

# MONETARY POLICY REPORT

June 2019



# MONETARY POLICY REPORT\* / JUNE 2019

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\*/ This is a translation of a document originally written in Spanish. In case of discrepancy or difference in interpretation the Spanish original prevails. Both versions are available at [www.bcentral.cl](http://www.bcentral.cl).





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\*/ This Report takes into account the Financial Brokers Survey published on 4 June and the monetary policy decision announced on 7 June. For all other purposes, the statistical cutoff date of the *Monetary Policy Report* was 3 June 2019.



# PREFACE

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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 Section 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, output and aggregate demand, 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. 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 meeting on 7 June 2019 for presentation to the Senate on 10 June 2019.

## The Board



# SUMMARY

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In recent months, annual CPI inflation has hovered around 2%, in both its headline and its core measure. Activity slowed its annual expansion rate in the first quarter, to less than expected. This adjustment concentrated most specifically in mining, agriculture and other sectors dominated by supply factors. On the expenditure side, there was a significant deceleration of investment, particularly of machinery and equipment, and of exports. Meanwhile, consumption kept its expected dynamism. Abroad, the main development since the last *Monetary Policy Report* has been the escalating conflict between the United States and its main trading partners, resulting in increased risk aversion, affecting the value of assets, currencies and commodities, as well as Chile's terms of trade.

In this *Report*, the Board has updated the structural parameters estimates that are used in evaluating the state of the economy, its outlook and the calibration of monetary policy. Most importantly, this allowed to quantify the effect of the strong immigration flow of recent years on both trend and potential growth, increasing both. At the same time, the neutral MPR has been revised downwards by 25 basis points, partly reflecting the fall in neutral rates around the world. The wider gaps resulting from the updating of parameters together with weak activity and demand in the first quarter are consistent with the recent inflationary dynamics. All these elements combined led the Board to estimate that for effective growth to succeed in closing the activity gap and inflation to converge to the target, it is necessary to recalibrate the monetary impulse. Accordingly, at its June meeting the Board decided to lower the MPR by 50bp.

In the first quarter this year, activity grew 1.6% annually, a combined result from a 3.6% drop in mining and a 2.2% increase in non-mining activity. The high basis of comparison of the same quarter a year ago anticipated that the quarter's growth would compare negatively with the first quarter of 2018, but it was still lower than expected. This reflected the negative behavior of mining—affected by climatic factors, downtime at some mines and lower mineral ore— and several of the more volatile sectors of non-mining GDP, linked to natural resources. In particular, worth noting was the worse than expected performance of agriculture, fisheries, and electricity, gas and water. Most of the non-mining sectors whose activity is more demand related behaved in line with expectations, specifically construction and services. The main exception was manufacturing exports, which combined the high basis of comparison, weak demand in destination markets—notably Latin America—and greater competition abroad.





On the demand side, the main changes of the first quarter were the slowdown of investment in machinery and equipment and exports. This coincides with the deterioration of the external scenario in recent quarters and inventory build-up that has not reversed as expected. On the other hand, investment in construction and other works and consumption evolved as expected, showing no change in the trend of the previous quarters, while various labor market indicators show an increase in employment creation.

About inflation, March and April figures show headline (CPI) and core (CPIEFE) inflation remain near 2% annually. The same phenomena identified in the March *Report* are still present: stronger competition in some markets, capacity gaps exceeding the previous estimates, and pass-through from the accumulated peso depreciation to local prices below historic averages.

The updating of the structural parameters revealed that the estimation of trend GDP—which is understood as medium-term growth—benefits from the impact of the strong immigration of recent years. This has characteristics that make it a relevant phenomenon from the macroeconomic standpoint, particularly because of the magnitude of the labor force increase and the specifics of the immigrant population (box V.3). However, the economy must undergo a process of adjustment towards the full absorption of the labor supply increase, so that the newcomers can find positions that match their skills. International experience is not conclusive regarding how long this process may take, because the characteristics of the migratory processes differ widely from one case to another. It is expected that, as the immigration flow is accommodated, a gradual increase in capital accumulation and productivity will be observed. The Board estimates that Chile's trend economic growth of between 3.25% and 3.75% for the period 2019-2028 (3.0% to 3.5% in September 2018). This range considers the uncertainty regarding several of the aforementioned factors (box V.1). In particular, this projection assumes that total factor productivity of the non-mining sector will increase 1% in the next two years, however there are still uncertainties, originating in the low dynamism that this variable has shown in recent years.

