banco central Chile

FINANCIAL STABILITY REPORT

FIRST HALF 2022



VALLE DEL ELQUI
Región de Coquimbo

Financial Stability Report

FIRST HALF 2022

Financial policy of the Central Bank of Chile (BCCh)

The Central Bank of Chile's objective is to ensure the stability of the currency and the normal functioning of internal and external payments. To fulfill this second objective, it must safeguard the stability of the financial system within the perimeter of its legal powers, implemented from a macro-financial perspective. The decisions and actions derived from its powers are part of its financial policy framework. In this context, financial stability is considered to exist when the system performs its functions normally or without significant disruptions, even in the face of adverse temporary situations. Identifying potential risk events, vulnerabilities and mitigators, together with assessing their impact on the financial system, are at the core of the Central Bank of Chile's financial policy analysis.

Financial policy conduct and implementation

The BCCh conducts its financial policy seeking to contribute, within its scope of competence, to the stability of the financial system. This has been deepening and gaining stability in recent decades due, in part, to the development of financial policy tools and their adequate application, which in turn has contributed to monetary policy effectiveness and increased the economy's resilience to disruptive events.

The Bank implements its financial policy through rigorous decision-making processes, in joint and coordinated actions with the supervisor and regulator. In particular, the BCCh issues and administers financial regulations, decides on the activation and deactivation of the countercyclical capital buffer, prepares reports and issues opinions on the impact of potential legal or regulatory changes on which it is consulted. In addition to these measures, it may exercise the role of lender of last resort for banking companies and other liquidity management tools.

Information disclosure and transparency

The Financial Stability Report (FSR) is one of the BCCh's main financial policy and communication instruments. In view of its mandate, the FSR delivers the Board's view on the main risks, vulnerabilities and mitigators affecting financial stability.

The FSR is published twice a year, in May and November. In line with international best practices, it is produced by specialized professionals and is led by the Financial Policy Division. Its contents are disseminated through various channels. In this way, the Central Bank communicates its analysis and implements its financial policy in a transparent and active manner.

Cover picture: Valle del Elqui / Coquimbo region.

Beltrán de Ramón / Legal Representative
Institutional Affairs Division
CENTRAL BANK OF CHILE
Agustinas 1180, Santiago, Chile

Phone: 56-22670 2000
www.bcentral.cl
bcch@bcentral.cl
ISSN: 0716-2219

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*/ This is a translation of a document originally written in Spanish. In case of discrepancy, the original version prevails. The statistical cutoff date for this Financial Stability Report is May 4th unless noted otherwise.

SUMMARY

Since the previous FSR, global financial conditions have deteriorated in a context of high uncertainty. The prolongation of the Russian invasion of Ukraine, and the massive quarantines in China, have increased inflationary pressure, which has led the authorities to accelerate their monetary normalization process. All these elements have weakened the outlook for global growth. Locally, the macroeconomic imbalances accumulated during 2021, political uncertainty and the reduced financial depth of the capital market, especially in the long term, have not only limited the financing capacity of longer-term projects —including the purchase of homes— but have also reduced the economy's ability to absorb external shocks. Households and firms have continued to show good debt repayment performance. However, some groups of borrowers are more vulnerable to a worsening in financial conditions, a recent drop in real wages increases vulnerabilities among households. Banks show resilience and adequate solvency and liquidity positions. This context highlights the importance of rebuilding a stable long-term savings fund, which favors the funding of investment projects and facilitates the mitigation of external financial turmoil.

SITUATION OF THE FINANCIAL SYSTEM

Externally, financial conditions and global growth prospects have deteriorated significantly during this year. The protraction of the Russian invasion of Ukraine, and the massive quarantines in China have increased pressure on the prices of raw materials, energy and food, and aggravated bottlenecks in supply chains. The above, in a context of tighter labor markets and demand pressures, has led to more inflation worldwide, with signs of greater persistence. This has led central banks to speed up their monetary normalization processes. The uncertainty associated with recent events, and particularly with the evolution of the inflationary process and the response of monetary policy in the US, besides the risks of the international corporate sector, have translated into higher financial volatility and a greater probability of abrupt corrections in global financial markets. This has increased term premiums, which has translated into increases in long rates in various jurisdictions, particularly where markets have shown greater volatility and liquidity drops since mid-2021.

At the local level, the boost to aggregate demand in 2021 generated significant macroeconomic imbalances, which are being addressed with a more restrictive macroeconomic policy combination. Increased domestic spending —due to massive income support policies— increased inflationary pressures. These have recently become more acute due to sustained global supply chain problems and the depreciation of the peso. Thus, inflation has reached double-digit levels. Convergence to the inflation target within the policy horizon requires correcting local imbalances, for which it is necessary to reduce macroeconomic stimuli. Monetary policy has adopted a restrictive stance, consistent with this objective. Going forward, the economy is expected to post negative growth figures for several quarters, in a context where tighter financial conditions and heightened uncertainty will cause both private consumption and investment to contract.

Pension funds withdrawals reduced the depth of the Chilean capital market, which in turn has deteriorated medium and long-term financing conditions, along with reducing the economy's capacity to face external shocks. The early withdrawals caused a drop in the demand for long-term financial instruments which, since the repetition of similar measures has not been ruled out, has kept the risk of asset fire sales high. This caused a rise in local long-term rates and shortened the maturity of bonds issues by banks, firms, and the Treasury. In fact, the volume of corporate debt issuance has been low in recent quarters and has taken place mostly abroad. The negative effects of these policies have been particularly visible in both mortgage lending and corporate sector funding. In the latter, there are significant increases in spreads of domestic bonds, especially for firms with a lower credit rating.

In a context of high local uncertainty, and more recently of a global strengthening of the dollar, the peso has depreciated. This has occurred with high volatility, significantly above that of other raw materials exporters. The increased uncertainty since 2020 has affected both the exchange rate and long-term interest rates. The recent dynamics of these variables has been influenced by the international movements described above, with volatility that remains high. This last phenomenon is particularly relevant for long-term interest rates, which usually tended to remain more isolated from external fluctuations. The real exchange rate remains well above its historical average, a divergence seen since the second quarter of 2021. In this scenario, there have been capital outflows due to a greater preference of local investors for external assets along with a high volume of new dollar denominated current accounts.

The financial situation of the firms remains stable at the aggregate level, driven by the increase in sales and by the credit support policies of the previous year, although some heterogeneity is present in some sectors. At the end of last year, there was recovery in the profitability of larger corporations, together with a decrease in their leverage and an increase in their liquidity. However, since mid-2021, more restrictive financial conditions have prevailed in the local corporate bond market, where the higher interest rates faced by firms with lower credit ratings stand out. Meanwhile, companies that depend on bank financing also improved their sales during 2021, while lowering their indebtedness. The latter continued during 2022, in an environment of weaker demand for bank commercial credit and in which lending standards have tightened. The delinquency of the bank commercial loan portfolio remains low and stable, although defaults have accelerated among companies that postponed debt payments during the pandemic.

In the residential real estate sector, sales have dropped while the share of projects without execution has increased, this has not yet affected the payment capacity of companies in this sector. Home prices continued to rise nationally, although their pace has slowed as of late 2021. The non-residential sector continues to adjust to pandemic-accelerated structural shifts in preferences for different property types.

Most recently, households face credit access restrictions and challenges due to a more deteriorated macroeconomic outlook. The increase in employment achieved in 2021 has been slowing down since the end of last year, in a context in which different indicators show a less dynamic demand and a supply that —with some improvement— continues to be limited. Household indebtedness has dropped in recent quarters, in line with lower credit demand —related to precautionary motives and high liquidity— and tighter lending standards for long-term credit. Mortgage lending has slowed down significantly, going from monthly flow figures close to 30 million UF in the third quarter of 2021 to about 16 million UF in March of this year. There was also an increase in the share of mortgage loans granted at an adjustable or mixed rate. In 2022, the participation of this type of loans exceeds 50% of the mortgage flow, compared to figures of less than 20% in previous years. Delinquency rates remain at historical lows, although, consumer loans have recently shown some deterioration. All of this is happening amid confidence indicators signaling people's growing concerns in the face of a more challenging economic environment.

Banks exhibit limited risks and adequate levels of solvency and liquidity. This is the result of both prudent behavior and the extraordinary measures implemented by the financial authorities during the pandemic. Credit has weakened in the face of lower demand and more strict lending standards. Portfolio delinquency remains low from a historical perspective. However, banks have made strong increases in additional provisions in the consumer and commercial segments, under the expectation that risks will return to their pre-pandemic levels. Bank solvency has increased, due to a reduction in exposure to riskier debtors and capital increases. Thus, the stress tests show that the solvency indicators would remain above the regulatory requirement, even after the materialization of severe stress scenarios. In the coming years, the banking sector will continue to strengthen its capital base, in accordance with the progress of the implementation of Basel III.

RISKS, VULNERABILITIES AND MITIGATORS

The main external threats to local financial stability come from abrupt deteriorations in global liquidity, from increases in long-term rates or from higher risk premiums for emerging economies. A faster than expected monetary policy tightening by the Fed; an escalation of the tensions derived from the Russian invasion in Ukraine; additional deterioration in the Chinese financial sector or in its growth outlook would further deteriorate the scenario. These elements would entail strong increases in rates and risk premiums, beyond those already seen, currency depreciations in emerging countries and widespread financial volatility, which in turn would exacerbate the slowdown in world economic activity. Less favorable financial conditions, together with higher sovereign leverage, would particularly affect emerging economies.

Locally, there is also the risk of implementation of measures that could deepen the macroeconomic imbalances accumulated in 2021. The reduction of macroeconomic stimuli is essential to reducing the cost of inflation control. Thus, policies that deepen macroeconomic imbalances or that affect an adequate evaluation of credit risk, would make it difficult for this normalization to continue in an orderly manner and will have a negative impact on financing conditions, along with increasing volatility in the Chilean financial market.

The materialization of stress scenarios has a similar impact to that of previous FSR over the debt at risk of households and firms and is consistent with the provisions accumulated by banks, although some developments require monitoring. Stress exercises based on microdata, which consider scenarios with sharp rises in interest rates and significant falls in economic activity and employment, show that aggregate risks remain stable. However, there is greater sensitivity of the payment capacity of some groups of borrowers to changes in financing conditions. Among households, some warning signs are the greater use of revolving credit, which are generally associated with lower-income individuals, and the recent deterioration in real wages, due to increased inflation. Firms present some sources of vulnerability, especially among those that fund themselves at shorter terms and that deferred payments during the pandemic. A deepening of these developments could affect the porfolios of banks and non-bank lender with greater exposure to these segments.

The loss of financial depth already experienced by the local capital market, together with a more challenging environment, highlight the importance of not further weakening our stable sources of long-term savings. This gains relevance every time the global economy presents tighter financing conditions, for the reasons already discussed. Thus, the need to maintain and strengthen the long-term savings fund of the local economy becomes crucial, this will allow the domestic capital market to be strengthened and recomposed to face eventual new high uncertainty scenarios.

The institutional, regulatory, and financial policy framework represent a strength of the Chilean financial system. Its robustness requires scrutiny and continuous improvement in a challenging environment. In this sense, the Bank, and the other local financial regulatory authorities (Commission for the Financial Market, Superintendence of Pensions and Ministry of Finance) are working on the suggestions emanated from a recent evaluation of the International Monetary Fund and the World Bank. The main recommendations refer to the need to strengthen the integrated supervision of financial conglomerates and to have a consolidated credit information system. Both this evaluation and several FSR have highlighted the benefits of advancing in this dimension (Box V.2). Other recommendations relate to the implementation of an institutional bank resolution system, with an update of the deposit insurance scheme (Box V.1). Regarding the field of action of the Central Bank, the financial policy agenda keeps on moving towards strengthening the local market, through initiatives related to payment systems, convergence with international standards in the regulation of bank liquidity and the launch of the implementation of the Countercyclical Capital Buffer mechanism (Box III.1). In fact, prior to the publication of this Report, the Board held the first Financial Policy Meeting, where it decided to not to activate the Countercyclical Capital Buffer .

THEMATIC CHAPTER: CLIMATE CHANGE CHALLENGES FOR THE FINANCIAL SYSTEM AND CENTRAL BANKS

Along with the short-term risks for financial stability analyzed in this FSR, a thematic chapter about climate change is included, it accounts for the challenges it poses for financial stability. The consequences of climate change are already visible and will deepen in the coming decades under practically all scenarios, with negative impacts on the economy and financial stability. The agents will be affected in multiple dimensions, with potentially systemic effects, which need to be evaluated and mitigated. This process entails risks that will fall on the financial system, which must be anticipated and have adequate tools to quantify their impact. This has motivated the Bank to design a work agenda in line with its objectives, which includes the development of stress tests with climate considerations for the banking system, incorporating this phenomenon into its financial stability monitoring tools and generating knowledge and statistics for the best performance of its functions. This thematic chapter is a first step towards the realization of these objectives in coherence with its mandate.

I. I.FINANCIAL MARKET TRENDS

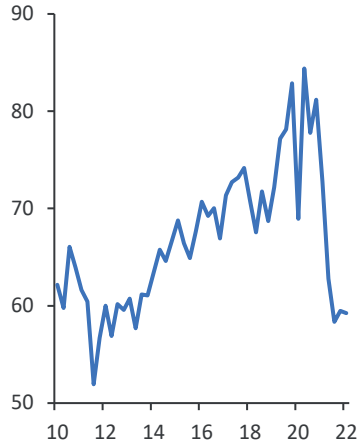
In the country, pension fund withdrawals resulted in a shallower capital market. This generated a rise in long rates and shortened the maturities of bank, corporate, and government debt. In a context of global strengthening of the dollar and high local uncertainty, the peso has depreciated significantly. This has occurred with high volatility, significantly exceeding that of other commodity exporters. Abroad, financial conditions have deteriorated in an environment of higher inflation, an acceleration of the monetary normalization process and increased uncertainty associated with geopolitical tensions, reducing world growth expectations. Thus, the main external threats to domestic financial stability come from abrupt deteriorations in global liquidity, bigger increases in long-term rates or risk premiums for emerging economies. Locally, there is also the risk of measures being implemented that will deepen the macroeconomic imbalances accumulated in 2021. This more challenging scenario for the Chilean economy underscores the importance of rebuilding a stable long-term savings fund, which would favor the financing of investment projects and facilitate the mitigation of external financial turbulences.

THE LOCAL FINANCIAL SITUATION

The withdrawals of pension funds in the last two years implied a reduction in the depth of the capital market. The massive liquidation of pension funds significantly reduced the volume of resources available in the local financial system. Pension fund assets went from representing 84% of GDP in the second quarter of 2020 to 59% in 2022 (figure I.1). It should be noted that the impact on the financial market is not solely restricted to withdrawals that have already been made, given that the still latent risk of new massive asset sales encourages the current demand for more liquid assets.

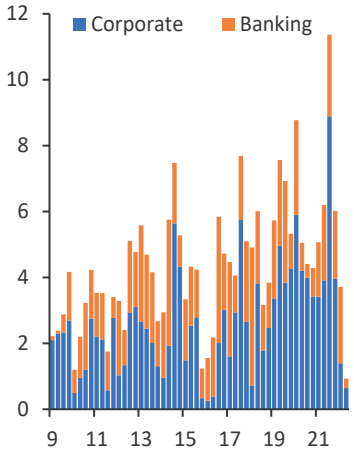
The adjustment of institutional investors' portfolios entailed a lower demand for domestic long-term fixed-income instruments. This has been reflected in the placement of bonds of the banking, corporate, and government sectors. The volume of new corporate issuance has been low in recent quarters and has mainly been made abroad, representing a greater dependence on external financing (figures I.2 and I.3). These adjustments have been particularly visible both in tighter mortgage credit conditions and in corporate sector financing. Thus, banks have shortened mortgage loan terms and are granting a greater proportion of loans at variable or mixed rates (chapter II).

FIGURE I.1 PENSION FUND ASSETS (*)
(percent of GDP)



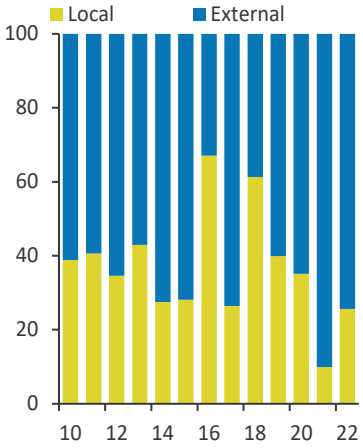
(*) 2022.Q1 estimated with growth rates in the Economic Expectations Survey (EES).
Source: Central Bank of Chile based on Pension Superintendency data.

FIGURE I.2 ISSUED CORPORATE AND BANKING BONDS (*)
(billions of dollars)



(*) Year 2022 considers up to statistical cutoff date.
Source: Central Bank of Chile based on information from DCV, RiskAmerica, and BCS.

FIGURE I.3 CORPORATE BOND ISSUES (*)
(percent)

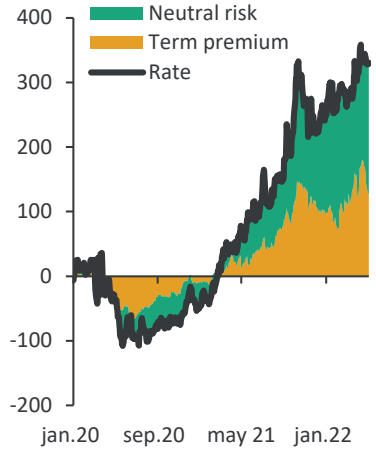


(*) Year 2022 considers up to statistical cutoff date.
Source: Central Bank of Chile based on information from DCV, RiskAmerica, and BCS.

Along the same lines, financing costs increased, especially for agents with a lower credit rating. The 10-year sovereign interest rate has risen particularly since the beginning of 2021, driven by its term-premium component, which is generally associated with a higher incidence of risks. On the domestic front, during this period events occurred that triggered increases in uncertainty about the economic and financial environment, where pension savings withdrawals stand out. Externally, the recent deterioration of international financial conditions would be intensifying the increase in term premiums and increases in local long rates. Second in importance is the neutral risk component, associated with the prospects of a reduction in the monetary stimulus (figure I.4). The increase in corporate bond spreads stands out, with a cumulative rise of between 100 and 230bp since September 2019, with greater intensity in those instruments with lower credit ratings (figure I.5).

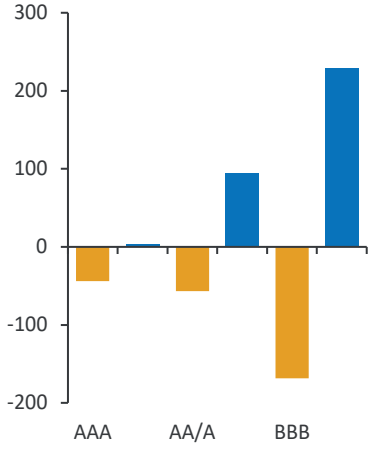
The recent strengthening of the dollar worldwide and high local uncertainty have further depreciated the peso, amid high volatility. Historically, by presenting a counter-cyclical behavior, the investment flows of pension funds contributed to mitigate external shocks, a situation that was reversed since the onset of the pandemic until the end of 2021 (Thematic chapter, FSR second half 2020). On the other hand, domestic uncertainty has remained high since 2019, initially as a result of social protests, and then due to concerns associated with the evolution of the pandemic (figure I.6). Meanwhile, since the end of 2021, the contribution of the outlook for economic performance has increased. These factors would account for some of the volatility of interest rates and the exchange rate, which has remained above its levels prior to the social protests of 2019 and that of commodity exporters (figures I.7 and I.8). Meanwhile, the real exchange rate remains well above its historical averages, a process that has been accumulating more strongly since the second quarter of 2021 (Monetary Policy Report, March 2022). In this scenario, data as of March 2022 show that capital outflows have totaled US$ 19.2 billion in the last year, due to a greater preference of local investors for foreign assets (figure I.9). At the same time, there continues to be massive openings of accounts in dollars, which already amount to US$12.6 billion by local households and companies.

