# FINANCIAL STABILITY REPORT

## Second Half 2016

# FINANCIAL STABILITY REPORT

## Second Half 2016*

*/ This is a translation of a document originally written in Spanish. In case of discrepancy or difference in interpretation the Spanish original prevails. Both versions are available at www.bcental.cl.

# CONTENTS*/



*/ The cutoff date for this *Financial Stability Report* was 30 November 2016.

# PREFACE

As established in its Basic Constitutional Act, the Central Bank of Chile must "safeguard the stability of the currency and the normal operation of internal and external payments." To carry out these tasks, the Central Bank of Chile is vested with diverse legal powers, such as extending emergency credit and determining regulations in matters affecting the financial system and international foreign exchange operations.

The Central Bank's focus in the area of financial stability is centered mainly on the well-functioning of the system and the Chilean economy's access to international financial markets. The Central Bank's tracking of financial stability is complementary to that undertaken by the specialized supervisory entities; it serves as an independent element of analysis with respect to the supervisors' powers and functions in relation to the entities subject to their oversight.

The objective of the *Financial Stability Report* is to provide information, on a half-yearly basis, on recent macroeconomic and financial events that could affect the financial stability of the Chilean economy, such as the evolution of the indebtedness of the main credit users, the performance of the capital market, and the ability of the financial system and the international financial position to adapt sufficiently to adverse economic situations. In addition, the *Report* presents the policies and measures that support the normal operation of the internal and external payment system, with the objective of promoting general knowledge and public debate with regard to the Bank's performance in fulfilling this function.

**The Board**

# SUMMARY

**External long-term interest rates have reverted their protracted downward trend.** These movements were a reaction to the surprising outcome of the U.S. presidential election, and to the consolidated view that the Federal Reserve (Fed) would resume its policy rate normalization process at its recent December meeting. Thus, between the election and the cutoff date of this *Financial Stability Report* (FSR), the interest rate on the U.S. 10-year T-bill rose around 50 basis points primarily as a consequence of an increase in term premia to levels close to those observed at the end of 2015. These developments have prompted changes in investors' risk appetite, sharp movements in volatility indicators and portfolio reallocation. Meanwhile, emerging market economies have seen limited increases in their sovereign risk premia, but a significant fall in capital inflows. Furthermore, the recent resumption of the U.S. monetary policy normalization has resulted in further increases in long-term rates.

**Geopolitical events have caused financial volatility episodes, triggering monetary policy actions.** After the United Kingdom referendum in June, the Bank of England extended its quantitative program and communicated its intent to enhance its flexibility to properly accommodate its exit from the European Union. The Bank of Japan, meanwhile, reacted with a hike in long-term interest rates to the U.S. elections, and announced a bond purchase program with the objective of controlling the yield curve. Going forward, the details of the economic proposals to be implemented by the new U.S. administration could entail episodes of increased volatility with effects on financial asset prices that are relevant for emerging market economies.

**As in the previous FSR, financial risks remain high in China.** Private credit continues on the rise, surpassing 250% of GDP, while banks have increased their exposure to the real-estate sector, where housing prices continue to show double-digit annual growth rates. Meanwhile, the banks' portfolio continued deteriorating, in line with the poorer performance of the corporate sector. This situation could further worsen should international trade policies develop a more protectionist bias, given the still strong dependence of the Chinese economy on its exports.

**The hikes in external interest rates have been transmitted to domestic rates.** This has affected the value of medium-term mutual and pension fund portfolios, especially those with a higher share of fixed-income securities, such as the E-fund. In particular, in the case of mutual funds, significant withdrawals were observed in medium- and long-term funds (FM3) which undid part of the increases reported in earlier *Reports*. Although so far no significant increases have occurred in money market rates, the higher reliance of medium-sized banks on the funding provided by said funds poses a risk that must be monitored.

**The financial situation of local firms is fairly unchanged from earlier FSR.** The debt of firms posted a slight fall, to 119% of GDP at the third quarter. A significant share of the variation is due to the appreciation of the Chilean peso with respect to the dollar during the period. The group of companies reporting to the SVS maintains low profits and high indebtedness by historical patterns. At the same time, various indicators show that the exchange rate risk remains limited. Finally, non-performing corporate loans with banks remain stable and relatively low, although the increase in the sub-standard commercial portfolio reveals a small decline in the capacity of debtors to pay in due time. This situation could worsen if confronted with a more adverse economic scenario resulting from a drop in economic activity or increased financial expenses. These may materialize if the higher costs of external funding are transmitted to the local lending rates, thereby affecting those firms in need of renegotiating their liabilities.

**Household risk indicators remain relatively stable, in line with the greater resilience observed in the labor market.** Aggregate household indebtedness continues to rise due to the higher contribution of mortgage loans. The lower interest rates recorded until September maintained the aggregate financial burden stable around 15%. Meanwhile, the delinquency of both consumer and mortgage loans remained bounded and almost unchanged since the first half. The exceptions were consumer loans granted by Family Allocation and Compensation Funds and mortgage loans in the northern area, where there is a deterioration in borrower creditworthiness. Therefore, a worsening of the labor market could hinder the repayment capacity of households.

**Housing prices and mortgage lending have moderated their growth rates.** Various housing price indices showed a slowdown since previous quarters, in line with the dynamics of their determinants. Although the data submitted by real-estate firms reporting to the SVS do not indicate an increase in withdrawn promises as of the third quarter of 2016, it should be noted that this risk persists because most of the projects promised during the last year are due to be delivered between the last quarter of 2016 and 2017. Although the labor market has been robust lately, during the current year banks have increased the down payment required to grant a mortgage loan, which could increase the withdrawal rate of households whose savings are now insufficient to meet the new down payment.

**The profitability of the banking system has declined, while capitalization has begun to recover.** Lower profitability is due to a reduced contribution of interest margins. This can be explained by the change in credit portfolio composition towards products with relatively lower return —from consumer to mortgage loans—and by a migration towards less risky clients, who are offered lower interest rates. In turn, capitalizations made during the first half of this year raised the capital adequacy ratio (CAR) of the banking system, thus strengthening its position to deal with adverse economic scenarios. Indeed, stress tests suggest that the banking industry's capital levels are sufficient to confront a severe stress scenario.

**Capital gaps remain unchanged with respect to comparable countries and the levels suggested by Basel III**. Although several capital increases have been made recently, no changes have been observed in the banks' dividend withholding policies that would allow for an endogenous increase in the capital base. In an international context, the banking system's CAR remains below the 25th percentile with respect to OECD countries and within the region. Accordingly, it is important to carry out legislative initiatives that help strengthening bank capitalization, in line with the efforts that other countries have made in order to meet the Basel requirements.

**In summary, although there are no fundamental changes in the risk outlook, the financial strength of local agents has steadily declined in recent years due to weaker economic activity.** Corporate and household indebtedness has increased moderately but persistently, the profitability of nonfinancial firms has fallen in line with the limited expansion of output—reducing their capacity to deal with scenarios of increased financial expenditure—and both the banks' profitability and capitalization have dropped. Although the lower interest rates have helped these developments not to materialize in financial stress, the agents' ability to cope with an adverse external scenario has diminished with respect to the previous years, especially if it results in a further decline in GDP growth. In this context, it is especially important for some trends observed in the last quarters to consolidate, such as the lower growth of corporate debt and the greater capitalization of the banking system.

# I. EXTERNAL ENVIRONMENT AND FINANCIAL RISKS

The global economy is facing greater political, macroeconomic, and financial insecurity, which has exacerbated some of the risks raised in the last *Financial Stability Report* (FSR). Long-term interest rates have reversed their long downward trend. Geopolitical events have generated episodes of volatility, triggering monetary policy actions.

## EVOLUTION OF THE INTERNATIONAL FINANCIAL SITUATION

***After the U.S. presidential election, the international financial markets reacted strongly, increasing volatility indices.***

The U.S. presidential election results surprised the markets, triggering sharp swings in commodity prices, currencies, and stock market indices. Although most prices quickly corrected, some did not return to their previous levels. The implied volatility indices increased after this event, consistent with their greater sensitivity to episodes of political uncertainty, such as after the U.K. referendum (figure I.1). In particular, the implied volatility of ten-year U.S. Treasury bonds (TYVIX) has not reversed, in line with the strong adjustment in interest rates at that maturity.

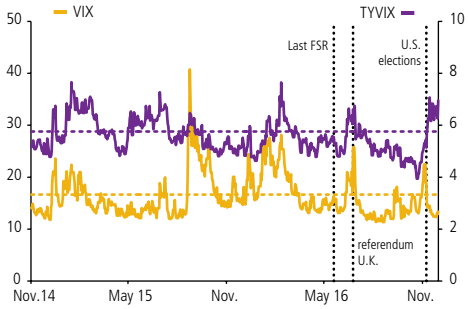
***Long-term interest rates in developed economies reversed their downward trend.***

On the cutoff date of the last FSR, interest rates on ten-year sovereign bonds in the main developed economies were still following the downward trend of the past few years. This trend turned upward in July for the U.S. and in September for other economies (figure I.2). Thus the increase recorded in November mainly reflects a decompression of the term spread. Moreover, the higher inflation expectations in the United States and the United Kingdom suggests that these reversals will not be transitory.

***The recent geopolitical events have led to monetary policy actions in developed economies.***

The discrepancy between communications by the U.S. Federal Reserve (Fed) and market expectations for the future path of the policy rate (federal funds rate, FFR) began to shrink over the last half, picking up speed after the U.S. election. Attention thus returned to the rate at which the Fed will normalize its policy.

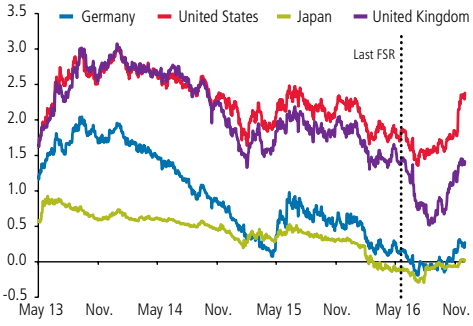
**FIGURE I.1**
Financial market volatility (*)
(percent)




(*) Horizontal lines indicate the average of the respective series in 2015.

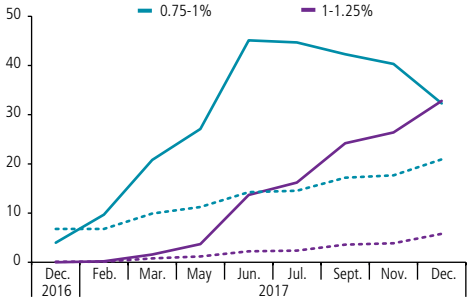
Source: Bloomberg.

**FIGURE I.2**
Interest rates on 10-year sovereign bonds
(percent)




Source: Bloomberg.

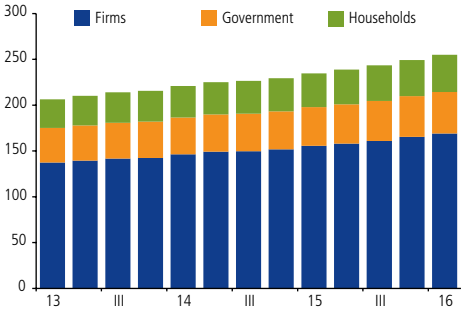
**FIGURE I.3**
Implied probability of an FFR hike (*)
(percent)




(*) The probability that the FFR will be in the ranges indicated in the legend is calculated based on futures prices on 28 July 2016 (slashed line) and 30 November 2016 (solid line).

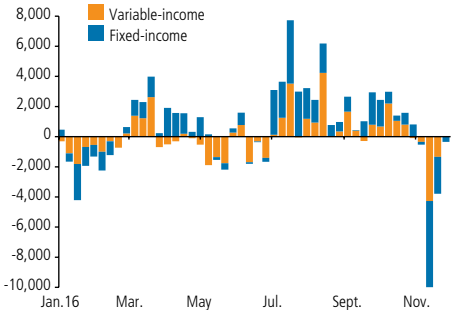
Source: Bloomberg.

**FIGURE I.4**
Credit to the nonfinancial sector in China
(percent of GDP)




Source: Bank for International Settlements.

**FIGURE I.5**
Portfolio flows to emerging economies (*)
(US$ million)




(*) Foreign investment flows to emerging market stocks and bonds. Data are from a survey of 1,600 international investment funds.

Source: Emerging Portfolio Fund Research.

On the cutoff date of this FSR, asset prices signaled that the probability that the FFR would be in the range of 0.75–1.0% in June 2017 had increased from 15 to 45%, relative to July, while the probability that it would be 1.0–1.25% at year-end 2017 rose from 5 to 33%. This reveals expectations that the speed of adjustment will be faster than previously assumed (figure I.3).

With regard to monetary policy in other jurisdictions, the United Kingdom expanded its quantitative stimulus program after the referendum, in order to accommodate the transition of its exit from the European Union. The Bank of Japan announced the first debt purchase to support its quantitative program, in response to the interest rate hikes following the U.S. elections[1]/. Finally, the European Central Bank announced that it will maintain its sovereign bond purchase program reported in the last FSR through March 2017, which was later extended through December of the same year but at a lower purchase rate (60 billion euros a month).

***China continues to present financial risks, while the emerging economies recorded capital outflows.***

Short-term indicators for the Chinese economy point to a better growth outlook. Growth continues to be driven by credit, which is equivalent to over 250% of GDP (figure I.4). The residential real estate sector is one of the most dynamic, in line with the growth of housing prices, which has reached double-digit annual rates in some localities. The firms in this sector are highly leveraged, which constitutes a risk for the banking sector. Additionally, several indicators suggest that the corporate sector is less dynamic, including an increase in the share of firms recording accounting losses (Natixis, 2016). Going forward, this sector could face new challenges, depending on local conditions and on whether the advanced economies introduce protectionist measures.

Throughout much of 2016, the strong macroeconomic indicators in a number of emerging economies contributed to net capital inflows to emerging markets on aggregate (figure I.5). More recently, however, risk aversion has increased, and investors are rebalancing their portfolios toward variable income in advanced economies, Consequently, the emerging economies have recorded strong capital outflows, once again demonstrating the sensitivity of nonresident investment to global factors. (Eichengreen and Gupta, 2016).

***A scenario of heightened risk aversion could complicate the situation in some emerging economies.***

The favorable external financial conditions this year could turn down in the medium term in the face of a decompression of credit spreads and continued capital outflows. These elements could result in a depreciation of emerging currencies against the dollar, with an effect on debt stocks in those currency. While this adverse scenario could be cushioned through economic measures,

[1]/ The objective of the Bank of Japan's quantitative program is to safeguard the yield curve against the risks associated with the low long-term interest rates. Specifically, the recent announcement of local debt purchases seeks to keep the long end of the curve around zero.

some countries have vulnerabilities—such as a high current account deficit or significant deviations of the inflation rate—that limit the policy space.

## MAIN EXTERNAL THREATS TO FINANCIAL STABILITY

***An acceleration of the increase in long-term interest rates in developed economies could have a significant impact on the rest of the world.***

Going forward, there are a number of possible scenarios for the evolution of external long-term interest rates (box I.1). On one hand, the structural factors that have contributed to the downward rate trend could persist, generating downward pressure or limiting future hikes. On the other, short-term factors could continue to generate upward pressure. The latter could pass through to interest rates in emerging economies.

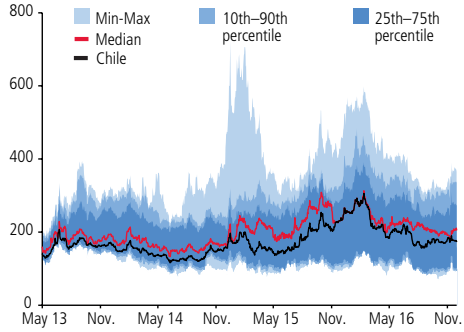
Estimates with historical data suggest that the pass-through coefficient for Chile is between 50 and 60%. It should be higher in periods of higher volatility,[2]/ however, such that the events of November heighten the possibility that local long rates will increase. Higher interest rates reduce the value of the medium- and long-term debt portfolios (type 3 mutual funds, or MF3), which could trigger asset withdrawals that—if sufficiently large—could affect prices in some markets. There were, in fact, substantial withdrawals from MF3 portfolios after the rate hike in November, although the impact on asset prices was limited (chapter II).

At the same time, financing costs could increase through the pass-through from the sovereign rate to the lending rates available to the local banking sector. If so, financing costs would rise for firms that obtain financing primarily from the banking sector. The impact would potentially be lower for firms that have issued debt at longer maturities (box III.2). The most-affected households would be those that rely heavily on revolving credit, as well as new home buyers applying for a mortgage (chapter III).

***Geopolitical events could trigger new spikes in financial volatility and portfolio adjustments.***

Although the new U.S. administration's economic program is as yet unknown, the markets expect that it will generate increased growth and inflation, but in combination with a widening of the fiscal deficit and a ballooning of public debt in the medium term. The resulting macroeconomic environment would be characterized by higher interest rates. Similarly, the tax proposals made before the elections at least partly explain the activity in the U.S. stock indices.

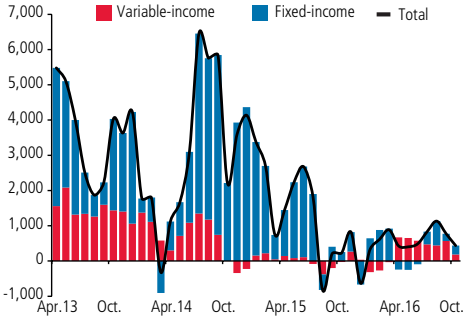
**FIGURE I.6**
EMBI, selected economies (*)
(basis points)




(*) Includes Brazil, Chile, China, Colombia, Philippines, India, Indonesia, Lithuania, Malaysia, Mexico, Peru, Poland, Russia, South Africa, and Turkey.

Source: Central Bank of Chile, based on data from Bloomberg.

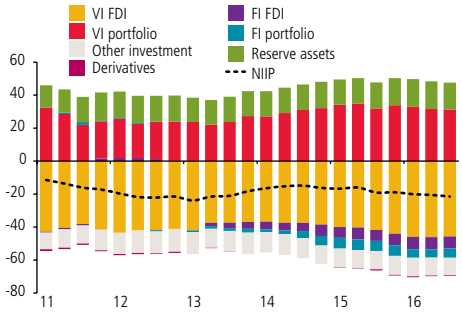
**FIGURE I.7**
Gross portfolio capital inflows to Chile
(US$ million, three-month moving average)




Source: Central Bank of Chile.

[2]/ See FSR, First Half 2015, chapter II.

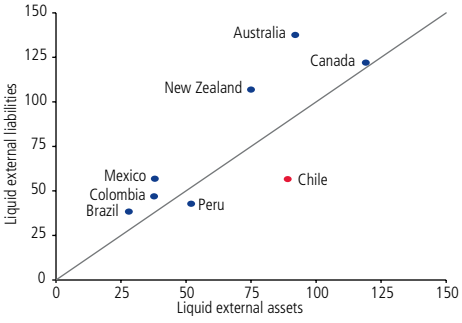
**FIGURE I.8**
Net international investment position (NIIP)
(percent of GDP) (*)




(*) GDP at a constant real exchange rate (fixed-base index: Sept.16 = 100)

Source: Central Bank of Chile.

**FIGURE I.9**
Liquid external assets and liabilities (*)
(percent of GDP)




(*) The total stock of external assets (liabilities) minus FDI assets los assets (liabilities). Data are for the first quarter of 2016, except for Australia, New Zealand, and Peru, where the latest available data are for the fourth quarter of 2015.

Sources: Central Bank of Chile and IMF.