Updating trend GDP is important for the determination of the economy's potential GDP, understood as GDP growth consistent with stable inflation, and, by its nature, is relevant for the calculation of the short-term activity gap, associated with inflationary pressures. The difference between the two concepts—trend and potential GDP—is that the latter, in contrast to the medium-term variable, can be affected by short-term productivity fluctuations and transitory limitations to factor availability. The Board estimates that for the period 2019-2021 potential economic growth will be around 3.4% (around 3.2% in September 2018), somewhat below its trend growth. This estimate combines the initial fall in

productivity with the labor force increase and the expected lags in the adequacy of the capital stock in response to this phenomenon. The updating of potential growth, together with the performance of the economy in the first quarter, cause the level of the activity gap to be wider than previously considered: -0.7%. The baseline scenario assumes that the gap will gradually close along the projection horizon, although at a slower pace than previously foreseen (figure V.2).

Regarding the neutral MPR, the set of estimates yields neutral interest rates of the order of 1% in real terms. Taking into account the range of estimates and the uncertainty surrounding this calculation, the Board estimates the neutral MPR between 3.75% and 4.25% in nominal terms, that is, 25 bp below the range expected until March, partly reflecting the lower neutral interest rates worldwide (box V.2).

The Board considers that, in light of the updating of the structural parameters, the economy has not recovered enough to close the activity gap and boost inflation. For this reason, they deemed necessary to increase the monetary impulse to ensure the timely convergence of inflation to the target. Consistently, in the June meeting, it was decided to recalibrate the monetary impulse, by cutting 50bp off the MPR. Going forward, the timing of the MPR normalization will depend on inflation being in a clear process of convergence to the target. For this evaluation, especially important will be how the labor market absorbs the massive immigration, the response of investment and the developments in the external scenario.

The convergence of inflation to 3% is subject to a baseline scenario of the following characteristics: on the one hand, it considers that the activity gap will close throughout the projection horizon, during which period the economy will accumulate growth above its potential level. For 2019, GDP growth is expected to stand between 2.75% and 3.5%, below the March estimate, mainly due to the effect of the negative surprise of the first quarter. Actually, this projection is consistent with the economy resuming its higher rates of annual expansion in the second half of the year. For 2020 and 2021, higher growth rates are foreseen, between 3% and 4% in both years. This considers that the macroeconomic effects of the immigration phenomenon will be more evident, pushing up salaried employment, investment and consumption. It is also based on the fact that the large-scale investment projects will be executed as planned, with a significant concentration in the next two years.

## ECONOMIC GROWTH AND CURRENT ACCOUNT

	2018	2019 (f)	2020 (f)	2021 (f)
	(annual change, percent)			
GDP	4.0	2.75-3.5	3.0-4.0	3.0-4.0
National income	3.8	3.2	3.9	3.6
Domestic demand	4.7	2.9	3.8	3.5
Domestic demand (w/o inventory change)	3.9	3.4	3.9	3.5
Gross fixed capital formation	4.7	4.5	5.1	4.1
Total consumption	3.7	3.1	3.5	3.4
Goods and services exports	5.0	0.6	3.6	2.7
Goods and services imports	7.6	0.6	4.3	2.7
Current account (% of GDP)	-3.1	-2.9	-2.8	-2.8
Gross national saving (% of GDP)	19.6	19.9	20.2	20.5
Gross national investment (% of GDP)	22.7	22.8	23.1	23.3
GFCF (% of nominal GDP)	21.3	21.8	22.1	22.3
GFCF (% of real GDP)	21.2	21.5	21.8	22.0
	(US\$ million)			
Current account	-9,157	-8,400	-8,700	-9,300
Trade balance	4,669	5,300	4,400	3,600
Exports	75,452	74,400	78,500	81,300
Imports	-70,783	-69,100	-74,100	-77,700
Services	-3,996	-4,100	-3,900	-3,700
Rent	-12,241	-11,300	-11,000	-11,000
Current transfers	2,411	1,700	1,800	1,800

(f) Forecast.

