MONETARY POLICY REPORT

June 2016

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JUNE 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.bcentral.cl.

CONTENTS*

*/ The statistical cutoff date of the *Monetary Policy Report* was 30 May 2016.

PREFACE

The main objective of the Central Bank of Chile's monetary policy is to keep inflation low, stable and sustainable over time. Its explicit commitment is to keep annual CPI inflation at around 3% most of the time, within a range of plus or minus one percentage point. To meet this target, the Bank focuses its monetary policy on keeping projected inflation at 3% annually over a policy horizon of around two years. Controlling inflation is the means through which monetary policy contributes to the population's welfare. Low, stable inflation promotes economic activity and growth while preventing the erosion of personal income. Moreover, focusing monetary policy on achieving the inflation target helps to moderate fluctuations in national employment and output.

The *Monetary Policy Report* serves three central objectives: (i) to inform and explain to the Senate, the Government and the general public the Central Bank Board's views on recent and expected inflation trends and their consequences for the conduct of monetary policy; (ii) to publicize the Board's medium-term analytical framework used to formulate monetary policy; and (iii) to provide information that can help shape market participants' expectations on future inflation and output trends. In accordance with Article 80 of the Bank's Basic Constitutional Act, the Board is required to submit this report to the Senate and the Minister of Finance.

The *Monetary Policy Report* is published four times a year, in March, June, September and December. It analyzes the main factors influencing inflation, which include the international environment, financial conditions, the outlook for aggregate demand, output, and employment, and recent price and cost developments. The last chapter summarizes the results of this analysis in terms of the prospects and risks affecting inflation and economic growth over the next eight quarters. Some boxes are included to provide more detail on issues that are relevant for evaluating inflation and monetary policy.

This *Report* was approved at the Board's session on 1 June 2016 for presentation to the Senate Finance Committee on 6 June 2016.

The Board

SUMMARY

In recent months, the economy behaved in line with estimates in the March *Monetary Policy Report.* Inflation descended to 4.2% in April and the projections in the new baseline scenario indicate that it will return to the tolerance range in the coming months. In the first quarter, activity exceeded forecasts, but the outlook for the year assumes that it will continue to grow below potential. On the external front, the conjuncture is still influenced by the Federal Reserve Board (Fed)'s decision regarding monetary policy normalization and the risks associated to the Chinese authorities' efforts aimed at achieving specified growth objectives. During the larger part of the quarter, the markets' assessment of these developments translated into looser external financial conditions than early in the year. However, lately these tendencies have been partly reversed. The baseline scenario assumes that the trading partners will maintain its pace of growth from 2015, but external lending conditions will be tighter and commodity prices will stay below their long-term levels. In this context, the Board has held the policy rate (MPR) at 3.5% and believes that before the projection horizon is out, additional increases will be necessary.

Inflation behaved as expected. Its goods component began showing milder expansion because, beyond significant fluctuations, the exchange rate did not post increases like those experienced between mid-2013 and the third quarter of 2015. Services inflation has slowed, although it is still near 5% annually, reflecting past-inflation indexation and the effects of the depreciation. This combines with gaps that are still bounded and with the labor market that, while showing a faster than expected deterioration, still enjoys low unemployment rates and strong growth in nominal wages.

In the most likely scenario, annual CPI inflation will enter the tolerance range during the third quarter of this year and decline to around 3% in the first half of 2017. This estimate uses as a working assumption that the real exchange rate (RER) will hover around its current levels throughout the policy horizon. For now, the RER has risen a little from the statistical closing of the last *Report*, and is now near 97 (index, 1986=100). The convergence of inflation is also linked to output gaps that are forecast to continue to widen in the near future and to gradual adjustments of the labor market during the year, which should contribute especially to further reduce—albeit moderately—services inflation.

INFLATION

	2014	2015	2016 (f)	2017 (f)	2018 (f)
	(annual change, percent)				
Average CPI inflation	4.4	4.3	4.0	3.2	
December CPI inflation	4.6	4.4	3.6	3.0	
CPI inflation in around 2 years (*)					3.0
Average CPIEFE inflation	3.6	4.7	4.3	3.1	
December CPIEFE inflation	4.3	4.7	3.6	2.9	
CPIEFE inflation in around 2 years (*)					2.8

(f) Forescast.
(*) Corresponds to the projected inflation for the second quarter of 2018.
Source: Central Bank of Chile.

ECONOMIC GROWTH AND CURRENT ACCOUNT

	2014	2015	2016 (f)	2017(f)
	(annual change, percent)			
GDP	1.9	2.1	1.25-2.0	2.0-3.0
National income	2.1	1.1	0.8	2.2
Domestic demand	-0.3	1.8	1.0	2.4
Domestic demand (w/o inventory change)	1.1	1.3	1.1	2.1
Gross fixed capital formation	-4.2	-1.5	-2.4	0.9
Total consumption	2.8	2.2	2.1	2.4
Goods and services exports	1.1	-1.9	1.3	2.1
Goods and services imports	-5.7	-2.8	-1.6	2.2
Current account (% of GDP)	-1.3	-2.1	-2.2	-2.1
Gross national saving (% of GDP)	20.9	20.4	19.5	19.5
Gross national investment (% of GDP)	22.2	22.5	21.7	21.6
GFCF (% of nominal GDP)	23.0	22.7	22.0	21.6
GFCF (% of real GDP)	24.6	23.7	22.7	22.4
	(US$ million)			
Current account	-3,316	-4,761	-5,130	-5,200
Trade balance	6,344	3,494	2,070	2,800
Exports	74,924	62,232	56,300	58,800
Imports	-68,580	-58,738	-54,230	-56,000
Services	-3,818	-3,812	-3,100	-3,300
Rent	-7,692	-6,194	-5,900	-6,500
Current transfers	1,849	1,750	1,800	1,800

(f) Forecast.
Source: Central Bank of Chile.

As for economic activity, first-quarter figures showed stronger growth in GDP and demand than foreseen in March. This was driven by the improved performance of agriculture and, to a lesser extent, of mining. However, the growth outlook has not changed materially. The economy is expected to continue to grow below potential for a few more quarters, affected mostly by the weak performance of the more investment-related sectors. Retail trade and personal services have proven more resilient, reflecting a more gradual adjustment in consumption.

The baseline scenario of this *Report* estimates GDP growth between 1.25% and 2.0% this year, and between 2% and 3% in 2017, assuming that the economy will regain its potential growth rates towards the end of the policy horizon[1]/. This forecast relies on the fact that the economy is balanced from a macroeconomic perspective, and on the levels of business and household confidence slowly returning to neutral territory. Plus, trading partners continuing to grow at near the pace of 2015, still favorable international lending conditions despite some tightening compared to recent years, and terms of trade stabilizing in 2017. Finally, the baseline scenario uses as a working assumption that the public expenditure trajectory will be consistent with the fiscal rule and the Administration's announcements that it will follow a path of budgetary consolidation.

As mentioned, the process of economic growth normalization will be slow. One particular cause for concern is the evolution of investment, especially because of its weak mining component. Various indicators, most notably the survey of the Capital Goods Corporation, the levels of imports of capital goods and business confidence, foresee a further decline in investment this year. Adds to this that the housing sector and public investment will be tight, after being very strong in 2015 (housing) and aligned with the fiscal consolidation objectives (public investment). In general, towards 2017 non-mining investment should resume growth consistently with the recovery of the economy's pace of growth.

In this context, the labor market is expected to further adjust over the coming quarters. Most recently, annual growth in salaried employment dropped significantly, to 0.5% in the latest moving quarter. The unemployment rate has adjusted more gradually thanks to increases in self-employment, so it remains low by historic standards. This, coupled with real wages that have reduced their annual expansion in the last year, results in lower growth in the wage mass, which, combined with still low household expectations, is consistent with consumption growing slowly.

World financial markets have been marked by two developments. First, the U.S. process of monetary policy normalization; second, the efforts of Chinese policy makers to meet the specified growth and financial stability goals.

[1]/ *Monetary Policy Report*, September 2015, boxes V.1 and V.2.

Early in the quarter, the market assumed that the Fed would apply extreme gradualism, and that Chinese authorities had figured out the policy mix that would allow them to grow in line with its objectives. This allowed to prolong the calm in financial markets that had begun at the close of the last *Report*, favoring the return of capital flows into the emerging world that resulted in recovered stock markets, lower interest rates, a drop in risk premiums, a weaker dollar, and increases in commodity prices. However, the perception that the U.S. monetary policy adjustment will occur sooner and the growing doubts about the state of the Chinese financial system, have tended to undo these trends in the past few weeks. This has been particularly visible in the depreciation of emerging currencies. The baseline scenario assumes that in the coming quarters international financial conditions will be, on average, less favorable than in the past years.

The growth outlook for the world and our trading partners has not changed much from March: 3.2% and 3.0% for the 2016-2017 average, respectively. The terms of trade will be lower than in 2015, but a little better than expected in the last *Report*, especially because of the price trajectory of non-copper exports. Considering its trend of recent months, the baseline scenario estimates that the copper price will average US$2.15 per pound in 2016 and US%2.25 in 2017. The projection for oil during the same period is lifted to US$45 and US$52 per barrel for the Brent-WTI average, compared with US$41 and US$46 in March.

This scenario uses as a working assumption that the MPR will follow a trajectory that is similar to the one that can be deduced from the financial asset prices at the statistical closing of this *Report*. This implies that monetary policy will continue to be normalized within the projection horizon, in line with the foreseen evolution of the economy at that horizon, albeit at a slower pace than thought in March. Under this assumption, monetary policy will continue to provide a boost to the economy.

As usual, monetary policy implementation will be contingent on the effects of incoming information on the projected inflation dynamics. Accordingly, news pointing in either direction will prompt the necessary policy adjustments.

Internationally, the risks are very similar to those discussed in March. Still critical is the path that the Fed will ultimately decide to take to continue its process of monetary policy normalization. In particular, because market expectations remain misaligned with the Fed's identified most likely scenario, especially at longer horizons. China's situation is a risk, both because of its effects on global growth and because it may trigger new episodes of financial volatility.

Latin America poses significant risks to Chile too, as the region provides important trade partners and investment destinations, but also because of its effects on external financial conditions. Macroeconomic challenges combine with complex political conditions. Markets reacted favorably to the changed political scene in Brazil, but major adjustments are still pending. About Argentina, it is worth noting its return to global financial markets.

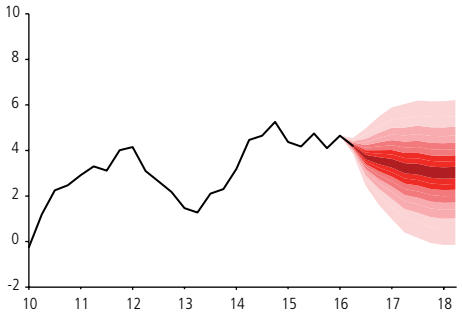
INTERNATIONAL BASELINE SCENARIO ASSUMPTIONS

	Avg. 00 - 07	Avg. 10-13	2014	2015 (e)	2016 (f)	2017 (f)
	(annual change, percent)					
Terms of trade	8.2	2.4	-1.8	-4.5	-3.9	0.1
Trading partners GDP (*)	3.6	4.4	3.4	3.0	2.8	3.2
World GDP at PPP (*)	4.2	4.1	3.4	3.1	3.0	3.4
World GDP at market exchange rate (*)	3.2	3.1	2.7	2.4	2.3	2.7
Developed economies' GDP at PPP (*)	2.6	1.5	1.7	1.9	1.7	1.9
Emerging economies ' GDP at PPP (*)	7.4	5.9	4.8	4.1	4.1	4.6
External prices (in US$,*)	4.6	4.0	-0.9	-9.8	-3.8	0.6
			(levels)			
LME copper price (US¢/lb)	154	359	311	249	215	225
WTI oil price (US$/barrel)	44	92	93	49	45	51
Brent oil price (US$/barrel)	42	103	99	52	45	52
Gasoline parity price (US$/m^3) (*)	366	752	731	467	401	420
Libor US$ (nominal, 90 days)	3.6	0.3	0.2	0.3	0.9	1.6

(*) For definition, see glossary.
(e) Estimate
(f) Forecast.

Source: Central Bank of Chile.

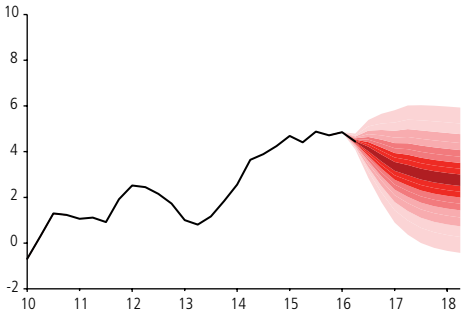
CPI INFLATION FORECAST (*)
(annual change, percent)



(*) The figure shows the confidence interval of the baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. These intervals summarize the risks on inflation as assessed by the Board. The baseline scenario uses as a working assumption that the MPR will follow a trajectory that is similar to the one that can be deduced from financial asset prices at the statistical closing of this *Report*.

Source: Central Bank of Chile.

CPIEFE INFLATION FORECAST (*)
(annual change, percent)



(*) The figure shows the confidence interval of the baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. These intervals summarize the risks on inflation as assessed by the Board. The baseline scenario uses as a working assumption that the MPR will follow a trajectory that is similar to the one that can be deduced from financial asset prices at the statistical closing of this *Report*.

Source: Central Bank of Chile.

Several other factors may also cause or intensify episodes of financial volatility, such as the upcoming referendum in the UK to define whether they will leave or remain in the European Union and a number of electoral processes around the world that could result in shifts towards more protectionist policies. Overall, the consolidation of economic growth in Europe and the U.S. might help boost the world economy.

An extension or steepening of the oil price's upward path is another risk for the baseline scenario, because of both its direct effects on local and world inflation and its implications on global growth. There are also reasons, however, why the oil price could recede to its levels of recent months. Actually, inventories are at record highs.

Locally, although inflation has diminished as expected, the high level it has shown for several quarters already continues to pose an important risk to the baseline scenario. Its short-term evolution continues to be closely tied to the exchange rate and thus also to risks coming from abroad.

Regarding activity, the risks identified in previous quarters remain. Confidence is still in the pessimistic territory and the Chilean economy will receive a milder external impulse compared with earlier years. The recent evolution of the labor market stands out. Should it deteriorate more sharply or should the world economy become more adverse, the economy could grow less than forecast. Conversely, if the labor market makes smaller adjustments and/or the external environment remains relatively calm, then economic activity would perform better than expected. This could manifest in stronger consumption growth and/or a more favorable performance of investment.

Upon evaluating these risks, the Board estimates that the risk balance is unbiased for both inflation and output.

The macroeconomic scenario is fairly unchanged from March. Estimates are that inflation will return to levels below 4% in the coming months and output will continue to show limited growth. The external scenario continues to present some risks and new volatility episodes are likely to occur in financial markets. The Board reiterates its commitment to conduct monetary policy with flexibility so that projected inflation stands at 3% over the policy horizon.

MONETARY POLICY DECISION IN THE LAST THREE MONTHS

BACKGROUND: MARCH 2016 MONETARY POLICY REPORT AND MEETING

The March *Monetary Policy Report* indicated that inflation had evolved in line with the forecast. Inflation was still high, mainly due to the significant accumulated depreciation of the peso, in a context where indexation to past inflation and bounded output gaps had constrained the decline in nontradables inflation. Output and demand had been weaker than projected, and the labor market had started to show signs of weakening. Moreover, consumer and business expectations remained in pessimistic territory, while the growth outlook for the year was revised downward again. In the international arena, the volatility of the external financial markets peaked in January and February. Although the markets had calmed by the cutoff date of the March *Report*, there was a series of risk factors that could trigger new fluctuations. In this context, the Board had held the monetary policy rate (MPR) at 3.5% for the past two months.

With regard to inflation, there had been no major changes in the forecast since the previous *Report*. The more favorable performance of some components that are not included in the CPIEFE—mainly foodstuffs—would contribute to a faster convergence than previously projected. Thus, annual inflation would remain above 4% in the first half of 2016 and reach 3% in the first half of 2017, to then fluctuate around that level going forward. Private inflation expectations were consistent with this scenario.

To a large extent, the inflation convergence process was determined not by the usual volatility, but by the fact that the baseline scenario did not foresee currency depreciation on the magnitude of the past couple of years. Most recently, the peso-dollar exchange rate had appreciated, albeit with considerable fluctuations, and was now around the level of August 2015. At the same time, the real exchange rate (RER) had decreased to its average of the last 15 years. While this was consistent with what was considered to be its long-term value, the cyclical conditions of the economy were suggesting a somewhat higher level.

In terms of output, the year-end 2015 data revealed a weaker economy than projected. Domestic demand had grown less than expected and was forecast to remain undynamic. When combined with the lower external stimulus, this led to a downward revision of the growth outlook for 2016 to a range of 1.25 to 2.25% (versus 2.0 to 3.0% in December). For 2017, GDP was expected to grow between 2.0 and 3.0%. The working assumption was that monetary policy would continue to stimulate the economy in the forecast horizon, and additional MPR adjustments would be implemented more gradually than estimated in December.