As the details of the new U.S. administration's economic proposals become known, there could be new episodes of volatility and changes in risk appetite, which could rekindle the capital outflows from emerging economies. The adjustment of the EMBI for Chile around the geopolitical events of June and November was limited. This measure of the sovereign spread stayed below the median of a sample of emerging economies, rising less than 10 bp after the U.S. elections (figure I.6). However, there is still a possibility that the EMBI could rise in response to a one-off event in a large emerging economy[3]/.

## CHILE'S EXTERNAL SITUATION

***Capital inflows to Chile remained low by historical standards.***

Since April 2016, foreign capital inflows to variable-income instruments have recovered slightly. Capital inflows to fixed-income instruments increased somewhat, due to overseas bond issues in the third quarter of 2016 (figure I.7).

***The net international investment position has become slightly more negative, but external liquidity remains stable (figure I.8).***

In the third quarter of 2016, total external debt represented 65% of GDP, which has increased over the course of the year. The same trend is seen in the residual short-term component (RSTED), and the ratio of international reserves to RSTED is just under 90%. However, if the sovereign wealth funds are included in reserves, the ratio over RSTED rises to 120%. In terms of external liquidity, an international comparison shows that Chile maintains a relatively favorable position. First, a large share of its stock of external liabilities is accounted for by foreign direct investment (FDI), a type of investment that, on average, is less sensitive to financial volatility events (Koepke, 2015). Second, the stock of external assets in Chile's financial account is primarily made up of portfolio instruments, which are easier to repatriate if necessary to cover liquidity needs (figure I.9).

[3]/ Internal Central Bank estimates indicate that the EMBI for Chile is highly sensitive to changes in the VIX and the EMBI for emerging economies such as Brazil, followed by China (see FSR, Second Half 2015, box 1.1).

# BOX I.1
# EXTERNAL LONG-TERM INTEREST RATES: DETERMINANTS AND RISKS

Over the last three decades, long-term interest rates in developed economies recorded a marked downward trend, which accentuated after the global financial crisis (GFC). In the most recent period, however, long rates reversed course. The reversal warrants an analysis of the factors behind the trend, as well as the associated risk. To this end, this box reviews the short-term and structural determinants of the trend and identifies possible risk scenarios.

### Short-term determinants

One of the main short-term determinants of long-term interest rates is monetary policy. Since the GFC, the large economic blocs have adopted expansionary monetary policies in combination with quantitative measures. This has contributed to reducing interest rates at all maturities. Kaminska and Zinna (2014) estimate that from 2008 to 2012, the Fed's asset purchase program reduced the ten-year U.S. Treasury bond rate by around 140 bp[1]/.

Investors' preference for sovereign fixed-income securities is another key determinant in the short run. This can be approximated through the term spread[2]/. Various measures suggest that term spreads have narrowed in the majority of the advanced economies, in some cases to negative values. Hördahl et al. (2016) report that since the GFC, this phenomenon has also occurred in emerging economies, where the pass-through to term spreads from advanced economies is around 80%.

### Structural determinants

The structural determinants have to do with the long-term equilibrium interest rate. One of these determinants is the observed change in the desired levels of global saving and investment. Rachel and Smith (2015) estimate that the real global interest rate has decreased nearly 450 bp over the last 30 years and that two-thirds of this trend can be attributed to increased saving[3]/. This reflects demographic changes in the world population in the period, specifically the increase in the working-age population, which is the population segment that is in a position to save.

From a financial perspective, Caballero (2006, 2010) argues that the supply of low-risk assets has not been able to fully satisfy global demand for assets that serve as a store of value and collateral, leading to an increase in these prices.

### Risks to financial stability

The short-term determinants are associated with abrupt changes in long-term interest rates. According to estimates published by the New York Fed, 75% of the rise in U.S. long rates in November is explained by the increase in the term spread, which depends strongly on the volatility in different financial markets (Abrahams et al., 2015) and responds to changes in the perception of global risk, as occurred after the recent geopolitical events. Sudden interest rate hikes in advanced economies are usually followed by capital outflows from emerging economies.

The structural determinants, in turn, could imply a prolonged period of low interest rates. This situation could lead to an overvaluation of some assets and continue motivating a search for returns on the part of institutional investors, such as pension funds and life insurance companies (GFSR, 2016; Turner, 2011 and 2013). Moreover, low long-term interest rates could affect bank profitability in the short term (Alessandri and Nelson, 2014; Borio et al., 2015).

These risks are exacerbated by the uncertainty surrounding various aspects of the economic policy that will be implemented in the United States, which could put upward pressure on inflation. If combined with a faster adjustment to the FFR, external interest rates could be pushed up even further, raising financing costs for emerging economies.

[1]/ According to estimates in various studies, the rate drops between 15 and 25 bp for each US$600 million of purchases (Williams, 2014, table 1).
[2]/ The term spread is the extra return required by investors to hold long-term bonds instead of shorter-term bonds.
[3]/ The authors use the global interest rate constructed by King and Low (2014) based on G7 inflation-indexed bonds.

# II. LOCAL FINANCIAL MARKETS

*The capital markets continue to be characterized by low financing costs at all maturities and strong demand from institutional investors for local fixed-income securities. However, the pass-through of the increase in external long-term interest rates to local rates implies a risk for these agents.*

## ASSET PRICES

***Financing conditions in the money market in pesos remain stable.***

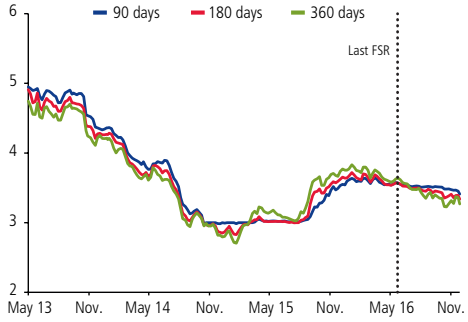
The average interbank interest rate swap (*promedio cámara*) has been relatively stable since the last FSR (figure II.1). The slight downward trend in recent months is in line with expectations for the monetary policy rate (MPR) in the short term. In particular, the December Economic Expectations Survey (EES) signals that the MPR will be 3% at year-end 2017.

The rate on time deposits traded in secondary markets increased slightly in late November (figure II.2). This trend, which was also observed in prime rates, could be related to seasonal liquidity pressures. In contrast, the banks' funding costs in dollars increased over the past few months (statistical appendix).

***Local long-term rates reversed their downward trend, in line with external benchmarks.***

The rise in local long-term interest rates in November was similar in magnitude to the increase in long rates in developed economies. This high correlation between local and external rates has been observed in past periods of high financial turbulence and is high relative to the estimated pass-through coefficient for the past few years. However, based on a broad sample of emerging economies, the November event had a lower impact than the taper tantrum of May 2013 (figure II.3). At any rate, domestic long-term interest rates are in line with external rate movements and other determinants (figure II.4).

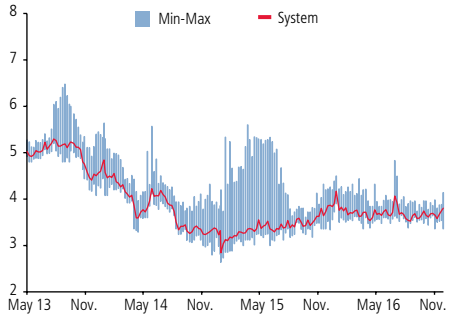
**FIGURE II.1**
Swap rates (*)
(percent)




(*) Weekly data.

Source: Central Bank of Chile.

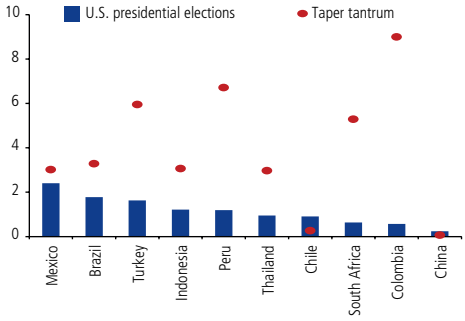
**FIGURE II.2**
30-day deposit rates (*)
(percent)




(*) Weekly statistics calculated based on daily data on deposit transactions on and off exchange, by issuer.

Source: Central Bank of Chile, based on data from the BCS and CSD.

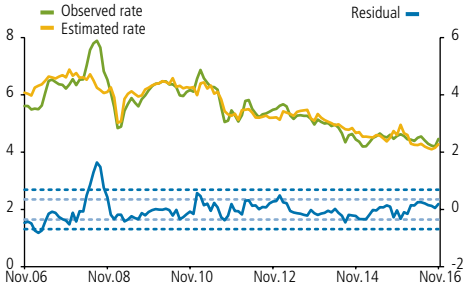
**FIGURE II.3**
Ratio between sovereign bond rates (*)
(times)




(*) Ratio between the change in 10-year sovereign interest rates of each country and the 10-year U.S. Treasury rate, 10 business days after the taper tantrum (22 May 2013) and the U.S. presidential elections (8 November 2016).

Sources: Central Bank of Chile and Bloomberg.

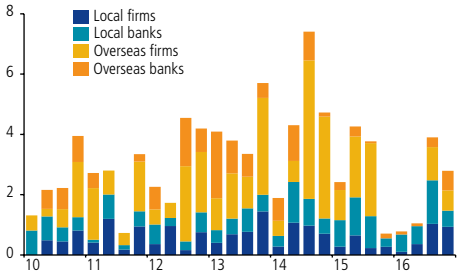
**FIGURE II.4**
Local long-term sovereign bond rates (*)
(percent)




(*) Horizontal blue line indicates one standard deviation. Horizontal dark blue line indicates two standard deviations. For more detail on the estimation, see the figure set.

Source: Central Bank of Chile, based on data from the BCS and CSD.

**FIGURE II.5**
Bank and corporate bond issues
(US$ billion)




Source: Central Bank of Chile, based on data from the BCS and Bloomberg.

***Local bond issues recovered in the second half of 2016.***

Bond issues reached US$8.5 billion in November, driven mainly by bank issues in the local market (figure II.5 and chapter IV). This stands in contrast to the lower dynamism reported in the last FSR. Financing costs for private issuers increased about 60 bp relative to the last FSR, due to increases in both the base rate and the spread (figure II.6).

***The local stock market and the nominal exchange rate moved in tandem with their external benchmarks throughout the year.***

In 2016, the IPSA index paralleled the movements of other emerging market stock indices, increasing 14% as of the cutoff date of this FSR (figure II.7). Despite fluctuations following the U.S. presidential elections, the IPSA return volatility is still modest relative to a large sample of countries (statistical appendix). The peso appreciated 5.4% against the dollar as of the cutoff date. This appreciation is stronger than the trend for comparable currencies, due to the better performance of the copper price (table II.1). Exchange rate volatility has increased in recent months, to around 11% on the cutoff of this FSR (statistical appendix).

**TABLE II.1**
Comparison of exchange rates against the U.S. dollar (1)
(percent)

| | Chile | Commodity exporters | Countries in the region | Dollar index |
|---|---|---|---|---|
| 2012 | -7.6 | -4.3 | -3.0 | -0.6 |
| 2013 | 9.8 | 8.4 | 8.8 | 0.3 |
| 2014 | 15.4 | 11.5 | 13.8 | 12.7 |
| 2015 | 16.8 | 16.1 | 28.5 | 9.3 |
| 2016 (2) | -5.4 | -3.8 | 0.8 | 2.1 |

(1) For more detail on the series, see the figure set.
(2) Data available 30 November 2016.

Source: Central Bank of Chile, based on data from Bloomberg.

## INSTITUTIONAL INVESTORS

***The pension funds migrated toward local fixed-income assets.***

Since the last FSR, the pension funds have invested over US$4.0 billion in local sovereign bonds and US$3.0 billion in local bank bonds (figure II.8). Their positioning in local fixed-income markets is the highest since 2008, representing 51% of the total portfolio. As a result, the pension funds held 70% of the total stock of local sovereign bonds on the cutoff date of this report (statistical appendix). The pension funds' migration reflects the massive response of affiliates to calls to switch to more conservative funds. Nearly US$11.0 billion has been transferred to type E funds thus far in the year (table II.2), causing a 64% increase in this class of funds in the period.

**TABLE II.2**
Annual transfers between funds
(US$ million)

| | Fund A | Fund C | Fund E |
|---|---|---|---|
| 2012 | -2,300 | -1,663 | 6,212 |
| 2013 | 916 | -739 | 1,034 |
| 2014 | -3,094 | -264 | 5,027 |
| 2015 | 583 | 634 | -1,064 |
| 2016 (*) | -4,975 | -2,598 | 10,985 |

(*) Data available through 30 November.

Source: SP.

The greater fixed-income exposure of the pension funds was accompanied by an increase in the average duration of the portfolio, in line with the securities available in the market (table II.3).

**TABLE II.3**
Average duration of sovereign bonds
(years)

| | 2012 | | 2013 | | 2014 | | 2015 | | 2016 (*) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | I | II | I | II | I | II | I | II |
| FP | 11.7 | 11.8 | 11.7 | 11.8 | 12.0 | 12.5 | 12.2 | 12.1 | 12.7 | 14.0 |
| Total | 9.0 | 8.9 | 8.9 | 9.2 | 9.1 | 9.3 | 9.4 | 9.6 | 9.9 | 11.0 |

(*) Data available through 25 November 2016.

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

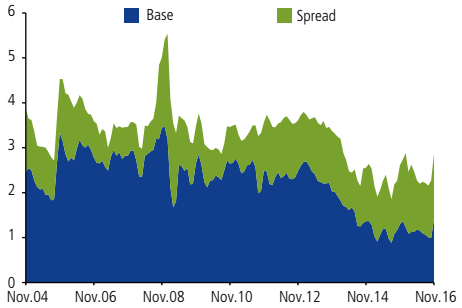
The high portfolio share of local sovereign bonds, which largely have a longer duration, could exacerbate losses in value of fixed-income funds in the face of long-term interest rate hikes.

***Mutual fund assets hit historical highs in September, driven by the strong growth of type 1 mutual funds (MF1).***

Relative to the last FSR, the assets held in MF1 mutual funds grew 27%, to UF530 million in November 2016. Fixed-income funds (MF3) totaled nearly UF330 million in the same month, which represents a decrease of 5% since the last FSR (figure II.9).

The MF3 funds usually face withdrawals in response to significant fluctuations in long-term interest rates. During times of financial market stress, this tendency could generate effects on the money market, through its impact on banks that are more dependent on wholesale funding. In point of fact, November recorded net MF3 withdrawals equivalent to 12% of total assets in October. As of the cutoff of this FSR, however, this trend has not had major implications for money market interest rates, in part because the withdrawals did not stem from net outflows for the industry, but rather from a reallocation toward MF1 funds.

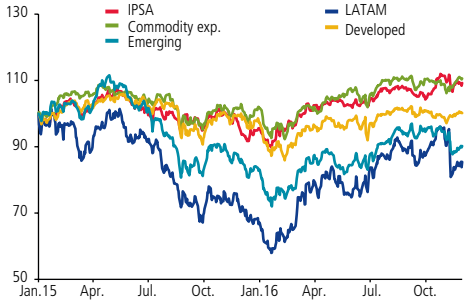
**FIGURE II.6**
Local financing cost (*)
(percent)




(*) Based on UF-denominated AA corporate bonds with a duration of 4 to 6 years.

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

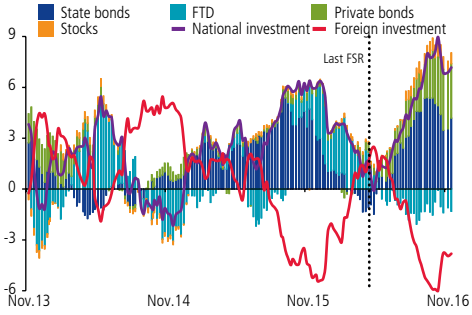
**FIGURE II.7**
Stock market indices (*)
(fixed-base index: Jan.15 = 100, local currency)




(*) For more detail on the series, see the figure set.

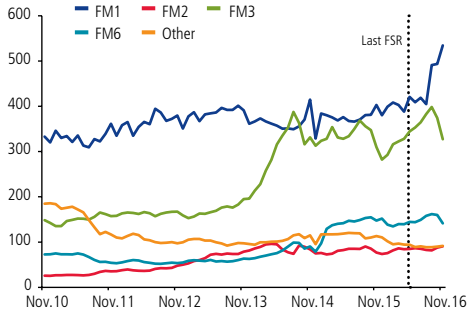
Source: Bloomberg.

**FIGURE II.8**
Pension funds' portfolio investment
(US$ billion, six-month moving average)




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

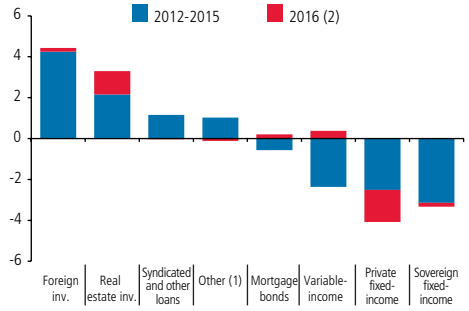
**FIGURE II.9**
Mutual fund equity (*)
(UF million)




(*) For more detail on the series, see the figure set.

Source: SVS.

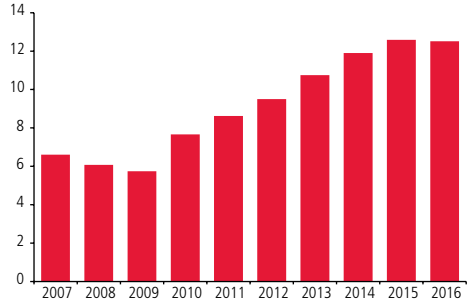
**FIGURE II.10**
Changes in LIC investment
(percent del portfolio)




(1) Includes cash and other financial investments. Excludes investments that back products with savings.
(2) Data available through September.

Source: Central Bank of Chile.

**FIGURE II.11**
LIC overseas investment (*)
(percent)




(*) Overseas investments by the LICs as a percent of the sum of risk capital and technical reserves. Data through September 2016.

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

Private investment funds that report their portfolios to the SVS have recorded real annual growth of 15%, on average, over the last ten years. One of the main challenges facing these investment vehicles is the appropriate valuation of their assets, which are relatively illiquid. In October, the funds associated with one manager underwent a valuation adjustment. Although the amounts were relatively small, this event highlights the importance of moving toward best practices in information, transparency, and valuation control in the industry, given that a large share of the assets under management does not have a price derived directly from financial markets. This becomes especially important in a scenario where the pension funds increase their exposure to alternative assets.

The life insurance companies (LICs) continued to increase their investment flows to real estate and international fixed-income assets.

In 2016, investment in real estate and overseas assets by the LICs grew on the order of 1.3% of the portfolio, while local fixed-income investments contracted by 1.8% of the portfolio (figure II.10). Thus, the search continues for higher-risk, higher-return investments, as has been the trend over the last five years. The ROE of these companies has been stable at around 12%, while their portfolio returns, on average, are about 90 bp over the guaranteed rate in their policies.

The recently passed Productivity Act will, among other things, allow more flexibility in the investment mandates of the pension funds and LICs (chapter V). In the case of the LICs, this law will allow more flexibility in overseas investment, which is currently limited to 20% of risk capital plus the technical reserve. At the system level, overseas investments by the LICs currently represent 12% of risk capital plus the technical reserve, although some companies have very little cushion (figure II.11).