Source: Central Bank of Chile.

**INTERNATIONAL BASELINE SCENARIO ASSUMPTIONS**

	Avg. 00 - 07	Avg. 10 - 17	2018	2019 (f)	2020 (f)	2021 (f)
	(annual change, percent)					
Terms of trade	8.2	2.0	-2.1	0.9	0.1	-0.3
Trading partners GDP (*)	3.6	3.9	3.6	3.2	3.2	3.3
World GDP at PPP (*)	4.5	3.9	3.6	3.2	3.2	3.3
World GDP at market exchange rate (*)	3.2	3.1	3.0	2.5	2.5	2.7
Developed economies' GDP at PPP (*)	2.4	1.8	2.2	1.6	1.5	1.6
Emerging economies' GDP at PPP (*)	6.5	5.3	4.8	4.5	4.5	4.7
External prices (in US\$)	4.6	0.8	2.4	-1.8	3.4	3.4
	(levels)					
LME copper price (US\$/lb)	154	312	296	280	280	280
WTI oil price (US\$/barrel)	44	75	65	60	58	56
Brent oil price (US\$/barrel)	42	83	71	68	65	62
Gasoline parity price (US\$/m <sup>3</sup> ) (*)	366	633	544	512	499	485
Libor US\$ (nominal, 90 days)	3.6	0.5	2.3	2.8	2.9	2.9

(\*) For definition, see glossary.

(f) Forecast.

Source: Central Bank of Chile.

Meanwhile, in the baseline scenario, the external impulse that the Chilean economy will receive in the next two years will be lower than expected in March and the in the two years before. The revision with respect to March responds to the negative international developments of recent weeks, particularly as the intensification of the trade conflict has led to greater risk aversion, causing, among other effects, a global appreciation of the dollar and a reduction in the prices of most commodities, including copper. The latter has special relevance due to its effect on the terms of trade (ToT). Thus, for the period 2019-2021 it is assumed that the ToT will accumulate an increase of 0.6%, which compares with the 1% increase expected in March. This projection considers annual average copper prices closer to US\$2.80 per pound between 2019 and 2021, and not around US\$2.90 as projected in March.

Regarding world growth, the baseline scenario slightly adjusts downward the expansion foreseen for our trade partners during this year, placing it at 3.2% (3,3% in March). Importantly, this revision inputs a quite worsened performance of Latin America. It is still estimated that China will grow around 6% and the U.S., somewhat above 2%. Although the world growth forecast does not change much from March, there has been a sharp deterioration of world trade growth, which is captured in the less favorable evolution foreseen for Chilean exports.

The projections contained in the baseline scenario of this *Report* consider a set of working assumptions. For the real exchange rate (RER), it assumes that during the next two years it will fluctuate around its 15- and 20-year averages. On the fiscal side, it is foreseen that in 2019 the impulse that the economy will receive will be 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. Finally, it assumes that during the coming quarters the MPR will remain where it is, to begin a gradual normalization process during next year<sup>1/</sup>.

Considering all the above, in the baseline scenario CPI inflation will fluctuate around 3% during 2020, while the CPIPEF would reach that value in early 2021. By the end of this year inflation is projected to be slightly below 3%.

As usual, the Board reiterates that the baseline scenario reflects the events that are most likely to occur given the information at hand at the close of this *Report*. However, there are risks that, if materialized, would alter not only the macroeconomic panorama, but also the course of monetary policy.

