minimum CAR plus capital buffers.
2/ These results should in no way be interpreted as a forecast for the 3 years analyzed.
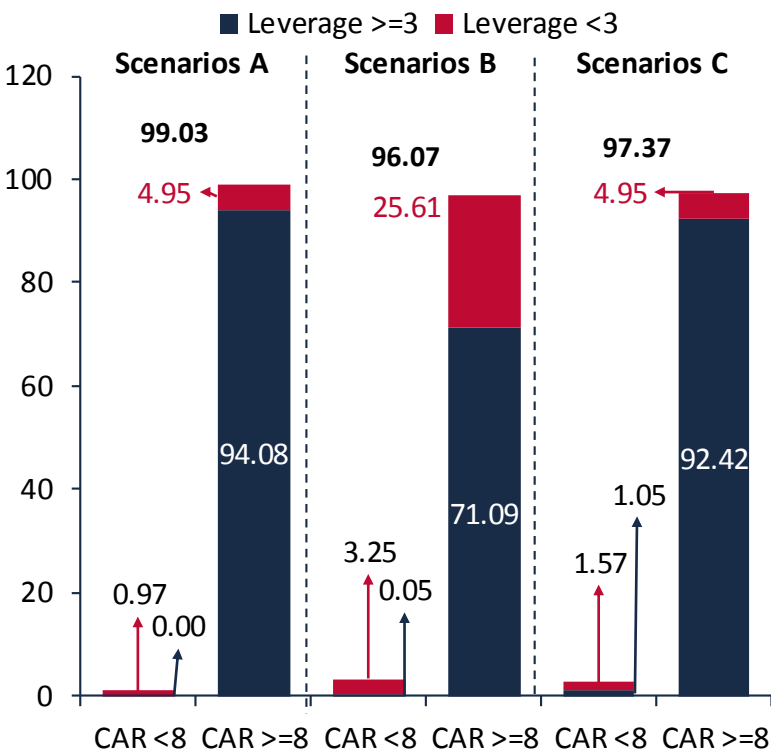
Stress tests

The exercise also considers the impact of the scenarios on banks' leverage levels. In all scenarios, leverage ratios were above the 3% minimum requirement.

Financial system's average leverage ratio
Percent

Data as of March 2020 and 3-year simulations starting from such date.
Source: Banco de México.

Average Capital Adequacy Ratio (CAR) and leverage ratio in stress scenarios
Percent of assets in the banking system

Data as of March 2020 and 3-year simulations starting from such date.
Source: Banco de México.

Contents

Final remarks

❶ As in other parts of the world, Mexico faces a complex situation in which **the economic and financial system outlooks have deteriorated** as a result of the pandemic.

❷ At the beginning of the pandemic, the Mexican financial system had **sound capital and liquidity positions**, which are essential to face an environment of economic weakness and sustain financing to households and firms.

❸ The financial authorities have implemented **temporary regulatory measures** to avoid either regulation or the response of financial institutions leading to a tightening of credit when it is most needed. The aim is to have a financial system capable of fulfilling one of its main functions, **to channel resources to the economic agents that need them** in order to face the health emergency, **without deteriorating the financial system's solvency**.

❹ Although at this stage the financial system has remained resilient, **certain risks could intensify** and affect the adequate functioning of the financial system or else certain particular elements of risk could materialize.

❺ Banco de México will continue to follow closely the evolution of the financial markets in the country, and will continuously assess their operating conditions. It will also take the necessary actions to continue fostering the sound development of the financial system.

Boxes

1. **Measures implemented in different jurisdictions to maintain financial stability**
2. **Financial conditions and growth at risk in the face of COVID-19**
3. **Determinants of non-financial private sector delinquency**
3. **Public insecurity's impact on the cost of financing**
5. **Evolution of sovereign and Pemex credit risk**

Annexes

1. **Additional information on the measures implemented to maintain the sound development of the financial system**
2. **Disaggregated heat map of Mexico's financial system**

BANCO DE MÉXICO

www.banxico.org.mx