# III. CREDIT USERS

*The balance-of-risk assessment for firms and households is relatively similar to the last FSR. At the country level, firm profitability in 2015 was the lowest of the last six years, while households continued to expand their debt level. In the residential real estate sector, the growth rates of both housing prices and mortgages slowed.*

## FIRMS

### *Corporate debt declined in 2016, although it remains high by historical standards.*

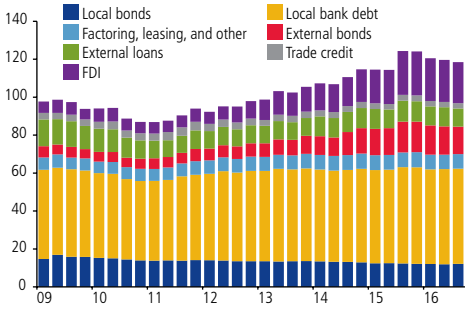
The third quarter recorded negative growth of debt, explained by a reduction in the external component and a slowdown in local sources (table III.1). Local debt in foreign currency was stable at about 9% of total debt (statistical appendix). Thus, the total debt of nonbank firms was 119% of GDP (figure III.1)[1/].

**TABLA III.1**
Sources of financing (1)
(real annual change, percent)

| Indicator | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | | | Share | Growth contribution |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | IV | IV | IV | IV | IV | IV | I | II | III | | |
| **Local debt** | 3.5 | 12.1 | 7.2 | 6.9 | 1.8 | 3.7 | 1.9 | 2.0 | 0.6 | 59.0 | 0.3 |
| Bank and other loans | 4.6 | 13.9 | 9.4 | 7.3 | 2.9 | 5.4 | 2.6 | 3.1 | 0.7 | 48.8 | 0.3 |
| Commercial loans (2) | 3.3 | 13.4 | 9.5 | 7.4 | 2.4 | 5.8 | 2.8 | 3.5 | 0.8 | 42.3 | 0.3 |
| Factoring, leasing, and other | 13.8 | 16.6 | 8.5 | 6.9 | 6.1 | 3.0 | 1.5 | 0.7 | 0.0 | 6.5 | 0.0 |
| Locally listed securities | -0.2 | 6.0 | -0.8 | 5.1 | -3.0 | -3.7 | -1.2 | -3.1 | -0.1 | 10.3 | 0.0 |
| **External debt** | 6.8 | 17.9 | 9.2 | 26.4 | 27.7 | 22.5 | 14.3 | 13.3 | -7.4 | 41.0 | -3.2 |
| Loans | -10.7 | 6.4 | 0.3 | 2.9 | 15.2 | 4.3 | -2.5 | 4.7 | -11.7 | 8.1 | -1.0 |
| Trade credit | 20.5 | 29.1 | -19.1 | -0.7 | -3.7 | -1.2 | -2.7 | -1.6 | -9.8 | 2.3 | -0.2 |
| Bonds | 24.0 | 27.8 | 12.2 | 42.1 | 43.3 | 22.5 | 12.2 | 7.1 | -8.5 | 12.3 | -1.1 |
| FDI-related loans | 22.0 | 20.7 | 37.4 | 49.2 | 33.4 | 38.2 | 28.8 | 25.2 | -4.2 | 18.3 | -0.8 |
| Exchange rate | -5.3 | 8.9 | -7.7 | 11.0 | 15.8 | 14.9 | 8.5 | 8.1 | -3.3 | | |
| **Total** | **4.4** | **13.7** | **7.8** | **12.7** | **10.5** | **11.0** | **6.8** | **6.4** | **-2.9** | **100** | **-2.9** |

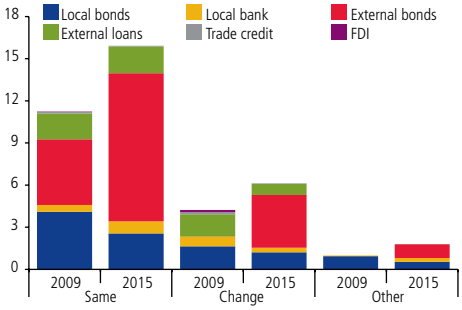
(1) For more detail on the series and methodology, see the figure set. Shaded cells are preliminary data.
(2) Includes commercial loans to firms and individuals, foreign trade loans and contingent loans; excludes student loans to individuals.
Source: Central Bank of Chile, based on data from the Achef, SBIF, and SVS.

**FIGURE III.1**
Total debt of nonbank firms (*)
(percent of GDP)




(*) Based on firm-level data, expect for factoring, leasing, and other: securitized bonds; and commercial paper. For more detail on the series and methodology, see the figure set.
Source: Central Bank of Chile, based on data from the Achef, SBIF, and SVS.

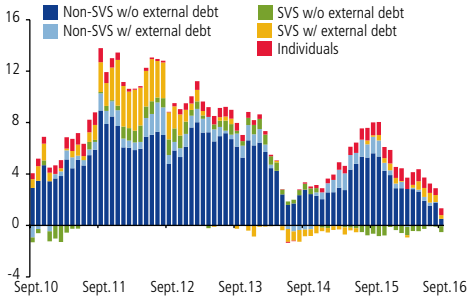
**FIGURE III.2**
Change in the structure of financing of firms that issue overseas bonds (*)
(percent of GDP)




(*) "Same" is the group of firms with external bonds on both dates; "Change" is the group that starts with external loans or FDI and has external bonds at the end of the period; and "Other" has a different combination of debt than the first two groups at the start of the period and external bonds at the end.
Source: Central Bank of Chile, based on data from the SBIF and SVS.

[1/] In this FSR, the total corporate debt series includes debt contracted with life insurance companies (LICs), and thus there are differences with the debt figures reported in the past. These loans are mainly leasing operations, which are a normal component of the LIC investment portfolio. Thus, on average, the LICs increased debt by 1.5 pp over the whole period and by 2.3 pp as of June 2016.

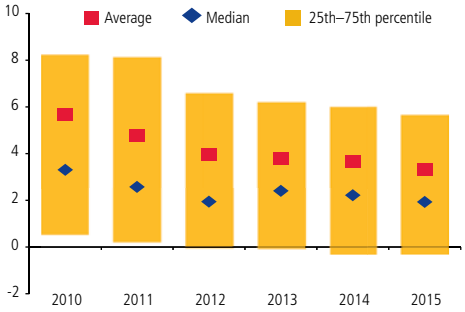
**FIGURE III.3**
Growth of local bank debt (*)
(percent)




(*) Includes contingent and foreign trade loans. For more detail on the series and methodology, see the figure set.

Source: Central Bank of Chile, based on data from the SBIF and SVS.

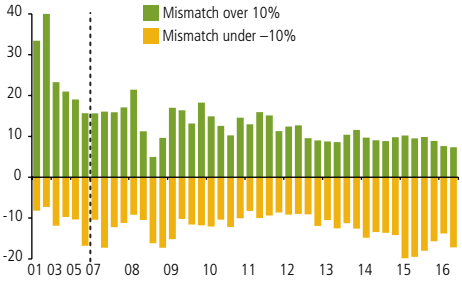
**FIGURE III.4**
Firm profitability at the country level (*)
(percent)




(*) Period earnings over total assets (excluding intangible, nominal, deferred, and pro forma assets). Assets weighted by total assets. Excluding financial service and mining. Data subject to change[3]/.

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

**FIGURE III.5**
Corporate sector mismatch (*)
(percent of total assets)




(*) To the left of the slashed line, annual data up to 2006. To the right, quarterly data. For more detail on the series and methodology, see the figure set.

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

Over and above the recent contraction, and as mentioned in past FSRs, the strong growth of total debt from 2009 to 2015 was largely due to FDI-related debt and overseas bond issues. The former derives from a parent-subsidiary relationship, which should be differentiated from other sources of financing. The latter is mainly explained by corporations that already carried this type of debt at the start of the period and, to a lesser extent, firms that are financed through external loans (figure III.2). Thus, the increase in overseas bond debt is concentrated in firms that have experience in contracting and paying this type of liability, which mitigates the associated credit risk to a degree.

The growth of bank commercial loans is again mainly explained by firms that do not report to the SVS and that do not have external debt. Since late 2015, however, the contribution of this group to commercial loan growth has declined, reaching historical lows in the third quarter of this year (figure III.3)[2]/.

***The profitability of domestic firms decreased again in 2015, to the lowest level of the last six years (figure III.4).***

The reduction in profitability since 2010 was generalized across firms of different sizes (statistical appendix). For large firms, return on assets fell from 5.2 to 2.9% in that period; for medium-sized firms, from 7.5 to 5.2%[3]/.

The lower profitability in 2015 is in line with the sluggish economy, and this indicator is thus expected to see another drop in the 2016 data. This could lead to a deterioration in firms' payment capacity. To date, the delinquency rate on bank commercial loans has not increased, but other indicators of portfolio quality point to a degree of deterioration (chapter IV).

***In September 2016, financial indicators for firms in the corporate sector that report to the SVS were somewhat higher than one year previous (table III.2).***

Relative to 2009 and 2010, however, both profitability and indebtedness have deteriorated in the sector. Both indicators are in line with the trends recorded in a sample of comparable countries (statistical appendix)[4]/.

[2]/ Moreover, this lower contribution is explained by the reduction in the share of debtors with at least one year remaining on current loans. Both elements are consistent with lower financing needs among established firms.
[3]/ Profitability data are subject to change due to board of director reviews, which affect the classification by size and economic sector of each firm. For example, the FSR for the second half of 2014 reported 2010 profitability rates of 4.9 and 8.0% for large and small firms, respectively.
[4]/ For more details on the comparison methodology, see FSR, First Half 2014, box III.1. For updated results, see the statistical appendix.

**TABLE III.2**
Financial indicators for SVS-reporting firms (*)
(percent, times)

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | Jun.15 | Jun.16 | Sep.15 | Sep.16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Profitability** | | | | | | | | | | | |
| Average | 7.6 | 8.2 | 6.9 | 6.3 | 5.8 | 6.1 | 5.9 | 6.4 | 6.4 | 6.3 | 6.6 |
| Median | 6.6 | 7.5 | 7.5 | 6.1 | 6.2 | 5.7 | 5.4 | 5.6 | 5.6 | 5.5 | 5.7 |
| **Indebtedness** | | | | | | | | | | | |
| Average | 64 | 63 | 68 | 73 | 71 | 73 | 73 | 71 | 71 | 73 | 73 |
| Median | 57 | 52 | 50 | 62 | 66 | 63 | 57 | 60 | 54 | 58 | 63 |
| **Coverage** | | | | | | | | | | | |
| Average | 3.9 | 4.4 | 3.5 | 3.1 | 2.9 | 3.1 | 3.1 | 3.3 | 3.3 | 3.2 | 3.3 |
| Median | 4.0 | 4.3 | 3.9 | 2.8 | 3.1 | 2.8 | 3.1 | 3.0 | 2.9 | 2.9 | 3.0 |

(*) For more detail on the series and methodology, see the figure set. Shaded cells are preliminary data. Profitability (percent) defined as EBIT over total assets. Indebtedness (percent) defined as financial debt over equity. Coverage (times) defined as EBIT over annual financial expense.

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

### *The currency mismatch has been stable, despite the exchange rate fluctuations of the past few quarters.*

The currency mismatch of SVS-reporting firms that keep their books in pesos was stable and moderate (statistical appendix). The share of firms with a mismatch greater than 10% of their assets, which are more exposed to a peso depreciation, has decreased since year-end 2015 (figure III.5). In terms of maturity, the mismatch tends to be concentrated at the long end, except for firms that keep their books in dollars[5]/.

A number of meetings were held over the course of the year with firms that have debt in foreign currency or overseas investments. One finding that emerged from these meetings is that these companies manage their foreign exchange risk using a series of tools that take into account complementary factors to the balance sheet mismatch that is usually reported (box III.1).

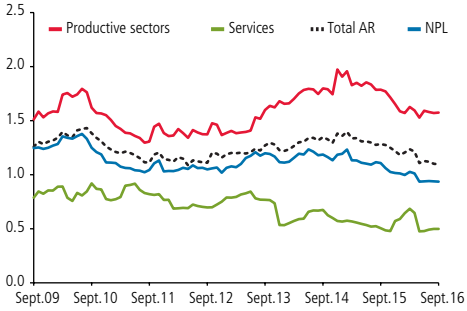
Stress tests show that among SVS-reporting firms, profitability exhibits a limited response to increases in financing costs and in the exchange rate (box III.2). The latter is largely due to the fact that financial debt is contracted at a longer horizon than the tests and the currency mismatches are limited. This could change, however, as a significant share of debt comes due starting in 2019.

### *Firms' impairment indicators are relatively stable, although some developments need to be monitored.*

In September of this year, the arrears ratio (AR) was around the level reported in the last FSR (figure III.6). While this indicator is lower than in 2015, the decline is mainly explained by payments that are over three years past-due, which are excluded from the calculation because they should have been written off by the banks. Thus, the reduction in the AR cannot be fully interpreted as a reduction in the credit risk of the firms.

[5]/ For the sample of firms that use the U.S. dollar as their functional currency, the maturity mismatch is calculated relative to the peso.

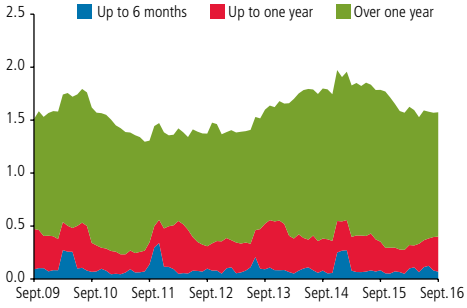
**FIGURE III.6**
Arrears ratio (AR) (*)
(percent of loans)




(*) Excluding contingent loans. Sectoral classification is from the 2015 directory. Results subject to change as data are updated. For more detail on the series and methodology, see the figure set.

Source: Central Bank of Chile, based on data from the INE, SBIF, and IRS.

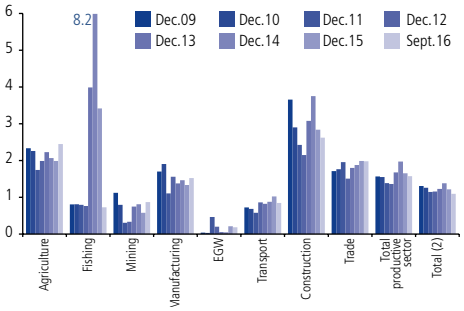
**FIGURE III.7**
AR of productive sectors, by maximum delinquency (*)
(percent)




(*) Firms are classified according to the payment that is longest past-due. On sectoral classification, see the notes to figure III.6.

Source: Central Bank of Chile, based on data from the INE, SBIF, and IRS.

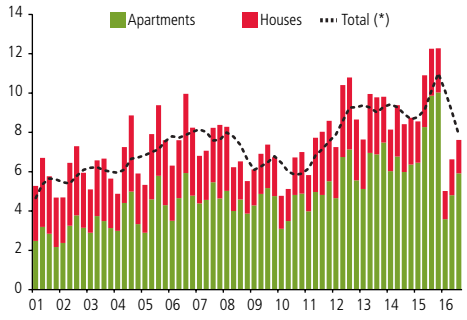
**FIGURE III.8**
AR by economic sector (1)
(percent of loans)




(1) For more detail, see the figure set and the notes to figure III.6.
(2) Includes services, loans without sectoral classification, and personal loans.

Source: Central Bank of Chile, based on data from the INE, SBIF, and SII.

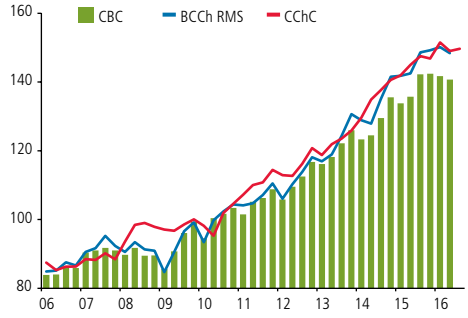
**FIGURE III.9**
New home sales in Santiago
(thousands of units)




(*) Twelve-month moving average.

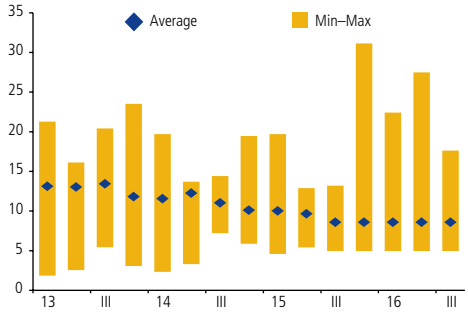
Source: Central Bank of Chile, based on data from the CChC.

**FIGURE III.10**
Real home prices
(fixed-base index: 2010=100)




Source: Central Bank of Chile and CChC.

**FIGURE III.11**
Withdrawal rates of real estate companies supervised by the SVS
(percent)




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

In productive sectors, the AR has been relatively stable since year-end 2015, although the share of firms with arrears of 3 to 12 months increased at the margin (figure III.7). By sector, arrears in the fishing sector fell back to historical levels, after rising significantly from 2013 to 2015. The AR also declined in the construction sector, although it remains high. In contrast, agriculture and manufacturing recorded an increase in the most recent period (figure III.8).

In sum, as of September 2016, the aggregate debt level of firms as a share of GDP has declined relative to December 2015. Also as of September, the financial indicators of SVS-reporting firms has improved marginally relative to one year previous, and the currency mismatch was relatively modest. While impairment indicators were stable on aggregate, the most recent period saw an increase in the share of arrears in the 3- to 12-month segment. This could represent a risk if these firms do not manage to rectify their situation, in a scenario of a slower economy or higher financing costs.

## REAL ESTATE SECTOR

***New home sales in Santiago gradually recovered in the third quarter of 2016, while residential prices posted lower growth rates.***

As described in the last FSR, advance purchases (or presales) associated with the application of the real estate VAT led to exceptionally high sales in 2015. Consequently, new home sales in Santiago were markedly lower in the first three quarters of 2016 than in the same period last year (figure III.9).

The growth of residential price indicators slowed in the most recent period, in line with less dynamic disposable income and other determinants. The annual growth rate of the house price index (HPI) calculated by the Central Bank—which includes actual transactions on new and used residential properties—slowed from 11.4% in the second quarter of 2015 to 4.2% in the second quarter of 2016 for the Santiago Metropolitan Region (SMR) and from 9.0 to 3.7% at the national level. The growth rate of new home prices in the SMR, calculated by the CChC, was 1.5% in the third quarter of 2016, versus 7.2% in the same quarter of 2015 (figure III.10).

***Financial indicators of firms in the real estate sector do not show signs of deterioration as of the third quarter of 2016.***

The set of construction and real estate companies that report to the SVS recorded profits around 6% in the third quarter of this year, which is about the same as in 2015. Total and short-term debt indicators similarly were stable in the period. Given the sharp drop in new home sales, the stability of these indicators is a positive development. The evolution of these trends should be monitored, however, given the risk that the sales reduction could intensify in the coming quarters.

The withdrawal rate on purchase commitments has been relatively stable for large real estate companies (figure III.11). This reflects, in part, the safeguards taken by these firms, such as scheduling the down payment in a series of smaller payments and tightening requirements for buyers who sign contracts. Nevertheless, there is still a risk that the withdrawal rate could increase in response to a deterioration in the labor market or a tightening of lending conditions, given that presales contracted in 2015 are to be delivered in late 2016 and early 2017.

***The loan-to-value (LTV) ratio decreased in line with expectations, which affected the dynamism of mortgage lending.***

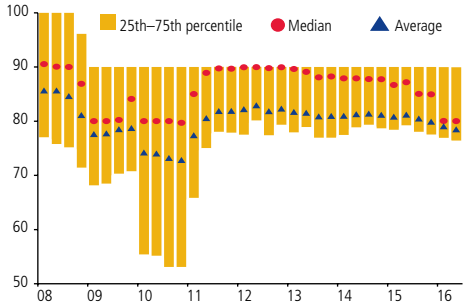
According to actual transaction data for June 2016, the LTV ratio on mortgage loans from banks has fluctuated around 80% since the SBIF mortgage regulations entered into force in January of this year (figure III.12). The higher down payment requirement for home buyers could affect the growth of mortgage lending in two ways: first, by reducing the amount of the mortgage for a given debtor; and second, by causing potential debtors to postpone their purchase. The reduction in the number of mortgage loans since 2015 is related to the second channel (chapter IV). Additionally, the delay in purchases could be increasing the demand for rentals, which is consistent with market data. However, the gross profitability of the buy-to-rent strategy continues to decline, which could compromise the payment capacity of mortgage debtors that have taken this investment strategy.