FIGURE I.4 10-YEAR SOVEREIGN RATE DECOMPOSITION (*)
(basis points)



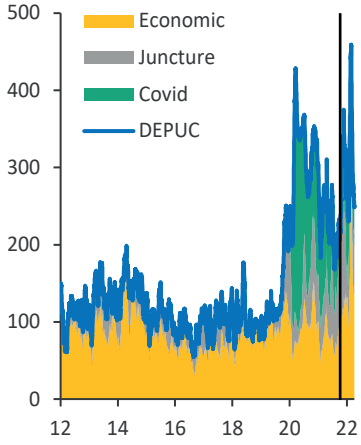
(*) Nominal rate. Estimated using swap transactions.
Source: Central Bank of Chile based on RiskAmerica data.

FIGURE I.5 CHANGE IN CORPORATE BOND SPREADS (*)
(basis points)



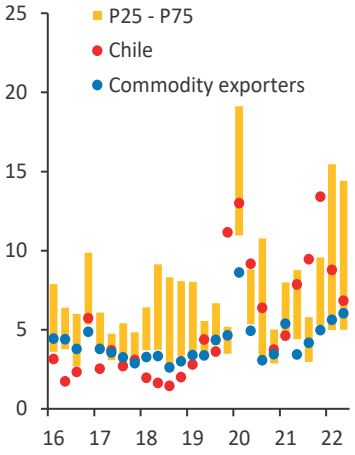
(*) Bars show change between January 2017 and September 2019 (orange) and between September 2019 and March 2022 (blue).
Source: Central Bank of Chile based on RiskAmerica data.

FIGURE I.6 ECONOMIC AND POLITICAL UNCERTAINTY (*)
(index, 1 January 2012 = 100)



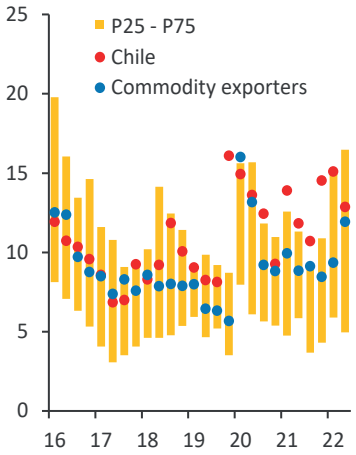
(*) Moving 30-day average. As from December 2021, the index includes update of word dictionary used in its construction, as a way of including new elements that affect the local juncture.
Source: Central Bank of Chile based on Becerra & Sagner (2020).

FIGURE I.7 VOLATILITY OF EMERGING ECONOMIES' SOVEREIGN RATES (1) (2)
(basis points)



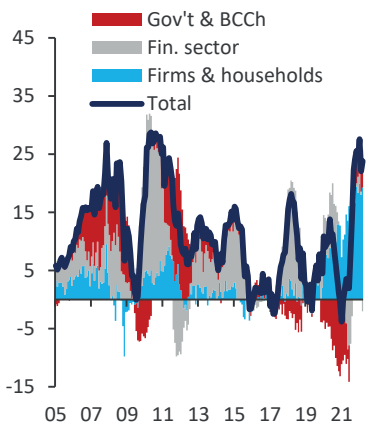
(1) Annualized daily volatility. Emerging countries sample includes Brazil, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Poland, Russia, and Turkey. Commodity exporters are Australia, Canada, New Zealand, and Norway.
(2) Second half of 2022 considers data up to statistical cutoff date.
Source: Central Bank of Chile based on Bloomberg data.

FIGURE I.8 EXCHANGE RATE VOLATILITY, EME (1) (2)
(percent)



(1) Annualized daily volatility. Emerging countries sample includes Brazil, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Poland, Russia, and Turkey. Commodity exporters are Australia, Canada, New Zealand, and Norway.
(2) Second half of 2022 considers data up to statistical cutoff date.
Source: Central Bank of Chile based on Bloomberg data.

FIGURE I.9 EXTERNAL LIQUID ASSETS IN THE FINANCIAL ACCOUNT (*)
(billions of dollars)



(*) Moving 12-month sum. Liquid asset flows comprise portfolio investments, deposits, and loans. Financial sector: banks, pension funds, and other financial companies.
Source: Central Bank of Chile.

Following the rejection of new pension fund withdrawal initiatives, there has been some increased activity in the more liquid domestic bond market and a return of pension funds to fixed-income markets. Most recently, pension funds have increased their holdings in liquid local market instruments, such as domestic government bonds, bank bonds, and time deposits, partly reducing their international position. In particular, between February and March of this year, there was an increase in local liquid instruments of more than US$3 billion, while international participation was reduced by US$2.2 billion. This is seen in a context where the more conservative funds show better performance relative to foreign assets, given the worsening of international financial conditions (statistical appendix).

Among institutional investors, some vulnerability is observed in fixed-income mutual funds, which present a persistently tighter liquidity position. Since the end of 2021, a considerable fraction of medium- and long-term debt mutual funds (FM3) have seen a deterioration in their liquidity position, due to the rebalancing of their portfolios to meet redemptions from their contributors, which have been carried out through the sale of more liquid assets. In particular, in March 2022 the liquid assets of the FM3 were 70% lower than in the same period of 2021, which is reflected in a decrease of stressed liquidity hedging indicators, which are around 68% of the potential redemptions in stress scenarios (statistical appendix). The solvency position of life insurance companies remains stable according to data up to March 2022.

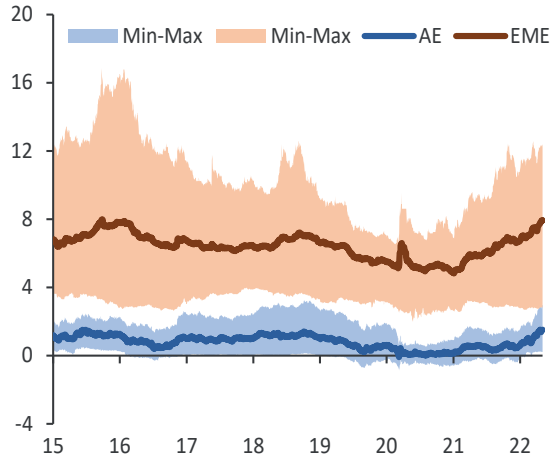
INTERNATIONAL FINANCIAL SITUATION

Geo-political tensions and mobility constraints in China have intensified inflationary pressures around the world. Global supply chains continue to be stressed, and the prolonged Russian invasion of Ukraine has been compounded by the closure of the port of Shanghai, due to the Chinese government's zero-Covid policy. Against this backdrop, commodity prices have risen significantly. In particular, in the last six months, the WTI oil price rose 28% and food prices have seen hikes of nearly 20%. These increased cost pressures have led to higher inflation in various economies, several of which were already on the rise due to the significant stimulus packages implemented during the pandemic (March 2022 MP Report).

In this scenario of higher inflation, a number of central banks have speeded up their process of withdrawing their monetary stimulus. As a result of inflationary pressures carried over from the previous year, in addition to recent events, the U.S. Federal Reserve began reducing the monetary stimulus last March. Thus, for the first time since 2018, it has raised its monetary policy rate twice, reaching the 0.75-1.00% range, and market expectations anticipate future hikes. Meanwhile, the European Central Bank announced the end of its asset purchase program by June of this year, indicating that any change in its benchmark rate will take place after the completion of the program.

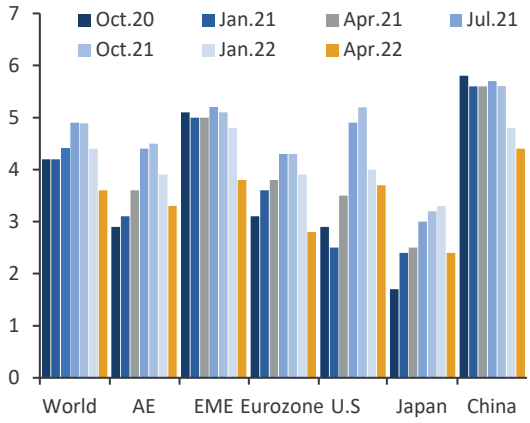
In this context, global financial conditions have worsened, as has the outlook for economic growth. In the developed world, 10-year interest rates on sovereign bonds have risen nearly 80bp since the last Report, which has occurred with volatility (figure I.10). This comes amid lower demand for this type of instruments observed since mid-2021, which is reflected in higher volatility and weaker liquidity conditions in these markets (GFSR, April 2022). In emerging economies, interest rates have posted more pronounced rises, with increases of close to 110bp in the same period. Sovereign spreads in these economies have risen by close to 20bp. According to IMF estimates, in this more complex environment, expected world growth for 2022 is close to 3.6%, more than one percentage point lower than was expected at the end of 2021. Meanwhile, significantly lower growth is anticipated for the United States, revised from 5.2% down to 3.7%. (figure I.11).

FIGURE I.10 TEN-YEAR SOVEREIGN RATES (*)
(percent)



(*) Advanced economies (AE): Germany, Japan, United Kingdom, and United States. Emerging market economies (EME): Brazil, Chile, China, Colombia, India, Indonesia, Mexico, and Peru.
Source: Central Bank of Chile based on Bloomberg data.

FIGURE I.11 EXPECTED GLOBAL GROWTH IN 2022 (*)
(percent)



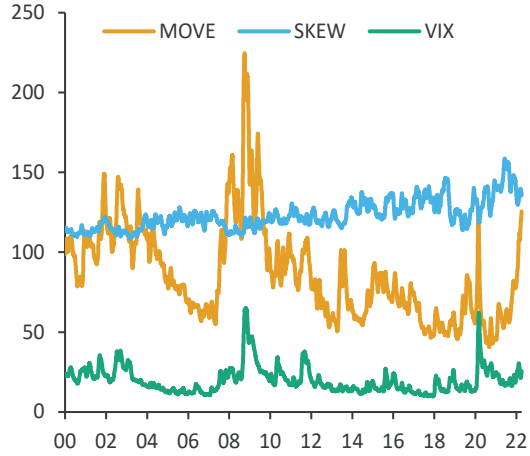
(*) AE: Advanced economies; EME: Emerging market economies.
Source: Central Bank of Chile based on IMF data.

The increased uncertainty regarding the international situation and its prospects has significantly increased global financial volatility and the probability of abrupt corrections in international financial markets. In particular, since the start of Russia's invasion of Ukraine, the probability of an abrupt correction in global financing conditions, especially in U.S. sovereign fixed-income instruments, increased significantly (figures I.12 and I.13). This coincided with a drastic reversal of risk appetite in developed economies and with the recent deterioration in stock market performance in the U.S., Europe, and emerging Asia (statistical appendix). Moreover, corporate spreads in developed economies have widened by around 65bp since the beginning of the year.

In addition, there are concerns about the financial situation of the Chinese real-estate sector and the international corporate sector. The real-estate company Evergrande has managed to accumulate liquidity to meet some of its debts through the sale of assets, while it reached an agreement with offshore creditors in the collection of fines for delayed payment of the company's bonds. However, the company continues to hunt for resources to meet the remainder of its financial obligations, which amounted to more than US$300 billion in mid last year. Recently, the slowdown in the Chinese real-estate market has translated into financial problems in other companies in the sector (statistical appendix). Meanwhile, the international corporate sector has increased its leverage during the pandemic[1]/ and its outlook has deteriorated, as reflected in increases in risk premiums, which in the case of U.S. high yield instruments rose by more than 150bp between mid-2021 and the end of April this year. (GFSR, April 2022).

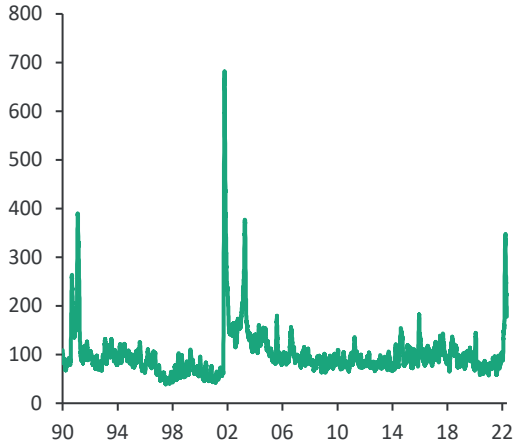
[1]/ For example, in the developed countries as a group, this indicator went from 96% to 108% of GDP between March 2020 and 2021 (BIS).

FIGURE I.12 IMPLICIT VOLATILITY INDEXES (*)
(index)



(*) Moving 30-day average. VIX: Implicit volatility in options over one-month U.S. S&P500; MOVE: implicit volatility over U.S. Treasury bill with different maturities at one month; SKEW: options over U.S. S&P500 used to measure tail risk.
Source: Central Bank of Chile based on Bloomberg data.

FIGURE I.13 GEOPOLITICAL RISK (*)
(index, 1985-2019 average = 100)



(*) Moving 30-day average.
Source: Central Bank of Chile based on Caldara & Iacoviello (2021).

THREATS TO FINANCIAL STABILITY

In the country, the significant boost to domestic demand generated macroeconomic imbalances in the last year that need to be resolved. Macroeconomic policy adjustments are essential to reduce the cost of controlling inflation. On the contrary, initiatives that deepen macroeconomic imbalances, or affect an adequate assessment of credit risk, would make it difficult for this normalization to continue in an orderly manner. In such a scenario, the stabilization of the economy would be delayed, increasing the volatility of the economic cycle and financial markets, and uncertainty would increase, further deteriorating local financing conditions.

Increases in political and legislative uncertainty could translate into greater volatility in local markets. Various definitions regarding the institutional functioning and financial markets are under discussion. The definition process generates uncertainty which, if increased or remaining high, could lead to higher volatility in various local asset classes and deteriorate the conditions for access to credit. In fact, empirical evidence indicates that episodes of uncertainty affect both the level and the volatility of interest rates in the local fixed-income market. (box I.1, FSR second half 2021).

On the external front, a significant downturn could exacerbate the global economic slowdown, undermine financial conditions, or trigger abrupt deteriorations in global liquidity or risk premiums in emerging economies. Disruptive events such as, i) an abrupt withdrawal of monetary stimulus by the Fed, beyond what the market expects, ii) a protracted Russian invasion of Ukraine accompanied by stronger impacts on financial markets, iii) a worsening of the international corporate sector, iv) of the Chinese real estate, or v) an extension of quarantines in China's main cities, which could hinder the recovery of the global supply chain, would further increase the prices of commodities or could spark corrections in financial asset

prices. This risk scenario with more volatility, lower growth and higher inflationary pressures poses a challenge for monetary policy (GFSR, April 2022) and could be accompanied by sharp hikes in interest rates and risk premiums, currency depreciations and massive capital outflows from emerging countries[2]/ plus widespread financial volatility, contributing to exacerbate the slowdown in global economic activity. Less favorable financial conditions, together with higher sovereign leverage, would take a particularly high toll on emerging countries.

The international geo-political situation, together with recent developments in the financial industry, add new elements to the international risk map. The conflict in Ukraine has amplified fears about a possible de-globalization of financial markets. This phenomenon, known as financial fragmentation, could limit access to credit in global markets and raise financing costs for governments and businesses. This would be especially important for emerging countries, which benefit from integration (Claessens, 2019). Adding to tensions in Europe, mobility constraints imposed during the pandemic boosted digital transactions and the use of crypto-assets in the past year (GFSR, April 2022). This greater exposure increased the propensity for cyber-attacks in these types of markets, which could become more pronounced and spread to government institutions and public and financial services in those countries that have imposed sanctions on Russia (FitchRating, 2022).

As the capital market has become shallower, coupled with a more challenging environment, it is important to have a stable pool of long-term savings. A deeper financial market allows access to lower financing costs, facilitates access to long-term funds and contributes to cushioning external shocks. Thus, individuals and firms benefit directly, either through the possibility of having resources available for investment, which increases the economy's capacity for growth and job creation, or for the acquisition of durable goods, such as a home. In turn, a deeper financial market reduces financing costs for the Treasury, which frees up resources for other purposes. Moreover, a bigger financial market reduces dependence on external financing and enables the development of a derivatives market, which translates into less exposure to foreign exchange risk (chapter II).

[2]/ Following Russia's invasion of Ukraine, capital inflows to emerging economies in variable income and fixed income in local currency became highly volatile and reversed rapidly, especially in energy-importing countries, which could be accentuated if the conflict is prolonged. (GFSR, April 2022)

II. BORROWERS

The greater economic activity and job creation of the previous year allowed credit users to recover a good part of their capacity to generate income. However, the macroeconomic imbalances accumulated during this period, the deterioration in the depth of the capital market, and high political uncertainty have curtailed financing possibilities, especially of long-term projects. Although households and firms have moderated their leverage and continued to perform well in the repayment of their debts, some groups are more vulnerable to the deterioration of financing conditions, and have recently shown greater default and intensive use of rolling products. The real-estate sector has weakened, sales have fallen substantially since last year, and the proportion of shelved projects is still on the rise. Finally, on the fiscal front and after a significant deterioration in the structural deficit and the level of indebtedness, the authority is committed to a path that will correct these imbalances. The main risks faced by credit users are related to a further deterioration of macroeconomic and financial conditions.

FIRMS

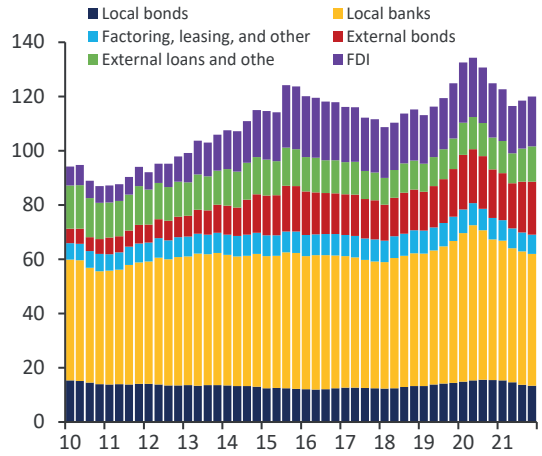
Aggregate corporate indebtedness remained stable due to the economic recovery and lower debt holdings, mainly bank debt. Thus, indebtedness stood at 120% of GDP at the end of 2021[1]/. This result was driven upwards by the revaluation of external debt, due to the depreciation of the exchange rate, while the increase in activity, the fall in bank credit, the lower issuance of corporate bonds and the decrease in debt related to foreign direct investment (FDI) had a downward impact (figure II.1).

Since the last Report, the bigger companies continued to improve their financial positions. The economic recovery from last year has allowed them to generate revenues on a larger scale. Thus, on average, companies' profits can cover more than three times their financial expenses, which means a significant recovery with respect to late 2020 (figure II.2). In turn, the average return on assets recovered its level of the end of 2019, standing at over 6%. The indebtedness of these companies increased slightly, to levels similar to those of 2018. This group of companies does not present significant exchange rate mismatches, which is relevant given the increase in exchange rate volatility in the last two years. On aggregate, their hedges place them in a creditor position in dollars and the proportion of firms with mismatches greater than 10% of assets has remained stable for the last three years (chapter I and figure II.3).

In a scenario of persistently high uncertainty, larger companies maintain high levels of liquidity. This level above its historical average is consistent with the high global and local uncertainty (chapter I) and investment prospects that have been on a downward trend for several years. In this context, during 2021 the amount of dividends paid exceeded historical patterns significantly (figure II.4).

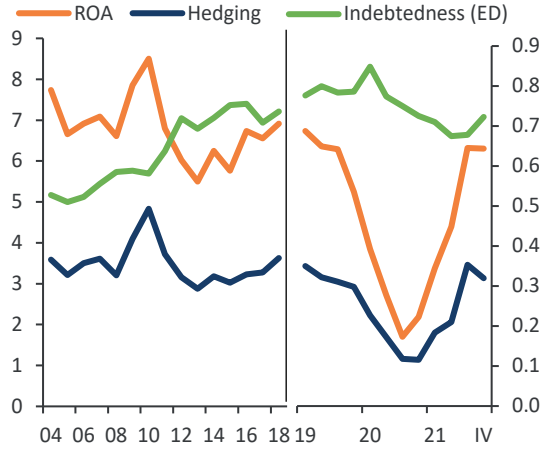
[1]/ In corporate debt, banks are excluded, which, in addition to certain differences in data sources and valuation methodologies, explain a large part of the difference with the National Accounts, where other financial companies are also excluded. In this statistic, indebtedness is at 106% of GDP at the end of 2021. For more information, click here link.

