

FINANCIAL STABILITY REPORT

SECOND HALF 2021





Financial Stability Report

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The Central Bank of Chile's Financial Policy

The objective of the Central Bank of Chile (CBC) is to ensure the stability of the currency and the normal functioning of internal and external payments. To meet this second objective, it must safeguard the stability of the financial system within the scope 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 material disruptions, even in the face of temporary adverse situations. The identification of potential risk events, vulnerabilities, and mitigators, together with the assessment of 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 CBC conducts its financial policy so as to contribute, within its sphere of competence, to the stability of the financial system, which has been deepening and stabilizing in recent decades due, in part, to the development and proper application of financial policy tools. In turn, this has contributed to the effectiveness of monetary policy and has boosted 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 CBC 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 whenever consulted. In addition, the CBC may act as lender of last resort for banking companies and other liquidity management tools.

Information Disclosure and Transparency

The Financial Stability Report (FSR) is the CBC's main instrument for financial policy communication. By virtue of its mandate, the FSR shares the Board's vision regarding the main risks, vulnerabilities, and mitigators associated with financial stability.

The FSR is published twice a year, in May and November. In line with international best practices, it is prepared by specialized professionals headed 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 transparently and actively.



Cover: Caichinque Volcano / Antofagasta region

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*/ The statistical cutoff date for this Financial Stability Report is October 20 2021, except where otherwise indicated.



SUMMARY

Since our last Report, the global economy has continued to recover from the shock caused by the Covid-19 pandemic, thanks to two factors: progress in the management of the sanitary situation and effective economic containment policies. These policies were key to preventing the crisis from spreading to the financial markets. However, the increase in the sovereign debt and the greater exposure of the monetary authorities to the financial sector have reduced their capacity to cushion shocks in the future. In the main economies of the world, and also in Chile, the magnitude of the impulses has contributed to the economic recovery in the short term, and both users and suppliers of credit have remained resilient, with abundant liquidity availability, in a particularly challenging context. However, the persistent boost to local demand and structural changes in the capital market resulting from forced liquidations of institutional investors' assets, have had a significant impact on asset prices. This has been compounded by the deterioration of public finances and increased uncertainty. Thus, the rise in long-term interest rates, the depreciation of the peso and the fall in stock prices have been at the extremes of international movements. This has begun to be reflected in a deterioration of the financial conditions affecting domestic agents, such as the Treasury's financing cost, mortgage rates and terms, and the valuation of pension funds. The non-financial corporate and household sectors have seen significant cumulative amounts of capital outflows and an increased preference for dollar-denominated assets. The main risk to local financial stability comes from new forced asset liquidations that continue to erode the intermediation of resources and the greater uncertainty that this implies. These developments restrict the capacity of the financial system, firms, and households to withstand corrections and/or disruptive events, which have become more likely to occur, both in the country and abroad. In the latter case, of particular note are the risks of reversal in risk perceptions, difficulties in supply chains and concerns about the Chinese real-estate sector. At home, there are concerns about the possibility of a credit contraction in the face of greater risk perceptions, as well as the vulnerability of more leveraged sectors that may be affected by a deterioration of their markets.

SITUATION OF THE FINANCIAL SYSTEM

Since the previous Report, the financial outlook continues to be favorable in the developed economies, with still positive growth expectations, while inflation has gained strength. Extraordinary measures of fiscal, financial, and monetary policy have remained in place globally, helping to improve prospects for activity and sustaining commodity prices. However, greater global liquidity increases the probability of reversals in global financial conditions due to changes in risk appetite regarding emerging economies, or the need for greater-than-expected interest rate adjustments in the face of rising inflationary pressures. In addition, major disruptions in the energy supply chain in Europe and China, as well as worries about China's real estate sector, could affect international trade and revive concerns about global corporate leverage.

Locally, fiscal and monetary support programs played an important role in curbing the negative effects of the Covid-19 crisis and accelerated the recovery of economic activity, avoiding massive corporate bankruptcies and keeping household defaults contained. The substantial stimulus measures, while allowing many companies to stay in business, has helped the economy to recover faster, based on buoyant private consumption, which has strengthened the financial position of companies. Similarly, fiscal support for households increased their liquidity and made it possible to compensate for falls in income, helping to keep delinquency rates in check. These elements have averted a deterioration of the banks' portfolios, which has helped to maintain the resilience of local credit suppliers.



However, financial conditions have worsened as a result of uncertainty and massive asset liquidations by institutional investors that are reducing the depth and adjustment capacity of the capital market.

Stimulus measures aimed at households, such as successive withdrawals of pension savings and annuity advances, while providing additional liquidity, have also hit hard the capital market due to forced asset liquidations. Both the exchange rate and local interest rates have shown strong corrections compared to other economies, accompanied by increased volatility of various asset prices. Thus, since the last Report, long-term interest rates have risen by more than 250 basis points (bp), while the local currency has depreciated 17%.

The withdrawals of pension savings have had the immediate effect of reducing the size of pension funds by close to 18% of GDP, which primarily impacts the fixed-income market.

The reduction in the size of the intermediated funds directly affects the provision of long-term financing, which combines with other factors that have caused a deterioration in financial conditions, such as reduced fiscal savings. Moreover, because of the high uncertainty, the demand for dollar assets has soared and capital outflows have intensified after rising since the social outbreak. These elements have eroded national savings, thus increases the country's dependence on external financial markets.

The strong fiscal impulse deployed since the middle of 2020 has narrowed the scope to implement further mitigating policies in case of future adverse events.

The current environment is particularly challenging for public finances, as the aforementioned policies directly affect the fixed-income market, the main source of domestic currency financing for the government. In particular, the lower demand for sovereign bonds occurs in a context of a lower public savings base and, therefore, greater financing needs. Going forward, there is still the need for a trajectory of converging sovereign debt and rebuilding of buffers.

In view of the higher inflationary pressures, the CBC Board raised the monetary policy interest rate (MPR) by 225bp between July and October.

Considering the greater risks for the convergence of inflation to the 3% target over the policy horizon, the Board brought forward the withdrawal of the monetary stimulus and anticipated that the convergence of the MPR to its neutral level would occur sooner than expected in the Monetary Policy Report of September 2021. However, the MPR still remains in expansionary territory and the expected control of inflation has reduced long-term rates by about 70bp since the last hike.

Despite the deteriorating local financing conditions, companies have not experienced significant problems in their financial situation.

Fiscal, financial, and monetary support measures, as well as the economic recovery and the adaptation of businesses, have contributed to the rebound in sales, the normalization of debt levels, and a decline in corporate defaults. Since the last Report, corporate debt decreased, down to 117% of GDP in the second quarter of this year, due to the recovery of activity and less dynamic credit, associated with a lower financing demand. Thus, after increasing in the onset of the sanitary emergency, aggregate leverage returned to close to where it was at the end of 2019. By the second quarter of this year, companies reporting their financial statements had improved their profitability and liquidity position, while moderating their indebtedness at the margin. Meanwhile, bank-financed firms increased their leverage driven by Fogape loans, a dynamic that has been partially reversed with the increase in sales, maintaining default indicators low and stable.

Changes in financial conditions and market capitalization, and the greater uncertainty surrounding investments have resulted in a significant increase in dividend distributions by companies, combining the effect of higher profits and lower corporate savings.

This increase occurs in a context of more available resources in 2021 compared to 2020, as a result of an increase in the profits of the bigger companies in the economy and, in some cases, greater resources associated with the sale of assets. In addition, there will be an increase in the proportion of profits paid before or during the current year. It should be noted that this increase occurs in a context of falling stock market returns, which is usually related to lower growth prospects for the corporate sector. In turn, the increase in dividend payout could be associated with a lower volume of investment projects in the pipeline, given a perception of greater uncertainty in the medium term.



Households remain highly liquid and have seen a reduction in their financing needs and have kept short-term defaults under control, although their long-term assets have been eroded. The deployment of support measures has eased the pressures on household finances that had been building up since early 2020. Thus, since the previous FSR, liquidity continued to increase due to the withdrawals of pension savings and the expansion of fiscal transfers. This has resulted in greater holdings of more liquid assets and a moderation in household debt, which stood at around 49% of GDP in the second quarter of this year and has remained stable ever since. Withdrawals of pension savings have had as a counterpart an important reduction in household savings, which went from 9.9% to 5.6% of GDP in the last year. Since the last Report, households have maintained their financial burden to labor income ratio stable and have used part of their available liquidity to repay their debts, although not as intensely as they did after the first withdrawal. In combination with the above, voluntary renegotiation of installments helped to alleviate the financial burden and bring delinquency levels to historic lows.

Stress tests show that the banking sector remains resilient and very solvent, beyond challenges for long-term financing, which have implied credit restrictions. Meanwhile, aggregate profitability, after some declines, stabilized early this year, in a context of forward-looking indicators pointing to higher credit risk. The banking sector's stress tests indicate that the system remains solvent, and its indicators are slightly improving over last year, even in the face of scenarios of severe deterioration in pandemic indicators and financial conditions. This is partly due to the precautionary behavior of the banking system and the creation of an appropriate level of provisions. In addition, in order to move towards compliance with regulatory limits, in accordance with Basel III standards, various entities announced extraordinary capitalizations, including the recently enacted US\$1.5 billion capitalization for Banco Estado.

However, recent structural changes to the local financial market compromise the usual intermediation of funds in which banks participate, especially at longer terms, as well as the banks' capacity to provide foreign exchange hedging services. In the short term, this has already translated into tightened conditions for long-term loans to individuals and businesses. The mortgage credit market provides an example, as the terms and the fraction of down payment have returned to their levels of 20 years ago. A further worsening of the financial system would exacerbate this situation, affecting the payment and funding capacity of the government, households, and firms, as well as the solvency of the banking system.

RISKS, VULNERABILITIES AND MITIGATORS

Globally, despite progress in handling the sanitary situation, vulnerabilities associated with increased liquidity, risk appetite and the search for returns have continued to accumulate. In a context where uncertainty persists about the unfolding of the pandemic, high global liquidity has favored the rebound of economies. Yet, it has had the collateral effects of greater search for and valuation of riskier financial assets, and increased corporate and government borrowing. This combined with the prospect of accelerated withdrawals of monetary stimulus in several economies, or other events, could reduce the capacity to refinance debts held by these agents and abruptly increase their risk premiums. This is especially relevant among the more leveraged and still vulnerable agents. A case in point is the financial problems in the Chinese real-estate sector, which could cast doubts on the international corporate sector, disrupt global financial conditions, and affect trade with emerging or commodity-exporting countries.



Forced liquidations of assets that continue to structurally weaken the domestic capital market and limit its capacity to face corrections and/or disruptive events are the main risks to local financial stability. The massive and indiscriminate withdrawals of pension savings and annuity advances, initially justified by the need to contain the impact of the crisis, although they increased the short-term liquidity of households and firms, have fueled demand further, pushing the economy to grow beyond its potential. They also caused structural damage to the capital market, whose short-term effects are already beginning to be felt. This damage, together with the deterioration of domestic savings, will cause impacts in the medium and long term that would be exacerbated if measures of this kind would be repeated.

Going forward, new forced liquidations of financial assets would increase uncertainty and would further reduce the capacity of the fixed-income market to provide financing and cushion external shocks. This would further increase the cost of financing and impose greater restrictions on access to mortgage credit for individuals, investment funds for companies and government funding. These elements, in turn, would result in slower long-term growth. Furthermore, the derivatives market would become shallower, which would restrict foreign exchange risk management mechanisms for companies. All these elements would make the Chilean economy more vulnerable to external fluctuations and changes in global financing conditions.

It is worth noting that, despite stable and low delinquency indicators, increased defaults by the more vulnerable credit users are expected in the face of stress scenarios. Although default remains at record-lows among households and businesses, there are sectors that remain financially weaker because of the pandemic, especially those firms that rescheduled their debt repayments and were not granted Fogape credit. A further economic downturn would increase their probability of future default and make it more difficult for them to access financing. Likewise, new risk factors appear for credit users, associated with increases in interest rates and higher inflation. For both businesses and individuals, the combined effect of these factors increases the risk of default in stressed scenarios, beyond what could be generated by a further weakening of the activity scenario.

In effect, the increase in additional provisions on the banks' side reflects an increase in portfolio default expectations. In turn, higher indebtedness could reduce the Treasury's capacity to mitigate adverse shocks and could impair the perception of sovereign risk, further increasing the cost of financing for local agents. Moreover, there is also a foreign exchange risk for credit users and the Treasury itself, in the face of a potentially growing mismatch and the aforementioned weakening of the local hedging market.

The broad spectrum of possible scenarios, originated by the current and potential deterioration of the capital market and a more challenging international context, finds the Chilean economy more vulnerable and with less economic policy room to mitigate them. In the context of a sanitary situation that could relapse and affect the economy, as has occurred in other jurisdictions, mitigation measures have less room for action than they had when the pandemic began. While the level of sovereign debt remains relatively contained, there has been a significant increase in the pace of borrowing and growing requirements for various types of spending. A weaker fiscal policy could affect the perception of risk in our economy and further increase credit costs. In addition, monetary policy is in a phase of stimulus withdrawal, a sharp currency depreciation, and a shrinking capital market with reduced capacity to cope with economic fluctuations.

All this results in less room for applying palliative policies in the event of deteriorating expectations, structural changes in the financial system, or new disruptive events. Although tools have been added, such as the possibility of buying Treasury bonds—in exceptional cases that pose a threat to the stability of payments—and the increase in international reserves, it should be noted that the measures applied by the CBC are designed to contain short-term volatility and not to reverse structural changes.



THEMATIC CHAPTER: THE FOREIGN EXCHANGE MARKET IN CHILE

The thematic chapter of this FSR deals with the foreign exchange market in Chile, stressing how important it is for it to be efficient and competitive given the current floating exchange rate regime, and providing an overview of possible future changes in its structure and operation. The analysis covers the structure and participants of the local market, as well as trading, clearing and settlement mechanisms. It also analyzes the outcomes of the interaction of these factors in terms of metrics such as the complexity of traded instruments, market liquidity, and users' costs, among others. The functioning of the forex market under proper conditions of safety and competition, as well as with instruments that adjust to the needs of its participants, is of the utmost importance in a floating exchange rate regime. Therefore, the CBC has recently carried out several initiatives to promote the cross-border use of the Chilean peso and the development of infrastructures to mitigate the risks associated with these transactions. In the medium term, this may produce significant changes in the functioning of the foreign exchange market.



I. TRENDS IN FINANCIAL MARKETS

Since the last Report, the main developments affecting local financial markets have come from within, where a structural change has been observed in the capital market, resulting from forced liquidations of assets that have affected the intermediation of the economy's resources. This is combined with a more challenging internal and external macroeconomic environment. Thus, in Chile, the significant stimulus measures aimed at households have contributed to the rapid recovery of the economy, but have brought with them significant demand-side pressures and greater financing needs of the Treasury. In particular, withdrawals of pension funds and annuity advances have strongly affected the capital market and restricted long-term financing in local currency. The associated high economic and political uncertainty is manifested in greater volatility of financial variables, increases in interest rates at longer terms, and currency depreciations that put it at extreme values compared to a wide range of countries. Likewise, there have been capital outflows from households and firms and an incipient preference for assets in foreign currency. These local developments are compounded by a weak external environment, in a context where the economic recovery of developed economies contrasts with doubts regarding the growth prospects of emerging ones. Stronger inflationary pressures, supply chain disruptions in Europe and China, and concerns about the Chinese real-estate sector contribute to increase the likelihood of a reversal of global financial conditions in the near future. This has resulted in a reduction of the instruments available for risk containment.

CAPITAL MARKETS AND FINANCIAL CONDITIONS

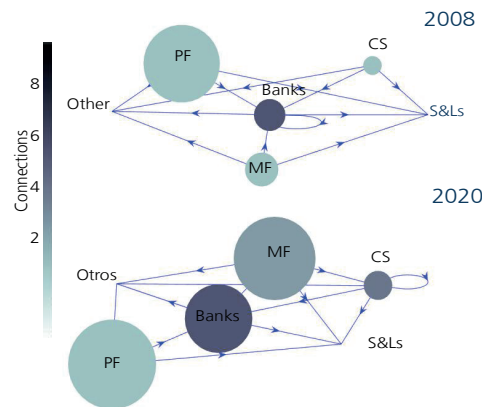
The Chilean financial system has steadily deepened over the years and, along with it, its complexity and interconnections have increased. As highlighted in the previous FSR^{1/}, the local capital market is made up of a variety of entities including banks and institutional investors, among others. These agents maintain a high number of interactions in the form of contracts or financial instruments that generate a large volume of cross payment obligations. These relationships have intensified in recent decades, hand in hand with a deepening of the national financial system. Indeed, between 2008 and 2020 there was significant growth in volume and connectivity between the different groups of institutions that comprise the network (diagram I.1). By the first half of 2021, the relative size of the financial system's assets was more than twice the GDP, where pension funds stand out with 63% of GDP, and mutual funds, life insurance companies, and banks with 4%, 22%, and 141% of GDP, respectively.

^{1/} Thematic chapter: "Nonbank financial intermediaries," Financial Stability Report, first half 2021.



This structure allows diversifying and transferring risks. However, in stress scenarios such as the recent ones, it can encourage the propagation of risks. Under normal conditions, institutional investors can play a stabilizing or shock-absorbing role in the financial system by facilitating the diversification and dispersion of risks among groups of investors with different investment profiles, considering that some of them have a long-term investment horizon. This is the case of pension funds and life insurance companies, which acquire instruments to keep them in their portfolios for long periods of time, especially in the fixed-income market, thus contributing to the stability of these markets. In fact, the limited volatility observed up to 2019 in long-term interest rates—which was also one of the lowest volatilities recorded among a broad set of emerging economies—is directly associated with the high participation of institutional investors in the local sovereign debt market (Álvarez et al., 2019). However, in situations where exogenous factors—such as fund transfers or massive savings withdrawals—impose abrupt portfolio adjustments, institutional investors are not only prevented from playing this buffer role, but can also become a source of instability.

DIAGRAM I.1 BANKS AND NONBANK FINANCIAL INTERMEDIARIES (*)



(*) The colors and position represent the institution's degree of connectivity. The arrows indicate the investment flow (from fund origin to destination). The size of the circle represents the amount of funds invested in assets in the subsystem. Source: Central Bank of Chile using information from the DCV.

This becomes relevant given that the capital market, via the banking sector, influences the financing of households and smaller firms. In addition, pension funds and life insurance companies are the major players in the forex hedging market. Pension funds, life insurance companies and mutual funds are the largest providers of long-term financing to credit providers through different instruments, including bonds and deposits. Banks, in turn, are the main source of financing to households and smaller enterprises. Meanwhile, larger companies and the Government directly access the capital market and the institutional sector for funds (table I.1). Also, pension funds and life insurance companies are a fundamental part of the formal forex market for currency derivatives, accounting for almost the totality of the foreign currency sales counterparty. Thus, the net position in derivatives of life insurance companies amounts to US\$ 10 billion, while for pension funds this amount stands at US\$ 15 billion, and is the main hedging counterparty of firms in the real sector (figure I.1).

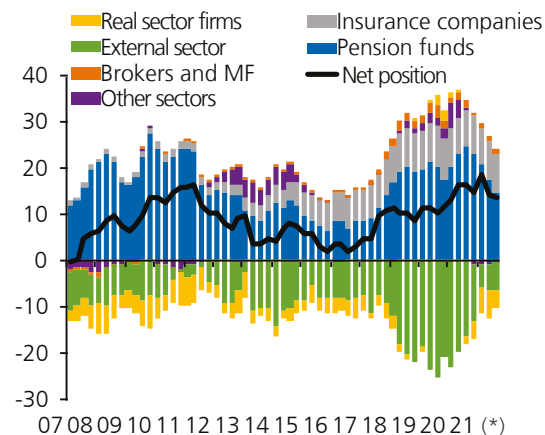


TABLE I.1 SOURCES OF FUNDS FOR FIRMS, HOUSEHOLDS, AND GOVERNMENT (*) (percent)

	Credit Banks and NBF1	Instruments		Percent of GDP
		Local	External	
Enterprises				
Mega	24	21	55	82
Big	77	3	20	18
SME	88	1	10	20
Micro	94	0	6	3
Households	100	0	0	49
Government	0	71	29	33

(*) Data as of June 2021. NBF1: Non bank financial institutions. Source: Central Bank of Chile using information of the DCV.

FIGURE I.1 NET DERIVATIVE POSITION OF FORMAL FOREIGN EXCHANGE MARKET (*) (billions of dollars)



(*) Quarterly average.

Source: Central Bank of Chile.

Taking this framework as a reference, it can be noted that, during the sanitary crisis, three withdrawals of pension funds were authorized, which were initially motivated by the need to alleviate the adverse effects of the crisis on the financial situation of households. The amendments that authorized the withdrawals (announced in August 2020, December 2020, and May 2021) did not consistently incorporate elements to discourage their use if unnecessary, or measures for the restitution of withdrawn funds (Chapter V). In addition, the third amendment added the possibility for annuity pensioners to advance up to 10% of their pension, albeit within certain limits.

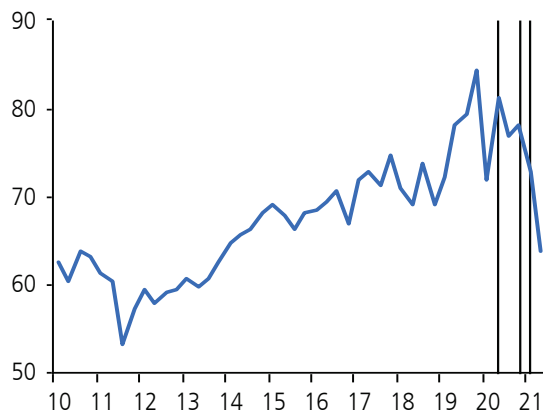
Thus, at the end of September, withdrawals from pension funds had accumulated close to US\$ 50 billion, while around 260,000 annuity advances had been made amounting to more than US\$ 1 billion. The largest proportion of pension funds were withdrawn the first time, where 91% of affiliates with a positive balance took US\$ 20 billion. The second and third withdrawals were somewhat less used: in the second, 87% of members with a positive balance withdrew funds of US\$ 16 billion, while in the third, 67% of affiliates with a positive balance withdrew savings of US\$ 13 billion. It is important to note that, after the three withdrawals, close to 4 million people had depleted their savings balance; of these, only a portion continued to contribute, so that currently around 2 million people have null balance. In addition, close to 50% of the total number of annuity pensioners made use of the available advance payment.

Given the importance of pension funds for the economy, the forced liquidation of pension funds had a significant impact on short-term economic activity, at the cost of generating a structural change in the capital market. Although the withdrawals of pension savings contributed to boost consumption, short-term demand and activity (Monetary Policy Report of September 2021), the liquidation of local assets—which was carried out over short periods of time and determined by law and amounted to around 10% of GDP—led to a major increase in the volatility of interest rates and the exchange rate, as well as to a reduction in these markets' liquidity. Also noteworthy is the significant reduction in the share of pension funds in the economy, from 81% of GDP in June 2020 to 63% in June this year (figure I.2). A significant portion of these funds has not been reinvested in the local capital market and has either remained in sight deposits in a bank or consumed. As a result, the share of pension funds, particularly in the local fixed-income market, has fallen sharply between



2019 and 2021, from 60% to 45% in sovereign bonds, and from 55% to 45% in bank bonds. This has been accompanied by interest rate hikes at all maturities and a decrease in the amount traded and liquidity in these markets, plus a fall in the duration of the financial instruments in their portfolios (table I.2).

FIGURE I.2 TOTAL PENSION FUND ASSETS (*)
(Percent of GDP)



(*) Vertical lines show quarters where pension fund withdrawals were approved.

Source: Central Bank of Chile based on data from the Superintendency of Pensions.

TABLE I.2 TERMS OF INVESTMENTS IN BANK ASSETS (*)
(Years)

	2018				2021			
	Banks	PF	MF	IC	Banks	PF	MF	IC
Bank bonds	6.3	6.7	2.8	10.9	5.3	5.2	2.5	9.0
Mortgage bonds	9.7	11.3	9.8	9.8	7.5	8.4	6.8	6.8
Subordinate bonds	-	15.1	10.0	18.0	18.7	14.5	7.3	16.3
Fixed-term deposits	0.5	0.7	0.2	11.0	0.5	0.6	0.2	10.2
Mortgage bills	10.9	7.4	8.1	10.9	9.4	6.5	6.7	10.7

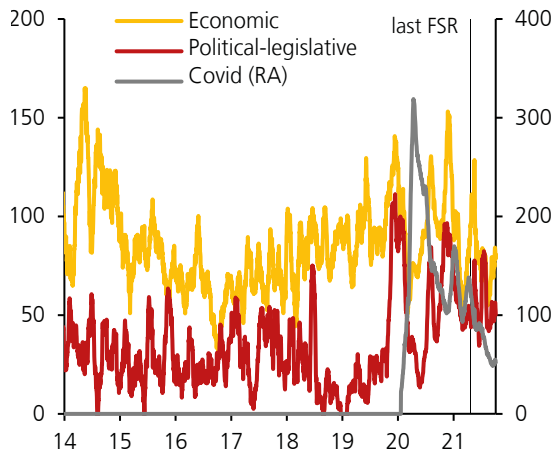
(*) Weighted average in years and relative weight bank liabilities in percentage. Banks includes the CBC. Data at the last working day of September each year.

Source: Central Bank of Chile using information of the DCV.

Structural changes in the capital market and greater economic and political uncertainty are manifested as greater volatility of financial variables, interest rate increases and tighter restrictions on access to long-term credit, and a currency depreciation that are at extreme values compared to a broad group of countries. Although uncertainty in Chile has decreased since the previous FSR thanks to the progress made in controlling the sanitary crisis, the aforementioned structural changes still keep uncertainty high and have led to its rising trend since August of this year (figure I.3), significantly affecting local financial prices (box I.1). Since the last Report, local medium- and long-term sovereign rates have gained 255 and 158 bp, respectively, driven by the term premium and higher short-term expectations for the monetary policy rate (Monetary Policy Report of September 2021). Although both components are associated with higher expected inflation, the former also reflects the recent increase in local uncertainty. In addition, the volatility of sovereign rates was among the highest in a sample of emerging countries during the third quarter of this year (figure I.4). In the forex market, although the volatility of our exchange rate was also among the highest in the sample of countries, it decreased with respect to the previous quarter, approaching the levels of commodity exporters (figures I.5 and I.6).

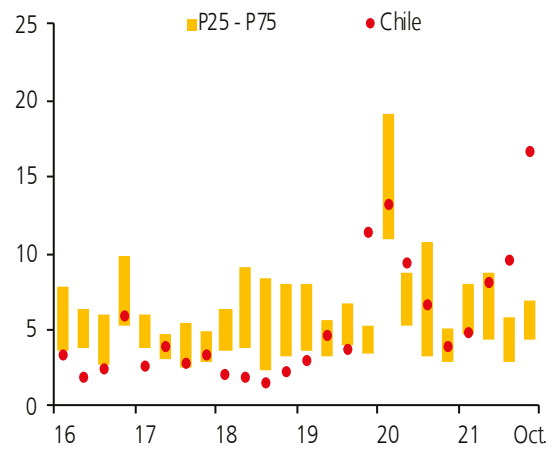


FIGURE I.3 CHILE'S UNCERTAINTY DECOMPOSITION (index)



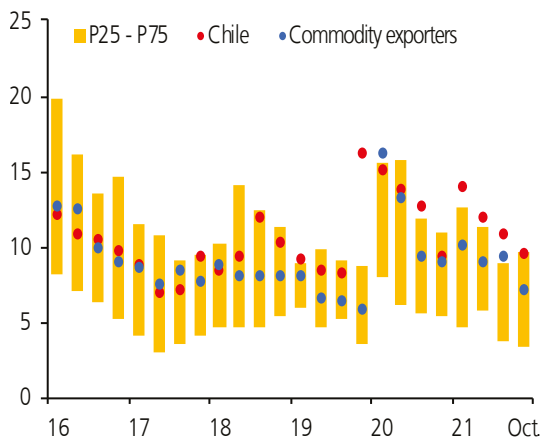
(*) 30-day moving average.
Source: Central Bank of Chile based on data from Bloomberg and Becerra & Sagner (2020, 2021).

FIGURE I.4 VOLATILITY OF EMERGING ECONOMIES' SOVEREIGN RATES (*) (percent)



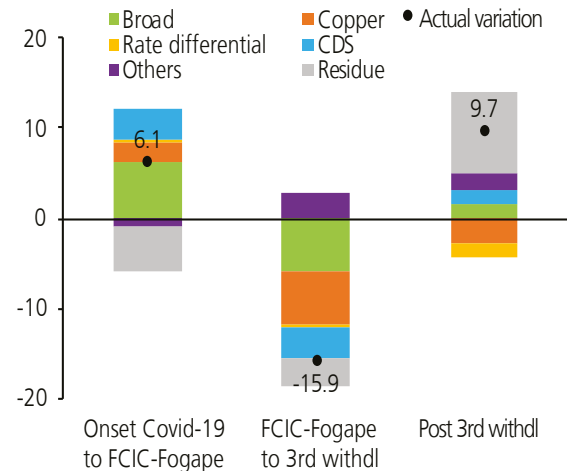
(*) Annualized daily volatility. The sample of emerging economies includes Brazil, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Poland, Russia, and Turkey. October data are up to statistical close.
Source: Central Bank of Chile based on data from Bloomberg.

FIGURE I.5 EXCHANGE RATE VOLATILITY (*) (basis points)



(*) Annualized daily volatility. Percentiles are calculated for a sample of emerging countries including: Brazil, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Poland, Russia, and Turkey. Commodity Exporters: average exchange rate volatilities for Australia, Canada, Norway, and New Zealand. October data are up to statistical close.
Source: Central Bank of Chile based on data from Bloomberg.

