MONETARY POLICY REPORT

December 2018

BANCO CENTRAL DE CHILE

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*/ This *Report* takes into account the Financial Brokers Survey published on Thursday, 29 November; sectoral data published by the INE on Friday, 30 November; and the monetary policy decision announced on 4 December. For all other purposes, the statistical cutoff date of the *Monetary Policy Report* was 28 November 2018.

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 useful 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, aggregate demand and output, and recent price and cost developments. The last chapter presents the most probable path for monetary policy in the next two years and describes sensitivity scenarios to show how the monetary policy reaction could change in the face of particular changes in the baseline scenario. The last chapter summarizes the results of this analysis in terms of the outlook and risks for 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 04 December 2018 for presentation to the Senate on 05 December 2018.

The Board

SUMMARY

After having stood below 2% almost all the second half of 2017, annual inflation has been rising this year, to around 3% in recent months. Although part of this increase owes to the more volatile components of the CPI and the depreciation of the peso, inflation of the items in the basket that are more activity-gap sensitive—i.e. services and non-tradables—has increased steadily over the course of 2018. This is in line with the growth rate recovery that began more than a year ago. Although this process took a pause in the third quarter, due to particular factors that affected mining and manufacturing, a rebound is expected for the fourth-quarter. The economy is set to grow 4% this year and between 3.25% and 4.25% in 2019, at the same time that headline and core inflation converge to 3% within the policy horizon. Key factors in this perspective are the dynamism observed in investment and a view of the labor market—once all the available information has been factored in and the impact of the significant immigrant flow of recent years has been assessed—whose dynamism is consistent with a better behavior of the activity. The evolution of macroeconomic conditions makes it necessary to reduce the monetary stimulus, a process that will continue to be implemented gradually and cautiously, in a context where the uncertainty coming from abroad is still high.

As had been anticipated in several previous *Monetary Policy Reports,* in the third quarter GDP saw a slower annual growth rate compared with the first half of the year. This is consistent with a scenario where the economy grows closer to its potential—estimated in the 3% to 3.5% range—given the progress made in the process of closing capacity gaps, that factors favoring growth in the first half are no longer present and that there is a significant comparison base effect in the second half. In any case, the slowdown of the last quarter was sharper than expected, explained by the worsened performance of mining and manufacturing. Mining was affected by difficulties in the operations at some sites; manufacturing, on the other hand, by a significant and unexpected calendar effect in September because of a string of national holidays. After the statistical cutoff date, October sectoral data was made available that confirmed the transitory nature of the calendar effect in manufacturing. On the domestic expenditure side, the greater dynamism of investment—especially in machinery and equipment—stands out, which has compensated for some slowdown in consumption.

Regarding projections, after growing 2.8% in the third quarter, the economy is expected to accumulate a 4% growth the full year. This figure—which considers October information published at the statistical closing of this *Report*—marks the bottom of the range estimated in September (4-4.5%), mainly due to deteriorated mining activity.

ECONOMIC GROWTH AND CURRENT ACCOUNT

	2017	2018 (f)	2019 (f)	2020 (f)
	(annual change. percent)			
GDP	1.5	4.0	3.25-4.25	2.75-3.75
National income	2.8	3.3	4.0	3.3
Domestic demand	3.1	4.7	3.8	3.3
Domestic demand (w/o inventory change)	1.8	4.0	3.9	3.6
Gross fixed capital formation	-1.1	5.5	6.0	3.9
Total consumption	2.7	3.6	3.3	3.5
Goods and services exports	-0.9	4.8	4.1	2.8
Goods and services imports	4.7	7.3	5.0	3.0
Current account (% of GDP)	-1.5	-2.8	-2.7	-2.8
Gross national saving (% of GDP)	20.6	20.2	20.9	20.8
Gross national investment (% of GDP)	22.1	23.0	23.6	23.5
GFCF (% of nominal GDP)	21.6	22.0	22.6	22.8
GFCF (% of real GDP)	21.6	21.9	22.4	22.6
	(US$ million)			
Current account	-4,146	-8,400	-8,300	-8,700
Trade balance	7,922	6,100	6,000	4,900
Exports	69,230	75,200	78,100	81,400
Imports	-61,308	-69,100	-72,100	-76,500
Services	-3,059	-4,200	-4,300	-4,100
Rent	-10,802	-13,300	-11,900	-11,400
Current transfers	1,793	3,000	1,900	1,900

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

For the next two years, the economy is still forecast to grow near its potential, which will gradually approach trend growth. Thus, the ranges projected in September are maintained: 3.25%–4.25% in 2019; 2.75%–3.75% in 2020. For spending, a somewhat different composition is foreseen, with investment growing more and consumption somewhat less. About the former, several antecedents lead to foresee it growing quite faster than was estimated in September. These include the significant upward revisions in the Capital Goods Corporation (CBC)'s Project Survey, the behavior of capital goods imports, the evolution of the more expansionary credit supply and demand conditions (Banking Credit Survey) and the qualitative information in our *Business Perceptions Report* (IPN). Thus, for 2019, growth in Gross Fixed Capital Formation is risen to 6% (4.5% in September), while for 2020 near 4% figures are kept.

Consumption has lost some dynamism most recently, but is projected to resume growth in line with GDP growth. This is supported by growth in the wage bill, measured using INE's revised salary data, the evolution of hours habitually worked and employment growth considering the immigration of recent years. Moreover, imports of consumer goods remain high. On the fiscal front, a working assumption is that in 2019 the economy will receive a boost consistent with the approved budget; from then onwards, the structural deficit will follow the path of gradual descent defined by the authority.

Thus, after a pause in the third quarter this year, partial fourth-quarter data point to a resumption of the process of activity gap closing. This relies on, among other factors, the actual and expected evolution of expenditure, particularly investment. Regarding the labor market, the lag in employment with respect to activity is smaller than considered previously. This, because if the impact of the significant immigration flow is considered, since 2016 employment has grown more than informed by the employment surveys. However, fully absorbing the labor supply increase produced by immigration may take a longer, so this higher employment growth does not imply a tighter labor market. Actually, wage indicators—both the INE's revised figures and the administrative records—show lower growth rates consistent with this development, a vision that coincides with the IPN. As for its effects on inflation, immigration generates a bounded increase, because the effect of higher consumption spending dominates over that of lower wage pressures (box III.3).

Internationally, as has been the trend of our latest *Reports*, the baseline scenario estimates that in the next three years the momentum that Chile will receive will tend to dwindle though it will still be positive. On the one hand, after reaching the peak of this growth cycle in 2017 and 2018, in the period 2019-2020 the rate of expansion of our trading partners will decline. On the other hand, in the last few quarters the financial conditions relevant for the emerging economies began to normalize, a process that will continue into the next two years. The baseline scenario assumes that, notwithstanding new volatility episodes in international financial markets, they will not escalate to a widespread negative shock to emerging economies. Finally, the recent drop in the oil price results in relative stability of the terms of trade in 2019 and 2020. This considers that average copper prices will be similar to September's: US$2.85 in 2019 and US$2.80 in 2020, and that Brent-WTI oil prices will average around US$60 in that same period.

Domestic financial conditions are still favorable. On the one hand, longer-term interest rates and local risk indicators have remained stable, while shorter rates have risen in line with developments in monetary policy. In turn, the cost of credit is low and lending shows some acceleration —especially commercial and consumer loans—, in a context where of lending standards seem to have relaxed. The stability of the domestic financial markets contrasts with the situation in other emerging countries, supported, among others, by the buffer role of the floating exchange rate and the substantial availability of domestic financing. Thus, the exchange rate has shown significant swings in recent months, ranging between Ch$660 and 690 most of the time. Compared to November 2017, the peso has depreciated close to 7% against the dollar, consistent with the strengthening of the U.S. currency globally. The real exchange rate is at levels close to its average of the last 15 to 20 years. Our working assumption is that it will oscillate around these numbers throughout the projection horizon.

Regarding inflation, the sharp drop in fuel prices reduces the CPI inflation projection for this year and next, to close 2018 and 2019 somewhat below 3%. By 2020, once these effects vanish, the CPI should be around 3%. In turn, the CPIEFE would approach 3% in the first half of 2019, to then remain in the neighborhood until the end of the projection horizon.

As for monetary policy, the Board continues to consider that the evolution of macroeconomic conditions makes it necessary to reduce the monetary stimulus. Key to this judgment is the evaluation of the size of capacity gaps compared to the magnitude of the monetary stimulus: while the former have narrowed—considering all the uncertainty surrounding its measurement and absolute value—,monetary policy remains highly expansionary. As a working assumption, the baseline scenario estimates that the MPR will be further increased in the coming months and that at the first half of 2020 it will stand near its neutral level: between 4% and 4.5%. As always, the implementation of monetary policy will be contingent to the effects of incoming information on projected inflation dynamics. Thus, new data in either direction will prompt the necessary adjustments in monetary policy.

As usual, there are internal and external elements that could modify these projections. The same as in the last few quarters, the balance of risks of the external scenario relevant for Chile remains biased downward. The main risk continues to be an abrupt deterioration of financial conditions for emerging economies due to some of various elements. On the one hand, conditions in the U.S. remain relevant, in terms of both the evolution of inflation, as well as

INTERNATIONAL BASELINE SCENARIO ASSUMPTIONS

	Avg. 00 - 07	Avg. 10 - 16	2017 (e)	2018 (f)	2019 (f)	2020 (f)
	(annual change. percent)					
Terms of trade	8.2	1.1	9.0	-1.8	1.1	-0.8
Trading partners GDP (*)	3.6	4.0	3.7	3.6	3.5	3.3
World GDP at PPP (*)	4.5	3.9	3.7	3.7	3.5	3.3
World GDP at market exchange rate (*)	3.2	3.1	3.2	3.1	2.8	2.7
Developed economies' GDP at PPP (*)	2.4	1.8	2.2	2.3	2.0	1.6
Emerging economies' GDP at PPP (*)	6.5	5.2	5.1	4.9	4.8	4.6
External prices (in US$)	4.6	0.4	3.6	2.6	-0.2	3.6
	(levels)					
LME copper price (US¢/lb)	154	316	280	295	285	280
WTI oil price (US$/barrel)	44	79	51	65	55	55
Brent oil price (US$/barrel)	42	87	54	72	64	63
Gasoline parity price (US$/$m^3$) (*)	366	657	466	546	449	457
Libor US$ (nominal, 90 days)	3.6	0.4	1.3	2.3	3.4	3.6

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

Source: Central Bank of Chile.

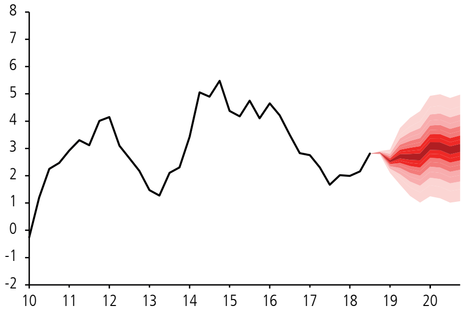
INFLATION

	2017	2018 (f)	2019 (f)	2020 (f)
	(annual change. percent)			
Average CPI inflation	2.2	2.5	2.7	3.0
December CPI inflation	2.3	2.7	2.9	3.0
CPI inflation in around 2 years (*)				3.0
Average CPIEFE inflation	2.0	1.9	3.0	3.0
December CPIEFE inflation	1.9	2.5	3.1	3.0
CPIEFE inflation in around 2 years (*)				3.0

(f) Forecast.
(*) Corresponds to inflation forecast for the fourth quarter of 2020.

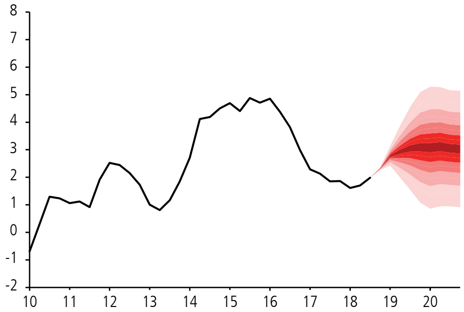
Source: Central Bank of Chile.

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 are calculated using the RMSE of the MAS-MEP models for the 2009-2017 average and summarize the risks on future inflation as assessed by the Board. As a working assumption, the baseline scenario estimates that the MPR will be further increased in the coming months and that at the first half of 2020 it will stand near its neutral level: between 4% and 4.5%.
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 are calculated using the RMSE of the MAS-MEP models for the 2009-2017 average and summarize the risks on future inflation as assessed by the Board. As a working assumption, the baseline scenario estimates that the MPR will be further increased in the coming months and that at the first half of 2020 it will stand near its neutral level: between 4% and 4.5%.

Source: Central Bank of Chile.

its monetary policy and its outlook for activity. On the other hand, important geopolitical risks persist. The trade conflict has tended to refocus on the United States and China, in a context where the Chinese authorities have activated various stimulus measures, but financial risks remain, waiting to the rebalancing of their economies to materialize. In Europe, the uncertainty surrounding Brexit and Italy's complex situation has increased. Finally, although it is estimated that the lower price of oil responds mainly to supply-side factors—which reduces inflationary pressures in the short term—it is yet to be established how much of this could be reflecting more permanent demand-side factors. In recent months there has been a significant adjustment in financial assets prices in the developed world that could be indicating a change in risk premiums, consistent with the long-standing scenario of uncertainty (box I.1).

At home, the Board estimates that risks for activity are unbiased. The economy has slowed down since early in the year, a long expected development. Nonetheless, it is possible for this slowdown to become somewhat more persistent if consumption fails to regain the expected dynamism. Meanwhile, although concentrated in the mining sector, investment has recovered significantly. It may happen that the revisions to the CBC's Project Survey couple with projects identified by other surveys, thus further expanding investment.

Regarding inflation, the Board estimates that risks are unbiased. Different indicators point to an economy that will continue to consolidate its process of closing capacity gaps. Inflation has increased through 2018 and both forecast and expected inflation two years ahead are aligned with the policy target.

Summing up, the Board continues to estimate that capacity gaps have been narrowing in the last few quarters and will continue to do so for two more years. In these circumstances, for inflation to converge to the target in the policy horizon, it is necessary to continue reducing the monetary stimulus in the coming months. Accordingly, the Board reaffirms its commitment to conduct monetary policy with flexibility, so that projected inflation stands at 3% over the two-year horizon.

BOX
CHANGES IN INFLATION DYNAMICS AND MONETARY POLICY

The relationship between economic activity and inflation plays a key role for monetary policy. Output growth above (below) potential—that is, a positive (negative) output gap—leads to an increase (decrease) in inflationary pressures that can affect the behavior of prices and the achievement of the inflation target in a two-year horizon. While this theoretical relationship underlies the majority of central bank forecasting models, the experience of the last decade suggests that the link has weakened to some degree. After the sharp contraction in world growth deriving from the 2008 global financial crisis, there has been a recovery in world GDP, and the gaps have been closing in the developed economies. However, this has not produced the expected correlation in inflation in the developed world, and the recovery of inflation has been slow. How to explain inflation's apparent lack of sensitivity has become an important theoretical and empirical challenge that is attracting a lot of attention in academic and political circles.

As part of its effort to improve our understanding of the local and global economic environment, the Central Bank dedicated its Twenty-Second Annual Conference to this issue. Thus, on 25–26 October, a group of high-level experts met to discuss new evidence on the relationship between inflation and output and the implications for monetary policy[1]/.

The conclusions of the papers presented at the Conference point to two major factors that must be taken into account when evaluating how the relationship between output and inflation has changed. First, there are structural causes underlying the change. A number of the presentations emphasized that the consolidation of central bank credibility has weakened the empirical relationship between output and inflation[2]/. Others highlighted how globalization has increased the importance of world inflation for domestic inflation dynamics, weakening its response to local output[3]/. This raises an additional challenge for central banks, which must take into account the increasing impact of external factors.

Second, measurement problems can lead to misinterpretations of how the relationship has evolved. On the one hand, output is not the only factor affecting inflation. Rather, there are also supply factors that, if dominant in the economic cycle, can lead to the erroneous conclusion that the output-inflation relationship has strengthened[4]/. On the other hand, there is no single way to measure inflation and output. In one presentation using data for the United States, the authors argued that different output and inflation measures undermine the conclusion that the output-inflation relationship has weakened, although that hypothesis cannot be fully discarded[5]/. Finally, some authors held that when extreme events are isolated, the relationship does not appear to have changed significantly[6]/. In contrast, other authors argued that the link between output and wages has, in fact, weakened substantially in the United States and the Eurozone, which in principle should have an impact on inflation dynamics[7]/.

Evidence and implications for Chile

Estimates of the correlation between the output gap and inflation in Chile show that it has fluctuated somewhat over the course of the last twelve years and that the current level is around the average of the last decade[8]/. (figure 1). Furthermore, the size of the coefficient is in line with estimates for a panel of countries[9]/. In sum, over and above whether the correlation is high or low, the evidence shows that it has not changed significantly in recent years, and the strength of the relationship is not very different from other economies.

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[1]/ Material from the Conference, including the papers presented and live-streaming of the event, are available on the Central Bank's website: http://www.bcentral.cl/en/web/guest/-/changing-inflation-dynamics-evolving-monetary-policy.

[2]/ See Jordá and Necchio (2018).

[3]/ Gilchrist and Zakrasjek (2018).

[4]/ Hobijn (2018).

[5]/ Stock and Watson (2018).

[6]/ Ball and Mazumder (2018).

[7]/ Galí and Gambetti (2018); Bobeica, Ciccarelli, and Vansteenkist (2018).

[8]/ Estimates made using the Central Bank of Chile's structural forecasting model (SFM). See the *Monetary Policy Report,* September 2015.

[9]/ Jordá and Necchio (2018).

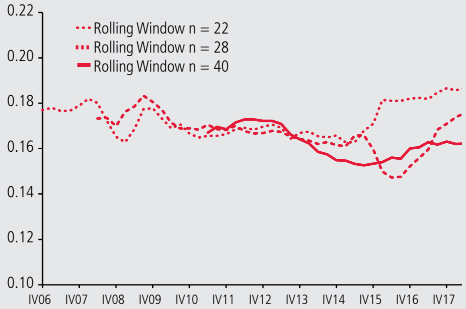
In any case, changes in inflation dynamics at the global level highlight the importance of inflation expectations. Thus, one important lesson is that policy tools aimed at anchoring expectations, such as central bank communications, are increasingly important and provide a key complement to monetary policy decisions. Here, the current monetary policy framework in Chile, based on a consolidated inflation-targeting regime and transparent monetary policy, is seen to be an appropriate choice, as proven by the fact that inflation expectations have remained consistent with the target most of the time since the implementation of a monetary policy based on medium-term inflation targets in the early 2000s. This has been the case despite sharp fluctuations in contemporaneous inflation and in inflation expectations at the shortest horizons, in response to various shocks affecting the Chilean economy, including exchange rate movements and food and energy price fluctuations, which tend to dominate changes in short-term inflation.