FIGURE II.1 TOTAL NON-BANKING DEBT BY TYPE OF LOAN (*)
(percent of GDP)



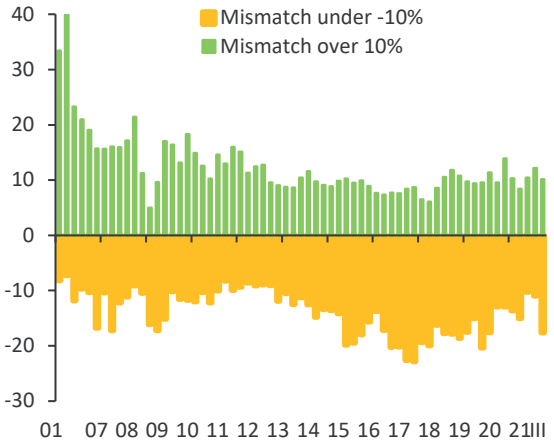
(*) Based on firm-level information except for factoring and leasing, securitized bonds and commercial papers. Commercial university debt not included.
Source: Central Bank of Chile based on FMC data.

FIGURE II.2 FINANCIAL INDICATORS OF COMPANIES REPORTING TO THE FMC (*)
(percent of total assets; times financial expenses; times net worth)



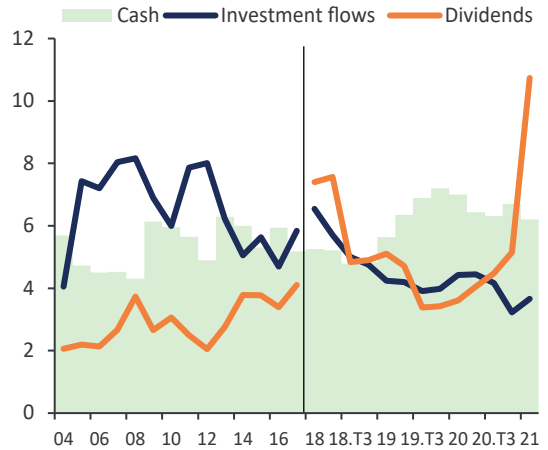
(*) ROA: 12-month cumulative income before financial expenses plus taxes over total assets. Interest coverage: Income before taxes and financial expenses over annual financial expenses. Indebtedness: Financial debt over net worth. Consolidated data. State-run companies and those classified under Financial services and Mining not considered. Annual frequency left of dotted line, quarterly frequency for the rest.
Source: Central Bank of Chile based on FMC data.

FIGURE II.3 EXCHANGE RATE MISMATCH (*)
(percent of total assets)



(*) Considers sample of companies reporting their balance sheets in pesos. The mismatch represents dollar liabilities minus dollar assets, minus net derivatives position, as a percent of total assets. State-owned companies and those classified in the financial services or mining sector not considered.
Source: Central Bank of Chile based on FMC data.

FIGURE II.4 FLOWS, CASH, AND DIVIDENDS OF COMPANIES REPORTING TO THE FMC (*)
(percent of total assets, trillions of pesos)



(*) Consolidated balance sheet data. State-owned companies and those classified in the financial services or mining sector not considered. Line divides analysis into annual (up to 2018) and quarterly (as from March 2018).
Source: Central Bank of Chile based on FMC data.

Businesses dependent on bank credit moderated their debt burden. After the most critical period of the sanitary crisis, when sales fell by 50% in annual terms, by the end of 2021 they had recovered their pre-pandemic levels (September 2021 MP Report). Since then, demand for commercial bank credit by large companies and SMEs has remained weak, with increasingly tighter lending standards (chapter III). Commercial credit rates have risen, largely due to aggregate factors —such as the reduced depth of the capital market and increases in the MPR that affect the shorter tranches— and to a lesser extent to idiosyncratic elements, such as a greater perception of risk concerning specific companies[2]/ (figure II.5 and statistical appendix).

Bank defaults remain below their historical average, although pockets of attention remain among companies that rescheduled debt during the pandemic. The unpaid installment index and delinquency rates—which measure default weighted and unweighted by amount, respectively—have declined since the previous FSR. As of last March, default stood at 1.4% of commercial loans and 7.8% of total corporate loans (figure II.6 and statistical appendix). Evidence indicates that Fogape loans, in addition to having been effective in providing targeted credit during the pandemic, had positive effects on the sales of suppliers of firms that accessed the program (box II.1). Although firms that obtained this credit have shown increases in delinquency over the past year, they are still below average in this regard. On the other hand, although the companies that rescheduled loans are a small group[3]/, they remain a source of vulnerability due to their higher default rate.

STRESS TESTS FOR FIRMS

The materialization of the stress scenarios is of similar impact to that presented in previous FSRs, at levels consistent with the commercial provisions accumulated by the banks. A slight increase in debt at risk is observed with respect to the previous Report, given a slightly higher materialized default. Among the stress scenarios, the impact of interest rate and sales shocks on repayment capacity stands out, followed by the risk of higher inflation[4]/, which is mitigated by low UF-indexed debt holdings (figure II.7). As a reference, it is lower than the sum of effective commercial provisions and the additional expense resulting from the banking stress test[5]/ (chapter III). By sector, the greatest potential risks are in trade, followed at some distance by financial services, construction, and manufacturing. The heterogeneity of the impacts of the scenario is due to the composition of corporate debt in terms of duration and currency (figure II.8).

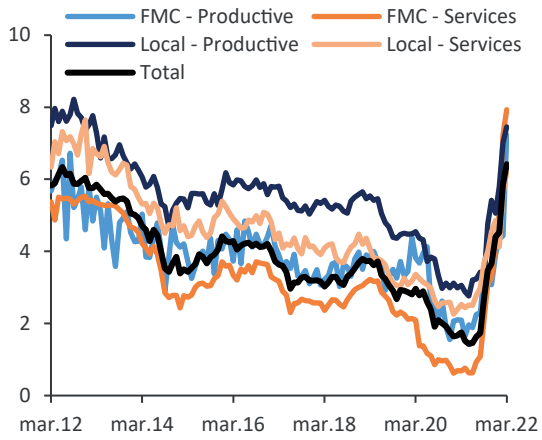
[2]/ Using the Principal Component Analysis (PCA) methodology, it is possible to conclude that a single factor explains more than 85% of the variance of the rates for these groups.

[3]/ Of the universe of companies, the groups that took no relief measures (37%) and Fogape (30%) account for 67% of the total number of companies, while companies that rescheduled account for 10%. Thus, in terms of total debt, the group that took no measures accounts for 53%, while those that rescheduled represent 28% of the total debt.

[4]/ This exercise considers inflation increases that directly affect the re payment of UF-denominated debts. It does not consider all the additional general equilibrium effects associated with inflationary shocks.

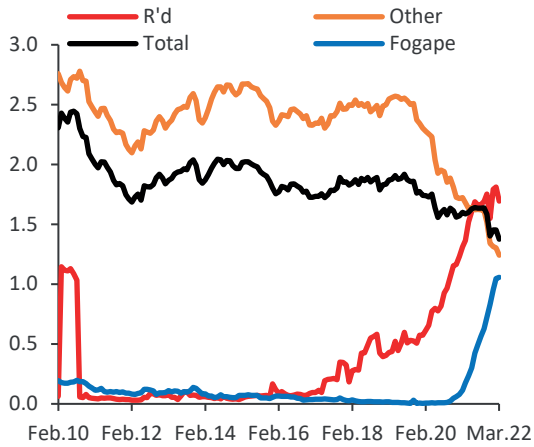
[5]/ This comparison should be considered only in referential terms and as an upper bound. Unlike the actual build-up of bank provisions, the stress test with granular firm data does not consider the associated collateral.

FIGURE II.5 BANK INTEREST RATE BY TYPE OF FIRM (*)
(percent)



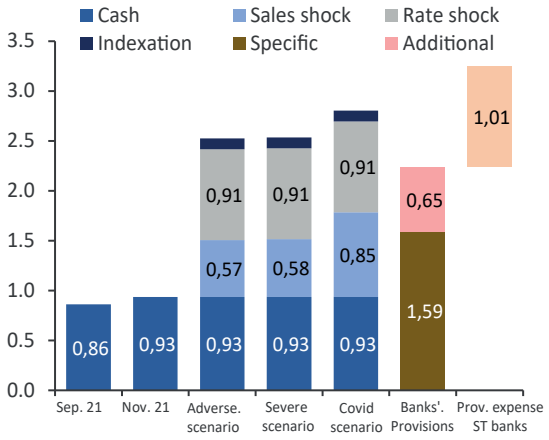
(*) Considers only loans in installments, excluding foreign trade and factoring operations. Fogape credit not included. Interest rate weighted by credit flow amount.
Source: Central Bank of Chile based on FMC data.

FIGURE II.6 UNPAID INSTALLMENT INDEX (*)
(percent)



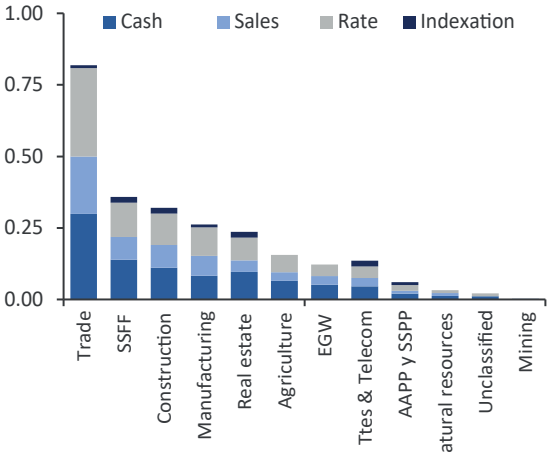
(*) Rescheduled (R'd) and Fogape categories are not mutually exclusive. Persons not considered.
Source: Central Bank of Chile based on FMC data.

FIGURE II.7 COMMERCIAL DEBT AT RISK (*)
(percent of GDP, 2021)



(*) Amount owed by each company weighted by its individual probability of default within the next year. Rate shock means an increase of 600 bp in one year in the commercial lending rate. Inflation shock means a 4pp increase (from 6.7% in November 2021 to 10.7% of CPI in one year). Sales shock in severe and adverse scenarios consistent with those used in the banking stress test (chapter III). Sales shock in Covid scenario replicates for each firm its sales performance from the second quarter of 2020 onwards. Specific and additional provisions effective in December 2022. Banks' provisions expense (stress test) as of December 2022 in severe scenario. Commercial debt at risk by economic sector calculated in severe scenario.
Source: Central Bank of Chile based on FMC, SII, and SuSeSo data.

FIGURE II.8 COMMERCIAL DEBT AT RISK BY ECONOMIC SECTOR (*)
(percent of GDP, 2021)



(*) Amount owed by each company weighted by its individual probability of default within the next year. Rate shock means an increase of 600 bp in one year in the commercial lending rate. Inflation shock means a 4pp increase (from 6.7% in November 2021 to 10.7% of CPI in one year). Sales shock in severe and adverse scenarios consistent with those used in the banking stress test (chapter III). Sales shock in Covid scenario replicates for each firm its sales performance from the second quarter of 2020 onwards. Specific and additional provisions effective in December 2022. Banks' provisions expense (stress test) as of December 2022 in severe scenario. Commercial debt at risk by economic sector calculated in severe scenario.
Source: Central Bank of Chile based on FMC, SII, and SUSESO data.

THE REAL-ESTATE SECTOR

Since the previous FSR, the residential real estate sector has reduced its dynamism in a context of more restrictive financing conditions. Aside from the increase in bank interest rates, the terms of mortgage loans have been reduced and the share of loans granted at variable or mixed rates has increased (figures II.9 and II.10). Although the latter could be facilitating access to the mortgage market, it also increases the vulnerability of these debtors, because it exposes them to the risk of facing higher interest rates in the future. Our own estimates[6]/ indicate that by the year 2026, mixed-rate borrowers would face an average increase of 7pp in their financial burden when the current fixed rate of their mortgage loan becomes variable. Similarly, increases in the financial burden of variable rate borrowers would have average increases of 4pp in their financial burden during this year. On top of these increases, the effects of higher inflation must also be added.

In a more complex economic environment, sales have declined and the share of shelved projects has increased in the housing sector. New home sales fell by around 50% annually in the first months of this year. This, together with the higher requirements to obtain project financing, has led to an increase in the total housing supply stock, concentrated in unfinished projects[7]/ (figure II.11). For the time being, no major disruptions in real estate companies' ability to pay are expected. Stress tests on companies show risks from the sector would be limited under stress scenarios (figure II.8).

Housing prices have not suffered abrupt corrections and have continued to rise nationwide, albeit at a slower pace than in late 2021. During 2021 housing prices increased 7.1%, thus accumulating an increase of 85% in the last ten years. Estimates based on Caldera and Johansson (2013) suggest that said increase is in line with its fundamentals, including income and financial conditions. The growth in transaction home prices slowed in the last quarter of 2021, while the prices listed for the Metropolitan Region suggest that this situation would have continued into early 2022. Reduced access to home purchases has put pressure on the rental market, whose prices have kept rising. However, the higher cost of financing has reduced the relative profitability of the buy-to-lease strategy, which could discourage the entry of new participants in this market (statistical appendix).

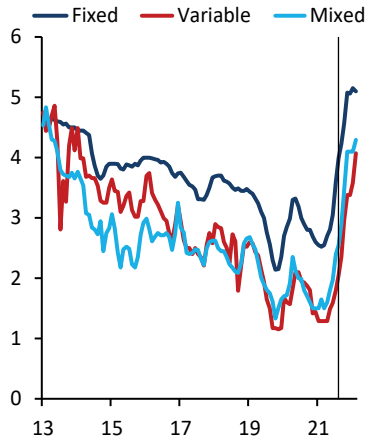
The non-residential sector continues to adjust —with heterogeneity according to property type— to the structural shifts in preferences. Both teleworking and the greater participation of online sales have meant a rebalancing in the use and valuation of assets such as office space, commercial premises, and warehouses. Thus, the vacancy rate in the office segment has increased and the availability of warehouses has dropped to record lows. Meanwhile, stores have halted the deterioration of their activity, although occupancy continues to be lower than their pre-pandemic levels (statistical appendix).

One risk for the non-residential sector is that the transition in which it finds itself will be frictional. If the market is unable to adjust to the changing use of its real estate assets, this could encourage the liquidation of these assets and trigger price adjustments and eventually bank defaults. For the time being, the available information indicates that banks' direct exposure to the sector is limited compared to other assets with similar characteristics.

[6]/ Using the current forward rate curve, the future financial burden is estimated for borrowers who took loans with mixed (fixed for 5 years) or variable (fixed for 1 year) rates, assuming that their income remains constant in real terms.

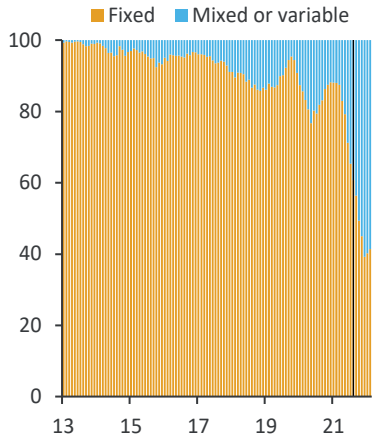
[7]/ A shelved project is one that has not been started, has no showroom or "pilot" homes and, in the case of apartment buildings, it is expected to be completed in more than two years.

FIGURE II.9 MORTGAGE LENDING RATES BY MODALITY
(percent)



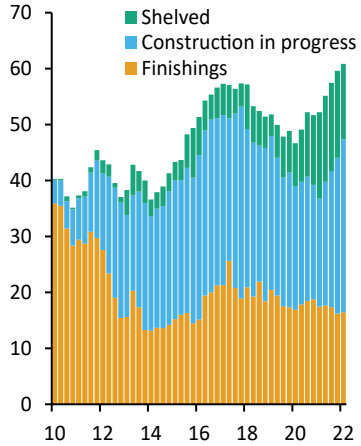
Source: Central Bank of Chile based on FMC data.

FIGURE II.10 DISTRIBUTION OF INTEREST RATE MODALITIES IN CREDIT FLOWS
(weighted by borrowed amount, percent)



Source: Central Bank of Chile based on FMC data.

FIGURE II.11 NEW HOME STOCK AVAILABLE IN GREATER SANTIAGO
(thousands of units)



Source: Central Bank of Chile based on CChC data.

HOUSEHOLDS

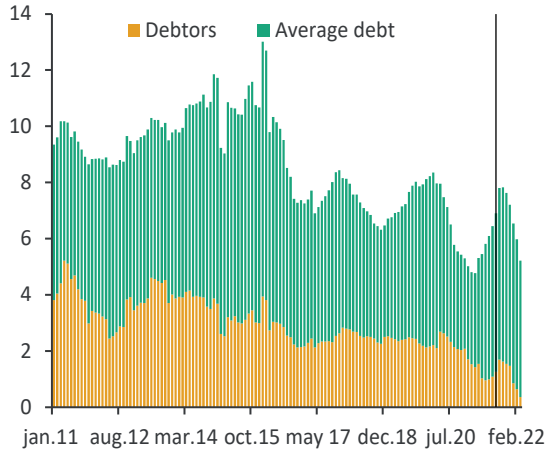
The increase in employment achieved in 2021 has been slowing down since the end of last year, in a context in which different indicators show a less dynamic demand and a supply that —despite some improvement— continues to be limited. Meanwhile, the economy overcame the effects of the pandemic on activity and a lag in labor supply boosted nominal wages. Recently, the labor supply has been recovering, which is less evident among older workers (March 2022 MP Report). Thus, up to the end of last year, income sufficiency to cover expenses had recovered to near its pre-pandemic levels. However, higher inflation has recently offset part of these nominal gains by reducing real wages (statistical appendix).

The dynamics of credit in this sector have remained limited, with greater use of rolling loans in the most recent period. Mortgage debt growth has moderated, in line with interest rate increases and tighter credit standards (figure II.12). In the case of consumer loans, there has been greater use of banking rolling products and an increase in loans granted by non-bank providers (figure II.13 and chapter III).

Bank defaults remain at historical lows for the different portfolios. The sanitary crisis caused a widespread increase in default, with somewhat greater intensity in the first two quintiles of the income distribution (lower income). It is also these groups that had the greatest subsequent decrease, converging to similar levels among debtors (statistical appendix). As for the gender dimension, women continue to show better repayment behavior than men, with similar decreases in the last two years (figure II.14). In aggregate terms, the latest trend in consumer loan delinquency has been a slight increase in the last two years (figure II.14).

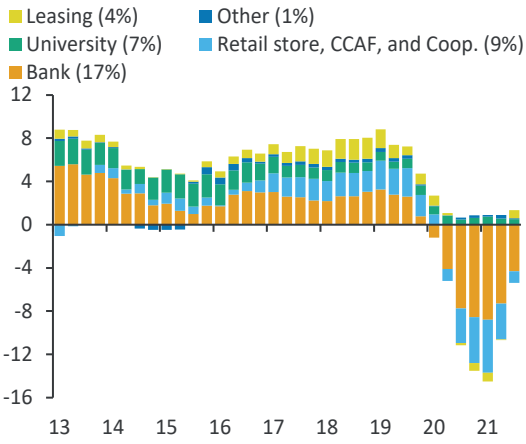
Households face credit access constraints in macroeconomic environments that are perceived to have deteriorated further. With some fluctuations, indebtedness —as measured by total debt over labor income— and the financial burden have increased slightly with respect to before the pandemic. Among lower-income households, consumer loans are more prevalent, while higher-income households are more likely to have mortgage debt (figures II.15 and II.16). The increase in credit constraints and costs make for an unfavorable outlook, characterized by people's greater concerns in the face of a more challenging economic environment. With information up to April, all the components of the economic perception index were still below their levels of three years ago. This is confirmed by our first-quarter Bank Lending Survey: from the banking sector's point of view, the demand for consumer credit remains subdued and deepens its weakening in housing credit.