FIGURE I.6 NOMINAL EXCHANGE RATE VARIATION (*) (percent)



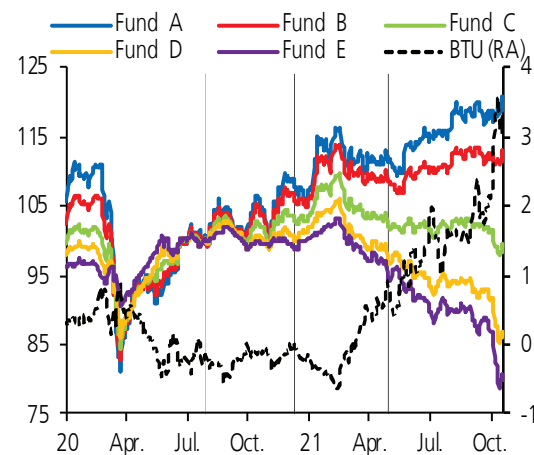
(*) Captures the movement or trend that the nominal exchange rate should follow based on its fundamentals. See "Use of macroeconomic models in the Central Bank of Chile" (2020). Dates considered for each event: March 3, 2020 (Covid-19 onset); March 23, 2020 (FCIC-Fogape); Jan 29, 2021 (third withdrawal). Variation post-third withdrawal is calculated at statistical close.
Source: Central Bank of Chile based on data from Bloomberg and RiskAmerica.



In particular, domestic long-term rates increase due to growing premiums on risks that transcend the short term and are not correlated with recent monetary policy decisions. The massive liquidations of instruments after the withdrawals have been absorbed at an upwardly adjusted price and with high variability in a scenario of increased uncertainty associated with these developments. As highlighted in the Monetary Policy Report of September this year, the higher rates are mainly explained by an increase in term premiums, which is associated with a higher risk inherent to these investments, in circumstances where neutral rates have remained relatively stable. Added to this are the greater financing needs of the Treasury, which put upward pressure on long-term interest rates (Chapter II). All in all, it is important to note that short-term and long-term rates obey to phenomena of a different nature, so their dynamics differ over time. In particular, the MPR is associated with the withdrawal of monetary impulse in response to greater inflationary pressures, which has contributed to stabilizing the exchange rate and partially reversing the rise in market rates but is not sufficient to counteract structural changes in the economy, as manifested in longer-term rates. One example of this is how these variables behaved after the October monetary policy meeting: the day after the 125bp hike in the MPR, the 10-year BCP rate dropped by 26bp, while the peso appreciated by 1% against the dollar. One week later, the long rates had dropped 11bp, and the peso had appreciated 1.1% compared with pre-monetary policy meeting values.

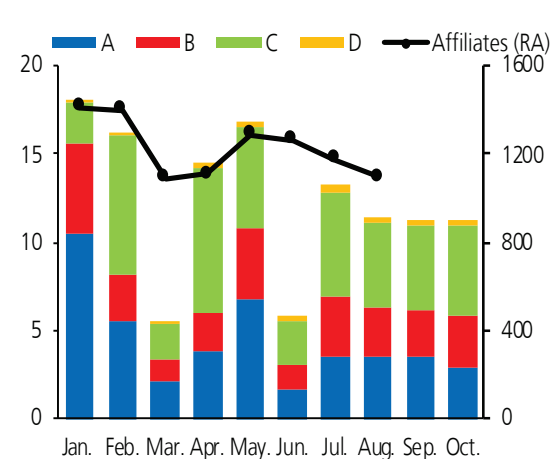
Despite the special measures implemented responding to fund withdrawals, the significant increase in long-term rates has had a negative impact on the profitability of the pension system affiliates' savings by reducing the return on the funds, particularly those more exposed to local fixed income. The active management of local and foreign asset liquidation by the pension fund managers, together with the adoption of special measures by the CBC, cushioned the negative impact of the authorized withdrawals on the funds saved by the system's participants. As explained above, and together with the rise in local rates observed since the third withdrawal (Monetary Policy Report of September 2021) up to the publication of this Report, the real yield of those funds most exposed to local fixed income instruments has dropped substantially (figure I.7). This has encouraged affiliates to shift from fund E to other funds, further aggravating the situation by putting new pressure on the sale of local fixed-income instruments (figure I.8).

FIGURE I.7 RETURNS ON VARIOUS TYPES OF FUNDS AND BTU-10 (*)
(Index Jul.20=100; Percent)



(*) Daily data on the funds' nominal variation deflated by the change in the UF. Daily 10-year BTU/BCU rate is used. Vertical lines indicate pension fund withdrawals. Source: Central Bank of Chile based on data from the Superintendency of Pensions.

FIGURE I.8 MOVEMENTS FROM FUND E TO OTHER FUNDS IN 2021 (*)
(Percent; Thousands)

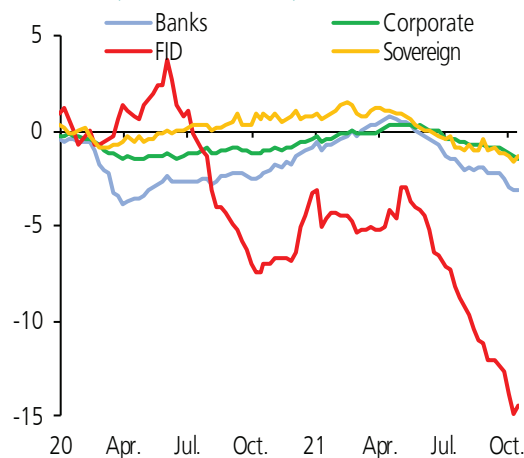


(*) Total amount transferred from Fund E to other funds (A, B, C or D), in billions of dollars over total assets of Fund E, in each month (updated at statistical close). Affiliates represents the number of Fund E participants (latest data available: August 2021). Source: Central Bank of Chile based on data from the Superintendency of Pensions.



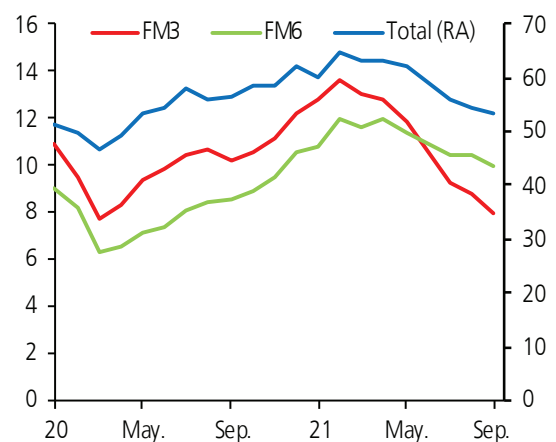
In this context, other institutional investors have adjusted their portfolios to accommodate the effects of depleted pension funds and anticipated annuities. Since the last FSR, the mutual funds have recomposed their portfolios, reducing mainly their investments in time deposits and to a lesser extent in local fixed income (figure I.9), to cope with the forced pension fund liquidations. While the volume of assets managed by medium- and long-term local fixed-income funds (FM3) has decreased, the indicator that measures the availability of resources to face potential liquidations has dropped by more than 30% since the early days of the sanitary crisis, and 74% in September, the lowest since 2006 (figures I.10 and I.11). Along with this, rising interest rates have led to revaluations of short-term local fixed-income mutual funds (FM1), resulting in negative nominal returns on some funds in this group this year to date. Life insurance companies, meanwhile, have maintained solvency levels sufficient for the payment of the annuities that began last May, according to data from the asset adequacy tests reported to the Financial Market Commission (FMC) as of June 2021. These entities absorbed the annuity frontloading requirements during the second quarter of this year by liquidating mainly the more liquid instruments, such as mutual funds (domestic and foreign) and domestic fixed income. In the third quarter of this year, there was also an increase in bank debt, which possibly contributed to accommodate part of the advanced payments (figure I.12). Although the solvency of the insurance companies has not been affected by the liquidations made to finance the advances, the current investment portfolio has less leeway from liquid instruments to face possible new advances, and a greater dependence on bank debt, whose conditions for financing are less advantageous. Since the social crisis and throughout the pandemic, banks have been absorbing the sales of instruments from life insurance companies and pension funds, accumulating liquid instruments for different reasons, both from the Treasury and the CBC. Initially, this behavior was associated with precautionary motives, but lately it is associated with the technical reserve requirements arising from the withdrawals of pension funds, which is mostly channeled into an increase in demand deposits (Financial Stability Report, first half 2021).

FIGURE I.9 CUMULATIVE CHANGES IN LOCAL STOCK OF FIXED-INCOME MUTUAL FUNDS (*)
(Billions of dollars)



(*) Weekly data, accumulated since January 2020.
Source: Central Bank of Chile based on data from DCV.

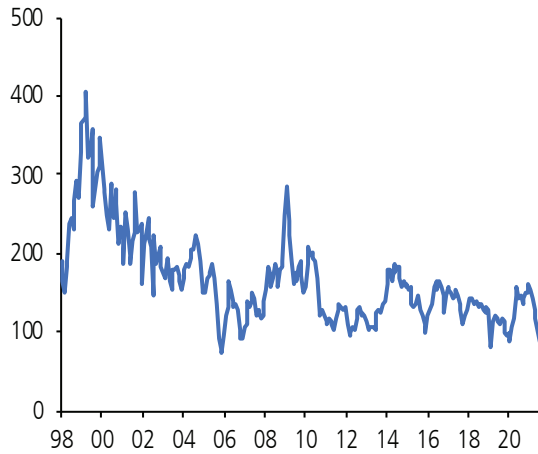
FIGURE I.10 ASSETS ADMINISTERED BY FIXED-INCOME MUTUAL FUNDS
(Billions of dollars)



Source: Central Bank of Chile based on data from the FMC.

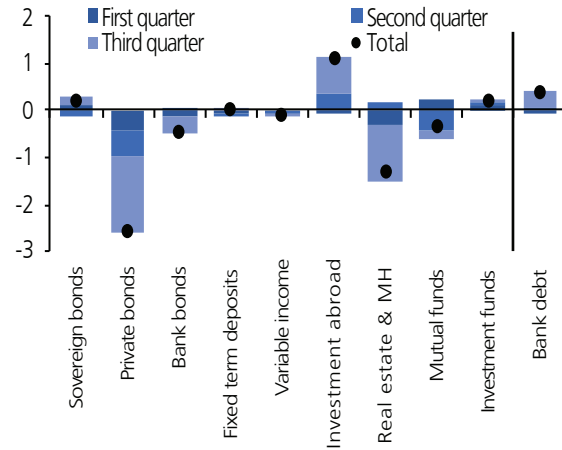


FIGURE I.11 LCR TYPE-3 MUTUAL FUNDS (*)
(Index)



(*) Proportion of liquid assets (maturing in or before 90 days) over maximum possible withdrawal of total FM3 assets. Latest figure: September 2021. Source: Central Bank of Chile using information of the DCV.

FIGURE I.12 QUARTERLY CHANGES IN CSV INVESTMENT PORTFOLIOS (*)
(Billions of Dollars)



(*) Change from December 2020. Considers only life insurance companies having received requests of anticipated annuity. Source: Central Bank of Chile based on data from the FMC.

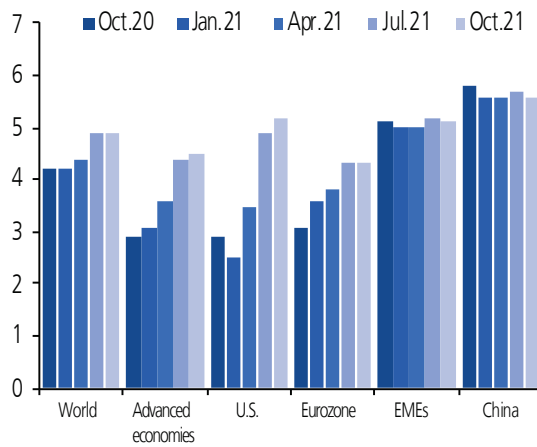
Similarly, there are outflows of household and corporate capital and an incipient preference for assets in foreign currency. Regarding global capital flows, there has been a slowdown in the inflow of non-resident capital in both developed and emerging countries, although more abrupt in the latter. In the case of Chile, there has been an unusually high outflow of more liquid foreign assets (portfolio investments, deposits, and loans) by local investors, such as financial corporations, firms, and households. This trend has been progressive since the last quarter of 2019 and has been accentuated with each episode of political uncertainty generated in recent years. Along with these higher investments in liquid foreign assets by residents, there has also been a considerable increase in the preference for foreign currency assets, such as deposits and current accounts.

INTERNATIONAL FINANCIAL SITUATION

The world economy continues to recover from the Covid-19 crisis, especially in developed countries, thanks to a substantial push from financial, fiscal, and monetary policy, and an improving sanitary environment, despite some ups and downs. In the developed world, growth expectations have risen further. In particular, IMF figures show that expected U.S. growth for 2022 went from around 3% a year ago to more than 5% in October this year. Meanwhile, in the Eurozone expected 2022 growth rose from 3% to more than 4% in the same period (figure I.13). Behind this improvement are the expansionary macroeconomic policies implemented by the various central banks, the significant progress in vaccinations, and reduced sanitary constraints. In fact, for the U.S., the confinement index has been dropping steadily, and now stands at its lowest since March 2020 (figure I.14). On the other hand, there are concerns surrounding China's speed of recovery, which has been adjusted downwards due to problems in the energy and real-estate sector, compounded by new sanitary restrictions that have been adopted because of new outbreaks of the virus (Monetary Policy Report of September 2021).

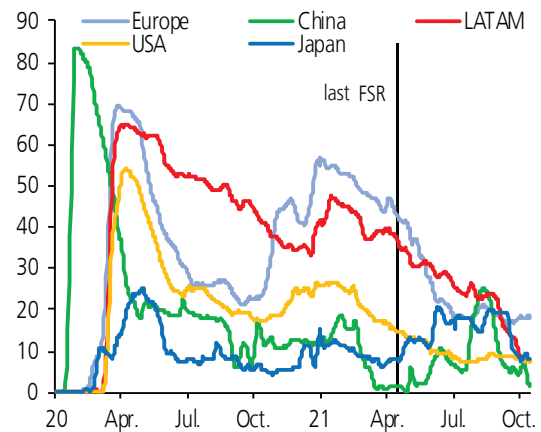


FIGURE I.13 EXPECTED GROWTH FOR 2022
(Percent)



Source: Central Bank of Chile using information of the IMF.

FIGURE I.14 EFFECTIVE CONFINEMENT (*)
(Index)



(*) Average between Google's mobility index and Oxford measurement index. Europe stands for France, Germany, Italy, Spain, Sweden, and the U.K. LATAM includes Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Group averages weighted by each country's GDP. Source: Central Bank of Chile based on data from Bloomberg and Goldman Sachs.

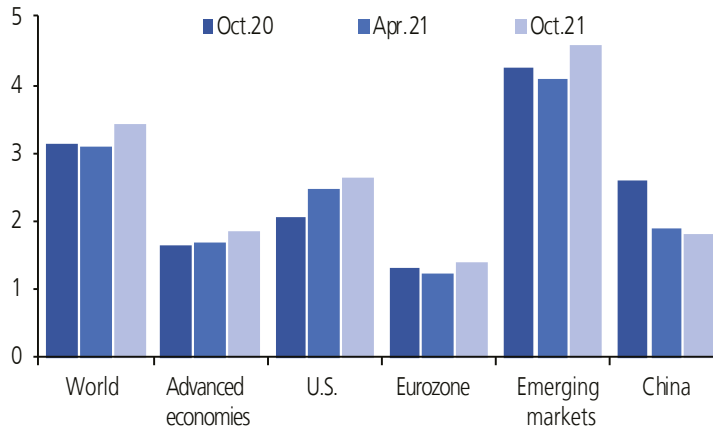
However, the increased liquidity generated by the mitigation measures has brought with it inflationary pressures from greater demand for goods, higher valuation of financial assets and an increase in sovereign and corporate leverage. Along with improved economic activity, incoming data point to an upsurge in inflationary pressures. On the one hand, U.S. inflation has exceeded 5% annually in recent months, while in the Eurozone it surpassed 3% last September. At the same time, inflation expectations have risen for 2022 (figure I.15). For their part, the benchmark rates of emerging countries posted significant increases. For example, the Central Bank of Brazil raised its benchmark rate by 150 bp at its October monetary policy meeting. Also, the riskier financial assets continue to post high returns, reflected in the persistent increase in the price-to-earnings ratio (cyclically adjusted) of the main stock indexes of developed economies. Meanwhile, the economies' massive fiscal spending to cover the various aid programs during the sanitary crisis led to a sharp increase in global sovereign indebtedness. In the context of abundant liquidity and increased risk appetite, there have also been worrying increases in corporate debt (box I.2).

International financial conditions remain favorable, although quite likely to be reversed in the near future, due to, among other factors, higher current and projected inflation, which could call for an abrupt stimulus removal. The probability of changes in these conditions has risen. Thus, in the case of the U.S. S&P500, together with the higher recent valuation, significant increases in the risk of reversals were observed, boosting the demand for protection against steep falls in the market in an uncertain economic recovery scenario, which is reflected in indicators of the risk of occurrence of extreme events (figure I.16)^{2/}. On the other hand, in the long-term sovereign debt markets of advanced economies, interest rates have seen limited increases, while in emerging economies—especially in Latin America—they have risen sharply in recent years (figure I.17). These rises are explained by a higher risk perception associated with idiosyncratic factors such as, for example, the fiscal, inflationary, and political situation in Brazil, the protests in Colombia, and the uncertainty surrounding the new Government in Peru (figure I.17).

^{2/} An increase in the SKEW indicators indicates that investors are demanding stronger protection to major falls in the markets.

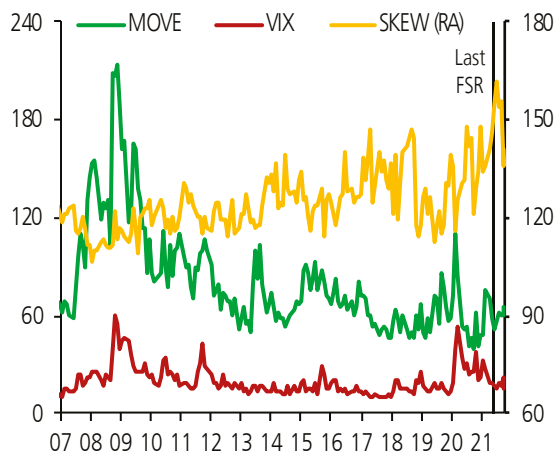


FIGURE I.15 INFLATION EXPECTATIONS FOR 2022
(percent)



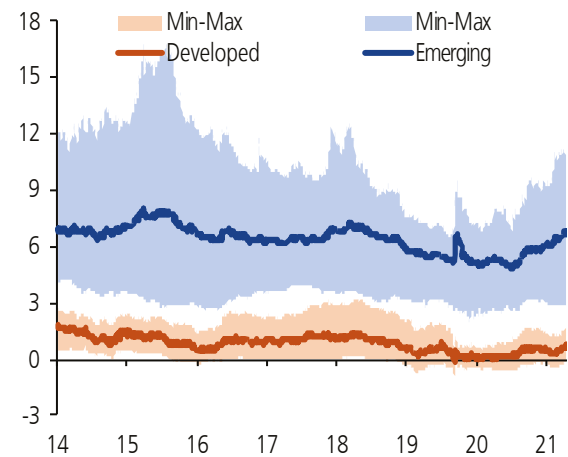
Source: Central Bank of Chile using information of the IMF.

FIGURE I.16 INTERNATIONAL MARKETS' RISK INDICATORS (*)
(index)



(*) VIX: implied volatility of options on the one-month U.S. S&P500; MOVE: implied volatility of options on the U.S. Treasury bond with different one-month durations; SKEW: uses options on the U.S. S&P500 to measure its tail risk.
Source: Central Bank of Chile using information of Bloomberg.

FIGURE I.17 10-YEAR SOVEREIGN RATES (*)
(percent)



(*) Developed stands for Germany, Japan, the U.K., and U.S. Emerging includes Brazil, Chile, China, Colombia, India, Indonesia, Mexico, and Peru.
Source: Central Bank of Chile using information of Bloomberg.

This is compounded with the vulnerable financial situation of China's real estate sector, which has recently seen, on top of highly indebted companies, difficulties in refinancing liabilities and uncertainty in coupon payments. Although this situation is expected to have limited effects on the global financial system, a greater-than-expected slowdown in this large-scale market could cause disruptions that could lead to increases in risk premiums both in China and in other emerging economies. In turn, recent increases in global housing



prices represent a vulnerability, as they could generate the expectation that such increases will be repeated in the future, inducing agents to take excessive risks.

THREATS TO FINANCIAL STABILITY

The global financial environment has more challenges, in a context where the Chilean economy reduced its capacity to deal with adversity. Although global financial conditions remain favorable and, at the statistical close of this FSR, the end of quantitative easing programs has been communicated in an orderly and clear manner, the greater liquidity available increases the possibility of reversals in the face of changes in risk appetite, or due to greater inflationary pressures and the potential need to make bigger adjustments in the short term. Specifically, a more persistent than expected increase in global inflation (GFSR, IMF October 2021) could require an early withdrawal of monetary stimulus by the world's main central banks, which would generate new rate hikes and stress in the markets.

In addition, recent economic events in China have had a downward effect on its growth outlook, which could affect international trade. In particular, a more profound slowdown in the Chinese economy could result from further defaults in its corporate real-estate sector. While there is no evidence of significant direct financial channels from China to Chile, an economic downturn could trigger a sharp decline in global markets' risk appetite and affect emerging markets more strongly via the resulting deterioration in commodity prices. More generally, this revives concerns about global corporate leverage and its second-round impacts on the financial stability of other emerging economies.

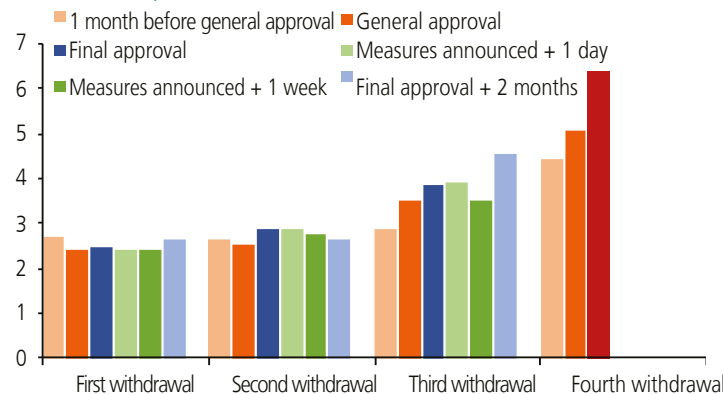
The main threat to local financial stability is that new forced adjustments of institutional investors' portfolios will continue to erode the intermediation of resources, limiting the capacity of the financial system, households, and companies to withstand corrections and/or disruptive events. The size and composition of the portfolio of institutional investors in Chile continued to adjust to accommodate the asset liquidations necessary to finance the withdrawals, directly affecting the provision of long-term credit. The above is combined with other factors that can disrupt financial conditions, such as lower fiscal savings. Therefore, additional forced liquidations that impair the capacity of the local fixed-income market to provide long-term financing could have even more profound effects for households, companies, and the Government itself, by making more expensive and constrained the access to financing in pesos or UFs to refinance debts, access to housing or other long-term projects (Chapters II and III). In addition, and hand in hand with the highly interconnected financial system, the negative effects on asset prices that this situation entails can generate second-order liquidations in other institutional investors that would amplify the shocks, further lowering asset prices and creating non-linearities in the impacts that are difficult to quantify.



At home, additional advances of annuities as have been proposed in recent initiatives ^{3/}, represent a first-order risk for the solvency of insurance companies, which provide a diverse array of services to households and firms. The FMC estimates that, if such advance occurs, between three and nine insurance companies might become insolvent, as they would be in noncompliance with equity and debt requirements ^{4/}. Life insurance companies provide, in addition to annuities, other types of insurance widely used in the Chilean economy, including 2.5 million life insurance policies; supplemental health coverage for 7 million people; more than 24 million life insurance policies; and the entire labor force that contributes to death and disability insurance. More generally, life insurance companies are inserted within an interconnected industry so, according to the FMC, recent developments might affect the provision of hedging in broader terms ^{5/}. In this sense, it is worth mentioning that general insurance companies provide coverage for other types of risks, with more than 41 million policies as of June 2021, including more than 6 million personal accident insurance policies, 5.6 million drivers' mandatory personal accident insurance policies (SOAP) and 5 million unemployment insurance policies.

This is occurring at a time when local authorities find themselves with less room to implement mitigation policies, thus reducing their toolkit to deal with internal and external shocks. On the one hand, the fiscal situation is tighter after multiple measures to support agents in containing the impact of the sanitary crisis on their balance sheets (Chapter II). On the other, it is worth noting the increase in the CBC's balance sheet after implementing liquidity measures and containing the adverse effects on financial markets of the forced asset liquidation of recent months. These policies have lost some effectiveness after the processes of implementing each withdrawal. For example, the increases in the 10-year peso sovereign interest rate one month before the general approval of the first withdrawal could be reversed quite effectively, while in the second withdrawal this phenomenon could only be contained; by the third withdrawal, the measures adopted by the CBC showed no mitigating effects (figure I.18). It is possible that the policy instruments available to the CBC may not be sufficient to reduce the increases in the long-term rate that were observed around the processing of the fourth withdrawal, which by the close of this Report was above 200 basis points.

FIGURE I.18 10-YEAR INTEREST RATES IN PESOS AROUND THE PENSION FUND WITHDRAWALS (*) (percent)



(*) General approval refers to the date on which the Constitution Committee of the House of Representatives approved and sent to the floor the draft of the respective withdrawal. Dark red bar: data as of October 20, 2021 (statistical close).

Source: Central Bank of Chile using information of Bloomberg.

^{3/} The recent initiative on annuity advances establishes a maximum discount that cannot exceed 5% of the monthly pension, while the amount advanced is 10% of the premium transferred and not of the technical reserve associated with the policy at the time of the request.

^{4/} FMC Minutes: "Nuevo Anticipo de Rentas Vitalicias" (New Annuity Advance), 1 October 2021. See [link](#).

^{5/} Presentation by the FMC president to the Constitution, Legislation, and Justice Committee of the Senate, October 2021. See [link](#).



BOX I.1:

Uncertainty and financial markets

Increased economic and political uncertainty attributable to idiosyncratic events has triggered significant adjustments in a range of financial prices in Chile. Most recently, although the local uncertainty component related to the pandemic has decreased, on aggregate it still remains close to its levels observed in the aftermath of the social crisis due to idiosyncratic factors (Chapter I). This heightened uncertainty has significantly boosted the term premium component of sovereign long-term interest rates (Monetary Policy Report of September 2021). It has also contributed to the recent deterioration in the level and volatility of the Chilean peso against the dollar beyond what its traditional determinants would suggest, which has implied higher risk premiums (Bansal and Yaron, 2004).

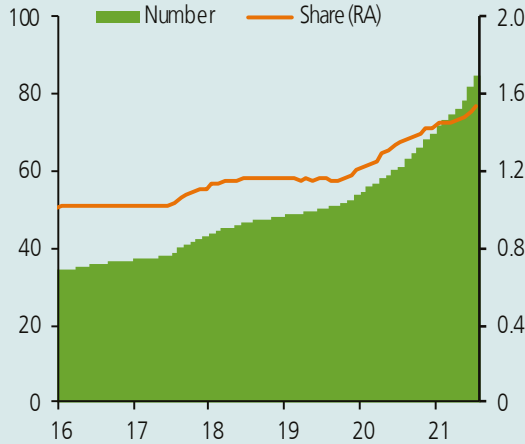
In general, the evidence indicates that there is a relationship between uncertainty and volatility in financial markets. Likewise, these corrections in financial prices due to uncertainty could also impact activity through consumption and investment channels in a prolonged manner (Blanchard, 1981). Since financial assets are part of household wealth, a drop in their prices affects consumption and saving decisions. A deterioration in asset prices reduces the value of capital relative to its replacement value, which negatively affects investment (Dixit and Pindyck, 1994; Bernanke, 1981). In addition, greater uncertainty can lead to capital flow reversals (Siemer et al., 2015).

Locally, the greater uncertainty resulting from the withdrawal of pension savings has resulted in reduced facility to trade instruments and greater short-term volatility. Additionally, the prices of financial assets do not reflect the value of the fundamentals due to the growing weight of risk premiums. These elements are combined with increases in interest rates and exchange rates that move in the same direction, i.e., the mitigation of external shocks has not been occurring. This has coincided with an increase in individuals' current accounts in foreign currency, which reached 1.5% of the total in May of this year (figure I.19 and Chapter III), together with a decrease in transactions in the formal exchange market. Also, since the end of 2019, a significant outflow of financial capital has been observed, close to US\$ 50 billion, comparable to that seen during the global financial crisis. A large part of this dynamic is explained by corporate and household flows, which recorded an outflow of close to US\$ 25 billion at August 2021 (figure I.20 and Chapter I).

Going forward, episodes where prices and volatility of local financial assets deteriorate may affect financial stability by raising credit costs for households and businesses and discouraging consumption and investment. In particular, an increase in long-term rates has already materialized, part of which can be attributed to greater uncertainty. In fact, the evidence shows a positive relationship of greater magnitude in Latin American countries between these two variables (figure I.21). This has combined with a tightening of bank credit standards due to the shallower capital market, which has contributed to exacerbate the greater uncertainty and further expose the economy to external shocks (Chapter III). Notwithstanding what has already occurred, new forced asset liquidations would accentuate these trends in magnitudes that are difficult to quantify, given the interconnections that pension funds have in the domestic financial system.