One of the main risks was the evolution of the international financial markets. The calm of recent weeks could continue, or, alternatively, there could be new episodes of volatility triggered by doubts about China and the future path of the U.S. policy rate. There were also doubts about the economic performance of both these countries, as well as the electoral debate in some countries, which could imply a turn toward more protectionist policies. Another possibility was that the stimulus measures in the developed world and China could be more effective in achieving higher world growth. Finally, Latin America continued to be an important source of risk. In the event these risks materialized, they could have negative effects on both the financial conditions and external demand facing Chile.

Domestically, growth could potentially be lower than projected in the baseline scenario, in the event of a greater deterioration in the labor market or expectations. However, given that the economy was well balanced from a macroeconomic perspective and characterized by responsible fiscal policy, well-anchored inflation expectations and a stable, well-regulated financial system, another possibility was that more favorable news could generate a faster growth recovery. The inflation risks were tied to the length of time that inflation had been high, which could affect the speed of convergence due to both the effects of indexation and possible impact on expectations. In the short run, its dynamics would continue to be linked with the movements of the exchange rate. Consequently, in line with the scenarios described above, there were risks in both directions. Based on their assessment, the Board considered that the balance-of-risk assessment for inflation and output was broadly balanced.

At the March monetary policy meeting, the Research Division presented two options: maintain the MPR at 3.5% or raise it 25 basis points (bp), to 3.75%. In both cases, the reference point for the discussion was the baseline scenario and risks presented in the *Monetary Policy Report* that was then in preparation. The option of increasing the MPR was justified essentially because it would reduce the probability of having to make sharper changes in the future. Inflation remained high, and the dynamics could influence expectations and generate second-round effects. Moreover, while

the inflation risk scenarios considered shifts in expectations in both directions, the Research Division believed that the risks associated with higher inflation were more difficult to correct than those associated with lower inflation. In addition, while the exchange rate had stabilized in the past month, new episodes of depreciation were still a possibility, given the external risks. This could postpone inflation convergence. Finally, the option of holding the MPR at its current level was more consistent with the baseline scenario in the March *Report*, and, in addition, inflation expectations remained well anchored. The Board decided to keep the MPR at 3.5%.

BACKGROUND: APRIL AND MAY 2016 MEETINGS

For the April meeting, the data released in the month were in line with the baseline scenario described in the *Monetary Policy Report.* The financial markets continued to favor risk taking, while the stock market, sovereign spreads and exchange rate in Chile remained similar to the previous month, with some fluctuation. Commodity prices were still fairly volatile. Long-term rates remained low in the developed economies, a sign that the world growth outlook remained pessimistic. Domestically, output data pointed to a weak performance of sectors tied to investment, while private consumption was somewhat more dynamic. However, expectations remained low, and the labor market was gradually adjusting. Inflation was lower than expected in items that are more sensitive to the exchange rate, but nontradables inflation was high and in line with expectations.

The Research Division again presented two options: hold the MPR at 3.5% or raise it by 25 bp, to 3.75%. The possibility of increasing the MPR sooner than expected so as to minimize the risks of a significant delay in inflation convergence continued to be a valid option, even though the information released during the month indicated that this risk had diminished. Inflation remained high despite these trends and the changes in the forecast. In particular, core inflation (the CPIEFE) was projected to come down only gradually. Moreover, the positive surprises in inflation were associated with volatile elements such as the exchange rate, and under the current circumstances, any upward shifts in inflation had a higher cost than downward shifts. On the other hand, the option of holding the MPR at 3.5% was more consistent with the baseline scenario in the *Monetary Policy Report* and with the fact that expectations two years ahead were well anchored. In this context, the Board decided to keep the MPR at 3.5%.

For the May meeting, the data collected in the month were still in line with the baseline scenario in the *Monetary Policy Report.* Domestically, first-quarter GDP had been higher than expected, largely due to stonger growth in the agricultural sector, while the most recent data pointed to weak aggregate demand, where investment was especially concerning. The outlook had been revised downward again in response to the drop in mining investment, combined with low confidence indicators. The labor market had deteriorated somewhat faster than projected, as reflected in the evolution of salaried employment, while labor costs remained high, although they were slowly abating. Inflation had decline with help from the exchange rate, which, despite strong fluctuations, had not recorded increases of the magnitude observed between mid-2013 and the third quarter of 2015. In the short term, the evolution of inflation would remain closely tied to the value of the dollar. In the days leading up to the meeting, the dollar had risen again in the face of growing doubts about the situation in China and the monetary policy normalization process in the United States. The impacts of these phenomena on medium-term inflation were less clear, however, and would largely depend on their persistence.

The Research Division presented a single option: holding the MPR at 3.5%. The option of raising the rate had been justified in the past as a preventive move to avoid larger hikes in the future, based on the possibility that the persistence of high inflation could delay convergence with the inflation target. However, this risk had declined over the past few months: the growth forecast had repeatedly been revised downward; the real exchange rate had not deviated significantly from its fundamentals; inflation had diminished in line with expectations; and two-year-ahead inflation expectations remained well anchored around 3%. At the same time, the fact that raising the MPR was not considered an option at this meeting did not in any way imply that the possibility would also be discarded in the future, especially given that, under the most probable scenario, further increases in the MPR would be necessary to ensure the convergence of inflation to 3% within the policy horizon. In this context, the Board decided to hold the MPR at 3.5%.

I. INTERNATIONAL SCENARIO

This chapter analyzes the recent evolution of the world economy and the outlook for the next two years. It also describes the most likely external scenario and the main risks.

Thus far in the year, the international scenario has been determined by two big issues: expectations on how fast the U.S. Federal Reserve (the Fed) will normalize its monetary policy; and the difficulties China could face in addressing the various challenges the economy is likely to encounter going forward. Headlines in one direction or the other have generated episodes of greater or lesser risk aversion, with the resulting swings in international financial markets. Thus, after considerable tension early in the year, the financial markets entered a period of calm following signs of greater caution on the part of the U.S. monetary authorities and the implementation of stimulus measures in China, which lessened the possibility of a sharp adjustment in that economy. Over the past few weeks, however, financial market trends have partially reverted, demonstrating that there are still risks associated with these factors. Consequently, the baseline scenario used in this *Monetary Policy Report* assumes that external financial conditions will be less favorable, on average, than in recent months. Nevertheless, the external stimulus does not appear very different from March: the 2016–2017 growth forecasts for Chile's trading partners, averaged for the period, are practically the same as in the last *Report* and similar to the 2015 growth rate (table I.1). The terms of trade will continue to decline in 2016 and then stabilize in 2017 (figure V.5).

On the cutoff date of the last *Report*, the international financial markets had regained their calm, after recording sharp volatility in January and February. The expectation that the main central banks would maintain their expansionary policies for some time yet, combined with the application of stimulus measures in China, triggered a new search for higher yields and a reduction in risk aversion. Thus, starting in late February, capital flows returned to emerging economies, the dollar depreciated in the global markets, the stock exchanges recovered, and long-term interest rates increased in developed economies (figure I.1).

These events tended to be reversed, however, in the last few weeks. The most important factor contributing to this reversal was perhaps the emergence of a scenario in which the U.S. monetary stimulus would be withdrawn faster than the market expected, which led to an appreciation of the dollar in global markets, capital outflows from emerging economies and rising sovereign

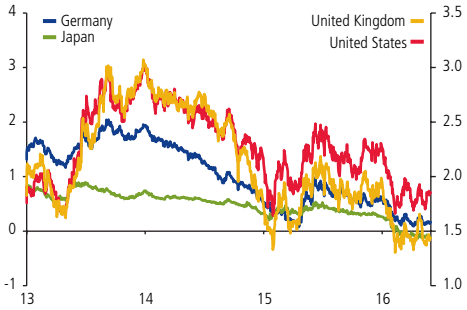
TABLE I.1
World growth (*)
(annual change, percent)

	Avg. 00-07	Avg. 10-14	2015 (e)	2016 (f)	2017 (f)
World at PPP	4.2	4.0	3.1	3.0	3.4
World at market FX rate	3.2	3.1	2.4	2.3	2.7
Trading partners	3.6	4.2	3.0	2.8	3.2
United States	2.6	2.0	2.4	1.9	2.3
Eurozone	2.2	0.7	1.6	1.5	1.6
Japan	1.7	1.5	0.6	0.6	0.4
China	10.5	8.6	6.9	6.5	6.2
India	7.1	7.3	7.3	7.5	7.5
Rest of Asia	5.1	5.0	3.5	3.6	3.9
Latin America (excl. Chile)	3.5	3.6	-0.5	-1.0	1.5
Commodity exporters	3.1	2.5	1.8	2.0	2.4

(*) See glossary for definitions.
(e) Estimate.
(f) Forecast.

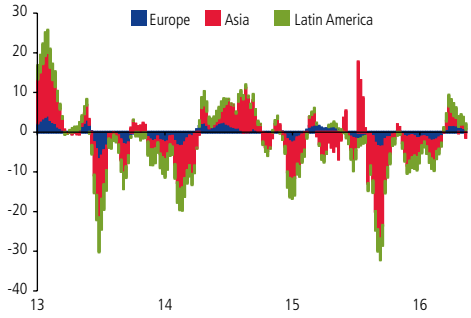
Sources: Central Bank of Chile based on a sample of investment banks, Consensus Forecasts, IMF and the statistics offices of each country.

FIGURE I.1
Interest rates on 10-year government bonds
(percent)



Source: Bloomberg.

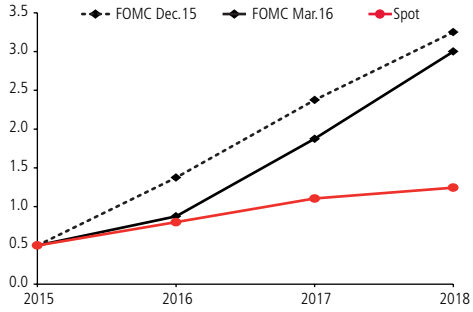
FIGURE I.2
Net capital inflows to emerging economies (*)
(US$ billion, moving month)



(*) Latin America includes Brazil, Chile, Colombia, Mexico and Peru; Asia includes South Korea, Indonesia, Malaysia and Thailand; Europe includes Czech Rep., Hungary, Poland, Russia and Turkey.

Source: Emerging Portfolio Fund Research.

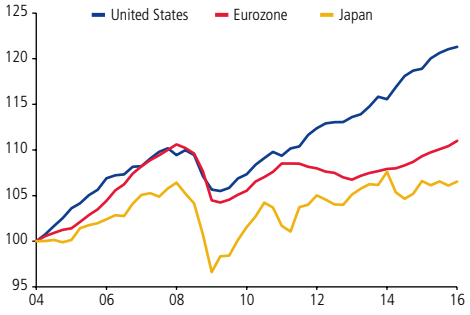
FIGURE I.3
Fed funds rate expectations, December of each year (*)
(percent)



(*) Red line: expectations measured by interest rate futures; black lines: the median FOMC forecast.

Sources: Bloomberg and U.S. Federal Reserve.

FIGURE I.4
GDP in developed economies
(index: first quarter of 2004=100)



Source: Bloomberg.

spreads as portfolios were adjusted toward safer instruments (figures I.2 and II.7). Particular attention was given to the publication of the minutes from the Fed's April meeting and announcements by monetary authorities pointing to an increase in the fed funds rate around mid-year, a possibility that the market had practically disregarded at that point. Although these events brought market expectations for the future path of the fed funds rate more in line with the Fed's projection, the discrepancy between the two persisted at longer horizons (figure I.3). This confirms the risk identified in the past several *Reports* with regard to the the market's overly passive view of the speed with which the Fed will carry out the process of normalizing its policy rate, in a context in which, despite the slow first quarter, the recovery of the U.S. economy continues to be robust and inflation appears to be normalizing.

In the first quarter, the U.S. economy was less dynamic than expected, with annualized quarter-on-quarter GDP growth of 0.8%. This figure reflects a significant drop in nonresidential investment, which is closely tied to the effect of the low oil price on the investment cycle in the energy sector, a larger inventory adjustment than projected and an external sector that has not rebounded. At the same time, the services sector, investment in other sectors and the labor market point to a steady recovery, which is also reflected in strong confidence indicators. However, labor market data released after the cutoff date of this *Report* indicate that job creation was much lower than expected, so a note of caution is in order. The U.S. growth forecast for 2016 has been revised downward by four tenths, to 1.9%.

The Fed's decision comes at a time when some other large developed economies have highly expansionary monetary policies, most notably the Eurozone and Japan. In these economies, the economic cycle and inflation are clearly lagging behind the United States (figures I.4 and I.5). In particular, the intensification of expansionary monetary policies has led these countries to apply negative interest rates, thereby heightening the appreciation pressure on the dollar and potentially generating negative effects on U.S. output growth. However, the strengthening of the dollar has been a necessary mechanism for rebalancing the global economy, shoring up growth and inflation in the weaker economies. At the same time, the negative rates in place in several developed economies have their own risks, especially in Europe, where some banks are still struggling with problems associated with portfolio deterioration.

The second key factor explaining the market shifts is the evolution of the Chinese economy[1]/. In the past three months, various stimulus measures have helped buoy growth. In the first quarter, GDP grew 6.7%, which, while below the growth rates of previous quarters, points to a smooth adjustment. For the year, the baseline scenario uses a growth forecast that is similar to the March projections. However, there are growing doubts about the sustainability of these stimulus policies, to the extent that they appear to be postponing

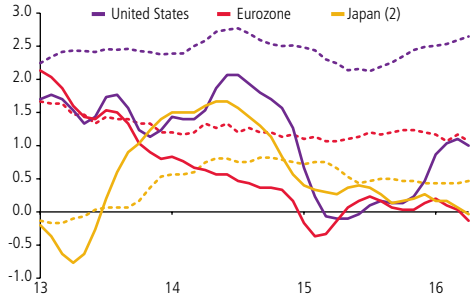
[1]/ See box I.1, *Monetary Policy Report*, March 2016.

necessary adjustments and thus increasing future risks (figure I.6). Corporate debt has grown steadily over the past several years; the quality of the loan portfolio has declined; real estate investment, at around 15% of GDP, exceeds the levels seen in other countries before the crisis; and corporate bond rates have increased, reflecting the difficulty firms are having meeting their debt service. In addition, the increased debt has not translated into greater private investment, but rather it is the public sector that has been leading investment in fixed assets (figure I.7). Finally, in a scenario with a strengthening dollar, the pressure for a greater devaluation of the renminbi against the dollar could call into question the consistency of China's foreign exchange policy, triggering new episodes of capital outflows from the economy.

Commodity prices have risen since March, with the exception of copper and some other industrial metals (figure I.8). The most notable upshift was in the oil price, which is mainly explained by two factors. First, the price increased at the same time that financial assets recovered and the dollar depreciated following the market stress in the first months of the year. Second, there are several indications of a tighter market, stemming from both one-off factors—including the significant decrease in production in Canada due to a massive fire, political changes in Saudi Arabia and disruptions in production in Nigeria—and the market exit of producers facing higher costs. As of the cutoff date of this *Report*, both WTI and Brent oil were trading at around US$50 a barrel. Futures prices in the last ten business days prior to the cutoff date suggest that average values will rise in 2016 and 2017. At the same time, inventories are still high, and the uncertainty regarding the international scenario is evident—as in the case of other commodity price forecasts, such as copper—in the high dispersion in market analysts' forecasts, which range between US$40 and US$65 per barrel for 2017.

The copper price continued to range between US$2.00 and US$2.30 a pound over the past three months. On the cutoff date of this *Report*, copper was trading at 7% below the March price. Once again, the main factors determining the price shifts are related to China and the global value of the dollar. In the first quarter, Chinese imports of both refined copper and copper concentrate were high for the time of the year, which helped hold up the price, but the weak performance of the manufacturing sector and the growing doubts about the sustainability of China's stimulus measures had the opposite effect. Moreover, copper production has not adjusted as much as expected, and inventories continue to accumulate, which will also affect the future price trend. The price forecasts used in the baseline scenario in this *Report* are thus somewhat lower than the March forecast, at US$2.15 for 2016 and US$2.25 for 2017. Finally, other Chilean export products have recorded a more positive price trend, and the terms of trade are somewhat more favorable than in March.

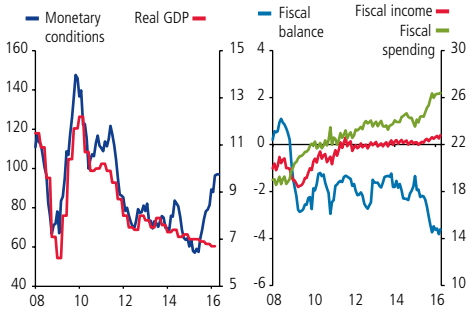
FIGURE I.5
Inflation in developed economies (1)
(three-month moving average, annual change, percent)



(1) Solid lines: total CPI; dotted lines: services CPI.
(2) Excluding the effect of taxes.

Sources: Bloomberg and Japanese Statistics Bureau.