FIGURE II.12 BANK MORTGAGE DEBT (*)
(real annual change, percent)



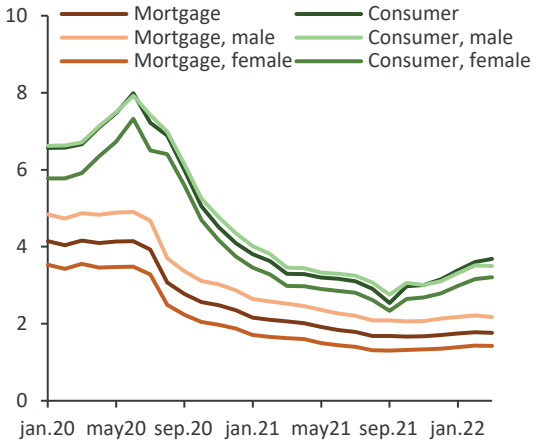
(*) Dashed vertical line marks statistical cutoff of previous FS Report.
Source: Central Bank of Chile based on FMC data.

FIGURE II.13 BANK MORTGAGE DEBT (*)
(real annual change, percent)



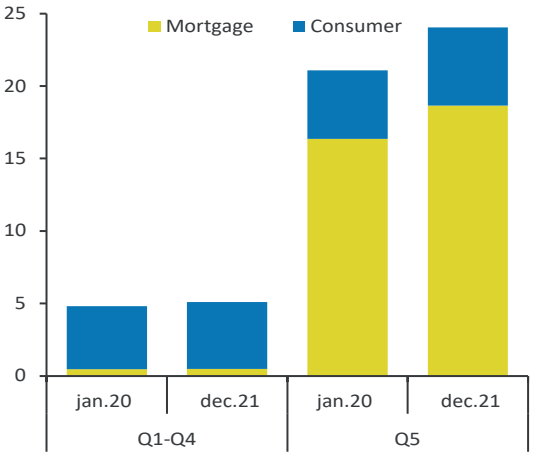
(*) Other includes leasing and insurance companies, automobile finance companies, and the central government (Fonasa, etc.) For further details set of figures.
Source: Central Bank of Chile based on information from FMC, SuSeSo, and Pension Superintendency.

FIGURE II.14 DEFAULT RATE OF CONSUMER AND MORTGAGE LOANS
(percent of bank debtors in each segment)



Source: Central Bank of Chile based on information from FMC and Servel.

FIGURE II.15 BANK DEBT BY INCOME QUINTILE (*)
(times monthly labor income, median)



(*) Q1-Q4 up to clp 1,680,000, Q5 between clp 1,680,001 and clp 2,000,000. For bank debtors contributing to pension fund.
Source: Central Bank of Chile based on information from FMC and SuSeSo.

FIGURE II.16 FINANCIAL BURDEN BY INCOME QUINTILE (*)
(percent of monthly labor income, median)

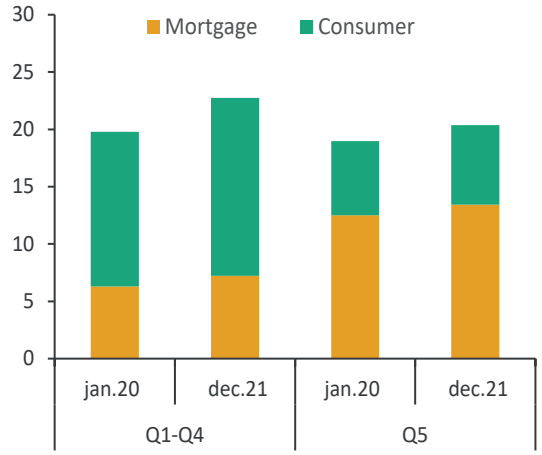
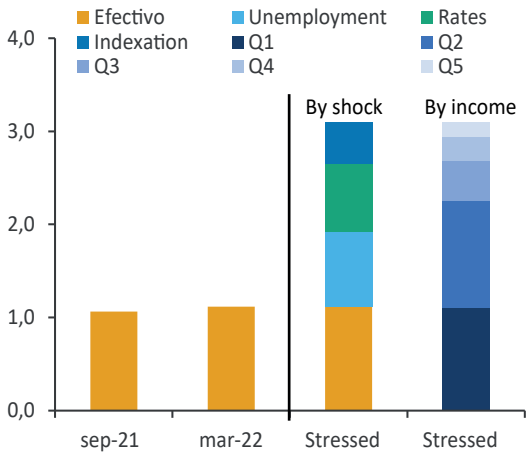


FIGURE II.17 DEBT AT RISK
(percent of GDP)



(*) Q1-Q4 up to clp 1,680,000, Q5 between clp 1,680,001 and clp 2,000,000. For bank debtors contributing to pension fund.
Source: Central Bank of Chile based on information from FMC and SuSeSo.

STRESS TESTING FOR HOUSEHOLDS

The impact of the stress scenarios is similar to that described in previous FSRs, where the debt at risk would triple within the one-year horizon (figure II.17). These exercises assess the potential effect of shocks in extreme, low-probability, high-impact stress scenarios. They are partial in nature, as they do not model all agents' reactions and are not intended as projections. Three simultaneous shocks above current levels are considered, the first one consisting of a 7pp increase in the unemployment rate in one year. In the second, a 600 bp increase in consumer credit interest rates and a 200 bp increase in mortgage rates are assumed. Finally, an inflation shock of an additional 4pp in one year is included[8]/. Given the degree of wage indexation in Chile —around 60% of salaried workers benefit from some CPI correction (September 2013 and January 2008 monetary policy reports)— it is considered a partial transfer of inflation to real wages.

Within the stress scenario applied, the shock with the greatest impact is unemployment, followed by interest rate and inflation risk, and the results show a high degree of heterogeneity among groups. Lower-income households are relatively more leveraged in short-term consumer loans —such as rolling products— and therefore more exposed to interest rate increases (figure II.15). In higher-income brackets this shifts to mortgage debt, with greater exposure to inflation risk. However, the latter is offset by the greater presence of wage indexation clauses in this group.

[8]/ This component captures the effects of inflation increases that directly affect the payment of UF-indexed debts. Additional general equilibrium effects associated with inflationary shocks would be implicitly captured in the deterioration of activity, employment, and financial conditions.

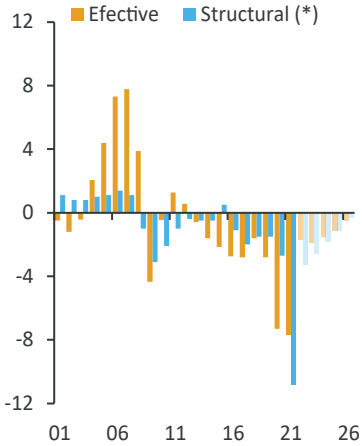
CENTRAL GOVERNMENT

Fiscal accounts have remained tight, with the deficit and debt continuing to grow. The effective fiscal balance for 2021 stood at –8% of GDP, while the cyclically-adjusted result was –11% of GDP (figure II.18). Central government debt increased by 3pp, reaching 36% of GDP at the end of 2021. According to projections by the Budget Office, the effective and structural deficits should converge to –1% by 2025, which would bring the total debt to around 44% of GDP by then. (figure II.19).

Sovereign debt has increased alongside a deterioration in financial conditions, which implies a higher cost of refinancing these obligations. According to an exercise that assumes future renewals of the current debt stock according to their maturities, and using the current interest rate structure, it is estimated that the current debt renewal cost for the next ten years would be approximately US$12 billion higher than that obtained in September 2019 (figure II.20). About a quarter of this increase is the result of the greater indebtedness acquired in that period, while the rest comes from the increase in interest rates.

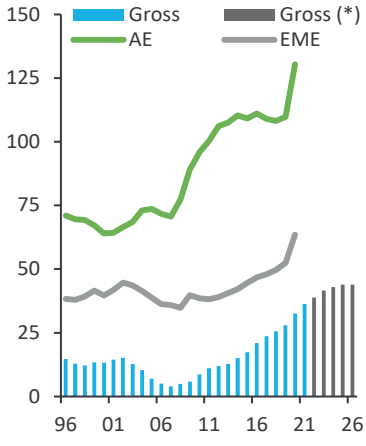
Ensuring fiscal sustainability is essential to avoid a deterioration in risk perception and local financial conditions. A deterioration in financial conditions erodes the resources available to the Treasury and reduces slack to deal with possible new shocks. In turn, the tightness would feed back into a greater risk perception of the local economy by raising premiums, which could affect the cost of financing for households and firms in a cross-cutting manner. Measures aimed at a convergence of fiscal debt towards sustainable levels are desirable because they reduce uncertainty and attenuate the reaction of financial markets to adverse events. In this sense, the establishment of a fiscal anchor —in line with the recommendations of the Autonomous Fiscal Council— would allow to better mitigate the effects of disruptive events on investors' risk perception and their potential impact on local financing conditions. (CFA, 2022).

FIGURE II.18 OVERALL AND STRUCTURAL BALANCE, CENTRAL GOVERNMENT
(percent of GDP)



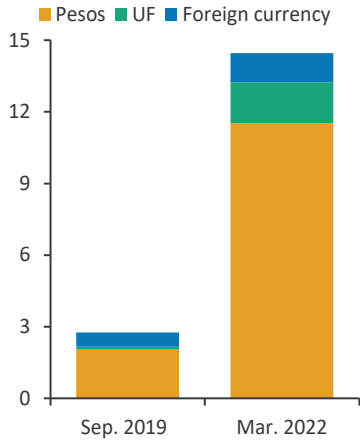
(*) Light-colored bars show projections in the Public Finance Report 1Q 2022, Dipres.
Source: Central Bank of Chile based on data from the Finance Ministry.

FIGURE II.19 DEBT OF CENTRAL GOVERNMENT AND OTHER ECONOMIES
(percent of GDP)



(*) Projection in Public Finance Report 1Q 2022, Dipres.
Source: Central Bank of Chile based on Dipres data.

FIGURE II.20 COST OF DEBT REFINANCING OVER THE NEXT 10 YEARS (*)
(billions of dolars)



(*) Scenarios based on cost of refinancing treasury bonds maturing in the next 10 years. Maturities considered are equivalent to 70%, 50%, and 45% of the total in pesos, UF and foreign currency, respectively, as of March 2022.
Source: Central Bank of Chile based on data from Finance Ministry and Bloomberg.

BOX II.1:

Credit policy spillovers during the pandemic

The interconnection that exists between firms through commercial, credit, and payment relationships allows for the propagation of shocks through the network they create (Jacobson and von Shedvin, 2015; Altinoglu, 2020; Costello, 2021, among others). Thus, the extraordinary credit support facilities and the liquidity conditions they generate, in addition to favoring the firms that receive the loans, have a potential indirect impact.

The evolution of sales at the firm level suggests that the measures that favored credit during the pandemic in Chile spread through the production chain. To review this hypothesis, the universe of transactions between firms via electronic invoicing was considered, and categories were constructed that depend on whether the agents with which the firms relate (i.e., sellers and buyers) benefited from the extraordinary credit facilities during the pandemic[9]/. One observation is that the speed of recovery is faster in firms whose buyers did receive financing through the Fogape-Covid program (figure II.21) (Fernández, 2022).

The cross-firm installment purchases and sales (trade credit) also seem to have played a role in amplifying the effects of the measures. To analyze this, we decomposed the growth rate of sales and trade credit at the firm level into: (1) a demand shock from buyers, (2) a supply shock from sellers, and (3) a common component associated with macroeconomic factors (Cortés and Toro, 2022). After a marked reduction in trade credit in the first half of 2020, the availability of this same type of credit increased once the support policies were initiated. It should be noted that at the beginning of these policies, the increase in liquidity reduced the need for installment purchasing and increased the willingness to offer this modality (figure II.22).

FIGURE II.21 QUARTERLY SALES GROWH WITH AND WITHOUT FOGAPE COVID (*)
(real annual growth, percent)

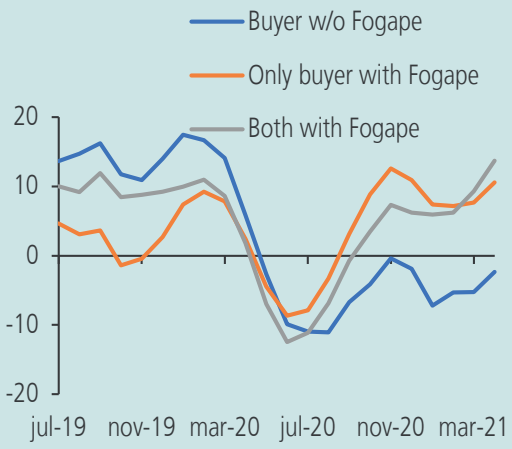
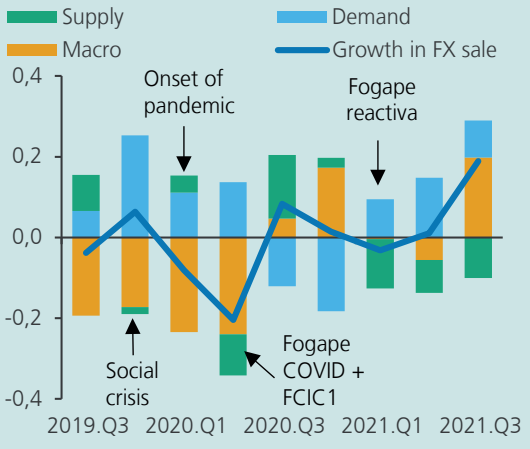


FIGURE II.22 DETERMINANTS OF QUARTERLY GROWTH IN AGGREGATE CREDIT BETWEEN FIRMS
(percent change)



(*) Firms with local funding and annual sales under one million UF. Purchase-sale relationship between October and December 2020.
Source: Central Bank of Chile based on SII and FMC data.

[9]/ For more information on the requisites to obtain a Fogape-Covid loan, click here link

III. LENDERS

Since the last FSR, lower demand for bank bonds and a further deterioration of the macroeconomic environment have translated into more demanding lending standards. However, bank consumer loans and those of non-bank credit providers have shown an incipient rebound, due to greater use of rolling products. The delinquency rate of bank portfolios remains low by historical standards. However, strong increases in additional provisions have been made in the consumer and commercial segments, consistent with pre-pandemic credit risk levels. Stress tests indicate that solvency indicators would remain above the regulatory requirement even under severe stress scenarios.

THE BANKING SECTOR

Bank credit has weakened since the previous Report, consistent with tighter financing conditions and lower demand (figure III.1). The Bank Lending Survey for the first quarter of 2022 points to a perception of weaker demand for commercial loans, as a result of lower investment needs. Meanwhile, in a more uncertain environment, lending conditions remain restricted, with higher interest rates and shorter terms, especially for smaller firms[1]/ (figure III.2 and statistical appendix).

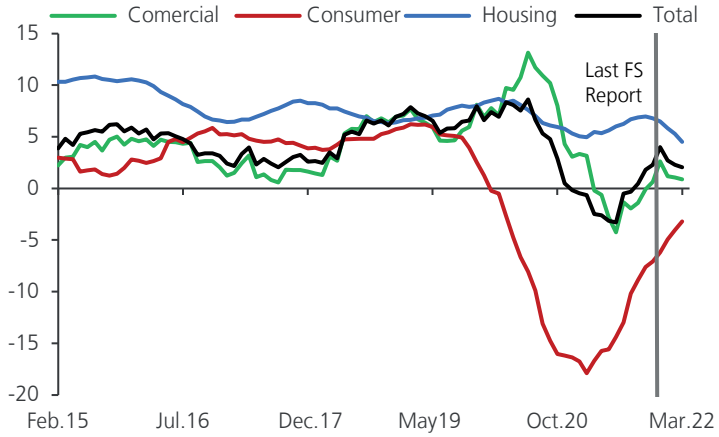
A similar situation is lived by housing loans, affected by the same factors mentioned above. The reduced depth of the capital market has restricted long-term financing for banks, resulting in more stringent lending conditions, with shorter terms and higher interest rates[2]/. The Bank Lending Survey confirms this dynamic, indicating a persistent drop in demand for mortgage credit (statistical appendix). Housing loans with variable or mixed interest rates have increased their share of the mortgage flow, which in a way makes it possible to maintain access to financing. However, they expose borrowers to increases in their financial burden depending on the evolution of interest rates (chapter II).

Although consumer credit in installments remains constrained, the use of rolling products has continued to increase since the beginning of last year. There are two opposing forces behind this phenomenon. On the one hand, the higher cost of credit and greater caution in the face of a deteriorating environment have discouraged demand (IPN, May 2022). On the other hand, the reduction in people's excess liquidity could be driving demand for new rolling loans, which would be more prevalent among lower-income debtors (March 2022 MP Report and chapter II).

[1]/ To see the results of the Bank Lending Survey of the first quarter of 2022, click here link.

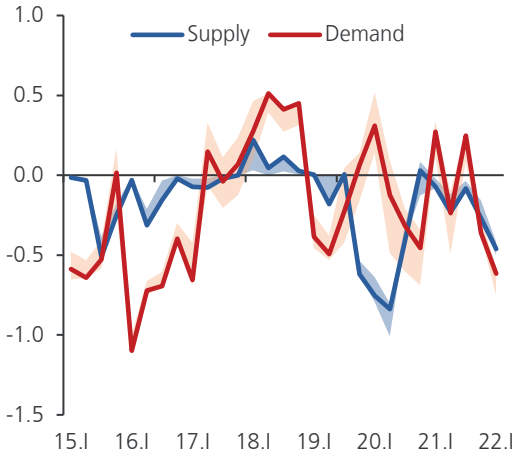
[2]/ It should be noted that, following the rejection of new pension fund withdrawals, part of the demand for bank bonds has been reactivated, which has to do with some recent flexibilization of the terms of mortgage loans.

FIGURE III.1 LENDING GROWTH (*)
(real annual change, percent)



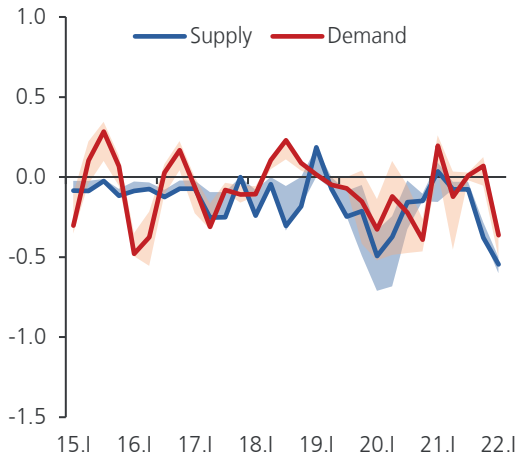
(*) Based on individual financial statements. Vertical line shows statistical cutoff of previous Financial Stability Report.
Source: Central Bank of Chile based on FMC data.

FIGURE III.2A LENDING STANDARDS FOR LARGE ENTERPRISES (*)
(index)



(*) Net fraction of responses weighted by banks' share of segment. Interval calculated using jackknife.
Source: Central Bank of Chile.

FIGURE III.2B LENDING STANDARDS FOR SMES (*)
(index)



(*) Net fraction of responses weighted by banks' share of segment. Interval calculated using jackknife.
Source: Central Bank of Chile.

Bank portfolio delinquencies remain at low levels from a historical perspective. In the commercial portfolio, delinquency remains low and stable, despite a high share of lower-rated and therefore riskier loans. Meanwhile, in recent months there has been a slight increase in delinquency in the consumer portfolio. At the system level, banks have brought total provisions, through additional ones, of the consumer and commercial portfolios close to their levels prior to the social outbreak, in view of the prospect of increased credit risk. (chapter I).

Bank liabilities have undergone changes due to a lower demand for bonds in the local market and other conjunctural elements. Withdrawals of pension funds swelled the current account balances and had as a counterpart a decrease in the demand for bonds. Retail —short-term— deposits of individuals and non-financial companies continue to increase their share in the liability structure of banks, accounting for more than 29% of the total, due to an increase in the returns offered (figure III.3). As a counterpart, wholesale deposits of institutional origin have practically vanished from the structure of bank liabilities. Given the lower demand from institutional investors for local instruments, from the end of 2020 to the end of 2021 there was a slight reduction in the duration of liabilities from 24 to 22 months and an increase in the dependence on external financing, from 7% to 10% of liabilities.