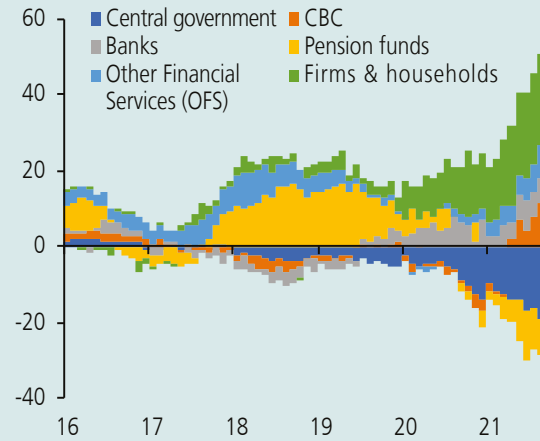


FIGURE I.19 CURRENT ACCOUNTS OF NATURAL PERSONS IN FOREIGN CURRENCY
(thousands of accounts, percent)



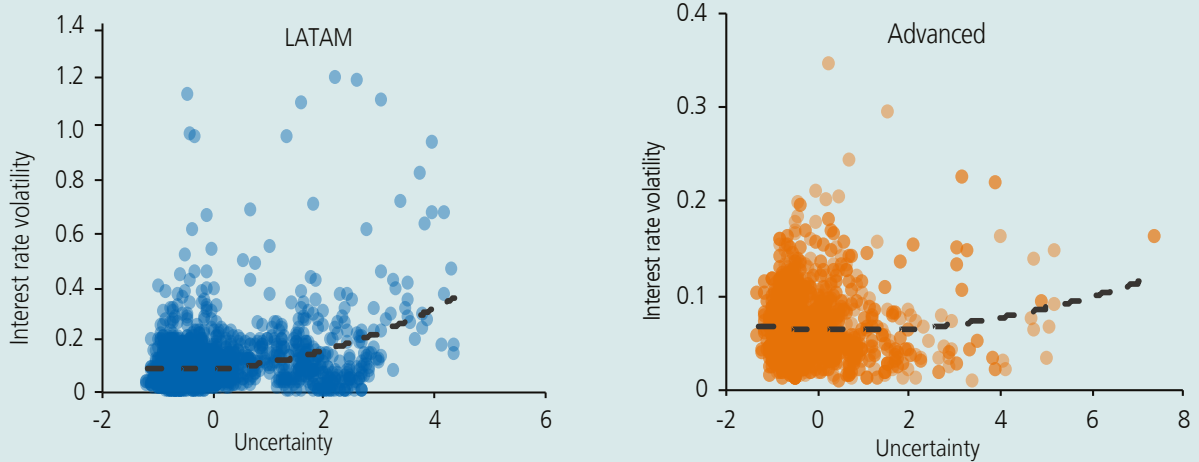
Source: Central Bank of Chile based on data from FMC.

FIGURE I.20 LIQUID EXTERNAL ASSETS IN THE FINANCIAL ACCOUNT
(billions of dollars)



(*) Moving sum of 24 months. Excludes foreign direct investment flows. OFS: Other Financial Services.
Source: Central Bank of Chile based on data from FMC.

FIGURE I.21 CORRELATION BETWEEN UNCERTAINTY AND VOLATILITY OF 10-YEAR SOVEREIGN RATES (*)
(index, percent)



(*) Weekly data for the period between Jan 2012 to Oct 2021. Uncertainty Index for LATAM by Becerra & Sagner (2020,2021) and for Advances economies by Baker et al. (2016). Measured in standard deviations from its mean of each sample. Dashed line shows quadratic trend. LATAM economies (left panel) considers Chile, Colombia, Mexico and Peru. Advanced economies (right panel) considers U.S. and U.K.

Source: Central Bank of Chile using information from Bloomberg, Becerra & Sagner (2020,2021) and Baker et al. (2016).



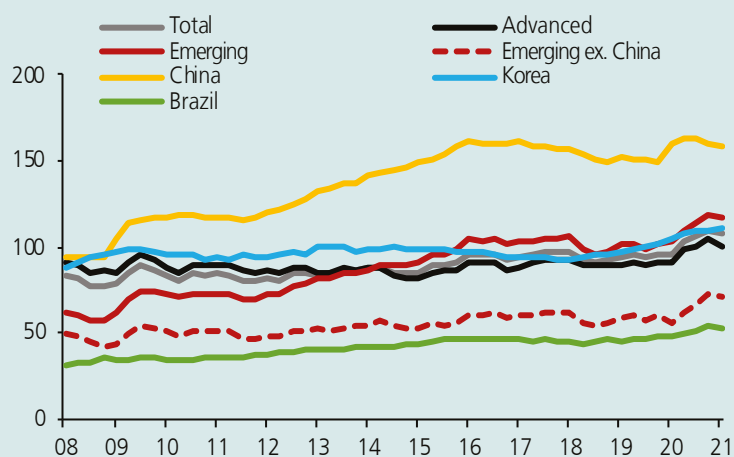
BOX I.2:

Corporate debt and recent vulnerabilities

Global corporate debt has shown significant increases, motivated by the policy reaction to the Covid-19 crisis. After the Global Financial Crisis, there were persistent increases in corporate debt around the world, which tended to stabilize towards late 2019 (FSR, second half 2019). However, since the turn of 2020, corporate debt resumed growth globally, especially in the bigger emerging economies like Brazil, China, and Korea (figure I.22). This was an expected side effect of the liquidity injections to the corporate sector that responded to the severe negative shock on sales associated to the mobility constraints imposed.

This higher indebtedness began in a context of favorable financial conditions. However, they have started to deteriorate due to recent developments, which generate vulnerability for these economies' financial stability. Before the pandemic, low interest rates and corporate spreads contributed to the trend observed in corporate debt. Some time into the crisis, the recent increase in expected inflation, the resulting normalization of monetary policy in several economies, plus the presence of adverse idiosyncratic factors in some countries—in particular, the uncertainty surrounding China's real-estate and financial markets— have involved less favorable financial conditions (IMF, 2021). Should this deterioration deepen, the sustainability risk of the global corporate debt would increase, especially in emerging economies that have seen considerable increments of their non-financial private debt in recent years.

FIGURE I.22 NON-FINANCIAL CORPORATE DEBT
(Percent of GDP)



Source: Central Bank of Chile using information of the BIS.



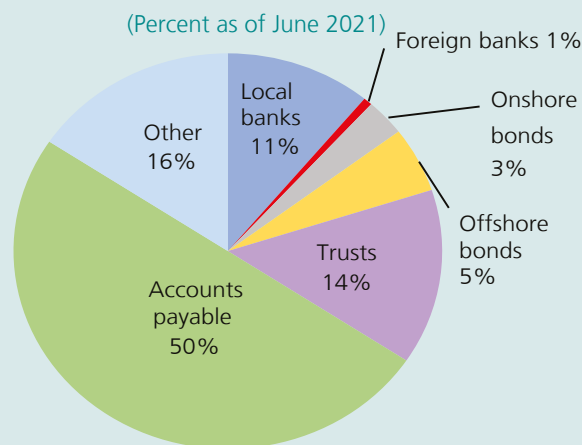
In particular, the risk of economic and financial contagion from China's financial conditions to other emerging economies deserves special attention.

The slowdown in the Chinese real-estate sector is explained by cyclical and structural factors, which respond to its monetary policy normalization, the new regulations imposed on the sector and demographic changes, among others. These elements contributed to the recent financial stress of Evergrande, China's biggest real-estate company. This, coupled with the high corporate debt in China—which accounts for nearly 31% of the world's total (S&P Global, 2021)—could entail a high risk of economic and financial spillover to both advanced and emerging economies. Given that the exposure of banks, especially foreign ones, to this real estate company is low, the Evergrande situation is believed to be unlikely to trigger a new international financial crisis (figure I.23). Nonetheless, the impact of the company's deterioration could be significant, given its weight in the country's real-estate industry, which in turn accounts for close to 29% of GDP when considering its direct and indirect contributions^{1/}. Moreover, it cannot be ruled out that doubts may arise with respect to the valuation of corporate debt at the global level, particularly in emerging economies. Evergrande's spillover to other sectors and countries has been limited so far, but non-payment events, which were few during the pandemic, are now on the rise at the margin in China and other emerging economies.

Although no major direct financial channels exist with Chile, a slowdown in the Chinese economy would have real impacts in our country through the prices of commodities.

China is the world's biggest consumer of copper, and the real-estate sector represents one fifth of copper demand. Therefore, a weakening of China's demand for raw materials would directly affect activity in Chile. This would take place in the context of monetary stimulus withdrawal in Chile and where the leeway to accommodate external shocks of that nature have decreased after the unprecedented deployment of policies during the pandemic and the recent changes in the capita market.

FIGURE I.23 EVERGRANDE LIABILITIES COMPOSITION (*)



(*) This composition considers the estimates of various investment banks.
Source: Central Bank of Chile based on data from Barclays, Bloomberg, Citi, Goldman Sachs, and UBS.

^{1/} Estimated using input-output matrix (Rogoff and Yang, 2021).



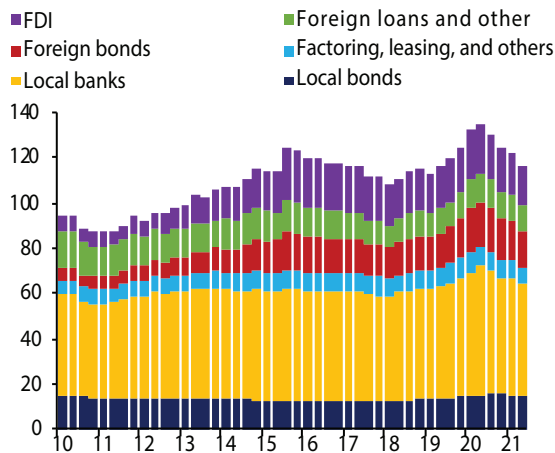
II. BORROWERS

Since the last FSR, the economy has remained on a recovery path, with support measures that have generally been phased out and that allowed credit users to weather the pandemic by compensating for lost income and avoiding default events. The policies deployed for companies, as well as the economy's recovery and adjustment, contributed to boost companies' sales, which has reduced their leverage in the most recent period. Households remain highly liquid, and this has reduced their financing needs and allowed them to reduce their defaults, albeit eroding their savings. The real-estate sector has also shown a recovery in sales and price increases. The cost of the mitigation measures has been largely borne by the monetary and fiscal authorities. In fact, the accelerated growth in debt reduces the Treasury's capacity to cushion possible disruptive events in the future with a deterioration in the perception of local risk that may result in higher financing costs. Although current delinquency indicators remain stable and low, expectations of future default by more vulnerable agents in the face of stress scenarios have increased since the last Report. However, the combined effect of higher interest and inflation rates increases the risk of default in stressed scenarios well beyond what

FIRMS

The recovery in economic activity has reduced leverage and other financial indicators of companies as compared to the previous FSR. Aggregate indebtedness reached 117% of GDP by the second quarter of 2021 (figure II.1). This 6pp decrease with respect to the previous quarter was mainly due to the recovery of economic activity and less dynamic local credit growth (figure II.2 and statistical appendix).

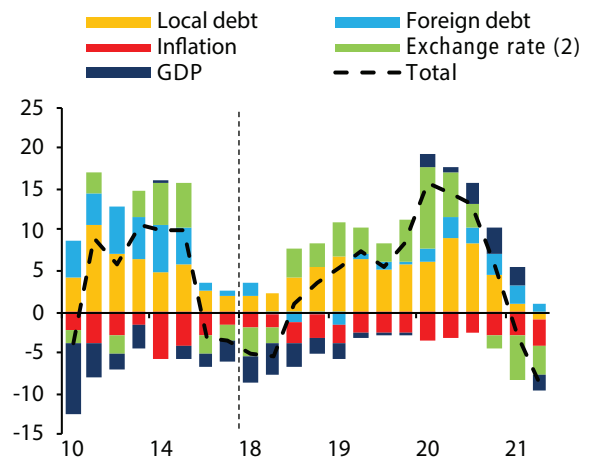
FIGURE II.1 CORPORATE DEBT (*)
(Percent of GDP)



(*) Based on information at companies' level except for factoring, leasing and other, securitized bonds and commercial drafts. Quarterly data. For further details on series and methodology see set of figures.

Source: Central Bank of Chile based on information from the Chilean Association of Factoring Agents (Achef) and the Financial Market Commission (FMC).

FIGURE II.2 CORPORATE DEBT (*)
(Annual change, percent)



(*) Foreign debt includes foreign bonds, foreign loans, commercial loans, plus FDI. This includes annual information through 2017; thereafter, quarterly data. The exchange rate is the average of the previous month.

Source: Central Bank of Chile based on information from the Chilean Association of Factoring Agents (Achef) and the Financial Market Commission (FMC).

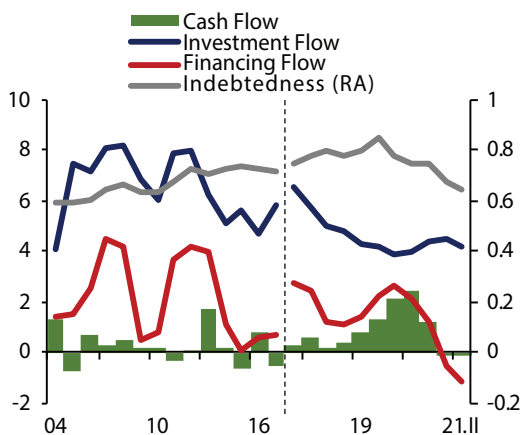


As of the second quarter, companies reporting financial statements continued to decrease their leverage, mainly driven by lower liquidity needs, which has also led to an increase in the payment and provisions of dividends. This explains the lower issuance and reduced dynamism of local bank credit since the first quarter of 2021 (figure II.3). Meanwhile, the cash level they held until June was still above their historical average, reflecting, among other factors, high uncertainty about the economic outlook.

In addition, these companies improved their profitability and interest coverage indicators, in line with the improved economic outlook, with some heterogeneity in their evolution. Reporting in the second quarter of this year, FMC companies' return on assets rose from 3.4% to 3.7%, while interest rate hedging increased from 1.8 to 2.5 times (figure II.4). These improvements reflect the economy is recovering. Meanwhile, despite the increase, interest hedging is still low and highly dispersed by historical standards. With data as of June 2021, the share of companies that failed to cover twice their financial expenses amounted to 32% of total assets. While this proportion is lower than the 59% reported in December 2020, it compares negatively with the 19% recorded in June 2019.

However, the financial conditions of the corporate sector have worsened recently. The interest rate on commercial loans has risen since the last FSR, as a result of structural changes that have trimmed down the size of pension funds (chapter I). This increase has affected companies across the board; however, it is worth noting the extent of the 140bp adjustment for the larger companies in the services sector between March and September 2021 (figure II.5).

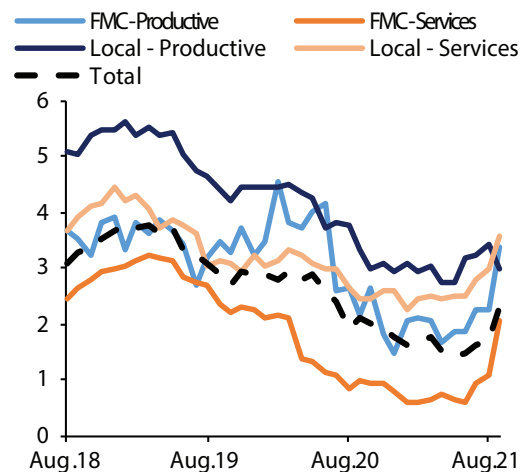
FIGURE II.3 INDEBTEDNESS AND FLOWS (*)
(Equity, percent of total assets)



(*) Indebtedness is financial debt over equity for consolidated data. Annual frequency before the vertical line and quarterly since March 2018. Consolidated data. Does not consider state-owned companies or those classified in the financial-services and mining sectors.

Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).

FIGURE II.4 BANK INTEREST RATES (*)
(Percent)



(*) Weighted average by credit flow amount; only includes installment loans, excluding Fogape loans.

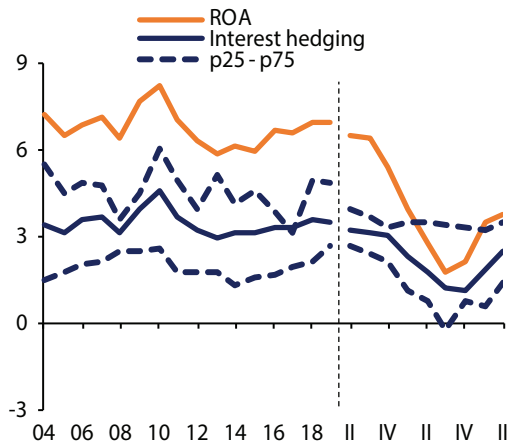
Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).



In October, there was an extraordinary distribution of dividends by corporations, which could point to lower investment opportunities for the corporate sector, in an environment of greater uncertainty.

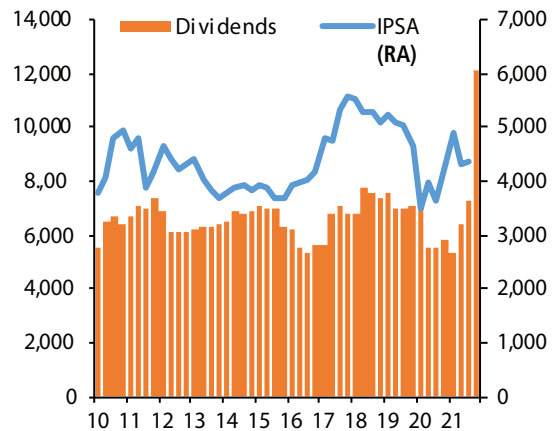
Among companies that report their financial statements, there was an increase in dividends paid of around US\$7.0 billion over the same period of the previous year. This increase is of significant magnitude from a historical perspective and is also significant because it occurred in the second half of the year instead of the first half, which is when dividend distributions are typically announced. This occurs in a context of greater availability of resources, as a result of a recovery in company profits (figure II.5) and, in some cases, the sale of assets. In addition, there was an increase in the volume of distributed profits, both from previous years and from the current year, and a fall in shareholder returns, which is probably related to lower growth prospects for the corporate sector (figure II.6). Regarding the destination of the resources, in the second half of the year, nearly 40% went to investors who do not report to the FMC, 37% to minority shareholders (7% to pension funds), and the rest, to subsidiaries and parent companies. This increased dividend distribution may be related to a lower volume of investment projects in the pipeline, given the perception of greater uncertainty in the medium term. This being the case, the dynamics observed recently could have limited real and financial effects in the medium term. The CBC will continue to monitor this matter and share the results of its analysis in future reports, according to their evolution in the coming months.

FIGURE II.5 PROFITABILITY AND INTEREST HEDGE (*)
(percent of total assets, cumulative annual profit)



(*) ROA: Return On Assets, before financial expenses, plus taxes on total assets. Hedging: Income before taxes and financial expenses, over annual financial expenses. Consolidated data. Does not consider state-owned companies or those classified in the financial-services and mining sectors.
Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).

FIGURE II.6 DIVIDENDS AND SELECTIVE-STOCK INDEX (IPSA) (*)
(millions of dollars, index)



(*) Dividends in annual rolling sum.
Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).

Since the beginning of the policy actions, bank-financed firms increased their leverage, driven by Fogape loans, which has been partially reversed via higher sales, maintaining low and stable default indicators. As of August 2021, these companies' commercial loans increased by 0.5% as compared to the beginning of the credit-support policies, showing greater dynamism relative to that observed for FMC firms (Chapter III). Since the previous report, the improvement in economic activity has boosted sales and allowed this group of companies to continue restoring their leverage to normal. In this correction, it is worth highlighting those that took advantage of the Employment Protection Law, rescheduled bank payments, and at the same time obtained Fogape-Covid financing. This group multiplied its leverage by four after the adoption of these programs, after a sharp decrease due to higher sales; however, their debt is still twice their pre-pandemic level (figure II.7).

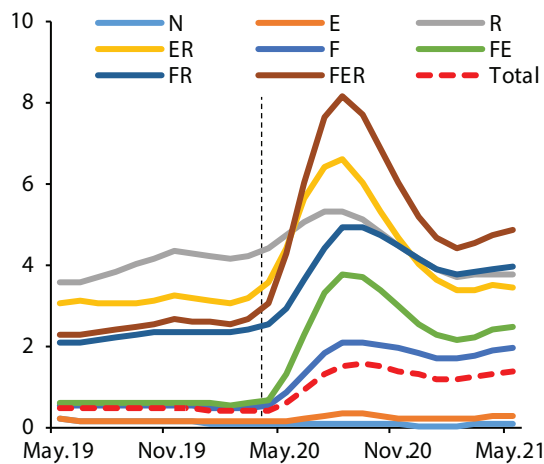


On the other hand, default indicators have remained low and stable since the previous FSR, with some heterogeneity in their composition. When grouping the firms by the use they have made of available policies, there is an increase among those that have used some combination of policies implemented during the sanitary crisis, such as the Employment Protection Law or rescheduling of commercial loans in the absence of Fogape loans. Meanwhile, the group of companies that obtained Fogape loans continues to show the lowest level of default, as in the period before the pandemic, with a limited increase in the most recent period (box II.1). In turn, larger companies with access to external financing have slowed their pace of indebtedness after having resorted to this funding during 2020. Going forward, these companies face potentially greater exchange rate mismatch risks if the hedging market is unable to meet their requirements (figures IV.1 and IV.2).

STRESS TEST FOR FIRMS

Stress testing of companies reporting their financial statements to the FMC^{1/}, usually of rather larger size, reveals a low impact in stressed scenarios. A simultaneous interest rate shock (250bp in bonds and 100bp in bank debt) and a 20% exchange rate depreciation would imply a 6.8pp increase in total assets with negative returns, over a two-year horizon, as compared to the baseline scenario. In a stress scenario for the economic activity—a fall in gross profit equivalent to 0.6pp of assets per year consistent with the deterioration in profitability observed between 2010 and 2012—, this effect would reach 24.2pp of assets.

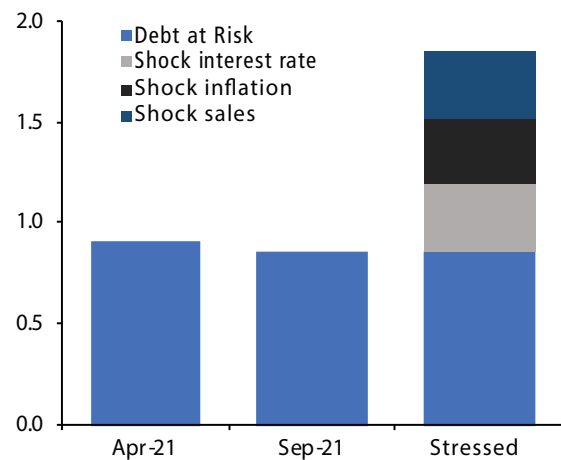
FIGURE II.7 MEDIAN LEVERAGE (*)
(debt over sales, times)



(*) F: Fogape-Covid credit, E: employment protection law, R: forbearance loans. FE, FR, ER, and FER correspond to the respective combinations. N: does not access any of these three policies. Vertical line indicates the start of support policies. Does not consider individuals, only bank-financed firms.

Source: Central Bank of Chile based on information from the FMC, Labor Authority, Ministry of Economy and Tax Authority (SII).

FIGURE II.8 COMMERCIAL DEBT-AT-RISK (*)
(percent of GDP 2020)



(*) The amount owed by each firm, weighted by its individual probability of defaulting one year ahead, except for the inflation shock where the horizon is three years.

Source: Central Bank of Chile based on data from the FMC, Labor Authority, Ministry of Economy and Tax Authority (SII).

^{1/} The test quantifies the impact of economic activity, interest-rate and exchange-rate shocks on ROA and coverage of FMC-reporting firms within a three-year horizon (Espinoza et al., 2017).



Likewise, the stress tests for bank-financed companies show limited and concentrated risks in companies that rescheduled payments without resorting to Fogape loans. Given the recent events involving the structural deterioration of the local capital market, scenarios with interest-rate and inflation increases appear in addition to the usual deterioration in economic activity. Regarding interest rates, as in the banking stress scenario, an increase of 300bp in the short rate and 100bp in the long rate is estimated. Inflation is assumed to be around 5% annually for three consecutive years. The starting point is lower debt-at-risk than that seen in the previous Report as a result of the economic recovery, going from 0.9% to 0.8% of 2020 GDP. Thus, with information as of the second quarter, stress testing shows that the combined effect of a higher cost of credit together with higher inflation doubles the effect of higher risk from a further weakening of the economic activity scenario as seen in the mid-2020s (figure II.8).

In particular, a further stress test for the larger companies that make up the individually assessed commercial portfolio reveals that the debt-at-risk in this segment is similar to that described in the previous Report. As of August 2021, individual commercial debt-at-risk was 1.29% of GDP, stable when compared to May. This result stems from the significant recovery in sales, which mitigates increases in credit risk. In a stress scenario, individual commercial debt-at-risk would reach 3.3% of GDP if all individually assessed firms increased their probabilities of default by a proportion consistent with a downgrade of two risk categories according to external agency ratings (statistical annex).

In short, thanks to the recovery in economic activity, companies resumed sales to their pre-pandemic levels, thus reducing their high leverage thanks to support policies. However, there are challenges posed by the deterioration of financing conditions. While the broad deployment of programs has kept defaults contained during the pandemic, in recent times an incipient increase in defaults has been observed in a particular group of companies that rescheduled payments without resorting to financing. This is a risk to be monitored for all companies that have benefited from any support program, because these programs are expiring. Going forward, structural changes to the local capital market will imply increases in the cost of financing for companies and possible restrictions on access, and inflationary pressures generated by excess liquidity will increase the financial burden from debts in UF. Stress scenarios that suggest interest rate hikes and inflation towards extreme values suggest that, if they materialize, they could have impacts on non-payment greater than those associated with a drop in sales such as the one seen in mid-2020.

THE REAL-ESTATE SECTOR

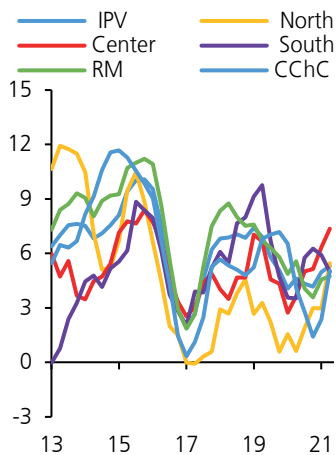
Since the last FSR, home prices increased globally, amid changing household preferences, favorable financing conditions, and higher construction costs. During the Covid-19 pandemic, there have been significant increases in house prices globally. This trend reflects both demand and supply factors. On the demand side, a number of surveys have shown a change in household preferences as a result of teleworking and lockdowns, which has translated into greater demand for better spaces at home. This change, in a context of favorable financial conditions, made it possible to sustain high house sales even in these times of crisis. On the supply side, the increase in construction costs, combined with the shortage of materials and higher transportation costs, has also influenced the recent rise in housing prices around the world.



Similarly, at a local level, home prices rose across the board. Although home prices in Chile grew at a real annual rate of 5% as of the second quarter of 2021 (figure II.9), they have evolved in line with the level of economic activity and, when compared with a broad sample of countries, local increases match those observed in other regions. This growth was observed across both geographic areas and types of dwellings. In turn, both new home prices and listed ads suggest that this price dynamism continued in the third quarter of this year.

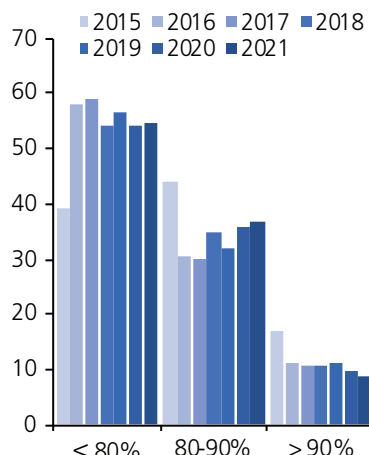
This price increase has occurred in a context of favorable financing conditions, which have recently reversed sharply. Until the third quarter, mortgage granting conditions remained largely unchanged as compared to the previous year (Chapter III). Thus, the share of amounts being financed with a loan-to-value (LTV) ratio between 80% and 90% remained stable and, although interest rates rose, as of September they were still below their historical average (figure II.10). In this context, mortgage debt accelerated its growth as of March of this year, through higher loan amounts (figure II.17). This trend was in line with the recovery in economic activity, higher housing prices, and eased mobility restrictions, which allowed deeds to return to normal, as well as handovers of dwellings. However, more recently, the weakening of the local capital market has begun to tighten the conditions for granting mortgage loans, a situation that could worsen in the future. On the one hand, benchmark rates (BCU, i.e., UF-denominated Central-Bank bonds) have shown significant increases in recent months, which are reflected in mortgage loans. On the other hand, recent restrictions on mortgage loan terms, rates, and LTV ratios could weaken housing demand and trigger price adjustments (Chapter III).

FIGURE II.9 HOUSING PRICES (*)
(annual change, percent)



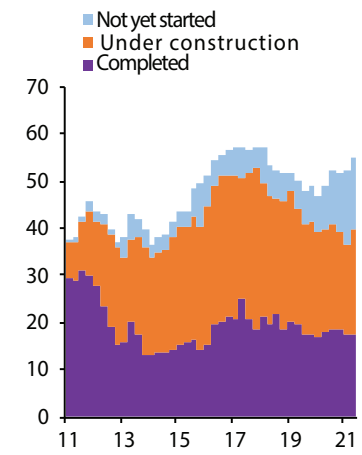
(*) Annual moving average
Source: Central Bank of Chile.

FIGURE II.10 LOAN-TO-VALUE RATIO (*)
(percent of mortgage deeds)



(*) Data as of December of each year. 2021 with data as of June.
Source: Central Bank of Chile based on information from the Tax Authority (SII).

FIGURE II.11 NEW HOME SUPPLY IN SANTIAGO (*)
(thousands of units)



(*) Annual moving average.
Source: Central Bank of Chile based on information from the Chilean Association of Construction Firms (CChC).



The proportion of homes available for sale rose since the last Report, but with a low share of finished stock. The supply in the Metropolitan Region exceeded 55 thousand units, driven by projects under construction and not yet completed. The percentage of homes for immediate handover remained low, which would allow real-estate companies to better manage their inventories (figure II.11). Meanwhile, demand for new homes remained dynamic in the second quarter, matching their levels observed prior to the social conflict in late 2019, and with a high share of pre-sales and under construction. Fewer contract cancellations and a recovery in sales by FMC-reporting companies allow them to keep up a planned pace of deeds and reduce disruptions to cash flows. The recent changes in mortgage loan financing conditions could increase contract cancellations and lead to an increase in the available stock, thus affecting the ability of companies to meet their commitments. This situation occurs in a context where lending to these companies could also become more restrictive.