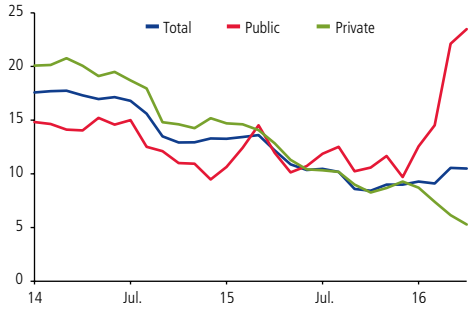
FIGURE I.6
China: Stimulus policies (1) (2)
(index; percent)



(1) Monetary conditions: Bloomberg intelligence monetary conditions index.
(2) Fiscal data measured as a percent of GDP.

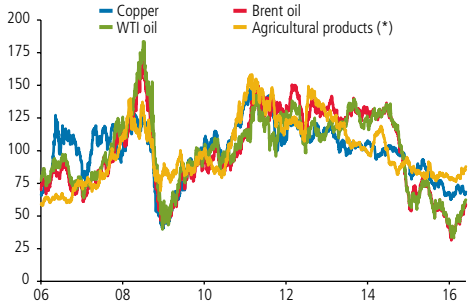
Source Bloomberg.

FIGURE I.7
China: Fixed-asset investment
(quarterly average, annual change, percent)



Source: Bloomberg.

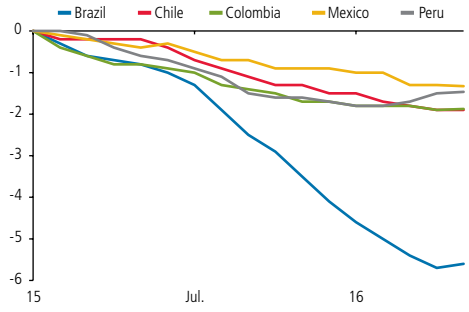
FIGURE I.8
Commodity prices
(index: average 2006–2016=100)



(*) Goldman Sachs aggregate index.

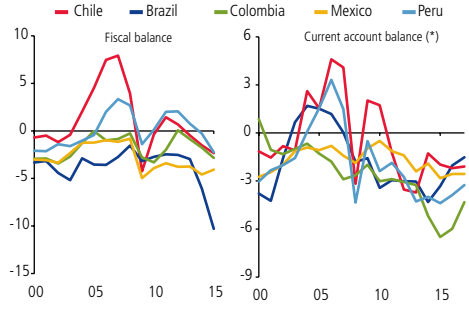
Source: Bloomberg.

FIGURE I.9
Change in 2016 growth forecasts for Latin America
(percentage points)



Source: Consensus Forecasts.

FIGURE I.10
Latin America: Fiscal and current account balances
(percent) of GDP



(*) For Chile, the forecast is from the baseline scenario in this *Monetary Policy Report;* for the remaining countries, from the IMF.

Sources: Central Bank of Chile and International Monetary Fund.

In Latin America, the situation has not changed significantly. If anything, the downward trend described in the last *Report* has evened out. Even so, the region will continue going through a recession this year, albeit with mixed performances within the region (figure I.9). Several economies are still experiencing macroeconomic imbalances and are thus in need of fiscal adjustments and improvements in their external accounts, in a context of high inflation (figure I.10). In Brazil, the markets reacted favorably to the changes in the political scenario, but the provisional authorities are facing major challenges in the economic sphere, so the possibility of new market stress cannot be ruled out. The economy is expected to contract again in 2016; the baseline scenario in this *Report* assumes a rate similar to the GDP contraction in 2015, together with annual inflation close to 10%, a delicate fiscal position, a growing primary deficit and public debt of over 65% of GDP. In Colombia, the most pressing challenge is adjusting the huge current account deficit, in a context in which the growth forecast has been repeatedly revised downward and inflation is bordering on 8%. Peru has recorded stronger growth than other economies in the region, mainly due to mining production. Argentina has successfully returned to the international debt markets, although the country still faces important challenges in the economic sphere.

In sum, the external stimulus for the Chilean economy has not changed substantially since March. The main risks continue to be led by events in the United States and China. Starting in late April, the markets began to show new signs of increased risk aversion, with a return to the market stress that has been the trend in the last few years. The baseline scenario in this *Report* incorporates a recurrence of these events, which, together with the monetary policy normalization process in the United States, will contribute to tighter financial conditions, on average, than in previous years. These episodes of volatility could be related not only to the issues mentioned above, but also to other more idiosyncratic factors, including the referendum in the United Kingdom on whether the country should stay in the European Union and various electoral processes scheduled over the rest of the year, which could trigger a shift toward more protectionist policies.

II. FINANCIAL MARKETS

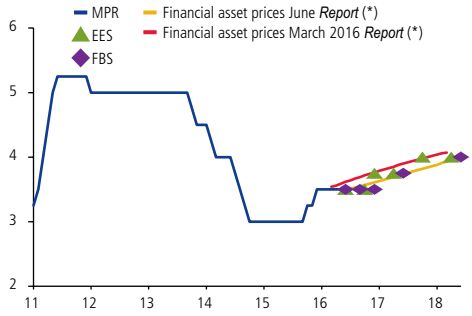
This chapter reviews the evolution of local financial markets in connection with the transmission of monetary policy.

MONETARY POLICY

In the last three months, the economy has evolved in line with projections in the March *Monetary Policy Report*. Inflation declined to 4.2% in April, and the new forecast in the baseline scenario indicates that it will return to the target range in the coming months. In the first quarter, output grew more than projected, but the outlook for the year foresees that the economy will continue growing below potential. Internationally, the climate continues to be marked by the U.S. Federal Reserve's decision on the normalization of its monetary policy and by the risks associated with the Chinese authorities' efforts to meet their growth targets. Throughout much of the quarter, the markets' assessment of these phenomena translated into looser external financial conditions than at the beginning of the year. In the most recent period, however, these trends have been partially reversed. The baseline scenario assumes that Chile's trading partners will grow at rates similar to 2015, but external financial conditions will be tighter and commodity prices will remain below their long-term levels.

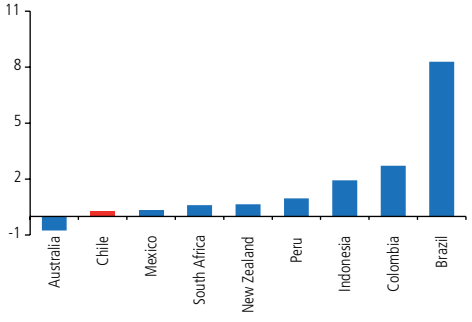
In this context, the Board has held the MPR at 3.5% and expects that additional hikes will be necessary within the forecast horizon. The different measures of MPR expectations have pushed back the timing of the next adjustment, although increases totaling 50 basis points (bp) are expected in the forecast horizon. Market surveys and expectations inferred from financial asset prices indicate that the first increase of 25 bp would occur toward the end of this year or the beginning of 2017, while the second increase would come in a little over a year (figure and table II.1). The working assumption in the baseline scenario is that the MPR path will be in line with expectations inferred from asset prices available as of the cutoff date of this *Report*. Thus, monetary policy will remain expansionary throughout the forecast horizon, with one of the lowest real rates of a set of comparable and Latin American economies (figure II.2).

FIGURE II.1
MPR and expectations
(percent)



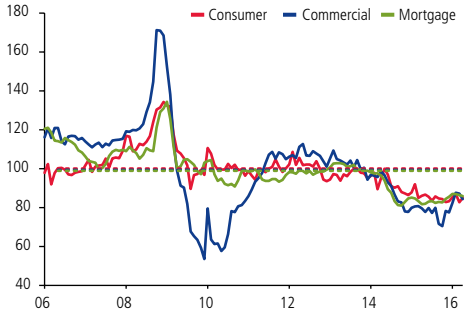
(*) Built using interest rates on swap contracts up to 10 years.
Source: Central Bank of Chile.

FIGURE II.2
Real MPR: Chile and comparable economies (*)
(percent)



(*) Calculated as the current MPR less expected inflation in one year.
Source: Central Bank of Chile and the central banks of the respective countries.

FIGURE II.3
Interest rates by type of loan (1) (2)
(index: 2006–2016=100)



(1) Weighted average rates of all operations in the month.
(2) The horizontal dashed lines indicate the average of the last ten years for each series.

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

TABLE II.1
MPR expectations
(percent)

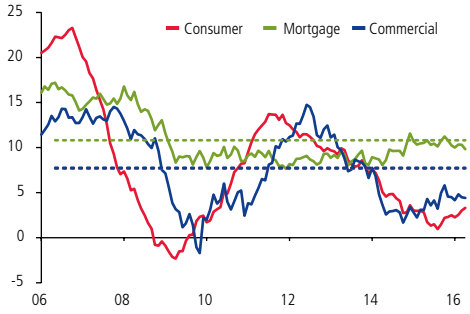
	December 2016		One year ahead		Two years ahead	
	March *Report*	June *Report*	March *Report*	June *Report*	March *Report*	June *Report*
EES (1)	3.75	3.75	3.75	3.75	4.00	4.00
FBS (2)	3.75	3.50	3.75	3.75	4.00	4.00
Financial asset prices (3)	3.76	3.61	3.83	3.74	4.07	3.99

(1) March 2016 and May 2016 surveys..
(2) First half of March 2016 and second half of May 2016.
(3) For the June *Monetary Policy Report,* considers the average of the last ten business days up to 30.May.16.

Source: Central Bank of Chile,.

The interest rates on Central Bank and Treasury securities have not changed significantly in recent months. The biggest movement was on ten-year bonds, which increased just over 10 bp in both pesos and UF.

FIGURE II.4
Real loan growth by type of loan (*)
(annual change, percent)



(*) The horizontal dashed lines indicate the average of the last ten years for each series.

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

FINANCIAL CONDITIONS

Domestically, the cost of credit remains favorable from a historical perspective, despite the greater supply restrictions indicated in the Bank Lending Survey (BLS). This reflects a climate characterized by expansionary monetary policy, low external rates and weak demand for credit. In the last three months, the amount loaned recovered somewhat. Internationally, financial conditions benefited from the relatively calm markets for part of the quarter, but these trends have tended to reverse in recent weeks. Given the persistence of various risks in this area, there is a possibility that new episodes of financial volatility could be triggered or intensified.

Lending rates declined after rising early in the year. In the case of consumer loans, this trend was largely due to seasonal factors. Specifically, the increase in consumer rates in the summer months primarily derives from a greater use of credit cards, which have higher rates than other products. Thus, between February and April, consumer rates fell around 60 bp. In the same period, commercial lending rates decreased around 30 bp, while mortgage rates saw a marginal reduction (figure II.3). The low cost of credit, from a historical perspective, has contributed to sustaining a higher credit growth rate. The real annual growth of consumer and commercial loans is somewhat higher than a year ago, while home mortgage rates declined somewhat but remain around 10% in real annual terms (figure II.4).

The credit supply has not recorded any significant changes in terms of cost, but there has been a shift in requirements. The lending conditions reported in the March BLS point to tougher requirements, especially in the supply of funds for the real estate and mortgage portfolios. This trend was confirmed by

the companies surveyed for the May *Business Perceptions Report* (BPR). With regard to mortgage loans, the people interviewed indicated that banks are generally requiring a larger down payment.

Demand continues to be weak, according to both the BLS and the BPR. The BPR highlights a more cautious attitude toward taking on debt on the part of both people and firms, given the deterioration of the labor market in the case of the former and the uncertainty regarding the performance of the economy in the case of the latter. Many of those surveyed reported an incipient rise in withdrawals from real estate purchase commitments, together with a concern that the withdrawal rate will increase significantly in the coming months.

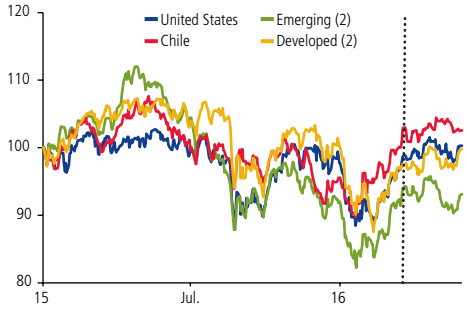
The demand for other financing sources has also dropped. Some of those surveyed for the May BPR highlighted the continued use of factoring in business funding, in a context in which supplier payment terms are lengthening across the board. Others, however, indicated that their firms are using factoring less due to poor business performance. Finally, issues in the primary bond market have declined steadily since the second half of 2015, both domestically and internationally.

International financial conditions have shown signs of greater risk aversion in recent weeks. This follows a period of relative calm in the markets that started just before the cutoff date of the last *Report*, which was underpinned by signals that the U.S. Federal Reserve would slow down its monetary policy normalization and by the implementation of stimulus measures in China, which strengthened the expectation of a gradual and orderly adjustment in that economy. This brought about a weakening of the dollar, an improvement in commodity prices and a return of capital inflows to the emerging world, resulting in a recovery of emerging stock markets and a decline in interest rates and spreads (figures II.5, II.6 and II.7). However, growing concerns about the state of the Chinese financial system and the speed of the monetary policy adjustment in the United States have tended to reverse these developments in recent weeks, which has been especially noticeable in the depreciation of emerging currencies.

In Chile, the IPSA followed a similar trend to the majority of the stock markets, deteriorating moderately since late April. The changes in spreads were mixed since the cutoff of the March *Report*, with somewhat higher sovereign spreads and lower corporate spreads. In other countries in the region, in particular Argentina and Brazil, financial conditions have benefitted from the markets' increased confidence that the new authorities can achieve the necessary macroeconomic adjustments.

With regard to the nominal monetary aggregates, the annual growth rate of M1, which comprises the most liquid assets, decreased to 9.1% in April (versus 11.8% in February). This was due to lower growth of checking accounts and other demand deposits. M2 and M3 recorded slightly higher growth rates since the cutoff date of the last *Report*.

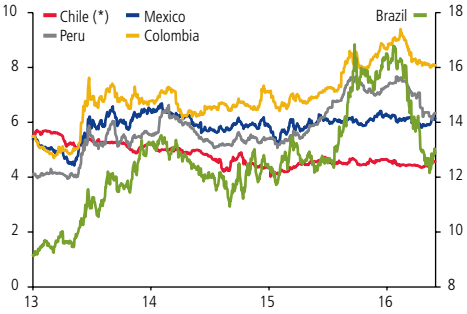
FIGURE II.5
Stock markets (1)
(index: 01.Jan.15=100)



(1) The vertical dotted line indicates the cutoff date of the March 2016 *Monetary Policy Report*.
(2) Morgan Stanley Capital International stock indices in local currency by region.

Source: Bloomberg.

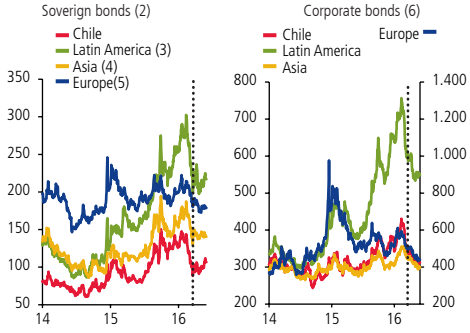
FIGURE II.6
Latin America: ten-year nominal government bond rates
(percent)



(*) Central Bank and Treasury bonds.

Sources: Central Bank of Chile and Bloomberg.

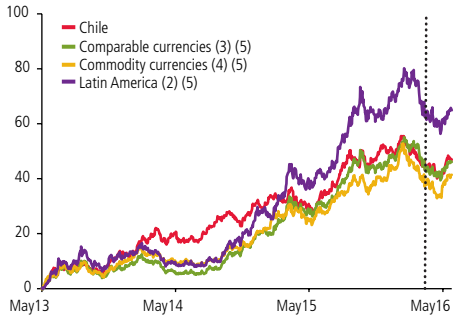
FIGURE II.7
Emerging market risk premium (1)
(basis points)



(1) The vertical dotted line indicates the cutoff date of the March 2016 *Monetary Policy Report*. (2) Measured by five-year CDS spreads. Simple average of the countries in each region. (3) Includes Brazil, Colombia, Mexico, Panama and Peru. (4) Includes China, Indonesia, Malaysia, Philippines and Thailand. (5) Includes Bulgaria, Croatia, Czech Rep., Hungary and Turkey. (6) Measured by the CEMBI.

Source: Bloomberg.

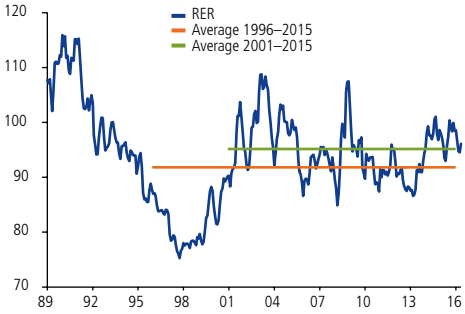
FIGURE II.8
Nominal exchange rate (1)
(accumulated change since the minimum in May 2013, percent)



(1) The vertical dotted line indicates the cutoff date of the March 2016 *Monetary Policy Report*.
(2) Includes Brazil, Colombia, Mexico and Peru.
(3) Includes Brazil, Colombia, Czech Republic, Israel, South Korea, Mexico, Philippines, Poland and Turkey.
(4) Includes Australia, Canada, New Zealand and South Africa.
(5) Constructed using the weights in the WEO, April 2016.