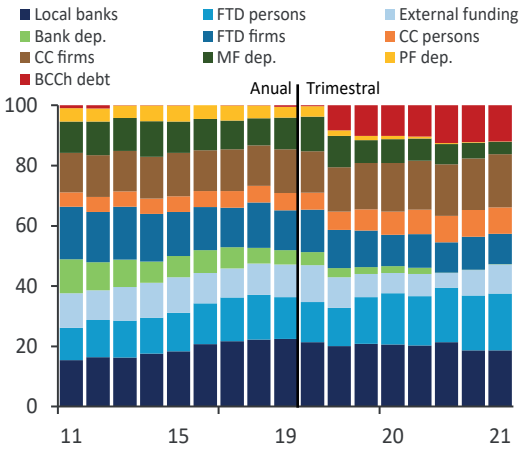
The shorter duration of liabilities has been mitigated with a reduction in the duration of assets. Since the last FSR, the term mismatch gap has shortened, because the shorter average term of liabilities has been accompanied by a reduction in the duration of assets by way of shorter credit terms, especially in the housing and commercial portfolios (chapter II). The difference between the duration of assets and liabilities remains at around one year and the 30-day term mismatch remains contained, close to 20% of capital in April of this year.

Banks' profitability has recovered its levels prior to the social outbreak. The improvement in profitability obeys mainly to three factors. First, an increase in the price-level adjustment margin as an effect of higher inflation. Second, greater operational efficiency explained by the intensified use of digital channels. Third, provisions that were lower than initially projected. It should be noted, however, that interest margins, which are the main source of income for banks, continue to decline (figure III.4). The restructuring of the portfolio towards shorter-term liabilities —as a result of pension fund withdrawals and the deterioration of the domestic fixed-income market— was balanced out by the holding of assets that characteristically yield lower returns, such as mortgage loans and sovereign instruments. Thus, the decrease in interest paid was compensated by a decrease in interest received, keeping low the contribution of the interest margin to total profitability.

The capital buffers of the banking system remain at historically high levels, considering the transition to Basel III standards that came into effect in December 2021. The system's solvency has remained stable since the last Report (15.3% in February[3]/), way above its historical averages. This is explained by a reduction in exposure to riskier assets, and the preparation for the new standards, which will begin to progressively incorporate capital charges associated with operating and market risk, and the modification of credit risk-weighted assets (RWA). Partial requirements for the conservation buffer and systemic charge are added (chapter V).

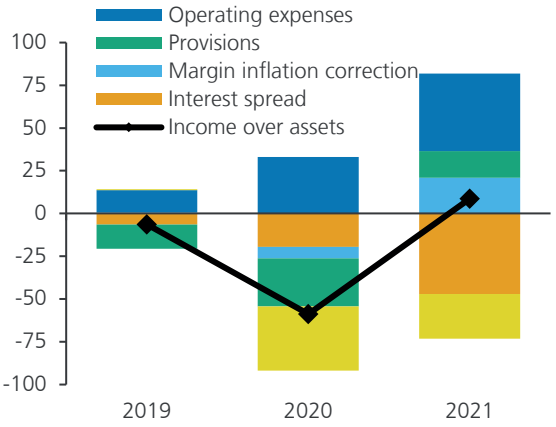
[3]/ Under the previous metric, the indicator as of February 2022 shows no significant differences with respect to current regulations. For more detail, see Matus et al. (2022).

FIGURE III.3 BANK LIABILITIES BREAKDOWN (*)
(percent of liabilities)



(*) Excludes subordinated bonds.
Source: Central Bank of Chile based on FMC and DCV data.

FIGURE III.4 CUMULATIVE CHANGE IN ROA WITH RESPECT TO 2018
(percentage points)



(*) Other includes adjustments for goodwill, commissions, trading, deterioration, taxes, and other operating expenses.
Source: Central Bank of Chile based on FMC data.

EVALUATION OF STRESS SCENARIOS[4]/

Stress tests indicate that banks maintain sufficient capital buffers to absorb the impact of credit and market risks in a severe stress scenario. This tool uses accounting data from the banking system as of December 2021 and considers two stress scenarios: i) a severe one with an abrupt contraction in activity, but with moderate convergence, and ii) an adverse one, with a slow and persistent slowdown[5] / (figure III.5 and statistical appendix). Both scenarios include a more volatile exchange rate[6]/ and an increase in financing costs. For the latter, an increase of 500bp is considered for the nominal short-term interest rate, 300bp for the short-term rates in UF and dollars, and 100bp for the long-term rate in all denominations[7]/. In addition, due to the policies applied during the period and as in the previous year, the increase in additional provisions is included and they are treated as specific provisions[8]/; the adjustments for state-guaranteed loans are also reversed, considering them as a traditional commercial portfolio in terms of their provisions and their impact on the RWA.

[4]/ Based on the methodology described in the FSR of the second half of 2013 and in Martínez et al. (2017). Both the analysis and its results are routinely reported to the FMC. Moreover, given their nature, they should not be considered as projection exercises.

[5]/ The adverse scenario is based on the 5th percentile of the March 2022 MP Report projections, which accounts for a milder but more persistent drop in activity.

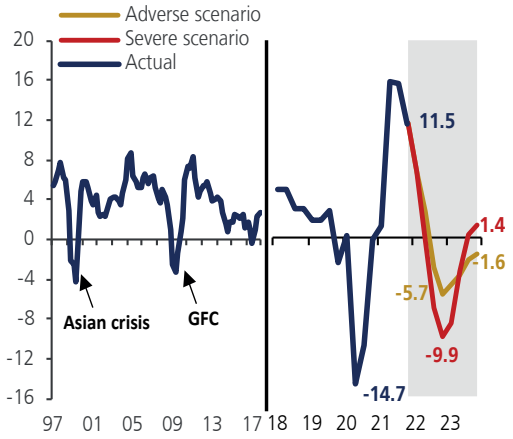
[6]/ It considers a depreciation around the maximum historical variations of the peso experienced since 2000. That is, 20% for credit risk and 16% for market risks.

[7]/ For the purposes of historical comparability, in the past, shocks from previous exercises have been maintained. Given the recent dynamics, an additional test was carried out in which the magnitude of the long-term rate shock was doubled to 200bp. This increase had a limited effect on market and credit risks for banks. Under this larger shock, total risk would rise by about 52bp of capital, with a smaller impact on solvency, close to 2bp of IAC.

[8]/ Although the transformation from additional to specific provisions has no net effect on expenditure, the former are deducted from the effective net worth of the banks.

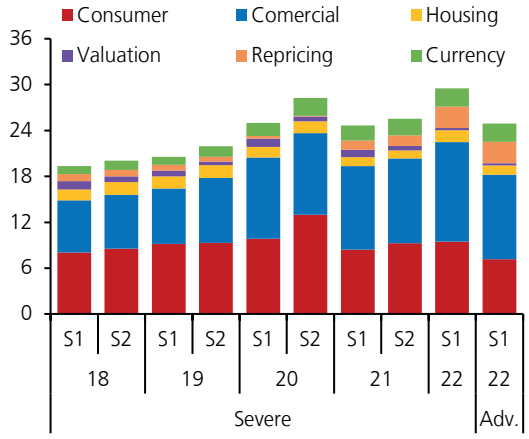
The results show an increase in credit risk, mainly in the commercial portfolio. Under a severe scenario, the exercise estimates a potential loss of total loans (consumer, commercial, and housing) of 24% of the system's capital, which represents an increase of 2.6pp in relation to the previous exercise (figure III.6). Credit risk in the adverse scenario would reach 19.4% of capital, a result similar to that presented in the previous Report.

FIGURE III.5 ANNUAL GDP GROWTH SCENARIOS (*)
(quarterly data, percent)



(*) Seasonally adjusted data. Shaded area shows test window.
Source: Central Bank of Chile.

FIGURE III.6 SYSTEM'S CREDIT AND MARKET RISK
(percent of basic capital)



Source: Central Bank of Chile.

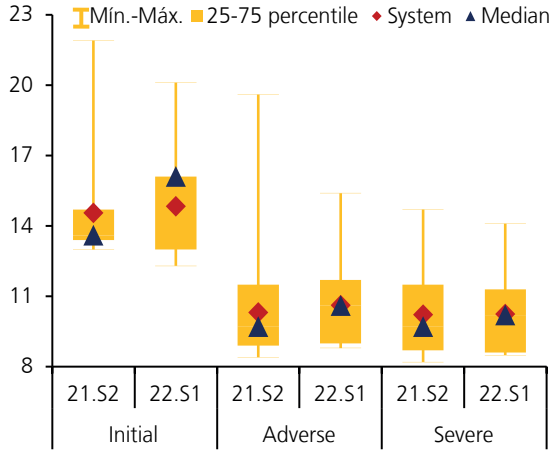
The banks increased their exposure to interest rate risk by shortening their liabilities (figures III.6 and III.3). This risk could increase if higher funding costs failed to be passed on to assets by either an increase in defaults or a lower demand that would further contract interest margins. Meanwhile, currency risk remains somewhat higher than in previous years, given banks' greater asset mismatch in foreign currency which, although it would generate profits in the event of a peso depreciation, it exposes them to exchange rate volatility. The valuation risk of trading book assets remains low.

The banks' solvency allows them to withstand the effects of the stress scenario while maintaining its capital above the regulatory minimums. The initial situation remained stable with respect to the previous year, the IAC[9]/ went from 14.6% to 14.8% and the ROE remained near 15% (figure III.7 and statistical appendix). At the level of institutions, banks that together account for about 97% of the system's total core capital would exhibit negative returns in the severe stress scenario, a percentage somewhat higher than 91% in the previous exercise[10]/. Although the impact of the severe scenario on the difference between initial and final capital would increase from 4.3 to 4.6pp, capital buffers after applying the exercise are greater with respect to the previous FSR exercise (figure III.8).

[9]/ For comparison purposes, the metric used is the one prior to the implementation of Basel III; for more details see Matus et al. (2022).

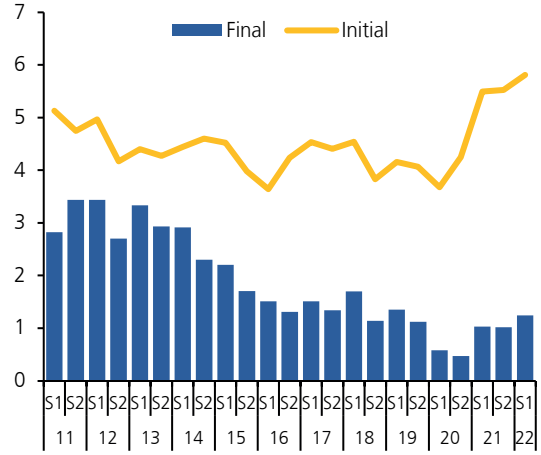
[10]/ In the adverse stress scenario, banks that together account for about 77% of total core capital would exhibit negative returns, higher than the 66% of the previous year.

FIGURE III.7 IMPACT OF STRESS SCENARIO OVER CAPITAL ADEQUACY INDEX (*)
(percent of risk-weighted assets)



(*) Figures weighted by basic capital of each institution. Calculations consider neither Treasury banking and foreign trade nor consumer banks that have exited the system.
Source: Central Bank of Chile based on FMC data.

FIGURE III.8 CAPITAL BUFFERS UNDER SEVERE STRESS SCENARIO (*)
(percent of risk-weighted assets)



(*) Excess of effective net worth over regulatory minimum. Considers particular bank-specific limits. As from 2021, consumer SAGs are considered.
Source: Central Bank of Chile based on FMC data.

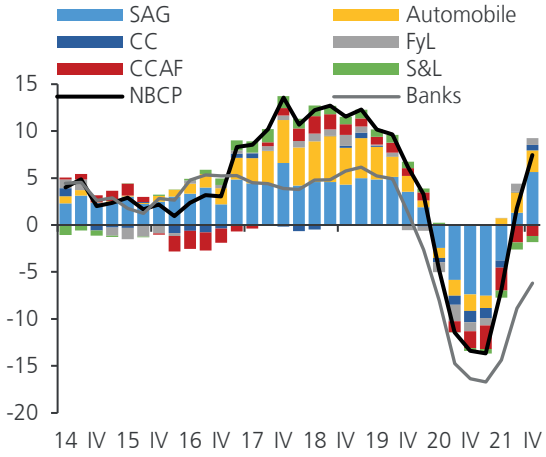
NON-BANK ORGANIZATIONS[11]/

Data for the end of 2021 showed that non-bank credit providers (NBCPs) continued to recover the dynamism of their consumer loans, driven by the growth in the participation of card issuers and the automotive sector (figure III.9). Consumer loans granted by NBCPs showed a greater expansion in the last quarter of last year, in contrast to loans granted by parent banks. In this recovery, the greater relevance of the support companies (SAG) and those of the companies that grant automobile loans stood out, whose credit granting grew at rates that matched those observed before the social outbreak.

Portfolio delinquency indicators stabilized during the past year (figure III.10). Although this evolution in delinquency is relatively similar to that of the banking sector, it shows higher levels of default and a relatively important change in trend in the case of the business support companies, whose business is associated with rolling loans. The profitability of NBCPs showed an increase in the second half of last year, mainly due to the recovery of lending activity together with a decrease in provisions.

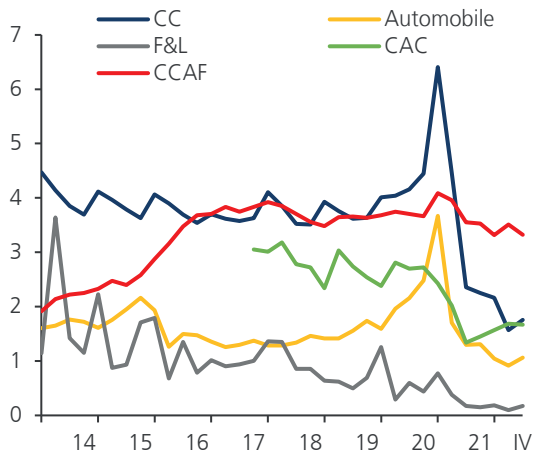
[11]/ NBCPs grant loans to households and firms. These entities include bank support companies (SAG), retailers (CC), family compensation funds (CCAF), savings & loans cooperatives, and entities that provide factoring and leasing (FyL) as well as automobile loans.

FIGURE III.9 CONTRIBUTION TO GROWTH IN NBCP GROWTH
(real annual change, percent)



Source: Central Bank of Chile based on FMC and SUSESO data.

FIGURE III.10 DELAYED PAYMENT INDEX (90-180D) (*)
(percent of loans)



(*) Retail companies (CC) include SAG. SAG delayed payment obtained from respective parent companies' consolidated and individual financial statements..
Source: Central Bank of Chile based on FMC and SUSESO data.

RISK FACTORS

The worsening of international conditions could affect the expected trajectory of economic activity, deteriorating the quality of the loan portfolio. A sharper-than-expected drop in economic growth could significantly affect the repayment capacity of companies, especially those most affected by the sanitary crisis and those that rescheduled their liabilities (chapter II). Likewise, a deterioration in employment conditions could affect the repayment behavior of households, especially those most indebted (chapter II).

A deterioration in international financial circumstances would affect the banks' funding and foreign currency liquidity conditions. A worsening of geopolitical uncertainty, coupled with a faster monetary correction in developed economies, could deteriorate funding sources. In the current context of tight margins for banks, this increase would imply a further rise in personal and corporate lending rates.

Locally, shallower capital markets could exacerbate credit constraints. The forced liquidation of pension funds and threats of a repeat of these events have brought about a change in financing conditions for banks. In particular, further restrictions could continue to affect the granting of housing loans, reducing terms and the availability of fixed-rate loans.

Since the onset of the pandemic, and given the deterioration of the international scenario, there has been an increase in the risk associated with the occurrence of cyber-attacks. The sanitary crisis accelerated the digital transformation of banking, which has involved a greater use of technological channels to meet people's needs in a more agile way. Although several entities in the market underscore the increases in technological investments focused on safeguarding systems against IT security risks, and have been incorporating best practices after the events that occurred in recent years, the conflict in Europe aggravates the risks of more sophisticated cybercrimes, such as data hijacking by blocking access, among others.

BOX III.1:

The decision-making process at financial policy meetings

The BCCh launched the Financial Policy Meetings (FPM) in May this year, which will determine the level of the Countercyclical Capital Buffer (CCyB). The General Banking Law entrusts the BCCh with the responsibility of determining the activation or deactivation of the CCyB. To this end, the FPRs will be held at least twice a year. In the event of activation, the Bank will set the CCyB level between 0 and 2.5% of risk-weighted assets, in addition to defining the implementation period. This instrument is a macroprudential tool that the BCCh possesses to conduct its financial policy within the framework of Basel III.

The Board has a set of methodological tools to guide its decisions regarding the CCyB. These are grouped into three categories (figure V.1). First, there are the credit gaps, which are constructed as the difference between various variants of credit-to-GDP ratios and their long-term trends. They contain information that helps to anticipate banking crises, based on periods of excessive credit growth (Borio and Lowe, 2002). The second set of indicators refers to the systemic risk map, which summarizes the financial situation of the banking, corporate, real estate, and household sectors, in addition to different macroeconomic and financial variables that illustrate the context. Finally, complementary models are included that provide a view of the future evolution of credit, interaction with monetary policy, and the impact of different decisions associated with CCyB. Together, these models contribute to calibrate the level of the capital buffer and its implementation period[12]/.

After close examination of this background information —in addition to considering elements of judgment— the BCCh Board will make a decision at the end of each Meeting, which will be communicated through the usual channels. Although this decision rests with the Board, the process involves a high level of coordination with the FMC, which must issue a prior favorable report, if deemed necessary[13]/.

DIAGRAM III.1 FINANCIAL POLICY MEETINGS INDICATORS



Source: Central Bank of Chile.

[12]/ See Alegría et al. (2022).

[13]/ To learn more about the norm, see article 66 ter of the General Banking Law. Click here link.

IV. CLIMATE CHANGE CHALLENGES FACING THE FINANCIAL SYSTEM AND CENTRAL BANKING

The effects of climate change have the potential to hinder productive activities and destroy capital. Different scenarios suggest that the magnitude and frequency of adverse climate events will increase, and with it their economic and financial impact. The adjustments required to move towards a sustainable economy, though costly, will contribute to partially mitigate irreversible negative events in the future. The degree of success of the policies adopted in this direction depends crucially on the level of global coordination and the promptness of their implementation. In this regard, policymakers can bring to the surface the risks of climate change to financial stability and promote the necessary changes. Recognizing the urgency of this phenomenon, the BCCh has established a work agenda, in accordance with its mandate, on the quantification of the financial and economic effects of climate change, as well as the degradation of ecosystems. This chapter discusses the implications that climate change may have on the stability of the financial system and the main associated challenges.

INTRODUCTION

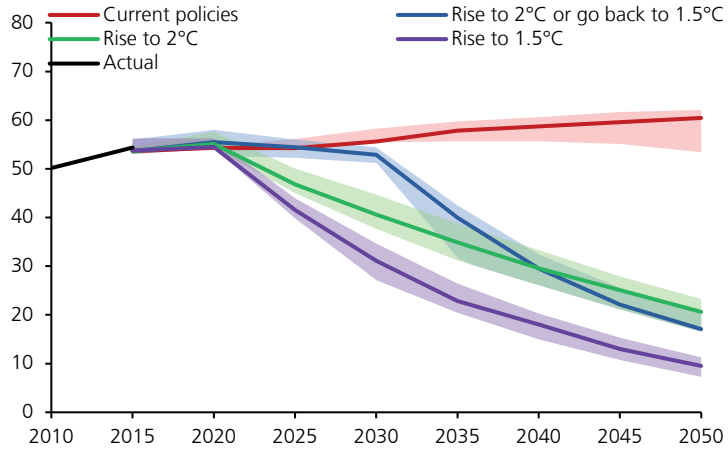
The scientific community has highlighted the adverse effects that climate change is having and will continue to have, and the importance of adopting mitigation measures to address and contain its consequences. The pace of growth of unsustainable economic activities has been increasing, and with it emissions and their effects on rising temperatures. The evidence presented by the Intergovernmental Panel on Climate Change (IPCC) shows that the adjustments required to limit temperature increase came too late (IPCC, 2022). In this sense, they project that staying on the current policy trajectory will take the world well beyond the goals set for temperature increases, and will make it practically impossible to limit them to below 2°C from 2030 onwards (figure IV.1). The urgency for different jurisdictions around the world to act promptly and in a coordinated manner means recognizing that the later the start, the fewer the effects that can be mitigated. In addition, applying coordinated measures helps to minimize the costs of being at different stages of the process and prevents transitions from being delayed, thus mitigating negative externalities at the global level. Therefore, the actions of countries whose contribution to this global problem is relatively limited, as is the case of Chile, are still relevant[1]/.