Externally, the balance of risks continues to be biased downwards, making the occurrence of negative events more likely. The escalating trade conflict between China and the U.S. has taken front row and has begun to permeate other areas of the relationship between the two economies. In addition, the U.S. tariff decisions have spread to other countries and with motivations other than strictly commercial ones. All this has raised fears of a sharper trade slowdown, a deterioration in the confidence of companies and households globally and a loss

**INFLATION (1)**

	2018	2019 (f)	2020 (f)	2021 (f)
	(annual change, percent)			
Average CPI inflation	2.4	2.2	2.8	3.0
December CPI inflation	2.6	2.8	2.9	3.0
CPI inflation in around 2 years (2)				3.0
Average CPIPEF inflation	1.9	2.2	2.7	3.0
December CPIPEF inflation	2.3	2.6	2.9	3.0
CPIPEF inflation in around 2 years (2)				3.0

(1) For 2018, it shows annual change obtained with the 2013=100 basket. As from 2019, the 2018=100 basket is used, so figures are not strictly comparable with those of earlier years.

(2) Inflation forecast for the second quarter of 2021.

(f) Forecast.

Source: Central Bank of Chile.

<sup>1/</sup> Chapter V contains sensitivity tests that evaluate some possible deviations away from the baseline scenario and their effects on the main macroeconomic variables.

of dynamism in global activity. Another concern is the resurgence of the possibility of a no-deal Brexit. Scenarios where these risks intensify could lead to a sharp deterioration of financial conditions, in which case the main central banks would probably make their monetary policies more expansionary. However, this may be insufficient to contain the loss of risk appetite and the fall in asset and commodity prices. The high prices that some riskier assets have reached—in some cases mirrored by increased borrowing—makes such a scenario much more complex. The materialization of any of these scenarios could have a negative impact on local investment decisions and expectations.

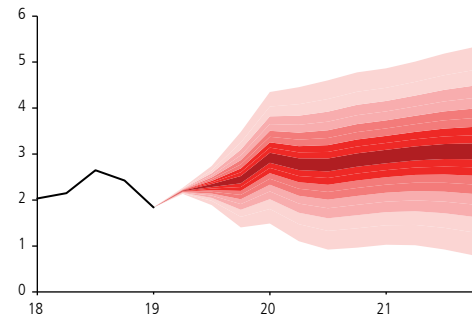
At home, it is estimated that the balance of risks for activity is biased downward. The baseline projection is that, beyond the first-quarter result, investment will see a significant recovery in the next two years, covering both large-scale mining projects and investment in other sectors. However, there are risks derived, for example, from the increased uncertainty of the external scenario and the various costs associated with investment projects' required formalities. There are also risks associated with the evolution of the mining sector. Although its weak performance of recent quarters has responded in part to specific factors, there are more permanent elements, such as the lower ore grade, which could prolong this weakness.

Regarding inflation, the Board estimates that risks are unbiased. The updating of structural parameters has a significant degree of uncertainty, particularly due to the macroeconomic effects of immigration. On the one hand, it is possible that the absorption of immigrants into the labor force is associated with a productivity fall that is more persistent, slowing potential growth in the projection horizon, a narrowing of the activity gap and, therefore, higher inflationary pressures. On the other hand, the increase in the labor supply could be more intense, which would result in greater potential GDP growth, a broader activity gap, and lower pressures on wages and prices. It must also be taken into account that the negative balance of external risks affects the exchange rate, which could raise, more than assumed, short-term inflation. Nonetheless, over the medium term, the dominant factor would be the negative effect on activity's dynamism, widening the gap and delay the convergence of inflation.

Summing up, the evaluation of the macroeconomic scenario and its outlook, which includes the updating of the structural parameters and the recent performance of the economy, suggest that a stronger monetary impulse is needed to ensure the convergence of inflation to the target. Accordingly, the Board decided to lower the MPR by 50bp. With this action, the Board reaffirms its commitment to conduct monetary policy with flexibility, so that projected inflation stands at 3% over the two-year horizon.