Sources: Central Bank of Chile and Bloomberg.

FIGURE II.9
Real exchange rate
(index: 1986=100)



Source: Central Bank of Chile.

EXCHANGE RATE

The peso-dollar exchange rate has fluctuated strongly in the past month, even on an intraday basis. As of the cutoff date, it was around $690. This reversed the peso appreciation trend recorded in the weeks following the publication of the March *Report*, when the exchange rate dropped as low as $660. The subsequent depreciation was largely tied to the global recovery of the dollar and the evolution of the copper price. Copper and other metals declined substantially, mainly due to the uncertainty surrounding the Chinese economy and, at the margin, the aforementioned recovery of the dollar.

The currencies of other commodity exporters have weakened slightly since the March *Report* (figure II.8 and table II.2). A number of Latin American countries saw a currency appreciation, largely due to idiosyncratic factors. Consequently, since the last *Report*, the peso has depreciated somewhat more in multilateral terms than against the dollar.

TABLA II.2
Exchange rates against the U.S. dollar (1)
(percent)

	Change in NER		
	Jun.16 / Mar.16 *Reports*	In one year	Spot/minimum 2013
Russia	-5.5	30.5	119.5
South Africa	1.9	31.2	87.0
Brazil	-3.0	15.2	83.6
Colombia	-3.0	22.0	74.5
Turkey	3.0	13.3	68.9
Latin America (2) (5)	-0.4	17.3	65.2
Mexico	4.4	20.9	54.3
Norway	-1.6	8.8	53.0
Australia	4.3	8.1	47.5
Chile	**1.6**	**13.9**	**47.0**
Comparable currencies (3) (5)	0.4	12.8	46.5
Commodity currencies (4) (5)	1.2	11.3	42.2
Indonesia	3.2	2.9	41.8
Canada	-1.2	5.9	32.7
Peru	-1.5	6.0	32.7
Czech Republic	-0.3	-2.8	30.2
New Zealand	-0.3	7.9	29.0
India	0.4	5.5	26.4
Thailand	1.7	6.2	24.7
South Korea	-0.3	8.0	13.5

(1) A positive (negative) sign indicates depreciation (appreciation) of the currency against the U.S. dollar. Spot is on the cutoff date of the *Report*.
(2) Includes Brazil, Colombia, Mexico and Peru.
(3) Includes Brazil, Colombia, Czech Republic, Israel, South Korea, Mexico, Philippines, Poland and Turkey.
(4) Includes Australia, Canada, New Zealand and South Africa.
(5) Constructed using the weights in the WEO, April 2016.

Sources: Central Bank of Chile and Bloomberg.

Based on these developments and the evolution of local and external inflation, the real exchange rate (RER) has increased somewhat relative to the cutoff date of the last *Report*, to around 97 (where 1986=100). This is slightly higher than the average of the last 15 years (figure II.9). The working assumption in the baseline scenario is that the RER will fluctuate around its current level during the forecast horizon.

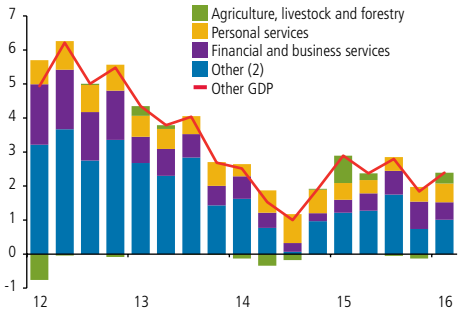
III. OUTPUT AND DEMAND

This chapter reviews the recent evolution of demand and economic activity and their short-term outlook, in order to examine possible inflationary pressures.

In the first quarter of 2016, both output and domestic demand (excluding changes in inventories) grew 2% in annual terms. In both cases, the performance was better than in the fourth quarter of 2015 and better than the forecast in the March *Monetary Policy Report*. This positive surprise was mainly due to a better performance in the agricultural sector and, to a lesser extent, mining. Nevertheless, the outlook has not changed significantly relative to the last *Report*. The economy continued to grow below its potential, with more dynamism in sectors related to consumption and less in sectors tied to investment. The latter continue to be affected by the reduction in mining investment, the prospects of a slow recovery of the local economy and the gloomy business confidence indicators. Additionally, the external impulse will be milder than in previous years. Market growth expectations for 2016 have not changed significantly, with most sources pointing to growth of less than 2%. The baseline scenario in this *Report* estimates annual GDP growth in 2016 at 1.25–2.0% (1.25–2.25% in March).

In the first quarter of the year, GDP in non-natural-resource sectors (other GDP) grew 2.4% in annual terms, which is higher than in the previous quarter and a little less than one percentage point over expectations in March. The agriculture, livestock and forestry sector, in particular, recorded strong annual growth, related to an increase in the production of vegetables and grains for domestic consumption. Due to seasonal factors, this sector is always an important component of average growth in the first quarter of the year. Personal services also recorded higher annual growth, mainly in segments associated with health and, to a lesser extent, education (figure III.1). Trade and transport both had a higher annual growth rate than in the previous quarter. In the case of the former, retail sales were particularly strong; this is in line with expectations of representatives of the sector who, in the framework of surveys conducted for the May *Business Perceptions Report* (BPR), mentioned the favorable impact of an increase in foreign tourists in various regions of the country. In April, the retail sales index (RSI) continued to show a strong performance in real terms, largely related to more dynamic sales in some nondurable segments. Car sales also increased in the first quarter. The latest data, however, signal a deterioration according to some sources.

FIGURE III.1
Sectoral contribution to other GDP growth (1)
(real annual change, percent)



(1) See glossary for definitions.
(2) Includes industry, construction, trade, restaurants and hotels, transport, communications, residential property and public administration.

Source: Central Bank of Chile.

TABLE III.1
Gross domestic product
(share of GDP; real annual change, percent)

	Share	2015				2016
	2015	I	II	III	IV	I
Agriculture, livestock and forestry	2.9	8.4	7.4	6.1	-2.4	4.5
Fishing	0.6	-3.9	-6.6	1.5	-2.5	-1.9
Mining	9.0	3.2	1.5	-3.0	-2.3	-1.9
Manufacturing	10.9	1.0	1.8	3.6	1.8	0.9
EGW	2.5	-2.3	-3.7	5.4	5.1	9.8
Construction	7.6	1.0	2.3	3.5	2.3	1.5
Trade	8.6	1.2	1.3	2.0	-0.7	2.3
Restaurants and hotels	1.8	2.5	0.2	-1.9	-3.6	-4.5
Transport	4.9	5.2	2.0	2.6	1.2	3.7
Communications	1.5	9.0	9.6	9.7	3.3	1.2
Financial services	4.9	3.2	4.0	5.2	4.7	4.1
Business services	13.8	1.0	1.4	2.1	3.0	1.5
Residential property	5.4	1.8	1.6	1.7	1.7	1.9
Personal services (1)	12.0	3.9	2.5	2.4	2.8	4.3
Public administration	4.8	3.4	4.2	4.6	2.9	3.4
Total GDP	**100.0**	**2.7**	**2.1**	**2.2**	**1.3**	**2.0**
Other GDP (2)	**79.1**	**2.9**	**2.4**	**2.8**	**1.8**	**2.4**
Nat. res. GDP (2)	**12.1**	**2.1**	**0.8**	**-1.4**	**-1.6**	**-0.2**

(1) Includes education, health and other services.
(2) See glossary for definitions.

Source: Central Bank of Chile.

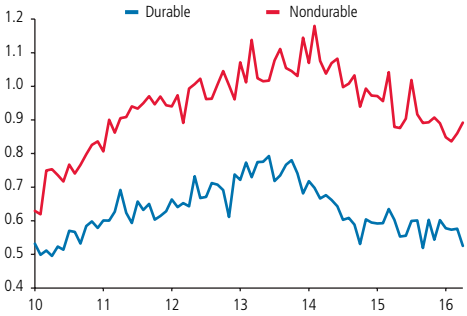
TABLE III.2
Domestic demand
(share of GDP; real annual change, percent)

	Share	2015				2016
	2015	I	II	III	IV	I
Domestic demand	**100.3**	**1.0**	**1.9**	**3.3**	**1.0**	**0.5**
Domestic demand (excl. change in inventories)	100.5	1.1	0.3	2.8	1.1	2.0
Gross fixed capital formation	22.7	-3.3	-5.5	4.3	-1.3	1.2
Construction and works	15.1	-0.1	1.8	3.6	2.6	1.5
Machinery and equipment	7.6	-9.6	-19.3	5.7	-8.4	0.8
Total consumption	77.8	2.5	2.0	2.5	1.8	2.2
Private consumption	64.4	2.2	1.2	1.3	1.1	1.6
Durable goods	6.4	-5.0	-1.2	1.6	1.9	4.0
Nondurable goods	26.5	2.5	1.1	1.6	0.7	2.1
Services	31.5	3.4	1.9	1.1	1.1	0.6
Government consumption	13.4	4.5	5.6	7.8	4.9	5.4
Change in inventories (*)	-0.2	-0.9	-0.5	-0.4	-0.4	-0.5
Goods and services exports	30.1	1.1	-6.2	-1.4	-0.9	2.4
Goods and services imports	30.3	-4.1	-7.3	1.7	-1.8	-3.0
Total GDP	**100.0**	**2.7**	**2.1**	**2.2**	**1.3**	**2.0**

(*) Ratio of inventory change to GDP, at average prices of the previous year, accumulated in the last 12 months.

Source: Central Bank of Chile.

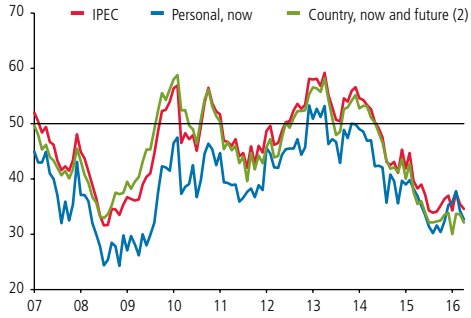
FIGURE III.2
Nominal consumer goods imports (*)
(US$ billion)



(*) Seasonally adjusted series.

Source: Central Bank of Chile.

FIGURE III.3
Consumer expectations (IPEC) (1)
(index)



(1) A value over (under) 50 indicates optimism (pessimism).
(2) Simple average of questions that measure the country's economic situation now, in twelve months and in five years.

Source: Adimark.

In contrast, investment-related sectors, such as wholesale trade and construction, remain less dynamic. Construction slowed in the first quarter, mainly due to the contraction of engineering works as a result of lower mining investment. Business services followed a similar trend, due to a weak performance of architecture and engineering activities. The industrial sector also recorded a lower annual growth rate, reflecting an overall drop in the manufacturing of cellulose, paper and printing products. In the natural resource sectors, GDP fell 0.2% in annual terms in the first quarter, which represents a slowdown in the contraction relative to the previous quarter. The downward trend in mining also eased, largely due to a less negative performance of copper production. EGW saw an increase in annual growth, driven by greater hydroelectric and coal generation (table III.1).

Domestic demand, excluding inventories, increased 2% in annual terms in the first quarter—a better performance than the previous quarter and better than projected in March. As indicated above, both consumption and gross fixed capital formation (GFCF) recorded higher annual growth rates than at year-end 2015 (table III.2). However, some determinants of consumption—namely, expectations and the wage bill—remain weak or weakened in the period. At the same time, capital goods imports and information on investment projects point to a less favorable scenario for GFCF.

Total consumption grew 2.2% in annual terms in the first quarter, which is higher than the fourth quarter of last year, but around the average for 2015. This performance is largely explained by higher annual growth of private consumption, which reached 1.6% (1.1% in the fourth quarter of 2015). In particular, routine consumption, which accounts for the largest share of consumer expenditures, recorded a stronger performance. The growth trend of routine consumption reflects a higher annual growth of nondurable goods consumption, which more than offset undynamic services. Durable goods expenditures also posted a better performance relative to the previous quarter, driven by technological products and car sales. Nevertheless, some short-term indicators continue to suggest limited consumption growth. In April, nominal consumer goods imports—adjusted for seasonal effects—decreased, mainly from lower durable goods imports (figure III.2).

Consumption fundamentals suggest that this lack of dynamism will continue over the coming quarters. First, consumer expectations (IPEC) remain in pessimistic territory and are near the levels observed in early 2009. Consumers' perceptions of the current and future economic situation of the country remain below the average for the second half of 2008 through the first quarter of 2009. Perceptions of their current personal situation, while somewhat higher than in that period, are still low from a historical perspective (figure III.3).

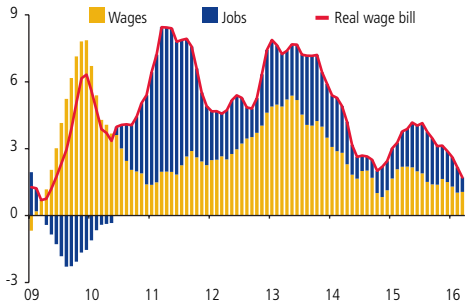
On the other hand, the labor market has deteriorated somewhat faster than expected in the past few months, which has slowed the growth of labor income, measured by the real wage bill (figure III.4). Worth noting was the sharp drop in the annual growth rate of salaried employment: from just under 2% at year-end 2015 to 0.5% in the moving quarter ending in April. However, the increase in self-employment has helped cushion the effect on the annual growth rate of total employment (figure III.5). With regard to wages, the annual increase in nominal terms—averaging the different measures—was just under 6% in the first few months of the year, while real wage growth was between 1.0 and 1.5%. These figures are lower than a year ago, when the annual growth rates were a little over 7.0 and 2.5%, respectively.

The national unemployment rate increased slightly in the last moving quarter, to 6.4%, although it remains low from a historical perspective. By region, unemployment has grown faster in the north than in other parts of the country. The firms surveyed for the May BPR cited a greater availability of labor, together with lower wage pressures. Several of the people interviewed stated that they are not hiring, although, with the exception of a few specific industries, the majority indicated that they (and other firms) had not laid off a significant number of employees in the first quarter. The University of Chile found, in its March survey, that the unemployment rate in Greater Santiago had increased to 9.4%, thus corroborating the weakening of the labor market.

GFCF recorded an annual growth rate of 1.2%, higher than in the previous quarter, mainly due to an increase in machinery and equipment (0.8% annual growth). This better performance is primarily explained by some one-off capital goods imports associated with uncommon transport vehicles. If these are excluded, GFCF growth remains low and even weakened at the margin (figure III.6).

The growth rate of the construction and works component declined relative to year-end 2015, despite the low basis for comparison. This was mostly a negative effect of the low mining investment and, to a lesser extent, the slowdown in residential construction. Several indicators suggest that in the coming months, investment in construction and works will continue to show signs of weakening, mainly as a result of new cuts in mining investment. This is supported by the March survey carried out by the Capital Goods and Technological Development Corporation (*Corporación de Desarrollo Tecnológico y de Bienes de Capital, CBC*) and the five-year investment plan released by *Codelco*, the state-owned mining company. In *Codelco*, the reduction is largely due to the postponement of projects. Public investment will be moderate, in line with fiscal consolidation targets. Housing investment will be similarly slow, following a very dynamic performance in 2015 (figure V.4). New home sales in Greater Santiago fell sharply in the first quarter (figure III.7), with a significant reduction in off-plan sales (CChC).

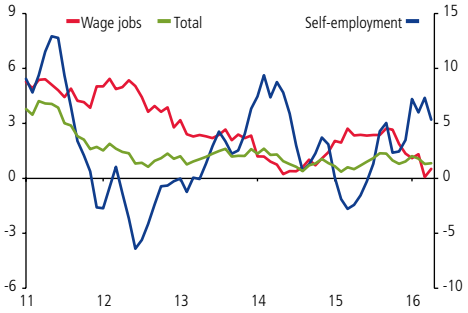
FIGURE III.4
Share in annual growth of the real wage bill (*)
(percentage points)



(*) Quarterly moving average.

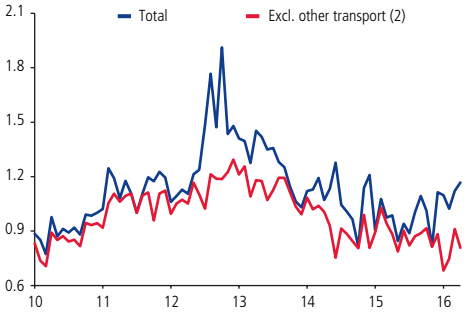
Sources: Central Bank of Chile and National Statistics Institute (INE).

FIGURE III.5
Job creation by occupational category
(annual change, percent)



Source: National Statistics Institute (INE).

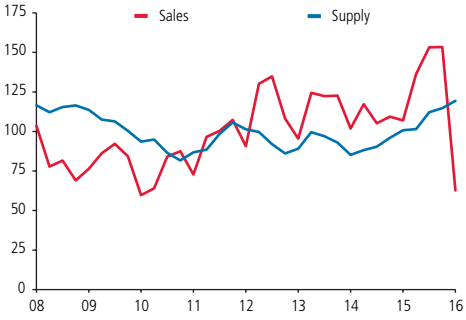
FIGURE III.6
Nominal capital goods imports (1)
(US$ billion)



(1) Seasonally adjusted series.
(2) Excluding uncommon transport vehicles (airplanes, trains, helicopters and ships).