***Office vacancy rates and rental prices were stable.***

In the second and third quarters of 2016, there were no new projects coming online in the prime office market (A+/A), which reduced the vacancy rate marginally (figure III.13). This trend is expected to reverse in the short term, however, due to the incorporation of 50,000 square meters in the fourth quarter of 2016 and another 120,000 in 2017. This should put the vacancy rate of this segment between 9 and 10%. In the case of class B office space, the vacancy rate has been stable at 12%. Rental prices were stable for both A+/A and B office space in the second quarter of 2016.

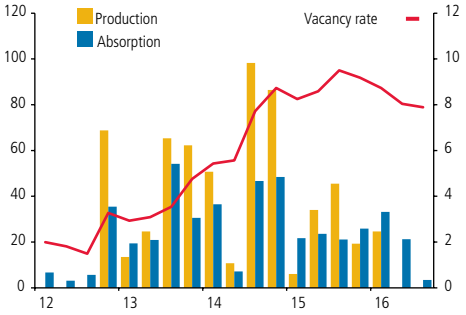
In sum, the dynamics of the residential real estate sector have been in line with the evolution of the macroeconomic situation and the new benchmark, deriving from the regulatory and tax changes discussed in past FSRs. Thus, both property prices and mortgage lending recorded lower growth rates. Finally, an adjustment in the labor market and a tightening of lending standards are two factors that could generate an increase in contract withdrawals.

**FIGURE III.12**
Loan-to-value (LTV) ratio
(percent)



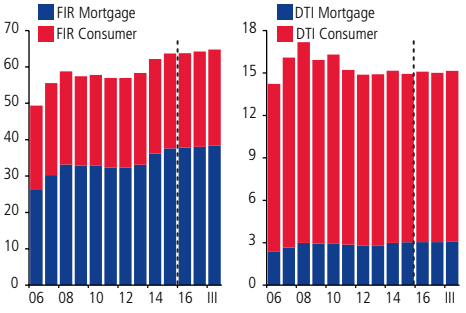

Source: Central Bank of Chile, based on data from the IRS.

**FIGURE III.13**
A and A+ office market
(thousands of square meters, percent)




Source: Global Property Solutions.

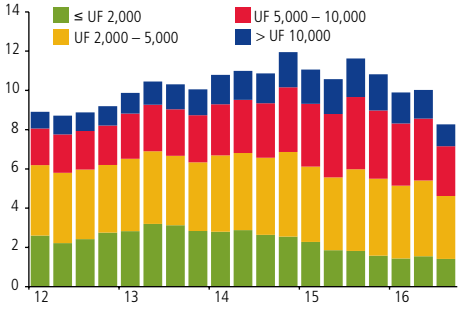
**FIGURE III.14**
Household indebtedness (*)
(percent of disposable income)




(*) For more detail on the series and methodology, see the figure set.

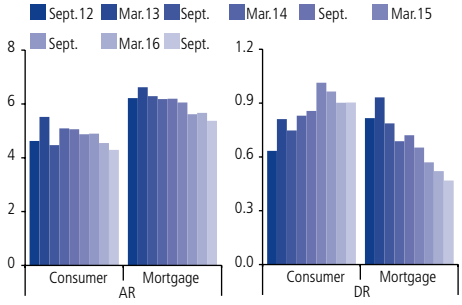
Source: Central Bank of Chile, based on data from the Dipres, SBIF, Suseso, and SVS.

**FIGURE III.15**
Impairment indicators: bank consumer and mortgage loans
(percent)



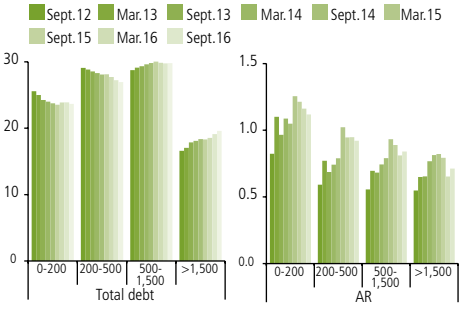

Source: Central Bank of Chile, based on data from the SBIF.

**GRÁFICO III.16**
Impairment indicators: bank consumer and mortgage loans
(percent)




Source: Central Bank of Chile base of data from the SBIF.

**FIGURE III.17**
Distribution of debt and portfolio in arrears by loan segment: consumer
(percent of respective total, UF)




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

## HOUSEHOLDS

***The household debt-to-income ratio (DTI) continued to increase, driven by the mortgage component and by less dynamic income, while the financial burden-to-income ratio (FIR) was stable (figure III.14).***

In the third quarter of 2016, the DTI was 65%, explained mainly by the increase in bank mortgage debt (statistical appendix). In the same period, the FIR remained 15%. The stability of the FIR is explained by lower interest rates and a larger share of mortgage debt[6]/. Granular data, from an appendix module of the Employment and Unemployment Survey (EUS) for Greater Santiago, show that the average FIR of households that have some amount of debt fell marginally, to 20% in the third quarter of 2016.

***In 2016, the total debt of households grew just over 7% (table III.3)[7]/***

Mortgage debt continues to be the biggest contributor to the growth of total household debt. Mortgage growth slowed substantially, however, in the second and third quarters of this year. In terms of amount, the slowdown was fairly generalized, although it was a little less intense in the under-UF2,000 segment (figure III.15). Consumer debt, in turn, recovered in the third quarter of 2016, with some variation by type of lender. The family compensation funds (CCAF) contracted throughout 2016, whereas the retailers recorded a higher growth rate in the period.

***Impairment indicators for bank debtors remain adequate for both mortgage and consumer loans (figure III.16).***

The share of consumer debtors with less than UF500 in debt continued to shrink, offset by an increase in the share of those with more than UF1,500. The arrears ratio (AR) decreased relative to one year previous, a trend that was generalized across all debt segments (figure III.17). Migration toward debtors with larger loans was also seen in the mortgage portfolio. The group with mortgages of less than UF2,000 decreased their share, while the weight of debtors with mortgages of over UF5,000 increased. The AR on mortgage loans has generally decreased since 2012 (figure III.18). While impairment indicators were stable on aggregate in the recent period, portfolio quality deteriorated in some regions in the north. This coincides with increases in the unemployment rate in the north (figure III.19).

[6]/ In this FSR, updated DTI and FIR data are presented due to an adjustment in disposable income and student loan debt. The latter includes state-guaranteed loans (Law 20,027) acquired by the Treasury. The data are from reports by the managing commission of the Higher Education Loan System (*Comisión Ingresa*) and the Dipres *Contingent Liability Report*; the data have an annual frequency through 2015, so the amount is held constant for 2016. This assumption is not significantly different from the historical evolution of student loan debt.
[7]/ For the purposes of this section, consumer debt excludes university loans. In the second quarter of 2015, bank loans were affected by the sale of the *Banco Paris* consumer loan portfolio to a subsidiary of Scotiabank.

**TABLE III.3**
Household debt (1)
(real annual change, percent)

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | | | Growth contribution | Share |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | IV | IV | IV | IV | IV | IV | I | II | III | | |
| **Mortgage** | **6.8** | **7.3** | **7.6** | **8.9** | **9.9** | **9.6** | **9.2** | **8.1** | **7.2** | **4.3** | **58.9** |
| Bank | 9.1 | 8.2 | 8.3 | 9.1 | 10.5 | 10.6 | 9.9 | 8.6 | 7.5 | 4.0 | 53.5 |
| Nonbank | -7.2 | 0.9 | 2.5 | 6.9 | 4.7 | 1.1 | 2.8 | 3.2 | 5.0 | 0.3 | 5.4 |
| **Consumer** | **8.3** | **10.3** | **5.5** | **8.3** | **3.4** | **5.6** | **5.1** | **5.9** | **7.1** | **2.9** | **41.1** |
| Bank excl. student (2) | 9.4 | 14.2 | 9.7 | 9.1 | 3.3 | 3.3 | 3.1 | 5.3 | 5.8 | 1.3 | 22.4 |
| Nonbank | 4.9 | -0.2 | -9.8 | 2.4 | 0.7 | 1.0 | -0.1 | 1.2 | 1.7 | 0.2 | 8.8 |
| Retailer | 6.1 | -1.3 | -19.3 | 4.1 | 1.0 | 1.9 | 3.2 | 6.1 | 6.9 | 0.3 | 4.6 |
| CCAF4 | 3.8 | 5.2 | 3.5 | 4.1 | 2.5 | -0.6 | -4.9 | -5.9 | -6.7 | -0.2 | 2.8 |
| S&L | 3.2 | -5.3 | -3.3 | -5.6 | -4.3 | 1.1 | 0.3 | 1.5 | 3.7 | 0.1 | 1.4 |
| Other | 12.0 | 18.9 | 18.4 | 13.8 | 7.2 | 17.4 | 16.6 | 12.5 | 15.5 | 1.4 | 9.9 |
| **Total** | **7.5** | **8.6** | **6.7** | **8.6** | **7.1** | **7.9** | **7.5** | **7.2** | **7.2** | **7.2** | **100** |

(1) For more detail on the series and methodology, see the figure set. Shaded cells are preliminary data.
(2) Excluding student loans, which were previously reported as consumer debt but is now included in other consumer debt.

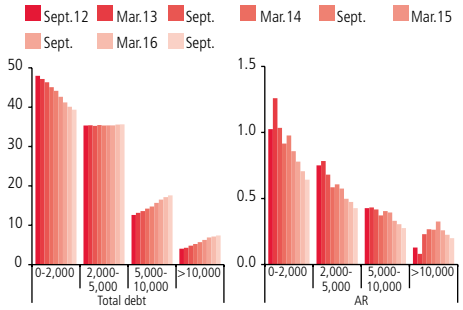
Source: Central Bank of Chile, based on data from the Dipres, SBIF, Suseso, and SVS.

Data from the EUS indicate that the household default rate was stable over the past year. This is in line with simulations carried out with data from the 2014 Household Financial Survey (HFS), which suggest that the current unemployment rate is consistent with the observed arrears rate (Madeira, 2016).

The arrears rate for the CCAF continued to deteriorate since the last FSR, reaching 9.5% in June 2016. In contrast, the AR has been relatively stable for retailers, at 3.7% (statistical appendix).

In sum, household debt continues to trend upward due to the contribution of the mortgage portfolio. In bank debt, both consumer and mortgage lending saw a reorientation toward debtors with larger loans, who usually have lower default levels. Thus, impairment indicators are adequate, except in the case of the CCAF, which continued to deteriorate gradually. The stability of delinquency and default rates is consistent with labor market dynamics, where the unemployment rate has been relatively stable despite the sluggish economy. The main risk that households could face is an increase in the unemployment rate, which would reduce their disposable income and thus limit their ability to service current debt.

**FIGURE III.18**
Distribution of debt and portfolio in arrears by loan segment: mortgage
(percent of respective total, UF)




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

**FIGURE III.19**
Change in the unemployment rate and the AR in inflation-adjusted currency, by region (*)
(percentage points)


(*) Change in the unemployment rate from March 2013 to March 2016; change in the AR from August 2013 to August 2016.

Source: Central Bank of Chile, based on data from the INE and SBIF.

# BOX III.1
# CURRENCY MISMATCH IN CURRENCIES OTHER THAN THE DOLLAR

The currency mismatch indicator that is usually published in the FSR appropriately captures the risk associated with exposure to debt in dollars in firms whose functional currency is the peso. These firms have adequately hedged their exposure to dollar-denominated debt through the use of derivative instruments and dollar assets (chapter III). However, a broader assessment of foreign exchange risk in the corporate sector requires taking additional factors into account. This box discusses the currency mismatch of firms whose functional currency is the U.S. dollar and the mismatch in other currencies of firms that keep their books in pesos.

## Mismatch by functional currency

Some local issuers of foreign currency debt use the U.S. dollar as their functional currency, such that they have the opposite exposure to firms that maintain their books in pesos[1]/. To assess the foreign exchange risk of this group of firms, the currency mismatch is calculated opposite to the usual procedure, using data on a representative sample of external bond issuers in the 2012–2015 period[2]/. The results indicate that these firms have a higher short-term mismatch than firms whose functional currency is the peso. This reflects the fact that because their operations are in Chile, they need local financing for working capital. The mismatch of these firms has remained moderate in recent years, representing less than 1% of the total assets of this sample of firms.

## Overseas investments

Chilean firms with investments abroad are exposed to an accounting effect on their balance sheets due to exchange rate fluctuations. This occurs because the equity of overseas subsidiaries—an asset of the parent company—is denominated in a currency other than the parent's functional currency. Thus, changes in the exchange rate affect he book value of the investments, which is offset in the equity accounts. Considering firms that use the peso as their functional currency, we calculated the mismatch against the dollar and other currencies. For June 2016, the set of firms with a moderate mismatch (i.e., less than 10% of the absolute value of assets) in both dollars and other currencies account for 67% of total assets in the sector. Of the remaining firms, those with a moderate mismatch in other currencies but less than –10% in dollars account for 16% of sector assets; while those with a mismatch of less than –10% in other currencies account for 13% of sector assets. Note that a negative mismatch is in line with the fact that these firms invest in other countries, for example, in Latin America.

The use of derivatives to hedge against the equity effects of overseas investments is not a common practice. In a series of meetings with players in the industry[3]/, the interviewees indicated that this risk is incorporated in the firms' valuation process. The foreign exchange risk associated with foreign currency flows, in turn, is commonly hedged with derivative contracts (currency forwards)[4]/.

## Final considerations

The overseas expansion of local firms implies that the foreign exchange risk assessment needs to take into account other currencies in the mismatch analysis. The different sensitivity analyses presented by the firms themselves in their managerial analyses, interviews with players in the sector, and stress test results (box III.2) all indicate that foreign exchange risk is moderate from all aspects.

[1]/ Firms chose their functional currency based on the economic environment in which they develop their business. Thus, some firms that operate in international markets use the dollar as their functional currency.
[2]/ The sample of firms analyzed in this box excludes financial, mining, and state-owned companies.
[3]/ The meetings were held in 2016 as part of the Central Bank's ongoing monitoring processes.
[4]/ For the case of firms that report to the SVS, these risks are discussed in greater detail in the managerial analysis of the financial statements. Visits to firms confirmed that they actively manage their foreign exchange risks using various hedging strategies.

# BOX III.2
# STRESS TESTS ON THE NONFINANCIAL CORPORATE SECTOR

Stress tests are a useful tool for evaluating and monitoring corporate financial risk (Chow, 2015). This box summarizes the methodology and results of stress tests carried out on the national corporate sector. The tests evaluate the sector's response to shocks to output, interest rates, and the exchange rate. The impact is measured in terms of financial expense and interest coverage[1]/.

## Description of the sample

The data are taken from individual corporate reports and were compiled by the Superintendence of Securities and Insurance (SVS) for statistical purposes in December 2015[2]/. The database includes information from balance sheets, income statements, and a decomposition of financial debt by source (banks and bonds) and duration (short- and long-term). There is also information on the currency mismatch, in terms of foreign currency assets and liabilities and currency derivatives, collected by the Central Bank. The sample comprises a total of 359 firms[3]/, carrying UF6.3 billion in assets and UF1.6 billion in financial debt, as of year-end 2015.

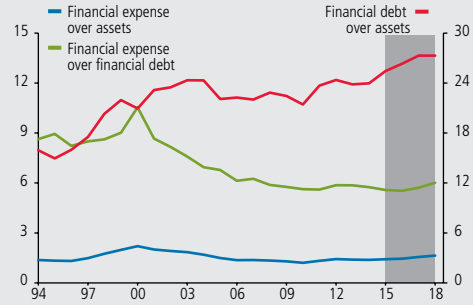
## Main shocks and assumptions

To assess the impact of the shocks, the aforementioned financial indicators were forecast for the 2016–2018 period under different scenarios. The output shock involves a drop in gross earnings equivalent to 0.6 pp of assets per year, consistent with the deterioration in profitability recorded between 2010 and 2012. The interest rate shock is an increase of 250 bp for bank and bond debt; the impact depends on the duration of the debt. Finally, the exchange rate shock assumes a peso depreciation of 40% in two years[4]/. In the exercise, the firms do not take measures to reverse the progressive deterioration of their financial indicators in response to the worsening of external conditions.

## Results

The main results indicate that the combined effect of the shocks at the end of the forecast horizon is a 2.1 pp drop in the return on assets, where 1.8 pp are due to the reduction in gross earnings. With regard to the deterioration of financial variables, we find that the increase in financial debt over assets—solely associated with the currency depreciation—is just under 2 pp at the end of the forecast horizon (figure III.20).

**FIGURE III.20**
Cost of financing (*)
(percent)




(*) Individual data as of December of each year. Gray area indicates forecast horizon.
Source: Central Bank of Chile, based on data from the SVS.

The relatively limited impact of the exchange rate is due to the small currency mismatch on the balance sheets of the corporate sector (box III.1). Financial expense, in turn, increased in relation to financial debt, due to the interest rate and exchange rate

[1]/ The cost of financing is defined as the ratio of annual financial expense to total financial debt, while interest coverage is defined as the ratio of earnings before interest and taxes (EBIT) to annual financial expense. An interest coverage ratio of less than one indicates that the firm has losses before taxes.
[2]/ The choice to use annual closings is based on the fact that it encompasses a larger number of firms that report their financial statements to the SVS. Specifically, the average of firms in the fourth quarter of 2015 is 63% higher than the average in the other quarters of the same year, which translates into 10% more assets.
[3]/ Excluding state-owned companies and the mining and financial services sectors.

[4]/ For more detail on the assumptions, see Espinosa et al. (2016).

shocks, by 6% in 2018. This small effect on the cost of debt reflects the fact that the bulk of financial debt is long term (82% of the total in 2015).

The impact of the stress tests translates into an increase in the share of firms that record losses (an interest coverage ratio of less than one), representing 34% of total corporate sector assets in 2018 (figure III.21).

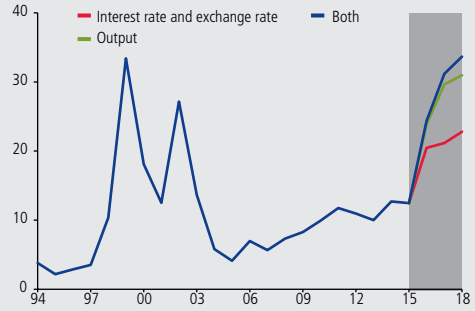
At the same time, the share of firms with an interest coverage ratio of over two decreases, representing less than a third of total financial debt (figure III.22)[5]/. In both cases, the output shock has the biggest impact, and the results are similar to the sector's response to the Asian crisis.

However, although the levels of the response are similar to the Asian crisis, the sources of the vulnerability are different. During the earlier crisis, the firms had a higher return on assets, but their exposure to financial shocks was higher, due to a larger currency mismatch.

## Conclusions

Stress tests are a useful tool for assessing the impact of possible risk scenarios on a given sector of the financial system, in this case the SVS corporate sector. They do not constitute forecasts of the sector's evolution. The tests show that under the scenarios analyzed, the main effect on profitability indicators derives from the drop in output. The impact of changes in financial variables (interest rates and the exchange rate) is lower, due to the small currency mismatch and the long duration of debt, which is outside the test horizon.