**CPI INFLATION FORECAST (\*)**

(annual change, percent)

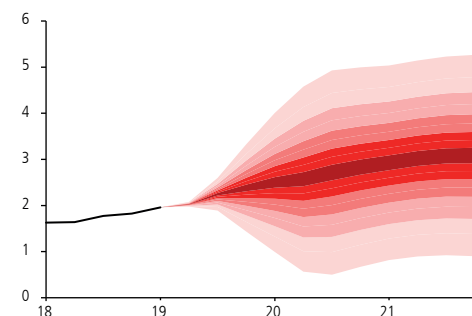


(\*) The figure shows confidence interval of baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. Confidence intervals are built based on the RMSE of averaged MAS-MEP models from 2009 to 2017. Also, the intervals contain the risk evaluation on growth performed by the Board. For 2018, the annual variation of CPI is obtained by splicing the 2013=100 series with the monthly variations of the 2018=100 basket starting in February 2018. See box IV.1, March 2019 Report. For forecasting purposes, the working assumptions is used that over the coming quarters the MPR will remain flat and will begin a gradual normalization process during 2020.

Source: Central Bank of Chile.

**CPIEFE INFLATION FORECAST (\*)**

(annual change, percent)



(\*) The figure shows confidence interval of baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. Confidence intervals are built based on the RMSE of averaged MAS-MEP models from 2009 to 2017. Also, the intervals contain the risk evaluation on growth performed by the Board. For 2018, the annual variation of CPI is obtained by splicing the 2013=100 series with the monthly variations of the 2018=100 basket starting in February 2018. See box IV.1, March 2019 Report. For forecasting purposes, the working assumptions is used that over the coming quarters the MPR will remain flat and will begin a gradual normalization process during 2020.

Source: Central Bank of Chile



# MONETARY POLICY DECISIONS IN THE LAST THREE MONTHS

## MARCH MEETING

The March *Monetary Policy Report* indicated that the main change relative to the baseline scenario in December was in local inflation. Measured by the reference CPI (calculated by the INE using the new basket and methodology), annual inflation was significantly lower than the forecast. Given that output and demand had been in line with expectations, the lower inflation was consistent with a lower-than-expected pass-through of the peso depreciation, supply factors in some sectors, and greater excess capacity deriving from the increase in the labor force as a result of high immigration. In this scenario, the convergence of inflation to the target would be slower than projected in December.

Domestic output had picked up after pausing in the third quarter of last year. Thus, total GDP grew 4.0% in 2018; and non-mining GDP, 3.9%. On the demand side, investment remained dynamic, especially in machinery and equipment. Nondurable goods and services consumption continued to grow at rates in line with GDP growth, while durables consumption had slowed significantly, especially due to the normalization of the volume of sales in the car sector. Partial output data for the first quarter of 2019 revealed slower growth than in late 2018, which reflected a higher basis of comparison and, in particular, a weak performance in the mining sector.

With regard to the determinants of spending, the cost of credit remained favorable, and both lending conditions and demand had improved. Consumer expectations (IPEC), in turn, had declined compared with late 2018, while business expectations (IMCE) turned up, mainly in the construction sector. In the labor market, the national unemployment rate had stayed around 7%. In investment, the survey by the Capital Goods and Technological Development Corporation (*Corporación de Desarrollo Tecnológico y de Bienes de Capital*, CBC) contained an upward revision of the investment outlook for this year and the next two years, with mining investment continuing to account for the largest share of the growth. Inventories had increased substantially in 2018, mainly associated with the export sector and machinery and equipment imports.

Internationally, there was a more marked slowdown in the main

developed economies, which, in conjunction with lower inflationary pressures and financial volatility, had led several countries to increase their monetary and/or fiscal stimulus. The U.S. Federal Reserve had shown itself to be open to maintaining an expansionary stance for some time, which led to a significant decline in long-term interest rates in the United States. The global financial markets remained susceptible to potentially negative news, as reflected in the tension in late 2018 and near the cutoff date of this *Report*. The baseline scenario considered that the external boost to the economy in the next two years would be positive, but lower than in the last two years. The scenario incorporated, relative to December, a downward revision in world growth and somewhat more favorable financial conditions.