Climate change is already causing significant adverse effects, which will deepen in the coming decades under practically any scenario, and which will propagate and amplify risks in the economy. Climate change is having an impact on economic activity and people's well-being, given the increase in frequency and magnitude of natural events —such as droughts, fires and floods— and changes in the chemical composition and sea level, as well as the depletion of the planet's wildlife. All these effects will intensify in the coming decades, at a speed that will depend critically on how fast the global energy transition proceeds (IPCC, 2022).

[1]/ For reference, all countries that individually emit less than 1% of global greenhouse gases (Chile emits 0.3%) collectively emit 25% of the world's total.

The unleashing of climate events constitutes a series of shocks with potentially large-scale effects, and their economic and financial impact is already being observed in multiple jurisdictions. For example, in the United States over the past thirty years, more than one-third of the economic costs of flooding are due to increased precipitation associated with climate change, an additional 73 billion US dollars (Davenport et al., 2021).

FIGURE IV.1 GLOBAL GREENHOUSE-EFFECT GAS EMISSIONS NECESSARY TO MEET PARTICULAR GLOBAL WARMING OBJECTIVES (*)
(billions of CO_2-equivalent metric tons per year)



(*) Solid lines indicate central projections corresponding to different global warming objectives. Shaded areas describe percentiles 25th to 75th of each projection.
Source: Assessment Report 6 of IPCC (2022).

The financial sector will be affected by these changes, but the negative consequences could be partly mitigated insofar as the sector allocates resources to investments that factor in climatic risks. Climate change becomes a source of financial vulnerability when resources are channeled to productive activities that lose viability as a result of this phenomenon[2]/. Financial risks related to climate change —hereafter referred to as climate risks— are transmitted through various channels to the financial sector, exacerbating traditional risks. This vulnerability could be minimized by internalizing climate risks into credit portfolios, which is complex given their characteristics, as mentioned above. In turn, by including these risks in their balance sheets, financial institutions could positively affect the environment, either by correctly assessing the costs associated with carbon-intensive investments, or by incorporating sustainable criteria in their financing policies, thus contributing to channeling resources towards activities that favor the preservation of ecosystems (box IV.I).

The generation of knowledge and information on the effects of climate change on the economy and the financial sector is essential for a correct assessment of climate risks. The aforementioned characteristics of climate change are some of the difficulties for the adequate design of scenarios of the expected medium- and long-term trajectory of climate change. In addition, there are information gaps related to the shortage of historical data and analysis at a granular level, which is partly due to the absence of data generation and reporting practices of financial and non-financial companies regarding their direct and indirect exposure to climate risks. For example, the disclosure of information by financial institutions on their exposure to economic sectors prone to be affected by climate events is essential for the measurement of the financial risks arising from these events.

[2]/ See box V.I, FSR, second half 2019.

This latter dimension was one of the first to be addressed by the initiative of the TCFD, promoted by the Financial Stability Board (FSB), which aims to guide the structured and systematic reporting of climate change issues for the financial and non-financial industry[3]/.

The international discussion has identified that central banks and financial supervisors can contribute to making the transition to sustainable economies less disruptive to financial stability, by initiating concrete actions within the scope of their powers. Generally speaking, the measures that can be adopted by the different financial authorities, depending on the scope of their mandate, are framed within: (1) the identification and monitoring of financial risks; (2) prudential regulation and supervision; (3) investment policy with environmental criteria; (4) international coordination and exchange of information and knowledge. The proper identification of climate risks and their constant monitoring goes hand in hand with the generation of data and the development of models that contribute to closing information and knowledge gaps. Likewise, promoting the proper functioning of financial markets with sustainable and environmental criteria through regulation and supervision could contribute to the implementation of sustainability criteria for underlying investments that would contribute to an orderly transition and risk management in portfolios.

These challenges have motivated the BCCh to develop an agenda for incorporating environmental aspects into the fulfillment of its objectives, the details of which will be made public at the end of the year within the framework of the new five-year strategic planning. In compliance with the objectives mandated by the Organic Law of the BCCh, the Board identifies as a high priority to develop an agenda that incorporates environmental aspects in general, and those related to climate change in particular. Along these lines, last year the BCCh declared its commitment to this issue by joining the Network for Greening the Financial System (NGFS) and adopting its recommendations[4]/. Specifically, the commitment includes incorporating climate change related elements into the macroeconomic analysis and monitoring of risks to financial stability; generating statistical information that involves the coordination of various sources, and building intellectual capacity, hand in hand with the generation of cutting-edge microfinance research. Furthermore, the BCCh plans to include as a priority in its 2022-27 strategic plan a cross-cutting work agenda for all the Bank's relevant areas.

FINANCIAL RISKS ASSOCIATED WITH CLIMATE CHANGE

In addition to endangering the ecosystem, severe weather events affect human activities and, consequently, different sectors of the economy, including the financial sector, which poses risks and challenges. With respect to financial risks, climate change brings with it the so-called physical risks, which are related both to catastrophic events projected in the long term and to natural disasters that have already been observed. These risks are separated into acute and chronic, where the former are associated with one-off climatic events (i.e., heat waves, forest fires, disruptions in rainfall patterns and types of storms, and floods), while the chronic risks are associated with long-term changes in weather patterns, such as rising sea levels, the

[3]/ For more details on the disclosure recommendations of this working group, see Box V.I, IEF Second Half 2019. The TCFD (Task Force on Climate-Related Financial Disclosures), created in 2017, is a private initiative of international financial institutions promoted by the FSB with voluntary principles.

[4]/ The Network for Greening the Financial System (NGFS) is a group of central banks and supervisors sharing best practices and international standards, including requirements for increased reporting on the effects of climate change, developing a common language, integrating financial risks into financial stability monitoring, and more detailed supervision of financial institutions. For more information, click here link.

planet's average temperature, and the acidification of the oceans. On the other hand, the advance of climate change imposes the need to migrate to sustainable economic systems, which requires coordinated actions by society, ranging from changes in the agents' investment and consumption decisions, to greater technological innovation and the implementation of public climate policies. This could be costly for households, companies, and the financial sector, and therefore constitutes the so-called transition risks.

Climate risks are heterogeneous in how they affect agents and markets in the economy, and are transmitted to the financial system through micro and macroeconomic channels. In general, both physical and transition risks can directly and indirectly affect households, businesses, and governments. With regard to physical risks, the occurrence of climate events could damage the assets of different agents, which, in addition to possibly causing significant losses of value, in some companies could impede their operational continuity. Weather events may also have an impact on household income depending on the disruptions they cause in their productive activities, or even the potential impact they may have on workers' health, for example, in the case of heat waves. In turn, the risks associated with the transition to sustainable economies could involve higher costs of living and of adapting productive activities derived from environmental policies focused, for example, on reducing CO_2 emissions. More generally, changes in consumption and investment patterns are expected to be observed. Individual effects may have important consequences at the macroeconomic level, when multiple sectors are exposed to the same risks and, therefore, cannot mitigate the results of their materialization. Thus, climate risks coming true could, on aggregate, lead to frictions in the labor market, contribute to alterations in financial prices derived from changes in expectations and risk aversion, among other consequences[5]/.

The impact of climate change on the economy exacerbates the traditional financial risks. Typically, the financial impact of natural disasters is considered in the assessment of operating and reinsurance risks. On the one hand, by limiting the ability of some companies to continue operating, their profits are curtailed and, with it, their financing and payment capacity. When such events generate losses of physical capital (e.g., data, hardware, offices) that were previously insured, significant imbalances of the insurance companies could be observed. In cases where these disasters' higher-than-expected frequency has not been duly internalized into premiums, this could lead to restrictions and higher reinsurance costs. This would also limit financial institutions or investors in their ability to recover the value of their investments, depending on how exposed they are to productive sectors more prone to be affected by nature's events. In such situations, not only operational and reinsurance risks are exacerbated by adverse weather events. Credit risk can also be increased by the depreciation or loss of value of collateral assets; for example, properties located on a coastline more prone to flooding (acute physical risks), or an increase in the probability of default when a company ceases to be viable due to non-compliance with emission standards (transition risk). Similarly, market risk may be higher when considering changes in investor perceptions resulting, say, from an abrupt energy transition.

A first step towards assessing the financial impact of climate change is to quantify the exposure of agents to the occurrence of adverse natural events, which is a challenge given the shortage of available data. Calculating agents' exposure to physical risks is intensive in granular information on the agents and economic sectors involved with respect to their activity or productive structure, their relationship with the environment, and their financial indicators. Furthermore, such information must be congruent with the climatic events to which they are possibly exposed and the means of transmission by which these risks can be transferred to the agents in question. BCBS (2020) indicates that low data availability is one of the most common challenges

[5]/ For a comprehensive summary of the empirical evidence of different situations where climate risks are or could be affecting different sectors of an economy, see BCBS (2021).

faced by jurisdictions in developing a framework for analyzing the impact of climate risks[6]/. Thus, efforts to close information gaps become paramount in order to develop new indicators and improve existing measurements.

Both locally and globally, initiatives have been launched to close information gaps by making available data related to the physical risks of climate change for several countries, including Chile. There are platforms developed both inside and outside the country by research institutes with climate impact indicators and projections. One such international tool is the Climate Impact Explorer (CIE) from Climate Analytics[7]/. This platform translates NGFS climate change scenarios into effects on the economy, agriculture, water availability, and extreme events for more than 120 countries, Chile among them. In the country, the Ministry of the Environment launched the ARClim platform in 2020[8]/, which has a similar functionality to CIE, but with a higher level of geographic granularity within the country. These tools provide a broad, yet granular, view of the effects of climate change under future scenarios, integrating social, economic, and environmental factors, which are fundamental ingredients in the exposure tests presented below.

The main climatic threats to Chile, given its geography, are coastal deterioration, increased flooding, temperature increases and prolonged droughts (IPCC, 2022). Accordingly, in order to compute the territorial exposure to these risks, this chapter performs a quantification exercise of real-estate properties exposed to climate risks. For this purpose, the properties listed in the Real Estate Cadaster (georeferenced by district) are associated with climate exposure indicators referring to the loss of labor productivity in the event of heat waves, fires, floods, drought, and coastal deterioration. It is found that over 30% of property valuation in Chile is exposed to climate risks in a horizon up to 2050 (under the assumption that the current policies are maintained). The Northern and Central macro-zones have a high relative exposure to physical risks of coastal deterioration (especially in the Central macro-zone), floods and drought, while the Southern and RM macro-zones have a much lower exposure to these elements. In particular, the exposure of agricultural properties and business use is higher than the risk in residential housing (Cortina and Madeira, 2022).

Thus, in Chile, the northern macro-zones, the Metropolitan Region (RM) and the center of the country appear to be more exposed to the decrease in the availability of water resources and increases in ambient temperatures. In terms of the climate indicators available in ARClim and CIE, and according to IPCC (2022), the most critical risk factors for the national territory would be urban domestic water security, changes in the electrical grid due to a decrease in water resources, variation in labor productivity due to thermal stress, and increases in maximum daily temperature. The North, Central and RM macro-zones concentrate 88% of the population, 86% of the firms, 95% of their annual sales, and 90% of the country's GDP (figure IV.2, right panel)[9]/. This implies that the direct exposure of households and businesses to the most pressing physical risks for Chile is high, which could exacerbate operating, reinsurance, and credit and market risks. Given this concentration of economic activities in the most exposed macro-zones, if materialized, the impact of physical risks could be significant.

[6]/ Second and third steps are to identify the methodological challenges and difficulties in mapping the transmission mechanisms of these risks. Tipically, the methodologies used to study the transmission mechanism of physical risks to the financial system through changes in economic activity go from empirical regressions that relate GDP to climate variables, to integrated assessment models (IAM). Recognizing this difficulty and the lack of international consensus on these issues, this chapter does not address the measurement of the impact of climate risks on the financial sector, but rather calculates the exposure of agents, which is a first step in this direction.

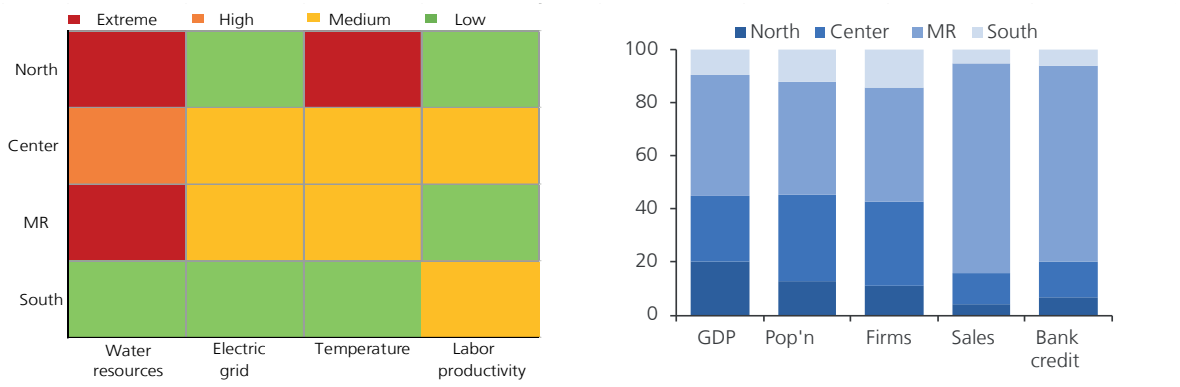
[7]/ Developed in collaboration with the NGFS, the Potsdam Institute for Climate Impact Research, and the Swiss Federal Institute of Technology in Zurich (ETH Zurich). For more information, click here link.

[8]/ Project of the Ministry of the Environment of the Government of Chile, developed by the Center for Climate and Resilience Research and the Center for Global Change of Pontificia Universidad Católica de Chile.

[9]/In each one of these variables, the greatest incidence is of the Metropolitan Region (RM).

Given the concentration of economic activities in the center of the country, together with the vulnerability of the area to an intensification of adverse climatic events, the direct exposure to physical hazards observed would be high. For example, 87% of bank loans are concentrated in regions located in the extreme-risk area for at least one of the dimensions examined, where 59% correspond to commercial loans, 31% to mortgage loans, and 10% to consumer loans. A similar geographic distribution is found in the sales and location of companies throughout Chile, with significant accumulations in the Central and RM macro-zones (figure IV.2)[10]/. It is worth noting that this exercise does not consider the full range of effects, since it does not consider feedback between sectors, nor future dynamics of reaction to policies.

FIGURE IV.2 EXPOSURE TO PHYSICAL RISKS AND DISTRIBUTION OF SELECTED VARIABLES BY MACROZONE(*)(*)
(index, percent)



(*) For more details on physical risk categories, see Córdova et al. (2022). Bank loans as of November 2021. Firms and annual sales as of 2020. Macro-zones: North includes regions XV, I, II, III and IV; Center includes regions V, VI, VII, VIII and XVI; South includes regions IX, X, XI, XII and XIV.
Source: Central Bank of Chile based on data from ARCLIM, CIE, SII, INE, and FMC.

TRANSITION CHALLENGES

Climate risks are uncertain, of large size, correlated with each other, nonlinear, of different frequency, and dependent on market and policymakers' action. This adds several layers of complexity to the task of generating internally consistent scenarios for the future evolution of variables such as global temperature. In this context, the NGFS together with a group of academic institutions developed a set of hypothetical scenarios for the evolution of various climate variables as a function of the level of greenhouse gas emissions. These scenarios have been widely used by various institutions around the world as a common baseline to compute exposures, assess impacts and design policies[11]/. These scenarios help to understand how physical and transition risks could evolve

[10]/ Given the information used, this concentration could be overestimated as banking and tax operations are usually associated with the domicile of the parent companies, which are usually located in the center of the country. However, population and GDP, indicators that do not suffer from this bias, validate this concentration of economic activities in areas subject to potentially relevant increases in water shortage, temperature increases, and labor productivity losses due to climatic phenomena in the coming decades.

[11]/ The NGFS climate scenarios were generated by Workstream 2 (macro-financial) in cooperation with the Potsdam Institute for Climate Impact Research, the International Institute for Applied Systems Analysis, the University of Maryland, Climate Analytics, and ETH Zürich. For more details, click here link.

in different alternative futures, conditional on the rate of implementation of mitigators, innovation, changes in preferences, and productive structure, among other elements. These scenarios can be grouped as follows: (1) Orderly transition: assumes that climate policies are introduced early, gradually becoming more stringent; (2) Disorderly transition: assumes that there is a higher transition risk given a delay in policy implementation or divergent implementation around the world; (3) Greenhouse world: assumes that measures are implemented in certain jurisdictions, but globally there is no material effect. Thus, rising temperatures lead to severe and irreversible physical risks; and (4) Too little, too late: a slow/delayed transition that fails to contain physical risks.

Measuring climate risk exposure arising from the transition to sustainable economies under possible climate change scenarios is a first step in assessing potential impacts. Most central banks and supervisors have opted for top-down stress tests at the sectoral level, focused on banking and based on NGFS scenarios. To date, central banks that have shown results have focused on calculating physical risk exposures and stress tests for bank credit risk. On the other hand, there is a move towards a greater development of exercises that include both physical and transitional risks, which has been accompanied by an extension of the projection horizon (initially five years, now 30) and the unification of the scenarios used to those developed by the NGFS (ECB, 2021). The forward-looking nature of stress tests makes them a suitable candidate for the assessment of climate-change-related risks, but presents important methodological challenges, requiring significant adjustments before they can be used in this context (Baudino and Svoronos, 2021). Specifically, the projection horizon in a stress test that incorporates climate risks is much longer —between 30 and 50 years— than a traditional stress test (between three and five years), which implies greater uncertainty in the assumptions and results. Added to this is the lack of historical information or reliable databases to estimate future impacts; the requirement for exposure data with a high level of granularity; modeling techniques at a premature stage of development compared to those used for traditional financial risks; the design of scenarios that consider positive feedbacks (reaction of companies and development of policies); and mechanisms for the transmission of impacts among agents. For all of the above reasons, this chapter limits the analysis to computing exposure, which contributes to making visible the most relevant elements of a work agenda that considers the inclusion of climate change in the BCCh's methodological framework for its analysis.