Since the last FSR, greater dynamism has been noted in the residential leasing market. According to data from listed ads, rents rebounded in the third quarter of this year, in a context of lower listing rates^{2/} (figure II.12). Particularly, the house segment posted real annual growth of almost 10%, driven by the change in household preferences, which are moving towards more spacious units. The apartment segment, on the other hand, showed lower listing rates and a slight recovery in prices, with real annual growth close to 3%. This recovery reduces the pressure on leveraged retail investors, who could depend on leasing to meet their mortgage commitments. In this sense, borrowers with more than one loan and borrowers with more than one home in the same region retained their share stable at 30% and 20% of the mortgage debt stock, respectively.

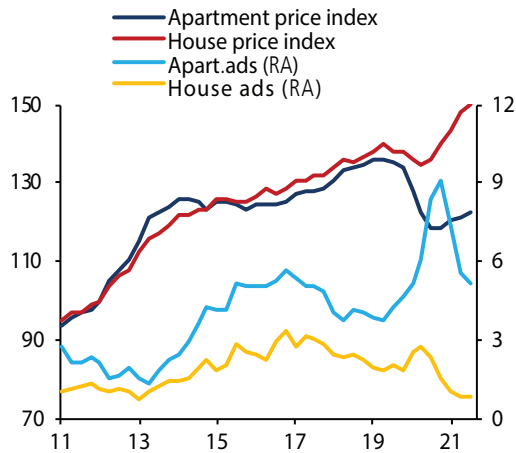
In the non-residential real-estate sector, the office and retail-shop segments have shown increases in vacancy as a result of the pandemic. Vacancy rates for office and retail-shops space have increased since the previous FSR, as well as the demand for warehouse leases (figure II.13). Mobility and capacity restrictions posed by the pandemic have reduced the demand for retail-shops and office space, thereby leading to higher vacancy rates. Particularly for offices, the greater availability was mainly explained by the freeing of square meters as people adapt to working from home. This poses a challenge for this segment, where adaptation to new requirements will be key to its future performance. In contrast, the warehouse leasing market has faced higher demand driven by the shift to online shopping and data centers. Regarding office prices in the Metropolitan Region, our internal estimates suggest that both leasing and sales prices saw annual declines during the first quarter of this year. Meanwhile, for commercial premises, after a sharp drop that started in late 2019 and continued during 2020, sales prices reportedly recovered at the beginning of this year.

Difficulties in access to mortgage loans and higher financing costs could weaken demand for housing and affect the liquidity of companies in the industry. The deterioration of the local financial market is reflected, in part, in the recent increases in interest rates and in the announced restrictions on mortgage lending. These difficulties in accessing credit reduce borrowing capacity and thus weaken the demand for housing. This weakness could reduce sales and increase the number of contract cancellations, which could deteriorate the liquidity and payment capacity of companies in the real-estate sector. For construction and real-estate companies, there has also been a tightening of credit standards and demand. In October, the Bank Lending Survey revealed that this change was mainly due to the banks' perception of a less favorable environment and, to a lesser extent, to higher funding costs. The main adjustment to the restrictions were higher spreads charged, shorter maturities, and smaller amounts.

^{2/} The ads rate is used as a measure of slack in the real-estate sector since, similar to the vacancy rate, it measures the degree of vacancy (vacant units over total units) in the market over a certain time span.

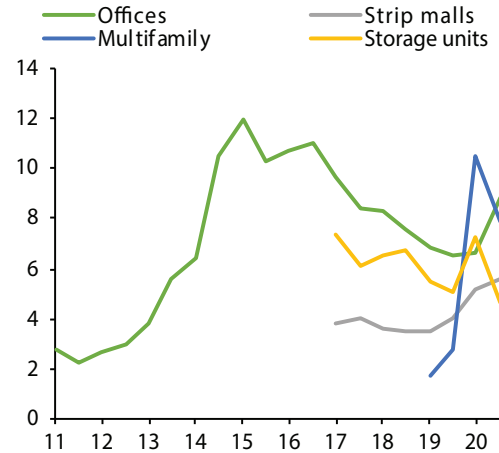


FIGURE II.9 RENTAL PRICES AND LISTING RATE
(base 2012:T1=100, percent)



Source: Central Bank of Chile based on data from Mercado Libre.

FIGURE II.13 VACANCY RATE
(percent)



Source: Central Bank of Chile based on data from CBRE and GPS.

Sharp increases in the cost of financing and/or a rise in inflation would erode the agents' ability to repay.

Rising interest rates and the recent constraints on mortgage loan terms could increase the financial burden of new borrowers. In addition, borrowers who in the past took loans at mixed or variable rates would face an increase in their financial burden when the new, higher rates impact their loan monthly payments. In turn, given that mortgage loans and their installments are denominated in real terms (UF-indexed), higher inflation represents a risk due to their permanent effect on the financial burden (see section on stress testing for households). This would affect all borrowers, but mostly those whose salaries are not inflation-indexed. Internal estimates suggest that about 60% of salaried employees get some kind of CPI adjustment (January 2008 and September 2013 MP Reports).

Regarding the non-residential sector, the adaptation of the office segment to the new requirements stemming from the pandemic will play an important role in its capacity to face price adjustments.

Structural changes derived from the new way of working could affect the value of assets in the non-residential real-estate industry. The reduced liquidity of these assets could represent a vulnerability, since it could potentially amplify any possible price adjustment. In this context, the lower inflow of new square meters in the office segment in recent quarters could be a mitigating factor in the face of the deteriorated demand.



HOUSEHOLDS

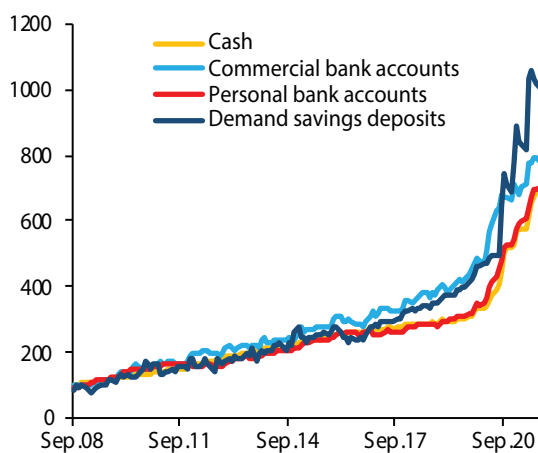
Since the previous FSR, the household sector has remained highly liquid, with low borrowing needs.

While the easing of the lockdown measures stimulated economic growth, the recovery of the labor market has not kept up with the same pace. Nearly 1.8 million jobs had been lost by April 2020, and nearly one million had been recovered by January 2021. Meanwhile, at the close of this Report, there was still a gap of approximately 670,000 jobs as compared to the pre-pandemic period. This difference is largely due to the lower labor participation rate in a context where activity is already back to its pre-pandemic level (September 2021 MP Report). In addition, the difference in the employment of salaried workers between the employment surveys and the administrative records is significant—close to 280 thousand people. Concerning other OECD countries, the drop in employment was not as dramatic and, accordingly, several economies have already resumed their pre-pandemic employment levels. Meanwhile, since the last FSR, the number of employed persons who experienced a halving or more of their salaries has stabilized from 18% to 14% of employed persons, which is an improvement over the 33% seen in May 2020.

The high liquidity observed since mid-last year has continued to increase, mainly in demand deposits and savings.

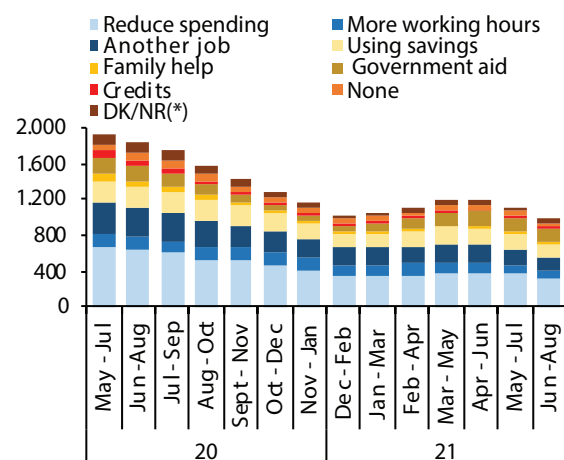
Supportive policies raised liquidity levels to compensate for the adverse shock that cut down incomes, thus reducing individuals' financing needs. This, coupled with the reduced loan supply, resulted in a slowdown in household debt. More recently, within the monetary aggregates, the one that contains the most liquid money (M1) shows a slight decrease but still holds historically high numbers. In terms of its structure, the presence of all its components has increased, with a greater concentration in demand deposits and savings (figure II.14). In this context of high liquidity available, financing needs have decreased. The National Employment Survey shows that, in the face of a potential future negative shock, households that have experienced a drop in income would adjust by reducing expenses and depleting savings while leaving the possibility of taking on debt as a last resource (figure II.15).

FIGURE II.14 M1 COMPONENTS
(index, Jan.08=100)



Source: Central Bank of Chile.

FIGURE II.15 FUTURE REACTION TO PERSISTENT LOWER HOUSEHOLD-HEAD INCOME
(thousands of people)



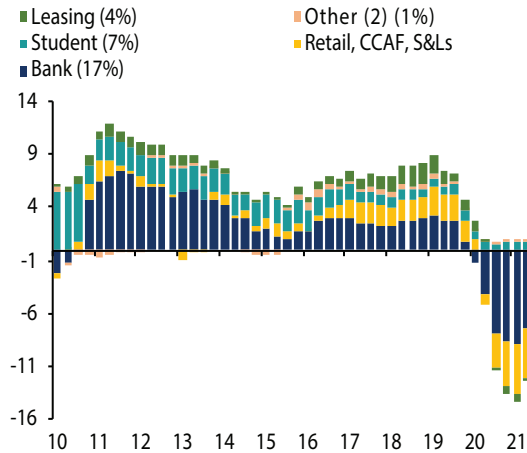
(*) Don't know/No response.

Source: Central Bank of Chile based on information from the National Statistics Institute (INE).



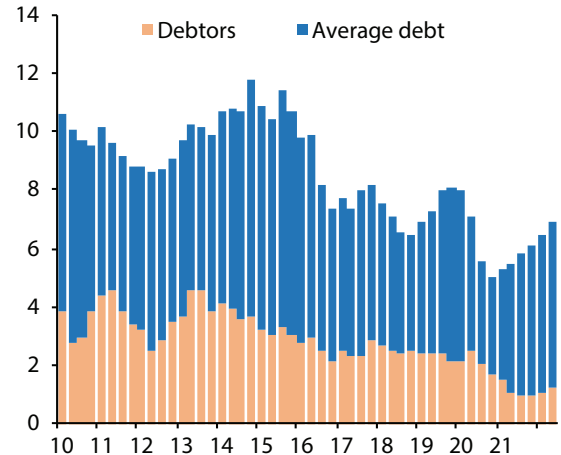
Compared to the previous FSR, non-mortgage debt continued to decline, but at a slower pace than in previous quarters. In contrast, mortgage debt expanded faster. In line with the increase in household liquidity and the decrease in the supply of consumer loans by banks, non-mortgage debt fell by around 10% in real annual terms, with the bank component coming first, followed by liabilities with retailers, clearing houses, and savings & loans cooperatives (figure II.16).

FIGURE II.16 NON-MORTGAGE DEBT (*)
(annual change, percent)



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

FIGURE II.17 BANK MORTGAGE DEBT (*)
(annual change, percent)



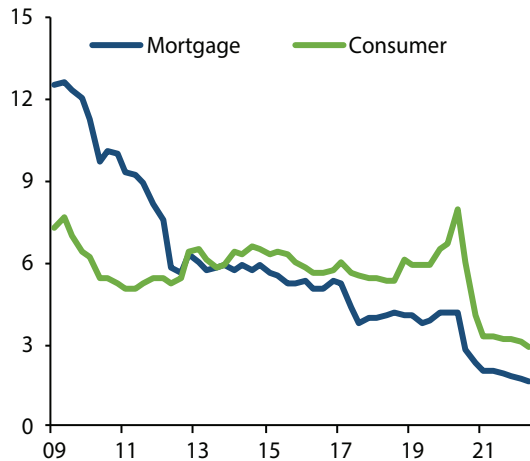
(*) Monthly data as from March 2021.
Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).

Since the beginning of this year, bank mortgage debt has expanded further, driven by the increase in housing prices and the improvement in the short-term outlook for economic activity. At the close of this Report, its growth is near the level of the pre-pandemic period (figure II.17). This increase has been mainly due to increases in the average debt of those who already had debts, and not to the influx of new debtors.

More recently, there has been a greater share of mixed- or variable-rate loans. In contrast to what has been the norm in the local market, in which the vast majority of loans are granted at fixed rates, during 2020 almost 20% of bank mortgage financing was granted at mixed or variable rates. Although these loans still account for a smaller fraction of total housing debt (9%), the trend should be monitored since these debtors could face unexpected increases in their financial burdens, particularly considering the current scenario with higher rates for longer terms and the new restrictions on financing in this portfolio by banks.

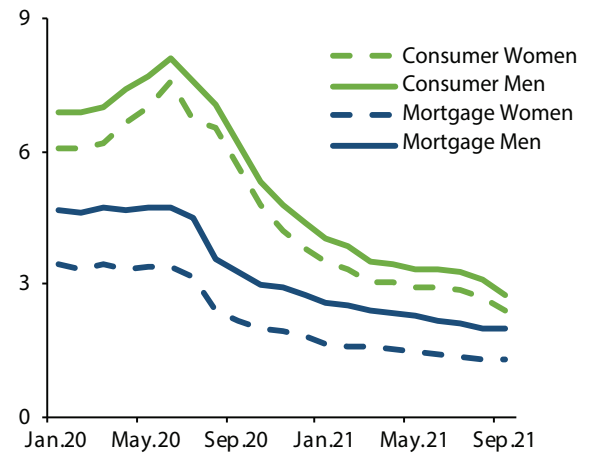


FIGURE II.18 BANK DEFAULT RATE (*)
(percent of debtors by portfolio)



(*) Monthly data as from March 2021.
Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).

FIGURE II.19 BANK DEFAULT RATE
(percent of debtors by portfolio and gender)



Source: Central Bank of Chile based on information from the FMC and the Local election service (Servel).

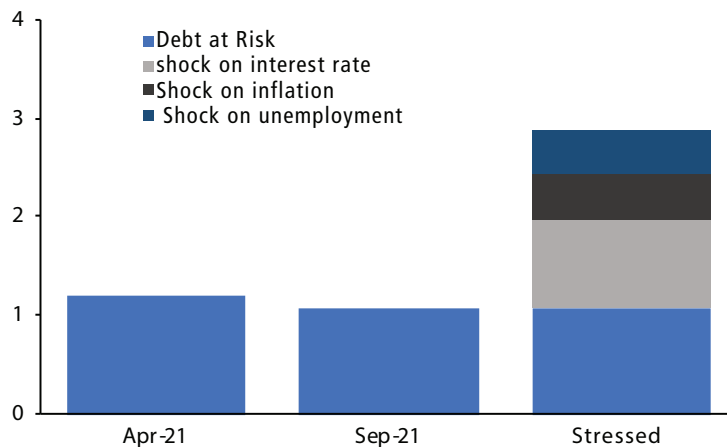
Support policies continued to contribute to household finances and an overall improvement in the repayments picture. After the increase in April 2020, default rates have declined systematically, reaching new historical lows at the close of this Report. In the case of consumer defaults, there was a significant reduction around the time credit rescheduling began and when the first withdrawal of pension funds was paid. Subsequent withdrawals had a limited impact on reducing defaults. Concerning mortgage debt, the reduction was also due to voluntary rescheduling of loans (figure II.18). The persistence of the risk of default when rescheduling, which can be triggered once the grace periods expire and debtors must once again face the payment of their debt, deserves special attention. Evidence has it that, at that time, the probabilities of default for the different loans increase considerably, so it is necessary to monitor their evolution (Bergant and Kockerols, 2020; Córdova and Toledo, 2020). Meanwhile, non-payment of essential utilities has increased following the enactment of Law 21,249, which forbids the suspension of certain utilities in the event of non-payment for a group of users. Since its enactment in August 2020, there has been an increase in the average amount of delinquent debt in power, sanitation, and gas network utilities (statistical appendix).

By gender, women continue to show better repayment behavior than men. However, the gap has been narrowing due to a greater drop among the latter since the implementation of support policies (figure II.19 and 2021 Report on Gender in the Financial System, FMC). This is so despite the fact that women appear in a relatively more vulnerable labor situation (September 2021 MP Report) and with a greater depletion of pension savings as reported by the Superintendency of Pensions.

Since the previous FSR, there have been no major changes in household indebtedness and debt service, which have stabilized at pre-pandemic levels. The median bank leverage stabilized around the levels reported in the previous FSR, around six times the monthly labor income. Similarly, debt service remained at around 23% of monthly labor income (excluding direct transfers). Thus, the portion of people under greater financial stress, defined as those who spend over 40% of their labor income on debt repayment and who have liabilities amounting to six times their income, remained at around 21% of the total number of bank debtors. This stability is a direct outcome of the policies that are still active and translates into low credit risk pressure in the short term (statistical appendix).



FIGURE II.20 HOUSEHOLD BANK DEBT AT RISK (*)
(percent of GDP 2019)



(*) Amount owed by each person weighted by their individual probability of default within the next year, except for the inflation shock where the horizon is three years.
Source: Central Bank of Chile based on information from the FMC, Labor Authority, Ministry of Economy and Tax Authority (SII).

STRESS TESTING FOR HOUSEHOLDS

Given the recent events that have affected the capital market, and in order to evaluate the financial condition of households, the stress scenario is based on three shocks. The first one is an increase in the national unemployment rate to 15% in one year. In the second one, a 300bp rate increase shock is considered for consumer loans and 100bp for mortgage loans. Finally, the third scenario models a 5% annual inflation shock for three years running. The addition of these two latter scenarios responds to the recent dynamics of rising rates and inflationary pressures resulting from the structural changes to the local capital market, caused by a forced settlement of assets. Given the high degree of wage indexation in Chile—close to 60% of salaried employees receive some kind of CPI adjustment (September 2013 and January 2008 MP Reports)—, it is not considered to be a direct effect of inflation on income. However, people in the informal sector may be more exposed to income loss through this channel.

The results show that the combined action of higher interest rates and higher inflation is, for the first time in a long time, larger in magnitude than the effect of higher unemployment on credit risk. The expansion of mitigators and job creation make the starting point somewhat lower than seen in the previous FSR. Thus, there is a slight reduction in bank debt-at-risk held by households, from 1.2 to 1.0% of GDP (figure II.20). Under the scenario with a 15% unemployment rate, debt-at-risk would increase by 0.4pp of GDP. The second shock considers a 5% annual inflation growth for three consecutive years, which increases the debt service of all agents that hold liabilities in UF; this shock adds debt-at-risk by 0.2pp of GDP. The third shock considers a 300bp increase in rates for consumer loans and 100bp for mortgage loans and assumes that loans are eventually refinanced at these new interest rates, thus increasing the financial burden of those who take out new loans and those who already had them. This shock raises debt-at-risk by 0.9pp of GDP, the highest impact among the three shocks.

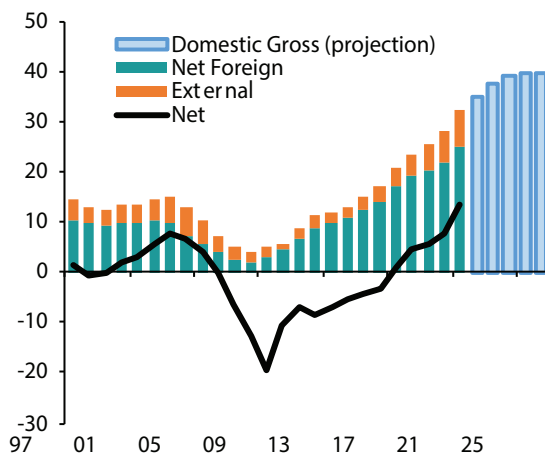


The strong policy reaction has kept default in check. However, increased short-term liquidity has come at the cost of reduced long-term savings. Currently, structural changes to the capital market jeopardize the cost and access to credit for individuals in the future. Since the previous FSR, mitigators such as the employment protection law and direct transfers still have a greater relative impact in mitigating credit risk. Meanwhile, the second and third pension fund withdrawals have had little effect in reducing default. In the current scenario, the main risk for the sector is the forced settlement of assets that could further deteriorate the local capital market, thus intensifying increases in financing costs and the price level of the economy. During this crisis, the buffers of both households and policy authorities have been reduced, as the underlying risks have not disappeared, and the capacity to mitigate future adverse events is weaker than before the pandemic.

CENTRAL GOVERNMENT

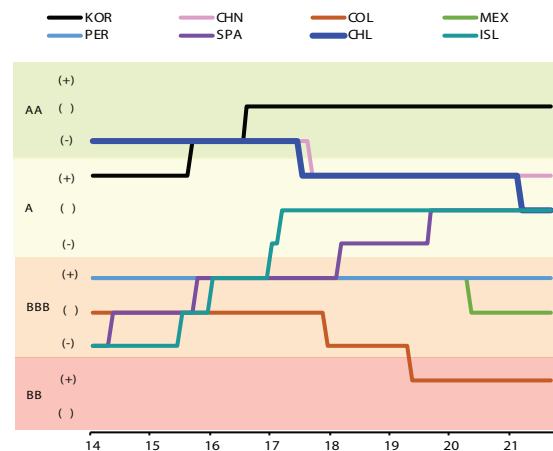
Fiscal support measures for households and SMEs helped contain the negative effects of the pandemic, but the space for the application of new countercyclical policy measures has shrunk. The policies implemented by the Central Government to cushion the consequences of the sanitary emergency, implied a significant increase in sovereign indebtedness. As of June 2021, gross debt was 33.1% of GDP and is expected to reach 34.9% of GDP by the end of the year (figure II.21). This would imply a 2.4pp increase as compared to its December 2020 value. The increase at June is explained by greater foreign indebtedness, which reached 9.7% of GDP (vs. 7.5% in December 2020), and a drop in the domestic component (23.4 vs. 25% of GDP in December 2020). In turn, the Central Government's financing needs required the settlement of financial assets. Accordingly, between December 2020 and August 2021, the Economic and Social Stabilization Fund (FEES) fell from US\$8.9bn to US\$2.9bn, while the Pension Reserve Fund (PRF) fell from US\$10.1bn to US\$7.5bn, which represents a drop from 7.5% to 4.1% of GDP of the total Sovereign Funds. Hence, the Central Government's net debtor position stood at 15.6% of GDP in June 2021 as compared to 13.4% in December 2020. Looking ahead, and according to information from the Budget Directorate, it is expected that the gross sovereign debt will continue its upward trend in the coming years, to levels close to 40% of GDP by 2024–2025. This will reduce the Treasury's capacity to implement counter-cyclical policies in the face of possible disruptive events.

FIGURE II.21 CENTRAL GOVERNMENT DEBT
(percent of GDP)



Source: Central Bank of Chile based on information from DIPRES.

CHART II.22 S&P RISK RATING
(categories)



Source: Central Bank of Chile based on information from Bloomberg.



Higher sovereign indebtedness could further worsen the risk perception of the local economy, which could elevate the cost of financing even more. The deterioration of the fiscal position in recent years has led to changes in Chile's credit rating. Thus, in the last five years, Chile shifted from having a credit standard similar to Korea (AA-) to one similar to Spain or Iceland (A) (figure II.22). This, in terms of Credit Default Swaps (CDS), has implied an increase of almost 30bp in the last two years. All in all, such negative impact has translated into a higher cost of sovereign financing, which in terms of the budget, could represent an additional expense of nearly US\$2 billion per year. Thus, the diminished fiscal strength could result in additional increases in the perception of risk and higher financing costs, which would affect not only the Treasury but also households and businesses.



BOX II.1:

Financial position of firms and underlying risks

The unusual extent of the real shock caused by the Covid-19 pandemic led to the deployment of support policies to facilitate agents' ability to compensate for lost income and contain potential effects on financial stability. The three policies most widely used by firms in Chile are Fogape-Covid loans (group F, the nomenclature is the same throughout this box), the Employment Protection Law (E), and voluntary loan rescheduling (R). These policies proved effective in reducing financial and labor expenses, and in ensuring a steady flow of credit to those who needed it. According to the September 2021 MP Report, the measures applied were effective in mitigating the fall in output. In this box, they are addressed from the financial point of view of firms, assessing their use, impact on financial burden, and credit risk.

The credit granting and rescheduling policies were not the same for everybody but were implemented through the market and conditional on risk assessments. Thus, the banks were in charge of managing and assessing how these loans were granted, although the Fogape-Covid program involved state guarantees. Likewise, in the case of rescheduling, the policy came from a temporary change in the CMF's regulations on allowances, which made these operations easier for bidders, who voluntarily assessed the extensions for each debtor who requested one. This contrasts with the non-market-mediated implementation seen in other jurisdictions (Chapter V).

Since firms were able to use these policies individually or in combination, it is possible to identify eight groups according to the configuration used, including those firms that chose not to use any of these programs (N)^{2/}. Companies that made use of Fogape-Covid loans, either alone or in combination with another program, represent 37% of the total number of companies financed by banks and 31% of commercial bank debt as of the second quarter of 2021. In turn, companies that made use of the Employment Protection Law alone or in conjunction with another program accounted for 22% and 25%, respectively in number and amount. Companies that rescheduled loans showed the highest leverage among groups before the pandemic (figure II.6), representing 8% of the total and 33% of the debt. It is worth noting that half of the companies financed by banks did not make use of any type of support policy (51% in number and 42% in amount). In general, smaller, younger companies in the commerce, manufacturing, and construction industries are found to be making intensive use, which shows that they have been hit harder by the sales shock (Córdova, Toledo, and Vásquez, 2021).

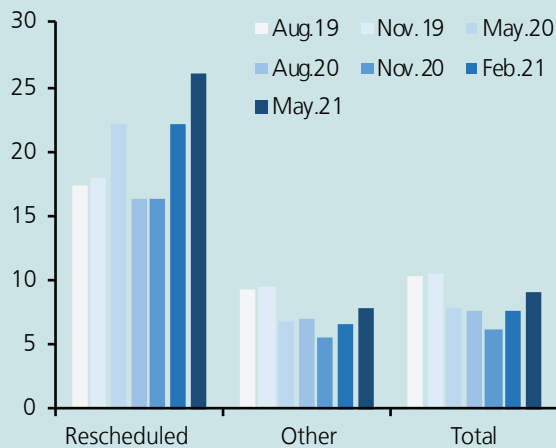
The financial position of those companies using the various policies evolved heterogeneously among the different groups of companies as they made their way through the pandemic. At the onset of policy deployment, early in the second quarter of 2020, there was a significant increase in leverage and financial burden on sales as compared to the pre-pandemic situation. Reschedulings succeeded in reducing the financing burden by extending it into the future, while Fogape credits provided liquidity by increasing indebtedness immediately, but keeping the financing burden unchanged for the duration of the grace period. Thus, the companies that postponed payments reduced their financial burden on sales temporarily and then experienced a growth in the

^{2/} Participation in one or more programs is constructed with the logic of having been part at some point since the beginning of each program.



indicator from the end of 2020 when the grace periods began to expire (figure II.23). In terms of leverage, the companies that borrowed from Fogape-Covid increased the most, with medium-sized companies increasing their indebtedness by four times at the beginning of the program, an expected result of the policy. The subsequent economic recovery has reversed much of this increase (Chapter II).

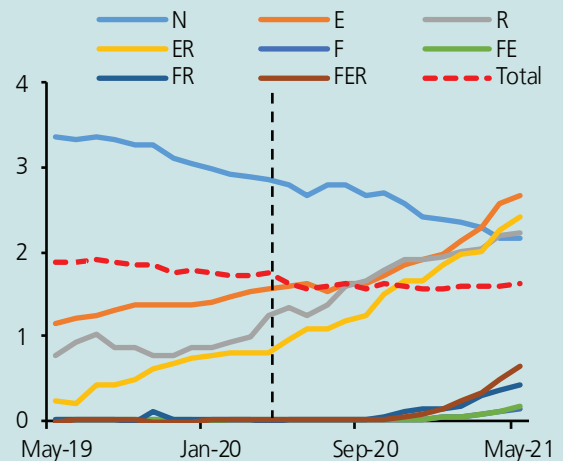
FIGURE II.23 DEBT SERVICE RATIO
(percentage of monthly sales, median)



(*) For bank-financed firms. Rescheduled also includes all combinations with other programs. Groups do not include individuals.

Source: Central Bank of Chile based on information from the FMC, Labor Authority, Ministry of Economy and Tax Authority (SII).

FIGURE II.24 DEFAULT RATE (*)
(percentage of commercial loans by group)



(*) F: Fogape-Covid credit, E: employment protection law, R: forbearance loans FE, FR, ER, and FER correspond to the respective combinations. N: does not access any of these three policies. Vertical line indicates the start of support policies. Does not consider individuals, only bank-financed firms.

Source: Central Bank of Chile based on information from the FMC, Labor Authority, Ministry of Economy and Tax Authority (SII).

Both before and after the start of the pandemic, credit has flowed mostly to companies with better payment history. Aggregate default has remained low and stable, with high heterogeneity among groups of companies both before and after the application of the policies (figure II.24). Those that received Fogape-Covid loans have displayed the best payment behavior both before and after accessing such financing. This contrasts with the companies that made use of the Employment Protection Law (E) and those that rescheduled loans (R). These groups showed relatively higher levels of default before the start of the policies, which was subsequently increased once the grace periods of the extensions expired. Materialization of default by these companies suggests that rescheduling is effective in reducing risk in the short term but does not eradicate it completely^{3/}. In turn, the term of the Employment Protection Law, the last policy in action among those discussed here, recently expired. Going forward, the evolution of economic activity and the recent structural changes in the capital market, which have implied increases in the cost of financing and inflation, will be crucial factors determining the evolution of these credit risk trends (Chapter I), particularly among companies that appear to have a higher prospective credit risk, such as those that have rescheduled quotas without accessing Fogape financing.