In this context, the baseline scenario projected that the Chilean economy would grow between 3 and 4% this year, slightly lower than the December forecast (3.25 to 4.25%), mainly due to a weaker performance of the mining sector. For 2020, GDP was projected to grow from 3 to 4%, slightly above the previous forecast; and for 2021, from 2.75 to 3.75%. Investment was expected to continue to be the most dynamic component of spending, with an annual growth rate of over 6% in 2019 and around 4% in 2020 and 2021. Consumption would grow at rates in line with GDP.

All the Board Members agreed that the information and analysis in the *Monetary Policy Report* confirmed that it would be prudent to postpone the withdrawal of the monetary stimulus. In particular, the inflation measure using the new CPI had been significantly lower than expected—due, in part, to apparently greater economic slack—and its convergence to 3% would take almost a year longer than projected in December. Moreover, there was some uncertainty about the structural parameters, including potential growth and the natural rate of interest, which would be addressed in the June *Report*.

For the medium term, everything indicated that it would be necessary to normalize the MPR to bring it to its neutral level. In the short term, however, the main focus was on understanding the current inflation level and what it implied for the future inflation path. Thus, holding the MPR at its current rate was the natural choice, consistent with inflation convergence to the target within the policy horizon. It was



also in line with the risk scenarios, and it demonstrated consistency between the Bank's actions and its communication. The Board voted unanimously to hold the MPR at 3%.

## MAY MEETING

For the May meeting, the output data for the first quarter suggested that the risks of a sharp growth slowdown in the developed world had eased somewhat. However, the external scenario still contained significant negative risks. The trade war between the United States and China had intensified in the days leading up to the meeting, causing an increase in volatility and global risk aversion and a drop in most commodity prices, including copper. High asset prices were also a concern, given the implications of possible corrections. Furthermore, there was evidence suggesting that the risks associated with corporate indebtedness had increased in some large economies. Otherwise, the external scenario had not changed significantly, with a gradual slowdown in the main economies, low inflation, and expansionary monetary policies.

Domestically, although output and demand had grown less than expected, this was mainly explained by supply factors, in particular in mining, agriculture, and fishing. With the exception of a few industries, the remaining sectors—more tied to the evolution of macroeconomic conditions—were in line with expectations. Thus, while it was possible that the first-quarter results would lower the growth forecast for the year, the economy would continue to pick up, which would contribute to closing the output gap.

Nevertheless, while demand-related sectors had grown in line with the forecast, there were still questions about the current level of spare capacity, in particular regarding the effect of the high immigration. As a result of that phenomenon, the economic slack was probably greater than previously thought, such that, to some degree, the monetary stimulus had been lower than estimated. Additionally, it was suggested that the real strength of domestic demand needed to be reconsidered, in a context of deteriorating economic expectations and confidence indicators, weaker investment in machinery and equipment in the first quarter, and slow growth in the consumption data, albeit in line with projections.

Headline inflation had been affected by the more volatile components—food and energy—while core inflation (CPIEFE) remained around 2% in annual terms. Inflationary pressures remained low, despite the depreciation of the peso accumulated since late 2017. Wages picked up a little, but this would appear to be mainly due to the minimum wage adjustment, which was implemented at a different time of year than normal. However, there were risks to inflation included the possible effects of the change in the CPI basket on inflation dynamics, which were unclear in terms of magnitude and sign. It was also mentioned that in a context where

CPIEFE inflation had been low for a long time and was expected to stay low for another quarter, the possibility of a deviation to the down side was more relevant than in the other direction.

All the Board Members agreed that the data released since the publication of the *Monetary Policy Report* did not, for the most part, change the baseline scenario described therein. Therefore, the option of holding the MPR at 3% emerged as the natural choice and was clearly consistent with the current analysis and forecasts. Nevertheless, as usual, the assessment of the options included a full exploration of the different MPR paths consistent with inflation convergence in the baseline scenario and the possible risk scenarios and their costs.