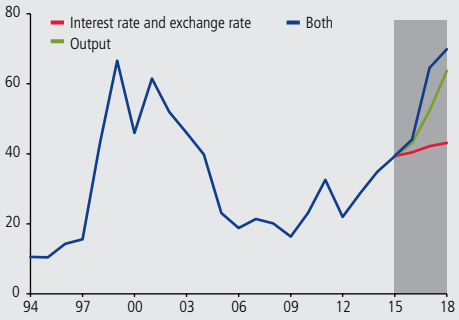
**FIGURE III.21**
Firms with losses, by type of shock (*)
(percent of total assets)




(*) Firms with losses have an interest coverage ratio of less than 1. Individual data as of December of each year.

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

**FIGURE III.22**
Firms with coverage ratio of less than two, by type of shock (*)
(percent of financial debt)




(*) Individual data as of December of each year.

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

[5]/ Limit taken from the October 2015 GFSR.

# IV. BANKING SYSTEM

Bank lending is in line with economic activity. Credit risk indicators remain stable, but there are risks in the commercial portfolio. Bank profitability decreased, and capitalization recovered marginally since the last FSR. Stress tests indicate that the banking system continues to be in an adequate financial position to face a severe stress scenario.

## RECENT EVOLUTION

***The dynamism of commercial lending was in line with the cycle, while mortgages slowed and consumer loans recovered somewhat.***

The growth rate of commercial loans slowed since the last FSR, to 2.6% annual in October (figure IV.1). Deducting the exchange rate effect, the portfolio showed an incipient recovery through August, which dissipated over the last two months (figure IV.2). An analysis by component suggests that demand, as extracted from the Bank Lending Survey (BLS), was one of the most significant factors behind the recent dynamism of this lending segment (figure IV.3).

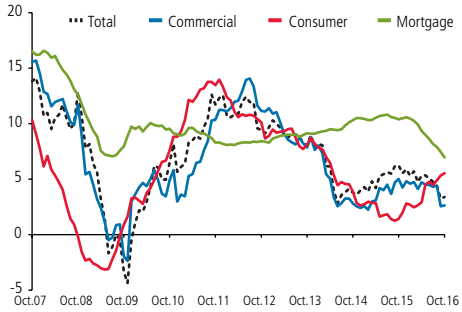
The growth of consumer loans recovered since the last FSR, reaching 5.5% in October. The recovery is mainly explained by dynamic lending in medium-sized banks. The mortgage segment has recorded a steady reduction in growth rate since the beginning of this year, declining to 7% in October. On the supply side, the entry into force of new mortgage regulations, which relate mortgage portfolio provisions to the loan-to-value ratio, have led to somewhat tighter lending standards. This is consistent with the BLS results from the fourth quarter of 2015 to date and with the drop in the number of operations (figure IV.4). On the demand side, the BLS points to a weakening since the last FSR, in line with the sluggish economy.

***Credit risk indicators have been stable for both households and firms, but the commercial segment shows signs of rising vulnerability.***

Large corporate debtors (i.e., large and mega firms) show a marginal increase in arrears in the third quarter. In the portfolio of commercial loans that are individually evaluated for impairment, the share of the substandard portfolio has continued to expand, reaching 4.8% of total commercial loans in the system in October of this year (figure IV.5)[1/].

[1/] Includes debtors with financial difficulties or a significant worsening of payment capacity, for which there are reasonably doubts about loan repayment. Also includes debtors with arrears of over 30 days.

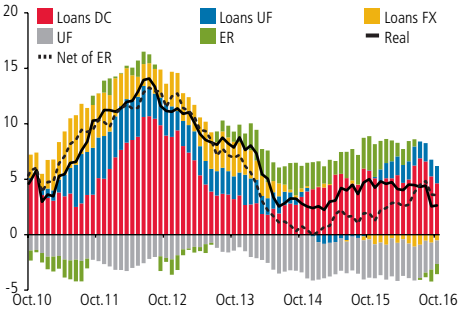
**FIGURE IV.1**
Growth of loans (*)
(real annual change, percent)




(*) Based on individual financial statements. Activity in the consumer and commercial portfolios is influenced by one specific operation between Cencosud and Scotiabank.

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

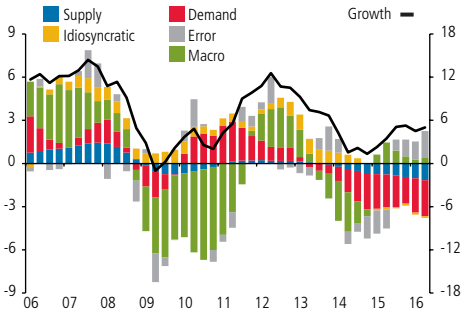
**FIGURE IV.2**
Growth of commercial loans (*)
(real annual change, percent)




(*) Disaggregated due to variation. Includes contingent loans.

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

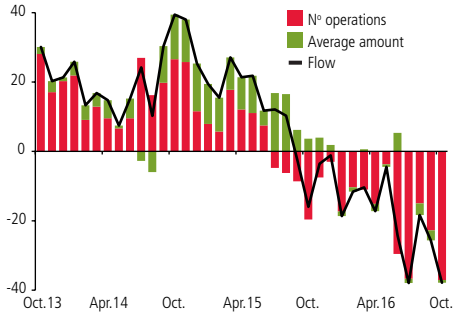
**FIGURE IV.3**
Estimation of commercial loan growth (*)
(percent)




(*) Based on the methodology in Del Giovane et al. (2011), using information on perceptions of loan supply and demand reported in the BLS. To facilitate presentation, the constant is omitted from the determinants. For details, see Jara et al. (2016).

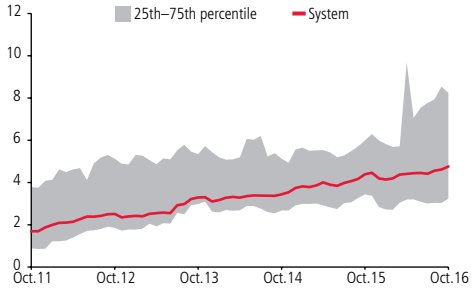
Source: Central Bank of Chile, based on data from the SBIF.

**FIGURE IV.4**
Mortgage loan flows
(real annual change, percent)




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

**FIGURE IV.5**
Distribution of the substandard portfolio (*)
(percent of commercial loans)




(*) Excludes treasury, foreign trade, and consumer banks.

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

Relative to 2013, transfers to the substandard portfolio and write-offs have increased, while normal portfolio flows have declined (figure IV.6). If this situation continues, the commercial portfolio could see a significant increase in delinquency, potentially reaching 2% at the system level in a twelve-month horizon[2]/.

***There was an increase in the share of local creditors in bank funding.***

Through the third quarter, bank bond issues in the local market were equal to the total issued in 2015 (US$3.0 billion) and far exceeded the issue of debt securities in the external market. This led to an increase in the share of local bonds in the total liabilities of the banking system from 15% in September 2015 to 18% in September 2016. The increase was sharpest in medium-sized banks (figure IV.7).

***Medium-sized banks maintained their exposure to institutional investors, replacing deposits with bonds (figure IV.8).***

The shift toward bonds has led to a marginal reduction in the financing risk of these banks[3]/. Nevertheless, they remain highly exposed to institutional deposits, which often register abrupt changes in trend. The situation should therefore be carefully monitored.

***At the system level, bank profitability decreased and capitalization recovered slightly, although the latter remains in the low end of a sample of countries.***

In October, system profitability had declined relative to the last FSR (11.6% for the ROE and 0.99% for the ROA). The interest margin—the main component of operating income—stabilized early the year, after falling by more than 0.3 pp of assets between June 2014 and December 2015 (figure IV.9).

The capital adequacy ratio (CAR) increased since the last FSR, to 13.8% in September of this year. The increase was strongest in medium-sized banks, mainly due to a reduction in leverage (figure IV.10). To a large extent, this development is due to capitalizations in the first half of 2016, which were

[2]/ The test carried over the observed monthly change for one year and then estimated the default portfolio. The arrears calculation assumes that arrears are proportional to default portfolio. For more details, see the accompanying note to the FSR.
3/ For a definition of debt-at-risk, see FSR, First Half 2015, box IV.1.

reported in the last FSR. Another contributing factor, albeit to a lesser extent, was the reduction in risk-weighted assets (RWA) due to the appreciation of the peso and the reduction in the credit conversion factor of the unused portion of free credit lines.

The increase in the CAR has contributed to narrowing the gap between bank capitalization in the Chilean banking system and in other OECD and Latin American countries. However, Chile is still in the lower end of the distribution for this indicator in that sample of countries. Furthermore, the increase does not reflect changes in dividend policy, but rather stems from the injection of new capital to support merger and acquisition processes. To the extent that the increase is used to expand bank assets, the CAR could return to its previous levels.

## RISK FACTORS

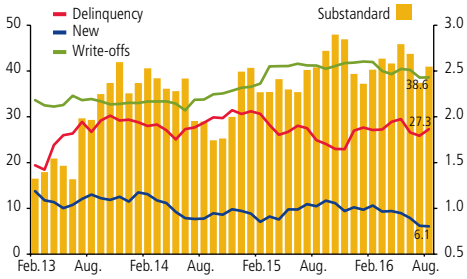
***A continuation or deepening of the economic downturn could produce a deterioration in the banks' portfolio quality.***

An adverse economic scenario could reduce the payment capacity of firms, due to lower income generation. This would accentuate the deterioration of the commercial loan portfolio as firms migrate from the substandard category to default. At the same time, an adjustment in the labor market would increase consumer credit risk in the banking system by reducing the payment capacity of debtors.

***The steepening of the yield curve implies greater financial risk for the banking system.***

The increase in external long-term interest rates has passed through to local long rates, with little effect on short rates (chapter II). This steepening of the yield curve implies a devaluation of financial assets held by the banking system and an increase in the financing cost of medium- and long-term debt. This could affect, in particular, banks that need to roll over this type of liability in the short term.

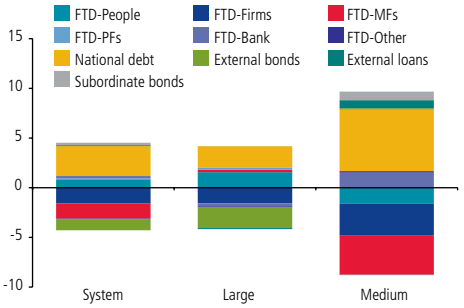
**FIGURE IV.6**
Transition of individually classified commercial loans (*)
(annualized percent)




(*) Ratio of net flow of transitions between risk categories to the respective stock lagged 3 months, for consistency with the definition of delinquency. The stock is the original category, except for new loans, which are calculated relative to the normal portfolio. The risk categories considered, in order of severity, are Normal, Substandard, and Delinquent, together with new loans and write-offs.

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

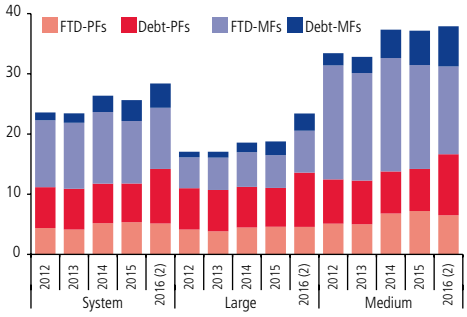
**FIGURE IV.7**
Change in the composition of bank liabilities (*)
(percentage points)




(*) Difference between September 2016 and September 2015. Excludes other deposits, other financial obligations, derivative, taxes, provisions, and other liabilities.

Source: Central Bank of Chile, based on data from the CSD, SBIF, and SVS.

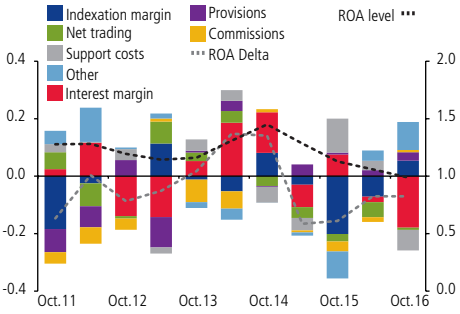
**FIGURE IV.8**
Bank liabilities with institutional investors (1)
(percentage points)




(1) Excluding subordinate bonds.
(2) Data as of September 2016.

Source: Central Bank of Chile, based on data from the CSD, SBIF, and SVS.

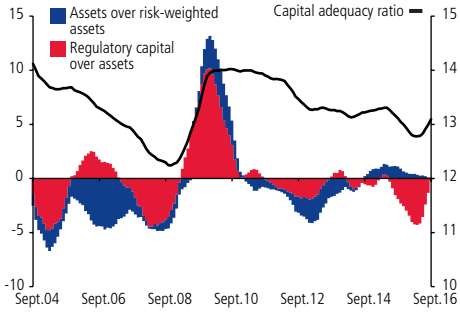
**FIGURE IV.9**
Changes in the main components of ROA (*)
(12-month moving sum, percent)




(*) Based on consolidated financial statements.

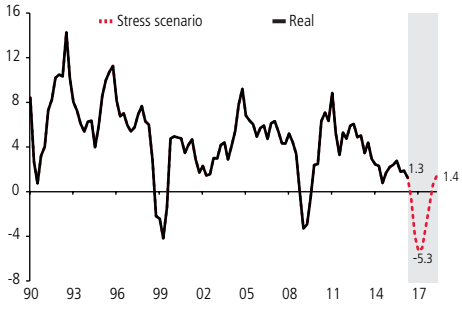
Source: Central Bank of Chile, based on data from the SBIF.

**FIGURE IV.10**
Contribution to annual growth of CAR
(12-month moving average, percent)




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

**FIGURE IV.11**
Annual growth of GDP (*)
(percent)




(*) Seasonally adjusted series. The shaded area indicates the test window.

Source: Central Bank of Chile.

## ASSESSMENT OF THE STRESS SCENARIOS [4]/

***Stress tests show that the banking system remains in an adequate financial position to face the materialization of a severe stress scenario.***

The stress tests use macroeconomic data and accounting data for the banking system as of June 2016. Credit risk is calculated by estimating a model that relates loan loss provisions—which reflect the credit risk of the banks' portfolios—primarily with economic activity. Market risk is calculated based on three types of exposure: currency, valuation and repricing. These risks are evaluated under a stress scenario.

The stress scenario considers a drop in GDP in the short term and low growth in the medium term. Specifically, output would reach –5.3% in annual terms and then converge in the medium term to growth of 1.4% in 2018. This scenario aims to replicate past episodes of financial fragility (figure IV.11).

Relative to the starting point in the last FSR, based on data for December 2015, the banking system exhibits lower profitability and higher capitalization levels. The system's return on equity (ROE) is 2.0 pp lower (12.5 versus 14.5%) and the CAR is 0.8 pp higher (13.4 versus 12.6%).

The tests show that under the stress scenario, the system's ROE becomes negative, at –6.3% of Tier 1 capital, which is lower than the –4.6% found in the stress tests in the last FSR (table IV.1). At the individual level, banks that together represent 74% of the system's Tier 1 capital (60% in the last FSR) would record negative earnings under the stress scenario. This is equivalent to 77.5% of system assets (figure IV.12).

Under the stress scenario, CAR levels are more heterogeneous, because the banks that are most exposed to the risk scenario have not increased their Tier 1 capital (figure IV.13). Thus, the group of banks that maintain a CAR of over 10% in the stress scenario represents 47.2% of system assets. This figure is slightly higher than the finding reported in the last FSR, although it is still low (figure IV.14).

[4]/ The analysis is based on the methodology described in the FSR, Second Half 2013. Both the analysis and the results are regularly reported to the SBIF.

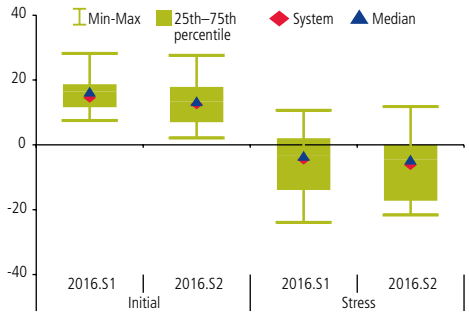
Stress tests are an analytical tool that contribute to identifying systemic financial strengths and weaknesses in a given moment of time. Given their partial nature, they do not necessarily uncover all the effects of specific risk scenarios. Consequently, they should not be interpreted as projection exercises.

**TABLE IV.1**
Stress tests: impact on profitability
(percent of Tier 1 capital)

| | 2016.S2 | 2016.S1 |
|---|---|---|
| **Initial ROE** | **12.5** | **14.5** |
| **Market risk** | **-1.2** | **-1.3** |
| Valuation | -0.5 | -0.8 |
| Repricing | -1.0 | -0.8 |
| Currency | 0.3 | 0.3 |
| **Credit risk** | **-20.5** | **-21.4** |
| Consumer | -7.8 | -9.4 |
| Commercial | -10.3 | -9.7 |
| Mortgage | -2.4 | -2.4 |
| **Margin** | **2.9** | **3.6** |
| Ending ROE | -6.3 | -4.6 |

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

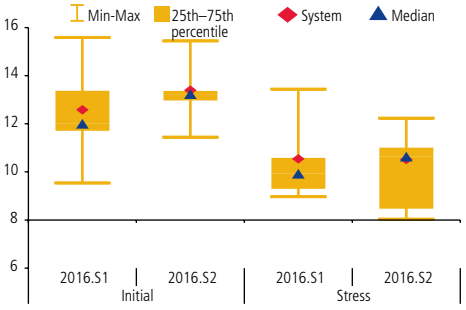
**FIGURE IV.12**
Stress tests: Impact on ROE (*)
(earnings over Tier 1 capital)




(*) Data are weighted by the Tier 1 capital of each institution. Calculations do not include treasury, foreign trade, and consumer banks that have left the system. The minimums correspond to the 1st percentile.

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

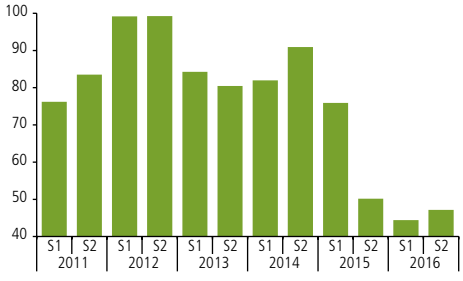
**FIGURE IV.13**
Stress tests: Impact on CAR (*)
(regulatory capital over risk-weighted assets)




(*) Data are weighted by the Tier 1 capital of each institution. Calculations do not include treasury, foreign trade, and consumer banks that have left the system.

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

**FIGURE IV.14**
Banks with a CAR equal to or over 10% in stress scenario (*)
(percent share of assets)




(*) Results of the stress tests presented in past FSRs.

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

# V. FINANCIAL REGULATION

*This chapter reviews the most important issues in the debate on financial regulation at the local and international levels in the second half.*

## NATIONAL REGULATION

### Creation of the Financial Market Committee.

Congress recently approved the proposal to create the Financial Market Committee (FMC). Initially, the FMC will replace the current Superintendence of Securities and Insurance. One of the biggest changes over the current situation is the creation of a collegiate board of directors. Going forward, the banking supervisor is expected to be incorporated into the FMC via a modification to the General Banking Law (GBL), which would constitute a very significant change in the structure of financial regulation and supervision in the country.

As established in the Law, the FMC must safeguard the functioning, development, and stability of the financial market, facilitating the participation of market agents and preserving the public trust. To this end, it must have a general and systematic view of the market, taking into account the interests of both investors and policy holders, and ensure that supervised entities or individuals comply with all applicable laws, regulations, statutes, and other provisions. Thus, when banking supervision is subsumed under the FMC, the structure of financial regulation and supervision will move from a silo approach, where there is a specific regulator and supervisor for a given type of regulated entity, to an integrated approach.