^{3/} Bergant and Kockerols (2020), and Córdova and Toledo (2020) provide historical evidence showing that the probability of default for those companies that reschedules decreases in the short term but increases again within 6 to 18 months after having rescheduled.



III. LENDERS

Since the previous report, credit continued to flow in line with the recovery of economic activity. Although delinquency remains low and stable, forward-looking measures account for risks ahead. Therefore, banks have been building up provisions to face possible disruptive events. Non-bank lenders have also shown signs of a recovery in their loans, with delinquency indicators remaining low. Stress tests show that banks are still highly solvent, with adequate buffers to face severe scenarios of further deterioration in economic activity and financial conditions. However, structural changes in the capital market have rendered banks more sensitive to financial market volatility, which may worsen in a scenario of greater uncertainty. In the short term, this has pushed up interest rates and tightened restrictions in access to credit, which may be even greater in the medium term.

BANKING SECTOR

Total bank credit has reversed part of its contraction of the first quarter of this year, while interest rates have risen across all segments, in line with the tighter financing conditions facing banks (figure III.1). Following the implementation of the "*Fogape-Reactiva*" program in February of this year, commercial credit has shown signs of recovery, hand in hand with an increase in GDP. As a result, its historical relationship with the economic activity began to converge, including a rebound in loans not linked to the program from July onwards (figure III.2 and statistical appendix). Meanwhile, interest rates on loans have risen since June, which is in line with the increases in rates for different terms. This credit dynamic is consistent with the slight recovery in demand, mainly for financing working capital. However, the latter has recently reversed, in a context where lending conditions have become more restrictive (figure III.3, statistical appendix and Chapter II).

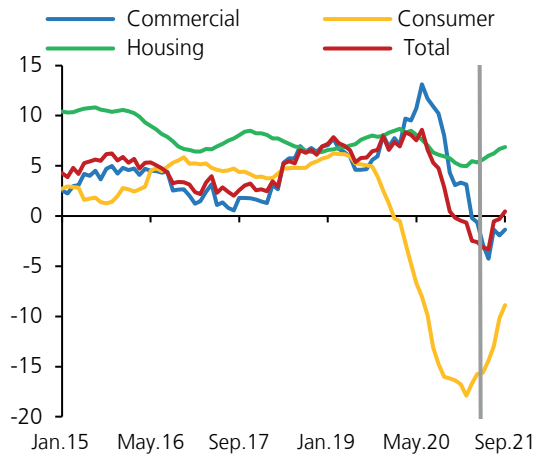
The consumer portfolio has stopped contracting recently. The lower demand for consumer credit observed in the first part of the year can be explained by the abundant liquidity available for agents, as a result of pension fund withdrawals and government aid programs (Chapter II). More recently, consumer loans have moderated their annual decrease, which is mainly explained by the moderation in revolving products, such as credit lines and credit cards, due to a lower comparison base (statistical appendix).

Housing loans have remained dynamic, but changes in the capital market have recently altered the structure of this segment. Housing loans have accelerated since the previous Report, with annual growth increasing. However, forced sales of pension funds have restricted long-term financing and kept uncertainty high (Chapter I). As a result, banks have tightened their lending standards, shortening the terms offered, raising the required down payments, and favoring variable or mixed-rate products (figure III.4). Despite an increase in interest rates associated with higher financing costs, the spread on the cost of funding, which is defined as the additional cost of risk charged to debtors, remains low and around the levels of the beginning of this year.

Although the delinquency of corporate and household portfolios has remained contained, the prospects of higher risk have led banks to build up substantial additional provisions. At the close of this Report, default levels are relatively stable in all segments, but the system's pace of increase in additional provisions continues to rise, reflecting higher risk expectations on the part of the banking system because of still high uncertainty (Chapter I). The share of substandard and non-performing loans, both individually assessed, has increased lately, while specific provisions have remained at 3% as of August 2021 (statistical appendix).

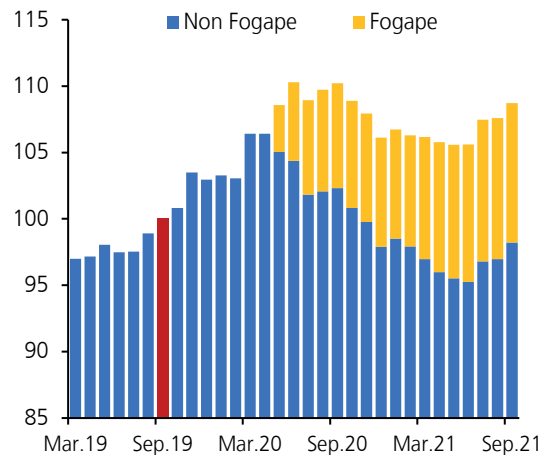


FIGURE III.1 GROWTH OF LOANS (*)
(real annual change, percent)



(*) Based on individual financial statements. Vertical line marks to statistical closing of previous FSR. Figures of September 2021 are preliminary.
Source: Central Bank of Chile based on information from the FMC.

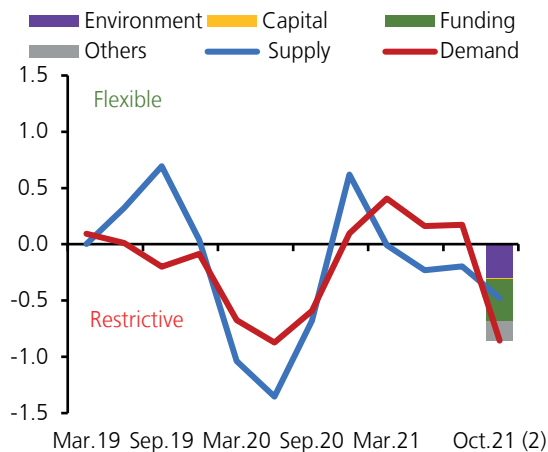
FIGURE III.2 COMMERCIAL LOANS (*)
(index 100 = sep.19)



(*) Figures of current year are preliminary.
Source: Central Bank of Chile based on information from the FMC.

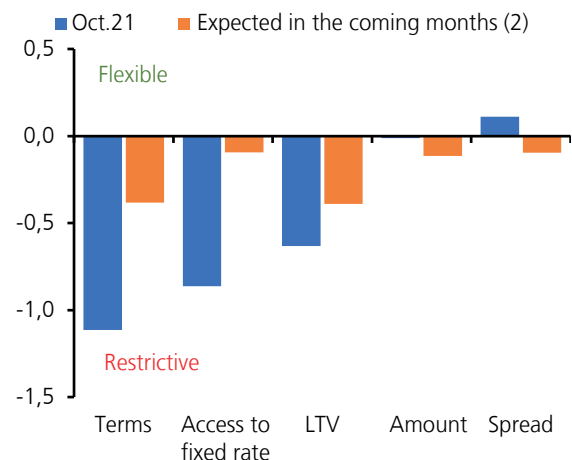
Likewise, to face possible sharp increases in default events or losses in the value of collaterals, additional bank provisions reached US\$1.45 billion as of August, their highest in its recorded past. It is estimated that, in the event of credit deterioration, additional provisions could buffer an increase in the probability of default of 3 pp on average (see statistical appendix). On the other hand, support programs contributed to reducing household portfolio delinquency indicators during 2020, which have remained stable most recently (Chapter II).

FIGURE III.3 CONDITIONS OF HOUSING LOANS (1)
(index)



(1) This indicator reflects the net value of the responses weighted by the bank's share of the commercial portfolio.
(2) Special survey on loan conditions.
Source: Central Bank of Chile.

FIGURE III.4 STANDARDS FOR HOUSING LOANS (1)
(index)



(1) This indicator reflects the net value of the responses weighted by the bank's share of the commercial portfolio.
(2) The difference between the loan's interest rate and the bank's funding cost.
Source: Central Bank of Chile.



Although the delinquency of corporate and household portfolios has remained contained, the prospects of higher risk have led banks to build up substantial additional provisions. At the close of this Report, default levels are relatively stable in all segments, but the system's pace of increase in additional provisions continues to rise, reflecting higher risk expectations on the part of the banking system because of still high uncertainty (Chapter I). The share of substandard and non-performing loans, both individually assessed, has increased lately, while specific provisions have remained at 3% as of August 2021 (statistical appendix). Likewise, to face possible sharp increases in default events or losses in the value of collaterals, additional bank provisions reached US\$1.45 billion as of August, their highest in its recorded past. It is estimated that, in the event of credit deterioration, additional provisions could buffer an increase in the probability of default of 3 pp on average (see statistical appendix). On the other hand, support programs contributed to reducing household portfolio delinquency indicators during 2020, which have remained stable most recently (Chapter II).

Currently, bank liabilities are made up of a higher portion of demand deposits as a result of pension fund withdrawals and there continues to be a high degree of the CBC's Financing Facility Conditional on Increased Lending (FCIC). Retail deposits of individuals and non-financial companies continued to increase their share in the liability structure of banks, reaching over 50% of the total. This has provided more resources, but in turn has implied higher technical reserves, which could not be directly translated into credit, so banks must maintain sufficient liquidity to cover these commitments. Interbank deposits and institutional financing, especially from Pension Funds, have reduced their relative share of banks' liabilities to less than 0.5% as of last June. On the other hand, the CBC's FCIC, which boosted the flow of credit during the pandemic, accounts for about 13% of liabilities and has a longer term to be amortized.

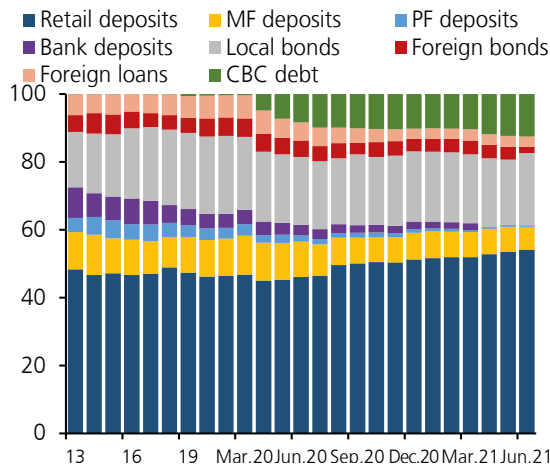
The higher portion of shorter-term obligations has shortened the duration of the bank's liabilities, making them more vulnerable to potential new increases in funding rates. Despite the high FCIC share, shorter maturity obligations prevail, reducing the duration of bank liabilities. Thus, the greater maturity mismatch magnifies the effects of interest rate shocks. This is because, in the event of an interest rate hike, liabilities will be rolled over at the new higher rate, but will be unable to be transferred to assets that are fixed to a longer term (Assessment of stress scenarios). Thus, a rate hike would reduce banks' spread, which is already tight (figure III.5).

The capital buffers of the banking system have stabilized since the previous FSR and their level is consistent with the minimums required by the new Basel III standards. The system's solvency has remained stable since the previous Report (14.6% in August) after increasing significantly between March of last year and January of this year. The higher capital buffers in that period were largely due to the 9% drop in risk-weighted assets (RWA), as a consequence of the decrease in the credit risk weighting of the portion of the loans covered by government collaterals and the contraction of the consumer portfolio.

Meanwhile, as of December of this year, capital adequacy will begin to progressively adopt the new Basel III standards established in the General Banking Law. Initially, the new requirements will cover the capital charges associated with operational and market risk, and the changes in the credit RWA, in addition to the partial requirements of the conservation buffer (Chapter V). Given the convergence to new standards and in order to strengthen their solvency position, several banks announced extraordinary capitalizations, including the recently enacted US\$1.5 billion capitalization for Banco Estado, which will help it comply with the regulatory limits under Basel III.

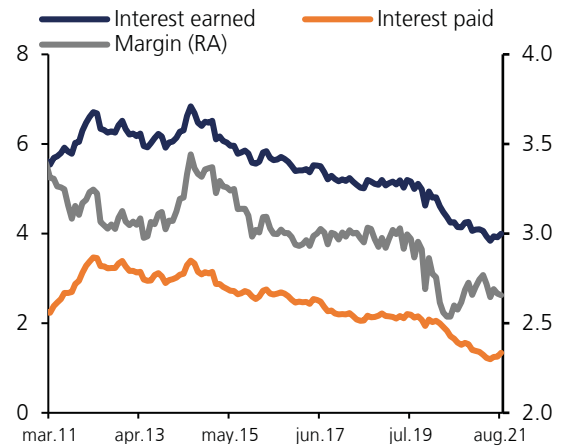


FIGURE III.5 COMPOSITION OF BANKING SYSTEM LIABILITIES
(percentage of liabilities)



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

FIGURE III.6 INTEREST MARGIN AND ADJUSTMENTS (*)
(percentage of assets)



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

STRESS TESTS^{1/}

Stress tests assess the impact of credit and market risks in extreme, but plausible, stress scenarios^{2/}. They use accounting data of the banking system as of June 2021 and consider two stress scenarios: i) a severe scenario with an abrupt contraction of economic activity, but with a recovery similar to those observed in previous crises and ii) an adverse scenario that considers a slightly weaker but persistent slowdown that would represent a relevant risk for the lending activity. The scenarios consider depreciation of the exchange rate and a shift of the spot and forward yield curves with an increase of 300 bp for the short-term interest rate and 100 bps for the long-term rate. Meanwhile, currency risk includes an exchange rate variation of 16% in a two-week term^{3/}. In addition, due to the policies applied during the period, and as in the previous test, the increase in additional provisions is added, treating them as specific^{4/} and adjustments for government-backed loans are reversed, and they are now considered as a traditional commercial portfolio, in terms of their provisions and their impact on the RWA.

^{1/} This tool estimates credit risk by using a model that relates the expense on loan loss provisions to macro-financial factors, such as economic activity and interest rates. The estimation of market risk considers the exposure to currency and interest rates (separated into valuation and repricing). Consequently, they should not be considered as forecasting exercises.

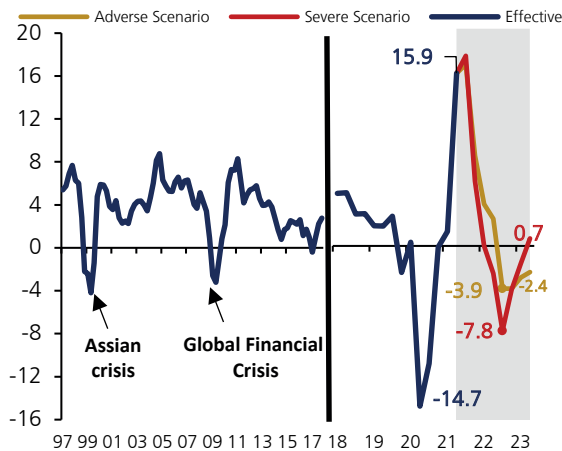
^{2/} Based on the methodology described in the FSR for the second half of 2013 and in Martínez et al. (2017a). Both the analysis and its results are reported to the FMC on a regular basis.

^{3/} Because of the current context, from June 2021 to August 2021, increases of 158 bp and 179 bp in 10-year rates in UFs and pesos, respectively, 133 bp and 286 bp of short-term rates in UFs and pesos, have been observed, as well as a 10.6% depreciation of the currency. It could thus be inferred that these stress scenarios would be at the bottom of the possible variations. However, for the market risks computed in this exercise, what matters is the fluctuations that occur in shorter periods, where the bank has no room to accommodate and, therefore, records losses. Thus, the configuration is still valid and informative about the strength of the banking system. Something different happens with credit risks, which take a longer time to surface, but can have an impact within the horizon of this exercise. In this sense, as will be mentioned below, complementing the exercise presented here, it is useful to refer to the impact of interest rates and inflation on household and corporate debt-at-risk (Chapter II).

^{4/} Although the transformation to specific of additional provisions has zero net effect on expenditure, they are deducted as part of the banks' effective net worth.



FIGURE III.7A ANNUAL GDP GROWTH (*)
(percent)



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

FIGURE III.7B REAL GDP (*)
(index, 100 = 2019.Q3)



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

Based on the above, both scenarios show a significant decline in output in the coming quarters, with growth converging towards 2023. The severe scenario features a sharp contraction starting in the fourth quarter of 2021 and a growth rate that tends to 1.4% in the next three years (figure III.7a). In turn, the adverse scenario, corresponding to the 5th percentile of the September 2021 MP Report projections, shows a slow but persistent fall in economic activity (figure III.7b).

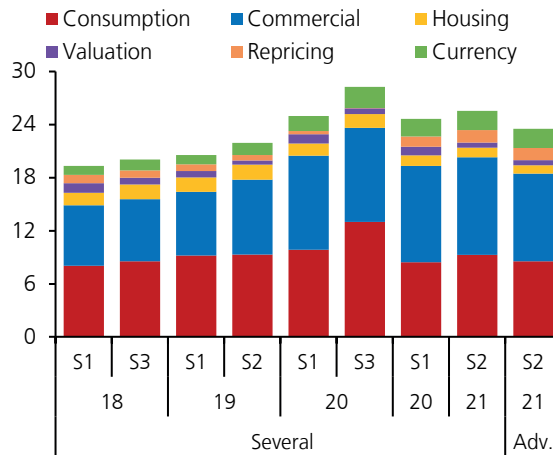
Results show a high credit risk, even higher than in the previous test. In particular, the risk of the commercial portfolio is expected to remain high, complemented by an increase in the risk of the consumer portfolio (figure III.8). This last fact is explained by a lower contraction of credit in this segment, which shows a greater deterioration. Thus, the exercise estimates a potential loss of total loans under a severe scenario corresponding to 21.4% of the system's capital, which represents an increase of 0.9 pp in relation to the previous test. Likewise, credit risk in the adverse scenario would reach 19.4% of capital, higher than the 16.6% of the previous test and which is close to the levels of the severe scenario. This would suggest a greater vulnerability of the system to an extension of the low levels of economic activity.

Market risk shows an increase due to higher currency and interest rate risk, the latter due to a shorter duration of banks' liabilities. In terms of market risk, currency risk increased with respect to the previous test, due to the greater mismatch in foreign currency, which makes the system susceptible to abrupt appreciations^{5/} (figure III.8). Likewise, with the shorter duration resulting from the change in the funding structure of the banking system, the repricing risk increases, particularly for some banks that are more exposed to short-term funding (figure III.9). Added to this is the possibility that higher demand deposits, resulting from withdrawals of pension savings, be transformed into short-term liabilities, and pressures to refinance debts continue. Thus, withdrawals have a double effect: on the one hand, they require that a high proportion of short-term funding be maintained, which could continue in similar windows, while at the same time banks have less funding available for longer maturities. This effect could increase significantly if the increase in the cost of funding is not successfully passed on to their assets, due to an increase in default or a macroeconomic scenario that implies lower demand for loans.

^{5/} The asset in foreign currency mismatch on the balance sheet is exposed to an appreciation of the exchange rate, while the liability mismatch is exposed to a depreciation.

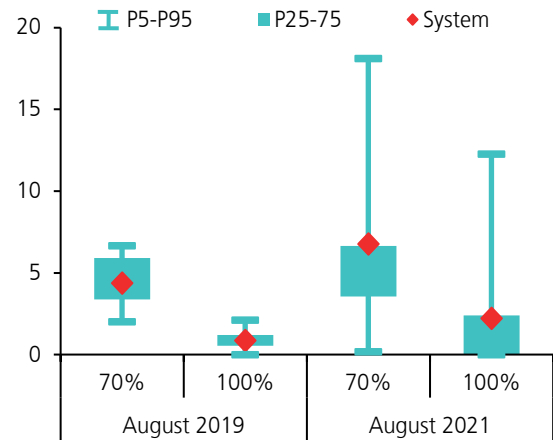


FIGURE III.8 SYSTEM CREDIT AND MARKET RISK
(percentage of base capital)



Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).

FIGURE III.9 REPRICING RISK BY ASYMMETRY FACTOR
(percentage of base capital)



Source: Central Bank of Chile based on information from the Financial Market Commission (FMC).

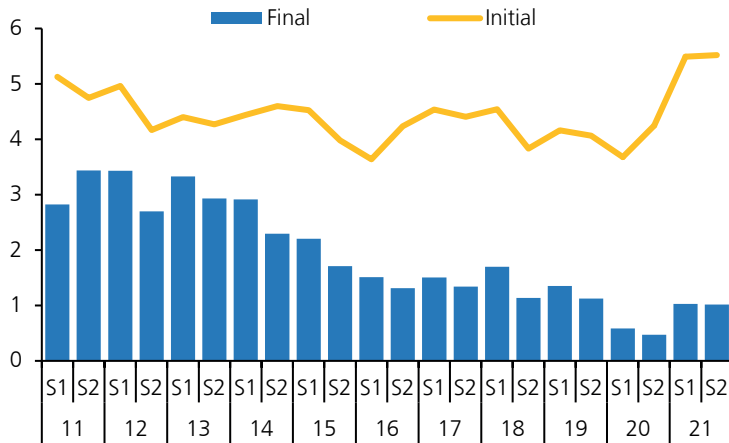
However, the initial recovery of profitability and high solvency, despite the higher estimated risks, keep the effects of the stress scenario under control. As compared to the previous test, the initial return-on-equity (ROE) rose from 9.1% to 15.8%, thereby increasing its capacity to compensate for the increase in losses, while the CAR remains at 14.6%. Even so, within the system, banks that together represent close to 91% of total core capital would exhibit negative returns in the severe stress scenario, similar to the 93% of the previous FSR test (statistical appendix). In the adverse scenario, this value would reach 66% of core capital. In this context, the high solvency under the severe scenario is slightly higher than in the previous test (statistical appendix). Thus, the impact of the severe scenario on capital decreases slightly from 4.4 to 4.3 pp, but remains high relative to previous versions. Likewise, the result shows a lower CAR distribution under the adverse scenario than the initial one, although higher than that of the severe scenario. Thus, capital buffers, which remain after applying shocks and estimating risks, are at levels similar to those of the previous period. However, they remain low compared to previous tests (figure III.10)^{6/}.

Notwithstanding the above, the situation in recent months has presented some changes related to the weakening of the capital market which, if not reversed, could increase the estimated risks. As noted, so far this year, the deterioration of the capital market has translated into greater volatility of financial variables, a sharp depreciation of the peso, and an increase in interest rates and inflation (Chapter 1; September 2021 MP Report). These increases could imply an increase in market risks higher than estimated in the presented tests, but still at limited levels. However, the greater difficulty in refinancing debts could imply a significant reduction in the payment capacity of households and companies, which has not yet become visible (Chapter II).

^{6/} Although the scenario of additional deterioration of financial conditions observed since June to date entails higher repricing and credit risks, this does not compromise the solvency of the banking system for the time being, and its aggregate effect is rather limited, given the adjustments made by the banks. However, it should be noted that more extreme scenarios of capital market disruption have not been applied due to the possibility of liquidation of the banking system. The possibility of additional fund liquidations, which would entail non-linearities and effects that would be difficult to quantify, has not been applied.



FIGURE III.10 CAPITAL BUFFERS UNDER SEVERE STRESS SCENARIO (*)
(percent of risk-weighted assets)



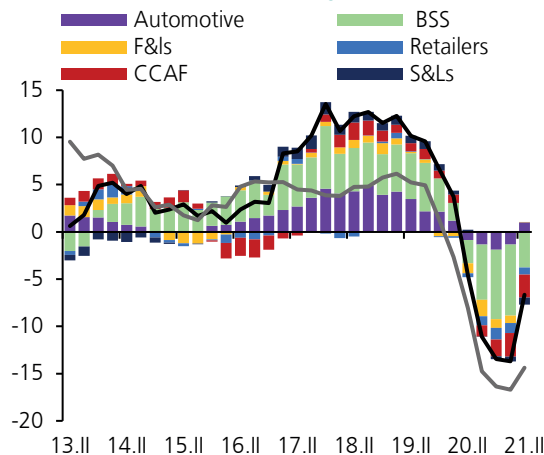
(*) Excess of effective equity above regulatory minimum. Consider the specific limits of each bank. From 2021 onwards, consumption BSSs are included.

Source: Central Bank of Chile based on information FMC.

NON-BANK INSTITUTIONS ^{7/}

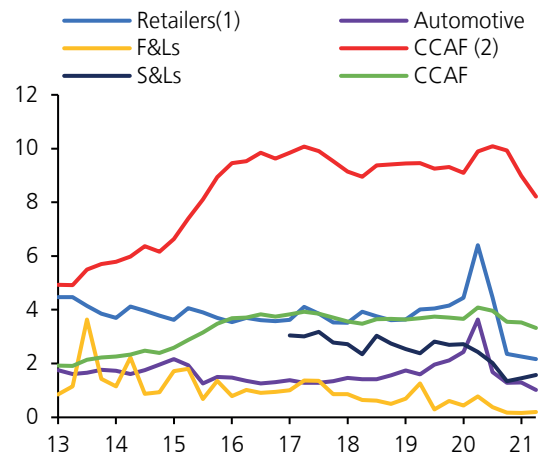
NBLs have reversed the downward trend of their loans in the consumer segment more than bank loans have. Consumer loans from the different NBLs have reduced their decline in the second quarter of this year due to the impact of the bank-support companies (BSSs) and companies that grant automobile loans (figure III.11). Regarding banks' exposure to the consumer segment, it is reduced mainly by the contraction of the parent companies' own loans

FIGURE III.11 CONTRIBUTION TO GROWTH IN NBLs LOANS
(real annual change, percent)



Source: Central Bank of Chile based on information from the FMC and the Superintendency of Social Security (SUSESO).

FIGURE III.12 DELINQUENCY RATE (90-180 DAYS)
(percent of loans)



(1) Retailers include BSSs. The arrears of BSSs were obtained from the consolidated and individual financial statements of the pertinent parent companies.

(2) This includes over 180 days of arrears.

Source: Central Bank of Chile with data from the FMC and SUSESO.

^{7/} Non-bank lenders provide loans to households and businesses. These organizations include bank-support companies (BSSs), retailers, family compensation funds (CCAFs), savings and loans cooperatives (S&L), and entities that offer factoring and leasing (F&L) as well as automobile loans.



and, to a lesser extent, by the decrease in exposure through commercial loans to NBLs. The latter component has continued to shrink, reaching 0.8% of bank assets in the second quarter of 2021.

Meanwhile, the latest portfolio delinquency records show a significant drop, especially for retailers loans (department stores). As in the banks' consumer portfolio, the credit quality of loans continues to improve, where automotive and CCAF loans stand out. As noted above, greater liquidity as a result of the aid programs has also contributed to keeping delinquency indicators low (figure III.12 and chapter II).

RISK FACTORS

The increase in interest rates and the planned termination of extraordinary liquidity facilities require correct management of the banks' liquidity position. The FCIC has been an important source of financing to facilitate the flow of credit in the economy, which has helped to navigate a devastating crisis. The resources provided have become an important part of the liabilities of some banks, a long-term obligation that needs to be properly managed. It is therefore particularly important to ensure adequate planning and management for the maturity of the liquidity credit line (LCL) in March 2022 and the FCIC in 2024, in view of the expiration of these facilities. This should also consider an increase in debt refinancing costs, given the increase in short- and long-term rates.

There is still the risk of a further deterioration in the capital market, which would exacerbate credit constraints. The shorter duration of bank liabilities has significantly aggravated their sensitivity to interest rate shocks. Among other effects, it has caused the adoption of greater restrictions on the granting of housing loans, by lowering their maximum durations and offering mixed or variable rates, which could affect access to this type of long-term credit in the near future.

A relapse in the pandemic's progression, higher interest rates, and higher inflation could deteriorate the quality of the loan portfolio. Although the easing of sanitary restrictions and the mitigation policies have favored a faster than expected recovery in economic activity, there are still risks that jeopardize this higher growth and that could increase the probability of default on the loan portfolio. There are combinations of the above factors that could affect the repayment capacity of companies, especially those most affected by the sanitary crisis, which rescheduled their liabilities, took advantage of the employment protection law, or obtained loans through the Fogape programs (Covid and *Reactiva*). Furthermore, the increases in interest rates and inflation could affect the payment behavior of households, especially those with higher financial burdens in terms of their income (Chapter II).

The implementation of Basel III, as of December of this year, will play a part in the accumulation of capital buffers to improve the resilience of banks to future perils. However, the occurrence of more severe stress scenarios, where the recovery of the economy would be much slower than expected, would generate significant impacts on profitability and the ability to increase the capital base of some institutions (see Stress Test Results Section). Therefore, profit capitalization decisions must be implemented in line with the recent announcements of some banks. This would allow for the generation of buffers capable of sustaining credit growth and coping with future disruptive events.



IV. THE FOREIGN EXCHANGE MARKET IN CHILE

The foreign exchange market determines the exchange rate on a daily basis, which has a direct impact on the prices of financial assets and tradable products that people consume. The volume of transactions that take place in this market is relevant, with a daily average of subscriptions of spot operations and FX derivatives of more than \$US9 thousands of millions in the 2020. Therefore, for the CBC it is of utmost importance that the operation of this market be carried out under the proper conditions of competition and security. This chapter presents the conceptual and operational framework under which the local FX market operates. First is a description of the most relevant characteristics of a floating exchange rate regime. Next is an analysis of the evolution of agents' foreign exchange exposure since such regime was adopted. Follows a description of the main aspects of the local FX market and how they compare with the international experience in terms of structure, participants and instruments traded, and the results that emerge in this market. Subsequently, the most relevant characteristics of the order execution processes are described, along with the clearing and settlement of orders. It concludes with the main recent regulatory developments by the CBC and the foreign exchange policy challenges.

FLOATING EXCHANGE RATE REGIMES

The CBC conducts monetary policy under an inflation-targeting cum floating exchange regime^{1/}. This macroeconomic policy framework has made it possible to achieve the objective of low and stable inflation, in addition to mitigating the effects of major external and internal shocks. Thus, on the one hand, the exchange rate is the first line of action to adjust to changes in external developments, allowing the external balance to be reestablished. On the other hand, this makes it possible for monetary policy to have a different orientation than in other countries with bigger financial markets.

Evidence shows that the flexible exchange rate regime helps to significantly mitigate the transmission of external shocks to the local economy, to both the real and the financial sectors (Obstfeld et al., 2019). Moreover, in this kind of regime the local interest rates move less (Albagli et al., 2019; Albagli et al., 2020; Monetary Policy Report, March 2018), output volatility is lower (Lacoviello and Navarro, 2019) and so is volatility of capital flows (Albagli et al., 2021).