At the same time, the Bank's practices recognize and try to alleviate measurement problems that could hinder a more precise estimate of the output gap and inflation. On the output side, the short- and medium-term analysis includes output aggregates excluding the mining sector, as mining is believed to have less of an impact on the output gap that explains inflation[10]/. Moreover, the Bank's analysis includes not only the output gap per se, but also a broader set of indicators of excess capacity. For inflation, the Bank looks at various measures in an effort to isolate the effects of more volatile prices, whose movements do not necessarily respond to the economic cycle[11]/. The usual example is the CPIEFE, which excludes food and energy prices from the inflation measure.

In sum, the discussions held at the Central Bank of Chile's Twenty-Second Annual Conference suggest that the Bank's policy framework and analytical instruments provide a solid basis for facing the challenges of a possible change in the relationship between output and inflation. At the same time, because central banks operate in a changing environment, the analytical and empirical tools used in the forecasting and decisionmaking processes must be continually revised and updated to ensure an effective monetary policy conduct.

FIGURE 1

Rolling window estimates of the contemporaneous reaction of inflation to changes in the output gap (*)



(*) Quarterly series.

Source: Central Bank of Chile.

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[10]/ *Monetary Policy Report*, December 2017, box III.1.
[11]/ *Monetary Policy Report*, March 2015, box V.1.

MONETARY POLICY DECISIONS IN THE LAST THREE MONTHS

SEPTEMBER MEETING

The September *Monetary Policy Report* revealed that economic growth had been higher than forecast over the course of the year. Moreover, since the June *Report*, there had been positive surprises in a large number of economic sectors and spending components, potential growth had been revised upward, and the output gap was expected to close more quickly. There was still excess capacity, as suggested by the capacity utilization rate and core inflation under 2%. In this scenario, the Board revised the GDP growth range for 2018 upward to 4.0–4.5% (versus 3.25–4.25% in June), though this still implied lower annual growth rates in the second half than in the first. For 2019 and 2020, the forecast ranges were similar to the June *Report*, with GDP growth in the range of 3.25 to 4.25% in 2019 and 2.75 to 3.75% in 2020. The assumptions underlying these forecasts included a somewhat less favorable external scenario than in the last *Report,* a monetary policy rate (MPR) below neutral for several quarters, a higher growth rate for investment than GDP, the absence of macroeconomic imbalances, and economic growth around potential in 2020.

The Chilean economy would receive a more moderate external boost than estimated in June, largely due to lower terms of trade. While there had been only small adjustments to the forecasts for world growth and the growth of trading partners, the risks associated with the external scenario had increased substantially. The trade conflict between the United States and China had intensified, which, together with the cyclical phase of the U.S. economy and the difference vis-à-vis other developed economies, had triggered a global appreciation of the dollar and a drop in commodity prices. All of these trends had a bigger impact on emerging economies perceived as more vulnerable.

Domestically, annual CPIEFE inflation remained just under 2%. CPI inflation had increased, driven by the more volatile prices in the basket, with no major surprises relative to the forecast. In the baseline scenario, the headline inflation forecast was revised upward, especially in the short term, mainly due to the peso depreciation and consistent with an economy that would eliminate excess capacity within the policy horizon.

At the September meeting, all the Board Members agreed that the analysis contained in the *Monetary Policy Report* and the data available since the statistical cutoff date indicated that the need to maintain the current monetary stimulus had lessened, based on the evolution of macroeconomic conditions and the convergence of inflation to 3% within the policy horizon. Thus, the policy options analyzed were (i) to begin withdrawing the monetary stimulus and (ii) to hold the MPR at 2.5%.

With regard to the first option, the main argument in favor was that the evolution of macroeconomic conditions and the immediate outlook were sufficient to push inflation up to 3%, which justified the initiation of monetary policy normalization in the short term. In addition, delaying the start of this process would force a faster implementation, leaving little room to pause to allow the policy to decant while waiting for evidence to accumulate. The main argument against this option was that the market did not expect the MPR to be raised at this meeting, which went against desirable practices of communicating policy and establishing expectations. While surprising the market was certainly an option, one that could heighten the effectiveness of the adjustment, it was important to clarify the foundations and timing of the adjustment for the market. In that sense, there were a number of factors that could interfere with the market's understanding. First, there was a significant gap between the diagnosis contained in the *Report* that would be published the next day and current market perceptions. Second, the recent exchange rate increase could cause confusion, in the sense that an increase in the MPR could be interpreted as a response to the peso depreciation rather than to the inflation determinants that the Board prioritizes in its decisionmaking. Third, core inflation was still under 2%, which could raise doubts about the immediate need for an adjustment.

With regard to the second option, the main argument in favor of holding the MPR at its current level while communicating that the monetary stimulus withdrawal process would begin in the coming months was that it would avoid surprising the market. Furthermore, to the extent that macroeconomic conditions remained stable, it was increasingly probable that the market would anticipate the initiation of the withdrawal of the monetary stimulus. Holding the MPR would also allow the collection of additional high-frequency data prior to implementing this next step. This argument seemed weak, however, given the market's adverse interpretation of recent news. There was always the option of waiting for more information to support the diagnosis. Finally, the domestic risks were limited, while the external risks would be in place for some time. The Board voted unanimously to hold the MPR at 2.5%.

OCTOBER MEETING

For the October meeting, the data released since the publication of the September *Monetary Policy Report* were consistent with the baseline scenario presented therein.

Internationally, the main news had to do with the consolidation of a scenario in which the U.S. economy diverged from other developed economies, and market expectations now indicated a faster monetary policy adjustment in the United States. The risks associated with the trade war had been increasingly limited to the United States and China, and market expectations had improved in this respect since the last meeting, as evidenced by higher commodity prices. Concerns about Europe had intensified, in response to both the difficulties surrounding Brexit and the heightened political uncertainty in the region. In recent weeks, the external scenario seemed less adverse for the emerging world. Recent events centered on volatilities associated with specific countries facing idiosyncratic issues rather than a negative shock affecting emerging economies as a whole. Nevertheless, this did not preclude the persistence of a high degree of uncertainty, potentially for quite some time.

Domestically, the evolution of nonmining GDP had been in line with the forecasts in the last *Report,* whereas mining GDP had surprised to the downside due to one-off, noncyclical factors. The slowdown in GDP growth and velocity have been considered in the forecast in several past *Reports.* On the demand side, investment remained dynamic, while consumption had slowed somewhat. Both the evaluation of the current state of the economy and the outlook going forward continued to point to a reduction in excess capacity in recent quarters. On the whole, the forecasts continued to indicate that the economy could reasonably be expected to grow in line with the baseline scenario in the September *Monetary Policy Report,* while headline and core inflation would be fluctuating around 3% within a few months. These forecasts were shared by the vast majority of market agents, as shown, for example, in the Economic Expectations Survey (EES). With regard to the labor market, a review of different data sources revealed a somewhat better performance, in terms of both jobs and wages, than suggested by the traditional surveys. With regard to inflation, although some measures still showed low annual rates, the trend suggested a recovery process in line with the forecast, as evidenced by prices that are historically more correlated with the evolution of output.

All the Board Members agreed that the analysis of the new data available since the last monetary policy meeting—and the publication of the *Monetary Policy Report*—were consistent with the baseline scenario forecasts and confirmed the need to begin withdrawing the monetary stimulus. Thus, the following policy options were analyzed: (i) to start the monetary stimulus withdrawal process, by increasing the MPR by 25 basis points (bp) and (ii) to hold the MPR at 2.5%.

The main argument in favor of keeping the MPR at its current level was the persistence of risks and the need to gather more information on their evolution before launching the normalization process. However, it appeared that these risk scenarios would be an issue for monetary policy decisions for some time, especially at the international level. Finally, if it became necessary to change the monetary policy orientation, the Board would have the usual flexibility to communicate the new situation quickly and effectively.

The main argument in favor of increasing the MPR by 25 bp was consistency with the analysis since the publication of the last *Monetary Policy Report* and with the fact that the baseline scenario described therein was still well-founded. In this sense, initiating the stimulus withdrawal at this meeting would favor a more gradual process of converging to the neutral rate, providing more time for pauses in the process and greater flexibility if needed in the future. Additionally, the current monetary policy rate—150 to 200 bp below neutral—was highly expansionary considering that the economy had been growing above potential for several quarters and inflation was moving toward 3%. Furthermore, increasing the MPR at this meeting was consistent with the last communication, assuming that the current analysis did not uncover any deviations in the macroeconomic scenario, and a large share of the market had incorporated the message that the MPR would increase sooner than had been expected in early September. The argument against this option was that an increase in the MPR could be over-interpreted by the market, provoking an excessive steepening of the curve and imparting a markedly more contractionary bias in monetary policy than the Board considered reasonable. Although this risk was always present, especially after a long period of a stagnant rate, it could be ameliorated by communicating that the process of raising the MPR would probably include pauses, fostering a gradual implementation that, as always, would be calibrated to the evolution of the macroeconomic cycle and inflation. Thus, the Board voted unanimously to increase the MPR by 25 bp, to 2.75%.

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 probable scenario and the main risks.

After reaching their most favorable levels in late 2017 and early 2018, the external conditions for the Chilean economy have begun to cool down. Thus, the growth of Chile's trading partners peaked in 2017–2018 and is expected to slow in 2019–2020, in line with expectations in past *Monetary Policy Reports*. Financial conditions for emerging economies, which have been highly expansionary for some time, began to normalize in recent quarters, a process that will continue to unfold over the coming years. The terms of trade will be relatively stable over the next two years, after following an upward trend in 2016–2017. These forecasts reflect not only the natural evolution of the economic cycle, but also the impact of some policy decisions in the developed world, such as the tariff adjustments adopted in the context of the trade conflict between the United States and China. There is also a set of risks associated with the market's perception of the speed of the Fed's monetary policy normalization, the evolution of the aforementioned U.S.-China trade conflict, and news on the situation of some countries in Europe, among other factors. As a result of the long period of uncertainty and the evolution of the risks themselves, various financial asset prices have fluctuated substantially in developed economies in recent weeks.

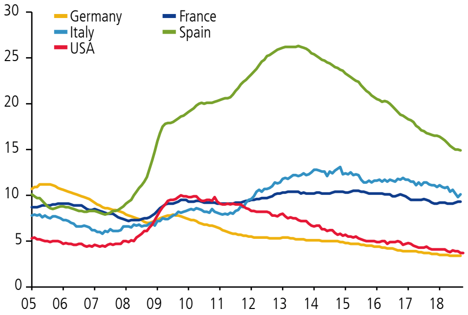
DEVELOPED ECONOMIES

The divergence in the cyclical evolution of the developed economies has grown over the past several quarters, which in turn has exacerbated the differences in the current and expected degree of expansionary monetary policy in these countries. In the United States, the output data collected in the year continue to reveal a dynamic economy, where the biggest boost is coming from consumption, consistent with a tight labor market and high consumer expectations (figure I.1). In contrast, output growth has continued to ease in the Eurozone in recent quarters—fairly uniformly across the countries in the bloc—and economic expectations indicators have deteriorated. Thus, the United States is going through a period in which it is clearly growing above its potential, a trend that is far less evident in Europe and especially Japan (figure I.2).

FIGURE I.1

Unemployment rate in developed economies

(percent)

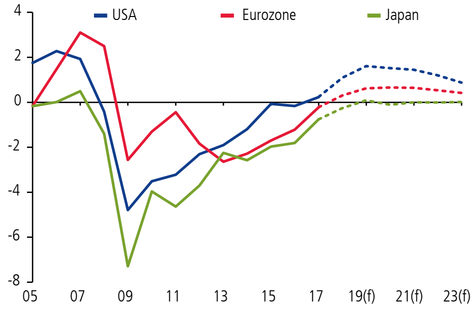


Sources: Eurostat and BLS.

FIGURE I.2

Real and projected output gap

(percent of potential GDP)



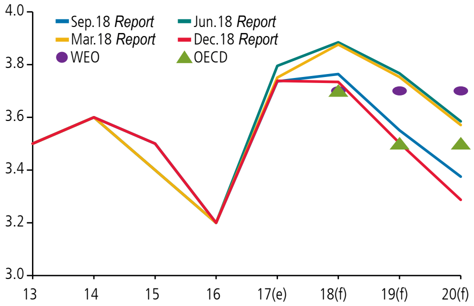
(f) Forecast.

Source: IMF.

FIGURE I.3

World growth

(annual change, percent)



(e) Estimate.
(f) Forecast.

Sources: Central Bank of Chile, IMF, and OECD.

TABLE I.1

World growth (*)

(annual change, percent)

	Ave. 00-07	2015	2016	2017 (e)	2018 (f)	2019 (f)	2020 (f)
World at PPP	4.5	3.5	3.2	3.7	3.7	3.5	3.3
World at market FX	3.2	3.2	2.5	3.2	3.1	2.8	2.7
Trading partners	3.6	3.4	3.1	3.7	3.6	3.5	3.3
United States	2.7	2.9	1.6	2.2	2.9	2.3	1.7
Eurozone	2.2	2.1	1.8	2.4	2.0	1.8	1.7
Japan	1.5	1.4	1.0	1.7	0.9	0.8	0.5
China	10.5	6.9	6.7	6.9	6.6	6.1	6.0
India	7.1	8.2	7.1	6.7	7.3	7.6	7.5
Rest of Asia	5.2	3.6	3.8	4.4	4.2	4.0	4.1
Latin America (excl. Chile)	3.4	-0.1	-1.1	1.1	0.9	1.8	2.5
Commodity exporters	3.1	1.8	2.0	2.7	2.5	2.3	2.2

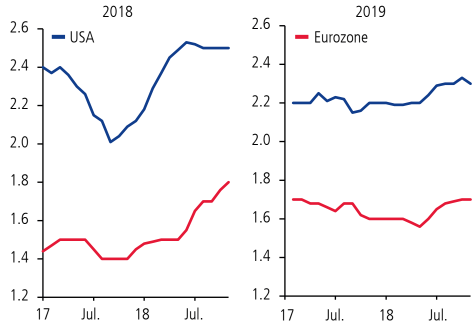
(*) See glossary for definitions.
(e) Estimate.
(f) Forecast.

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

FIGURE I.4

Inflation expectations for the United States and the Eurozone

(annual change, percent)



Source: Bloomberg.

Going forward, the baseline scenario in this *Report*, as in the past, considers that the U.S. economy will slow down more than expected according to average market forecasts. This reflects not only the cyclical evolution of the economy, but also the dissipation of fiscal stimulus measures, the effects of the monetary stimulus withdrawal, and the recent drop in the stock market—with wealth effects—which also points to lower consumption in that county. Thus, for 2019, the baseline scenario considers growth of 2.3% for the United States, versus 2.5 to 2.7% according to other sources (Consensus Forecasts; WEO; OECD). For 2020, the difference vis-à-vis other sources is the same for the United States, but it increases for world growth (figure I.3 and table I.1).

The divergence in the output trends in the developed world has been correlated with prices. In the United States, the different measures of headline and core inflation were at or over 2%, as is the forecast for 2019. In the Eurozone, while annual inflation has increased in recent months, core inflation remains around 1% in annual terms. Similarly, although expectations for next year have risen at the margin, they remain under 2% annually, indicating lower inflationary pressures than in the U.S. economy (figure I.4). In any case, the recent drop in oil and fuel prices will reduce inflationary pressure in the short term.

In line with the output and inflation dynamics in the economy, the U.S. Federal Reserve (Fed) raised its reference rate—the federal funds rate (FFR)—three times in 2018, while also reducing its balance sheet and signaling one more increase in the FFR in the fourth quarter. While this process should continue in 2019, recent statements by some Fed authorities suggest that it will become more gradual going forward. In the Eurozone, the European Central Bank announced that it will conclude its asset purchase program at the end of this year and that rates will not begin to rise until the second half of 2019. It is thus less likely that the monetary policy normalization process will become more synchronized in the developed world. In line with that outlook, long-term interest rates have increased in the United States, and the dollar has appreciated since the beginning of the year.

EMERGING ECONOMIES

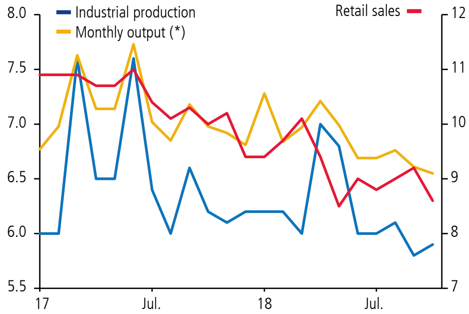
In the emerging world, as mentioned, the growth forecast for 2019–2020 is lower than 2017–2018. In China, output has gradually slowed over the year—due, in part, to the uncertainty caused by the trade conflict with the United States—which has fostered a rebalancing of the economy between consumption and investment (figure I.5). In this context, the Chinese government has implemented various stimulus policies, while at the same time allowing the currency to depreciate. This raises important risks: while the stimulus measures benefit the growth of demand, they could put a brake on the necessary economic adjustment processes, thereby increasing the risks of a sharp correction in the future, when the authorities have less capacity to implement countercyclical measures. In particular, in the last decade, China's current account surplus has decreased, its fiscal deficit has widened, and its global debt has grown to nearly three times its GDP. At the same time, its international reserves have shrunk by almost 10 points of GDP in the last four years, among other problems[1]/. For the rest of the Asian economies, real output data have come in below projections, and the growth forecast has been revised down for this year and next, in line with their trade and financial ties with China.

One of the key developments of the past few months was the pressure faced by a number of emerging economies, due either to macroeconomic vulnerabilities or to idiosyncratic factors that hindered the adoption of policies considered necessary for sustainable economic development. Argentina, Brazil, and Turkey, in particular, experienced serious turbulence. In all these cases, the pressure has eased off substantially in recent weeks, in response to the evolution of the political situation and/or the adoption of emergency measures. Doubts remain, however, especially in Latin America, where Argentina, Brazil, and also Mexico are subject to a high degree of uncertainty. Thus far, the stress points in these particular economies have remained well-encapsulated and have not given rise to contagion or to more generalized risk aversion toward the bloc of emerging economies as a whole—which has been considered in the risk scenarios of the past several *Monetary Policy Reports.* This contrasts with the pattern of past stress episodes that started in a given emerging economy and then were transmitted to the rest—for example, the uncertainty associated with the 2002 elections in Brazil or the so-called Asian crisis. Thus far, the normalization of financial conditions in the developed world has been absorbed by the emerging countries without any widespread shocks[2]/. Nevertheless, in the case of Argentina, the growth forecasts for this year and next have deteriorated significantly, and a recession is expected in that economy in 2018 and 2019. Brazil, in turn, has recorded positive annual GDP growth rates, but the forecast has been reduced by almost a half of a percentage point for this year and next, to an average growth rate of less than 2% for both years—a meager forecast considering that the economy just came out of a sharp recession in 2017 (figure I.6). The revisions for Argentina and Brazil largely explain the downward adjustment in the growth forecast for the Latin American region since September: from 1.3 to 0.9% for 2018 and from 2.1 to 1.8% for 2019.