The need to perfect our financial regulation and supervision system has been raised by international organizations on a number of occasions, with an emphasis on improving the supervision of financial conglomerates and strengthening the independence and legal protection of the regulatory authorities. In the past, there have been forums for analysis and debate on these issues, such as the so-called Desormeaux Commission in 2011[1]/, and a number legal adjustments have been implemented to facilitate coordination and information sharing among sectoral entities, most notably the creation of the Financial Stability Board that same year[2]/.

[1]/ See FSR, First Half 2011, box VI.1.
[2]/ See FSR, Second Half 2011 and Second Half 2014, chapter V.

At the international level, more than a few countries have implemented deep reforms of their financial regulatory structures since the global financial crisis. While there is not necessarily a single best approach, these reforms tend to establish either a so-called twin peaks model, in which one entity is concerned with solvency issues and another with market conduct, or an integrated supervisor. Both approaches have advantages and disadvantages.

In moving toward an integrated supervisory scheme, Chile can benefit from having a single supervisor with a systemic view of the financial sector. It will be important, however, to find ways to resolve the potential conflict between solvency and market conduct, one of the main challenges facing this type of supervisor.

The integration of the bank supervisor into the FMC will pose major challenges. For example, a new banking law will have to be drafted, in harmony with the rest of the financial regulatory framework; and the FMC will have to interact smoothly with the Financial Stability Board, the Central Bank and other entities with regulatory authority over certain areas of the financial sector. There are also the organizational problems inherent in unifying two entities that until now have worked independently.

Finally, the creation of the FMC in no way affects the regulatory and interpretive authority of the Central Bank, in virtue of its Basic Constitutional Act, in the area of financial regulation.

**Law authorizing the issue and operation of prepaid debit cards by nonbank entities.**

After almost three years in process, Law 20,950 was approved in October, authorizing the issue and operation of prepaid debit cards by nonbank entities, whose systems require that the issuer or operator regularly take on monetary obligations with the public. With regard to nonbank prepaid card issuers, the Law authorizes these entities to take deposits or funds from the public on a regular basis, an activity that was previously restricted to banks only. To do so, the issuers must comply with a series of requirements, including the following: the company must be established as a special purpose corporation; it must be engaged in a single line of business; and the founding shareholders must comply with the integrity requirements stipulated in the General Banking Law. In addition, the funds collected are subject to the following restrictions: they shall only be used for payments deriving from the use of the prepaid card, the corresponding commissions, and reimbursements; they shall be recorded, held, and accounted for separately from other operations carried out by the issuing corporation; they shall not earn interest or indexation adjustments; they shall be held in cash or invested in instruments authorized by the Central Bank, in accordance with its Basic Constitutional Act and the new legislation; and they shall be subject to supervision by the SBIF as provided by the General Banking Law.

The Law authorizes banking service providers (BSPs) that perform payment-means activities to provide services to nonbank issuers and operators subject to the new legislation, in order to facilitate access to acquisition networks and interconnection with processing networks. The Law further stipulates that these BSPs can use technological, electronic, or any other suitable means to facilitate the process through which commercial establishments accept the contracting conditions proposed for the operation of nonbank prepaid cards and similar payment means, which must be objective, competitive, transparent, and nondiscriminatory.

In addition, the Law introduces modifications to sector-specific laws to allow savings and loan associations (S&Ls) that have paid-in capital of at least UF400,000 and are subject to oversight by the SBIF to issue and operate these prepaid cards directly, while the Family Compensation Funds (CCAF) and other similar funds must establish subsidiary corporations and banking service providers, respectively, which must comply with the stipulations of the Law and with the regulations issued by the Central Bank and be subject to oversight by the SBIF.

Finally, the state-owned company *Metro S.A.* is authorized to issue and operate prepaid cards and to enter into agreements with nonbank issuers of prepaid cards for the reciprocal provision of collections, card reloading, or other related services, under objective and nondiscriminatory conditions. These services will be provided through subsidiary or related companies, whose activities will be subject to Law 20,950 and the regulations stipulated therein, as well as oversight by the SBIF.

The objective of this Law is to promote the development and massification of electronic payment means, to increase financial inclusion, and to strengthen competition in the payment means market. From the Central Bank's perspective, this new legal framework contains elements that support the achievement of these objectives, with appropriate safeguards for preserving the public trust. These elements will be taken into account in the development of regulations by the Central Bank, together with the avoidance of creating space for regulatory arbitrage.

**Modifications to the Central Bank's Basic Constitutional Act deriving from Law 20,956, to improve the regulation applicable to payment systems established in the country and to recognize payment infrastructures in foreign jurisdictions where local financial entities participate.**

The replacement of paragraph 8 of Article 35 of the Central Bank's Basic Constitutional Act strengthens the regulatory framework on payment infrastructures and their interconnection with other jurisdictions. The Central Bank can now recognize payment systems established in other countries, in order to allow participation therein by banks and other financial institutions supervised by the SBIF.

In addition, the Law explicitly establishes the finality and irrevocability of settlements and the legal protection of collateral rights in the payment systems recognized by the Central Bank. These concepts were previously incorporated only at the regulatory level. These adjustments are in line with the recommendations of the ROSC Mission (box VI.1).

The operation of this type of system could contribute to strengthening the internationalization of the peso and reducing the risks of paying in foreign currency, by allowing the integration of the Chilean financial system with international settlement systems for payments in foreign currency.

**Other aspects of financial regulation contained in Law 20,956 to boost productivity.**

Law 20,956 (the Productivity Act), which establishes measures to boost productivity and which was passed in October, modifies various statutes and includes some measures related to the financial sector. In addition to the aforementioned modification to the Central Bank's Basic Constitutional Act, this Law introduces measures to facilitate the installation of international custodians in Chile, to increase the overseas investment limits applied to insurance companies, to allow new investment alternatives for the pension and unemployment funds, and to introduce a legal framework for the risk-based supervision of the latter fund managers.

To facilitate the installation of international custodians in Chile, modifications were introduced to the Income Tax Law on the tax benefits for investment in fixed-income securities by foreign investors. According to the Declaration of Purpose, the installation of international custodians could facilitate the participation of foreign investors, contributing to the liquidity and depth of our fixed-income market and reducing financing costs. In this regard, while the participation of foreign investors tends to be associated with lower financing costs, there is empirical evidence that it also can generate higher volatility[3]/.

The Law also contemplates changes in the overseas investment limits for insurance companies. These can currently invest abroad at least 20% of their technical reserves and risk capital, up to the limit determined by the Central Bank, subject to a report from the SVS. Currently, the cap on overseas investment, as established in the Insurance Law and regulated by the Central Bank, is 20% and the system as a whole has a ratio of 12% (chapter II). The insurance companies are also authorized to invest directly in infrastructure projects. Finally, to diversify the investment portfolio of the pension funds and thus obtain better risk-return combinations, the investment alternatives have been expanded for the pension and unemployment funds, allowing investment in instruments, operations, and contracts representative of real estate assets, private capital, private debt, infrastructure, and other types of assets specified in the Investment Guidelines.

[3]/ See FSR, Second Half 2015, box II.1.

The Law confers new powers on the Superintendence of Pensions to implement a risk-based supervisory framework for the pension and unemployment fund managers, through instructions and quality assessment of corporate governance, risk management, and internal control.

## INTERNATIONAL REGULATION

### Cyber resilience

The safe and efficient operation of financial market infrastructures (FMIs) contributes to financial stability. If poorly managed, FMIs can be a source of financial shocks or a major channel through which these shocks are transmitted between domestic and international markets. Consequently, the level of cyber resilience of the FMIs can be critical for the financial system and the wider economy. To address these issues, the CPMI-IOSCO has published its "Guidance on Cyber Resilience for Financial Market Infrastructures," which constitutes the first set of internationally agreed guidelines on cyber security for the financial industry. The objective is to contribute to improving cyber resilience in the FMIs. This implies preventing cyber attacks or, in the event of a cyber incident, being able to respond quickly and effectively, with short recovery times. It is also important for practices to be similar among countries.

Some of the main proposals put forth in the report include the following: a sound "cyber governance" is critical and thus requires the attention of the FMI's board and upper management; FMIs must be able to resume operations quickly and safely following a cyber attack; they must instill a culture of cyber risk awareness; they must analyze threats and carry out rigorous tests; and cyber resilience depends not on a single FMI, but rather on the system as a whole.

At the local level, the SBIF recently issued a memorandum on information security and cyber security, emphasizing the need to take control measures in this area and requiring that in supervised entities, the board and upper management must report on the risks associated with cyber security and determine appropriate mitigation measures. The companies must carry out periodic assessments of their control systems, in line with the CPMI-IOSCO recommendations.

### Payment aspects of financial inclusion

According to the BIS, financial inclusion can be interpreted in simple terms as having access to and using the type of financial services that satisfies the user's needs.

The BIS, in conjunction with the World Bank, recently published a report on *Payment Aspects of Financial Inclusion*. The report identifies the barriers to the adoption and use of so-called transaction accounts, which are essential for financial inclusion because they provide a point of entry to other financial services such as saving, credit, and insurance. Given that 40% of the adult population worldwide does not have a transaction account, measures need to be adopted to facilitate their expansion, such as the provision of free or low-cost accounts, increased efforts in the area of financial education, and the promotion of the use of electronic payment means, for example through social benefits. The BIS also suggests some guiding principles for establishing the foundations of financial inclusion: the commitment of public and private organizations; a robust legal and regulatory framework for financial inclusion; safe and efficient financial and communications infrastructure; the supply of transaction accounts and payment means that satisfy diverse needs; and a large network of access points and interoperable channels.

Some of the concepts discussed in the BIS *Report* are relevant to Chile, in particular in the context of the implementation of the legislation on nonbank prepaid cards, where one of the objectives is to enhance financial inclusion.

**TABLE V.1**
Main regulations issued in the second half of 2016

| Date | Organization | Regulation | Material and objective |
|---|---|---|---|
| 07-Jun-2016 | SBIF | Bank Circular 1<br>Banking service providers 1 | Establishes the necessary requirements associated with information security and cyber security for the assessment of banking service providers, under the Superintendence's operational risk management framework. |
| 08-Jun-2016 | SBIF | CIRCULAR 02/2016<br>Information system MANUAL | Modifies files on the liquidity position, concentration ratios, liquidity ratios, and time tables, respectively. Documents in the framework of the SBIF Regulations (RAN 12-20) on liquidity position measurement and management. |
| 27-Jul-2016 | SVS | NCG 410 | Determines which people or market entities will be considered institutional investors, in accordance with the provisions of Law 18.045 on the securities market. |
| 30-Aug-2016 | SVS | NCG 411 | Establishes minimum requirements for classifying securities delivered as collateral by mining firms as suitable, as well as the valuation method to be used to determine the sufficiency of the securities. |
| 06-Sept-2016 | SVS | NCG 412 | Establishes the form, frequency, and requirements that must be met by securities brokers, third-party fund managers, and fund sales representatives, to be receive certification of qualification and minimum knowledge. |
| 13-Oct-2016 | | LAW 20,956 WITH MEASURES TO BOOST PRODUCTIVITY | Promotes the depth of the financial system and greater efficiency in the payment system, among other measures. |
| 29-Oct-2016 | | LAW 20,950 AUTHORIZING THE ISSUE AND OPERATION OF NONBANK PREPAID PAYMENT MEANS | Authorizes the issue and operation of prepaid debit cards or similar payment means by nonbank firms, whose systems require that the issuer or operator to regularly take on monetary obligations with the general public or specific groups or sectors therein. |
| 02-Nov-2016 | SBIF | CIRCULAR 3.612 BANKS | Advances on the incorporation of best practices in business continuity, taking into consideration the volume and complexity of operations of these entities. |

**TABLE V.2**
Main regulations published for public consultation in the second half of 2016

| Date | Organization | Regulation | Material and objective |
|---|---|---|---|
| 15-Jun-2016 | SBIF | PUBLIC CONSULTATION CLOSED<br>REGULATIONS ON BUSINESS CONTINUITY MANAGEMENT | Establishes provisions on the minimum guidelines for business continuity management in banks, including contingencies at the systemic level, whose monitoring will be evaluated by the Superintendence as an essential element of operational risk. |
| 25-Jul-2016 | SBIF | PUBLIC CONSULTATION CLOSED<br>UPDATE OF THE GENERAL REGULATIONS GOVERNING BANKING SERVICE PROVIDERS | Extends the restriction that bank employees cannot serve on the board of companies that manage large-value payment clearing houses and banking service providers that provide services related to the payment systems and that are not bank subsidiaries. |
| 03-Aug-2016 | SVS | PUBLIC CONSULTATION CLOSED<br>REGULATIONS ON REINSURANCE MANAGEMENT POLICIES AND PROGRAMS | Requires insurance companies to provide the Superintendence with information on their reinsurance management policies, approved by the company's board of directors, for the purpose of evaluation. Also introduces a requirement for insurers to report annually on their reinsurance programs. |
| 29-Sept-2016 | SP | PUBLIC CONSULTATION CLOSED<br>MODIFICATION OF PENSION FUND INVESTMENT POLICIES AND CONFLICT OF INTEREST RESOLUTION POLICIES | Incorporates new information in the annual report to the Board of Directors on the issue of and increased reporting requirements for asset lending and asset allocation with regard to asset transfers and transactions between pension funds, among other modifications. |
| 29-Sept-2016 | SP | PUBLIC CONSULTATION CLOSED<br>MODIFICATION OF TITLE XV ON INFORMATION ON THE COMPANIES IN THE PFM BUSINESS GROUP | Modifies reporting requirements in terms of the information to be sent to the Superintendence for the purpose of adequately assessing the relative risks to the financial position of pension fund managers (PFMs). |
| 29-Sept-2016 | SP | PUBLIC CONSULTATION CLOSED<br>MODIFICATION OF UNEMPLOYMENT FUND INVESTMENT POLICIES AND CONFLICT OF INTEREST RESOLUTION POLICIES | Incorporates new information in the annual report to the Board of Directors on the issue of and increased reporting requirements for asset lending and asset allocation with regard to asset transfers and transactions between unemployment funds, among other modifications |
| 06-Oct-2016 | SBIF | PUBLIC CONSULTATION CLOSED<br>REGULATION REQUIRING A REVIEW REPORT OF INTERIM FINANCIAL STATEMENTS | Establishes the obligation that when the financial statements dated 30 June are submitted to the Superintendence, they must include a review report on the interim financial information, prepared by the company's external auditors in accordance with generally accepted accounting standards. |
| 16-Nov-2016 | SBIF | PUBLIC CONSULTATION | Align the conditions on accrued interest on mortgage bonds with the time limits on approving the mortgage loans underlying the respective issue. |

**TABLE V.3**
List of documents reviewed

| Document | Title | Organization | Solvency / Liquidity | Infrastructure / Transparency | Resolution | Macroprudencial policy | Other |
|---|---|---|---|---|---|---|---|
| 1 | Revision to the Securitization Framework | BCBS | * | | | | |
| 2 | Guidance on the Application of the Core Principles for Effective Banking Supervision to the Regulation and Supervision of Institutions Relevant to Financial Inclusion | BCBS | | | | | * |
| 3 | Regulatory Treatment of Accounting Provisions: Discussion Document | BCBS | | | | | * |
| 4 | TLAC Holdings Standard | BCBS | * | | * | | |
| 5 | Objective-Setting and Communication of Macroprudential Policies | CGFS | | | | * | |
| 6 | Fast payments - Enhancing the speed and availability of retail payments | CPMI | | * | | | |
| 7 | Resilience and recovery of central counterparties (CCPs): Further guidance on the PFMI - consultative report | CPMI | | * | * | | |
| 8 | Key Attributes Assessment Methodology for the Banking Sector | FSB | | | * | | |
| 9 | Implementation and Effects of the G20 Financial Regulatory Reforms | FSB | * | * | * | * | * |
| 10 | Elements of Effective Macroprudential Policies. Lessons from International Experience | IMF - FSB - BIS | | | | * | |
| 11 | Guidance on Arrangements to Support Operational Continuity in Resolution | FSB | | * | * | | |
| 12 | Essential Aspects of CCP Resolution Planning | FSB | | * | * | | |
| 13 | Implementation Report: G20/FSB Recommendations related to Securities Markets | IOSCO | | | | | * |
| 14 | Harmonisation of critical OTC derivatives data elements (other than UTI and UPI) – second batch | CPMI - IOSCO | | * | | | |
| 15 | Harmonization of the Unique Product Identifier (UPI) Second consultative report issued by CPMI-IOSCO | CPMI - IOSCO | | * | | | |
| 16 | Progress Report on the CCP Workplan | CPMI - IOSCO - FSB | | * | | | |

Source: Website of each organization.

# VI. PAYMENT SYSTEMS

*This chapter presents the main statistics on the payment systems and describes developments in financial infrastructure at the local and international levels[1]/.*

## LARGE-VALUE PAYMENT SYSTEMS

In Chile, the large-value payment systems (LVPS) are the real-time gross settlements (RTGS) system and the large-value payment clearing house (Combanc). The RTGS system, which is managed by the Central Bank, settles gross transactions immediately in the accounts of each bank, whereas Combanc nets the transactions for each bank at the end of the day and then clears them through the RTGS system.

***The total amount of payments settled in the LVPS decreased slightly, mainly do to a reduction in interbank transactions.***

In the third quarter of 2016, the LVPS cleared a daily average of Ch$15.8 trillion (–1.5% annual). The reduction is mainly due to a smaller amount of interbank payments in both the RTGS system, where they were down 15.8%, and Combanc, where the decrease was 10.5%. At the same time, there was a 12% increase in payments deriving from the OTC securities markets in both systems. The distribution of payments between the two systems is almost identical to 2015, with 72% of payments settled directly in the RTGS system and 28% settled net in Combanc (table VI.1).

***The payment system, in general, operates with a liquidity cushion.***

Gross settlement in the RTGS system represents lower risk for system participants during the settlement process because it eliminates credit risk. It does, however, demand higher liquidity than net settlement. Even so, during the period analyzed, the majority of banks had sufficient liquidity to meet their liquidity obligations, in the form of current account balances at the Central Bank and deposits with the standing deposit facility. In the event that a bank's

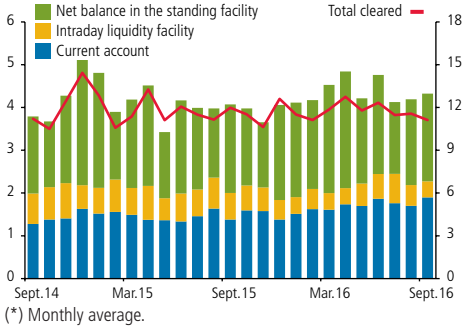
**TABLE VI.1**
Amounts cleared and processed in the large-value payment systems, LVPS (*)
(Ch$ billion)

| | Quarter III | |
|---|---|---|
| | 2015 | 2016 |
| **Payments settled in the RTGS** | **11,542** | **11,384** |
| Interbank | 1,840 | 1,549 |
| issuer/Nonbank receiver | 1,501 | 1,569 |
| Securities market | 2,058 | 2,259 |
| CCLV | 503 | 501 |
| ComDer | 6 | 18 |
| DvP OTC securities market | 1,549 | 1,740 |
| Clearing houses (net) | 322 | 287 |
| Checks | 59 | 54 |
| ATMs | 17 | 19 |
| Combanc | 246 | 214 |
| Central Bank of Chile | 5,821 | 5,721 |
| **Payments processed in Combanc** | **4,503** | **4,420** |
| Interbank | 1,280 | 1,146 |
| Client account | 2,028 | 1,933 |
| DvP OTC securities market | 1,195 | 1,341 |
| **Total cleared in LVPS** | **16,045** | **15,804** |

(*) Daily averages for each quarter, To better reflect the information, the subaccounts of Interbank Payments have been reclassified and disaggregated, Therefore, while the data have not been modified, they are not directly comparable to the data presented in the FSR for the second half of 2015,

Sources: Central Bank of Chile, Combanc, CCLV, and ComDer,

**FIGURE VI.1**
RTGS system: Liquidity (*)
(Ch$ trillion)



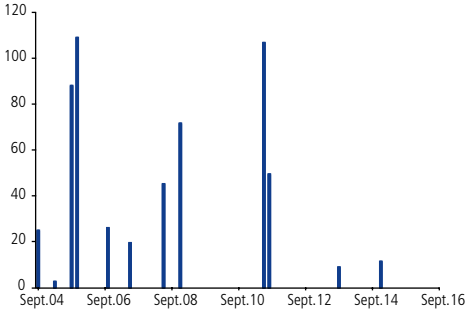

(*) Monthly average.