By definition, a floating exchange rate regime entails greater volatility in the value of the currency, which could be a factor of vulnerability if the economy's agents maintain significant currency mismatches (Hausmann et al., 2001; Calvo and Reinhart, 2002; Eichengreen et al., 2002; Céspedes et al., 2004). In order for this volatility not to be detrimental, it is necessary not only for monetary policy to be credible, but also to have a developed local financial system, deep capital markets that can provide an alternative source of external financing, and a properly functioning foreign exchange market that allows the various agents access to financial hedging.

^{1/} See document "[Chile's Monetary Policy within an Inflation-Targeting Framework](#)," January 2020.



A regime made up of mutually consistent macroeconomic policies can significantly alleviate the vulnerabilities involved in a free-floating exchange rate that adjusts to maintain the external balance of the economy. In particular, the flexible exchange rate regime, credible inflation targeting scheme, and financial stability have created for Chile an environment conducive to reducing the vulnerabilities associated with exchange rate volatility (Albagli et al., 2020).

The floating exchange rate, aside from contributing to macroeconomic stability, facilitates compliance with the financial stability objective. As mentioned above, a floating exchange rate under an inflation targeting regime smooths cyclical fluctuations and thus helps to reduce the volatility of agents' repayment capacity. Likewise, the floating exchange rate acts as an adjustment mechanism in the face of abrupt changes in external financial conditions, which has reduced the impact on local financial variables, such as, for example, sovereign risk premiums (FSR, second half 2020, Chapter IV).

The proper functioning of the financial system contributes to economic development and the welfare of society, channeling resources from those who save to those who borrow, be they households or firms, thus facilitating funding of consumption and investment^{2/}. Therefore, macroeconomic and financial stability is a necessary condition for financial markets to develop and deepen in the medium and long term.

EVOLUTION OF EXCHANGE RATE EXPOSURE

In a flexible exchange rate framework, the main vulnerability for users of the FX market comes from greater foreign currency exposure. When agents maintain an exchange rate mismatch in their balance sheets ^{3/}, an increase in their foreign currency liabilities may have an undesired effect in the face of exchange rate depreciation episodes. In the early 2000s, the balance sheet exchange mismatches of Chilean companies were of a significant magnitude for an important fraction of them. This is mainly explained by less foreign currency liabilities due to dollar financing being substituted by domestic currency, enabled by deeper local capital markets and, to a lesser extent, by the use of derivatives (Albagli et al., 2020). In both cases, financial intermediation by institutional investors played an important role.

The adoption of a floating exchange rate regime brought about a decrease in agents' net foreign exchange exposure, particularly for the corporate sector, whose currency mismatch has remained contained in the last decade. Since 2013, according to the indicator developed by Cowan et al. (2005), the level of corporate exchange mismatch has remained negative —net asset position in dollars—, even after the marked depreciation of the peso observed in 2019 and 2020 (figure IV.1). This is the result of greater asset holdings denominated in foreign currency and the use of derivatives for hedging, which more than offset liabilities in foreign currency. Also, in the last decade, the share of companies' assets that have had a mismatch of more than 10% has remained generally low (figure IV.2).

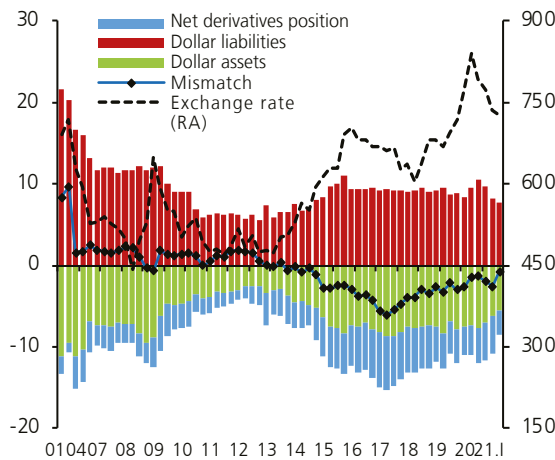
Corporate external debt has been increasing since 2012, going from 30% to 50% of GDP, due to the issuance of long-term external bonds and debt associated with Foreign Direct Investment (FDI). This growth is mainly explained by greater financial integration and a capital market that is more developed with respect to comparable countries, which allows contracting hedges. It should be noted that the higher external bond issuance comes from companies whose functional currency is the dollar. These companies, being oriented to the external market, have a natural hedge against exchange rate variations (Fernández, Pino, and Vásquez, 2020). Meanwhile, the FDI-related debt responds to decisions on the forms of financing from foreign parent companies to their subsidiaries in Chile (FSR second half 2019, chapter IV). In the latter case, being commitments between related companies, it has a degree of enforceability and financial conditions that respond to elements

^{2/} See document "[Financial Policy of the Central Bank of Chile](#)", March 2020.

^{3/} Foreign currency liabilities minus foreign currency assets over total assets.

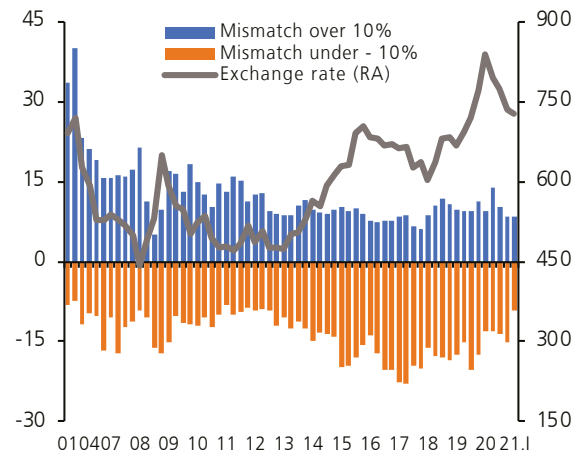


FIGURE IV.1 CORPORATE CURRENCY MISMATCH (*)
(percent of total assets, pesos)



(*) Firms reporting their balance sheets in pesos. State-run enterprises and those classified under Financial services and Mining are not considered. Mismatch refers to dollar liabilities minus dollar assets, minus net derivatives position, as percent of total assets. Average exchange rate of last quarter (or year). Source: Central Bank of Chile based on FMC data.

FIGURE IV.2 MISMATCH DISTRIBUTION
(percent of total assets)



Source: Central Bank of Chile based on FMC data.

other than those of claims held with other institutions, which is a risk mitigator against events that raise the cost of financing, such as exchange rate movements (FSR first half 2019, Chapter II).

Despite the increase in external debt, thanks to financial integration and access to international markets, domestic financing has remained scarcely dollarized. At the corporate level, 60% of current aggregate debt is in local currency. Households' exposure to foreign currency liabilities is practically nil. A reflection of this is the local mortgage credit market, which has fixed rates in pesos (indexed to inflation) and terms that exceed 20 years, on average. On the banks' side, foreign currency loans represent close to 10% of total credit, while bank financing in foreign currency through deposits and bonds accounts for less than 20% of total liabilities.

In the last 20 years, banks have increased their access to external financing and their liabilities in foreign currency, but regulatory improvements implemented have perfected the measurement and management of foreign exchange risk exposure (Matus, 2017). In particular, since 2005 the norm considers currency mismatch risk management within the overall market risk limit for banks. Thus, the foreign currency mismatch in the banks has been reduced and since 2009 it has maintained an active position in dollars. At the same time, dollar liabilities have increased in the last decade, peaking at near 30% of GDP in early 2020.

Although this exposes banks to an increase in the cost of funding in the face of an exchange rate depreciation, the net asset position in foreign currency acts as a hedge, because it generates valuation gains in case of a depreciation. However, although the sector is exposed to losses in the event of an exchange rate appreciation, stress tests show that this risk is limited and remains at around 1% of the system's capital. Also, if non-performing loans in foreign currency increase, the net position may turn negative as this source of income is reduced. However, the banking system is perceived as resilient to severe stress scenarios, which includes the effects of the exchange rate on credit risk (Chapter 3).



On the other hand, the institutional investors' participation in a mature and deep financial system has boosted the development of a derivatives market that allows hedging foreign exchange risks, where the main counterparties are represented by banks (Villena and Hynes, 2020). In the case of companies that are regular participants in the financial market and that, therefore, publicly report their financial statements, an active use of derivatives is observed according to the hedging needs in each case. Meanwhile, in the rest of the companies, the use of this tool is less transversal because there is a significant lack of knowledge on the part of the smaller firms regarding the operation of this type of instrument and its benefits in terms of stabilizing cash flow flows. In addition, transactions with derivative financial instruments involve using lines of financing subject to similar conditions of access as a bank loan (Acharán et al., 2009; Miguel, 2016).

The participation of institutional investors in the fixed-income market, aside from being an additional source of funds, would have helped up until 2020 to reducing the volatility of long-term interest rates (FSR second half 2020, Chapter IV). Lately, however, the pension fund withdrawals have moderated that role (Chapter I).

STRUCTURE AND RESULTS OF THE CHILEAN PESO'S FOREX MARKET

Foreign exchange (FX) transactions on the Chilean peso are carried out in the exchange market both locally and abroad, with different types of participants and instruments traded in each case (table IV.1). Spot transactions on the Chilean peso are mainly done in Chilean territory, while non-deliverable derivatives are subscribed abroad. As will be explained below, this is a difference with respect to the currencies most traded abroad, since in the international markets they are traded in any modality.

In addition to spot operations, in Chile's local exchange market there is a high volume of foreign exchange derivatives subscriptions concentrated in forwards, which is unusual at the global level. In general terms, the complexity of the instruments traded in the FX markets —ranging from spot operations to sophisticated options— is determined primarily by the needs of their participants, such as risk hedging, investment in and exposure to foreign currency, and also by the capacity of the financial system to intermediate risks. Globally, the subscription of foreign exchange instruments is concentrated in spot operations and swaps (figure IV.3), with no major differences between emerging and developed countries^{4/}.

In terms of structure, FX markets are organized in an "Over the counter" structure in which end customers demand liquidity from wholesale participants that intermediate risks and needs of FX instruments ("the dealers"). These participants are usually commercial banks, investment banks, or financial instrument intermediaries (King and Mallo, 2010) that buy and sell FX instruments when required by an end client or another dealer. Thus, foreign exchange markets can be conceptualized as two-tiered. On the one hand, dealers trade among themselves, performing operations for their own accounts or to provide liquidity to end clients; and on the other hand, they also trade with end clients who demand FX instruments.

^{4/} A forward is a type of derivative transaction consisting of an agreement in which the parties agree to exchange currencies in the future at a predefined price. Spot transactions, on the other hand, involve the exchange of currencies at the time of the agreement. Finally, FX swaps are derivative transactions that involve a spot transaction and a forward transaction.



TABLE IV.1 OVERVIEW OF TRANSACTIONS IN FX INSTRUMENTS ON THE CHILEAN PESO (CLP)

Market	Participants	Instruments traded	Percentage of volume traded
Local	Local intermediary with local clients	Spot, deliverable derivatives and non-deliverable derivatives	30%
Local / cross-border	Local intermediary with foreign clients	Spot and non-deliverable derivatives	11%
Off-shore	Foreign intermediaries with local and foreign clients	Non-deliverable derivatives	59%

Source: Central Bank of Chile and BIS

In Chile, the dealers are banks and securities intermediaries^{5/}, while the end clients that demand FX instruments are the non-bank financial institutions (figure IV.1). This is consistent with international experience^{6/}. End clients can access FX instruments through dealers that are not based in the country where the currency they wish to acquire was issued, in the so-called off-shore markets. In fact, FX instruments tend to be transacted in few jurisdictions that serve as off-shore financial centers, which is associated with the presence of network externalities, as it is less costly for a participant to establish its contractual, operational and legal relationships to transact FX instruments in a single jurisdiction (Schrimpf and Sushko, 2019a). The volume traded of Chilean pesos, like other currencies, tends to be higher in the off-shore market than in local markets^{7/} (figure IV.4).

Irrespective of the residence of the participants in an FX transaction, or the market in which it takes place, the positions that arise, whether asset or liability, in the currencies involved must be settled. When settlement involves an exchange of currency between the parties, such as spot transactions, deliverable forwards and swaps, the FX instruments are referred to as “deliverable.” In practical terms, the exchange takes place through credits and debits in positions payable in each of the currencies involved^{8/}. Conversely, when settlement is on a net basis there is no exchange of currencies but a one-way payment in either currency, and the instruments are referred to as “non-deliverable.” The main instruments with these characteristics are known as non-deliverable forwards (NDFs).

^{5/} Most capital account transactions must be channeled through the Formal Exchange Market (FXM), which is comprised of banks and other entities, such as stockbrokers that request authorization to become a member. For the purposes of our analysis, dealers will be defined as those entities that make up the FXM.

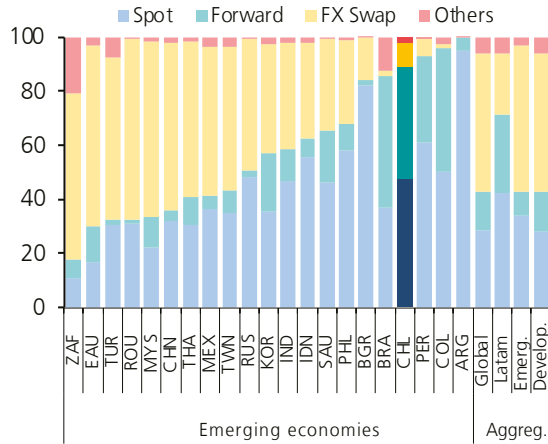
^{6/} See Schrimpf and Sushko, 2019c.

^{7/}The BIS triennial survey indicates that, of all transactions with Chilean pesos, 60% were made with non-resident intermediaries in Chile.

^{8/} For example, a spot sale of CLP to a local dealer can be made through charges on credit lines or balances in bank accounts owned by the seller.

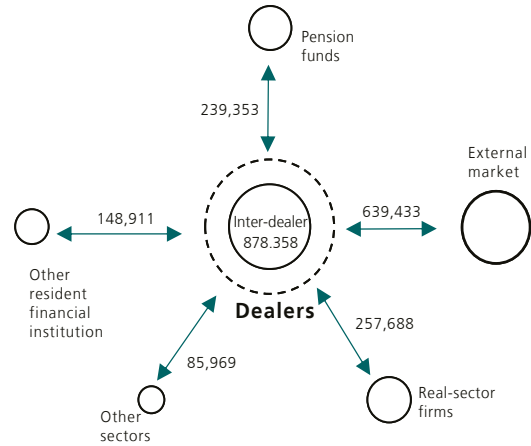


FIGURE IV.3 DERIVATIVES SUBSCRIBED IN LOCAL MARKETS BY TYPE OF INSTRUMENT
(percent, April 2019)



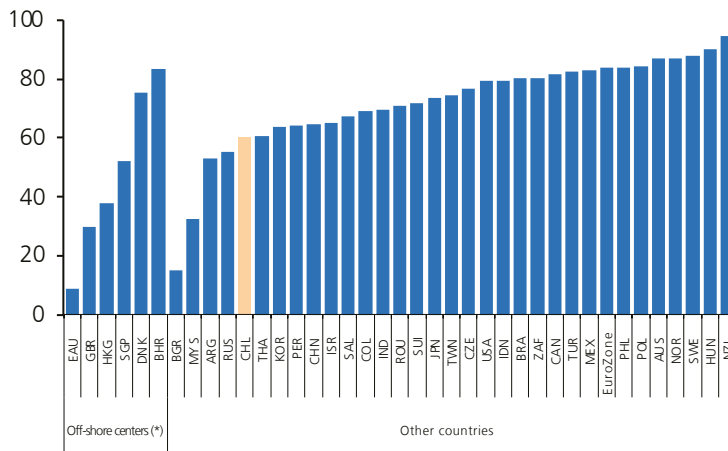
Source: Central Bank of Chile based on BIS Triennial Survey (2019).

CHART IV.1 FX INSTRUMENTS SUBSCRIBED BY SECTOR
(billions of dollars – 2019)



Source: Central Bank of Chile

FIGURE IV.4 FX INSTRUMENTS SUBSCRIBED OFF-SHORE
(percent of total subscriptions, April 2019)



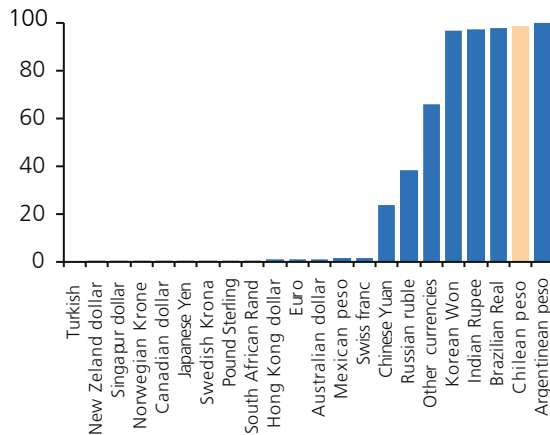
(*) Off-shore financial centers are those where resident participants report trading mostly FX instruments on parities involving two foreign currencies.

Source: Central Bank of Chile based on BIS Triennial Survey.

The existence of restrictions on the use of local currency, which prevent the settlement of balances in local currency by non-residents, limits the transactions of deliverable FX instruments in the offshore markets. If a non-resident dealer cannot establish domestic currency positions with a resident bank, it will be unable to settle payments associated with deliverable instruments. Hence, off-shore markets can only be developed through non-deliverable FX instruments (He and McCauley, 2012).

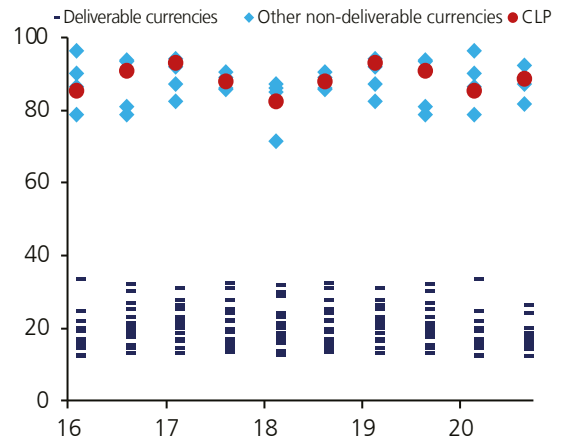


FIGURE IV.5 FORWARDS HELD IN THE NORTH AMERICAN MARKET IN NDF MODE (*) (percent of total forwards subscribed by resident dealers in North America, April 2021)



(*) Considers gross amounts transacted by each resident reporting bank. Thus, there is double accounting of transactions of New York resident banks.
Source: Central Bank of Chile based on a FX Volume Survey – NY Fed.

FIGURE IV.6 FORWARD TRANSACTIONS OVER TOTAL FOREX TRANSACTIONS (*) (percent of total transactions)



(*) This figure considers as FX instruments forwards, swaps, and spot. Other non-deliverable currencies considered are the currencies of India, Brazil, Argentina, and South Korea.
Source: Central Bank of Chile based on FX Volume Survey – NY Fed.

For years, Chile maintained restrictions on the use of its currency in cross-border operations, which were lifted this year (FSR second half 2020, Box V.I). This may have had an effect on the off-shore peso markets developing in non-deliverable mode. Unlike other currencies, almost all forwards on the peso subscribed by dealers resident in North America are non-deliverable (figure IV.5), a characteristic similar to that of countries that maintain restrictions on the use of their currency, such as Argentina, Brazil, South Korea, and India. In this regard, for the currencies of the countries mentioned, most of the volume of FX instruments subscribed in North America are forwards —i.e., instruments that can be traded in non-deliverable form— while other currencies tend to be traded with deliverable instruments, such as spot operations and swaps (figure IV.6). However, it cannot be ruled out that behind the difference in the types of instruments used between the different currencies there are differences in the demand for instruments by the participants in the respective markets. It should be noted that restrictions on the use of domestic currency may have effects on the microstructure and availability of FX instruments in offshore markets, but by themselves do not necessarily prevent the international use of a currency, since this use may be carried out through non-deliverable instruments. Nor does the absence of restrictions guarantee its use, since this depends on various macroeconomic and institutional factors (Box IV.1).

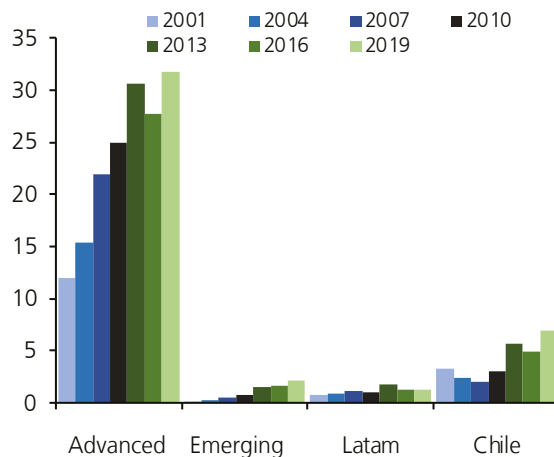
Liquidity in FX markets reduces the costs and uncertainties associated with the execution of transactions, whether at the level of spreads charged by dealers, movements in the value of the currency associated with high value orders, or the probability that an order will not be executed in time. In this way, liquid markets perform their functions efficiently, thus expanding the options for managing foreign exchange risks and reducing costs.



As for the Chilean peso chileno, the volume traded in terms of the size of the economy has increased lately and surpasses that of emerging countries and other countries in the region (figure IV.7). Most of the recent growth relates to the off-shore market, which, as noted above, accounts for a higher volume of transactions than the local market. Patel and Xia (2019) argue that this dynamic is repeated for most emerging countries and would be characterized by both increases in demand from non-bank financial institutions and the growing use of digital platforms to trade these instruments.

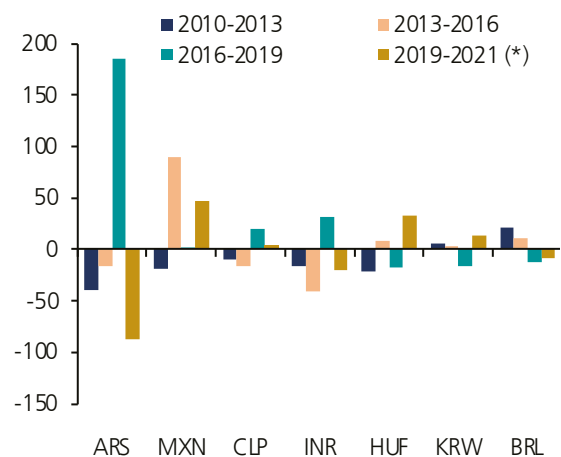
Meanwhile, the costs that a FX market user faces are closely related with the difference between buy and sell prices available in said market (the bid-ask spread)^{9/}. Theoretically, those differences are determined by the costs incurred by a dealer, which in turn have to do with: keeping an inventory of FX instruments, the risk of subscribing FX instruments with counterparties having access to private information^{10/}, and the associated operating costs (Huang and Stoll, 1997). In practical terms, the evidence shows that the bid-ask spreads depend substantially on the currency's volatility, the number of participants and the number of quotes (Hua et al., 2011). Over the past 10 years, the Chilean peso's average annual daily bid-ask spread has been fairly stable^{11/} unlike other emerging country currencies (figure IV.8).

FIGURE IV.7 DAILY VOLUME OF FX INSTRUMENTS TRANSACTIONS (*) (April of each year, percent of GDP)



(*) Based on Villena and Hynes (2020).
Source: Central Bank of Chile based on IMF and BIS data.

FIGURE IV.8 RELATIVE BID- ASK SPREAD IN SELECTED EMERGING CURRENCIES (change in daily 12-month average, percent)



(*) Last data of August 21
Source: Central Bank of Chile using Bloomberg data.

^{9/} The cost of executing an FX instrument is not associated solely with the bid-ask spread. Changes in this spread associated with a particular transaction, as well as the probability that high-value transactions may not be executed in time, are other components of this cost (Evans et al., 2019).

^{10/} Dealers trading with counterparties having information about factors that can move the exchange rate, such as about future orders that will be placed by that same participant (King et al., 2011), face an expected loss. Since the dealer cannot distinguish beforehand whether a counterparty is informed, an adverse selection phenomenon occurs that magnifies the relevant bid-ask spread.

^{11/} Considering bid-ask spreads published by Bloomberg, which, according to Karanaukh et al. (2014) are correlated with the effective transaction cost. Calculating this cost would require high-frequency information on bid-ask spreads and execution prices, which are unavailable for this market. However, the authors point out that this indicator is appropriate for analyzing the behavior of the same currency over time, but not for comparing different currencies.



Markets for non-deliverable currencies, such as the Chilean peso, operate on a reduced schedule, which tends to coincide with the operating hours of local dealers, so that most of the day there is no activity. Given the relationship between liquidity and the cost of execution of a currency, the bid-ask spread is usually used as a liquidity indicator (Karnaukh et al., 2014).

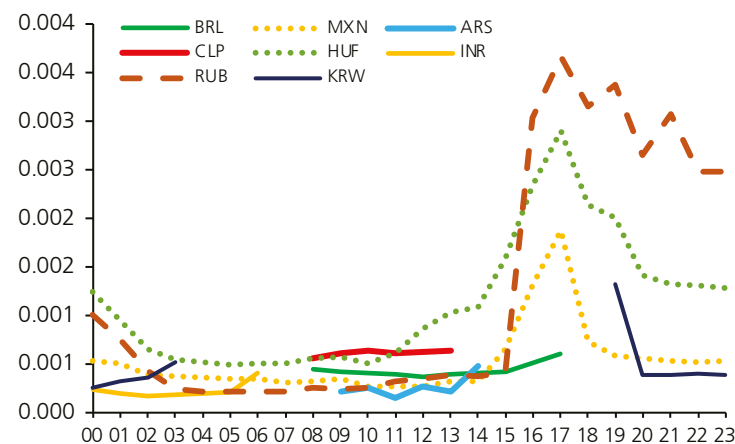
Allowing a non-deliverable currency to be spot traded in off-shore markets should contribute to extending the spot trading hours of that currency, as is the case with the deliverable currencies of emerging countries. When analyzing a subset of these countries' currencies, it appears that for deliverable currencies there are quotations 24 hours a day, because around the world there are non-resident dealers that can operate at any time, although during a significant portion of the day liquidity is rather low (figure IV.9).

TRANSACTION, CLEARING AND SETTLEMENT MECHANISMS

For transactions involving foreign exchange instruments, there is an initial instrument subscription or trade phase, in which the mechanisms for the exchange of execution orders of the participants play a crucial role. Once the trade is completed, in the post-trade stage, the counterparties clear and settle the instruments and/or money, and the transactions are recorded. Financial market infrastructures are fundamental in this process.

Traditionally, markets for FX instruments operated through the bilateral exchange of execution orders, which has partially evolved into a multilateral market, thanks to the operation of brokers. These entities can disseminate an execution order to multiple participants, and currently more than 40% of FX instrument transactions in the world are intermediated by a broker (BIS Triennial Survey, 2019). A particular type of broker are those that create multi-currency platforms, with a centralized order book, and that allow anonymous trading^{12/}, with EBS and Reuters (Refinitiv) being the main such platforms. These would have made it possible to reduce transaction costs for smaller participants and increase market transparency.

FIGURE IV.9 RELATIVE BID-ASK SPREAD FOR DIFFERENT EMERGING COUNTRY CURRENCIES BY TIME FRAME
(April 2021 average for each 1-hour interval; Santiago, Chile time)

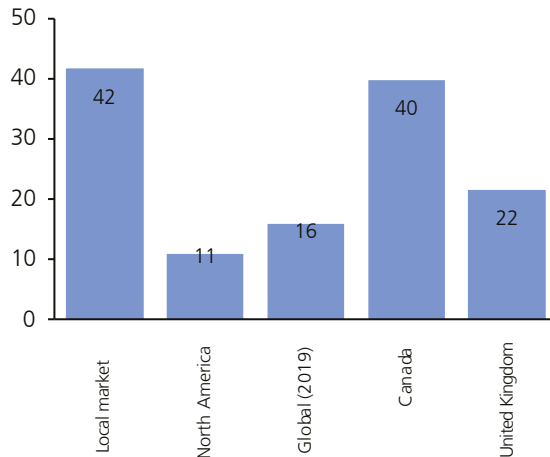


Source: Central Bank of Chile based on Bloomberg data.

^{12/} The participants can know all the quotes entered by the platform participants at each moment of time, but without knowing the identity of who entered the order in the platform.



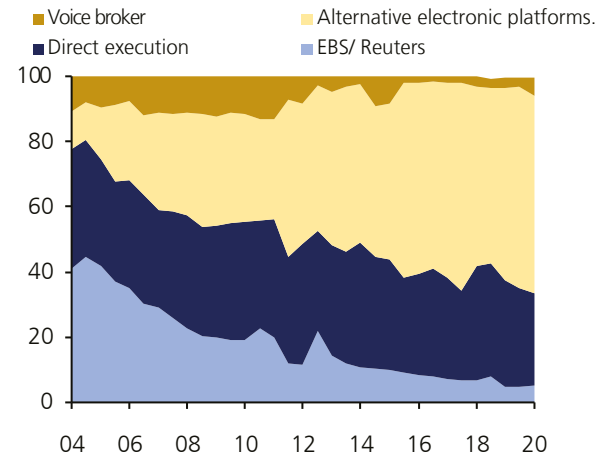
FIGURE IV.10 USE OF DIGITAL PLATFORMS CREATING ORDER BOOKS (*)
(percent of total volume of FX instruments traded on inter-dealer market, 2020)



(*) For more detail, see set of figures.

Source: Central Bank of Chile based on BIS Triennial Survey, NY semi-annual FX Turnover Survey, London semi-annual FX Turnover Survey, Canada semi-annual FX Turnover Survey, Datatec.