FIGURE I.5

China: Short-term indicators

(annual change, percent)



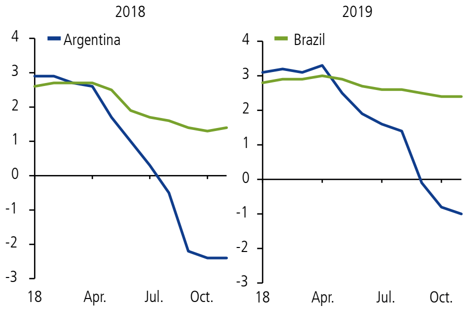
(*) Bloomberg index.

Source: Bloomberg.

FIGURE I.6

Market growth forecasts

(annual change, percent)



Source: Consensus Forecasts.

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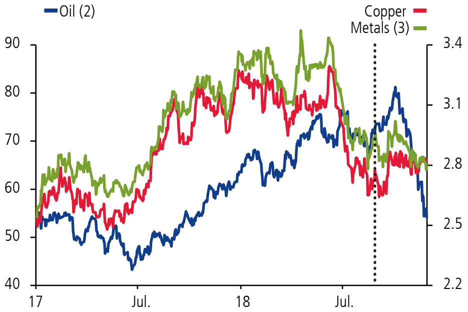
[1]/ See the *Monetary Policy Report,* September 2018, box I.1.

[2]/ For a detailed analysis of external financial conditions for emerging economies, see chapter II of this *Monetary Policy Report.*

FIGURE I.7
Commodity prices (1)
(US$/barrel; US$/lb; index: 2017–18 average=3)



(1) Vertical dotted line marks the cutoff of the September *Monetary Policy Report*.
(2) Simple average of Brent and WTI prices per barrel.
(3) Goldman Sachs metals price index.

Source: Bloomberg

COMMODITY PRICES

Commodity prices trends have been mixed in the last three months. Oil prices have decreased sharply in the most recent period, while copper and metals in general have been relatively stable (figure I.7). In the case of oil, Brent and WTI prices have fallen on the order of 20%, comparing the moving average of the ten business days prior to the cutoff dates of this and the last Reports. Both prices climbed fairly high in October (averaging almost US$80 a barrel toward the end of the month) before dropping to an average of almost US$55 on the cutoff date. The price plunge reflects a combination of several supply factors, including increased production by OPEC, higher inventories in the United States, and diminishing geopolitical risks. Demand factors could also be contributing to the downward trend, as could an adjustment in speculative positions, in the context of more generalized adjustments in financial asset prices. For 2019–2020, the baseline scenario assumes lower average prices than in September: around US$60 a barrel for the Brent/WTI average (US$70 in September). With regard to copper, the price has fluctuated between US$2.7 and 2.9 per pound in recent months, which is very close to the estimate of its long-term value—which considers a rate of return that makes marginal investments financially viable. The forecast in the baseline scenario has not changed, and copper is expected to trade around its current price in the forecast horizon—namely, an average of US$2.85 in 2019 and US$2.80 in 2020. This reflects the fact that demand from China remains dynamic and stock exchange inventories have contracted over the year.

RISKS IN THE BASELINE SCENARIO

As in past quarters, the balance of risks in the external scenario relevant for Chile remains skewed to the downside. The main risk continues to be a sudden deterioration in financial conditions for emerging economies, which could be triggered by a number of elements. On the one hand, what happens in the United States continues to be a concern, in terms of the evolution of inflation, monetary policy, and the growth forecast. On the other hand, there are still significant geopolitical risks. Specifically, the trade conflict between the United States and China, in a context where the Chinese authorities have activated a number of stimulus measures that could heighten some of the country's market imbalances. In Europe, uncertainty has risen regarding Brexit and the increasingly complex situation in Italy. Finally, although the general consensus is that the lower oil price mainly reflects supply factors—which would reduce inflationary pressures in the short term—it has yet to be determined to what extent the decrease could reflect more permanent demand factors. There has been a significant adjustment in financial asset prices in the developed world in recent weeks, which could reflect a change in risk premiums.

BOX I.1

DETERMINANTS OF U.S. STOCK RETURNS: CORRECTION OR ANTICIPATION OF A CRISIS?

In recent months, stock exchanges have fallen significantly in a number of developed economies, dovetailing the drop in emerging stock markets recorded since mid-year. Understanding the causes behind these movements is important, since stock prices can contain information related to the economic outlook. For example, the interpretation is different if the decline reflects the incorporation of expectations of higher interest rates due to a solid output and labor market performance in a mature economic cycle, than if the movements reflect the anticipation of a recession. They could also represent changes in risk appetite, in response to an international climate with multiple sources of uncertainty. This box analyzes the historical determinants of stock market returns in the United States, with an emphasis on the post-financial-crisis period and, in particular, the most recent trends. These determinants include changes in expected dividends and changes in discount rates, where the latter are decomposed into the risk-free rate and the risk premium on the security.

The analysis yields two main results. First, from a historical perspective, the dominant component behind the surprises in U.S. stock market returns is changes in the risk premium, followed by changes in expectations of future dividends. In the time series, these measures correlate significantly with indicators of uncertainty (VIX) and output, respectively. Second, in the most recent period, the drop in the stock market derives from increases in both risk-free rates (due to expectations of higher Fed rates) and risk premiums. Expected dividends, in turn, are no longer adding to the positive returns as they did in the past, although they are not subtracting from them either. These results support the hypothesis that the recent shifts reflect a correction in discount rates toward more normal levels, rather than the alternative interpretation where they could be anticipating a recession. This is consistent with the baseline scenario of this *Report*, which estimates a mature cycle in the United States and growth rates that are converging toward trend levels.

Historical decomposition of U.S. stock returns

The basic conceptual framework for stock pricing postulates that the price of a stock is equal to future expectations of dividends, discounted by interest rates (adjusted for risk). The standard methodology for carrying out this decomposition of returns into the main variables that explain stock market dynamics was first proposed by Campbell and Ammer (1993). They show that the excess stock returns can be written as the sum of four terms: the expected excess return —the first term on the right-hand side of equation (1)— plus changes in expectations of future dividends (second term)— minus changes in the discounted value of risk—free interest rates (third term)— minus changes in the discounted sum of excess returns required to buy the stocks (that is, the risk premium, the fourth term in the equation)[1]/,

$$\mathrm{e}_t = E_t\,\mathrm{e}_{t+1} + (E_{t+1} - E_t)\{\textstyle\sum^{\infty}_{j=0} p^j \Delta \boldsymbol{d}_{t+1+j} - \sum^{\infty}_{j=0} p^j \boldsymbol{r}_{t+1+j} - \sum^{\infty}_{j=1} p^j \mathrm{e}_{t+1+j}\} \qquad (1)$$

where e_t is the excess return (over the risk-free rate), dt is the dividend, r_t is the (short-term) risk-free rate, and (Et+1 - Et) is the change in expectations of the respective terms between successive periods (in other words, the surprise). Intuitively, the excess returns could be due to changes in expectations of dividends or to changes in expectations of the discount rate, through either the risk-free rate or the compensation for risk demanded by the stock market. To estimate this model, a vector autoregression is used to obtain empirical proxies for the four terms in equation (1)[2]/. The empirical adjustment of this method rests on the predictive ability of the observed variables on excess returns, which has been shown to be significant. In particular, a high price-dividend ratio predicts lower expected returns in the future (Shiller, 1989).

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[1]/ The term rho (p) in equation (1) equals the historical average for the ratio between the price and the sum of the price plus dividends paid. Its value is less than one, so it acts as a discount rate on the three terms in the equation.

[2]/ The observable variables included in the vector autoregression are excess returns, the risk-free interest rate, the relative interest rate (defined as the risk-free interest rate minus its twelve-month moving average lagged one month), the (monthly) change in the risk-free interest rate, the price-dividend ratio (smoothed), and the spread between the ten-year interest rate and the risk-free rate. All the are real and are expressed at a monthly frequency.

Figure I.8 shows the excess stock returns for the Standard&Poors (S&P) index, expressed as a six-month moving average, together with its decomposition into the three changes described above and its expected component, all estimated for the period from January 2003 to December 2015. Around 69% of the variance of the series is explained by changes in the risk premium. The expected fraction of returns explains another 26%, while changes in future dividends contribute 16%. The variance from changes in risk-free rates is relatively minor, explaining just 1.7% (the covariance terms explain the rest).

A review of the historical decomposition of the series suggests a narrative consistent with the main macroeconomic developments of the last two decades. The risk premium increases at the beginning of the global financial crisis (blue bars), which explains the stock market crash in the second half of 2008. This period is followed by a partial recovery of risk appetite, but with a persistent deterioration in expectations of dividends (yellow bars), as the U.S. economy entered the sharpest contraction since the Great Depression. Starting in late 2011, the trend begins a definitive reversal (after some corrections associated with the Fed's asset repurchase programs), consistent with a gradual recovery of output. Additional episodes of high volatility occurred around the crisis of confidence in the Eurozone in the third and fourth quarters of 2011 and the crash of the Chinese stock market in September 2015.

In effect, while changes in future dividends are significantly correlated with the monthly industrial production index in the United States (the correlation between the first and second series, with a twelve-month lag, is approximately 34%), changes in the risk premium closely track changes in the VIX (the contemporaneous correlation between the two series is approximately 70%). Since none of these series are included in the model, these correlations suggest that the methodology significantly and intuitively captures the main macrofinancial developments of the last two decades, validating its utility for interpreting stock market movements.

What is behind the more recent movements?

The results of figure I.9, expressed as a three-month moving average, suggest that the stock market correction in recent months is due, in part, to the increase in risk-free rates (green bars, which subtract from returns in the last few months of 2018), and, to a greater extent, to higher risk premiums. Notably, expectations of higher dividends, which contributed positively and significantly in 2017 and early 2018, are much less important in the more recent period. This would be consistent with the interpretation that the better U.S. growth forecast has already been incorporated in the strong stock market performance of the last two years, and that the U.S. economic cycle is maturing, giving way to lower growth rates in the coming years (in line with the forecasts in the baseline scenario in this *Report*).

A related question is whether the recent correction has brought the stock market to "adequate" levels or if, instead, there could be new reversals in the near future. This is, of course, a very difficult question to answer, given that the determinants are highly volatile and difficult to predict in the short term. One way to shed some light on this question is to analyze the behavior of the discounted sum of future excess returns—the third summation in equation (1). The evolution of this variable is presented in figure I.9 (dotted red line). As expected, there is a countercyclical dynamic vis-à-vis the excess return series (black line). At the margin, this variable presents a strong upward correction, pointing to a contraction in risk appetite. A comparison of current versus historical levels (situated around zero) suggests that while there is still room for additional declines, the bulk of the adjustment has already been assimilated.

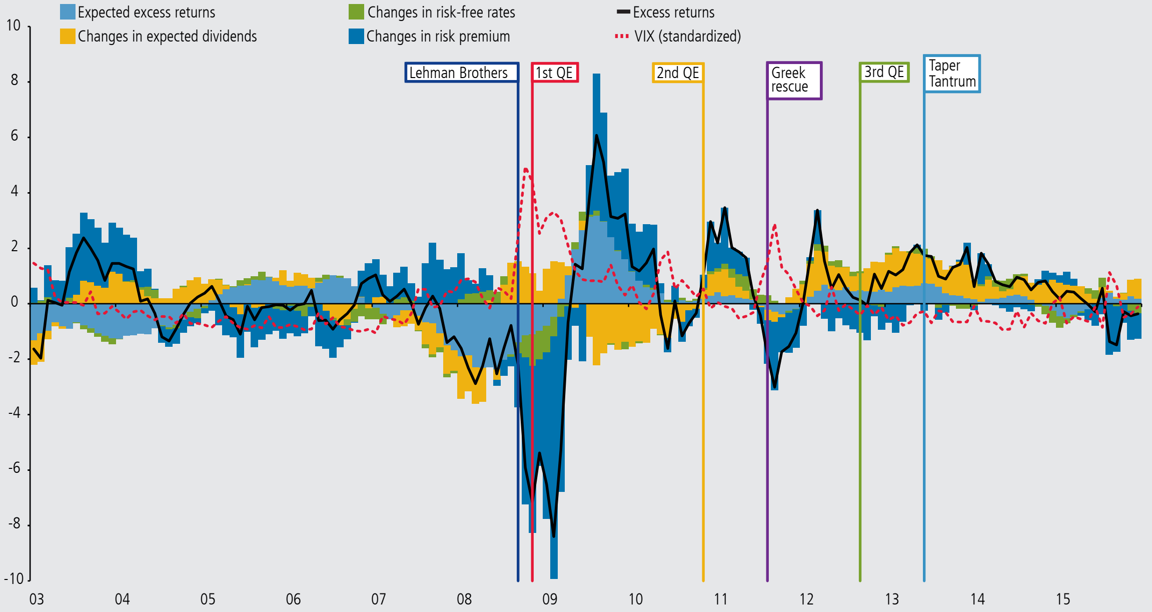
Conclusions

Examining the possible determinants underlying the recent evolution of the U.S. stock market is informative, to the extent that asset prices are important leading indicators of the future economic outlook. Based on standard methodologies for decomposing stock returns, the recent market decline would appear to be associated with expectations of higher risk-free rates, consistent with an increase in market interest rate expectations in line with the Fed's dot plot forecasts, as well as increases in risk premiums to levels near their historical average. On the other hand, changes in expectations of future dividends have eased at the margin, consistent with the view that the U.S. economic cycle is maturing and thus should peak this year before slowing in the coming years.

FIGURE I.8

Expected excess returns for the S&P 500: 2003–2015

(six-month moving average)

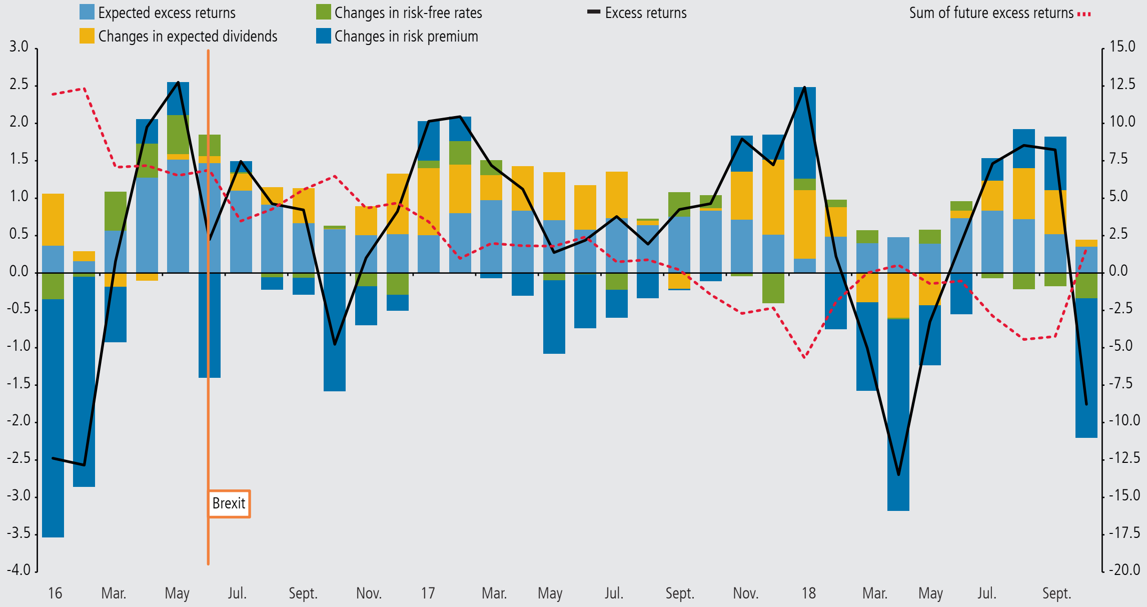


Source: Central Bank of Chile, based on Bloomberg.

FIGURE I.9

Expected excess returns for the S&P 500: 2016 - 2018

(three-month moving average)



Source: Central Bank of Chile, based on Bloomberg.

II. FINANCIAL CONDITIONS

This chapter reviews the evolution of local and external financial conditions.

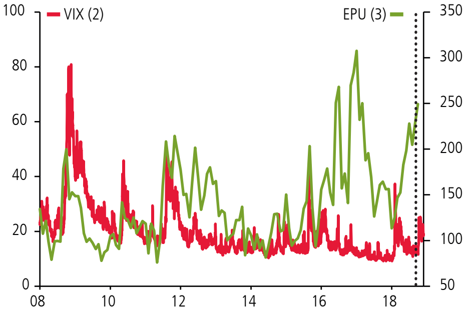
External financial conditions have continued to normalize, in line with projections, in a context where world growth appears to have reached a peak in 2017–2018 and the U.S. Federal Reserve (Fed) has moved forward with its monetary stimulus withdrawal as expected. In the past few months, there has been a significant correction in financial asset prices in the developed world, which could reflect a change in risk premiums, consistent with the prolonged period of uncertainty. Locally, the exchange rate has fluctuated substantially since the September *Monetary Policy Report,* reflecting market volatility. Local risk indicators and long-term interest rates continue to stay somewhat at the margin of movements in other economies, due to the shock-absorbing role of the floating exchange rate regime and the wide availability of domestic financing, among other factors. Short- and medium-term interest rates have aligned with the Board's announcements and decisions in recent months. Local financial conditions remain favorable, with low lending rates from a historical perspective and more dynamic credit growth in some portfolios. Qualitative measures point in the same direction, revealing an increase in the demand for credit and a relaxation of lending conditions.

EXTERNAL FINANCIAL CONDITIONS

Despite the presence of somewhat more negative data recently, the U.S. economy has performed better than the rest of the developed countries throughout most of the year, which has been reflected in current and expected inflation and monetary policy. Thus, the Fed has moved forward with its monetary policy normalization process and is expected to continue doing so in the coming months, although some Fed authorities have recently signaled that the process will be more gradual going forward. In contrast, this process has lagged in the rest of the developed world, due to the slower closing of the output gap and low inflationary pressures. As a result, the U.S. dollar has strengthened at the

FIGURE II.1

Volatility indicators and policy uncertainty (1)
(indices)

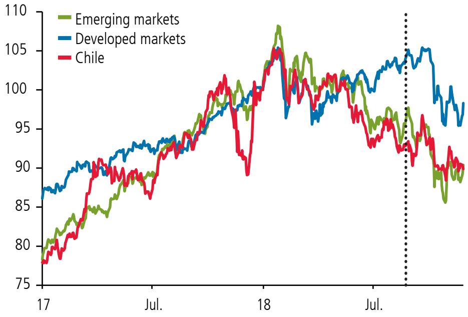


(1) Vertical dotted line marks the cutoff date of the September 2018 *Monetary Policy Report.*
(2) U.S. stock market volatility measure.
(3) Global Economic Policy Uncertainty Index.