Source: Central Bank of Chile.

[1]/ For additional statistics, see the statistical appendix and Central Bank's website (the payment system section).

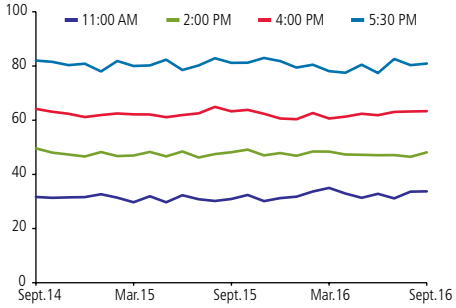
[2]/ This facility operates daily through the purchase of financial instruments with a repurchase agreement. The terms and conditions of these operations are contained in the Central Bank's financial regulations.

**FIGURE VI.2**
RTGS system: Service interruption
(minutes per month)




Source: Central Bank of Chile.

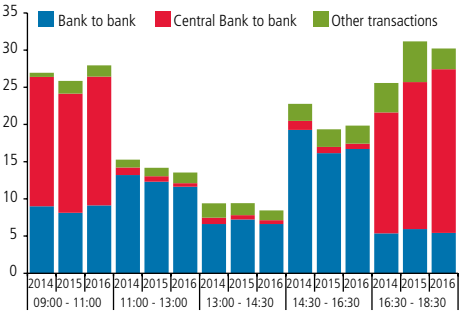
**FIGURE VI.3**
RTGS system: Transactions by time of day (*)
(percent of total)




(*) Monthly average.

Source: Central Bank of Chile.

**FIGURE VI.4**
RTGS system: Distribution by type of payment
(percent)




Source: Central Bank of Chile.

own resources are not sufficient, the Central Bank has available a standing intraday liquidity facility[2]/. This window was used by a small number of banks in the year (figure VI.1).

***As in past years, system availability was 100%.***

Based on volume, the RTGS system is the main payment system in Chile, settling an amount equivalent to annual GDP every 13 business days[3]/. From this perspective, the system constitutes a fundamental pillar for the smooth functioning of the financial markets and the economy in general, and its operational continuity is critical. Consequently, maintaining the operational continuity of the RTGS system is a permanent concern of the Central Bank. The Bank's efforts are reflected in the complete absence of service interruption events in the RTGS system in the last two years (figure VI.2).

***In the RTGS system, 50% of payments are completed three hours before closing time, which reinforces the robustness and resilience of the system.***

The hour in which 50% of the transactions in the RTGS system are completed is an indicator of operational risk from the potential impact of service interruption. The later transactions are cleared (i.e., the closer to closing time), the larger the share of payments that would not be cleared that day in the event of a service interruption, which would have consequences for the financial system. Since 2008, the hour in which 50% of transactions have cleared is 13:00 to 14:00; the closing time of the RTGS system, when it stops receiving and clearing transfer orders, is 17:30 (figure VI.3). Additionally, at the end of the cycle (i.e., from 16:30 on), the system mostly processes payments between commercial banks and the Central Bank, which further increases flexibility in the event of a system failure: in the event of a contingency, the Central Bank could reduce or delay transactions that do not affect the normal functioning of the financial market (figure VI.4).

***In line with international standards, the share of securities market transactions settled directly in the RTGS system continued to expand.***

International standards recommend that financial market transaction be directly settled in the RTGS system, given that the settlements are executed immediately and on a gross basis. Consistent with this guidance, Law 20,345 established in 2009 that securities clearing and settlement systems and central counterparties (CCP) must settle their transactions directly in the RTGS system[4]/. Finally, transactions that are not centrally netted that are cleared in the RTGS system also increased (figure VI.5).

[3]/ Annual GDP in 2015. The volume of payments cleared in the RTGS system is currently a little more than 17 times quarterly GDP. At the international level, this value varies significantly among countries. For instance, in India, the figure is 6 times; in Australia, 25 times; in the United States, 46 times; in Brazil, 47 times; and in Japan 66 times (BIS, 2016).

[4]/ CCLV S.A. and COMDER S.A. are authorized by the SVS, with approval from the Central Bank, to operate as CCPs and to maintain an account in the RTGS system.

***The RTGS system established a Users Committee.***

Financial infrastructures in general and payment systems in particular must be efficient and effective in the services they offer. Therefore, the RTGS system implemented a Users Committee starting this year, which is made up of banks and central counterparties that participate in the system, together with the Central Bank. This authority will facilitate the coordination and cooperation of participants and the payment system, while also promoting transparency, efficiency, and effectiveness.

***CCLV began the application process to participate in the European Securities and Market Authority (ESMA) as a recognized Qualifying Central Counterparty (QCCP).***

CCLV, which operates in Chile as a central counterparty for the variable-income and derivatives market and as a clearing house for fixed-income and money market instruments, initiated the application process to be recognized by ESMA as a QCCP, which would allow investors in the European market and their subsidiaries to process transactions through this CCP at a low regulatory capital cost. In the process, ESMA will review the design, characteristics, and safeguards of the CCP; assess whether Chilean regulation and supervision are equivalent to the European Market Infrastructure Regulation (EMIR); verify that the country has rules against money laundering and terrorist financing in line with the general requirements in the European Union; and ensure that memoranda of understanding are established to formalize cooperation agreements between the local and European authorities. ComDer Central Counterparty also initiated this process in December 2015 and is currently in the evaluation phase.

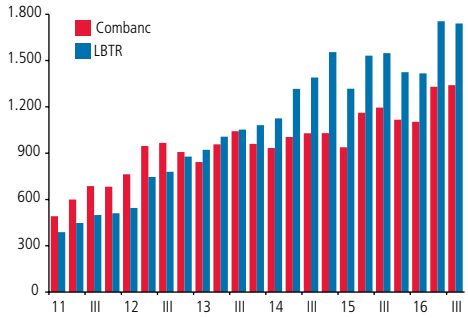
## RETAIL PAYMENT SYSTEMS

***The amounts processed through all retail payment means increased relative to 2015 (table VI.2).***

In terms of the number of transactions, electronic payment means continue to increase steadily, while checks continue to follow a downward trend. The number of debit card transactions, in particular, increased sharply relative to 2015 (figure VI.6).

The number of cards issued (including debit, bank credit, and nonbank credit cards) continues to expand, as reported box V.1 of the FSR in the first half of 2016. In December 2015, there were 28.7 million active cards—up two million since December 2014 (figure VI.7). This expansion is explained by the strong growth of debit cards, which grew by nearly two million in the year.

**FIGURE VI.5**
Clearing of OTC transactions (*)
(Ch$ billion)




(*) Quarterly averages.
Source: Central Bank of Chile.

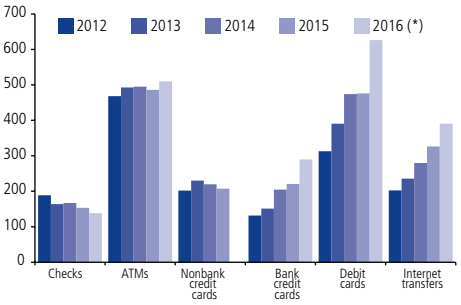
**TABLE VI.2**
Main retail payment means
(Ch$ billion)

| | 2012 | 2013 | 2014 | 2015 | 2016 (*) |
|---|---|---|---|---|---|
| Checks | 323,980 | 279,699 | 291,322 | 280,881 | 296,725 |
| ATMs | 22,174 | 24,523 | 25,674 | 25,952 | 27,412 |
| Nonbank credit cards | 5,083 | 5,890 | 5,778 | 5,542 | n.a. |
| Bank credit cards | 7,338 | 8,758 | 11,381 | 12,334 | 15,295 |
| Debit cards | 6,056 | 7,550 | 9,131 | 9,063 | 11,722 |
| Internet transfers | 526 | 667 | 717 | 769 | 872 |

(*) Latest available data, annualized.
n.a: not available.

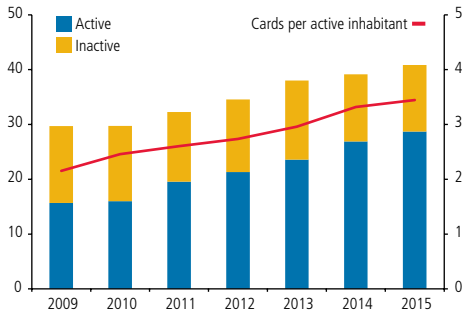
Source: Central Bank of Chile, based on data from the SBIF.

**FIGURE VI.6**
Retail payment means
(millions of operations)



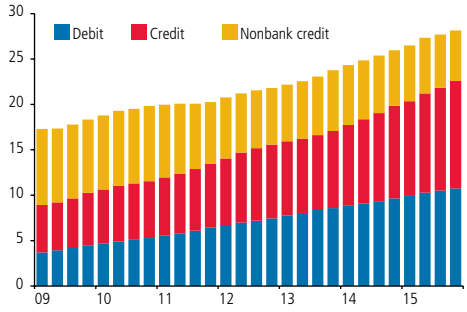

(*) Last available data, annualized.
Source: Central Bank of Chile, based on data from the SBIF.

**FIGURE VI.7**
Card holding (*)
(millions; times)




(*) Annual average. All current debit cards are counted as active.
Source: SBIF.

**FIGURE VI.8**
Total card spending (*)
(percent of total household consumption)




(*) Considers the conversion of the nonbank cards of CAR S.A. (January 2014) and CAT S.A. (May 2015) into bank cards.
Sources: Central Bank of Chile and SBIF.

This growth is reflected in the total volume of card transactions as a share of total household consumption, which reached 28% in December 2015 (figure VI.8). This breaks down as 11.8% with bank credit cards, 10.7% with debit cards, and 5.6% with nonbank credit cards.

## FINANCIAL INFRASTRUCTURE

***The assessment of the local infrastructures and the legislative and regulatory framework carried out in 2015 by the World Bank and the International Monetary Fund (IMF) indicates a high level of compliance with international standards, although there is still room for improvement.***

Compliance with international standards in the area of financial infrastructure is important not only for building solid, resilient infrastructures that contribute to financial stability, but also for ensuring Chile's integration with other financial markets. This issue is particularly important for the Chilean economy, given the large share of cross-border transactions.

In 2011, the BIS and IOSCO published the *Principles for Financial Market Infrastructures*, which integrates the lessons learned from the 2008 financial crisis[5]/, harmonizing and strengthening the existing standards at the time. This paradigm shift has generated a need for changes in the legal and regulatory framework and in financial infrastructure practices in almost all jurisdictions, including Chile. In this context, and in the framework of the Financial Stability Board, financial authorities have decided to coordinate their actions to achieve compliance with the new principles. Thus, in 2015 the Finance Ministry and the Central Bank asked the World Bank and the IMF to evaluate the degree of compliance with the new standards in Chile and to make recommendations for closing any existing gaps. The assessment was applied to all financial market infrastructures, and the results were recently published. The general results were satisfactory, and some of the recommendations have already been implemented. Going forward, pending tasks include the establishment of an agenda developed jointly by the private sector and the authorities to continue fine-tuning the system, thereby contributing to reinforcing the robustness and financial integration of the Chilean market (box VI.1).

5/ See FSR, Second Half 2014, chapter VI.

# BOX VI.1
# INTERNATIONAL ASSESSMENT OF FINANCIAL MARKET INFRASTRUCTURE IN CHILE

## General background

In January 2015, the Finance Ministry and the Central Bank of Chile asked the World Bank and the International Monetary Fund (IMF) to evaluate local compliance with international principles for financial market infrastructures (PFMIs) [1/].

The infrastructures included in the assessment were the real-time gross settlement (RTGS) system, the large-value payment clearing house (Combanc), ComDer Central Counterparty, CCLV Central Counterparty (with the central counterparty and the securities clearing house divisions considered separately), and the central security depository (CSD). The assessors also looked at the performance of the authorities directly involved in the regulation and supervision of these infrastructures (CBC, SVS, and SBIF).

The PFMIs are 24 principles developed by the IOSCO Committee on Payments and Market Infrastructures (CPMI) to systematize and communicate the best practices and legal and regulatory standards applicable to financial market infrastructures[2/]. These principles are oriented toward effective risk management and the promotion of efficiency and transparency. They also establish five responsibilities for the authorities in charge of regulation, supervision, and oversight of these infrastructures (FSR, Second Half 2014).

The implementation of the PFMIs contributes to the soundness of financial infrastructures, which, in markets that had them, demonstrated their importance in containing the adverse effects of the 2008 financial crisis. It also contributes to the well-functioning of financial markets and enhances international integration (BIS, 2012).

## Assessment and results

The assessment carried out in 2015 was based on the CPMI-IOSCO "Assessment Methodology for the Principles for FMIs and the Responsibilities of Authorities" and followed the IMF *Reports* on the *Observance of Standards and Codes* (ROSC), which are usually applied by World Bank assessors. The report was published jointly by the Central Bank and the Finance Ministry on 6 December.

In general, the ROSC identified a high level of compliance with the principles on the part of the entities evaluated, as well as the authorities in terms of their responsibilities. The main conclusion was that Chile has sound, robust financial market infrastructures, in line with international standards and best practices on risk management (credit, liquidity, operational, and custodian risk), the finality and irrevocability of settlement, efficiency, and transparency. The ROSC further indicates that the regulatory and supervisory framework in Chile allows the clear distinction of the powers and responsibilities of each institution in relation to each infrastructure, which in turn have sufficient authority to obtain information, generate improvements, or take corrective action if necessary.

Despite this positive evaluation, and as expected, the assessors detected some shortcomings that need to be addressed in the medium and long term.

With regard to infrastructures, the *Report* identifies deficiencies whose solution requires a change in the corresponding legal framework, as discussed below, as well as weaknesses that need to be addressed in each institution, to the extent that they involve organization, operation, and/or internal rules. An example of the latter is the development of adequate corporate governance mechanisms that are clear, transparent, and efficient.

[1/] Financial market infrastructures include payment systems, securities clearing systems, central securities depositories, central counterparties, and trade repositories (TR). These infrastructures facilitate the clearing, settling, and recording of monetary and financial transactions such as payments, securities trading, and derivatives contracts.
[2/] In April 2012, the BIS and the IOSCO published the report, "Principles for Financial Market Infrastructures (PFMI)." This report brought together a number of international standards that had previously been published separately, strengthened the standards considered, and added trade repositories (TR) as infrastructure.

As mentioned, the *Report* identifies deficiencies that must be addressed in the medium term through legal modifications. One of the main issues has to do with recognizing the finality and irrevocability of settlements processed through systems recognized by the Central Bank and the protection of collateral rights within the systems. The *Report* indicates that these principles are currently adequately addressed in the regulatory framework[3]/, but given that they are paramount for a well-functioning payment system, it is recommended that they be explicitly encoded in the law. This issue has already been addressed through a modification to Article 35.8 of the Central Bank's Basic Constitutional Act introduced through Law 20,956 on productivity, passed in October of this year (chapter V above).

Another recommendation is the incorporation of a trade repository in the regulatory and legal framework. Such infrastructures contribute to transparency in the over-the-counter (OTC) derivatives market. This recommendation should be carefully considered, given that Chile has a relatively large derivatives market, in which almost 100% of the transactions are OTC. The assessors gave a positive opinion on the data system on all currency derivatives with nonresidents and/or by members of the Formal Exchange Market, managed by the Central Bank.

The *Report* also contains proposals for regulatory development. One of the recommendations is to explicitly design a regulatory and supervisory framework for payment systems. In particular, the supervision of Combanc is based on the supervisory framework for banking service providers, but it should ideally be overhauled to take into account the specific characteristics and risk profile of a financial infrastructure.

A final recommendation is for the authorities to analyze the advantages of providing an intraday liquidity facility for central counterparties, given their importance for the well-functioning of financial markets and the direct participants of payment systems. This is as yet an open discussion in the rest of the world, and the analysis must take into consideration the international experience.

**Final considerations**

The results of the ROSC indicate a high level of compliance with the PFMIs, as well as some gaps that need to be closed. Some of the recommendations have already been addressed, and the authorities will continue working together with the private sector to tackle the remaining challenges.

[3]/ Central Bank of Chile, *Compendium of Financial Regulations*, chapters III.H.4 and III.H.5.

# REFERENCES


Abrahams, M., T. Adrian, R. K. Crump, and E. Moench. 2015. "Decomposing Real and Nominal Yield Curves." Federal Reserve Bank of New York Staff Report N° 570. February.

Alessandri, P., and B. D. Nelson. 2015. "Simple Banking: Profitability and the Yield Curve." Journal of Money, Credit, and Banking 47(1): 143–75.

Central Bank of Chile. Financial Stability Report. Several issues.

Borio, C., L. Gambacorta, and B. Hofmann. 2015. "The Influence of Monetary Policy on Bank Profitability." BIS Working Paper N° 514. October.

Caballero, R. J. 2006. "On the Macroeconomics of Asset Shortages." NBER Working Paper N° 12753. December.

CPSS-IOSCO. 2012a. "Principles for Financial Market Infrastructures." April.

CPSS-IOSCO. 2012b. "Principles for Financial Market Infrastructures: Disclosure Framework and Assessment Methodology." December.

Chow, J. 2015. "Stress Testing Corporate Balance Sheets in Emerging Economies." IMF Working Paper 15/216. September.

Del Giovane, P., G. Eramo, and Nobili, A. 2011. "Disentangling Demand and Supply in Credit Developments: A Survey-Based Analysis for Italy." Journal of Banking and Finance 35(10): 2719-2732.

Eichengreen, B., and P. Gupta. 2016. "Managing Sudden Stops." World Bank Group Policy Research Working Paper N° 7639. April.

Espinosa, C., J. Fernández, and F. Vásquez. 2016. "Ejercicio de deterioro de empresas: una aplicación al sector corporativo no financiero chileno." Mimeo. Central Bank of Chile.

Global Financial Stability Report. 2015. "Vulnerabilities, Legacies, and Policy Challenges: Risks Rotating to Emerging Markets." October

Global Financial Stability Report. 2016. "Fostering Stability in a Low-Growth, Low-Rate Era." October.

Hördahl, P., J. Sobrun, and P. Turner. 2016. "Low Long-Term Interest Rates as a Global Phenomenon." BIS Working Papers N° 574. August.

Jara, A., J. F. Martinez, and D. Oda. 2016. "Banks' Lending Growth in Chile: The Role of the Senior Loan Officers Survey." Mimeo. Central Bank of Chile.

Kaminska, I., and G. Zinna. 2014. "Official Demand for U.S. Debt: Implications for U.S. Real Interest Rates." IMF Working Paper N° WP/14/66. April.

King, M., and D. Low. 2014. "Measuring the 'World' Real Interest Rate." NBER Working Paper N° 19887. February.

Koepke, R. 2015. "What Drives Capital Flows to Emerging Markets? A Survey of the Empirical Literature." IIF Working Paper.

Madeira, C. 2016 "Stress tests de deuda de consumo en Chile," Mimeo. Central Bank of Chile.