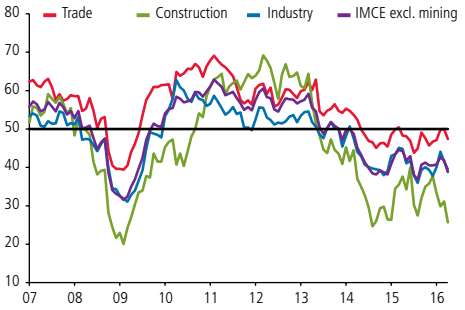
Source: Central Bank of Chile.

FIGURE III.7
New home supply and sales in Greater Santiago
(index: 2007–2015=100)



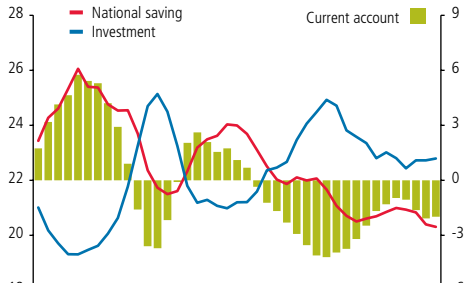
Source: Chilean Chamber of Construction.

FIGURE III.8
Business perceptions: IMCE (*)
(index)



(*) A value over (under) 50 points indicates optimism (pessimism).
Source: *Icare/Universidad Adolfo Ibáñez.*

FIGURE III.9
Current account, national saving and investment
(percent of GDP, accumulated in a moving year)



Source: Central Bank of Chile.

Business expectations (IMCE), excluding mining, are also low and have even fallen again across sectors at the margin. Trade expectations contracted, despite the better sales performance in the quarter. Furthermore, pessimism deepened in the construction sector, with a worsening in several subcomponents (figure III.8).

In terms of financial conditions, interest rates remain low relative to historical averages, and the annual growth rate of credit is somewhat higher than a year ago. At the same time, the March Bank Lending Survey (BLS) reported a marked weakening of demand in most kind of loans. Lending conditions generally tightened. All of these trends are consistent with the May BPR, where the firms in the survey reported a greater reluctance of people to take on debt or make purchases, together with greater difficulty selling homes due to the increased down payment requirements. Several of those interviewed expressed concern that there could potentially be a significant increase in withdrawals from signed real estate purchase commitments. On the whole, the firms described a general lengthening of supplier payment terms, with a negative effect on the cash cycle. This coincides with a greater use of factoring in business financing, although some firms are using less factoring due to low business performance.

With regard to external demand, the volume of goods and services exports grew 2.4% annual in the first quarter (–0.9% in the fourth quarter of 2015). This mainly reflects a strong performance of the services component, which increased 11.7% in annual terms, based on dynamic tourism services exports. Shipments grew 1%, driven by the growth of copper exports and a less negative performance of industrial exports. The volume of goods and services imports fell 3% annual (–1.8% in the previous quarter) due to an annual contraction across the board in all goods segments.

Given these trends, combined with a drop in export and import prices, the country recorded a current account deficit of 2% of GDP in the last moving year (2.1% in the previous quarter) (figure III.9). The baseline scenario assumes a current account deficit of 2.2% of GDP in 2016 (2.5% in the March *Report*) and 2.1% of GDP in 2017 (2.0% in the March *Report*).

BOX III.1
LABOR FLOWS: EVIDENCE FOR CHILE

Introduction

At any given point in time, firms create and destroy jobs. This job reallocation process is a natural consequence of the companies' adaptation to the aggregate, sectoral or idiosyncratic shocks that determine their demand for labor. For the economy as a whole, the speed with which this process takes place is important. On one hand, it determines how long it will take the economy to adjust to changes in the environment. On the other, given that wage rigidity is usually greater at the firm level, job creation and destruction is one way that aggregate wages adjust.

Despite the importance of this issue, there are few measures of job creation and destruction in Chile due to a lack of available date[1]/. This box uses data from the Chilean Internal Revenue Service (IRS) to calculate these statistics[2]/. The labor turnover rate, measured as the average between annual entry and exit rates, is 37%, which is high compared with other OECD countries. This average, however, hides a large degree of heterogeneity. By sector, turnover is highest in agriculture and construction; by company, in small businesses and in firms that pay relatively low wages. In addition to the high turnover, the Chilean labor market features a large share of fixed-term contracts relative to the OECD countries. In terms of the economic cycle, turnover increases in boom periods. This is mainly due to the procyclical behavior of job creation and, to a lesser extent, the slightly countercyclical behavior of job destruction, and it is consistent with a positive response to the economic cycle in the form of net creation.

More than a structural characteristic of the economy, labor turnover is an equilibrium result, in the sense that it arises from the interaction between the shocks that affect the economy and the incentives generated by the labor legislation and other characteristics of the country that help firms resist these shocks. Consequently, the data presented in this box should not be used to form conclusions on the optimality of turnover levels. For example, some economies with very flexible labor legislation, such as the United States, have lower turnover rates than countries with more rigid legislation, such as Spain.

Aggregate labor turnover and heterogeneity among firms

The labor flow measures presented in this box are the entry rate (total hires as a fraction of total employment), the exit rate (total voluntary and involuntary separations as a fraction of total employment), the net rate (the difference between entry and exit) and turnover (the average between entry and exit), all calculated at an annual frequency[3]/. Entry and exit can be divided into two categories: job changes in firms that remain active (intensive margin) and job changes deriving from the appearance/disappearance of firms (extensive margin). In the latter case, the entry/exit rate is 100% by definition.

Figure III.10 graphs the turnover for individual firms in 2007. For the purpose of illustration, the figure only includes firms with positive turnover levels and excludes turnover deriving from the extensive margin (entry and exit of firms)[4]/. The upper panel of the figure shows the distribution for the aggregate economy. The

[1]/ García and Naudon (2012) document high flows between employment, unemployment and inactivity using data from the INI employment survey. Reinecke and Ferrada (2005) calculate the net of firms using AChS data. Albagli *et al.* (2016) find substantial differences between gross and net flows at the firm level. Box III.2 in this *Monetary Policy Report,* based on Marcel and Naudon (2016), presents a calculation of the probability that a worker will transition between different labor states.

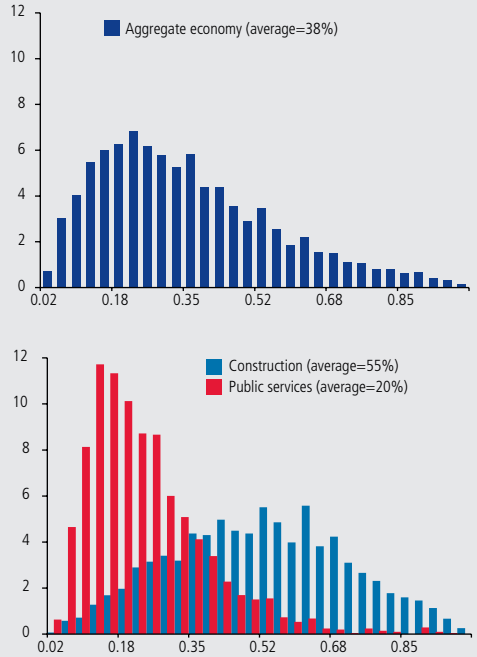
[2]/ Specifically, the data are taken from business tax statements filed with the Chilean IRS (form F1887). The database has the advantage of covering almost all wage employment and containing monthly data on the employment histories of individual workers, which supports the calculation of gross labor flows (gross entry and exit rates). These data are anonymized by the IRS to protect the privacy of both people and firms. For more details, see Albagli *et al.* (2016).

[3]/ The reference point is the data from IRS form F1887 in December of each year. The calculations exclude agriculture (in the sectoral analysis). These adjustments are made to facilitate international comparisons.

[4]/ The contribution of the extensive margin to turnover is presented in table III.3. Figure III.10 considers only firms with more than 10 employees, which in 2007 accounted for over 90% of jobs.

relatively long right tail reveals a high degree of heterogeneity in turnover levels—that is, a significant number of firms have high turnover. The lower panel shows that a large share of this heterogeneity can be explained by the economic sector in which the firms operate. In particular, construction displays a right-skewed distribution with a weighted average of 55%, whereas the public services sector has a low turnover rate, with a weighted average of just over 20%.

FIGURE III.10
Turnover: aggregate economy and selected sectors (2007) (*)



(*) Weighted averages, where each firm is weighted by the number of employees as a fraction of total employees in the sector, including the universe of firms.

Source: Albagli *et al.* (2016).

For the aggregate economy, average turnover was 37% in 2005–2014, and the net rate was 3.8% (table III.3). By economic sector, public services and mining have the lowest rates, while agriculture and construction have the highest. When the sample is broken down by the size of annual sales, there is a negative relationship between size and turnover. However, the higher turnover of micro and small business is due to the extensive margin. In fact, 30% of turnover in small firms derives from the entry and exit of firms, versus only 10% for medium-sized firms and 6% for large firms (see the last column of table III.3). With regard to wages, firms that pay more (relative to their sector) tend to have lower turnover, as expected[5]/.

TABLE III.3
Labor flows by category: 2005–2014 (*)
(annual averages)

	Entry rate	Exit rate	Net rate	Turnover	Turnover (simple average)	Share extensive margin (%)
			Aggregate economy			
	38.8	35.0	3.8	36.9	42.5	12.3
			By economic sector			
Public services	24.1	19.6	4.4	21.8	37.1	15.2
Mining	29.9	22.3	7.6	26.1	53.1	19.7
Other	30.3	25.3	5.0	27.8	40.5	13.4
Manufacturing	30.2	29.4	0.8	29.8	38.5	9.9
Personal services	33.0	27.9	5.2	30.4	37.7	16.1
Transport and communications	34.3	29.7	4.6	32.0	44.0	14.3
Trade	39.6	35.4	4.2	37.5	41.4	12.8
Financial services	43.4	38.4	4.9	40.9	41.3	12.2
Agriculture	41.4	44.2	-2.8	42.8	36.6	8.8
Construction	56.6	53.6	2.9	55.1	58.5	11.0
			By firm size, according to sales			
Micro and small	42.8	39.0	3.8	40.9	43.9	29.8
Medium	41.7	38.6	3.1	40.2	36.7	9.8
Large	36.7	32.7	4.0	34.7	34.1	5.9
			By quintile of average wages by economic activity			
1st quintile	64.8	57.6	7.2	61.2	69.4	21.7
2nd quintile	49.8	44.9	5.0	47.3	48.4	14.1
3rd quintile	41.6	39.4	2.2	40.5	36.2	11.0
4th quintile	36.4	34.1	2.4	35.2	31.6	8.5
5th quintile	26.4	22.9	3.5	24.7	27.1	7.4

(*) Entry, exit, net and turnover rates are weighted averages, where each firm is weighted by the number of employees as a fraction of total employees in the respective sector. The simple average is the average of firms with the same weight each.

Source: Albagli *et al.* (2016).

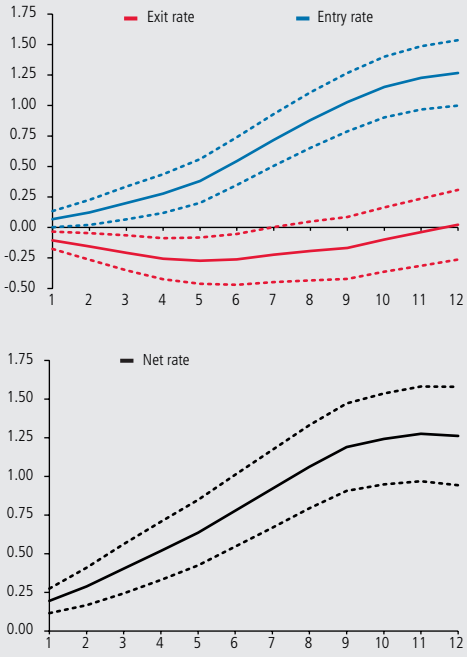
Cyclical response of entry, exit and net employment

High-frequency flow data provide insight into the margins through which employment adjusts to cyclical conditions. This section presents the results of estimates on the effect of changes in economic activity (changes in the Imacec) on entry, exit and net job growth rates for the aggregate economy. Figure III.11 shows the accumulated response of each flow in a horizon of 1 to 12 months. The central estimate suggests that a permanent increase in the Imacec of 1% increases hiring by around 1.2% after one year. The response of the exit rate has the expected

[5]/ Albagli *et al.* (2016) estimate a panel with dummy variables for size, sector and relative wages; the find that these variables are highly correlated with turnover among firms.

sign, but it is not very statistically significant[6]/. The effect on the net rate is primarily explained by the highly procyclical entry rate, consistent with the adjustment dynamics found for the United States by Hall (2005) and Davis *et al.* (2012).

FIGURE III.11
Cyclical response of entry and exit rates (*)



(*) Solid lines graph the central estimate of the accumulated effect at one to twelve months for the respective rate. Dotted lines show the 90% confidence interval.

Source: Albagli *et al.* (2016).

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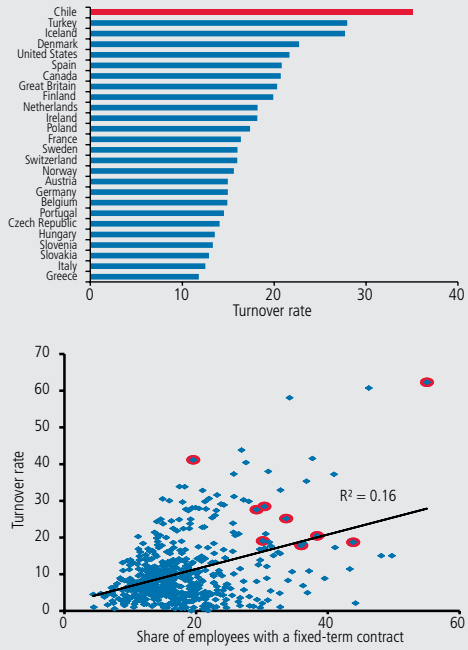
International comparison

To provide an international perspective on the magnitude of turnover in Chile, Bassanini and Garnero (2013) calculate similar statistics for 24 OECD countries. The turnover indicators for Chile are high in comparison with this sample of countries[7]/ (figure III.12). This is consistent with information that positions Chile as the OECD country with the lowest share of jobs that last more than a year[8]/. The authors find that one of the dimensions correlated with turnover is the intensity in the use of fixed-term contracts, and they present statistics by country and economic sector. Using data on the share of fixed-term contracts from the NENE survey, they show that fixed-term contracts are more prevalent in Chile than in other OECD economies (figure III.12).

FIGURE III.12
Labor turnover rate in Chile and a sample of countries (*)



(*) In the lower panel, the dots represent the different sectors in each of the 24 economies analyzed by Bassanini and Garnero (2013). The red dots are the sectors in the Chilean economy.

Source: Albagli *et al.* (2016).

As mentioned, turnover is the result of the interaction between shocks and some structural characteristics of the economy. With regard to shocks, Albagli *et al.* (2016) show that the sectoral shares of employment are substantially more volatile in Chile than in the other countries in the sample, suggesting that part of the explanation could be a greater prevalence of sectoral shocks in Chile.

[6]/ The simulated shock is a permanent change in the Imacec of 1%.
[7]/ Albagli *et al.* (2016) show that the conclusions are robust to data cleaning.

[8]/ See OECD: Employment by Job Tenure Intervals, https://stats.oecd.org/Index.aspx?DataSetCode=TEMP_I#

With regard to the impact of labor regulation on turnover, it is not possible to establish solid conclusions based on the evidence. It is notable, however, that turnover is high even though firing costs are high relative to other OECD economies[9]/. One possible interpretation is that companies use fixed-term contracts more frequently precisely because open-ended contracts are subject to high firing costs and other regulatory rigidities, resulting in high turnover. The case of Spain is often cited as evidence of this mechanism. A number of studies argue that firing costs are an important factor behind the country's labor market segmentation, where young people have extremely high turnover and older workers have long job tenure[10]/. Other factors can also play an important role. For example, Blanchard *et al*. (2014) argue that high turnover could be associated with low training and human capital formation on the part of firms. Thus, an alternative interpretation of the fact that turnover is high in companies that pay low wages is that these companies are intensive in unskilled jobs, which are of shorter duration[11]/. The relative validity of these and other hypotheses for Chile cannot be evaluated in light of the evidence presented here; these issues should be a high research priority.

Conclusions

This box studies the levels of labor turnover in Chile. Turnover is high from an international perspective, but there is substantial heterogeneity depending on the size of the firm, the economic sector and the wage level. This suggests that the economy has a significant capacity to adjust to shocks. The analysis of time series, in turn, suggests that the adjustment of net job growth is dominated by the contraction margin.

9/ See OECD: Indicators of Employment Protection, http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm.

10/ See Bentolila *et al.* (2011), Bover *et al.* (2000), Bover and Gómez (2004), Dolado (2015a, 2015b) and Estrada *et al.* (2002).