Sources: Bloomberg and Economic Policy Uncertainty.

FIGURE II.2

Stock markets (1) (2)
(index: 01 Jan 2018=100)

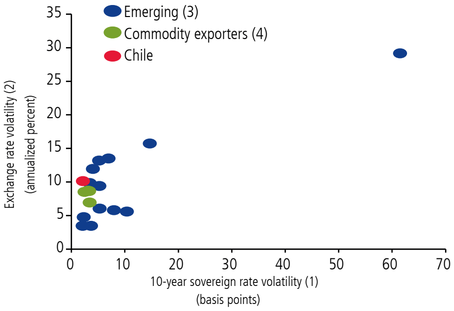


(1) Vertical dotted line marks the cutoff date of the September 2018 *Monetary Policy Report.*
(2) Morgan Stanley Capital International stock indices measured in local currency by region.

Source: Bloomberg.

FIGURE II.3

Volatility: exchange rates and 10-year sovereign rates

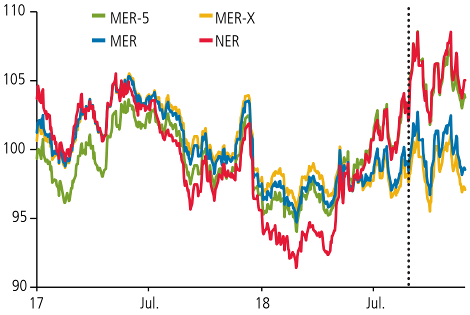


(1) Calculated as the standard deviation of the daily change in rates.
(2) Calculated as the standard deviation of daily returns.
(3) Emerging economies: Chile, Brazil, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Poland, Russia, Turkey, and Ukraine.
(4) Commodity exporters: Australia, Canada, Norway, and New Zealand.

Sources: Central Bank of Chile and Bloomberg.

FIGURE II.4

Nominal exchange rate and multilateral measures (*)
(index: 2017–2018=100)



(*) Vertical dotted line marks the cutoff date of the September 2018 *Monetary Policy Report*.

Source: Central Bank of Chile.

global level in the last year, and long-term interest rates have increased in most economies. Thus far in 2018, ten-year interest rates have risen on the order of 55 basis points (bp) in the United States, and the dollar has appreciated around 5% in multilateral terms.

This normalization of external financial conditions has taken place without any major disruptions in the main fixed-income markets. However, some news has generated uncertainty, triggering episodes of risk aversion and volatility, although the latter remains low from a historical perspective (figure II.1). These include the following: (i) the evolution of the U.S.- China trade war; (ii) the current and projected divergence in monetary policy in the United States vis-à-vis other developed economies; (iii) concerns about the United Kingdom's exit from the European Union and the pending challenges in Italy; (iv) doubts about some emerging economies, such as China and some Latin American countries; and (v) the evolution of the U.S. economy and its possible implications for the Fed's monetary policy.

These factors have triggered corrections in most stock markets since the beginning of the year, including a significant adjustment in financial asset prices in the developed world in recent weeks. Thus, for example, the U.S. and E.U. stock exchanges fell around 6 and 7%, respectively, since the September *Report*. In the emerging world, EMBI and CEMB spreads have increased about 120 and 70 bp since the start of the year, with sharper hikes in regions like Latin America and Europe. In this context, capital inflows to emerging economies have slowed relative to 2017 and the first half of 2018—and even turned to outflows between the second and third quarters of this year. As mentioned in the last *Report*, the biggest impact of these volatility episodes in the emerging world has been felt by economies that are perceived as having weaker macroeconomic fundamentals and/or that have been affected by idiosyncratic factors, such that the deterioration has not been generalized across the emerging world.

LOCAL FINANCIAL CONDITIONS

The Chilean stock exchange (IPSA) has not been exempt from the market corrections registered globally. The IPSA has also been influenced by news from Argentina and Brazil, which affected securities that are more exposed to those countries (figure II.2). At the same time, local risk indicators increased only moderately and less than external risk measures.

The normalization of external financial conditions over the course of the year has primarily manifested in exchange rate volatility, which has continued to play a stabilizing role in the face of external shocks in the framework of the current policyl[1]/. Long-term interest rates and sovereign spreads in Chile have kept at the margin of these corrections (figure II.3). The Chilean economy continues to be characterized by solid macroeconomic fundamentals, narrowing gaps, sustainable debt levels, and a wide availability of domestic financing. The peso-dollar exchange rate was quite volatile in the period, fluctuating between a high of nearly $700 to the dollar and a low of just over $655. As of the cutoff date of this *Report*, the exchange rate was $675 to the dollar, which represents a depreciation of less than 2% since the last *Report*. This trend is in line with the strengthening of the U.S. dollar globally, which has outweighed the appreciation pressure deriving from the increase in the copper price in the period. In multilateral terms, the peso fluctuated less than the peso-dollar exchange rate, and it even appreciated in some measures. Thus, the MER and MER-X fell –0.2 and –0.6%, respectively, while the MER-5 grew 0.9% in the period (figure II.4 and table II.1). The real exchange rate (RER; index: 1986=100) increased again, to around 93 on the cutoff date of this *Report* (a little more than 2% since the last *Report*), which is around the average of the last fifteen or twenty years (figure II.5). This real depreciation is similar to the currency trend of other commodity exporters in recent months. As a working assumption, the RER is expected to fluctuate around this level throughout the forecast horizon.

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[1]/ See the *Monetary Policy Report,* March 2018, box II.1.

TABLE II.1
U.S. dollar exchange rates (1)
(percent)

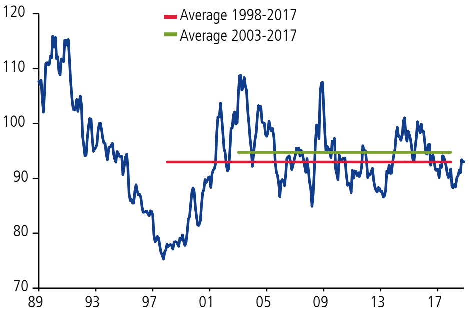
	Change in NER, December 2018 *Report*			
	Sept.18 *Report*	Jun.18 *Report*	Mar.18 *Report*	Dec.17 *Report*
Latin America (excl. Chile) (2)	**1.0**	**2.5**	**12.8**	**11.8**
Brazil	-5.2	6.7	23.6	23.4
Chile	1.6	5.4	10.4	4.8
Colombia	7.2	4.5	4.8	-0.2
Mexico	7.4	-5.6	1.4	0.5
Peru	2.3	1.0	1.4	1.8
Commodity exporters (2)	**0.1**	**4.2**	**7.0**	**2.9**
Australia	0.7	3.8	7.0	3.9
Canada	1.4	0.7	1.0	2.3
New Zealand	-2.5	5.2	9.5	3.2
South Africa	-3.2	13.3	21.7	2.5
Developed economies (2)	**1.4**	**1.7**	**6.6**	**1.7**
Eurozone	1.5	1.4	7.1	2.4
Japan	2.2	1.2	4.2	-1.2
United Kingdom	0.1	4.1	8.3	3.4
Other emerging economies				
China	1.3	7.0	8.3	3.6
South Korea	0.7	4.4	4.7	2.2
India	1.7	4.0	7.7	7.7
Indonesia	-0.2	4.9	6.1	8.0
Poland	1.7	1.3	9.4	4.0

(1) Positive (negative) sign indicates depreciation (appreciation) of the currency against the U.S. dollar. The comparison is based on the last ten business days before the cutoff date of each *Monetary Policy Report*.
(2) Includes the currencies of the economies included in this table, using the weights in the October 2018 WEO.

Sources: Central Bank of Chile, Bloomberg and International Monetary Fund.

Interest rates in the local fixed-income market increased across the board since the last *Report*, especially for the short and medium terms. In the case of nominal rates, this trend is consistent with the increase in market expectations for the

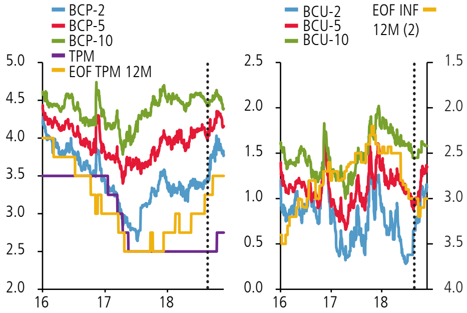
FIGURE II.5
Real exchange rate (*)
(index: 1986=100)



(*) Data for November 2018 are through the 28th.

Source: Central Bank of Chile.

FIGURE II.6
MPR and interest rates on Central Bank of Chile bonds (1)
(percent)

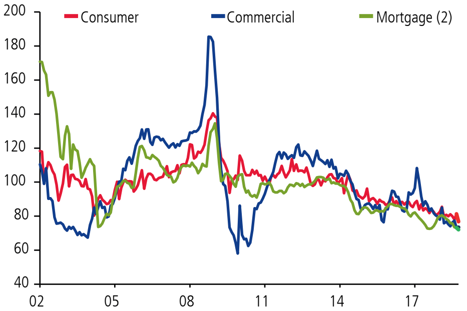


(1) Vertical dotted line marks the cutoff date of the September 2018 *Monetary Policy Report.*

(2) Inverted axis.

Sources: Central Bank of Chile and Bloomberg.

FIGURE II.7
Interest rates by type of loan (1)
(index: 2002–2018=100)



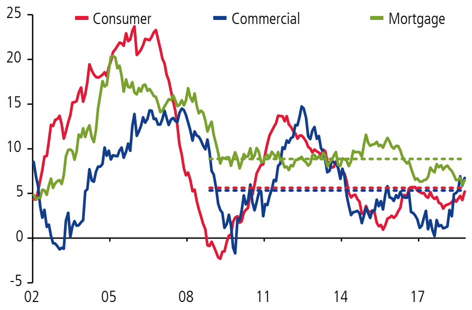
(1) Weighted average rates of all operations in the month.
(2) UF-denominated loans.

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

FIGURE II.8

Real loans (1) (2)

(annual change, percent)



(1) Real data constructed by splicing the 2013 base year CPI.

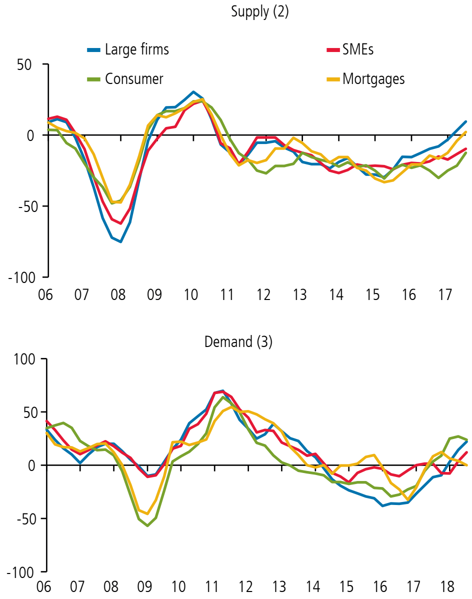
(2) Horizontal dotted lines indicate the average of the last 10 years for each series.

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

FIGURE II.9

Bank lending survey (1)

(average response, percent)



(1) Annual moving average of average quarterly survey responses.

(2) Negative (positive) values indicate tighter (looser) lending conditions than in the immediately prior quarter.

(3) Negative (positive) values indicate weaker (stronger) demand than in the immediately prior quarter.

Source: Central Bank of Chile.

monetary policy rate (MPR), in line with the monetary stimulus withdrawal process announced in September and initiated in October. For real interest rates, the increase is tied to market expectations on inflation (figure II.6). Thus, since the September *Report*, two- and five-year rates increased more sharply, the former by nearly 40 bp in pesos and 55 bp in UF and the latter by around 15 and 40 bp in pesos and UF, respectively. Ten-year interest rates, in turn, were fairly stable, although they increased in various economies. In the money market, time deposit rates have generally increased: around 25, 50, 65, and 75 bp for 30-, 90-, 180-, and 360-day rates, respectively. This is consistent with the usual search for liquidity at the end of the year by the mutual fund managers and also with the change in the market's projection of the MPR path. On-shore spreads have been low, in line with the pension funds' return to the local market in response to changes in external risk considerations.

Domestic credit continues to evolve favorably, consistent with the expansionary monetary policy. Thus, interest rates remain low from a historical perspective in most segments (figure II.7). Loan growth has been in line with the growth of the economy in the last few years. Since the last *Report*, in real terms, the commercial portfolio was particularly dynamic, due to installment loans and contingent loans. The consumer segment also improved, due to installment loans and, to a lesser extent, credit cards. Mortgage loans, in turn, continued to record a reduction in their annual growth rate (figure II.8). Foreign trade loans—denominated in dollars—continued to grow, due to the impact of the exchange rate and to import credits, the latter in line with dynamic imports. The rates on foreign trade loans have been increasing since the second half of 2016, consistent with the rise in the LIBOR.

Qualitative indicators of domestic financial conditions have continued to improve. Over the last year, the Bank Lending Survey (BLS) has revealed a strengthening of demand, especially in the case of households, large corporations, and real estate companies. With regard to supply, lending conditions have loosened for large corporations (figure II.9). The firms and banks interviewed for the November *Business Perceptions Report* (BPR) both underscored the relaxation of lending conditions, the low interest rates, the predominance of operations oriented toward debt restructuring, and the penetration of car loans for sales financing, which has now extended to machinery and equipment sales. The latter is in line with the increase in this type of loan from nonbank lenders, as indicated in the *Financial Stability Report* for the second half of this year.

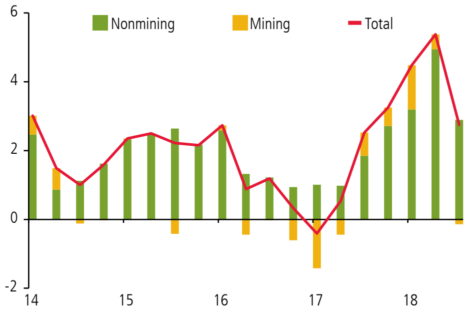
III. OUTPUT AND DEMAND

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

As projected in past *Monetary Policy Reports,* the annual GDP growth rate was lower in the second half of 2018 than in the first, due to a higher basis of comparison and the disappearance of one-off factors that had a positive impact in the first months of the year. The economy thus grew 2.8% annually in the third quarter (4.9% annually, on average, in the first half), while the nonmining sectors grew 3.2% annually in the period (4.5% annually, on average, in the first half) (figure III.1).

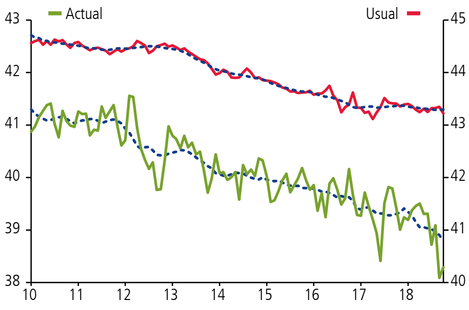
The GDP growth rate in the third quarter was below the forecast in the September *Report* and also below private forecasts, which projected 3.6% growth according to the average of Economic Expectations Surveys (EES) for July, August, and September. The lower real growth was largely explained by mining and manufacturing. In the mining sector, annual output contracted 2.7%, due to lower production in both copper and other minerals. In the case of copper, the poor performance reflected operational difficulties in certain mines. Manufacturing, in turn, was affected by a quarter that had three fewer business days than the same period last year, two of which were in September. The impact that month may have been exacerbated by the long string of consecutive holidays. In fact, manufacturing output fell significantly in September, more than historically has been the case, which is largely associated with the fewer work days (box III.1). The importance of the seasonal component in the sector's monthly macroeconomic —ared quarterly— performance is confirmed by the trend in hours worked. While there was a substantial reduction in the number of hours actually worked in September, that was not the case with hours usually worked (figure III.2). In any case, manufacturing production tends to have substantial carry-over between contiguous periods, and the data available as of the cutoff date confirm that the downturn in September was largely reversed in October (figure III.3). Trade also recorded a somewhat less favorable performance, although partial data for the last quarter of the year show a notable improvement. As projected in the *Business Perceptions Reports* (BPR) in 2018, The decline in tourists from Argentina has affected results in that sector. Data based on the use of electronic payment means indicate that the average spending of Argentine tourists has decreased significantly since the beginning of 2018 (figure III.4).

FIGURE III.1
Annual GDP growth
(contribution, percentage points)



Source: Central Bank of Chile.

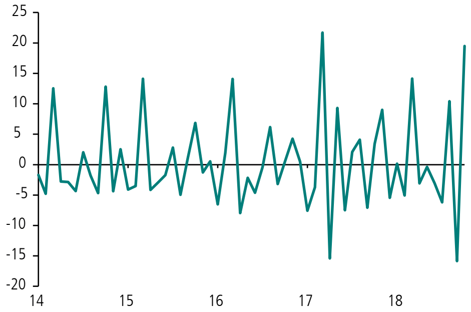
FIGURE III.2
Private wage hours work (*)
(seasonally adjusted levels, weekly average)



(*) Dotted lines mark the annual centered moving average for each series.

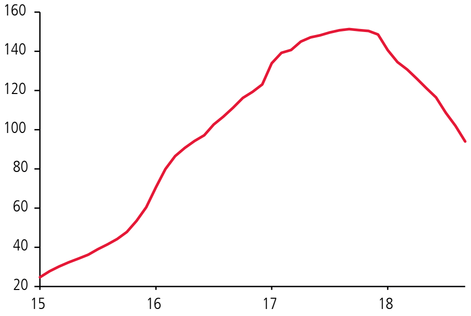
Sources: Central Bank of Chile and National Institute of Statistics (INE).

FIGURE III.3
Manufacturing production index
(monthly change, percent)



Source: National Institute of Statistics (INE).

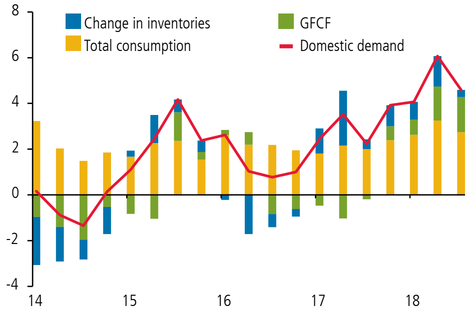
GRÁFICO III.4
Payments using credit and debit cards issued in Argentina (*)
(index: 2015–2018 average=100)



(*) Accumulated in a rolling year.