Natixis. 2016. "From Lending to Investing in Order to Survive." China Banking Monitor. November.

Rachel, L., and T. D. Smith. 2015. "Secular Drivers of the Global Real Interest Rate." Bank of England Staff paper N° 571.

Turner, P. 2011. "Is the long-Term Interest Rate a Policy Victim, a Policy Variable, or a Policy Lodestar?" BIS Working Paper N° 367. December.

Turner, P. 2013. "Benign Neglect of the Long-Term Interest Rate." BIS Working Paper N° 403. February.

Abrahams, M., T. Adrian, R. K. Crump y E. Moench. 2015. "Decomposing Real and Nominal Yield Curves". Federal Reserve Bank of New York Staff Report No. 570. Febrero.

Alessandri P. y B. D. Nelson. 2015. "Simple banking: profitability and the yield curve". Journal of Money, Credit and Banking 47(1): 143-175.

Banco Central de Chile. Informe de Estabilidad Financiera. Varios números.

Borio, C., L. Gambacorta y B. Hofmann. 2015. "The influence of monetary policy on bank profitability". BIS Working Paper N° 514. Octubre.

Caballero, R. J. 2006. "On the Macroeconomics of Asset Shortages". NBER Working Paper No. 12753. Diciembre.

CPSS-IOSCO. 2012a. "Principles for financial market infrastructures". Abril.

CPSS-IOSCO. 2012b. "Principles for financial market infrastructures: Disclosure framework and Assessment methodology". Diciembre.

Chow, J. 2015. "Stress Testing Corporate Balance Sheets in Emerging Economies". IMF Working Paper 15/216, Septiembre.

Del Giovane, P., Eramo, G., and Nobili, A. 2011. "Disentangling demand and supply in credit developments: a survey-based analysis for Italy". Journal of Banking & Finance 35 (10), 2719-2732.

Eichengreen, B. y P. Gupta. 2016. "Managing Sudden Stops". World Bank Group Policy Research Working Paper No. 7639. Abril.

Espinosa, C., J. Fernández y F. Vásquez. 2016. "Ejercicio de deterioro de empresas. Una aplicación al sector corporativo no financiero chileno". Mimeo. Banco Central de Chile.

Global Financial Stability Report. 2015. "Vulnerabilities, Legacies, and Policy Challenges. Risks Rotating to Emerging Markets". Octubre

Global Financial Stability Report. 2016. "Fostering Stability in a Low-Growth, Low-Rate Era". Octubre.

Hördahl, P., J. Sobrun y P. Turner. 2016. "Low long-term interest rates as a global phenomenon". BIS Working Papers No. 574. Agosto.

Jara, Alejandro, Juan F. Martinez, Daniel Oda. 2016. "Banks' Lending Growth in Chile: The Role of the Senior Loan Officers Survey". Mimeo. Banco Central de Chile.

Kaminska, I. y G. Zinna. 2014. "Official Demand for US Debt: Implications for US real interest rates". IMF Working Paper No. WP/14/66. Abril.

King, M. y D. Low. 2014. "Measuring the "World" Real Interest Rate". NBER Working Paper No. 19887. Febrero.

Koepke, R. 2015. "What Drives Capital Flows to Emerging Markets? A Survey of the Empirical Literature". IIF Working Paper.

Madeira, C. (2016), "Stress Tests de Deuda de Consumo en Chile", Mimeo. Banco Central de Chile.

Natixis. 2016. "From lending to investing in order to survive". China Banking Monitor. Noviembre.

Rachel, Luckasz y Thomas D. Smith. 2015. "Secular drivers of the global real interest rate". Bank of Englad Staff paper No. 571.

Turner, Philip. 2011. "Is the long-term interest rate a policy victim, a policy variable or a policy lodestar?". BIS working papers No. 367. Diciembre.

Turner, Philip. 2013. "Benign neglect of the long-term interest rate". BIS working papers No. 403. Febrero.

# GLOSSARY

**Arrears rate (AR):** Also called portfolio in arrears. A measure of credit risk calculated as the ratio of loan installments that are past due by over 90 days to the total debt. For commercial loans to firms, the delinquent installments are past due by up to three years; for commercial loans to people, up to one year; for consumer loans, up to 180 days.

**Average interbank interest rate swap (*promedio cámara*):** Derivatives contract between two parties, who carry out an exchange of flows at future dates, between a fixed rate established when the contract is written and a variable rate (fixed-for-floating swap). The variable rate corresponds to the average interest rate in the interbank clearing house (*cámara*), which in turn is derived from the average clearing house index.

**Banks, large:** Banks with a large market share and wide diversification of operations (loans and derivative and nonderivative financial instruments).

**Banks, medium-sized:** Banks with a smaller market share but equally diversified operations as the large banks.

**Basel III:** A set of new capital and liquidity requirements for the banking industry, developed by the BIS with the aim of substantially strengthening the Basel II capital framework. The objectives include the following: raise the quality, consistency and transparency of the capital base; strengthen risk hedging; introduce leverage limits; promote a countercyclical capital framework; and introduce a global liquidity standard. These requirements will be implemented gradually through 2019.

**Capital adequacy ratio (CAR):** A measure of a bank's financial soundness, measured as the ratio of regulatory capital to credit-risk-weighted assets.

**Central counterparty (CCP):** An intermediary that acts as the buyer for all sellers and as the seller for all buyers in a given market.

**Central securities depository:** A financial organization that provides securities accounts and central custody services and plays an important role in guaranteeing securities trade.

**Credit risk:** The possibility that a bank borrower or counterparty will fail to meet its contractual obligation, whether in interest or capital.

**Currency mismatch:** The difference between foreign currency liabilities and foreign currency assets, less the net position in derivatives (the difference between buy and sell positions in derivatives contracts). An alternative measure is calculated as the difference between external debt and the net derivatives position, scaled by exports minus imports.

**Currency risk:** Exposure to losses caused by adverse changes in the value of the foreign currencies in which the instruments, contracts, and other transactions recorded on the balance sheet are denominated.

**Debt-to-income (DTI) ratio:** Measures the debt held by households with different financial and nonfinancial entities as a percentage of their disposable income.

**Default of 90 days or more:** The total amount of a loan that is past due by 90 days or longer, even if only some of the monthly payments are past due.

**Default rate (DR):** The ratio between the number of debtors with arrears of over 90 days and the total number of debtors in the corresponding portfolio.

**Delinquent loans:** Loans with arrears of over 90 days from the maturity date. The full amount of the loan is considered delinquent for accounting data, versus the total debt for administrative data.

**Emerging Market Bond Index (EMBI):** An indicator calculated by JPMorgan that measures the return on government bonds issued by emerging market countries (sovereign bonds), with a specific structure and liquidity.

**Federal funds rate (FFR):** Monetary policy rate of the U.S. Federal Reserve.

**Federal Reserve System (Fed):** U.S. Federal Reserve, the central bank of the United States.

**Financial burden-to-income ratio (FIR):** Measures the payments that households must make to fulfill their consumer and mortgage loan commitments, as a percentage of their disposable income.

**Financial indebtedness:** Ratio of financial indebtedness, measured as financial debt/(Equity plus minority interest).

**Financial infrastructures:** Institutions that enable the effective operation of financial markets, including payments systems, central counterparties, securities clearing systems, central securities depositories, and trade repositories.

**Foreign exchange risk:** A measure of the change in the profitability, cash flows, and/or market value of a firm deriving from fluctuations in the value of currencies other than the functional or presentation currency.

**G20:** An international forum for cooperation and consultation among developed countries and emerging economies, on issues related to global economic stability. Members include the seven most industrialized countries in the world (G7), Russia, the European Union and a group of other economies, including Brazil, India, China and South Africa.

**Guaranteed rate:** The average sales rate of life insurance companies, weighted by the stock of life annuities.

**House price index (HPI):** Estimated using a stratification or mixed adjustment method, based on anonymized administrative records from the Chilean IRS on actual transactions on new and used residences at the national level.

**Indexation margin:** Difference between the indexation adjustments earned and paid by banks, measured relative to total bank assets.

**Interest coverage ratio:** A measure of repayment capacity, defined as the ratio of EBITDA to financial expense.

**Interest margin:** Difference between the interest earned and paid by banks, measured relative to total bank assets.

**Interest rate risk:** Exposure to losses caused by adverse changes in interest rates, which affect the value of the instruments, contracts and other transactions recorded on the balance sheet.

**Intraday liquidity facility:** Financing granted by the Central Bank of Chile to banking entities through the RTGS system. This facility operates daily through the purchase of financial instruments with a repurchase agreement. The terms and conditions of these operations are contained in the Central Bank's financial regulations.

**Leverage:** Measure of the banks' debt level over equity; used as a complementary tool to capital adequacy requirements.

**Liquidity risk:** The risk that a counterparty (or participant in the payments system) will not be able to meet its obligations when they come due, although it may be able to do so in the future. Liquidity risk does not necessarily imply that the counterparty is insolvent.

**Loan-to-Value (LTV) ratio:** The ratio of a given loan to the value of the underlying asset purchased, usually a home.

**Loans in default:** Debtors and their loans for which there is little chance of recovery, due to a weak or null capacity to pay. This portfolio includes debtors who must undergo a forced debt restructuring, as well as any debtor with arrears of 90 days or more in the payment of interest or principal on a loan.

**Market risk exposure (MRE):** Exposure to interest rate risk on the trading book and to currency risk on the balance sheet.

**Market risk:** The potential loss in value of the net positions held by a financial entity, as the result of adverse changes in market prices.

**MF1:** Type 1 mutual funds, which invest in short-term debt instruments with a duration of 90 days or less. This mutual fund invests in short-term debt securities and medium- and long-term debt securities. The duration of a Type 1 fund's investment portfolio must be 90 days or less. Shares are invested in short-, medium- and long-term debt instruments.

**MF2:** Type 2 mutual funds, which invest in short-term debt instruments with a duration of 365 days or less. This mutual fund invests in short-term debt securities and medium- and long-term debt securities. The duration of a Type 2 fund's investment portfolio must be 365 days or less. Shares are invested in short-, medium- and long-term debt instruments.

**MF3:** Type 3 mutual funds, which invest in medium- and long-term debt instruments, with a minimum duration of over 365 days. This mutual fund invests in short-term debt securities and medium- and long-term debt securities. A minimum and maximum duration are defined for the investment portfolio. This information must be contained in the definition adopted by the fund, and it must be longer than 365 days. Shares are invested in short-, medium- and long-term debt instruments.

**MF6:** Type 6 mutual funds, which can be freely invested. These funds are not classified under the definitions of types 1 through 5. The investment policy is unrestricted, but while they are not subject to regulated guidelines, they must establish internal regulations.

**Net international investment positions (NIIP):** The difference between the economy's external assets and liabilities, at the end of a given period.

**Nonperforming loans (NPL) ratio:** A measure of credit risk, calculated as the ratio between nonperforming loans and total loans.

**Nonperforming loans:** Bank loans, or a fraction thereof, that are past due by up to 90 days from the maturity date. On loans with fixed monthly payments, only the amount of the past-due payment is considered, although the full amount of the loan could be transferred to the nonperforming portfolio if acceleration clauses are enforced.

**Normal loans:** Loans to debtors with the payment capacity to meet their obligations and commitments, for whom there is no sign that this condition will change, based on an evaluation of their economic-financial situation.

**Office absorption:** The number of square meters of office space rented or purchased in a given period.

**Office class (A+, A, B, C):** Classification used to categorize offices according to their characteristics, from high to low. The characteristics considered are location, access, floor plan size, absence of pillars, ceiling height, access control, closed-circuit TV, security equipment, fire detectors and extinguishers, air conditioning, elevator speed, structured cabling and whether the building has Leadership in Energy and Environmental Design (LEED) certification.

**Operational risk:** Exposure to losses deriving from deficient internal processes, personnel and systems or external events, including legal risks but excluding strategic and headline (or reputational) risk.

**Over-the-counter (OTC):** A term used to describe the trading of financial instruments directly between two parties, without going through the organized securities exchanges.

**Qualifying central counterparty (QCCP):** A foreign CCP recognized by the European regulator, subject to the provision that the CCP's operations and the domestic rules and regulations are consistent with established standards.

**Real estate VAT:** In accordance with Law 20.780, of 29 September 2014, which modified D.L. 825 of 1974, on sales and services taxes, the Chilean tax regulations were modified to extend the value added tax to include the sale of real estate properties by real estate agents or companies (as opposed to private individuals).

**Regulatory capital:** Tier 1 (core) capital plus Tier 2 (supplementary) capital. The latter mainly includes subordinate bonds and additional provisions.

**Repricing:** A component of interest rate risk, corresponding to the exposure to losses caused by rolling over of assets and liabilities with different maturities under different financial conditions.

**Repurchase agreement (repo):** A contract in which one party sells a security to a second party, with a commitment to buy back the same security at a time specified in the original sales agreement.

**Residual short-term external debt (RSTED):** External debt coming due within 12 months of a given date (that is, short-term external debt plus the current portion of long-term external debt).

**Return On Assets (ROA):** Measured as the ratio of earnings after taxes, amortizations and extraordinary items to total assets.

**Return On Equity (ROE):** Measured as the ratio of earnings after taxes, amortizations and extraordinary items to shareholders' equity plus minority interest. It is the shareholders' return.

**Risk-weighted assets:** Bank assets weighted on the basis of five risk categories, set forth in Article 67 of the General Banking Law. The ratio of capital to risk-weighted assets serves as a measure of capital adequacy (known as the Basel ratio), which is internationally accepted as a measure of bank solvency.

**Senior bonds:** Ordinary long-term bonds issued by banks.

**Standing deposit facility:** Operations through which the Central Bank contributes to banks' liquidity management by accepting deposits. The deposits collect interest on the agreed maturity date, as established in the Central Bank's financial regulations.

**Subordinate bonds:** Long-term bonds issued by banks, with an average maturity of not less than five years and with no prepayment clauses. Because subordinate bonds are repaid after the claims of other creditors are settled in the case of bank liquidation, a share of these bonds is computed as regulatory capital.

**Substandard loans:** Individually evaluated loans to firms with a significant worsening of their payment capacity and little cushion for meeting their financial liabilities in the short term. The loans in this portfolio are more than 30 days delinquent.

**Taper tantrum:** The surge in volatility on 22 May 2013 that was triggered by comments by then-Chairman of the U.S. Federal Reserve, Ben Bernanke, about a possible reduction—or tapering—of the Fed's asset purchase program toward the end of that year.

**Tier 1 capital:** Paid-in capital plus bank reserves and period earnings, net of provisions for the distribution of dividends.

**Vacancy rate:** Square meters available for rent or sale, calculated over the current stock.

**VIX:** Chicago Board Options Exchange (CBOE) stock volatility index, based on S&P 500 index options contracts (at one month).

# ABBREVIATIONS

**Achef:** *Asociación Chilena de Empresas de Factoring* (Association of Chilean Factoring Firms).
**AR:** Arrears rate.
**BCBS:** Basel Committee on Banking Supervision.
**BCS:** *Bolsa de Comercio de Santiago* (Santiago Stock Exchange).
**BIS:** Bank for International Settlements.
**BLS:** Bank Lending Survey.
**bp:** Basis points.
**BSP:** Banking service providers.
**CAR:** Capital adequacy ratio.
**CBC:** Central Bank of Chile.
**CCAF:** *Cajas de Compensación y Asignación Familiar* (Family Compensation Funds).
**CChC:** *Cámara Chilena de la Construcción* (Chilean Chamber of Construction).
**CCP:** Central counterparties.
**CEF:** *Consejo de Estabilidad Financiera* (Financial Stability Board).
**CGFS:** Committee on the Global Financial System.
**COMEX:** Foreign trade.
**CPMI:** Committee on Payments and Market Infrastructures.
**CSD:** Central securities depository.
**DC:** Domestic currency.
**Dipres:** *Dirección de Presupuestos* (Budget Division).
**DR:** Default rate.
**DTI:** Debt-to-income ratio.
**DvP:** Delivery versus Payment.
**ECB:** European Central Bank.
**EMBI:** Emerging Market Bond Index.
**EMIR:** European Market Infrastructure Regulation.
**EPFR:** Emerging Portfolio Fund Research.
**ER:** Exchange rate.
**ESMA:** European Securities and Markets Authority.
**EUS:** Employment and Unemployment Survey.
**FDI:** Foreign direct investment.
**Fed:** U.S. Federal Reserve System.
**FFR:** Federal Fund Rate.
**FI:** Financial infrastructure
**FI:** Fixed income.
**FIR:** Financial burden-to-income ratio.
**FLI:** *Facilidad de Liquidez Intradía* (intraday liquidity facility)
**FMC:** Financial Market Committee.
**FPD:** *Facilidad Permanente de Depósito* (standing deposit facility).

**FSB:** Financial Stability Board.
**FSR:** Financial Stability Report.
**FTD:** Fixed-term deposit.
**FX:** Foreign currency.
**GBL:** General Banking Law.
**GDP:** Gross domestic product.
**GFSR:** Global Financial Stability Report
**HFS:** Household Financial Survey.
**HPI:** House Price Index.
**IMACEC:** Monthly Indicator of Economic Activity.
**IMF:** International Monetary Fund.
**INE:** *Instituto Nacional de Estadísticas* (National Statistics Institute).
**IOSCO:** International Organization of Securities Commissions.
**IPoM:** Monetary Policy Report.
**IPSA:** Selective Stock Price Index.
**IRS:** Chilean Internal Revenue Service.
**LATAM:** Latin America.
**LIC:** Life insurance companies.
**LOC:** Central Bank of Chile's Basic Constitutional Act.
**LTV:** Loan-to-value ratio.
**LVPS:** Large-value payment system.
**MF:** Mutual funds.
**MPR:** Monetary policy rate.
**NCG:** *Norma de Carácter General* (General Regulation).
**NIIP:** Net international investment position.
**NPL:** Nonperforming loan ratio.
**OECD:** Organization for Economic Cooperation and Development.
**OTC:** Over-the-counter.
**PF:** Pension Funds.
**PFMI:** Principles for Financial Market Infrastructures.
**pp:** percentage points.
**QCCP:** Qualifying Central Counterparty.
**RAN:** *Recopilación Actualizada de Normas* (SBIF banking regulations).
**ROA:** Return on assets.
**ROE:** Return on equity.
**ROSC:** Report on the Observance of Standards and Codes.
**RSTED:** Residual short-term external debt.
**RTGS:** Real-time gross settlement.
**RWA:** Risk-weighted assets.
**S&L:** Savings and loan associations.
**SMR:** Santiago Metropolitan Region.
**SBIF:** *Superintendencia de Bancos e Instituciones Financieras* (Superintendence of Banks and Financial Institutions).

**SML:** Securities Market Law.

**SP:** *Superintendencia de Pensiones* (Superintendence of Pensions).

**Suseso:** *Superintendencia de Seguridad Social* (Superintendence of Social Security).

**SVS:** *Superintendencia de Valores y Seguros* (Superintendence of Securities and Insurance).

**TYVIX:** 10-year U.S. Treasury note volatility index.

**UF:** *Unidad de Fomento*, an inflation-indexed unit of account.

**VAT:** Value added tax

**VI:** Variable income.

**VIX:** Chicago Board Options Exchange Volatility Index.

Alejandro Zurbuchen S.
**LEGAL REPRESENTATIVE**

CENTRAL BANK OF CHILE
Institutional Affairs Division
Publications Department
DECEMBER 2016

ISSN: 0716-2219
Santiago, Chile
Agustinas 1180, Santiago, Chile
P. O. Box 967, Santiago, Chile
Tel.: 56-22670 2000
www.bcentral.cl
bcch@bcentral.cl


BANCO CENTRAL
DE CHILE

**FINANCIAL STABILITY REPORT** Second Half 2016