FIGURE IV.11 MODALITY OF EXECUTION OF FX TRANSACTIONS BY RESIDENT BANKS IN NORTH AMERICA
(percent)



Source: Central Bank of Chile based on NY semi-annual FX Turnover Survey

In Chile there is an electronic platform of these characteristics oriented to the local market, which creates an order book for the subscription of FX instruments on the peso-dollar parity^{13/}. Unlike other jurisdictions, there are no mechanisms allowing end clients to directly access this platform. Only local dealers have participant status, while financial entities such as pension funds, insurance companies, and mutual fund administrators have observer capacity^{14/}. The percentage of FX instruments subscribed on platforms is higher than in other markets (figure IV.10), which may be beneficial because exchange rate price formation is done on a single platform that provides transparency to dealers and could reduce transaction costs. In other countries, access to equivalent platforms by end clients is through “prime brokerage” relationships^{15/}.

A different modality that allows end clients to enter orders directly into electronic platforms, for dealers to create or be part of alternative electronic transaction platforms that are available to end customers^{16/}. By means of these modalities, end clients are increasingly participating globally in the execution of FX transactions on electronic platforms (figure IV.11). The fragmentation and greater relevance of these platforms may reflect greater competition among different providers, but it has the disadvantage that the price formation process is less transparent, since execution orders are spread across different platforms (Evans and Rimes, 2019; Schrimpf and Sushko, 2019a)^{17/}.

^{13/} The recently introduced Fintech Bill includes provisions on the regulation of Alternative Transaction Systems.

^{14/} The 2020 Annual Report of the Electronic Stock Exchange states that this platform is also being adapted to grant access to international banks.

^{15/} In these relationships the dealers act as sponsors of end clients and allow them to enter order to platforms that are restricted for dealers only.

^{16/} These platforms can be either “Single-Bank Platforms” or “Multi-Bank Platforms” depending on the number of dealers providing liquidity in them. For the sake of simplicity, this chapter considers these platforms as “Alternative Electronic Platforms.”

^{17/} In this situation, BIS (2020) points out that the use of execution algorithms is important for price formation under these conditions because they are able to monitor and execute transactions on the different platforms available.



Allowing the transaction of deliverable FX instruments in local currency on offshore markets could contribute to the incorporation of these instruments into these FX trading platforms, with the associated costs and benefits. The existence of limitations for non-resident dealers to liquidate positions in a currency with other participants reduces the possibility of deliverable FX instruments in that currency being entered into platforms where these dealers operate.

Just as important as the way in which transactions are negotiated and executed in the FX market is the way they are cleared and settled. A first risk in this process is called replacement cost risk. Since some time elapses between trading and settlement that depends on the maturity of the instrument, the counterparties assume reciprocal credit positions that generate exposures in the event of a default, which depend on the value of the instrument when the risk materializes and thus it has to be replaced.

One way of mitigating this risk is to introduce specific provisions into the derivatives contracts, such as early closing and “close-out netting”^{18/}, and annexes with rules to govern the exchange of spreads, constitution of collateral, or maximum exposure between the parties. In international derivatives master agreements, they are called “Credit Support Annexes” (CSA). In Chile, close-out netting for FX derivatives is recognized by law and in local master agreements for derivatives contracts, but not for CSAs, where there are no locally recognized master agreements and, therefore, their provisions must be negotiated bilaterally.

Another way to mitigate the replacement cost risk is multilateral clearing through Central Counterparties (CCPs). These entities legally assume liability for all the contracts they clear, so that they become the counterparty to all their participants. Thus, a participant can transform multiple bilateral positions with different counterparties into a single net position with a low-risk infrastructure that requires collateral, margins, and limits for the net positions held by each participant. Although CCPs are widely used globally for credit or interest rate derivatives, they are not so widely used for FX instruments^{19/}. The exception is NDFs^{20/} which are almost entirely cleared on the London Clearing House (LCH). In Chile, there is a CCP that clears NDFs performed by local banks, which would be the only one outside LCH that provides this service for a significant amount (Clarus FT, 2019). The use of CCPs to clear derivatives entered into on the Chilean peso, both in the local and foreign markets, contributes to the players’ good management of the replacement cost risk^{21/}.

Once the period between the subscription of an order and its settlement has elapsed, the settlement process itself involves principal risk for the counterparties. This is associated with the losses that may be faced by a party that delivers funds in one currency to its counterparty, but does not receive the corresponding funds in the other currency. This risk is most significant in the case of deliverable instruments.

^{18/} Upon a counterparty's insolvency, eligible bilateral derivative exposures held with that counterparty are transformed into a single ^{net} bilateral exposure, thus reducing the total value of the exposures and the replacement cost risk.

^{19/} At end-of 2016, at the global level only 1% of the national FX derivatives amount was compensated through a CCP, contrasting with the 76% for interest rate derivatives (Wooldridge, 2017). The difference may be influenced by the FSB's international regulatory agenda that establishes that credit and interest rate derivatives be compensated in a centralized manner.

^{20/} Some 25% of the notional value of NDFs was cleared in CCPs in 2019 (Schrimpff and Sushko, 2019b). The introduction of margin requirements for bilateral NDF clearing has incentivized clearing through CCPs (Patel and Xia, 2019).

^{21/} According to Comder, LCH, and BIS data, 10.6% of total volume of FX instruments subscribed on the Chilean peso were cleared through CCPs in 2019.



The main way to mitigate this risk is to use systems that ensure that both parties to the transaction receive their payments only if they both made payments in the corresponding currencies (payment-versus-payment, or Pvp). Another mitigator of this risk is bilateral netting mechanisms, which establishes that all settlements that two counterparties must make to each other for the execution of FX instruments on a given day are netted off and transformed into a single payment, thus reducing bilateral exposures. It is estimated that, globally, bilateral netting reduces the amounts to be settled by 18.8%, while the use of the Continuous Linked Settlement payment system—which ensures Pvp—covers 41% of the balances to be settled globally (Bech and Holden, 2019). Thus, the volume of transactions exposed to this counterparty risk is significant and concentrated in emerging currencies, including the Chilean peso pending its incorporation into the CLS system. (FSR second half 2019, box VI.1).

RECENT REGULATORY DEVELOPMENTS AND CHALLENGES TO FOREX MARKETS

It is very important to have in place an exchange market that allows economic agents to have instruments to deal with the exchange rate volatility associated with a floating regime. For this reason, in recent years the CBC has carried out several actions to improve the FX market. One pillar of these actions is in its 2018-2022 Strategic Plan, and another is a broad agenda to strengthen financial market infrastructures (MFIs), as explained below.

As has been noted in previous FSRs, one line of action of the CBC's Strategic Plan is the modernization of its foreign exchange regulation, which has undergone no substantial changes in more than twenty years. Thus, the Compendium of foreign exchange regulations (CNCI) is being reviewed in detail with a focus on reducing the regulatory burden; for example, by using administrative data where available. A first step was to reformulate chapter I of the CNCI, explicitly incorporating into the regulations the general framework of exchange rate policy, including the powers of the CBC, the existing exchange rate limitations, and the uses of the information to be reported to the CBC, among other matters. A new version of the CNCI is scheduled to be published next year.

The CBC also lifted restrictions that required some FX operations to be carried out only in dollars or euros, and also the restrictions it maintained on the use of the Chilean peso in cross-border operations. As described earlier, this aspect is the one that in the medium term may have the greatest impact on the functioning of the FX market. Along the same lines, this year the rules governing access to and the functioning of the Formal Exchange Market are also being revised. Finally, in previous FSRs it has also been reported that the CBC developed numerous initiatives to strengthen and expand the regulatory framework applicable to MFIs, strengthening the clearing and settlement processes of interbank payments in foreign currency, from international exchange operations, both locally and cross-border, in a manner consistent with international standards on the matter (PFMI) ^{22/}.

At the end of 2019, the regulation allowing the interbank settlement of US dollars between local banking entities at the CBC was published, by incorporating the new Real-Time Gross Settlement System in US Dollars (RTGS USD System). Thus, a system with lower operational, credit and liquidity risk compared to traditional settlement through correspondent banks is now available. This infrastructure began operations in March 2020, channeling interbank payments that averaged US\$22.8 million a day in the third quarter of this year.

^{22/} By international consensus, MFIs are comprised of Payment Systems, CCPs, Securities Clearing and Settlement Houses, Securities Custody and Depository Institutions, and Transaction Repositories.



Subsequently, in June of this year, the CBC published a regulatory framework that allows the establishment of Clearing Houses for High Value Foreign Currency Payments (CCAV FX)^{23/}.

Subsequently, in June of this year, the CBC published a regulatory framework that allows the establishment of Clearing Houses for High Value Foreign Currency Payments (CCAV FX).^{23/} This will allow local banking entities to carry out the clearing and subsequent settlement in the RTGS System of payments for transactions corresponding to the purchase and sale of dollars against domestic currency based on the application of the international payment-versus-payment (PvP) standard, which, as previously explained, reduces the settlement risk in the domestic FX market.

Also, and as a measure to reduce settlement risk in cross-border FX operations, since 2019 the CBC is in the process of introducing the Chilean peso as an eligible currency into the CLS international payment system. It allows clearing and settlement of payments from spot and derivatives transactions for 18 currencies, without settlement risk due to the application of the PvP standard, and with high operational standards. Incorporating a currency into the CLS System is a highly complex process, which implies compliance with standards and development stages, as well as the coordination and participation of the local banking system^{24/}.

In November 2020, the Integrated Information System for Derivatives Transactions (SIID-TR) began operations^{25/}. This infrastructure promotes the transparency of derivatives transactions in the OTC market. The SIID-TR regulatory framework was developed following international best practices and recommendations for Transaction Repositories, and aims to expand the quantity and quality of information available on currency, interest rate, inflation and fixed-income derivatives transactions ^{26/}.

The implementation and future coexistence of all these new infrastructures will allow for a secure clearing, settlement and registry framework based on international standards, promoting efficiency and proper risk mitigation for both local and cross-border FX market transactions. This chapter has pointed out various elements and conditions of the FX market, such as its structure, participants, trading mechanisms, and clearing and settlement mechanisms. The interaction of all these elements yields results that are observed in different metrics including, among others, the complexity and maturity of the instruments traded, market liquidity, costs for users, and the relevance of the off-shore market.

These results, some of which show differences with other markets abroad, also obey to the characteristics of the market participants and their needs, mainly institutional investors, who have played a central role up to now; to market practices; and also to the regulatory framework in force up to now (table IV.2). The CBC has adopted a series of measures that seek, on the one hand, to make it easier for non-residents to trade the peso, and on the other, to develop infrastructures to mitigate the risks inherent to these operations. Thus, going forward, there should be significant changes in the functioning of the local FX market. First, the lifting of restrictions on the use of local currency in cross-border transactions should allow the development of correspondent banking services (in Chilean pesos) in Chile, which have been non-existent

^{23/} As from this publication, entities interested in implementing an FX CCAV that meet the established requirements must submit to the CBC the respective Operating Regulations with the details of its operation for approval, as well as subsequently carry out the necessary operational tests to settle their transactions in the RTGS System.

^{24/} The standard process of incorporating a new currency into the CLS System can take an average of 3 years.

^{25/} The SIID-TR began operations by submitting information on participants corresponding to banking companies. As from May 2021, the reporting of the rest of the participants began. The SIID-TR is expected to be fully operational during the first half of 2022.

^{26/} The start-up of this system constitutes a major breakthrough with respect to the regulatory gaps detected in terms of the application of international standards to MFIs, which made it possible to recently obtain the highest rating for all existing MFIs in Chile in the annual level 1 monitoring, on compliance with PFMI conducted by CPMI/IOSCO to the different jurisdictions that make up these bodies (more information in FSR second half 2018, Box VI.1).



until now, facilitating the participation of non-residents in the market for deliverable FX instruments on the peso. As indicated, this could contribute to providing users of this market with new counterparties, transaction modalities and instruments for their foreign exchange operations.

These developments are not uncommon in other jurisdictions, but they entail important changes for the local market, which will have to be duly internalized by the agents. For example, it is to be expected that the existence of spot peso transactions in off-shore markets, together with the possible incorporation of the Chilean peso to the CLS System, will make it necessary to extend the local exchange market's operating hours. Finally, in a floating exchange rate regime, it is essential that the exchange market operates under appropriate conditions of security and competition, and provides its participants with instruments that meet their needs. The CBC, as regulator and supervisor of this market, will continue adopting the necessary measures to achieve the above mentioned objectives.

TABLE IV.2 DIFFERENCES IN THE STRUCTURE OF THE FOREX MARKET ON THE CHILEAN PESO IN CONNECTION WITH THE EXPERIENCE OF CURRENCIES HIGHLY USED INTERNATIONALLY

Restrictions	Local experience	International experience	Is the difference related to restrictions on the international use of the CLP?
Transactions of deliverable FX instruments on domestic currency	Can be traded only on on-shore markets	May be traded on on-shore and off-shore markets	Yes
Transaction platforms for deliverable instruments on domestic currency	Local platforms that allow the participation of only resident dealers	Local and international platforms that allow the participation of resident and non-resident dealers	Yes
Trading hours for deliverable instruments	Trading hours associated to resident dealers' opening hour	Extended trading hours associated to resident and non-resident dealers' hours for deliverable currencies	Yes
Use of PVP mechanisms for the settlement of deliverable FX instruments	Used	Most currencies are not eligible for settlement through CLS	Yes
FX derivatives' spreads and collaterals	CSA bilateral negotiation	Recognition of standard CSA and ISDA frameworks	No
Settlement of spot transactions	Spot transactions settled on t+1	Spot transactions settled on t+2	No

Source: Central Bank of Chile.



BOX IV.1:

Currency internationalization

This box discusses the potential for internationalization of the Chilean peso, i.e., the currency's possibilities of playing a dominant role either in transactions in our region or in the financial markets of emerging economies. Generally speaking, international currencies are those that play the role of money outside the borders of the country that issues them in international trade operations, sovereign and corporate debt securities, international reserves and financial assets. In cross-border markets, the yen, pound sterling, euro and U.S. dollar play a dominant role. However, other currencies also participate in these markets, making up the intermediate league, whose importance has been increasing in recent years (Cobas and Herald, 2021; IMF, 2020)^{1/}.

A currency's internationalization has a number of desirable consequences for the country issuing it, with limited risks. Some of its main effects are increased demand for the currency, a reduction in credit costs and foreign exchange risk for exporters, and a deepening of the FX and capital markets. Also, from a systemic point of view, it contributes to the stability of the global financial system through greater diversification of portfolios by currency and by increasing the speed of convergence in the adjustment of current account imbalances (Mazaia et al., 2011). In turn, the vulnerabilities derived from the process are fundamentally related to greater currency volatility, which would remain contained in economies with low exchange rate mismatches and deep derivatives markets. In this sense, economies with mature financial markets have substantial net advantages.

The internationalization process takes several steps, starting with an adjustment to the level of regulatory flexibility and maturing through mass adoption by economic agents. Ideally, the transition would be led by private agents in expanding their activities while governments concentrate on implementing the necessary financial and regulatory policies (Genberg, 2011). Since this is a largely market-driven process, regulatory flexibilization per se does not ensure its occurrence^{2/}. Other factors are also required, both institutional (a sound economy and strong financial system) and of economic and commercial scale (Waiquamdee, 2011). In the case of smaller economies, the scale condition, necessary to reduce transaction costs, could be replaced by a significant share in some specific commercial market or by product differentiation^{3/}.

^{1/} In this group, the most relevant currencies of advanced economies are the New Zealand dollar, the Swiss franc, the Australian dollar and the Canadian dollar, and among those of emerging economies are the Mexican peso, the Hong Kong dollar, the South Korean won, the Indian rupee, the Brazilian real, the Thai baht, the Russian ruble and the South African rand.

^{2/} Roughly speaking, regulatory easing may signify the absence of restrictions on trading in the currency for local or international entities (with local entities or with each other) both spot and forward instruments, or it may imply the possibility of issuing, investing and trading locally or internationally assets in the local currency for international or domestic entities.

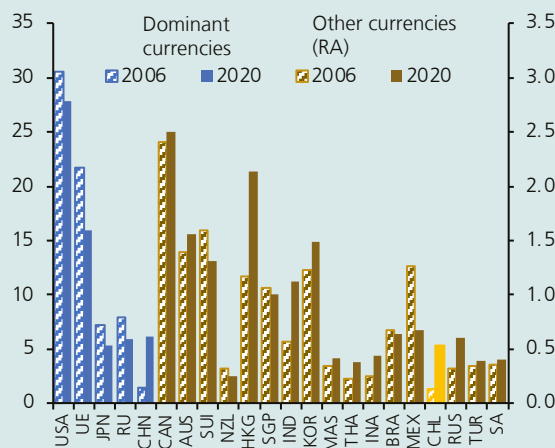
^{3/} The experiences of South Africa, Australia and South Korea are worth mentioning. On the one hand, the South African rand is an example of a regional currency that culminated in a Currency Area Agreement, which was influenced by South Africa's commercial importance in the group of countries that signed the agreement (Wang et al., 2007). In the internationalization of the Australian dollar, the development of the cross currency swap market played a key role in expanding the pool of low-risk issuers in that currency across borders, thus reducing the credit risk on their debt assets. Finally, the process of internationalization of the won stands out because of the role of the use of non-deliverable forwards in circumventing persistent non-resident regulations, while the activity of offshore bank branches allowed arbitrage between the international and domestic markets.



In the last decade, the Chilean peso has enhanced its internationalization potential, in line with the other currencies of the intermediate league. Despite recent changes to the structure of the local capital market (Chapter I), estimates of a global currency role index^{4/}. in 2020 reflect an increase in the degree of internationalization of the less dominant currencies in cross-border markets, to the detriment of the dominant currencies, driven by the growth of stock, FX, and debt markets in emerging economies (figure IV.12). In the comparison with similar countries, the internationalization potential of the Chilean peso is close to those estimated for the Turkish lira, the Russian ruble, the South African rand or the Thai baht. In the decomposition of the index for the Chilean peso into its different components (figure IV.13), 2020 data showed significant importance to the size of the financial markets^{5/}, since these were in proportions comparable to those of mature financial markets in small and open economies (FSR second half 2020).

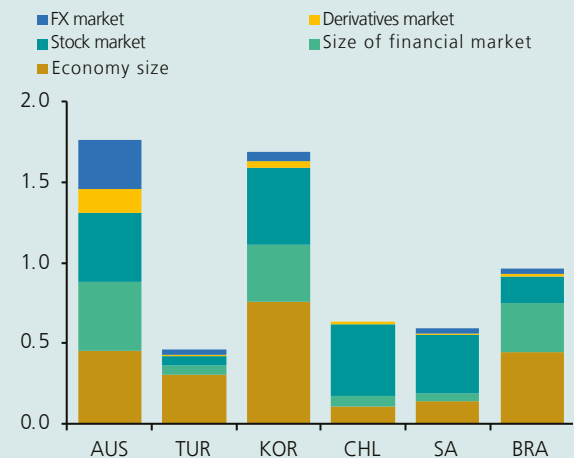
The recent flexibilization of the financial and foreign exchange markets in Chile is consistent with providing a regulatory framework for the potential internationalization of the peso. However, there are challenges not only with respect to the size of our economy, but also to the structural changes that have reduced the depth of our capital markets (Chapter 1). Going forward, the success of internationalization will largely depend on the incentives for resident and non-resident agents to use them in cross-border trading, and in currency, derivatives, and debt markets.

FIGURE IV.12 GLOBAL ROLE OF CURRENCIES (*)
(index)



(*) Based on Thimann (2010) index.
Source: Central Bank of Chile using data from de BIS, FMI, World

FIGURE IV.13 CONTRIBUTION TO SIZE SUB-INDEX, SELECTED CURRENCIES, 2020
(index)



Source: Central Bank of Chile based on Thimann 2010 index with data from BIS, IMF, World Exchange organization.

^{4/} The global role index proposed by Thimann (2010) combines a size sub-index and an institutional development sub-index to estimate the degree of internationalization of a currency. The first sub-index is composed of indicators of economy size, trade, and financial system development. The second sub-index contains indicators of regulatory progress for countries' economic and trade.

^{5/} In the institutional development sub-index, Chile ranked near Australia, Brazil, South Korea, and South Africa (Cobas and Heraldo, 2021).



V. FINANCIAL POLICY DEVELOPMENTS

Since the last Report, a good part of the regulatory measures implemented to deal with the economic and financial consequences of the sanitary crisis has been coming to an end. As in other jurisdictions, including advanced economies, similar measures were deployed at the local level and are also in retreat. However, structural changes in the local capital market, as a result of forced liquidations of assets by institutional investors, put the stability of the financial system at risk. For its part, the implementation agenda of the CBC's financial policy continues to advance – especially with regard to prudential regulation of banks and savings and credit cooperatives – as well as other more structural regulatory initiatives, among which the implementation of the Basel III standards contained in the new General Banking Law (GBL) stands out.

MEASURES TO DEAL WITH THE EFFECTS OF COVID-19

On the international front, the financial policy actions deployed to deal with the effects of the pandemic have been phased out and, in general, no new measures have been adopted. Multiple jurisdictions made various aspects of their regulatory frameworks related to the financial system more flexible, aimed to mitigate the effects of the pandemic or facilitate different sectors of the economy to weather the sanitary crisis. Among the measures adopted are early access to pension funds and the relaxation of prudential requirements and special treatment of bank debt.

About the anticipated withdrawal of pension funds, most countries that needed to make changes to their pension systems^{1/}, they were of transitory nature, meant to alleviate the agents' financial stress during the pandemic. In general, these measures were focused on suspending, postponing, or reducing pension contributions during the months of strictest restrictions on people's mobility and business activities and, in some cases, exceptional withdrawals of pension funds tied to specific causes and incorporating elements to discourage their use, such as the requirement to reimburse the funds. For the most part, these mechanisms remained in place only during 2020 (table V.1a). Among those jurisdictions that resorted to restricted withdrawals of funds, the cases of the U.S. and India stand out, as they introduced Covid-19 as one of the health reasons to grant early access to these resources (table V.1b). The cases of Chile and Peru contrast in that they have adopted more lax policies for the use of pension funds, as withdrawals were allowed without giving reason to justify them^{2/}.

^{1/} Some countries already had models where contributors can anticipate access to their pension funds. These mechanisms typically consider exceptional and specified causes to justify the use of the resources, e.g. to avoid the embargo of a real-estate property, severe health problems, and some other cause of extreme financial need, in addition to mechanisms to discourage use, such as the obligation to return the funds used. In Mexico and New Zealand, for example, these facilities were used to face pandemic-related difficulties (OECD, 2020).

^{2/} In a sample of 68 countries, Chile and Peru stand out as those whose pension funds were depleted the most (OECD, 2021). Likewise, in Chile and Peru pension fund withdrawals were the highest during 2020, at 7.4% and 13.9% of 2019's disposable assets, respectively (OECD, 2020).



TABLE V.1 SUPPORT MEASURES
(selected jurisdictions)

a. Via reduction of, suspension of, or subsidy to pension contributions

Country	2020				2021			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Argentina, Brazil, China, France, Peru, U.K								
Russia								
Belgium, Germany, Portugal, Uruguay								
Colombia								
India, Spain, U.S.								
Finland								
Malaysia								

b. Via pension fund withdrawal or loan

Country	Measure	2020				2021				2022
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Australia	Restricted withdrawal									
Chile	1st withdrawal, free									
	2nd withdrawal, free									
	3rd withdrawal, free									
U.S.	Loan									
	Restricted withdrawal (*)									
Spain	Restricted withdrawal									
India	Restricted withdrawal (*)									
Iceland	Restricted withdrawal									
Malaysia	Restricted withdrawal 1									
	Restricted withdrawal 2									
Peru	1st withdrawal									
	2nd withdrawal, restricted									

(*) Existing program is made more flexible to incorporate Covid-19 contagion as a reason for requesting withdrawal.

Source: Central Bank of Chile based on International Update Report (Social Security Administration, U.S.).

The use of this type of measures in Chile has lasted longer than in other jurisdictions, which has generated risks for the stability of the financial system. As has been explained throughout this FSR, forced liquidations of institutional investors' assets have had negative consequences for the Chilean capital market, resulting in greater difficulties for the long-term financing of the same agents. This scenario was described in several public presentations before Congress by the CBC Governor ^{3/}. It is worth mentioning that, only in Chile, the debate has also included the advancement of annuity payments.

^{3/} For more detail, see presentation before the Constitution, Legislation, Justice and Regulation Committee of the Chamber of Representatives on 14 October 2020, and presentations before the Constitution, Legislation, Justice and Regulation Committee of the Senate on 19 April 2021 and 12 October 2021.

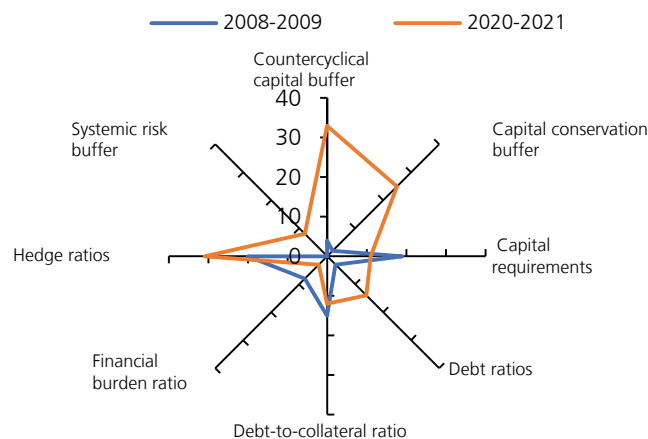


Meanwhile, measures related to the relaxation of prudential requirements and special treatment of bank debt were applied in Chile matching those of advanced economies. Australia, the United States, the European Union, and the U.K. relaxed certain prudential requirements applicable to the banking industry in order to avoid severely restricting the supply of credit. In addition, in these same regions, various measures were implemented to facilitate the treatment of provisions and defaults, and to reduce the cost of rescheduling bank debt, easing the financial burden on households and businesses. In Chile, the Financial Market Commission (FMC) postponed the start of the implementation of Basel III to December this year, and the CBC suspended the liquidity risk regulation requirements, thus providing some regulatory leeway to the banking system. In the insurance area, by virtue of Law 21.276, the FMC temporarily amended, as from July 2021, some limits and requirements for assets representing technical reserves and risk equity of insurance companies. Also, as noted in the previous FSR, during 2020 the FMC made the treatment of debt rescheduling more flexible by not requiring a higher level of provisions for unpaid installments on mortgage, commercial, and consumer loan rescheduling. This measure was extended in April of this year for commercial loans, an extension that was in effect until last July. At the same time, the FMC determined that the level of provisions mandated during the grace or rescheduling period associated with Fogape loans (Circular 2,252), which expired on October 31, would not be increased.

It is worth noting that in our country, the application of loan rescheduling measures was voluntary on the part of the supervised banks and savings and loan cooperatives, contrary to other countries where a mandatory scheme was applied. In this way, the local financial institutions were able to enable compliance with the commitments of those debtors who had the capacity to pay in the future while maintaining adequate credit risk management and compliance with the regulations in force (box II.1).

Policy responses deployed around the world during the pandemic reflect the broader range of macroprudential tools available, unlike what was seen during the global financial crisis. The main macroprudential measures adopted have focused on relaxing regulatory capital and liquidity requirements, such as liquidity hedge ratios and conservation and countercyclical buffers (figure V.1).

FIGURE V.1 COMPARISON OF MACROPRUDENTIAL MEASURES APPLIED DURING COVID-19 AND GLOBAL FINANCIAL CRISES (number of measures)



Source: Central Bank of Chile based on IMF and Yale CFRT data.



Regarding countercyclical capital buffer (CCyB), most of the jurisdictions that have implemented it have either reduced or maintained the applicable level. Since 2016, twelve jurisdictions that implemented this tool have maintained the requirement at 0%, including the U.S. and Spain. Subsequently, and as a way to address the pandemic, between March and August 2020, twelve jurisdictions (in Europe and Hong Kong) reduced the CCyB to 0% in most cases. Only three jurisdictions have applied or announced increases in this requirement this year: Norway, Luxembourg, and the Czech Republic. In these three cases, the decisions are linked to housing market developments and mortgage financing, and in the particular case of Norway the improved economic situation due to better health conditions is also cited as a reason for the increase.

In Chile, with the 2019 reform to the General Banking Law, the CCyB was added to the policy toolkit. Last September, as will be explained below, the CBC published the CCyB implementation document^{4/}, which describes the Board's policy objectives and implementation strategy. Although this tool is yet to become operational, it is expected to be implemented during the first half of 2022 (box V.I).

As the Constitutional Exceptional State of Catastrophe declared because of the pandemic was finalized, the CBC's easing of regulations to facilitate the banks' liquidity management, and in connection with the clearing of payment with checks, was cancelled. The suspension of the term mismatch limits related to the CBC's liquidity regulation will be extended until the final publication of the proposed modernization of this regulation^{5/}. In turn, as of October 1, the exceptional and transitory relaxation of the regulation of the Clearing House for Checks in Domestic and Foreign Currencies was terminated, whereby the individual limit of 50 million pesos to present checks, vouchers, and other demand documents issued in domestic currency by banking companies for exchange, clearing, and settlement through this Clearing House will come back into effect^{6/}.

A policy tool widely used by central banks in different jurisdictions was the provision of liquidity to the banking system coupled with incentives or credit supply conditions to the real sector. Advanced economies such as Australia, the European Union and the U.K. implemented this type of program through financing facilities maturing in 2021^{7/}. A policy tool widely used by central banks in different jurisdictions was the provision of liquidity to the banking system coupled with incentives or credit supply conditions to the real sector. In addition, globally it was observed that many countries set up guarantee programs to encourage or facilitate the flow of credit in a context of high uncertainty in the financial markets, and thus lessen the negative effects of the pandemic on the real sector. In most of the countries that activated similar measures, such programs have already expired or are about to do so. It should be noted, however, that the guaranteed credits may be extended for several months or years. In Chile, as documented in previous FSRs, the CBC has implemented similar policies through special peso liquidity programs (LCL, FCIC 1, FCIC 2, and FCIC 3). The general characteristics of these programs, in terms of maturities and pricing, follow schemes comparable to those of advanced economies detailed above. These policies would also be expiring this year (table V.2).

^{4/} For details, see document [Requerimiento de Capital Contracíclico \(RCC\)](#), Banco Central de Chile, September 2021

^{5/} Chapter III.B.2.1 of Compendium of Financial Regulations (CFR).

^{6/} Chapter III.H.1 of CFR.