Sources: Secretary of Tourism and National Tourism Service (Sernatur), based on data from Transbank.

FIGURE III.5
Annual growth of domestic demand
(contribution, percentage points)



Source: Central Bank of Chile.

With regard to the forecast, in the baseline scenario of this Report, the Board considers that the economy will end 2018 with a growth rate of 4%, which is the lower end of the range projected in September (4.0 to 4.5%). This is mainly due to the poor performance of mining. Furthermore, the revision of the labor cost index (LCI) by the National Statistics Institute (INE) resulted in lower growth in the first half of the year than previously reported, especially in some services sectors, because the index is used to deflate tax data. However, this was offset by an upward revision in the growth of other sectors, due to the usual incorporation of additional information[1]/. For 2019 and 2020, the growth forecast range is the same as in the last Report: 3.25–4.25 and 2.75–3.75%, respectively. Finally, the EES expects the economy to grow 4% in 2018 and 3.5% in the next two years.

After a pause in the third quarter of the year, the output gap is expected to resume closing in the coming months, and the process should be completed within the forecast horizon. Thus, the economy will follow a growth path that converges toward its trend level, which the Board still estimates at 3.0 to 3.5%. This is based on the real and projected evolution of spending, in particular investment, as well as other factors. With regard to the labor market, when the significant impact of immigration is taken into account, the growth of employment has been higher than reported in the surveys. While this reevaluation reduces the lag of employment relative to output, there is still considerable slack in the labor market, given that it takes a long time for the market to adjust to this kind of shock. In fact, wage indicators—both the revised INE data and administrative records—show lower growth rates than at the start of the year, consistent with the increase in the labor supply due to immigration, as suggested by qualitative information from the BPR. Other measures can also help assess the degree of slack in the economy. For example, measures of installed capacity utilization, inflation of prices that are more sensitive to output, and the behavior of credit demand all continue to demonstrate a gradual recovery. The current account deficit has grown over the course of the year, in line with more dynamic domestic spending (–2.3% of GDP in the rolling year ending in the third quarter; –2.1% on average in the last five years). This reflects a more negative trade balance, as imports have increased across the board (around 25% annually in nominal terms in October).

With regard to domestic spending, there has been a change in composition in recent months, with more dynamic investment and a slowdown in consumption (figure III.5). Thus, gross fixed capital formation (GFCF) recorded an annual growth rate on the order of 7% in the third quarter, driven strongly by machinery and equipment, while the construction and works component is slowly returning to higher growth rates. This has translated into a better performance in several economic sectors. Retail sales of machinery and equipment propelled the growth of trade in recent quarters, while the increase in this type of rental continued to contribute positively to business services. Growth of the latter was led by jobs related to architecture and engineering, in

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[1]/ For more details, see *Informe de Cuentas Nacionales,* third quarter 2018, chapter 3 (in Spanish).

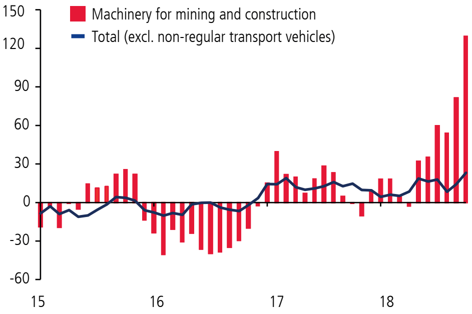
line with the ongoing recovery of construction in the third quarter. In this sector, a recent improvement in the residential segment stands out, as shown in data from the Chilean Chamber of Construction (CChC) on new home sales and months to sell existing inventory.

By sector, mining investment continues to be concentrated on the recovery of different GFCF aggregates (figures III.6 and III.14). The November BPR agrees, but adds that investment is also becoming more dynamic in other areas. The report emphasizes project commencement and capacity expansion, although some of the interviewees reiterated that their actions are aimed at replacing depreciated capital, which can no longer be postponed.

The outlook for GFCF is favorable, as shown by different sources. In particular, the survey by the Capital Goods and Technological Development Corporation (*Corporación de Desarrollo Tecnológico y de Bienes de Capital,* CBC) for the third quarter included a significant upward revision in the series of investment plans for the next three years. The main cause was the inclusion of some large mining projects, which have been approved following long assessment processes (box III.2). Other sources—such as the Office for Large Sustainable Projects and the Chilean Copper Commission (Cochilco)—indicate that there is another group of large projects that, for various reasons, have not yet been incorporated into the CBC survey, which implies that the investment growth forecast could be pushed up even further going forward. The CBC has also increased its forecast for forestry investment, albeit at a smaller magnitude. Capital goods imports—which led the surge in total imports in recent quarters—continue to be a driving force in the available data for the fourth quarter. Qualitatively, construction expectations reported by the CChC are favorable relative to a few quarters ago (figure III.7).

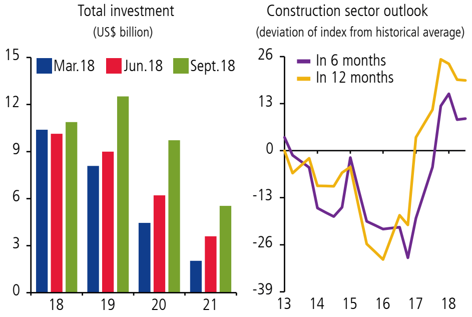
Private consumption was less dynamic in the third quarter, with a real annual growth rate of 3.8% in the period (4.4% in the second quarter), although it is still higher than in past years. This lower growth is largely explained by a slowdown in the durables component in comparison with past quarters, as seen in household durable goods and car sales. The automotive sector recorded a low performance in September—probably due to the shorter number of business days—which was reversed in October according to sales data from the National Car Association of Chile (ANAC). At any rate, the durables segment continues to grow at the highest rates of the past several years. Private consumption of nondurables grew at similar annual rates to the third quarter. In particular, all components of services grew (4.5%, which is the same as the average for the first half), most notably spending on health, financial, and transportation services; while nondurable goods (2.2%; 2.1% average for the first half) saw an increase in demand for food, clothing, and shoes.

FIGURE III.6
Nominal capital goods imports
(annual change of quarterly moving average, percent)



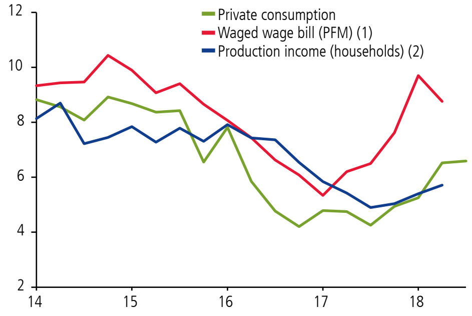
Source: Central Bank of Chile.

FIGURE III.7
GFCF outlook



Sources: Capital Goods Corporation (CBC) and Chilean Chamber of Construction (CChC).

FIGURE III.8
Private consumption, wage bill, and household income
(nominal annual change, percent)



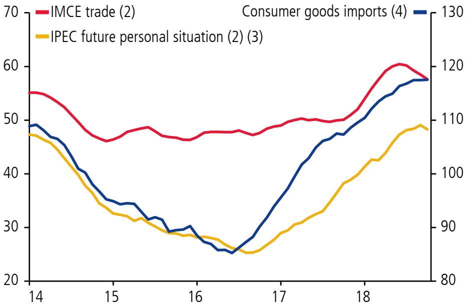
(1) Wages and employment use data from the pension funds (PFs): average taxable income and number of dependents, respectively.
(2) Wages, mixed income, and gross surplus.

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

FIGURE III.9

Determinants of consumption (1)

(diffusion index; index: 2014–2018=100)



(1) Six-month moving average of each series.

(2) A value under (over) 50 indicates pessimism (optimism).

(3) For definition, see *Central Bank of Chile Working Paper* 824, July 2018 (in Spanish).

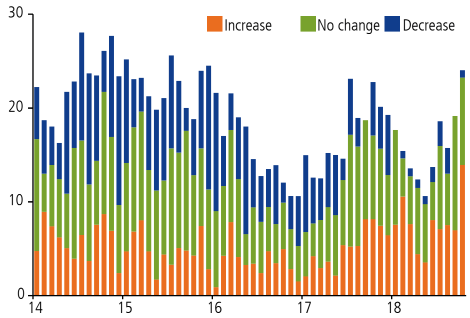
(4) Seasonally adjusted series.

Sources: Adimark, Central Bank of Chile, and Icare/Universidad Adolfo Ibáñez.

FIGURE III.10

IMCE trade: Share of firms with high inventory perception and future sales expectations

(original series)



Source: Icare/Universidad Adolfo Ibáñez.

With regard to the determinants of consumption, second-quarter data show that the growth of household income remains high (figure III.8). The same trend is found for the wage bill, based on employment and wage data from administrative records (pension funds).

In terms of employment, the surveys measuring the labor market, by construction, use expansion factors that do not capture the impact of the strong immigration shock on the labor market. A re-estimation based on data from the 2017 national census shows that employment has increased more than reported by the INE—a conclusion that is robust to different assumptions on the net immigration flow in 2018 (box III.3).

Several factors indicate that consumption will recover to growth rates similar to GDP. Consumer goods imports are high, while consumer and commercial loans have both recovered in the year. This is in line with the results of the Bank Lending Survey (BLS) for the third quarter, which reveals that in general credit demand has strengthened, including for households. According to the BLS, this is one of the segments that are seeing somewhat looser lending conditions. Trade prospects, measured by the IMCE, remain in optimistic territory, despite a recent decline, while personal expectations on the future[2]/ —an indicator that is highly correlated with the consumption trend—are at the highest levels of the past several years (figure III.9). At any rate, a prolonged slowdown in private consumption is one of the risks included in the baseline scenario.

Another notable trend on the domestic demand side is the behavior of inventories. In the third quarter, inventories grew 1.1% of GDP in the last rolling year, which represents an increase relative to the second quarter. The greater volume of imports explains a large share of the accumulation, especially capital goods. In line with the surge in these imports, wholesale inventories werw among those that grew the most. At the margin, almost all the firms in the trade sector that think their current inventories are high anticipate an improvement in future sales (IMCE), supopporting the view that spending will follow a positive trend (figure III.10).

Fiscal spending slowed significantly in the third quarter, consistent with the adjustments announced by the authorities a few months ago. In that period, fiscal spending contracted 3.5% annually in real terms, after increasing 5.7% annually in the first half. This represents 70.4% of the budget execution in the first three quarters of the year (72% in the same period of 2017)[3]/.

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[2]/ Constructed using components of the Consumer Confidence Index (IPEC). For more details, see Central Bank of Chile *Working Paper* 824, July 2018(in Spanish).

[3]/ Central government budgetary spending. *Informe de Ejecución del Gobierno Central,* third quarter 2018, Ministry of Finance, Budget Division (in Spanish).

BOX III.1
CALENDAR EFFECT ON THE ECONOMY

The measure of output can sometimes be affected by factors that are not economic in origin. Disruptions in production caused by natural phenomena, strikes, or the distribution of holidays can have a significant impact on high-frequency output indicators. However, while they represent real gains or losses in production and income, their magnitude and projection must be adequately weighted in the analysis of the economy, so as not to overestimate the implications for cycle dynamics or longer-term trends.

The calendar can affect economic data in two ways: first, through the number of business days in the month; and second, through the presence of legal holidays that fall during the work week. With regard to the former, for the purposes of measuring production, a month that has five Mondays and five Tuesdays is not the same as a month with five Saturdays and five Sundays[1]. With regard to the latter, in Chile, September tends to have fewer business days due to the Independence Day holidays. This year, however, September had a particularly strong calendar effect, since it had two fewer business days than September 2017—one more holiday and one less Friday. Furthermore, the fact that Independence Day holidays resulted in three consecutive holidays extending a weekend may have amplified the calendar effect.

The calendar effect has different impacts on different sectors of the economy. For example, the mining sector, where the work is nonstop, should not be affected by this type of situation. In trade, there are offsetting effects. While the retail component could be favored by the increase in holidays—as long as they are not mandatory, which 18 and 19 September are—and more Saturdays and Sundays; this effect is more than offset by the impact of fewer business days on wholesale trade. Manufacturing production, in turn, would be negatively affected by both the number of holidays and the composition of work days and weekends in the month[2].

The *National Accounts Report* for the first quarter of 2018 includes a box measuring these effects. Using data from January 2009 to March 2018, the box shows that the presence (absence) of a business day has an average effect of 0.4 percentage points up (down) on the total Imacec. By sector, the calendar effect has no impact on mining output. The biggest impact is on manufacturing, where the average effect on the sector's monthly growth is 1.6 percentage points (pp), with a peak of 2.3 pp (table III.1).

TABLE III.1
Effect of an additional business day in a month (*)
(percentage points)

	Mining	Manufacturing	Trade	Imacec
Average	0.0	1.6	1.2	0.4
Maximum	0.0	2.3	1.9	0.5
Minimum	0.0	0.8	0.6	0.2

(*) Calculations cover the period from January 2009 to March 2018.

Source: Central Bank of Chile.

Behavior of the economy in September 2018

In September of this year, the Imacec recorded an annual growth rate of 2.3%. The nonmining component grew 2.5%, which represents a significant slowdown in the annual growth rate relative to prior months. The economic sector with the biggest drop in September was the manufacturing industry, which fell 4.2% annually and 12.6% relative to August.

September 2018 was an atypical month in terms of the composition of days: there was one more holiday than in September 2017 and also one less business day, since there were five Fridays in 2017 and five Sundays in 2018. At the same time, the series of Independence Day holidays (Monday the 17th, Tuesday the 18th, and Wednesday the 19th) was fairly unusual, and it probably caused a large share of people to work fewer hours than normal in the rest of the week, either by choice (vacation) or by a company decision to stay closed on Thursday the 21st and Friday the 22nd. The data on actual and usual hours worked demonstrate this trend (figure III.11). While the former fell significantly in the month, the latter hardly changed at all. The same can be seen in electricity consumption, which was 15% lower on the Monday, Tuesday, and Wednesday of the third week in September than the average of the same days in previous weeks. There was also lower-than-average consumption on Thursday the 21st and Friday the 22nd (figure III.12).

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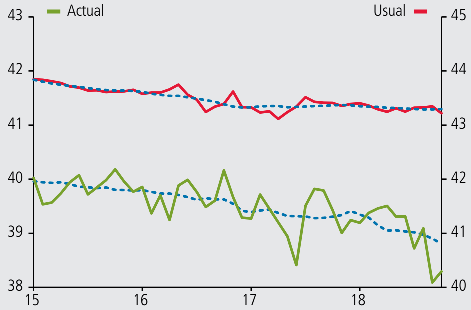
[1] By definition, all months have at least four Mondays, four Tuesdays, four Wednesdays, four Thursdays, four Fridays, four Saturdays, and four Sundays.

[2] This is not the case in leap years, when the extra day in February affects all economic sectors equally and therefore generates more GDP.

FIGURE III.11

Private wage hours worked (*)

(seasonally adjusted levels, weekly average)



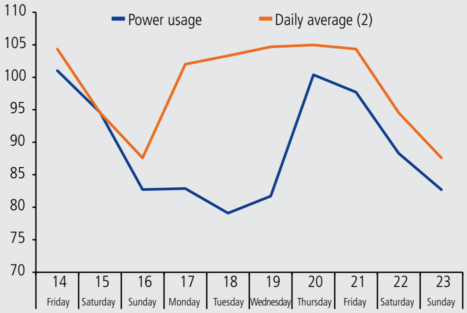
(*) Dotted lines mark the annual centered moving average for each series.

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

GRÁFICO III.12

Daily distribution of the main power distributors in September 2018 (1)

(index, September 2018 average=100)



(1) The simple sum of energy use by customers of CGE Distribución, Chilquinta, ENEL Distribución, and Conafe.
(2) Daily average in September 2018, excluding the period from the 14th to the 23rd of that month.

Source: National Electricity Coordinator.

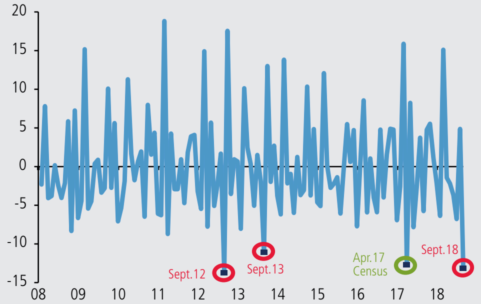
Based on the parameters in table III.1, we estimate that the presence of two fewer business days in September of this year could have reduced output in the manufacturing sector by 1.6 to 4.6 pp. In addition, the series of three straight holidays could have affected the sector's activity for the full week, thereby explaining a large share of the monthly decline.

These estimates are corroborated by an analysis of the manufacturing sector during other episodes with similar calendar effects. September 2012 and 2013 had a similar composition to this September. In those years, the sector's monthly output fell between 10 and 15%, with a complete reversal the following month (figure III.13). The INE data on the sector available on the cutoff date of this Report demonstrate a significant reversal of the September contraction in 2018, as well.

FIGURE III.13

Imacec: manufacturing (*)

(monthly change, percent)



(*) 2008–2012 series constructed using the dynamics of historical high-frequency indicators from INE subject to the restriction of coinciding with quarterly manufacturing GDP, chained volume to previous year's prices, spliced series, 2013 benchmark year.

Source: Central Bank of Chile.

Another example is April 2017, when the Easter holidays shifted from March in 2016 to April in 2017, and there was also a mandatory holiday for the national census. In that case, there was a very significant contraction in manufacturing and in the economy in general, which was offset by increased activity in the months before and after.

Finally, September 2019 will also be an unusual month in terms of the composition of days. The mandatory holidays of the 18th and 19th will fall on Wednesday and Thursday, so Friday the 20th will also be declared a holiday[3]. It would therefore not be surprising to see a greater-than-average effect from the series of holidays. There will, however, be one more business day, since the five Saturdays of 2018 will be shifted to five Mondays.

Because the calendar effect can cause strong fluctuations in particular months, the evolution of high-frequency output indicators should be carefully analyzed. There could be a significant decrease in output in a given month due to factors that are not necessarily economic in origin and that are largely offset in subsequent months, and which thus should not be interpreted as a change in the economy's medium-term path.