With regard to the option of increasing the MPR, some Board Members pointed out that even if the information available at the last Meeting was removed from the analysis, the information accumulated since then, in and of itself, argued against this alternative. The data remained in line with the baseline scenario of the *March Report*, in a context in which the risks were to the downside and, depending on their intensity, pointed more in the direction of cutting the MPR. In contrast, other Board Members suggested that the option of reducing the MPR could be justified either as a preventive move in the face of current risks or as a corrective action if monetary policy was thought to have been less expansionary than desired. The latter, it was stressed, stemmed from data that suggested that there was more slack in the economy than previously estimated, which could explain the lower inflation under the new CPI. For this to justify a lower MPR, the difference would have to be significant, with evidence of a slowdown in the economy, a worsening of external conditions, and/or a lower neutral MPR. All Board Members agreed that the publication of updated structural parameters in June would provide new information for evaluating the importance of these hypotheses.

All Board Members agreed that the option of holding the MPR at 3% was clearly superior to the other alternatives. Inflation expectations remained well anchored; the MPR was already expansionary, despite the uncertainty about the degree of the stimulus; and new analytical information was about to become available, including the adjusted structural parameters. Holding the MPR at its current level would allow the collection of more information to help clarify the existing doubts, albeit partially. The Board voted unanimously to hold the MPR at 3%.

# I. INTERNATIONAL SCENARIO

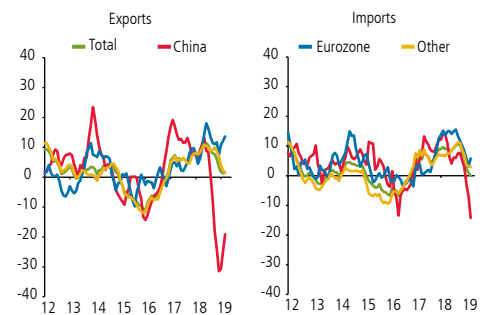
*This chapter analyzes the recent evolution of the world economy and the outlook for the next two years. It also describes the most probable scenario and the main risks.*

In the baseline scenario, the external boost to the Chilean economy in the next two years will be lower than in the last two-year period and also lower than considered in March. This reflects, in particular, the escalation of the trade conflict between the United States and its main trading partners, which has even extended into other areas. This has contributed to increased risk aversion, a global appreciation of the dollar, a reduction in long-term interest rate in the main economies to levels not seen for several periods, and a drop in most commodity prices, including copper. The latter translates into lower terms of trade, due to a reduction in the average copper price in the forecast horizon. The world growth outlook has been revised slightly for this year and maintained for the next two years. The marked deterioration in world trade demonstrates the trade conflict's potential impact on the global economy. At the same time, financial conditions remain very sensitive to potentially unfavorable scenarios, in particular because the balance of risks surrounding the baseline scenario continues to be skewed to the downside, while the probability of negative events has increased.

The risk scenario has worsened since March. The main risk has to do with an escalation of the U.S.-China trade conflict, which has spilled over into other countries and other spheres besides trade. The United States has increased its existing tariff rates and threatened to apply tariffs to all Chinese imports, and the potential retaliation from China is as yet unclear. Moreover, the conflict has spread, with the U.S. government applying restrictions on a major Chinese technology company, decreeing tariffs on Mexican exports to the United States, and pushing back the date for deciding the application of tariffs on imports from the European Union.

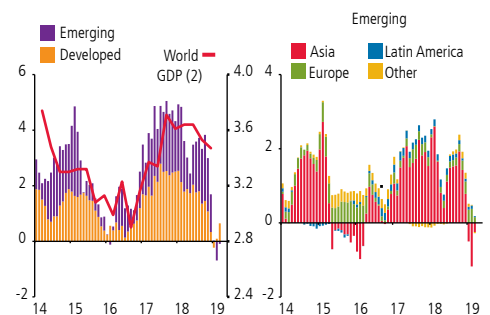
With regard to the real effects of the conflict, the data available in March—before the intensification—reveal that bilateral trade between the United States and China continued to contract in annual terms, with some early signs that

**FIGURE I.1**  
**United States: nominal goods exports and imports (\*)**  
 (annual change, percent)



(\*) Three-month moving average.  
 Source: Bloomberg.