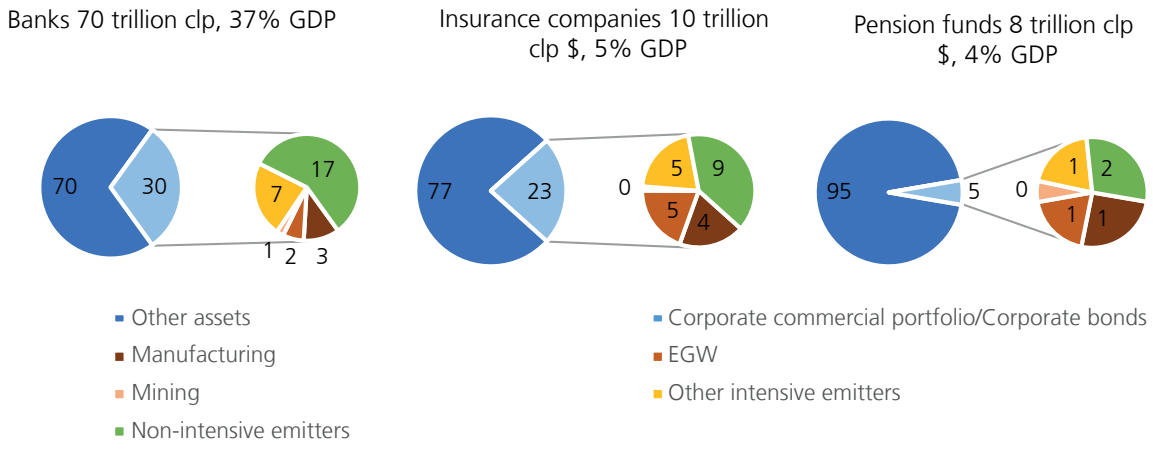
The magnitude of the costs of steering the society through an orderly transition is substantial, and the enforcement of mitigation policies is pressing, as these costs rise considerably as their implementation is delayed. This is related to the capacities of the different agents and sectors of the economy to adapt to new systems compatible with environmental preservation and restoration, and how far they are from doing so. Thus, for example, the emission of greenhouse gases by different sectors and economic agents has been used as a unifying metric to quantify the climate problem, although it does not cover all the dimensions of the phenomenon. Next comes the computation of the exposure of these agents and sectors[12]/. In this way, financial institutions could be exposed to a lower repayment capacity of companies that, in their transition to a greener economy, face higher costs for having to implement new technologies, which could even make them unviable. In this sense, an abrupt transition could imply a sudden downward revaluation of businesses linked to emission-intensive economic sectors. This scenario could also be accompanied by a negative shock in energy supply and costs (due to the materialization of physical risks). In turn, a delayed transition could have severe climatic consequences (natural disasters), which would have an impact on insurers (Schotten et al., 2016). A chain of events of this nature could have systemic consequences on a country's economy, destabilizing its productive and financial sectors.

[12]/ One of the most common methodologies for calculating exposures is that which uses the input-output matrix to quantify CO_2 emissions at the aggregate level by sector of companies and households. See, for example, Cohen et al. (2005) for Brazil, Park and Heo (2007) for korea, Wood and Dey (2007) for Australia, Zheng et al. (2007) for China, Vermeulen et al. (2019) for the Netherlands, BdM (2021) for Mexico, and Avilés-Lucero et al. (2021) for Chile.

Like other countries, Chile has begun to close the information gaps with regard to climate change, which has yielded some preliminary results. Most recently, Avilés-Lucero et al. (2021) provide a description of the CO_2 emissions of Chilean industries —containing 115 economic activities— in different productive sectors, by extending the Supply and Use tables, identifying intensive sectors based on the ratio of carbon footprint to value added. They find that, in 2017, coal-based electricity generation and manufacturing industry are the sectors with the highest direct CO_2 emissions in Chile, while manufacturing and mining have the highest carbon footprint[13]/.

The exposure of the financial sector to climate risks presents significant challenges. With regard to the carbon footprint, assets located in sectors with higher relative emissions have been identified so far. Based on the carbon footprint estimation of Áviles-Lucero et al. (2021) and administrative debt registries, the exposures of the main financial agents to companies are computed. This calculation is a work in progress and does not consider the totality of the effects, since it is based on a subsample of assets and does not incorporate feedback between sectors, nor future dynamics of reaction to policies. Thus, total assets of 94 trillion pesos (approximately 138 billion US dollars) are considered, mostly from banks, followed by the assets of insurance companies and pension funds (figure IV.3)[14]/. It is possible to assign a carbon footprint to 30% of total bank assets, which means that 42% (29 trillion pesos) of the commercial portfolio of banks is lent to companies in the manufacturing, mining, EGW and other emission-intensive sectors. It was possible to assign insurance companies a carbon footprint of 23% of their assets, of which 60% are located in emission-intensive sectors. Finally, with a much lower representation, in pension funds only 5% of assets can be assigned to carbon footprint, 71% of which are in industries with high emissions. This is a first approximation, and going forward it remains to increase the coverage of information to be able to encompass a larger portion of the assets in question. In addition, this exercise does not consider the environmental mitigation measures carried out by the companies, so only gross emissions are obtained.

FIGURE IV.3 EXPOSURE TO SECTORS WITH HIGH CARBON FOOTPRINT AS A SHARE OF TOTAL COMMERCIAL DEBT AND LOCAL CORPORATE BONDS (*)
(percent)



(*) Data as of December 2018. "Other intensive emitters" includes the construction, transportation, and agriculture sectors. Intensive sector definition based on carbon-footprint-to-value-added ratio (Avilés-Lucero et al., 2021). There are six trillion pesos in bonds (3% of GDP) held by mutual funds, principals, brokerage firms and others. Bank assets represent total assets of the banking system, Life insurance companies correspond to financial assets and PF in aggregate portfolio
Source: Central Bank of Chile based on FMC and Pension Superintendency data.

[13]/ In related matters, Mardones and Muñoz (2017) analyze the effect of imposing a carbon tax on power generation.

[14]/ The assets of banks consist mainly of commercial loans, while for the rest of the institutions, corporate bonds issued in the local market are considered.

THE ROLE OF CENTRAL BANKS AND OTHER AUTHORITIES

In order to meet the challenges posed by climate change, authorities and private institutions at the global level have agreed on several initiatives. In 2015 the international community consolidated the Paris Agreement to coordinate an articulated action against climate change[15]/. This Agreement aims to limit global warming to below 2°C (1.5°C preferably) compared to pre-industrial levels, for which economies were to determine a maximum of greenhouse gas emissions by 2050. To achieve this goal, a group of countries committed themselves through Nationally Determined Contributions (NDCs). These commitments include mitigation efforts, adaptation and means of implementation, which in turn consider aspects of finance, technology development and transfer, and capability building. Since then, the evidence indicates that NDCs have been insufficient to curb the rate of global warming. The most recent projections (IPCC, 2022 and figure IV.1) show that the trajectory of NDCs will take us on a path of temperature increases well above the original objective of the Paris Agreement, making it necessary to ramp up efforts in this area.

Given the potential for climate risks to compromise financial stability, policymakers play a role in the design and implementation of mitigation measures. The effects that climate change may have on financial stability pose challenges to the policy implementation of financial supervisors and regulators. They can act in various dimensions of their policy making processes, i.e. from the assessment stage to the execution of a decision or tool. Examples include incorporating new elements into their financial stability risk analysis framework and ensuring compliance with requirements for reporting climate information to the institutions they regulate or supervise, in case this task is part of their overall mandate.

There is international consensus that financial monitoring of climate risks is essential in this part of the process. Unlike traditional risks that are now embedded in regulatory and supervisory standards —and accepted and integrated by financial institutions—, climate risks are at an earlier stage of development. Therefore, the NGFS recommends that financial supervisors begin by raising awareness of the importance of climate risks and the need to build internal capabilities inside financial institutions for incorporating them. The role of supervisors also includes issuing guidelines for the proper administration and management of these risks and the correct disclosure of each company's climate information; and defining the actions to be taken when financial risks are considered material for specific companies[16] /[17]/. Globally, supervisors are incorporating disclosure requirements into regulation, based primarily on TCFD recommendations, on both institutions' exposures to climate change and

[15]/ After the creation of the United Nations Framework Convention on Climate Change in 1992 and initiatives such as the Kioto Protocol (1997), the actions undertaken worldwide did not achieve their objectives in terms of emissions and temperature reduction. The Paris Agreement was signed during the 21st Conference of the Parties to the Convention (COP21), generating a binding agreement for its signatories, both developed and emerging economies.

[16]/ In that case, supervisors should consider capital charges in Tier 2, including assessing their incorporation into Tier 1 capital requirements (NGFS, 2020; FSB, 2022).

[17]/ El The BIS published for consultation in November 2021 proposed Principles for Effective Management and Supervision of the Financial Risks of Climate Change; these build on the Basel Core Principles for Effective Banking Supervision and the Supervisory Review Process, including particularities such as their early stage of development and their long-term effects. For more details, click here link.

firms' impact on climate (known as dual materiality). Examples include the European Commission, the Central Bank of Brazil, the Tokyo Stock Exchange, and the New Zealand Government, which have made reporting and disclosure of climate information part of their codes, regulations or legislation (TCFD, 2021). In Chile, the FMC made disclosure on environmental, social, and corporate governance risks mandatory for supervised companies in their Annual Reports as from 2023. For its part, as of 2021, the Superintendency of Pensions began to require its supervised companies to factor climate risks individually into their risk matrix and report it to the supervisor.

The BCCh is committed to a work agenda to address the risks associated with climate change, in those dimensions that are in line with its mandate. Within the framework of its strategic planning, the BCCh contemplates the drafting and development of a work agenda, which includes several initiatives within its scope of action, in line with the recommendations of the NGFS. In particular, as regards the climate change dimension, these include: (i) integrating climate risks into financial stability monitoring, by improving the understanding of risks, incorporating indicators, and conducting stress tests; (ii) closing the data gap, working on the generation of emission statistics and other monetary and financial policy inputs, and incorporating a new research agenda focused on environmental issues; and (iii) assessing the integration of sustainability factors in the management of the Bank's own portfolio[18]/. The agenda currently under development at the BCCh will also contemplate more general aspects associated with the measurement of natural capital.

Most recently, the Central Bank has decided to incorporate a small percentage of green bonds into its reserves portfolio. This type of investment enables making visible a set of instruments so far little explored by the market, which are consistent with the portfolio's risk diversification criteria. In this sense, green bonds are compatible with the objectives of liquidity and capital preservation of international reserves, both necessary elements to guarantee that they constitute an effective policy tool. As has been documented internationally, these instruments offer opportunities for specialized investors (box IV.1).

Despite participating in multiple working instances, the BCCh and other local authorities, just like the rest of the world, have a long way to go in their efforts to contribute to contain the impacts of climate change on the financial sector. Since 2019, the BCCh has been a member of the Green Finance Roundtable, established by the Ministry of Finance. This initiative has resulted in the Declaration of the Authorities and the Green Agreement and[19]/, most recently, a committee to generate recommendations for a taxonomy of sustainable productive activities. The BCCh also participates in the Natural Capital Committee together with the Ministry of the Environment, the Ministry of Finance and the National Council of Science, Technology, Knowledge, and Innovation for Development. At the international level, in addition to its participation in the NGFS, the BCCh has taken part in instances of climate change analysis of the FSB's Vulnerability Task Forces and in various conferences, which are also part of the BCCh's work agenda to broaden its knowledge on the subject and converge towards international practices in mainstreaming these considerations in its understanding of the economy's functioning. All in all, it is clear that the world is overdue in its efforts to curb climate change, and regulators and supervisors are no strangers to the gaps that need to be closed. The BCCh acknowledges the importance of the situation, and will continue to act within its scope of action to help contain the harmful effects of these phenomena.

[18]/ This BCCh work agenda was included and published on the occasion of the NGFS Pledges in the context of COP26 in November 2021. To see this agenda, click here link. To learn more about the financial risks associated with sustainable finances, see box IV.1.

[19]/ See box V.1, FSR second half 2019 for details of the Green Agreement and the Authorities' Declaration.

CONCLUDING REMARKS

Incorporating the multiple environmental consequences of human activities into economic, financial, and statistical analysis is not easy, but it is absolutely urgent. In the near future, the measurement of the impact of climate risks and its disclosure will become part of the international standard. Climate change will continue to trigger profound changes in human activity and the economic system that sustains it. Measuring its effects, assessing them and helping to contain them calls for investing in information collection and building analytical capacity. It becomes essential to maintain efforts to achieve medium- and long-term effects. This is a shared task among economic agents, public entities, and regulators.

From its mandate, the BCCh can contribute to generating environmental information, developing scenarios and adopting new methodologies to understand how climate risks affect the economy, in addition to including these criteria in its portfolio. For now, in addition to advancing the aforementioned agenda, the BCCh will continue to evaluate the adoption of recommendations arising from the various global initiatives in which it participates, and will seek to contribute to local efforts within its scope of action.

BOX IV.1:

Sustainable finance and central banking

Sustainable financial markets have grown significantly over the last decade, yet they are still far from their initial objectives. These markets channel financial flows with sustainable development priorities, which typically fit within environmental, social, and corporate governance (ESG) criteria. In 2020, the market for sustainable financial products amounted to US$630 billion, that is, 73% higher than in 2011, split evenly between the public sector (i.e. government and development institutes) and the private sector[20]/. However, to meet the climate goals of the Paris Agreement, investments of more than US$4,350 billion are required by 2030, six times the current levels (Climate Policy Initiative, 2021).

In addition to being relevant in the investment portfolios of financial and non-financial corporations, sustainable investment criteria have been increasingly integrated into the portfolios of central banks. According to information from the Network for Greening the Financial System (NGFS), as of 2020, 29 central banks (62% of the sample considered) include responsible investment criteria in their portfolio management policies (e.g., in their international reserves), while 10% are under evaluation. In addition, 24 central banks of the total sample invest their own portfolios and other portfolios they manage —related to pensions or third parties such as the Treasury— in instruments with sustainable objectives (NGFS, 2021).

There is no conclusive proof of a difference in profitability between sustainable instruments and traditional instruments; however, their inclusion in portfolios represents new opportunities for their investors (S&P, 2021). The most important opportunities include obtaining higher returns conditional on climate change risks (i.e. physical and transitional) or environmental risks. On the other hand, incorporating sustainable investment criteria allows mitigating reputational risks by explicitly committing to the promotion of environmental objectives. Likewise, this type of investment finances projects that contribute to adapting the economy to the consequences of climate change, having the potential to impact long-term returns and contribute directly to sustainability goals.

Finally, institutions investing in sustainable assets must take into account and mitigate the associated risks. One such risk is related to the possibility that sustainable investments allocate resources to activities other than those they claim to finance. This practice is known as green washing, and is possible because the resources of sustainable investments, unlike traditional ones, have a specific destination. The great diversity of existing instruments increases monitoring costs and complicates the evaluation and comparison of portfolios[21]/. On top of this, there is the difficulty in assessing portfolio risk due to the lack of appropriate methodologies to measure the underlying climate risks, insufficient information available and, in some cases, still incipient supervision. These elements highlight the need for more and better information in this growing market in order to manage the associated risks correctly.

[20]/ In terms of instruments, 61% of this market corresponds to debt and 33% to equity, while, in terms of participation, the energy sector leads with 52%, followed by transportation with 27%.

[21]/ Deschryver and de Mariz, 2020.

V. FINANCIAL POLICY DEVELOPMENTS

The BCCh continues to develop its financial policy initiatives in a still challenging context. Among the most important initiatives it has carried out recently, it is worth singling out those related to the convergence to the Basel III framework, the continuation of the modernization process of forex regulation, and the development of low- and high-value payment systems. Legislative progress was also made in some bills that contribute to strengthening the financial system, such as the Fintech Law and the Consolidated Debt Registry. Finally, the evaluation (FSAP) requested to the IMF delivered its results, where it recognizes important advances in the national regulatory framework, although it also highlights some pending issues. These developments will allow strengthening the Chilean financial system, so that it can continue to properly fulfill its role.

The BCCh continues to develop its financial policy initiatives, despite the complex external scenario and the challenges at home. Since the previous Report, its main advances include the completion of the process of convergence of BCCh regulation on bank liquidity risk management with Basel III and other international standards, the launch of the implementation process of the Countercyclical Capital Buffer (CCyB), the easing of conditions for access to the formal forex market, and the modernization of the regulation of clearing houses for low-value payments (table V.1).

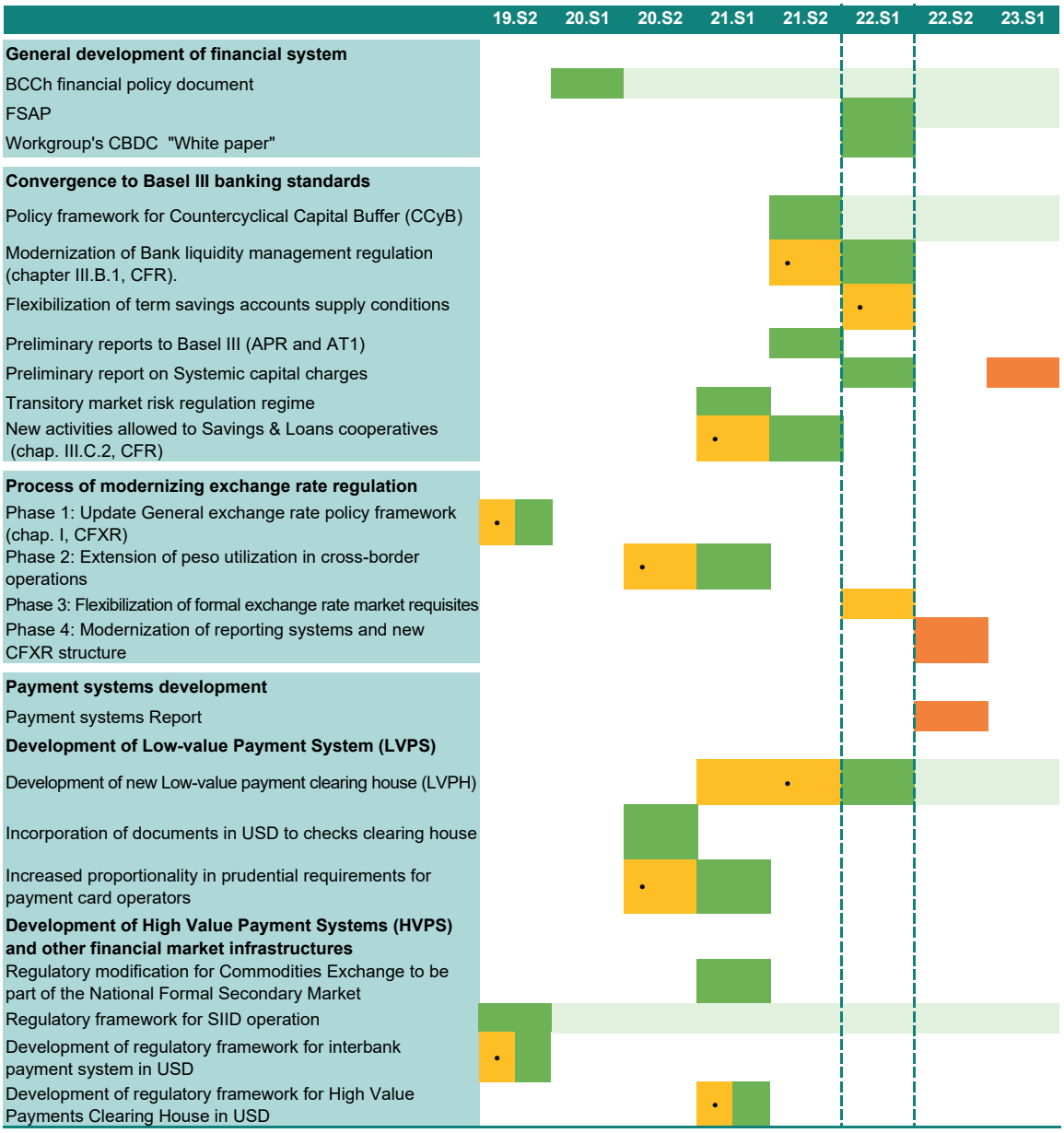
REGULATORY DEVELOPMENTS

Within the framework of Basel III standards implementation, the Net Stable Funding Ratio (NSFR) is gradually being incorporated as a regulatory requirement in the liquidity risk management regulation of the BCCh. In March of this year, the BCCh published the final version of chapter III.B.2.1 of the Compendium of Financial Regulations (CNF), which finalizes the incorporation of the Basel III liquidity ratios. This reform obliges banks to maintain a level of 100% in the LCR and gradually incorporates the NFSR coefficient, starting in 2022 with a minimum requirement of 60%, which will be increased by ten percentage points per year to be subject in 2026 to the minimum level of 100% considered in Basel III. In addition, the framework of regulatory limits applicable to 30- and 90-day term mismatches is made more flexible (table V.2).