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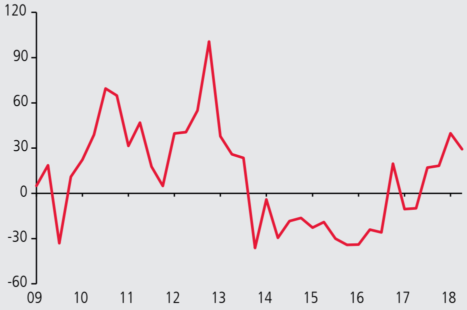
[3] Article 35 of the Labor Code.

BOX III.2
MINING INVESTMENT

The growth estimate for 2018 has risen substantially over the course of the year, largely because the growth rate of investment was significantly higher than projected. Thus, in September 2017, the economy was expected to grow between 2.5 and 3.5% this year, whereas the estimate in this *Report* is 4.0%. In the same period, the annual growth forecast for gross fixed capital formation (GFCF) rose from 3.2 to 5.5%.

By sector, investment has been most dynamic in mining, which is consistent with the increase in investment expense on the balance sheets of private mining companies and *Codelco* (figure III.14). This is also reflected in the composition of capital goods imports, in which goods destined for mining and construction grew nearly 80% in annual terms in the third quarter (figure III.5). Qualitative information contained in the *Business Perceptions Report* (BPR) also shows that over the course of the year there has been a growing perception of increased investment directly or indirectly related to the mining sector.

FIGURE III.14
Investment of mining companies (*)
(annual change, percent)



(*) Investment in plant and equipment.

Source: Central Bank of Chile.

In addition to 2018, there has been a significant upward revision in the mining investment forecast for the coming years. According to the latest survey by the Capital Goods and Technological Development Corporation (*Corporación de Desarrollo Tecnológico y de Bienes de Capital*, CBC)—published in mid-October—investment expense on mining projects in the 2018–2021 period went from around US$5.400 billion to US$10.600 billion. The biggest changes are concentrated in 2019 and 2020, when the survey reports investment nearly US$3.500 billion higher than previously expected. This is the largest upward revision between two consecutive quarters in the history of the survey[1]/. This significant expansion of investment stems from the inclusion of a small number of very large investment projects that have moved substantially closer to implementation. The *Quebrada Blanca* Project and the expansion of the *Los Pelambres* mine stand out.

The mining investment forecast reported in the third-quarter survey is a good predictor of the actual behavior of this variable in the following year (figure III.15). The incorporation of the new survey in the GFCF forecast has a substantial impact on the baseline scenario. For 2018, when the incremental effect of the new survey is more limited, the mining component is expected to record annual growth of 18% (a little over 3 percentage points higher than the September forecast). For 2019, the annual growth rate of mining GFCF is revised up from 7% in September to 16% in the current estimate. For 2020, while the level of investment increases substantially relative to the last forecast, the annual growth rate vis-à-vis 2019 is not very different, at just over 3% (figure V.X).

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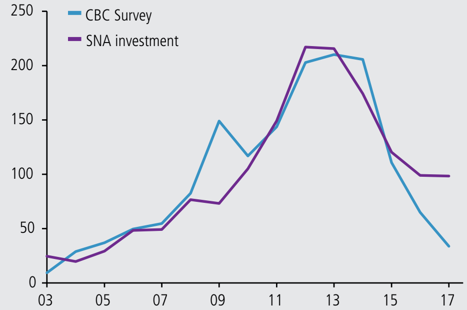
[1]/ Peru has also seen a significant increase in investment in the mining sector. According to data from the Central Reserve Bank of Peru, a number of large projects are expected to be expanded between 2018 and 2019, together with the construction of new projects, resulting in a 20% growth rate of investment expressed in dollars in both years. Other mining economies, such as Australia, have not recorded a comparable uptick.

FIGURE III.15

Mining investment (*)

(index: 2003–2017=100)



(*) The CBC survey is the investment forecast for each year published in the third quarter of the previous year.

Sources: Central Bank of Chile and CBC.

The increase in mining investment has important effects on other economic sectors. In the early phases of project development, the biggest impact is on business services. As the project matures, more significant effects are found on the demand for machinery and equipment, construction, and employment. Estimates of the macroeconomic impact[2]/ indicate that an increase in mining investment implies a growth in spending on real wages, jobs, and hours worked. This generates higher inflationary pressures on locally produced goods (nontradables), which are partially offset by lower inflation on imported goods, given the real exchange rate appreciation. Additionally, the current account deficit temporarily intensifies. The magnitude of these effects will depend on how much mining investment increases. The increase in mining investment projected for 2019 could generate on the order of 0.1 to 0.2 percentage points of GDP in that year[3]/.

Finally, the mining investment forecast entails a number of risks. First, there is a high degree of uncertainty regarding the timing of the projects. The initial project timeline could potentially be modified due to exogenous factors or internal decisions by the companies involved, which could move up or push back the estimated impacts for a given year. Second, other investment surveys—such as the Chilean Copper Commission (Cochilco) and the Office for Large Sustainable Projects—indicate that there are other large mining projects that could be approved over the course of the forecast horizon, which would raise the mining investment forecast even further.

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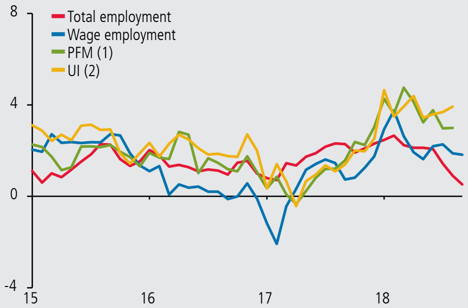
[2]/ The macroeconomic effects of a mining investment shock are somewhat different from the effects described by Kirchner, Fornero, and Yany (2015), who analyze the impact of a commodity price shock on an economy that exports this type of goods.

[3]/ Estimates from 2012 (*Monetary Policy Report,* June 2012, box III.1) indicate that an increase in mining investment of US$8.000 billion would cause an increase of around 3.5% in construction activity, which, together with all the effects on the rest of the economic sectors, would contribute around 0.5 percentage points of higher GDP. This exercise, however, was based on the previous input-output matrix, in which mining investment had a higher weight than in the current matrix. consequently, these effects could overestimate the current impacts.

BOX III.3
EVOLUTION OF THE LABOR MARKET

A number of indicators suggest that over the course of the last year, the Chilean economy has reduced its excess capacity. Despite a pause in the third quarter, economic growth has been above potential for several quarters, inflation has increased in prices that are more closely related to output, and spending has been dynamic, in particular investment. However, labor market statistics captured in various surveys reveal low job creation. This raises doubts about how much of the growth recovery has passed through to employment and why there would be an apparent lag between the two variables. At the same time, administrative sources—such as the number of pension fund members or the total number of employees enrolled in the unemployment insurance system—provide evidence that contradicts the surveys (figure III.16).

FIGURE III.16
Employment
(annual change, percent)



(1) Pension fund members with a formal job contract.
(2) Total number of employees enrolled in the unemployment insurance system.

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

In the case of jobs, employment surveys are used to extrapolate individual results to the whole population, based on so-called expansion factors. Expansion factors are parameters establishing how many people and which population segments (gender and age group: over or under 15 years) are represented by each person surveyed; and they are estimated using the population forecasts derived from the national census[1]. Thus, by construction, the surveys cannot reflect exogenous changes in the population that occur between censuses. Consequently, an immigration phenomenon of the magnitude recorded in the Chilean economy over the last few years cannot be correctly captured in the surveys until the expansion factors are updated. The information captured in the surveys, in terms of the economically active population, employment levels, and other key aggregates, is not necessarily a faithful representation of the current reality. This could also be the case for measures of the unemployment rate and the distribution of workers by occupational category (self-employed, wage workers, etc.) to the extent that the sample is not representative of this new group of workers[2].

This box uses a range of sources to review the evolution of employment, taking into account the impact of immigration flows. The analysis shows that job growth has been higher than reported in the surveys, thereby laying to rest the doubts arising from the apparently sluggish labor market.

This assessment does not imply that the labor market is tightening or that the market slack has disappeared. In fact, the behavior of wages is consistent with an increase in the supply of labor. In September 2018, the INE published, in conjunction with the usual monthly data, an updated wage growth series going back to July 2017. These new data were the result of a methodological review process that revealed significant differences between the provisional data from the survey and the final revision[3]/. Based on the corresponding adjustment, wage growth still shows a slowdown in recent quarters, but to a lesser degree than previously reported and more in line with the administrative data (figure III.17).

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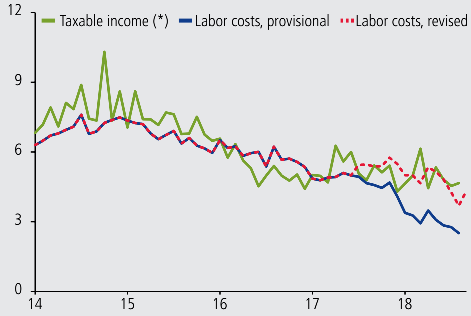
[1] Because the 2012 census was subject to a range of methodological problems, the different economic surveys carried out in the country continue to use the population forecasts from the 2002 census, implying a lag of over ten years. New population forecasts are being built using the abbreviated census implemented in 2017, which will be used as the baseline for future surveys.

[2] Immigrants are underrepresented in the employment survey, which reports a share of just 1.6%, versus almost 5% in the 2017 census.

FIGURE III.17
Nominal wages
(annual change, percent)



(*) Average taxable income, from the pension fund managers.

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

Effect of immigration on employment

As discussed in the September *Monetary Policy Report*[4]/, the Chilean economy has experienced large-scale immigration over the past few years. Estimates by the Department of Immigration and Foreign Services indicate that between January 2015 and December 2017, approximately 700,000 immigrants entered the country, causing an increase in the share of the population born overseas from 2.3 to 5.9% in just three years.

This immigration process has major effects on the economy, in particular due to the significant increase in the labor supply. Data from the 2017 census indicate that immigrants have a much higher labor participation rate than Chileans, at 80.2% versus 61.2%. In addition, despite the necessary period of adjustment after an immigrant arrives in the country, the unemployment rate for immigrants at that time (April 2017) was similar to the rate for Chileans (table III.2).

TABLE III.2
Labor market participation of Chileans and immigrants
(percent)

	Immigrants	Chileans
Participation rate	80.2	61.2
Unemployment rate	7.5	7.0

Source: Aldunate et al. (2018), based on the 2017 national census.

One way to incorporate the immigration effect—until officially revised data become available—is to adjust the population, labor force, and employment levels based on 2017 census data. To do so, we use the total number of immigrants calculated by Aldunate et al. (2018) to estimate how many are employed and then add them to the total national workers reported by the INE. This calculation cannot be done directly for 2018, since official immigration data are not yet available, so ranges are estimated based on three different scenarios: (i) immigration stopped in 2018 (zero net growth rate); (ii) immigration continued at a rate of 50% of the net immigration recorded in 2017; and (iii) the immigration rate was the same as last year. The results show that between 2016 and 2018, the average annual growth rate of employment was higher than reported by the INE at the national level, regardless of the assumption used for 2018 (table III.3). Clearly, these values show that the labor market has been able to absorb this labor supply shock, with job growth rates that are more consistent with the output trend.

TABLE III.3
Alternative estimates of job growth
(percent, annualized)

	National employment survey (NENE)	Scenarios for 2018		
		0% of 2017 flow	50% of 2017 flow	100% of 2017 flow
2016Q1–2018Q3	1.3	2.4	2.9	3.3

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

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[3]/http://www.ine.cl/prensa/detalle-prensa/2018/11/07/pol%C3%ADtica-de-actualizaci%C3%B3n-de-cifras-de-la-encuesta-mensual-de-remuneraciones-y-del-costo-de-la-mano-de-obra.

[4]/ *Monetary Policy Report,* September 2018, box III.1.

Macroeconomic effects of immigration

The macroeconomic effects of a wave of immigration like the one occurring in Chile are generated through two main channels of transmission. First, population growth increases aggregate demand for consumer goods and services, which pushes up inflation. Second, immigration expands the labor force and increases productive capacity. Additionally, the greater labor supply contains real wages, which reduces marginal costs and puts downward pressure on inflation. Together, the supply and demand channels generate an expansionary effect on output and mixed effects on inflation.

A general equilibrium model, adjusted for the Chilean economy and calibrating the effects of these changes on output and inflation, suggests that the demand effect on inflation outweighs the supply effect[5]/. Thus, an immigration wave would generate a temporary increase in the GDP growth rate and a mild increase in inflation (table III.4). The latter effect is mild because the labor supply channel offsets the inflationary pressure coming from the demand channel, to the extent that the growth of real wages declines. Therefore, the inflationary effect is lower than in the case of investment or consumption shocks[6]/. In the medium term, real wages will tend to recover as the economy's capital stock returns to equilibrium with output.

TABLE III.4
Macroeconomic effects of an immigration shock

GDP	Consumption	Real wages	Inflation
Expansionary	Expansionary	Contractionary	Positive, mild

Source: Central Bank of Chile.

Conclusions

Throughout much of 2017 and early 2018, there were doubts about the existence of a lag in the labor market vis-à-vis output growth, while there was also a considerable slowdown in the growth of wages. The methodological revision of wage surveys, together with the recognition that employment surveys are not designed to deal with unexpected changes in the population, indicate that the labor market has been more dynamic in recent years than previously estimated. In particular, the market has been able to absorb the influx of immigrants, which could, in principle, explain the wage slowdown captured in different indicators. This explanation is consistent with qualitative information from the *Business Perceptions Report,* which reveals lower wage pressures due to the greater labor supply. At the same time, because it is a supply shock, the resulting pressure on inflation due to the more dynamic market is limited.

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[5]/ Estimated following Medina and Soto (2007).

[6]/ With regard to the demand effect, immigrants are likely to allocate a share of their disposable income to remittances to their home country. The larger the share of remittances, the less disposable income is available for local consumption.

IV. PRICES AND COSTS

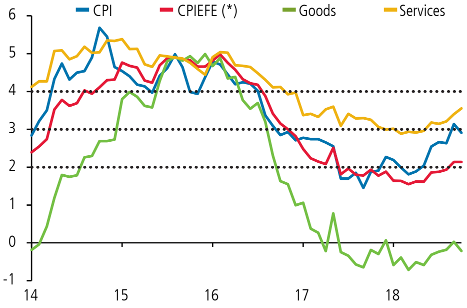
This chapter analyzes the recent evolution of the main components of inflation and costs, identifying the current sources of inflationary pressure and their likely evolution in the future.

INFLATION

After staying under 2% throughout most of the second half of 2017, annual inflation has increased over the course of this year, around 3% in recent months (figure IV.1). Although some of the increase is explained by the more volatile components of the CPI and the depreciation of the peso, inflation of the CPI basket items that are more sensitive to the output gap—namely, services and nontradables—has risen steadily throughout 2018. This is in line with the growth rate recovery that began over a year ago, in a context of favorable external conditions and a clearly expansionary monetary policy. Thus, the downside risks for convergence to the inflation target within the policy horizon have dissipated over the course of the year. An important factor in this assessment was the more positive outlook for the labor market, once all the available information had been incorporated and the impact of the recent immigration influx had been properly weighted (box III.3). In this context, the Board's position shifted from no longer considering a reduction in the monetary policy rate (MPR) open for debate—an option that had still been on the table in late 2017 and early 2018—to thinking that it was time to consider withdrawing the monetary stimulus. Thus, the Board announced in the last *Report* that the economy no longer required such an expansionary monetary stimulus and then increased the MPR by 25 basis points at its October monetary policy meeting. At the same time, the Board signaled that given the evolution of macroeconomic conditions, it would be necessary to continue reducing the monetary stimulus to ensure that the inflation forecast stayed around the target.

The baseline scenario assumes that CPI inflation will be under 3% for most of 2019, ending the year at 2.9%. This path is lower than the September forecast, and the revision is mainly explained by the effect of the sharp drop in international fuel prices in the short term. Once this effect dissipates, headline inflation will approach 3% and then fluctuate around that level throughout 2020. Core inflation (CPIEFE) will reach 3% sooner, in the first half of 2019, mainly due to the low basis of comparison left by unusually low prices for some items at the beginning of this year. From that point through the end of the forecast horizon, core inflation will fluctuate around 3%.

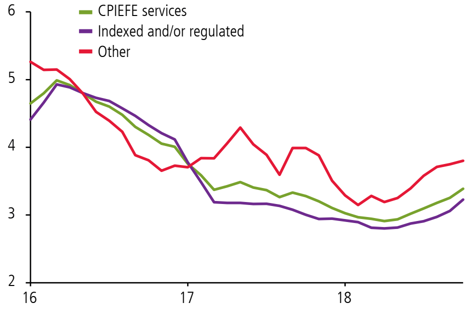
FIGURE IV.1
Inflation indicators
(annual change, percent)



(*) See glossary for definitions.

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

FIGURE IV.2
CPIEFE services and disaggregation (1)(2)
(annual change, percent)



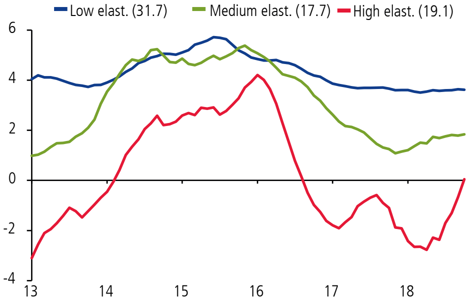
(1) Three-month moving average.
(2) For more details, see the *Monetary Policy Report,* March 2017, box IV.1.

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

FIGURE IV.3

CPIEFE grouped by exchange rate elasticity (1)(2)(3)

(annualized six-month average inflation, percent)



(1) Seasonally adjusted series.

(2) Inflation by subclass based on Contreras y Pinto (2016). Excludes financial expenses.

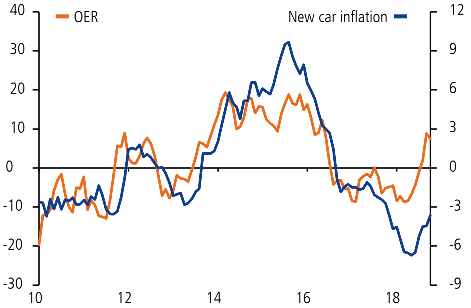
(3) Share of the CPI basket in parentheses.

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

FIGURE IV.4

Inflation of new car prices and the exchange rate

(annual change, percent)

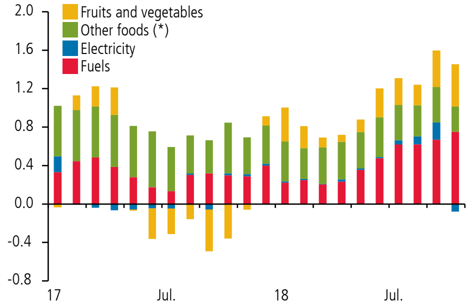


Sources: Central Bank of Chile and National Institute of Statistics (INE).