11/ Albagli *et al.* (2016) show that, within a given firm, employees with low wages have significantly higher turnover rates than employees with high wages. See Mortensen (1988) for a discussion of this issue and Abowd *et al.* (1999) for international empirical evidence.

BOX III.2
UNEMPLOYMENT RATE AND TRANSITION PROBABILITIES

Introduction[1]/

Surveys measuring employment and unemployment in an economy classify people into three labor states: employed (people who have a job); unemployed (people who do not have a job, but are looking for one); and inactive (people who do not have a job and are not looking for one). Flows of workers from one state to another determine the unemployment rate. For example, a person who moves from being employed to being unemployed—whether voluntarily or involuntarily—will increase the unemployment rate, as will someone who goes from being employed to being inactive. For each flow, it is possible to calculate the probability of occurrence, called the transition probability. Transition probabilities can also be understood as the percentage of people who transition, on average, from one state to another in a given period. This box reports the results on transition probabilities for the Chilean economy and their relationship to the unemployment rate[2]/.

The results show that in Chile, transition probabilities are higher, on average, than in other OECD economies, but in line with economies such as Australia, Canada, New Zealand and Norway. The results indicate that changes from employment to unemployment (and vice versa) explain most of the variation in the unemployment rate (and not movements in and out of inactivity). In addition, whenever the unemployment rate has recorded a sharp upward shift, it has primarily reflected a significant increase in flows from employment to unemployment, usually involving an increase in the number of dismissals. These events have occurred in periods of recession, such as 1998 or 2008–2009[3]/. Finally, in the most recent period, the low unemployment rate reflects a low employment-to-unemployment transition probability and a high unemployment-to-employment transition probability.

Transition probabilities in the Chilean economy

The possible transitions between the different labor states are as follows: from employed to unemployed (EU); from employed to inactive (EI); from unemployed to employed (UE); from unemployed to inactive (UI); from inactive to employed (IE); and from inactive to unemployed (IU). Because the employment survey underwent changes in 2010, the average transition probabilities are calculated separately for the period 1996–2009 (ENE survey) and the period 2010–2016 (NENE survey). The results show that in an average month, around 2% of workers leave their jobs but remain in the workforce to look for further employment (EU), while around 2.5% leave the workforce altogether (EI). Between 35 and 40% of unemployed people cease looking for work in the month—two-thirds because they find a job (UE) and one-third because they become inactive (UI). Finally, between 4 and 6% of inactive people join the workforce each month, of which two-thirds find work immediately (IE) and one-third remain unemployed[4]/ (table III.4).

TABLE III.4
Monthly transition probabilities

	EU	EI	UE	UI	IE	IU
Total	2.1	2.5	24.1	12.3	3.1	1.4
1996-2009	2.2	2.4	23.3	10.4	2.7	1.2
2010-2016	1.9	2.9	25.8	16.4	4.0	2.0

(*) The abbreviation "XY" describes the probability of transitioning from state X to state Y. For example, EU is the probability of moving from employed (E) to unemployed (U).

Source: Marcel and Naudon (2016).

[1]/ The data and analysis presented in this box are based on microdata from the National Employment Survey (ENE) and the New National Employment Survey (NENE). Consequently, the aggregate data shown here differ from the spliced series from the National Statistics Institute and the Central Bank of Chile.

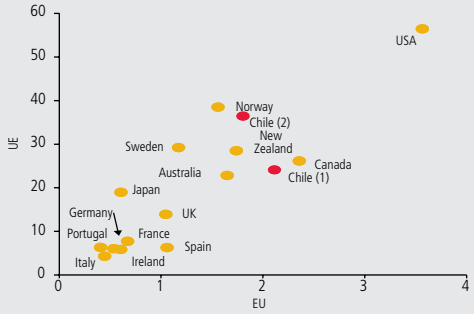
[2]/ Marcel and Naudon (2016) also analyze the evolution of transition probabilities for different demographic groups.

[3]/ The transition from employment to unemployment can also be voluntary, but in crisis periods it is reasonable to think that involuntary dismissals are more common.

[4]/ The calculation of these probabilities is based on data on the flow of people who transition from one labor state to another, so it is necessary to have information on the labor state of a given person in two consecutive periods. Because the INE methodology conducts interviews every three months, it is likely that some labor flows are not seen. For example, if a person transitioned from inactivity to unemployment, but then found work before the end of three months, that would be counted as a flow from inactivity to employment, when in reality there were two flows: from inactivity to unemployment (IU) and from unemployment to employment (UE). To correct for this problem, at least partially, we follow Shimer (2012). There is probably still a bias, however. In addition, movements between jobs are not considered. For example, if a person loses a formal job and takes up informal work, it is not counted as job destruction.

As mentioned, in international terms, the data show that Chile's transition probabilities are similar to economies such as Australia, Canada, New Zealand and Norway and clearly higher than continental Europe[5]/ (figure III.13). These numbers are similar to the findings of other studies on Chile[6]/ and consistent with other sources. For example, Albagli *et al.* (2016), using firm-level data, report that around 35% of workers leave their jobs in a given year, on average. Based on household surveys, they find that the monthly probability of transitioning out of employment (EU+EI) is 4.5 to 5.0%; this implies that people leave their jobs in one of the twelve months of the year with a probability of around 45%[7]/.

FIGURE III.13
Employment-to-unemployment transition probabilities (*)



(*) Elsby *et al.* (2013) focus on the probability of transition from and to unemployment, without explicitly considering the role of entry into and exit from the workforce. Taking this into account, the data from that study are compared with two different measures for the Chilean case: Chile (1), which defines the probability of transitioning into unemployment as equal to the EU transition probability and the probability of transitioning out of unemployment as equal to the UE probability; and Chile (2), which takes a weighted average of the EU and IU transition probabilities for entering unemployment and UE+UI for leaving unemployment.

Source: Marcel and Naudon (2016).

With regard to the differences between the results based on ENE versus NENE data, it is difficult to distinguish between the effects of the methodological changes and the effects of differences in the cyclical conditions during the years in which the surveys were conducted. However, with the exception of the transition from employment to unemployment, it would appear that movement between the three states is generally higher in the new survey, especially for flows into and out of inactivity (figure III.14).

Contribution to changes in the unemployment rate

As mentioned, variations in the unemployment rate derive from changes in transition probabilities between the different labor states. As in most countries, in Chile shifts in the employment-to-unemployment transition probability (and vice versa) have the biggest effect in terms of changes in the unemployment rate in a given year (figure III.15). In particular, between 40 and 55% of the variation in the unemployment rate can be explained by changes in the probability of losing a job and transitioning into unemployment (EU), and between 20 and 30% is explained by changes in the probability of transitioning from unemployment to employment (UE)[8]/. A review of the data provides some interesting results. First, it is not common to see big changes in the unemployment rate from one year to the next, with the exception of recession years, when the unemployment rate jumps quickly. Second, during these crisis episodes, the increase in the unemployment rate is related to significant jumps in the probability of losing one's job and becoming unemployed (EU), which can also be seen clearly in the historical evolution of this probability. In contrast, during the one period in which the unemployment rate fell significantly and for which comparable data are available (2005–2007), it is the recovery of the probability of finding a job (UE) that had the biggest influence. Finally, over the last couple of years, transition probabilities have been relatively stable, consistent with an unemployment rate that has not changed much. In particular, the probability of losing one's job has been lower than the historical average, while the probability of finding work is higher.

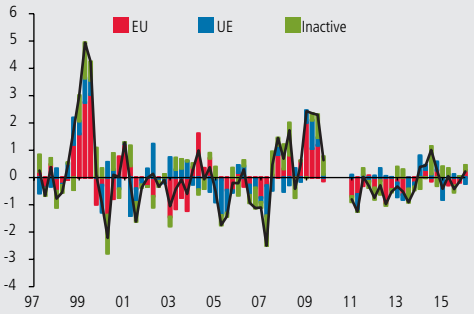
[5]/ Comparisons in this area are always difficult, because the survey methodologies and the calculation of transition probabilities vary among countries.
[6]/ Papers that address this issue include Bravo et al. (2005), García and Naudon (2012), Lima and Paredes (2007) and Jones and Naudon (2009).
[7]/ The comparison is not exact. The data in Albagli *et al.* (2016) do not include self-employed workers, but do consider movements between jobs, which are not included in the calculations presented in this box.

[8]/ These numbers were obtained using the methodology proposed by Fujita and Ramey (2009). For details on the calculation, see Marcel and Naudon (2016).

FIGURE III.14
Transition probabilities

Source: Marcel and Naudon (2016).

FIGURE III.15
Contribution of shifts in transition probabilities to changes in the unemployment rate in a given year



Source: Marcel and Naudon (2016).

Conclusion

This box has reviewed the evolution of transition probabilities in the Chilean labor market. The evidence indicates that the different margins are important for understanding the behavior of the unemployment rate and that the relative significance of the different probabilities varies across the economic cycle. Therefore, a closer study of the determinants should be a priority. In particular, understanding the reasons for high turnover in the labor market is a pressing issue.

IV. PRICES AND COSTS

This chapter analyzes the recent evolution of the main components of inflation and costs, identifying the current sources of inflationary pressure and their likely evolution in the future.

RECENT EVOLUTION OF INFLATION

In the past few months, annual CPI inflation has evolved in line with expectations. It remains over 4%, largely due to the accumulated effects of the significant peso depreciation and indexation to past inflation, in a context of bounded output gaps. Annual CPIEFE growth was 4.6% in April (5% in February), which breaks down into CPIEFE goods inflation of 4.4% (4.9% in February) and CPIEFE services inflation of 4.7% (5% in February) (figure and table IV.1). Thus, annual CPIEFE services inflation continues to contribute more to total inflation due to both its level and its weight. This was combined with an incipient reduction in the contribution of CPIEFE goods prices (figure IV.2).

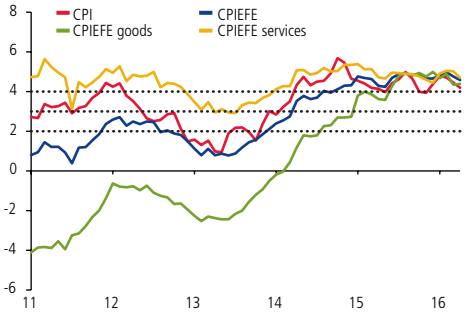
TABLE IV.1
Inflation indicators (*)
(annual change, percent)

	CPI	Food	Energy	CPIEFE	CPIEFE goods	CPIEFE services
2014 avg.	4.4	6.9	5.5	3.6	1.6	4.9
2015 Jan.	4.5	9.5	-8.1	4.8	3.8	5.4
Feb.	4.4	8.8	-7.3	4.7	4.0	5.1
Mar.	4.2	8.0	-7.6	4.6	3.9	5.1
Apr.	4.1	8.0	-5.5	4.3	3.6	4.7
May	4.0	7.7	-6.2	4.2	3.6	4.7
Jun.	4.4	7.5	-4.5	4.7	4.3	5.0
Jul.	4.6	7.5	-3.8	4.9	4.8	4.9
Aug.	5.0	8.2	-1.5	4.9	4.9	4.9
Sept.	4.6	7.1	-2.7	4.9	4.8	4.9
Oct.	4.0	4.4	-3.8	4.8	4.9	4.8
Nov.	3.9	4.7	-3.8	4.7	4.8	4.6
Dec.	4.4	4.7	1.2	4.7	5.0	4.4
2016 Jan.	4.8	4.3	5.9	4.8	4.7	4.9
Feb.	4.7	4.0	4.2	5.0	4.9	5.0
Mar.	4.5	4.2	2.4	4.8	4.3	5.0
Apr.	4.2	3.4	2.7	4.6	4.4	4.7

(*) See glossary for definitions.

Sources: Central Bank of Chile and National Statistics Institute (INE).

FIGURE IV.1
Inflation indicators (1) (2)
(annual change, percent)

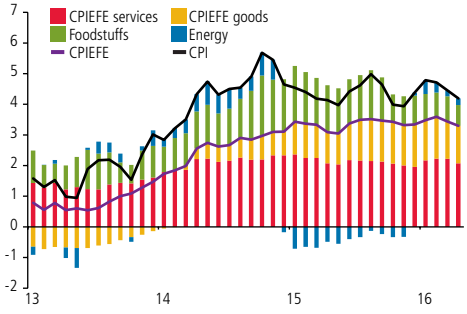


(1) See glossary for definitions.

(2) Starting in January 2014, calculations are based on the new indices with base year 2013=100, so they may not be strictly comparable with earlier figures.

Sources: Central Bank of Chile and National Statistics Institute (INE).

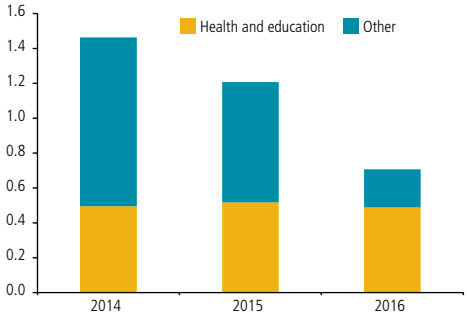
FIGURE IV.2
Contribution to annual CPI inflation (*)
(percentage points)



(*) Starting in January 2014, calculations are based on the new indices with base year 2013=100, so they may not be strictly comparable with earlier figures.

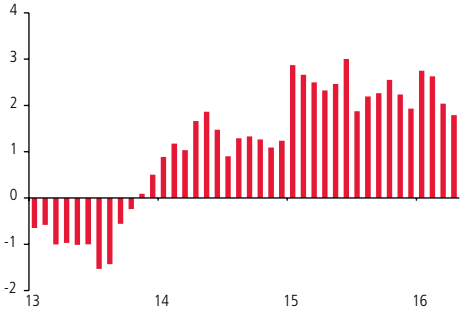
Sources: Central Bank of Chile and National Statistics Institute (INE).

FIGURE IV.3
Contribution to inflation accumulated in March and April
(percentage points)



Sources: Central Bank of and National Statistics Institute (INE).

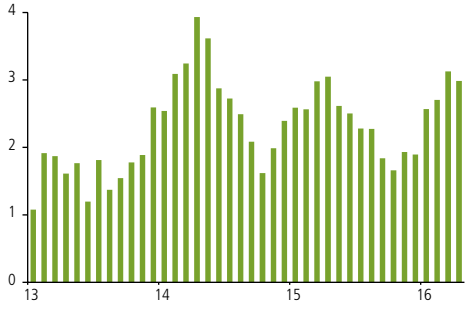
FIGURE IV.4
CPIEFE goods: accumulated inflation in six months (*)
(percent)



(*) Starting in January 2014, calculations are based on the new indices with base year 2013=100, so they may not be strictly comparable with earlier figures.

Sources: Central Bank of Chile and National Statistics Institute (INE).

FIGURE IV.5
CPIEFE services: accumulated inflation in six months (*)
(percent)



(*) Starting in January 2014, calculations are based on the new indices with base year 2013=100, so they may not be strictly comparable with earlier figures.

Sources: Central Bank of Chile and National Statistics Institute (INE).

In addition to the factors that have determined the evolution of inflation in recent quarters, inflation in March and April was affected by the strong contribution of indexed prices (health and education) during this season of the year. In these two months, the CPI accumulated an increase of 0.7 percentage points (pp), of which almost 0.5 pp corresponded to these services (figure IV.3). CPIEFE goods inflation was contained in the last two months (0.2% on average), growing below the average recorded for the season in the past few years and in line with a nominal exchange rate that is no longer rising as sharply as in the period from mid-2013 to the third quarter of 2015.

Looking at CPIEFE inflation accumulated in the last six months, the rise in the goods component has eased in recent months, while the services component increased again, due to the aforementioned seasonal effects from some key items, together with the increase in stamp duties in January (figures IV.4 and IV.5).

The baseline scenario in this *Report* estimates that annual CPI inflation will enter the tolerance range during the third quarter of this year and will then drop to around 3% in the first half of 2017. Private expectations put inflation at a little over 3% in one year and at 3% in two years ahead..

As mentioned, the evolution of total inflation in recent years largely reflects the exchange rate trend, through both direct and indirect effects on the prices in the CPI basket. In the last three months, the peso has fluctuated, but it has not depreciated on the magnitude of the devaluation between mid-2013 and the third quarter of 2015.

In the baseline scenario, the working assumption is that the real exchange rate (RER) will hover around its current levels throughout the forecast horizon. For now, the RER has increased somewhat relative to the cutoff date of the last *Report*, to around 97 (where 1986=100). In the coming months, CPIEFE goods inflation will continue to ease off gradually, as will total inflation. According to the May *Business Perceptions Report,* the firms that were interviewed deem that the cost pressures associated with the exchange rate have abated. At the same time, they indicated that the accumulated depreciation of the peso has not been fully passed through to prices—nor can it be, in their opinion, given the weak demand. This is reflected, in particular, in the steady decline in import margins, which dropped to the lowest level of the last decade in the first quarter of this year (figure IV.6).

There are a number of risks, however, especially in the external front, that could lead to different exchange rate scenarios. Thus far in the year, the peso-dollar exchange rate has been characterized by its volatility, fluctuating from $730 to the dollar at the beginning of the year to under $660 at the beginning of the second quarter.