In addition, a formal scheme for the self-assessment of banks' liquidity management is introduced. A bank internal liquidity adequacy assessment process (ILAAP) is established, the results of which must be submitted periodically in a report to the supervisor. This will begin in April 2023 but only from April 2025 onwards can the FMC require, at its discretion, a higher ALAC stock if as a result of its supervisory process it judges that a bank has significant or material deficiencies in the ILAAP. This practice is observed in advanced jurisdictions, mainly in Europe[1]/, and is intended to strengthen liquidity risk management in banking firms and complement the supervisory process.

[1]/ Belgium, Denmark, Germany and Spain stand out regarding this practice. See EBA (2021).

TABLE V.1 FINANCIAL POLICY INITIATIVES OF THE BCCH



(*) Yellow highlights marks start of public consultation for reference initiative (marker indicates finalized public consultation); dark green highlight indicates definitive publication; orange highlight indicates new initiatives programed for two next half years; light green highlight indicates initiatives requiring direct implementation actions by the BCCh.
Source: Central Bank of Chile.

TABLE V.2 TIMELINE FOR IMPLEMENTING BASEL III LIQUIDITY STANDARDS

	Jun. 22	Jan.23	Jan.24	Jan.25	Jan.26
NSFR	60%	70%	80%	90%	100%
LCR	100%				
30- and 90-day mismatch	Information requirement under contractual term and adjusted basis				
30-day FX mismatch	Maintains regulatory limit for contractual and adjusted basis				
ILAAP (*)		"Regulatory requirement" (as from April 2023).		Posible additional ALAC requirement	

(*) Internal liquidity adequacy assessment process.
Source: Central Bank of Chile.

Within the context of incorporating the Basel III bank solvency framework, the implementation of the Countercyclical Capital Buffer (CCyB) begins. In May of this year, the BCCh held its first Financial Policy Meeting, in accordance with the CCyB implementation framework agreed with the FMC[2]/. The analysis conducted to feed this process includes quantitative and regulatory aspects (box III.1). In the latter, the adjustments made internationally to the CCyB are reviewed[3]/ and the main local regulatory developments that are relevant to consider are included, such as the progressive activation of the Basel III capital requirements, the designation of systemic banks, and the effective equity deductions.

The timetable for the gradual implementation of the Basel III standards in Chile continues to move forward as established by the FMC. As from December 1, 2022, several changes associated with Basel III capital requirements are contemplated. First, the conservation buffer level will increase from 0.625% to 1.125% of risk-weighted assets (RWA). Second, the regulatory adjustments and exclusions to capital components for the determination of effective equity, detailed in chapter 21-1 of the RAN, will start to be applied considering 15% of the stipulated discounts (FMC, 2020a) (CMF, 2020a)[4]/. Third, the Effective Equity Self-Assessment Report (IAPE) for 2022 remains in simplified format and incorporates market and operational risks in its assessment. Fourth, the AT1 capital requirements are to be supplemented by one third of the total requirement (0.5% of RWA) with perpetual bonds or preemptive stocks.

The FMC defined additional capital charges for banks classified as systemically important. In this calibration, the factors of size, interconnection, and complexity played an important role. The FMC regulation stipulates that this rating and the respective requirements must be reviewed in March of each year, upon favorable agreement of the BCCh as established in the General Banking Law. Banks rated as systemic, and the respective additional capital charges as a percent of their RWA, are: Itaú Corpbanca (1% additional); Scotiabank Chile, Banco del Estado de Chile and Banco de Chile (1.25% additional each); and Banco Santander Chile and Banco de Crédito e Inversiones (1.5% additional each). According to the implementation schedule, this charge is activated gradually, beginning with a requirement of one-fourth of the charge in December 2022, increasing by an additional one-fourth each year[5]/.

[2]/ See box V.1, FSR second half 2021, and BCCh (2021) "Capital Counter-cyclical Buffer (CCyB)" published in September 2021.

[3]/ Several jurisdictions deactivated or reduced their CCyBs during the pandemic and no effective reactivations have been observed, although lately future increases in the buffer have been announced in Bulgaria, the Czech Republic, Denmark, Germany, and the United Kingdom. These decisions have been made against a backdrop of low interest rates and economic recovery.

[4]/ Effective net worth deductions are introduced in December of this year and increase gradually until 2025.

[5]/ For details, see CMF (2020b).

During the first quarter of this year, the BCCh proposed a simplification of the savings account regulation, aimed at promoting the use of digital channels and encouraging savings through more flexible financial services. This proposal was kept in public consultation between January 6th and March 6th, 2022 and is expected to be finalized before the end of June. The proposal consolidates the regulation of term savings accounts into a single chapter, with the purpose of facilitating the contracting of the account and the management of all its aspects through digital channels. It also proposes to make the product more flexible, allowing the parties to freely agree on the number of draws without loss of interest or price-level adjustments, making it possible to calculate interest and adjustments at different terms, and reducing from 30 to seven days the time limit for drawing from term savings accounts with deferred drafts.

The BCCh amended Chapter III.C.2 of the Compendium of Financial Regulations in November 2021, in order to modernize and strengthen the prudential framework applicable to Savings &Loans Cooperatives. (S&L). This amendment creates a new S&L standard that, by complying with the established requirements, allows them to purchase credit portfolios without assigner liability, request access to the BCCh's Open Market Operations System (SOMA), and access a higher credit limit between cooperatives. In addition, references to legislation are updated in view of the amendments made to the General Law on Cooperatives in recent years.

In addition, the BCCh set the investment limit of the Pension Funds in bonds with no fixed maturity. These new financial instruments were incorporated into the regulatory capital structure of banks with the General Banking Law reform enacted in 2019[6]/. Considering their hybrid nature, which combines characteristics of debt and equity instruments, the BCCh regulation established that the total investment of pension funds in this type of instrument may not exceed 5% of the fund for Type A and Type B funds, and 2% for the Type C fund. This limit is 0% of the fund for Type D and Type E funds.

In a new effort of the local authorities to achieve international recognition of Central Counterparties (CCPs) operating in Chile, the FMC, in coordination with the BCCh, incorporated in its regulation a reciprocal procedure for the recognition of foreign CCPs. During the last few years, important advances in the Chilean institutional framework, reflected in international assessments (ROSC), compliance with the Principles for Financial Market Infrastructures (PFMI), and the creation of a Transaction Repository (SIID-TR), have allowed local CCPs to operate with European counterparties within the framework of a transitional recognition granted by the European securities authority ESMA, which should conclude next June[7]/. ESMA, while recognizing the efforts made to obtain permanent recognition of CCPs established in the local market, deems it necessary to develop in addition in Chile a foreign CCP recognition framework equivalent to the European one. Considering the Basel III standards already in operation in Europe, this development will allow European banks' exposure to local CCPs to continue to access a credit risk weighting of 2%, instead of the 1.25% applicable to non-recognized CCPs, thus preventing European banks from ceasing to operate with local CCPs and all the costs and risks that such a situation would entail.

[6]/ By means of this reform, banks were allowed, upon authorization by the FMC, to issue bonds with no fixed maturity date that may qualify as regulatory capital. In addition, the legal framework governing the Pension Funds was modified, allowing them to invest in such instruments, and empowering the BCCh to determine the ceiling for these investments, per type of fund, which shall not exceed 5% of their value.

[7]/ For the evolution of the international evaluation of Chile's financial market infrastructure, see box VI.1 in Financial Stability Report, second half of 2016 and 2018. See chapter VI in FSR of second half 2020 for a review of the launch of the Integrated System of Information on Derivative Instrument Transactions (SIID-TR).

The Superintendence of Pensions (SP), the FMC, and the BCCh have been gradually incorporating the financial risks associated with climate change in their regulation and analysis. Of note are the SP regulation that incorporates these matters into the investment and risk management policies of the fund managers, and the FMC regulation for the disclosure of information on sustainability in the Annual Reports. In addition, both the BCCh and the FMC, within the framework of COP26, adhered to the commitments of the Network of Supervisors and Central Banks for Greening the Financial System (NGFS), including a series of individual actions to advance in this matter within their mandates and attributions. For a more detailed analysis of the role of central banking in this area, as well as the initiatives of local and international supervisors and regulators, see Thematic Chapter.

TABLE V.3 STAGES OF THE PROCESS OF MODERNIZING BCCH FOREX REGULATION

Phase	Contents	Status
1	Adjustments to chapter I CFXR, expansion of currencies for denomination of foreign securities, elimination of three chapters of the CFXR and its Manual	Effective 1 January 2020
2	Extended authorization for Chilean peso utilization in cross-border operations	Effective 1 January 2021
3	Revision of rules of access to and operation in formal forex market	Public consultation up to 20 May 2022
4	New CFXR structure	Public consultation during second half 2022

Source: Central Bank of Chile.

At its initial Financial Policy Meeting, the Board of the Central Bank of Chile agreed not to activate the Countercyclical Capital Buffer (CCyB). This, in a context where credit growth remains limited and the ratio of credit to GDP remains below its long-term trend. Meanwhile, different indicators analyzed in systemic risk maps are generally stable, despite the deterioration of economic and financial conditions since the middle of last year (chapter 1). Going forward, it will be important to monitor the process of adjustment of imbalances accumulated in 2021.

MODERNIZATION OF FOREIGN EXCHANGE REGULATION

The BCCh continues with the third phase of its agenda to modernize foreign exchange regulation, which consists of easing the rules for accessing and operating in the formal foreign exchange market (FEM). As has been discussed in previous Reports, the BCCh is developing a four-phase process for modernizing forex regulation (table V.3). Phases one and two of the process have already been completed, and phase three, on the revision of rules for access to and operation of the FEM, is underway. The regulatory reforms corresponding to this third stage would essentially allow stockbrokers, securities agents, and foreign banks with representation offices in Chile to become part of the FEM with fewer requirements than those currently in place. In addition, it is proposed that the FEM entities that use electronic transactional platforms confirm that they comply with some minimum operating standards.

DEVELOPING LOW-VALUE PAYMENT SYSTEMS AND RELATED ADVANCEMENTS

Last January, the BCCh issued the new regulation applicable to Low Value Payment Clearing Houses (CPBV) —currently in its implementation phase—, whereby CPBVs will accept, clear, and arrange for the settlement of low-value payment orders payable to banks or companies reporting to the FMC. This standard contributes to enhancing the resilience of the financial system, as multilateral clearing reduces counterparty risk. In addition, it will give finality and irrevocability to the transactions it processes. Thus, CPBVs are a necessary condition for moving towards a more advanced standard for instant payments, while ensuring the interoperability of retail payment systems. This can contribute to scale up the effects of adopting an open finance system involving payment initiators, such as the one contemplated in the Fintech Bill, because CPBVs offer alternatives for the clearing of such transactions. The regulation establishes that CPBVs must put in place objective, transparent, and non-discriminatory access rules for their participants, and incorporates into the regulatory perimeter the clearing and settlement of card payments and electronic transfers. Also, this new regulatory framework is intended to allow innovations in means of payment to be included in the regulation through experimental projects developed by entities supervised by the FMC, which will be exempt from certain prudential requirements.

The Fintech bill, which progressed to its second constitutional procedure in the Senate, promotes competition and financial inclusion through innovation and technology in the provision of financial services. As mentioned in the last FSR, this bill modifies several aspects of the legal framework of the financial system, incorporating into the FMC regulatory perimeter entities that perform various activities, such as crowdfunding, and platforms that provide alternative transaction systems. In relation to payments, an open finance regulatory framework is incorporated, which among other aspects contemplates payment initiators. Also, the BCCh will be able to regulate the use as a means of payment of crypto assets equivalent to cash, usually known as stablecoins (box V.2, FSR second half 2021). This bill continues being discussed in Congress, and the BCCh has attended to share its opinion on several occasions, highlighting that the development of the Fintech industry in the country may be beneficial, but is not exempt from risks. Considering that some players are becoming increasingly relevant, their regulation is unavoidable, as providing unregulated financial services exposes their users to risks. Finally, this project assigns new tasks to the FMC, thus requiring that this entity have the necessary resources to be able to fulfill these new roles adequately.

The Committee on Exchange Rates (CER) set the ceilings to CERs to be applied in Chile. The limits set for CERs, i.e., payments received by card issuers from operators for the use of their cards, are: 0.6% for debit cards; 1.48% for credit cards; and 1.04% for prepaid cards. The level at which these rates will be defined is very important for the functioning of this market, as they directly affect the incentives for issuers and operators to issue cards and affiliate merchants, respectively. In 2017, the BCCh modified its rules for payment card issuers and operators, enabling, among other things, the operation of a 4-Party model (M4P). The transition from the previous operating model, where card issuers delegated merchant affiliation —or procurement— to a single entity, has taken time and has required the intervention of competition experts. In this context, one important change in adopting M4P is the explicit charging of CERs, some of which were initially set by the card brands at levels relatively close to the merchant discount that the acquirers charge the merchants. In Chile, a law was enacted to create an ad hoc technical and autonomous committee to set these fees, with the aim of helping to promote a competitive card market, with strong penetration and aimed at the efficient and secure operation of the retail payment system. The law granted a term of six months to the Committee to set the rates on a provisional and binding basis, and the Committee will continue to work with the aim to determine the ultimate rates.

EVALUATION OF THE CHILEAN FINANCIAL SYSTEM REQUESTED TO THE IMF

The FSAP delivered its results, where it acknowledges the regulatory and institutional advances of the last decade. However, it highlights important changes pending from the recommendations of the previous evaluation. In 2019, the BCCh and the Ministry of Finance requested an updated assessment of the Chilean financial system (FSAP) from the IMF to identify vulnerabilities in the financial system and develop policy responses to strengthen it[8]/. The evaluation focused on aspects of risk assessment, the regulatory and supervisory framework, and crisis readiness and management, among others. Some of the IMF's recommendations from previous years that are still pending require significant structural adjustments, such as the creation of a bank resolution framework and a deposit insurance scheme, which take time to materialize. Box V.1 provides a summary of the results of the recently completed FSAP. Of the recommendations not related to the prudential framework, the development of a consolidated credit information system stands out, an initiative that is addressed by the bill introduced in Congress last December, the benefits of which are discussed in box V.2.

[8]/ For details of this evaluation, see FSAP (2011).

BOX V.1:

The 2021 Financial Sector Assessment Program (FSAP)

The International Monetary Fund, among its regular activities, carries out a Financial Sector Assessment Program (FSAP) applicable to different jurisdictions, with the purpose of identifying their vulnerabilities and developing policy responses to strengthen them. For emerging economies, the FSAP is conducted jointly with the World Bank (WB), which is responsible for a special market development module. The first FSAP applied in Chile was in 2004[9]/ with an update in 2011, which contained important recommendations to improve aspects and areas contributing to the stability of the local financial system. This new assessment (2021) was requested by the BCCh together with the Ministry of Finance, and it also involved the participation of the FMC and the Superintendency of Pensions, as well as a range of other specialized public and private entities representing the financial sector. The exercise covered various aspects of the Chilean financial system including the regulatory and supervisory framework, crisis preparedness and management, comprehensive financial risk assessment, among others. In addition, the WB module reviewed competition issues, digital financial inclusion, consumer financial protection, household indebtedness, pensions, and green finance.

The main recommendations of this FSAP for the Chilean financial system require legislative developments for their implementation. Among the cross-cutting recommendations for the financial system, most noteworthy are those related to strengthening the integrated supervision of financial conglomerates, developing a consolidated credit information system, advancing in the development of open finance and digital financial inclusion, and improving privacy, data protection and cybersecurity frameworks. The main recommendations applicable to the banking and insurance sectors refer to implementing a bank resolution framework with an updated deposit insurance scheme, strengthening interbank funding via the development of a repo market, and incorporating a supervisory framework and risk-based capital buffers for insurance companies.

The outcome and recommendations of this FSAP are an important foundation for formulating changes to improve the solvency, resilience, and safety of the Chilean financial sector. The FSAP recommendations provide an objective assessment of the local jurisdiction with reference to the main international standards. This exercise, along with recent technical assistance reports and other periodic IMF reports, should serve as a basis for the formulation of supervisory and regulatory policies, as well as legal initiatives, to improve the functioning of the local financial system and close the identified gaps. In this regard, it is worth noting the progress observed with the recent passage of bills such as the "Fintech Law" and the bill for the creation of a consolidated debt registry.

[9]/ A review of the Basel Core Principles for Effective Supervision was also carried out in 2004. Many of the recommendations were incorporated by local authorities in recent years, most notably the reform of the General Banking Law and the law creating the Financial Market Commission (FMC).

BOX V.2:

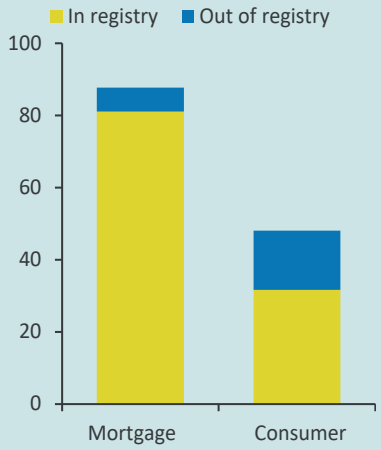
Comments on the bill that creates a Consolidated Debt Registry

A new bill to create a consolidated debt registry was introduced in Congress last December. This new bill, in addition to consolidating financial obligations in a common registry, features a proposal for a substantial increase in the coverage of positive and negative information regarding non-bank credit lenders in the consumer and mortgage segments. Nowadays, a small percentage of mortgage debt lies outside the credit registry, which includes banks and other providers; in the consumer segment, however, the information gap is more significant (figure V.1).

A financial system that has more information, including positive aspects, is associated with better financial intermediation and more favorable conditions for access to credit. If only negative information is considered in econometric credit evaluation models that use administrative records of consumer loans, it is found that longer time in arrears and/or delinquency lead to a surcharge in the interest rate on new loans and a higher probability of default. When complemented with positive information, payment without delays, moderate use of revolving products and history of consumer loans obtained are correlated with lower interest rates when applying for new financing and lower probability of default in the future (figure V.2). It is also observed that rate reductions due to a better credit history are greater among men than among women, controlling for other individual and credit characteristics. (figures II.9 and V.3, FSR second half 2021) (Córdova, Cruces, and Toledo, 2022).

A consolidated debt registry contributes to financial stability by improving risk management. The greater availability of information on debtors' obligations and repayment behavior results in a better credit evaluation process, improved bidders' credit portfolio and, thus, reduced pressures on their liquidity and solvency. In particular, creditors can improve ex ante selection among people with different repayment behavior, by having information on debt history and knowing the real degree of indebtedness of potential clients. This allows the charging of interest rates and access conditions that adjust to the risk profile of each debtor and mitigate idiosyncratic risks. Moreover, it facilitates the future development of securitization markets, strengthening the management of stress situations in the financial system. Having such a registry would not only close an important gap in our financial system (box V.1) but would also provide the above-mentioned benefits to individuals.

FIGURE V.1 DEBT STOCK BY TYPE OF LOAN AND DATA AVAILABILITY (*) (MMM USD)



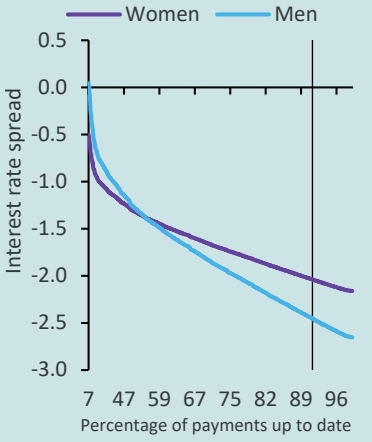
(*) Out of registry: Mutuals, Factoring and Leasing, S&L cooperatives and credit cards of retail companies. Information at December 2021, except for S&L and Factoring & Leasing (Dec. 2020).
Source: Central Bank of Chile based on FMC and SuSeSo data.

FIGURE V.2 CONSUMER LOAN SPREAD ACCORDING TO DEBT CHARACTERISTICS (*) (percentage points)



(*) Bank personal loans between 2012 and 2018.
Source: Central Bank of Chile based on FMC data.

FIGURE V.3 CONSUMER LOAN RATE SPREAD BY GENDER AND FRACTION OF PAYMENTS UP TO DATE (*) (percentage points)



(*) Dashed vertical line marks median of fraction of payments up to date.
Source: Central Bank of Chile based on FMC data.



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