FIGURE IV.5

Contribution to annual headline inflation

(percentage points)



(*) Includes food goods and nonalcoholic beverages; excludes fresh fruits and vegetables.

Source: National Institute of Statistics (INE).

As mentioned, annual inflation has increased in 2018. Annual CPIEFE inflation rose from 1.6 in January to 2.1% in October. While this is still low on aggregate, the prices of CPIEFE items that are historically more closely linked to the evolution of output have risen gradually, but steadily over the course of the year. CPIEFE services inflation increased from 3.0 to 3.6% between January and October of this year. By item, this increase applied both to highly indexed and regulated services prices and to the rest of services, although more markedly in the case of the latter (figure IV.2).

CPIEFE goods inflation also followed an upward trend in 2018, although annual rates are still slightly negative. The peso has depreciated throughout the year, reaching 6% over its value a year ago as of the cutoff date of this *Report*. Thus, the annual inflation of CPIEFE prices that are more sensitive to the exchange rate has increased steadily over the course of the year (figure IV.3). However as mentioned in past *Reports*, the annual inflation rate of some products decreased, especially in the first half of the year, more than would be expected based on the historical relationship between these prices and the exchange rate. In the case of car prices, the *Business Perceptions Report* (BPR) suggests that this trend could reflect strong competition in the automotive industry or an increase in market participation (figure IV.4). With regard to these and other prices, according to the opinions captured in the November BPR, the high exchange rate volatility makes it hard to justify price increases based in this element. This, in a context in which the interviewees indicate indicate that competition among firms remains strong, despite a perceived improvement in demand.

The more volatile items in the CPI basket have also increased their contribution to inflation over the course of the year (figure IV.5). In the case of fresh fruits and vegetables, the higher annual inflation is mainly related to the low basis of comparison left by the unusual price trend for these items over the course of 2017. As a result, fruit and vegetable prices have risen a lot year-on-year in some months of 2018, for example, recording annual inflation of 13% in October. In the case of energy, the increase was mainly explained by higher fuel prices. International fuel prices, in particular gasoline, increased through early October, a trend that was intensified by the depreciation of the peso. Through October, the average price of gasoline in dollars was on the order of 20% higher than the 2017 average. Thereafter, fuel prices started to come back down, falling 30% between the cutoff dates of this and the last Report (figure IV.6). Importantly, the hike in gasoline prices was much lower in the local market—around 8%, on average—due to the shock-absorbing role of the fuel price stabilization mechanism (Mepco).

With regard to costs, both quantitative and qualitative indicators show that wage pressure remains low. Nominal wages—the wage index (WI) and the labor cost index (LCI)[1] —grew around 4.5% annually in September, which is below the rate in the first half of this year and also below the average of the last decade (figure IV.7). In terms of qualitative information, the November BPR continues to report low wage pressure, with immigration being a key factor in some markets and for certain types of jobs. Additionally, most of the interviewees stated that wage adjustments in the last year were closely aligned with the CPI.

Inflationary pressures from external prices have continued to decline since the last *Report*. Imported consumer goods inflation (IVUM) fell from 1.4% annually in the second quarter to a 0% in the third. The external price index (EPI) in dollars continued to fall in terms of both levels and the annual inflation rate (–2.5% in September versus 3.1% in June), mainly due to the appreciation of the dollar at the global level.

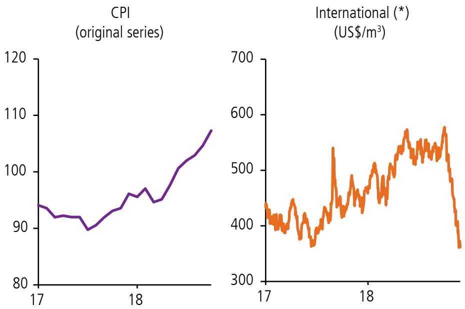
The recent evolution of inflation has been consistent with the baseline scenario presented in the last *Report*, with a few surprises that have tended to offset each other. In particular, the higher-than-expected inflation of fuel prices contrasts with the lower-than-expected inflation of some foods and other goods, especially in September, including alcoholic beverages, cigarettes, and cars.

INFLATION OUTLOOK

In the baseline scenario, annual CPI inflation will be under 3% for most of next year, mainly due to the sharp drop in fuel prices at the international level. It will approach 3% toward the end of 2019 and then fluctuate around that level through the end of the forecast horizon. Annual CPIEFE inflation will reach 3% more quickly, due to the low basis for comparison at the beginning of this year. At that time, some CPIEFE prices—including cars, tourist packages, and health services—followed an atypical trend that is assumed will not be repeated. Going forward, the CPIEFE will fluctuation around 3% through the end of the forecast horizon.

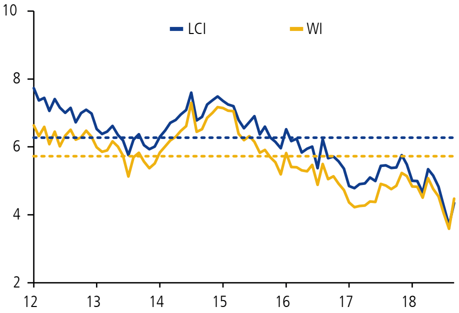
Compared with the baseline scenario in the last *Report,* inflation has been revised downward for the rest of this year and the next. This mainly reflects the more volatile components prices, especially international fuel prices as discussed above. Thus, CPI inflation is projected to be 2.7% in December of this year, which is four-tenths of a percentage point lower than the September

FIGURE IV.6
Gasoline price



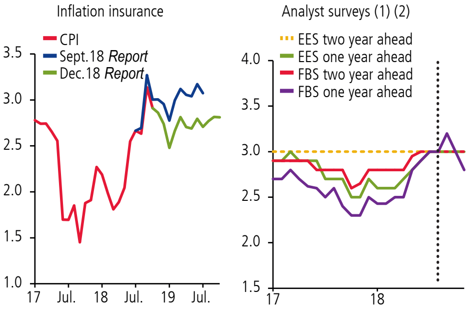
(*) 87 octane gasoline in the U.S. market.
Sources: Bloomberg and National Institute of Statistics (INE).

FIGURE IV.7
Nominal wages (*)
(annual change, percent)



(*) Dotted lines mark the average of the last ten years for each series.
Source: National Institute of Statistics (INE).

FIGURE IV.8
Inflation expectations
(annual change, percent)



(1) The FBS is for the first half of each month through January 2018. From February on, the data are from the survey published after each monetary policy meeting, except for the last datum, which is from the survey published before the December 2018 meeting.. In months when the survey is not published, the last available survey is used.
(2) Vertical dotted line marks the cutoff date of the September 2018 *Monetary Policy Report.*

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

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[1] Based on revised wage data released by the National Institute of Statistics (INE) on 7 November 2018 (www.ine.cl/docs/default-source/boletines/separatas-técnicas/2018/separata-tecnica-politica-de-rectificacion-de-cifras-de-la-encuesta-mensual-de-remuneraciones-y-costo-de-la-mano-de-obra.pdf?sfvrsn=4).

forecast. The assessment of inflation dynamics has not changed, however, as reflected in the much smaller revision of CPIEFE inflation, which will continue to follow an upward trend, very much in line with the last *Report* (figure V.3).

Private inflation expectations are similar to the baseline scenario of this *Report*, with a downward revision in the short-term outlook, especially after the aforementioned drop in international fuel prices. Inflation insurance anticipates annual inflation of 2.7% in December of this year (3.0% in the September *Report*). One year ahead, both inflation insurance and the last Financial Brokers Survey before the December monetary policy meeting put inflation at 2.8% (3.1 and 3.0%, respectively, on the cutoff date of the last *Report*). Two years ahead, market expectations are still at 3% (figure IV.8).

V. FUTURE MONETARY POLICY EVOLUTION

This chapter presents the most likely trajectory for monetary policy over the next two years, based on the Board's assessment of the dynamics projected for inflation in the policy horizon, with the information at hand at the close of this Report. It also describes sensitivity scenarios, which show how the monetary policy response could change if faced with various changes in the baseline scenario.

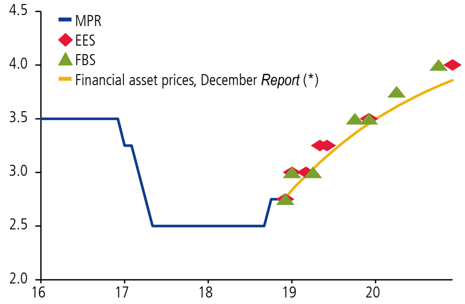
MONETARY POLICY STRATEGY

In October, the Board gave the green light to the process of monetary policy normalization, considering that the evolution of macroeconomic conditions made it less necessary to maintain the current monetary stimulus. This, because the capacity gaps had narrowed, while monetary policy remained highly expansionary. The baseline scenario of this *Report* assumes that in order to ensure that the inflation target will be achieved, this normalization process must continue. This process will continue to be implemented gradually and cautiously, in a context where the uncertainty coming from abroad is still high.

As a working assumption, the baseline scenario estimates that the MPR will be further increased in the coming months and that at the first half of 2020 it will stand near its neutral level: between 4% and 4.5%. As always, the implementation of monetary policy will be contingent to the effects of incoming information on projected inflation dynamics. Thus, new data pointing in either direction will prompt the necessary adjustments in monetary policy.

The different measures of market expectations —up to the December Monetary Policy Meeting— also consider an ongoing process of normalizing the monetary impulse, but with the MPR reaching its neutral level later than is implicit in the baseline scenario. Surveys of specialists foresee the MPR at 3.5% by the end of 2019 and 4% by the end of 2020. The prices of financial assets point to a flatter trajectory for the MPR, with it hitting 4% beyond the projection horizon, i.e., towards 2021 (figure and table V.1).

FIGURE V.1
MPR and market expectations
(percent)



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

Source: Central Bank of Chile.

TABLE V.1
MPR expectations
(percent)

	One year ahead		Two years ahead	
	September *Report*	December *Report*	September *Report*	December *Report*
EES (1)	3.00	3.50	3.50	4.00
FBS (2)	3.25	3.50	4.00	4.00
Financial asset prices (3)	3.32	3.45	3.87	3.86

(1) August and November 2018 surveys.

(2) Surveys prior to the September and December 2018 monetary policy meetings.

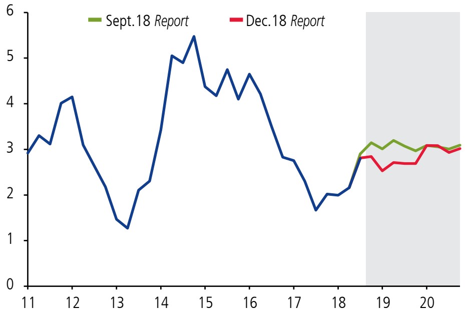
(3) The September and December *Monetary Policy Reports* use the average of the last ten business days as of 28 August 2018 and 28 November 2018, respectively.

Source: Central Bank of Chile

THE CONVERGENCE OF INFLATION

Over the course of 2018, inflation has been rising to around 3% in recent months. This has resulted from an increase in the more volatile components of the CPI and the depreciation of the peso, but it has also happened that

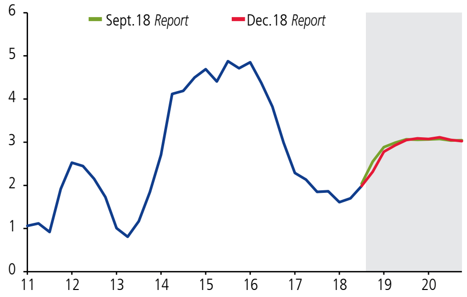
FIGURE V.2
CPI inflation forecast (*)
(annual change, percent)



(*) Gray area, as from the fourth quarter of 2018, shows forecast.

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

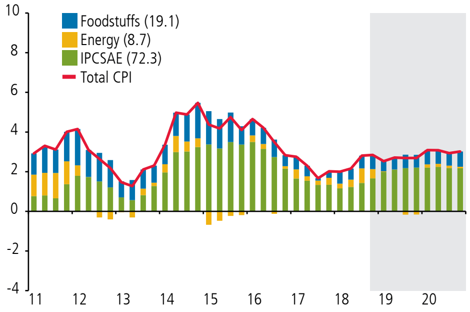
FIGURE V.3
CPIEFE inflation forecast (*)
(annual change, percent)



(*) Gray area, as from the fourth quarter of 2018, shows forecast.

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

FIGURE V.4
Contributions to annual CPI inflation (*)
(percentage points)



(*) Starting in January 2014, calculations are based on the indices with base year 2013=100, so they may not be strictly comparable with earlier figures. Gray area, as from third quarter of 2018, shows forecast.

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

inflation of those items in the basket that are more activity-gap sensitive—i.e. services and non-tradables—has grown steadily. The increases in these prices have been in line with the economy growing at a pace that has allowed it to reduce the activity gap, in a context of favorable external conditions and a clearly expansionary monetary impulse.

The baseline scenario assumes that the CPI will stand below 3% for a good part of 2019 and will end that year at 2.9%. This trajectory runs below the September forecast, a change that is mainly explained by the effect of the sharp drop in international fuel prices in the short term. Once this effect fades, headline CPI will approach 3% and will fluctuate around this figure throughout 2020. The CPIEFE will be faster to approach 3%, reaching the goal in the first half of 2019, mainly because of the base effect left by the atypical low levels of some components earlier this year. From then onwards and until the end of the forecast horizon—the fourth quarter of 2020—core inflation will hover around 3% (figures V.2, V.3 and V.4).

CAPACITY GAPS AND CURRENT ACTIVITY GAP

The trajectory followed by inflation has been consistent with the steady reduction of capacity gaps. Actually, the CPIEFE went from 1.6% at the beginning of the year to 2.1% in its last record. Although still low, as aforesaid, it will approach 3% as soon as the first half of 2019. In addition, the prices of the products in the CPIEFE that historically have been more closely associated with the evolution of activity have seen a sustained increase throughout 2018. In fact, annual inflation of the CPIEFE for services rose from 3.0 to 3.6% between January and October of this year (figure V.2).

The increase in the current account deficit—which is expected to go from 1.5% of GDP at the end of 2017 to 2.8% at the end of 2018—and in particular, in its measure at trend prices—which will stand at 3.8% of GDP at the end of 2018, compared with a little over 1% in 2016—is also a reflection of an economy spending more, as is the strengthening of the banks' credit demand perception (figure V.5).

For much of 2017 and during the first half of 2018, the low dynamism observed in labor market statistics were believed to possibly pose a risk for the convergence of inflation to the target. These doubts have dissipated as other sources of information have been incorporated into the analysis, such as administrative records of employment and salaries, and the impact of the significant immigrant flow of recent years on the labor market has been considered. The various surveys, by construction, cannot take stock of this phenomenon, resulting in an underestimation of job creation. Simulations that correct for this factor show that in recent years the growth of national employment was higher than what the surveys reported by more than one percentage point, reducing the lag with respect to the evolution of activity.

The higher growth in employment that results from considering immigrants does not imply a tighter labor market. In fact, the lower growth rates shown by wage indicators—those adjusted by the INE—are consistent with the greater labor supply derived from immigration, as suggested by the qualitative information in the IPN. However, immigration does not necessarily reduce inflationary pressures, given the increase in domestic demand coming from the increased consumption of immigrants and the increase in investment required to absorb the larger supply of labor. Both effects combined would dominate over the disinflationary effect of lower wage pressures (box III.3).

The Board maintains the potential non-mining GDP figure it estimated in September. It must be kept in mind that this is the current level of productive capacity—including the various transitory productivity shocks and problems of resource allocation that define the economy at a given moment—that is relevant to gauge the inflationary pressures that could deviate inflation away from its 3% target. On that occasion, it pointed out that for this year, the potential growth of non-mining GDP would be at 3.1% and at 3.2% in 2019. The Board also maintains its estimate of trend growth—which occurs in the absence of transitory productivity shocks and when inputs are used at their normal capacity—, that is, between 3 and 3.5% for the next ten years[1]. Potential and trend GDP will be re-estimated once the updated demographic projections based on the 2017 Census become available.

The data shows that in the third quarter of 2018 there was a pause in the process of closing the activity gap initiated in mid-2017. In any case, the figures known at the statistical close of this *Report* suggest that the slowdown in non-mining GDP in the third quarter may have been transitory. Thus, the projected gap in the baseline scenario of this *Report* considers that the closing process would resume in the fourth quarter (figure V.6). It is important to reiterate, as mentioned in the September *Report*, that the estimation of the level of the gap is subject to high degrees of uncertainty. In fact, when reviewing the standard deviation of the historical revisions to the gap as a measure of uncertainty, the range that includes 50% confidence of the estimate covers +/- 1 pp.

GAPS AND ACTIVITY IN THE BASELINE SCENARIO

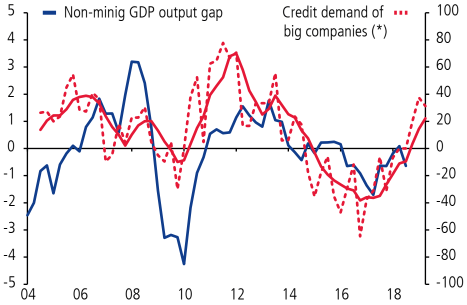
The Board estimates that GDP will grow 4% in 2018. This forecast is on the lower end of the range projected in September, mainly because of a worsened performance of mining. This forecast includes the October figures available at the statistical cutoff of this *Report*.

GDP will post an expansion between 3.25% and 4.25% in 2019 and between 2.75% and 3.75% in 2020, as was projected in September. Accordingly, the economy's growth will further approach its trend trajectory during the next two years. These ranges consider an external scenario with a declining impulse

FIGURE V.5

Credit demand perception

(annual change; net percentage of responses)



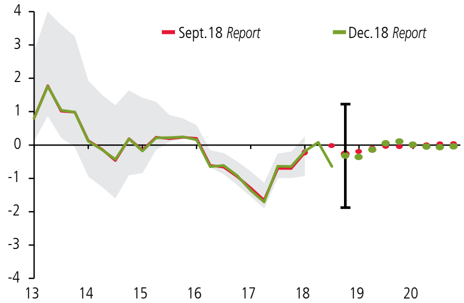
Dotted line shows the series lagged three quarters of the difference between the percentage of BCS (bank credity survey) respondents that percieve a some degree of strengthening of big companies' credit applications and the percentage of respondents that perceive some degree of weakening of said big companies' credit applications. Solid line shows the annual moving average of the series.

Source: Central Bank of Chile.

FIGURE V.6

Output gap (1) (2) (3)

(percentage points)



(1) The gray area indicates the minimum and maximum range of the gap estimations, using different estimation methods for potential GDP (trivariate filter, HP, SVAR, MEP, and SSA). See Fornero and Zúñiga (2017).

(2) Dotted lines represent forecasts.