The lower external cost pressures have also cooperated in bringing down goods inflation. The consumer goods import prices in dollars (IVUM) have recorded negative annual inflation rates for over a year now. The same trend is found with external prices relevant to the Chilean economy (the external price index, or EPI), mainly due to the depreciation against the dollar of the currencies of trading partners. The baseline scenario projects that the EPI will return to positive growth rates over the course of 2017 (figure IV.7).

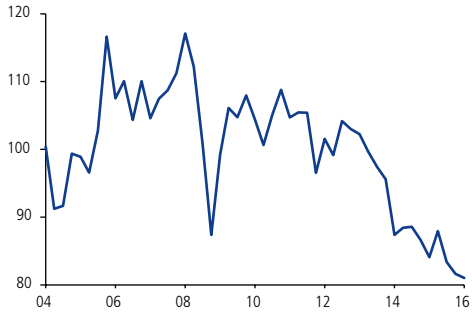
With regard to CPIEFE services inflation, as mentioned, data for March and April were strongly affected by the indexation of health and education services, which is normal for that season of the year and in line with historical patterns. Going forward, inflation of this component is expected to decline more slowly than goods inflation, based on inflation persistence and the fact that although excess capacity will increase in the forecast horizon, it will have a limited effect on inflation (box V.1).

The labor market has deteriorated somewhat more quickly than expected, but unemployment rates are still low and nominal wage growth high. Nevertheless, the annual growth rate of nominal and real wages in the last three months was lower than a year ago, averaging just under 6% for nominal wages and 1.0–1.5% for real wages, versus just over 7 and 2.5%, respectively, a year ago. The evolution of wages, together with the trend in average productivity, has implied a lower growth of unit labor costs (figure IV.8).

Annual inflation of the most volatile components of the basket—foodstuffs and energy—has also declined in the last three months. In the case of energy, the electricity and fuels components recorded an uneven performance. Electricity increased due to the entry into effect of new tariff rules that raise costs as a function of past depreciation of the peso. Fuels, in turn, fell sharply through March and increased thereafter, but on a smaller magnitude than international comparators. In some cases, the pass-through to domestic prices has been lower and has occurred with a lag, due to the operation of the domestic price stabilization mechanism (Mepco) (figure IV.9).

In the case of foodstuffs, no major changes were recorded in the first months of the year. Fresh fruit and vegetable prices behaved in line with the usual seasonal trends, and the rest of the group have not shifted significantly. If anything, the accumulated inflation of meat and milk products has declined, in line with the annual reduction in international prices (figure IV.10).

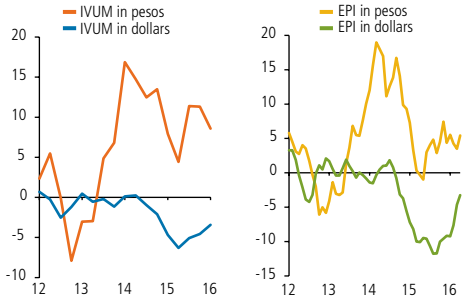
FIGURE IV.6
Margins (*)
(index: average 2004–2016=100)



(*) Approximation measured as the ratio between the CPIEFE goods and the value in pesos consumer goods imports (IVUM).

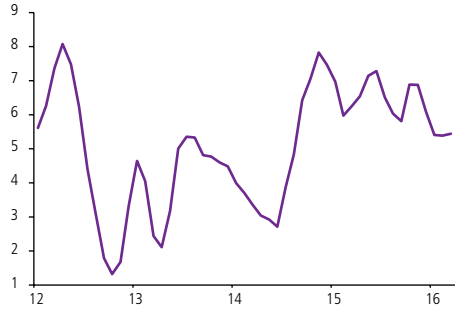
Sources: Central Bank of Chile and National Statistics Institute (INE).

FIGURE IV.7
Consumer goods import prices (IVUM) and the external price index (EPI)
(annual change, percent)



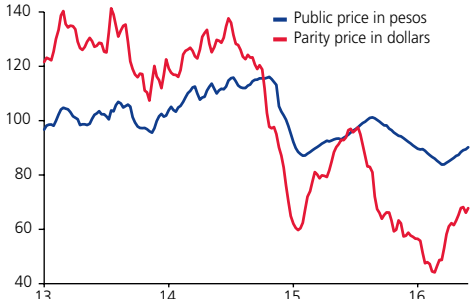
Source: Central Bank of Chile.

FIGURE IV.8
Nominal unit labor costs
(annual change of the quarterly moving average, percent)



Sources: Central Bank of Chile and National Statistics Institute (INE).

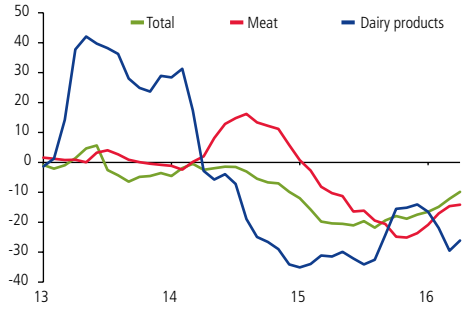
FIGURE IV.9
Weekly gasoline price (1) (2)
(index: 2013–2016=100)



(1) Starting in August 2014, the CNE publishes the parity price in pesos; after that date, the price is converted to dollars using the average observed exchange rate in the two weeks prior to a given date.
(2) Real data through the week of 30 May 2016 for the parity price in dollars. For the public price in pesos, real data through the week 2 May 2016 and preliminary estimates thereafter.

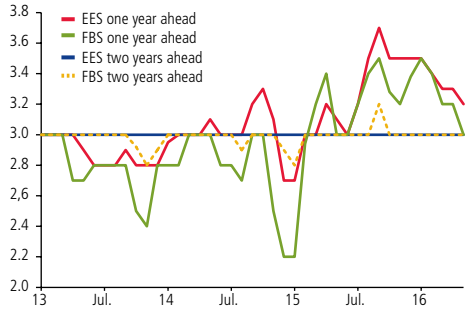
Sources: Central Bank of Chile and National Energy Commission (CNE).

FIGURE IV.10
Food prices in dollars
(annual change, percent)



Source: United Nations Food and Agriculture Organization (FAO).

FIGURE IV.11
Inflation expectations (*)
(annual change, percent)



(*) The FBS uses the survey for the first half of each month, except for March 2016, which uses the survey for the second half of the month.

Source: Central Bank of Chile.

INFLATION OUTLOOK

The baseline scenario in this *Report* assumes that annual CPI inflation will enter the tolerance range during the third quarter of this year and then decline to around 3% in the first half of 2017. This convergence to the target is in line with the forecast in the last *Report*, to the extent that the internal and external macroeconomic scenario has not changed significantly. As indicated above, the working assumption used for this forecast is that the real exchange rate will fluctuate around its current level throughout the forecast horizon. The Output gaps are expected to continue widening in the coming months, while the labor market will continue adjusting over the rest of the year, which should contribute to a moderate reduction in services inflation.

This scenario is similar to the projections captured in market expectations surveys (figure IV.11). One year ahead, expectations are near 3.0%; two years ahead, the market forecast remains anchored at 3.0%.

There are still important risks, however. Although inflation has decreased in line with expectations, the high level that has persisted for several quarters continues to be a risk in the baseline scenario. In the short term, the evolution of inflation will be closely tied to the exchange rate and the risks deriving from the international scenario.

V. INFLATION SCENARIOS

This chapter presents the Board's assessment on the Chilean economic outlook over the next two years. Projections are presented of the most likely inflation and growth trajectories. These are conditional on the assumptions in the baseline scenario, thus the Board's assessment of the risk balance for output and inflation is also provided.

BASELINE PROJECTION SCENARIO

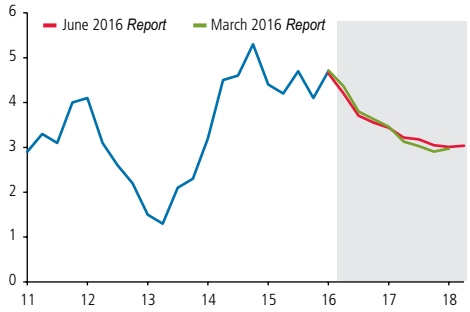
The macroeconomic scenario has evolved in line with March projections, and the outlook contained in this *Report* shows no big changes. Annual CPI inflation will enter the tolerance range during the third quarter of this year and will decline to around 3% in the first half of 2017. In the first quarter, activity exceeded forecasts, but the outlook for the year assumes that it will continue to grow below potential. In 2016 the impulse coming from abroad will be softer than in 2015, as foreseen in March, with trading partners growing at a similar pace as last year, somewhat lower terms of trade, and tighter financial conditions. A gradual recovery of the world economy is expected towards 2017.

Most recently, the real exchange rate (RER) has risen a little from the closing of the last *Report*, and is now near 97 (index, 1986=100). The baseline scenario uses as a working assumption that the RER will hover around its current levels throughout the policy horizon. In this context, the significant effects that the peso depreciation had on inflation, especially on its goods component, should continue to ease in the coming months (figures V.1 and V.2).

It is also foreseen that the output gap will continue to expand and that the labor market will continue to adjust this year, which will also contribute, although to a lesser extent, to reduce inflationary pressures in the medium term. In particular, the baseline scenario estimates GDP growth between 1.25% and 2.0% this year and between 2.0% and 3.0% in 2017. This considers that the improved first-quarter figures will be offset by somewhat slower than expected growth in the remaining quarters of the year. Still, it is estimated that the economy will resume its near-potential growth rates around the end of the projection horizon[1]/.

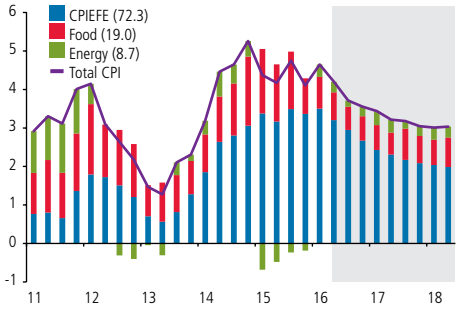
[1]/ Boxes V.1 and V.2, *Monetary Policy Report,* September 2015.

FIGURE V.1
CPI inflation forecast (*)
(annual change, percent)



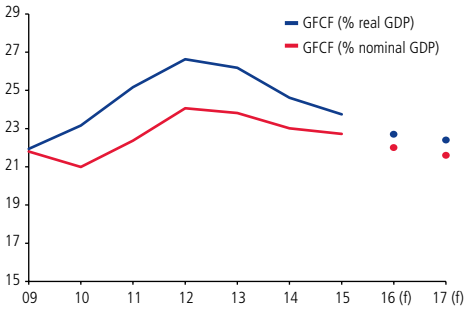
(*) Gray area, as from the second quarter of 2016, shows forecast.
Source: Central Bank of Chile.

FIGURE V.2
Contribution to annual CPI inflation (1) (2)
(percentage points)



(1) Gray area, as from the second quarter of 2016, shows forecast.
(2) In parentheses, shares in CPI basket.
Source: Central Bank of Chile.

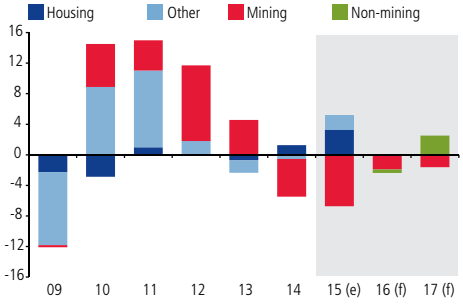
FIGURE V.3
Gross fixed capital formation
(percent of GDP)



(f) Forecast.

Source: Central Bank of Chile.

FIGURE V.4
Real annual contribution to GFCF (*)
(percentage points)



(*) 2015 mining investment is estimated using available information from listed companies (FECU) and *Codelco's* investment plan. Housing investment uses data from the Chilean Chamber of Construction and National Accounts by institutional sector. Other contributions use residues. For 2016, Central Bank projection models and sectoral sources are used, including the Capital Goods Corporation's investment plans and surveys,
(e) Estimate.
(f) Forecast.

Source: Central Bank of Chile.

Domestic demand—excluding inventories—will expand 1.1% in 2016 and 2.1% in 2017. A significant part of the downward revision from March has to do with the expected worsening of gross fixed capital formation (GFCF) in 2016: –2.4% (versus +0.5% in March). In the first quarter, this component posted positive annual growth, associated with a one-time import of capital goods[2]/. In addition, various indicators point at a weakening of mining investment in what remains of the year, where the significant reduction in these projects reported by the Capital Goods Corporation's survey of engineering works and by *Codelco* is worth noting. Also, the housing sector and public investment will be tight, after being very strong in 2015 (housing) and aligned with the fiscal consolidation objectives (public investment). Likewise, business confidence has been persistently pessimistic and has dropped even further. In 2017, GFCF will grow 0.9%, again determined by a drop in mining investment. Non-mining investment will resume growth consistently with the recovery of the economy's pace of growth. In any case, as a percentage of GDP, real and nominal GFCF will continue to drop in 2017: 22.4% and 21.6%, respectively, thus approaching their levels of 2010 (figures V.3 and V.4).

Projected consumption has changed little from March: its annual average growth rate for 2016-2017 will remain near 2%, close to its 2015 level. Private consumption is revised slightly upward for 2016 due to improved first-quarter figures, which are offset, however, by weaker prospects for the rest of the year and which involve slow growth in this expenditure component. This leans on low levels estimated for consumer goods imports and consumer confidence. Also on labor market figures that have deteriorated faster than expected. In the past few months, salaried employment has expanded clearly less than its 2015 average, which has been partly compensated by increased growth in self-employment, a tendency that is foreseen to continue in the coming quarters. In addition, nominal wages are forecast to slowly continue to descend as they have in the past year, reflecting the decline in inflation and the expected evolution of the labor market.

The higher economic growth rate expected in 2017 relies on the economy's macroeconomic balance, and on a slow increase of business and household confidence towards neutral territory. Also in trading partners continuing to grow at near the pace of 2015, still favorable international lending conditions despite some tightening compared to recent years, and terms of trade stabilizing in 2017. Finally, the baseline scenario uses as a working assumption that the public expenditure trajectory will be consistent with the fiscal rule and the Administration's announcements that it will follow a path of budgetary consolidation.

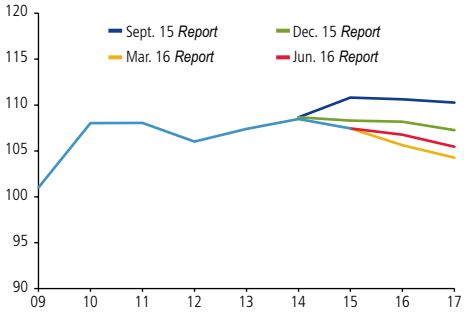
[2]/ The entry of uncommon transport equipment (i.e. air, sea and railroad transport) in amounts equivalent to nearly 19% of total capital imports had a significant incidence on the period's annual variation.

About the external sector, this year the current account deficit will be smaller than previously forecast: 2.2% of GDP (2.5% in the last *Report*), and with no big change for 2017: 2.1% of GDP (2% in March). In particular, the trade balance outperformed the March forecast in the first quarter, which reflected particularly in volume exports of goods, mostly copper, and tourism-related services. A slowdown is foreseen in capital goods imports, given the investment adjustment, together with upward revisions to prices. The current account deficit measured at trend prices[3]/ also shows some improvement from March and should average 2% in 2016-2017.

Our trading partners will expand at a similar rate to that of 2015: 3% on average in 2016-2017. However, there is a significant revision to expected growth in the U.S. 1.9% in 2016 (2.3% in March). This figure considers the poor figure for first-quarter activity, which was related to weak investment in energy and poor external sector performance. In any case, services and labor market indicators show a recovering trend and, in the baseline scenario, the economy resumes higher growth rates in 2017. The baseline scenario also assumes that the Chinese economy will be able to go ahead with its adjustment process without significantly compromising economic growth. However, this process will not be without difficulties, which will probably result in outbreaks of volatility over the coming years. This, coupled with the process of normalization of monetary policy in the U.S. and the uncertainties associated with its effects, will imply that external financial conditions will tighten further over the projection horizon.

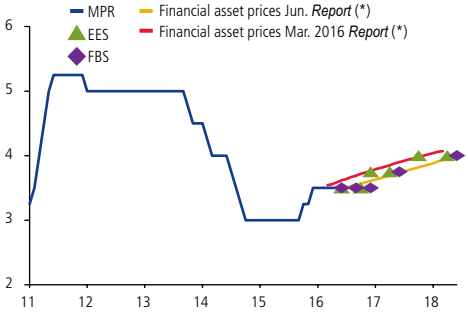
The terms of trade (ToT) will remain below their five-year average. They have improved somewhat from March, however, thanks to higher prices of non-copper exports—including salmon and some agricultural goods (figure V.5). The copper price is marginally revised downward considering its recent behavior, to averages of US$2.15 per pound in 2016 and US$2.25 in 2017. The oil price picked up in recent months, partly due to a tighter market balance. The projections that are drawn from the futures prices of the 10 working days before the closing of this *Report* point to average prices for WTI and Brent in the range of US$45 to US$52 per barrel in 2016-2017. The external price index (EPI) will drop somewhat less in 2016: 4% (about 6% in March) and rise 0.6% annually in 2017 (1% in March). These revisions are motivated in part by higher external inflation due to increased crude oil prices.