^{7/} Other jurisdictions that applied similar measures include Hungary, Mexico, New Zealand, South Africa, South Korea, Sweden, Switzerland, and Taiwan (Casanova et al., 2021).



TABLE V.2 FINANCING PROGRAMS CONDITIONAL ON LENDING
(selected jurisdictions)

Jurisdiction	Effective	Main characteristics
United Kingdom (BoE)	2020Q1 - 2021Q1	Program "Term Funding Scheme with additional incentives for SMEs (TFSME)". 4-year financing at MPR.
European Union (ECB)	2019Q3 - 2021Q4	Program "Targeted longer-term refinancing operations III (TLTRO III)". 3-year financing, 50 bp below MPR.
Australia (RBA)	2020Q1 - 2021Q2	Program "Term Funding Facility (TFF)". 3-year financing. Initially at 0.25% lowered to 0.1% in November 2020.
Chile (CBC) (*)	2020Q1 - 2020Q2	Program "FCIC 1-LCL". 4-year financing at MPR.
	2020Q3 - 2021Q1	Program "FCIC 2". 2- and 4-year financing at MPR
	2021Q1 - 2020Q3	Program "FCIC 3". 3-year financing at MPR.

(*) FCIC: Financing Facility Conditional on Increased Lending; LCL: Liquidity credit line.
Sources: Central banks' websites.

In the local context, the coordination between the measures promoted by the Executive Branch to extend state-guaranteed loans and the exceptional liquidity measures of the Central Bank of Chile (CBC) stands out. Although these programs have been successful, they are nearing their expiration date, as they are in the rest of the world. In particular, Fogape-Reactiva will be in force until December 2021, and the Fogape-Postponement program expired last June. As shown in Chapter II, the effect of these programs was important in the provision of credit to firms, particularly smaller ones. In addition, Fogape guarantees are used to secure the postponement of mortgage installments payable.

As regards fiscal measures, direct transfers were used in practically every country. According to Gentilini et al. (2021), 186 countries implemented transfers that lasted an average of four months, most of them expiring during 2021. In Chile, following a trend similar to the rest of the world, the Emergency Family Income (IFE) is scheduled to expire in November of this year.

FINANCIAL POLICY OF THE CENTRAL BANK OF CHILE

Beyond the pandemic, the CBC continued to conduct financial policy within the scope of its powers. It is channeled through an active agenda of new regulatory developments, most notably in this period those related to banking and savings and loans cooperatives regulation, the internationalization of the peso, retail payments, and high value payment systems and market infrastructures ^{§/}.

Banking and savings and loans cooperatives regulation

Last September, the CBC published the CCyB Implementation document, which establishes the policy objectives that will guide the Board's decisions in this area. In accordance with Basel III implementation in Chile, which is discussed later in this chapter, a macroprudential countercyclical capital buffer, applicable to the banking system, was incorporated into the GBL. Its purpose is to strengthen the banks' resilience during upward phases of the financial cycle, enhancing their capacity to face severe stress scenarios, thus contributing to financial stability and avoiding the abrupt restriction of essential services, such as credit supply. The CBC, according to GBL provisions is empowered to determine the activation or deactivation of the CCyB and, once the activation decision has been made,

^{§/} See statistical appendix for a detailed list of the main regulatory changes and publications for consultation during the period.



it must set both its level, in a range between 0 and 2.5% of risk-weighted assets, and the term for its compliance, no less than six months, after a favorable report from the FMC. The Board's decisions in this area will be channeled through semi-annual Financial Policy Meetings (box V.I).

The process of perfecting the banks' liquidity management regulation, as established in chapter III.B.2.1 of the Compendium of Financial Regulations (CFR) of the CBC continues. The ongoing regulation contemplates a gradual incorporation of the Basel net stable funding ratio (NSFR). Starting in 2022, this indicator will be subject to a lower limit of 60%, rising 10 percentage points per year until it reaches the 100% minimum considered in Basel III. As a complement, it considers the flexibilization of the normative limits applicable to term mismatches at 30 and 90 days. Forthcoming is a proposal for the new regulation for consultation.

Additionally, the incorporation of a liquidity management self-evaluation process by banks is being considered, whose results shall be periodically presented in a formal report to the supervisor. This practice is observed in advanced jurisdictions —mainly in Europe— and its purpose is to strengthen liquidity risk management in banking companies and complement the supervisory process.

The CBC released for consultation the investment ceilings of pension funds in bank-issued perpetual bonds, some instruments introduced to the local capital market through the adoption of Basel III in the GBL. As from the reform to the GBL in 2019 banks are allowed to issue bonds with no fixed maturity upon authorization by the FMC. As a complement, the legal framework governing pension funds was amended (DL 3500) to allow investing resources in these new bonds and authorizing the CBC to determine the corresponding investment ceilings, which in no case can exceed 5% for each fund ^{9/}.

The CBC has defined a gradual program of repealing its regulation on market risks, considering the issuance of the corresponding regulation by the FMC, in accordance with the GBL. The CBC's regulation in this area made it possible to partially correct the treatment of market risk for the purposes of capital requirements, since the legal framework remained aligned with the Basel I standards that consider only credit risk. With the reform to the GBL of 2019, market risks are incorporated into capital charges and the FMC issued the corresponding regulation, scheduled to come into force on 1 December 2021. As of that date, the provisions of chapter III.B.2.2 of the CFR of the CBC that may generate voids or duplication of requirements with chapters 21-7 and 21-13 of the Updated Compilation of Standards (RAN) of the FMC will be repealed. As of April 2023, the date on which the regulatory requirements for market risk implemented by the FMC enter into full force, chapter III.B.2.2 of the CBC's CFR will be fully repealed.

^{9/}These instruments are essentially of hybrid nature, combining characteristic of debt and equity securities, offering a new investment alternative and an additional opportunity for portfolio diversification in the Chilean capital market. Considering the risk profile of all types of funds, the investment limit structure published for consultation is thus: up to 5% for type A and type B funds; 2% for type C funds; while for type D and type E funds the limit would be set at 0% of the respective pension fund.



Last August, the CBC officially recognized a set of new foreign reference interest rates. At the end of this year, the transition from Libo rates to the new rates will culminate globally (box V.2, IEF first half 2021). With the aim of promoting and facilitating the transition from various existing contracts linked to the Libo rate to the new risk-free rates, the CBC modified its regulation applicable to credit operations and derivatives^{10/}, recognizing new foreign reference interest rates^{11/}.

The CBC will issue before the end of this year the new chapter III.C.2 of its CFR that modernizes and strengthens the regulatory framework for Savings and Credit Unions. With the aim of strengthening and updating the regulatory and prudential framework applicable to savings and loans cooperatives and the operations that these entities can carry out, the CBC published for consultation a proposal to modify chapter III.C.2 of its CFR^{12/}.

Internationalization of the Chilean peso^{13/}

Even though cross-border operations with Chilean pesos such as physically deliverable derivatives or non-resident investments in the country have been authorized since September 2021, to date there is no significant progress despite the manifest interest of international organizations and some initiatives proposed by local banks. One important friction for the internationalization of our currency has to do with the tax treatment that will apply to the new operations that can be carried out, as authorized by the CBC. To dispel this friction, the CBC asked the Tax Authority (SII) to issue a pronouncement that contemplates, among other matters, the tax obligations to which local and non-resident entities that carry out these operations are affected, the need or not for non-residents to obtain a taxpayer ID, and exemptions, double taxation regimes or other special regimes that may be applicable. The SII published for consultation a Circular covering the aforesaid matters. In this context, it is important to move towards a tax scheme that does not depart significantly from international practices or the existing treatment when the same operations are carried out in a foreign currency.

With respect to the other stages of the process of modernizing FX regulations, in the coming months the new norms for entities participating in the formal exchange market will be published for consultation. Additionally, during next year the final structure of the new Compendium of International Exchange Regulations will be published for consultation, including revised forms for submitting information to the Central Bank of Chile.

Retail payment agenda

The focus of the CBC's payments regulatory agenda is shifting towards one that incorporates the role of technological innovations. Technological innovations have had a great impact on payment systems, facilitating the development of new payment means and the incorporation of new participants in their issuance and operation. Therefore, the regulatory agenda of the CBC in this area is refocusing from the implementation of the 4-part model (M4P)^{14/} for payment cards, to the promotion of further development in fast or instant payments, to address the challenges posed by privately issued digital assets and evaluate the possible benefits of issuing central bank digital

^{10/} Contained in chapter III.B.1 and chapter III.D.1 of CFR, respectively.

^{11/} The rates recognized by the CBC are: the secured overnight financing rate (SOFR), the euro short-term rate (ESTR), the Sterling overnight index average (SONIA), the Tokyo overnight average rate (TONA), and the Swiss average rate overnight (SARON).

^{12/} Finally, in terms of banking regulation, it must be noted that during the period the CBC authorized a local entity to build a banking affiliate abroad

^{13/} One of the key elements of the forex regulation modernization is to extend the use of the Chilean peso in cross-border operations, which was authorized by the CBC in late 2020. As noted in Chapter IV, this is a prerequisite for the process of internationalization of the Chilean peso, which would enhance competition in the local forex market, in addition to being necessary for the incorporation of the CLP to the Continuous Linked Settlement System.



currency (CBDC). Regarding instant payments, although Chile already has digital fund transfers that are instantaneous for users, settlement between institutions is deferred. Therefore, there is room for shortening the settlement period, as well as for extending this standard to other types of payments, and for this the Low Value Payment Clearing Houses, which are part of the CBC's agenda and whose final norm is about to be published, will play a very important role. As for digital assets, the recently presented Financial Innovation Bill—detailed below—grants the CBC powers to regulate the use as a means of payment of so-called stablecoins (box V.2). It should be noted that this regulation will be explicit indicating that the Chamber Administrators must establish transparent, objective, and non-discriminatory conditions so that banks, issuers, and payment card operators can access clearing services as participants.

In this context, the CBC formed a high-level cross-cutting working group on digital means of payment.

The potential development of a new payment system that operates on the basis of crypto assets of different types and in parallel to the regulated one could have undesirable effects on financial stability and interfere with the conduct of monetary policy. For this reason, it is a priority to analyze what role a central bank should play in this scenario, as well as the possible issuance of its currency in digital format. To accelerate the analysis and definitions in this area, the aforementioned working group will produce a document to define a framework for action for the coming years, with strategic objectives, lines of action, and expected results, forthcoming during the first quarter of 2022.

High-value payment systems and financial market infrastructures

Last June the final version of the regulatory framework applicable to High Value Payment Clearing Houses (CCAV) was published. This regulation allows the private entities mentioned in the regulation to create a foreign currency CCAV for the clearing of payments originated in international FX transactions in the spot market (Chapter IV) and strengthens the current prudential framework applicable to the CCAV in domestic currency.

The two Central Counterparties in the local market—ComDer S.A. and CCLV S.A.—have formally submitted to the FMC for approval the regulatory updates to include in their procedures the settlement in dollars of some of their products, through an account in the RTGS System in dollars. These modifications must also be approved by the CBC, as provided for in the current law. If approved, this would be an important milestone for the development of the RTGS System in dollars since it began operations in March 2020, as these infrastructures would be incorporated as participants in the system, thus ensuring that fund transfers and settlement are protected by the principles of finality and irrevocability. These developments are complemented by the settlement in dollars in the Clearing House for Domestic and Foreign Currency Checks reported in the previous FSR, whose net debit and credit balances in dollars are already being settled in the RTGS sub-system in dollars.

^{14/} It should be noted that in September 2021 the TDLC ruled on Transbank's pricing system, given its operation under the M4P. At the same time, the Committee for the Setting of Interchange Rate Limits will have to set these rates for the first time next February. Both facts will provide certainty to the market, which will increase competition and thus mitigate the cost increases that some businesses have had to cope with in this new scenario.



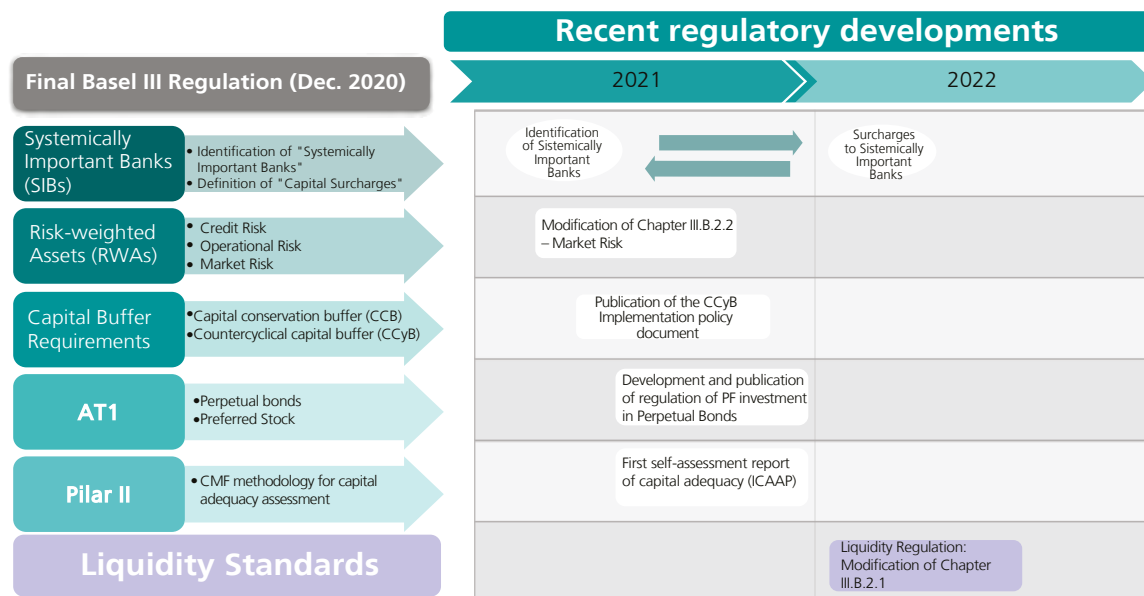
Meanwhile, the Integrated Information System on Derivative Instruments Transactions has met all the milestones established for the trial run initiated in November 2020. After a long process of regulation and subsequent implementation of the Integrated Information System on Derivative Instruments Transactions (SIID), as reported in previous Reports, it is expected to start operations as of the first half of 2022, including reports from non-banks^{15/}. Thereafter, it will be possible to access updated information on currency, interest rate, inflation, and fixed-income derivatives in accordance with international standards applicable to this type of repository^{16/}.

OTHER FINANCIAL POLICY DEVELOPMENTS AND INITIATIVES IN CHILE^{17/}

Chile has begun implementing the Basel III bank solvency standards, which represents a significant step forward in strengthening the stability of the financial system. As noted in previous FSRs, the FMC, in coordination with the CBC, relaxed the Basel III deadlines, postponing the application of certain elements of the new capital requirements framework. This postponement was decided by an international consensus aimed at giving banks and supervisors some leeway to address the risks to financial stability associated with the Covid-19 pandemic. These deadlines expire on 1 December 2021, thus initiating the practical implementation of this new bank solvency framework in Chile (figure V.1).

The Basel III implementation process contemplates, as from December 2021, the entry into full force of capital charges with respect to assets weighted by credit risk and operational risk. Meanwhile, for market risks, a process of gradual implementation of requirements associated with the repeal of the current market risk regulations of chapter III.B.2.2 of the CFR is established (amendment detailed in this same chapter). Also, the additional core capital charges for systemically important banks, the capital conservation buffer, the discounts on capital for the determination

FIGURE V.1 IMPLEMENTATION OF BASEL III: MAIN REGULATORY LANDMARKS



Source: Central Bank of Chile.

^{15/} Stock brokers and securities agencies, general fund administration companies, and insurance and reinsurance companies.

^{16/} More information at www.siid.cl.

^{17/} See statistical annex for a detailed list of the main regulatory changes and publications for consultation during the period.



of effective equity, and the additional capital requirements (AT1) will begin on the same date a process of progressive application in order not to overburden the operational and capital solvency situation of the industry^{18/}. As for “Pillar 2” regulations^{19/}, it is expected that in April 2022 the first delivery of the simplified version of the Equity Self-Assessment Report (IAPE) by banks will become effective, in order to extend its coverage progressively, with the first IAPE in full format to be delivered in April 2023. In turn, the regulation that promotes market discipline and transparency^{20/}, through the meaningful and timely disclosure of information associated with the bank’s profile known as “Pillar 3,” will deliver its first publication on the last working day of April 2023.

Last August saw the enactment of Law 21.365, which creates a Committee for the Establishment of Exchange Rate Limits. These fees correspond to the payment that acquirers or operators make to payment-card issuers for each transaction they process. The Committee began its functions immediately, and must set the first limits to these fees no later than February 6, which will come into effect 45 working days later^{21/}. The level at which these fees are set will be very important for the future development of the market, due to the incentives it will be setting for issuing and acquiring the cards.

In September, the Fintech Law bill entered Congress, which would promote competition and financial inclusion through innovation and technology in the provision of financial services. This bill seeks to amend several pieces of the legal framework of the financial market, incorporating into the regulatory perimeter of the FMC, among others, entities engaged in activities such as crowdfunding and platforms that provide alternative transaction systems, in addition to establishing a regulatory framework for open banking. As far as the CBC is concerned, it may regulate “stablecoins” (box V.2). In general terms, the CBC shares the objectives of this project, considering that technological progress in financial services has the potential to radically modify the structure of financial markets by allowing new players to offer products that in the past belonged only to banks and financial institutions. This may bring higher levels of financial inclusion and lower costs for users, but it is not without risks. Considering that in Chile there is a growing Fintech industry, which operates in a largely unregulated manner, having a clear legal framework can help mitigate risks for users and foster the development of the sector.

INTERNATIONAL FINANCIAL POLICY DEVELOPMENTS

During this year, several central banks, led by the BIS Innovation Hub, have announced projects that explore solutions for using digital money issued by central banks to implement cross-border payment systems. The BIS Innovation Hub, among other initiatives, is coordinating actions and projects of a significant number of jurisdictions that are developing platforms to make cross-border payments more efficient, faster and at lower costs than those currently available. The following projects stand out: (i) mCBDC Bridge, involving China, United Arab Emirates, Hong-Kong, and Thailand; (ii) Jura, involving France and Switzerland; and Dunbar, comprising Australia, Malaysia, Singapore and South Africa ^{22/}.

^{18/} [Basel III implementation calendar in Chile, Financial Market Commission \(FMC\).](#)

^{19/} Chapter 21-13 of the FMC’s RAN.

^{20/} Chapter 21-20 of the FMC’s RAN.

^{21/} The Committee is composed of individuals appointed by the Ministry of Finance, the National Economic Prosecutor’s Office, the FMC and the CBC. More information on this Committee is available at <https://ctdi.hacienda.cl/>.

^{22/} For more information, see the BIS Innovation [BIS Innovation Hub](#). This BIS Innovation Hub aims to promote international collaboration among central banks for the development of innovative financial technology.



Regarding privately issued crypto assets, the very opposite measures adopted by China and El Salvador stand out, in addition to further analysis by international organizations. While China declares crypto-assets illegal, prohibiting all types of related activities, El Salvador is the first country to approve the use of bitcoin as legal tender. Meanwhile, multilateral organizations were against the measure adopted by El Salvador, citing various risks to monetary policy, financial stability, and integrity of the financial system, among others. It should be noted that the recognition of crypto assets by third countries in no case modifies their legal status locally.

Reinforcing its importance to international agencies, the BIS recently published two consultations related to crypto assets: one on the prudential treatment of banks' exposure to crypto-assets, and the other on the application of the Principles for Financial Market Infrastructures (PFMI).

The growing relevance of climate- and environment-related risks accelerates the process of assessing their potential effects on financial stability. As has been recognized locally and internationally, the financial sector has the potential to incubate risks related to climatic events or processes (i.e. physical and transition risks), in addition to having the capacity to channel resources for a cleaner economy (i.e. green finance)^{23/}. For this reason, multilateral economic organizations, central banks, supervisors, and private entities have already begun to study, evaluate, and incorporate these aspects into their respective areas of action. The participation of the CBC in the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) reported in the previous FSR, as well as other instances of domestic and international participation, have allowed for a gradual transfer of information and know-how through joint studies, working groups, workshops, and research papers, in addition to internal initiatives.

THE CENTRAL BANK OF CHILE IN INTERNATIONAL COORDINATION INSTANCES

The final report on the Crisis Simulation Exercise that took place in March 2021, together with five other countries in the region and organized by the BIS Financial Stability Institute, was received last July. The objective of this exercise was to provide an opportunity to test crisis management and cooperation schemes among authorities. The main results are related to recommendations for future policy developments in the areas of bank resolution and the provision of emergency liquidity^{24/}.

From February to April of this year, the CBC's transparency practices were reviewed against the IMF's Central Bank Transparency Code (CBT) that was adopted last year. The overall purpose of the CBT is to help central banks assess their own transparency practices that can ultimately serve to strengthen accountability, enhance policy effectiveness, and improve public confidence. The results indicate that the CBC has adopted highly advanced transparency practices, which have served to broaden confidence in the institution and enhance the effectiveness of its policy. In response, the CBC put together a detailed roadmap to address the recommendations contained in the IMF report to strengthen its transparency.

^{23/} See box V.1. in Financial Stability Report, second half 2019.

^{24/} [Press release: Financial Stability Institute publishes report on Latin American cross-border crisis simulation exercise \(bis.org\).](https://www.bis.org/press/pr210401.htm)



BOX V.1:

Implementing the Contracicycal Capital Buffer

Within the framework of the Basel III implementation in Chile, which will come into force in December 2021^{1/}, the CBC was granted power to determine the so-called Contracicycal capital buffer (CCB) for banks. This requirement can be set between 0 % and 2.5% of risk-weighted assets, and must be fully funded with core capital (CET 1) above the minimum capital requirements established by the General Banking Law (GBL).

The CCyB is conceived as a macroprudential tool to preserve the stability of the financial system as a whole, rather than the solvency of a particular bank. In this sense, it reduces the impact of materialized risks on the banking sector and, therefore, on financial stability, avoiding the restriction of essential services, such as the supply of credit, and protecting the economy at large ^{2/}.

The General Banking Law grants the CBC the power to determine the activation or deactivation of the CCyB. Once the activation decision has been made, the CBC must set the level and term of compliance, upon favorable report from the FMC. The implementation of the CCyB follows a preventive strategy that results from assessing, in each circumstance and in a forward-looking manner, the vulnerabilities and risks of the financial system. In this way, the CCyB will be activated before an episode of financial stress materializes, in order to accumulate capital reserves during the upward phase of the cycle to face future risk scenarios. Once the risks materialize, the threats to financial stability have subsided, or the bank is deemed to be sufficiently resilient, the CCyB can be scaled down partially or completely.

The implementation of the CCyB is based on an analytical framework that includes qualitative, quantitative and judgmental elements. In line with what was developed in the thematic chapter of the FSR of the second half of 2017, the quantitative segment has as its starting point identifying the timing and magnitude of deviations of the credit-to-GDP ratio from its trend^{3/}. Increments in this gap would indicate excessive credit growth, which would serve as a precedent for a possible increase in the CCyB. Some countries, such as Germany and Hong Kong, use default rules in line with BIS recommendations to guide the assessment of CCyB activation or deactivation.

On the other hand, the vast majority of jurisdictions include supplementary indicators that seek to reflect other sources of systemic risk. BIS (2017), Norges Bank (2020) and Sveriges Riksbank (2020) study the use of supplementary indicators in multiple jurisdictions, concluding that these can be divided into 8 blocks: credit indicators, property market, households, corporate sector, banking sector, risk appetite, macroeconomic, and others (table V.3). Several countries also incorporate macroeconomic and statistical models that complement the indicators described above. For example, the United Kingdom uses bank stress exercises to complement the systemic risk map (BoE, 2016).

^{1/} [Basel III implementation calendar in Chile, Financial Market Commission \(FMC\)](#).

^{2/} [Contracicycal capital buffer CCyB](#), september 2021.

^{3/} This measure was initially proposed by the Bank for International Settlements (BIS) in 2010 (BIS 2010a; 2010b). For more details about of the advantages and disadvantages of this measure, see FSR, second half 2017, thematic chapter.



The BCCh has significant experience in the design of tools to support the analysis and decision-making of the CCyB. These include the stress tests of banks published in the different FSRs, and the macro-financial model, currently under development, which allows complementing the toolkit available for the conduct of monetary policy through the explicit incorporation of the CCyB as a macroprudential tool.

TABLE 2. BLOCKS OF INDICATORS FOR THE CCyB

Credit Market	Real Estate	Households	Corporate
It incorporates indicators of credit to GDP, credit growth and other indicators of the state of credit market.	It includes measures of residential and commercial price growth, affordability, and credit standards.	In this block, we analyze indicators of indebtedness and households' financial assets	It includes measures of profitability, cost and level of indebtedness, and credit standards.
Banking Sector	Risk Appetite	Macroeconomics	Others
It considers indicators of liquidity, funding costs, profitability, capital solvency, and loan portfolio performance of the banking sector.	It includes financial indicators that assess risk appetite, such as stock prices, interest rates and spreads, and measures of volatility and financial stress.	It incorporates the national financial account, current account, national savings, external debt, GDP growth, and unemployment rate, among others.	This block allows us to incorporate other types of indicators, for instance, systemic risk indicators, and stress tests.

Source: Central Bank of Chile based on BIS (2017), Norges Bank (2020), and Sveriges Riksbank (2020).



BOX V.2

Digital assets and the new bill for the Fintech sector

New technological advances in the financial system have facilitated positive changes in the provision of services and in the entities offering them^{1/}, and at the same time have motivated a review of some of the current regulatory frameworks. In this context, the Executive recently introduced a bill that, among other matters, integrates digital assets representing electronic money (commonly known as stablecoins) into the regulatory perimeter of the CBC. This box describes the characteristics of these digital assets, their similarities with electronic money and their differences with other types of digital assets

Digital or electronic money is not new. For decades deposits in commercial banks have had digital support and access methods. The use of digital money deposited in commercial banks or other non-bank providers represents a liability of these institutions and ultimately depends on the existence of a central authority in charge of controlling its supply, regulating intermediaries and granting transactions' finality.

Technological advances, on the other hand, have allowed the emergence of digital assets intended to challenge the centralized notion of money. These types of digital assets, often referred to as crypto assets or crypto currencies, aim to function as money, without intermediation of an authority that upholds the integrity and finality of the payments made, proposing instead that decentralized consensus protocols grant validity to payments made with these assets (box IV.1 in FSR for the first half of 2018).

However, there is still no clarity as to whether crypto currencies can fulfill the functions of money, because they are subject to significant price variations, which, among other reasons^{2/}, prevent them from properly performing the functions of money. Rather, the available information indicates that, more often than not, these assets are used for speculative activities, notwithstanding the fact that, for some users, crypto currencies may offer advantages compared to traditional money.

On the contrary, stablecoins are digital assets whose characteristics distinguish them from most decentralized-issue crypto assets in that they seek to maintain a stable value in relation to fiat money, and for this purpose typically use reserve funds, which, theoretically, back up the value of these assets^{3/}. Thus, there are stablecoin designs in which the issuer of these assets becomes a debtor of the holder of the asset, since the latter is entitled to be reimbursed by the issuer for the value of the stablecoin or, otherwise, for a portion of the reserve fund.

^{1/} The Bali Fintech work agenda, prepared by the World Bank and the IMF, points out that these activities have the potential to strengthen the efficiency, inclusion, and development of financial markets. [See The Bali Fintech Agenda \(imf.org\)](https://www.imf.org/en/Publications/WP/Papers/2018/01/01/WP/180101).

^{2/} For example, the time required to conduct disintermediated transactions with crypto currencies, the exposure to attacks that breach predefined consensus mechanisms, and the high energy usage of consensus protocols for some of the so-called crypto currencies.

^{3/} Some algorithmic stablecoins seek to maintain value by shifting the monetary base in response to changes in demand.



Instruments of this nature present important similarities with traditional forms of electronic money. The collection of money from the public or issuance of electronic money has characteristics equivalent to some of the configurations of stablecoins, which has been recognized in various jurisdictions (table V.4).

TABLE V.4 REGULATORY TREATMENT OF STABLECOINS THAT ARE EQUIVALENT TO ELECTRONIC MONEY IN SELECTED JURISDICTIONS

Jurisdiction	Description	Source
United States	The Office of the Comptroller of the Currency (OCC) notes that stablecoins can be issued by banks to facilitate payments from their customers, equivalent to debit cards, prepaid cards, or checks. At the same time, crypto assets that are not electronic money are not regulated at the federal level.	OCC – interpretative letter 1174. (2021).
United Kingdom	Conduct regulator recognizes that the issuance of these assets should be regulated as electronic money. Other payment assets are not regulated.	Policy Statement 19/22 (2019)
Singapore	The monetary authority defines that e-money tokens must be regulated as electronic money and are different from other payment assets.	Payment Service Act (2019)
Switzerland	E-money tokens are equivalent to bank deposits.	Guidelines for Stablecoins – Finma (2019)
European Union (proposal)	Regulation of e-money tokens in a differentiated way to the rest of other payment assets.	MICAR proposal.

Source: Central Bank of Chile.

In this sense, an entity that performs an activity consisting of issuing an asset in exchange for the collection of funds should be regulated as such, irrespective of whether the collection involves crediting money in an account, or issuing some type of digital asset. For this reason, the bill incorporates into the regulatory perimeter those digital assets that represent a collection of funds from the public, extending the regulatory framework of the CBC to them ^{4/}.

It is therefore unclear whether a regulatory framework for payments should be applicable to activities carried out with crypto currencies, because there is still limited international experience on the matter, plus there is no certainty as to the use of these digital assets as payment instruments in the near future.

In light of the available precedents, the approach adopted in the bill with respect to crypto currencies seems to be adequate. This approach consists of regulating specific activities carried out with these digital assets from a market conduct perspective, granting the Financial Market Commission powers in this matter. However, nothing prevents this approach from being revised in the future in case the information available changes.

^{4/} It is also important that the eventual payment systems that operate with these assets be recognized as regulated payment systems and, also, that the international forex transactions carried out with this type of assets be subject to the exchange regulation that may be issued by the CBC in the exercise of its legal powers.



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