(3) Bar in the fourth quarter of 2018 includes a +/- 1.3% range that corresponds to one standard deviation of historical revisions to the gap. Thus, the final state of the gap will fall within said interval with a 68.3% confidence.

Source: Central Bank of Chile.

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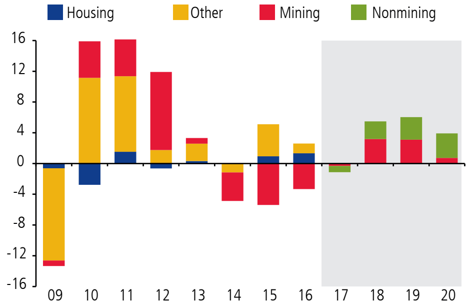
[1] See box V.1, *Monetary Policy Report*, September 2018.

FIGURE V. 7

Real annual contributions to GFCF (*)

(percentage points)



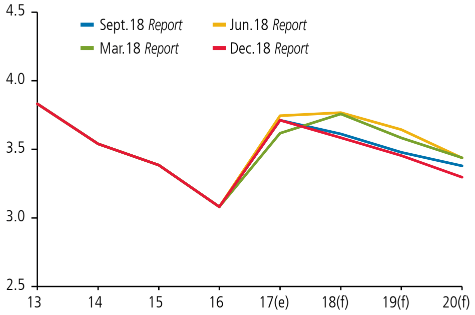
(*) For 2017 mining investment is estimated using FECU information. Housing investment uses household investment data taken from the national accounts by institutional sector. The other GFCF component is a residue. Reported projections for the years 2018, 2019 and 2020 are used forecasting models of the Central Bank and sectoral sources, including the Capital Goods Corporation (CBC)'s investment plans and cadastral surveys.

Source: Central Bank of Chile.

FIGURE V.8

Trading partners' growth

(annual change, percent)



(e) Estimate. (f) Forecast.

Source: Central Bank of Chile.

from abroad. It also contemplates that, although monetary policy will reduce its expansionary stance, the MPR will remain below its neutral level still for a few quarters. As a working assumption for the RER, it is considered that during the projection horizon it will fluctuate around its values of the last 15-20 years. In the fiscal area, as a working assumption, it is assumed that in 2019 the economy will receive a boost consistent with the approved budget. From then onwards, it is assumed that the structural deficit will follow the path of gradual descent defined by the authority.

On the expenditure side, projections assume a change in composition compared to September, with higher investment and consumption taking somewhat longer to recover growth rates in line with GDP. The change in the projection is based on the dynamism shown by gross fixed capital formation (GFCF) throughout 2018, particularly for the machinery and equipment component, which has grown around 10% on average in the first three quarters of this year. There are also significant revisions to the CBC's project survey, which in its latest version added about US$3.5 billion in projects for 2019-2020. This has a direct impact on the GFCF revision, which is particularly marked in 2019, where the growth forecast is changed from 4.5% to 6% annually (figure V.7) (box III.2). The more expansionary credit supply and demand conditions revealed by the Banking Credit Survey, plus still low interest rates by historical standards, will help boost this component of spending. Finally, the qualitative information compiled in the *Business Perceptions Report* (IPN) points to a recovery of investment compared with previous quarters and, although more often than not the projects reported are in the mining sector, investments in other sectors are gradually being observed. The greater robustness of the GFCF that is now expected will result in it rising, as a percentage of GDP, from 21.9% and 22% in 2018 to 22.5% and 22.7% on average in 2019-2020, in real and nominal terms, respectively.

Consumption has grown somewhat below the September forecast, but the baseline scenario foresees that it will resume higher rates in line with GDP growth. A first element behind this projection is the evolution of the wage bill. The calculation of this variable must consider the INE's revised wage figures and the hours habitually—not actually—worked. With this, a wage bill that grows more in line with the growth of the economy is obtained. In addition, it is possible that adding the immigratory flow results in higher growth in the wage bill. Likewise, the expectations regarding the situation for the purchase of durable goods (IPEC), are still above their neutral level. Finally, consumer loans have shown some upturn most recently, while Bank Credit Survey reports a stronger demand for these loans and some relaxation of lending standards on the supply side.

Thus, in the baseline scenario, domestic demand grows 4.7% this year, 3.8% in 2019 and 3.3% in 2020. These figures consider that the significant inventory build-up of 2018—and which has offset the –0.8% of GDP depletion accumulated between 2014 and 2017—will be slower going forward, reducing growth in domestic demand.

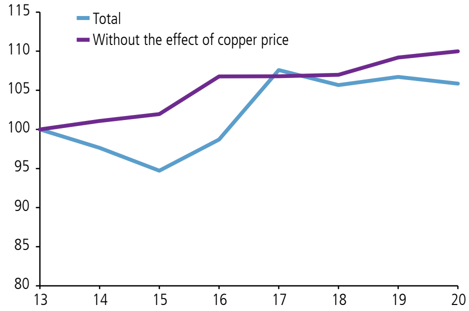
The baseline scenario of this *Report* considers that the Chilean economy will receive an impulse from abroad that will decline along the projection horizon, but that will remain positive. On the side our trading partners' growth, indicators show a peak in 2017-2018, so, as has been said in several *Reports*, in the period 2019-2020 its expansion will be slower than it was in the two-year period before (figure V.8). As has been the case in recent quarters, international financial conditions will continue to be normalized in the forecast horizon, notwithstanding episodes of volatility as long as they do not turn into a negative shock hitting the emerging economies as a group. The terms of trade, after following an upward trajectory until 2017, will remain stable in the policy horizon, because the decline in the price of copper and other export products in the period 2018-2020 is offset by the significant drop in the projections for the price of oil, its derivatives and other imported products in the same period.

The growth outlook for Chile's trading partners considers that, after growing 3.6% in the period 2017-2018, they will average 3.4% in 2019-2020. The fact of global activity slowing down from 2019 onwards has been a concern in several *Reports* and incoming information has confirmed this assessment. In developed economies, the maturity of the U.S. cycle stands out. The baseline scenario considers that the U.S. economy, after expanding 2.9% this year, will grow only 2.3% in 2019 and 1.7% in 2020. Behind this is mainly the fading of the fiscal stimulus injections of the last several quarters and a process of monetary policy normalization that has run its course. The Eurozone has already shown signs of a slowdown in its main member countries in recent months. Thus, for this bloc projections foresee growth rates averaging 4 tens of a point less in 2019-2020 than in 2017-2018.

The lower expansion rates are not exclusive to the developed economies. Among emerging economies, China's expected deceleration is worth noting because of its weight, where GDP will go from growing on average 6.7% in 2017-2018, to only marginally over 6% in the following two years. The latest activity figures for China already reflect this. In addition, its authorities have been exhausting the gaps to continue implementing stimulus measures; in particular, they have been reducing the current account surplus and international reserves, while its fiscal deficit and the global indebtedness of the economy have increased. Although the projections for Latin America do not consider a slowdown in the near future, their projections have seen important downward adjustments. In particular, developments in Argentina will lead this economy to suffer a recession in 2018 and 2019, while Brazil will have quite lean expansion rates considering the deep recession that it just came out of in 2017.

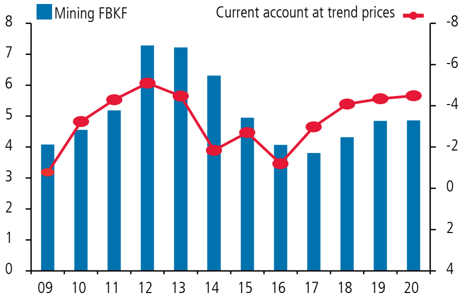
As mentioned, in the baseline scenario, the terms of trade will remain near the levels of 2018 (figure V.9). This is mainly due to the significant drop in the oil price in recent weeks, which has a direct correlation with the projections extracted from futures prices. The baseline scenario considers that the Brent and WTI barrels will average close to US$60 in 2019 and 2020. This scenario is consistent with the industry's cost estimates and which accounts for a high elasticity of crude oil supply around US$60 per barrel. Since September, the copper price has remained between US$2.7 and US$2.9 per pound, close to its estimated long-term values, so the baseline scenario contemplates it will continue to oscillate around these values. Specifically, it assumes that after averaging US$2.95 in 2018, it will be at US$2.85 and US$2.8 in 2019 and 2020, as was foreseen in the last *Monetary Policy Report*. Other export products will also see their prices fall in of 2019-2020 compared to 2018.

FIGURE V.9
Terms of trade
(index, 2013=100)



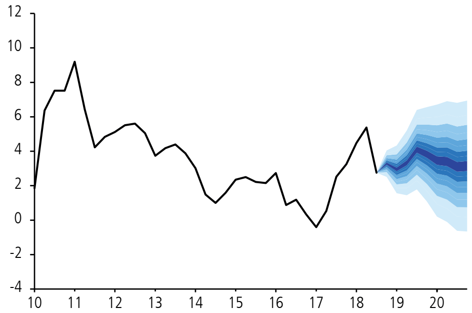
Source: Central Bank of Chile.

FIGURE V.10
Mining FBKF and current account at trend prices
(percent of GDP)



Source: Central Bank of Chile.

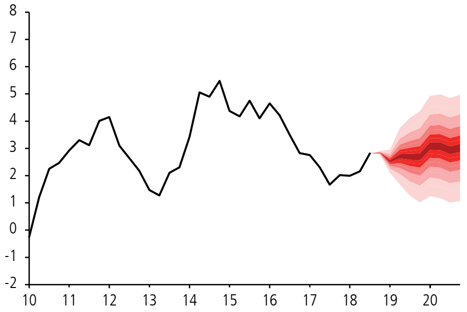
FIGURE V.11
Quarterly GDP growth scenarios (*)
(annual change, percent)



(*) 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 are calculated using the RMSE of the MAS-MEP models for the 2009-2017 average and summarize the risks on future inflation as assessed by the Board. As a working assumption, the baseline scenario estimates that the MPR will be further increased in the coming months and that at the first half of 2020 it will stand near its neutral level: between 4% and 4.5%.

Source: Central Bank of Chile.

FIGURE V.12
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 are calculated using the RMSE of the MAS-MEP models for the 2009-2017 average and summarize the risks on future inflation as assessed by the Board. As a working assumption, the baseline scenario estimates that the MPR will be further increased in the coming months and that at the first half of 2020 it will stand near its neutral level: between 4% and 4.5%.

Source: Central Bank of Chile.

Considering the changes in the internal and external scenarios, the current account is projected to increase its deficit and reach 2.8% of GDP at the end of 2018 and remain close on average in 2019-2020. This is more than was foreseen in September, mainly because of higher remittances abroad, particularly from mining companies, considering the cost reduction processes they have carried out and which have propped up profits. Also due to higher imports related to investment growth, inventory restocking and increased consumption, as well as lower-than-expected copper shipments. At trend prices[2], the current-account deficit is also larger than expected in September and is foreseen to be around 4% in the projection horizon. Although it looks high, it owes to increased investment—primarily in mining—that is funded with external savings. A similar situation was already seen in 2011-2013, associated with the mining investment cycle at the time (figure V.10).

SENSITIVITY SCENARIOS

The monetary policy strategy consistent with the convergence of inflation to the target is contingent on compliance with the baseline scenario outlined here. As always, there are internal and external elements that could modify these projections. On the one hand, from the standpoint of its impact on local activity, the balance of risks in the external scenario remains biased to the downside. At the same time, the Board considers that both the balance of internal risks for activity and for inflation are unbiased. The materialization of the risks—detailed in the Summary of this *Report*—would modify the baseline scenario and thus the trajectory of the monetary policy rate (figures V.11, V.12, and V.13).

Although any change in the baseline scenario must be evaluated in its completeness, it is possible to quantify some possible deviations from the baseline scenario and their impact on the main macroeconomic variables.

The first one asks what would happen if investment—both mining and non-mining—turns out to be more dynamic in 2019, growing one percentage point more than expected. Obviously, this would result in higher GDP growth and, because this increase in investment is not concentrated in mining, it would trigger an increase in inflation. Absent an increase in the MPR, inflation could accumulate 1.4 percentage points more than expected in the period 2019-2022. Although the effects are more evident beyond the policy horizon, if there is no policy action, inflation will not converge to the target within two years. Therefore, should this scenario occur, the MPR should be raised above its levels considered neutral, following a somewhat steeper path than that contemplated in the baseline scenario.

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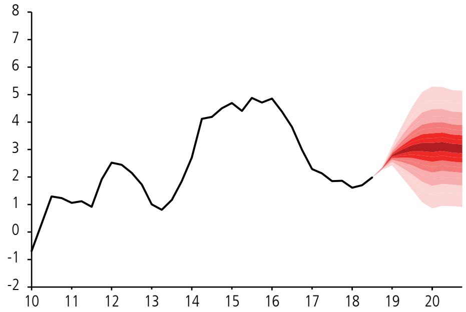
[2] This measure adjusts the value of mining exports or fuel imports considering the deviations of the prices of copper and oil from their long-term values. The same for revenues and transfers associated with copper exports. Other exports and imports are valued using current prices. Furthermore, it does not correct possible changes in the quantities exported or imported because of movements in copper and oil prices. The calculation considers a long-term price of US$2.7 per pound of copper and US$70 per barrel of oil (box V.2 in the September 2012 *MP Report* and box V.1 in the December 2015 *MP Report*).

It is also possible to envision a situation where consumption is less dynamic than expected in the baseline scenario during 2019, growing one percentage point less than projected. This would have a correlation with GDP, which would grow around 0.5 pp less in 2019 and 2020. The deflationary effects of such a case would lead to inflation remaining below 3% beyond the policy horizon. To ensure convergence, the MPR should follow a process of normalization more gradual than assumed in the baseline scenario, with the MPR taking longer to reach its neutral level.

In the external scenario, the risk of an abrupt deterioration of external financial conditions has been present for several quarters. An episode of this kind could respond to a particular element—the performance of the U.S. economy—or a combination of several events, such as Brexit-related problems, a worsening of conditions in Italy, an escalation of the trade conflict or a sharper fall in stock markets. Such a scenario could be characterized in a similar way to that of the first quarter of 2016[3]. A deterioration of this magnitude in the external impulse would have contractionary effects on the Chilean economy and in 2019 the GDP would be slightly more than one pp below the figure assumed in the baseline scenario. Inflation would take longer to converge, in a context where the real exchange rate accumulate a depreciation of somewhat above 5% in the 2018-2020 period. To ensure the convergence of inflation in such a scenario, the process of monetary policy normalization should be slower, with the MPR reaching its neutral level only at the end of 2021.

The simulations just analyzed are scenarios that, without turning around the baseline scenario, reflect the magnitudes of monetary policy adjustments that certain deviations from the baseline scenario might require. However, it is important to note that in none of the scenarios described should the MPR be lowered—even in the most negative ones. As always, the Board reiterates that it will review possible deviations from the baseline scenario that could endanger the convergence of inflation to the target in the projection horizon and that therefore could require adjusting the trajectory of the MPR. The Board reaffirms that it will conduct monetary policy with flexibility, so that projected inflation stands at 3% over the two-year horizon.

FIGURE V.13
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 are calculated using the RMSE of the MAS-MEP models for the 2009-2017 average and summarize the risks on future inflation as assessed by the Board. As a working assumption, the baseline scenario estimates that the MPR will be further increased in the coming months and that at the first half of 2020 it will stand near its neutral level: between 4% and 4.5%.

Source: Central Bank of Chile.

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[3] This would imply, during 2019, a reduction in the copper price to less than US$2.5 per pound, an oil price around US$40 per barrel, a major slowdown in trading partners' growth (more than 1 pp) and an EMBI Chile near 250 basis points.

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.

CEMBI: Corporate Emerging Market Bond Index. A measure of corporate risk, calculated by J.P. Morgan as the difference between the interest rate on dollar-denominated bonds issued by banks and corporations in emerging economies, and the interest rate on U.S. Treasury bonds, which are considered risk free.

Commodity exporters: Australia, Canada, and New Zealand, weighted at PPP (using data from the October 2018 WEO).

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

EPI: External price index for Chile, calculated using the wholesale price index (WPI)—or the CPI if the WPI is not available—expressed in U.S. 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.

Growth of trading partners: The growth of Chile's main trading partners, weighted by their share in total exports over two rolling years. The countries included are the destination for about 94% of total exports, on average, for the 1990–2017 period.

IVUM: Import price index.

Latin America: Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela, weighted at PPP (using data from the October 2018 WEO).

MER-5: MER against the following five currencies: Canada, the Eurozone, Japan, United Kingdom, and United States.

MER-X: 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 2018, the following countries are included: Argentina, Bolivia, Brazil, Canada, China, Colombia, France, Germany, India, Italy, Japan, Mexico, Netherlands, Paraguay, Peru, South Korea, Spain, Thailand, United Kingdom, United States, and Vietnam.

NER: Nominal exchange rate.

OER: Observed exchange rate.

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 the 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, South Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand, weighted at PPP (using data from the October 2018 WEO).

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.

World growth at market exchange rate: Each country is weighted according to its GDP in U.S. dollars, published in the IMF World Economic Outlook (WEO, October 2018). The sample of countries used in the calculation represent around 90% of world growth. For the remaining 10%, an average growth rate of 1.8% is used for the 2018–2020 period.

World growth: Regional growth weighted by its share in world GDP at PPP, published in the IMF World Economic Outlook (WEO, October 2018). World growth forecasts for the period 2018–2020 are calculated from a sample of countries that represent about 86% of world GDP. For the remaining 14%, an average growth rate of 3.4% is used for the period.

ABBREVIATIONS

BCP: Central Bank bonds denominated in pesos

BCU: Indexed Central Bank bonds denominated in UFs

BIS: Bank for International Settlements

BLS: Bank Lending Survey

BLS: Bureau of Labor Statistics

BPR: *Business Perceptions Report*

CPIEFE: Consumer price index excluding food and energy

EES: Economic Expectations Survey

FBS: Financial Brokers Survey

FFR: Federal funds rate

IIF: The Institute of International Finance

IMCE: Monthly Business Confidence Index

IMF: International Monetary Fund

IPEC: Consumer Confidence Index

IPSA: Selective Stock Price Index

LCI: Labor cost index

MPR: Monetary policy rate

MSCI: Morgan Stanley Capital International

OECD: Organization for Economic Cooperation and Development

OPEC: Organization of the Petroleum Exporting Countries

PDBC: Central Bank discount promissory notes

SBIF: Superintendence of Banks and Financial Institutions

SDF: Standing deposit facility

SDR: Special drawing rights (IMF)

SNA: System of National Accounts

UF: Unidad de Fomento (an inflation-indexed unit of account).

WI: Wage index

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Alejandro Zurbuchen S.
LEGAL REPRESENTATIVE

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

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