FIGURE V.5
Terms of trade w/o copper price
(index, 2008=100)



Source: Central Bank of Chile.

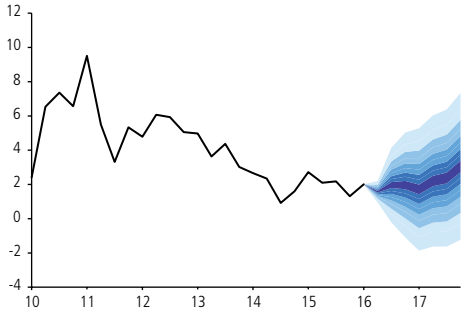
FIGURE V.6
MPR and expectations
(percent)



(*) Built using interest rates on swap contracts up to 10 years.

Source: Central Bank of Chile.

FIGURE V.7
Quarterly GDP growth scenarios (*)
(annual change, percent)

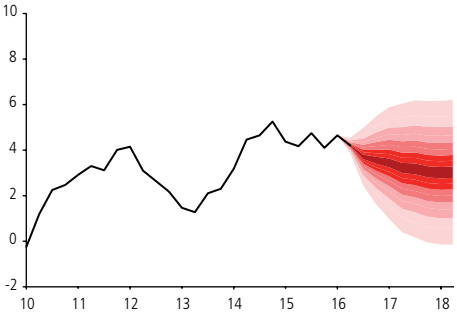


(*) The figure shows the confidence interval of the baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. These intervals summarize the risks on growth as assessed by the Board. The baseline scenario uses as a working assumption that the MPR will follow a trajectory that is similar to the one that can be deduced from financial asset prices at the statistical closing of this *Report*.

Source: Central Bank of Chile.

[3]/ This measure adjusts the values of mining exports and fuel imports taking the deviations of the prices of copper and oil away from their long-term trends into account. It does the same with the rents and transfers associated with copper exports. Other exports and imports are valued using current prices. It does not correct any possible changes in quantities exported or imported due to movements in the prices of copper or oil. Estimates consider a long-term copper price of US$2,7 per pound and of oil of US$70 per barrel (box V.2, *Monetary Policy Report,* September 2012; and box V.1, *Monetary Policy Report,* December 2015).

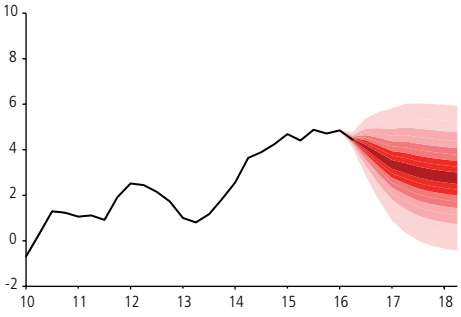
FIGURE V.8
CPI inflation forecast (*)
(annual change, percent)



(*) The figure shows the confidence interval of the baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. The baseline scenario uses as a working assumption that the MPR will follow a trajectory that is similar to the one that can be deduced from financial asset prices at the statistical closing of this *Report*.

Source: Central Bank of Chile.

FIGURE V.9
CPIEFE inflation forecast (*)
(annual change, percent)



(*) The figure shows the confidence interval of the baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. The baseline scenario uses as a working assumption that the MPR will follow a trajectory that is similar to the one that can be deduced from financial asset prices at the statistical closing of this *Report*.

Source: Central Bank of Chile.

The baseline scenario uses as a working assumption that the MPR will follow a trajectory that is similar to the one that can be deduced from the financial asset prices at the statistical closing of this *Report* (figure V.6). This implies that monetary policy will continue to be normalized within the projection horizon, in line with the foreseen evolution of the economy at that horizon, albeit at a slower pace than thought in March. Under this assumption, monetary policy will continue to provide a boost to the economy.

As always, monetary policy implementation will be contingent on the effects of incoming information on the projected inflation dynamics. Accordingly, news pointing in either direction will prompt the necessary adjustments to monetary policy.

Internationally, the risks are very similar to those discussed in March. Still critical is the Fed's decision on the path it will ultimately take to continue its process of monetary policy normalization, as are the risks surrounding the Chinese situation, both because of its effects on global growth and because it may trigger new episodes of financial volatility. Latin America poses significant risks to Chile too, as the region provides important trade partners and investment destinations, but also because of its effects on external financial conditions. Macroeconomic challenges are compounded by complex political conditions. Other factors that may also cause or intensify episodes of financial volatility include the upcoming referendum in the UK and a number of electoral processes around the world that could result in shifts towards more protectionist policies. Overall, the consolidation of economic growth in Europe and the U.S. might help boost the world economy. There is also the evolution of the oil price with its effects on domestic and world inflation and its implications on global growth.

At the local level, the risks identified in previous quarters remain. On the inflation side, its short-term evolution is still closely linked to the exchange rate and thus to the risks coming from abroad. About economic activity, a scenario where the labor market deteriorates more sharply or the world economy takes a more adverse configuration could result in the economy growing less than forecast. Conversely, if the labor market makes smaller adjustments and/or the external environment remains relatively calm, then economic activity would possibly perform better than expected. This could manifest in stronger consumption growth and/or a more favorable performance of investment.

Upon evaluating these risks, the Board estimates that the risk balance is unbiased for both inflation and output (figures V.7, V.8 and V.9).

BOX V.1
EVIDENCE ON THE PHILLIPS CURVE FOR CHILE

The empirical evidence for Chile and the world coincides in that, at least in the short term, there is a positive relationship between output and inflation, which is usually conceptualized through the so-called Phillips Curve. Quantitatively establishing the strength of this relationship is clearly important for monetary policy. This box reviews estimates of the Phillips Curve for Chile and the world. The conclusion is that, in general, the estimates confirm the correlation, but find that the relationship is not strong.

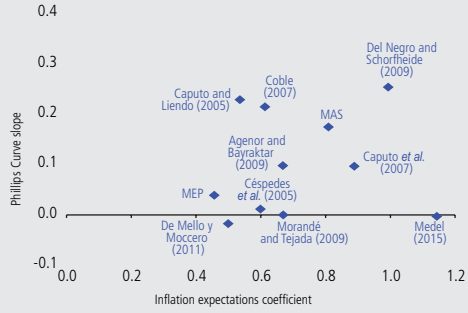
In the New Keynesian analytical framework used by most central banks,[1]/ the relationship between the inflation rate and output is rationalized through the so-called New Keynesian Phillips Curve[2]/. In the simplest version, inflation (π) is determined by the output level (y) and inflation expectations (π^e). More formally, this relationship can be expressed through the following equation[3]/:

$$(1) \qquad \pi_t = \psi y_t + \gamma \pi_t^e,$$

In this context, the relationship between inflation and output is governed by the parameters ψ and γ. The former, known as the slope of the Phillips Curve, regulates the strength of the relationship between current output and inflation. The latter determines the impact of expected inflation on current inflation and, through that, of future output on current inflation.

Consistent with international practice, the Phillips Curve plays an important role in two of the main models used by the Central Bank of Chile to make forecasts and to support policy decisions. The Structural Forecast Model explicitly includes a Phillips Curve with inflation expectations in the equations[4]/. Here, the estimated coefficient for the slope is 0.04, and the coefficient regulating the impact of expectations is 0.46. These magnitudes are similar to the findings of several studies for Chile and also similar to the values estimated for other countries and used by their respective central banks. With regard to the evidence for Chile, despite differences in the estimation methods, empirical specification and sample period, various studies suggest that the magnitude of the relation between inflation and output is relatively low (average of 0.1) and smaller than the inflation expectations coefficient, which is around 0.65 (figure V.10). This result is not exclusive to Chile: similar magnitudes are found in different estimations carried out by a wide range of economies. That is, the Chilean evidence and the international evidence both suggest that the coefficient relating changes in output and changes in inflation is slightly positive[5]/.

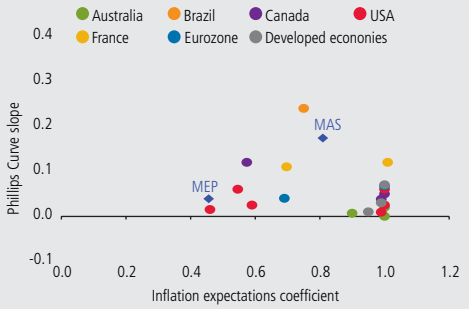
FIGURE V.10
Estimation of the Phillips Curve for Chile (1)(2)



(1) The slope of the Phillips Curve is defined as the estimated coefficient of the impact of the output gap (marginal costs) on quarterly inflation.
(2) Coefficients of the relationship between quarterly inflation and the GDP gap, except in Caputo *et al.* (2007), Céspedes *et al.* (2005) and the Analysis and Simulations Model, which show the marginal cost coefficient in the Phillips Curve.

[1]/ See, for example, Galí and Gertler (1999).
[2]/ The Phillips Curve is named for A. W. Phillips, a New Zealand who in 1958 empirically documented the negative relationship between unemployment and wage inflation in the United Kingdom from 1861 to 1957. For more details on the history of the Phillips Curve, see Fuhrer *et al.* (2009) and Gordon (2011).
[3]/ In practice, the presence of indexation means that the empirical analysis incorporates the dependence of current inflation on past inflation. In the case of open economies, the estimation usually also includes some measure of the relative inflation of goods imports.
[4]/ The Phillips Curve in the Structural Forecast Model incorporates the direct effect of trading partners' output, as well as other variables traditionally considered in the literature, in line with the discussion in footnote 3.
[5]/ These estimations are not without critics. For more details, see Mavroeidis *et al.* (2014) and Contreras *et al.* (2016).

Estimation of the Phillips Curve for the world (3)(4)



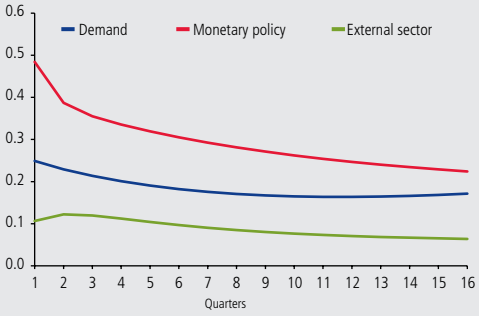
(3) The slope of the Phillips Curve is defined as the estimated coefficient of the impact of the output gap (marginal costs) on quarterly inflation.

(4) For details on the country estimations, see Contreras *et al.* (2016).

Source: Central Bank of Chile.

The second key model used by the Central Bank of Chile is the Analysis and Simulations Model[6]/. This model does not incorporate a Phillips Curve as such, but the different elements that make up the curve generate a very similar relation between inflation and output as that described above (figure V.11)[7]/. Although the exact relationship depends on the particular type of shock being analyzed, the coefficient converges to values near or under 0.1–0.2 in a one-year horizon for local and external demand shocks. That is, the inflation response is significantly smaller than the output gap response, which is consistent with the coefficient in the first model.

FIGURE V.11
Elasticity of inflation to the GDP gap in Chile (1)(2)



(1) The GDP gap is defined as the deviation in the GDP level from its steady-state growth path. Inflation is defined as deviation from the target.
(2) Demand: Average of shocks to government spending, consumer preferences, and investment efficiency. Monetary policy: Shock to the monetary policy rate. External sector: Shock to trading partners' GDP.

Source: Central Bank of Chile.

The parameter estimation of the Phillips Curve is subject to a number of difficulties. Since it is not a structural relationship, but rather an equilibrium result, the empirical estimation must be constantly revised, since structural changes in the economy will be reflected in changes in the estimated parameters. One example is the so-called lost inflation observed in the United States. According to existing estimates of the Phillips Curve, the lower output following the 2008 crisis should have generated a drop in inflation that is not seen in the data. One possible explanation is the "flattening" of the Phillips Curve[8]/, that is, the "lost inflation" could be explained by a reduction in the slope of the Phillips Curve and an increase in the inflation expectations coefficient. Céspedes *et al.* (2005) document a similar phenomenon for Chile, with an increase in the importance of inflation expectations after 2000. This is consistent with the convergence of inflation to the long-term target after the disinflation of the 1990s, and it highlights the importance of the Central Bank's credibility for anchoring information. Naudon and Vial (2016) show that the Phillips Curve remains an important empirical instrument for understanding the behavior of inflation in Chile in the post-2000 period, with changes in the estimated parameters that reflect the new conditions facing the Chilean economy.

To conclude, output adjustments have a direct and significant impact on inflation, with limited elasticity. Other variables, such as inflation expectations and the exchange rate, also play a key role, which is why they are included in the Phillips Curves used by the Central Bank. Additionally, both the theory and the evidence suggest that the Phillips Curve parameters change over time, in response to changes in the structure of the economy and current environment. Therefore, the Central Bank periodically revises its models, to ensure that the estimations used for forecasting and analysis incorporate all the relevant information.

[6]/ See Medina and Soto (2007).
[7]/ Measured as the ratio between the accumulated impulse response functions for the two variables. For example, at the end of four quarters after an external demand shock, the price level would have increased one tenth of the size of the output increase.

[8]/ See, for example, Blanchard *et al.* (2015), Bernanke (2010) and IMF (2013).

GLOSSARY

CDS: Credit default swap. A derivative instrument that provides insurance against the credit risk of the issuer of a given underlying sovereign or corporate bond. The premium implicit in the cost of this coverage (the CDS spread) is commonly used as an indicator of sovereign or corporate risk.

Commodity exporters: Australia, Canada and New Zealand.

CPIEFE: CPI excluding food and energy prices, leaving 72% of the total CPI basket.

Emerging Market Bond Index (EMBI): The main measure of country risk, calculated by J.P. Morgan as the difference between the interest rate on dollar-denominated bonds issued by the government or banks and corporations in emerging economies, and the interest rate on U.S. Treasury bonds, which are considered risk free.

EPI: External price index for Chile, calculated using the wholesale price index (WPI) —or the CPI if the WPI is not available—expressed in dollars, of the main trading partners included in the MER.

Excess capacity: A broader set of indicators for measuring inflationary pressures, which includes not only the output gap, but also labor market conditions, electricity consumption and installed capacity utilization in firms.

GDP, natural resources: Includes the following sectors: electricity, gas and water (EGW); mining; and fishing.

GDP, other: Includes the following sectors: agriculture, livestock and forestry; manufacturing; construction; trade; transport and communications; financial and business services; residential property; personal services; and public administration.

Growth of trading partners: The growth of Chile's main trading partners, weighted by their share in total exports over two moving years. The countries included are the destination for 93% of total exports, on average, for the 1990–2015 period.

IVUM: Import price index.

Latin America: Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela.

MER-X: The MER excluding the U.S. dollar.

MER: Multilateral exchange rate. A measure of the nominal value of the peso against a broad basket of currencies, weighted as for the RER. For 2016, the following countries are included: Argentina, Belgium, Bolivia, Brazil, Canada, China, Colombia, France, Germany, India, Italy, Japan, Mexico, Netherlands, Paraguay, Peru, South Korea, Spain, Thailand, United Kingdom and United States.

Output gap: A key indicator for measuring inflationary pressures, defined as the difference between the economy's actual output and its current production capacity in non-natural-resource sectors (other GDP).

Potential GDP: The economy's current production capacity. Also called short-term potential GDP.

RER: Real exchange rate. A measure of the real value of the peso against a basket of currencies, which includes the same countries used to calculate the MER.

Rest of Asia: Hong Kong, Indonesia, Malaysia, Philippines, South Korea, Singapore, Taiwan and Thailand.

Trend GDP: The medium-term growth potential of the Chilean economy, where the effect of shocks that usually alter production capacity in the short term have dissipated and the productive factors are thus used normally. In this context, growth depends on the structural characteristics of the economy and the average growth of productivity, variables that, in turn, determine the growth of productive factors.

Unit labor costs (CLU): Labor costs adjusted for the productivity of wage employment.

VIX: Stock volatility index calculated by the Chicago Board of Trade, and the most commonly used measure of general market volatility at the international level. Measures the implicit volatility in S&P 500 options contracts.

World growth at market exchange rate: Each country is weighted according to its GDP in dollars, published in the IMF *World Economic Outlook* (WEO, April 2016). The sample of countries used in the calculation represent around 90% of world growth. For the remaining 10%, average growth is estimated at 1.8% for the period 2016–2017.

World growth: World growth: Regional growth weighted by its share in world GDP at PPP, published in the IMF *World Economic Outlook* (WEO, April 2016). World growth forecasts for the period 2016–2017 are calculated from a sample of countries that represent about 86% of world GDP. For the remaining 14%, average growth is estimated at 3.4% for 2016–2017.

ABBREVIATIONS

BCP: Central Bank bonds denominated in pesos.

BCU: Central Bank indexed bonds denominated in UFs.

BLS: Bank Lending Survey.

CPIEFE: Consumer price index excluding food and energy.

EES: Economic Expectations Survey.

FBS: Financial Brokers Survey.

IMCE: Monthly Business Confidence Index.

IPEC: Consumer Confidence Index.

MPR: Monetary policy rate.

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

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