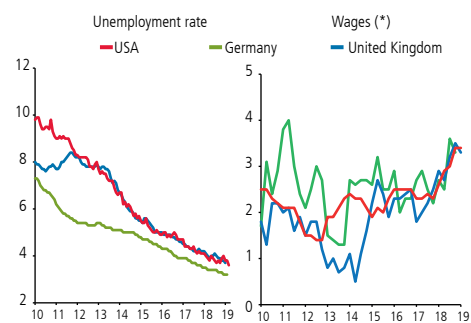
**FIGURE I.2**  
**Real exports and world GDP (1)**  
 (share, percentage points; annual change, percent)



(1) Three-month moving average. (2) Quarterly data from IMF.  
 Source: CPB Netherlands Bureau for Economic Policy Analysis and IMF.

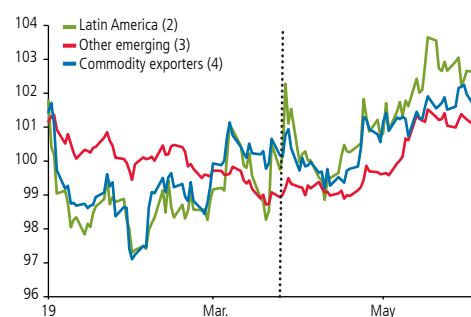


**FIGURE I.3**  
Unemployment rate and nominal wage growth in selected economies  
(percent; annual change, percent)



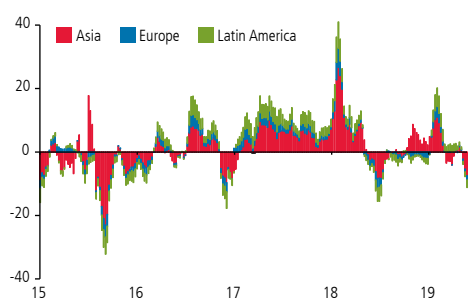
(\*) Quarterly data.  
Source: Bloomberg.

**FIGURE I.4**  
Exchange rates against the U.S. dollar (1)  
(index: av.2019=100)



(1) Based on the PPP weights in the April 2019 WEO. Vertical dotted lines marks the cutoff date of the March Report.  
(2) Brazil, Colombia, Mexico, and Peru.  
(3) China, India, Indonesia, South Korea, Russia, and Poland.  
(4) Australia, Canada, New Zealand, and South Africa.  
Source: Bloomberg and IMF.

**FIGURE I.5**  
Capital inflows to emerging economies  
(US\$ billion, rolling month)



Source: Emerging Portfolio Fund Research.

other U.S. trade has started to increase<sup>1/</sup> (figure I.1). The former coincides with a sharp slowdown in global trade in recent quarters, which has even contracted in annual terms in some months, especially in the emerging economies. Emerging Asia has been the hardest hit, consistent with the participation of these countries in the production value chain of Chinese exports (figure I.2). The downturn in global industrial production eased somewhat, but the outlook (PMI) remained unfavorable. In Chile, industrial exports slowed in the first quarter (chapter III).

In this context, another important risk has centered on a sharp downturn in the main economies and global output, which could be exacerbated by the effects of the trade conflict. While output data for the first quarter were somewhat better than the market expected, moderating the risk, partial data for the second quarter—especially tied to investment and trade—indicate that the risk is still present. In the first three months of the year, annualized quarterly U.S. GDP grew 3.1% (2.2% the previous quarter), but nonresidential investment and consumption slowed relative to the previous quarter. Short-term indicators show that the investment outlook has suffered, while industrial expectations declined again. The Eurozone recorded weak growth, although GDP was above market expectations, at 1.2% annually, as the bloc continues to show the effect of industrial production and net exports. Most recently, economic sentiment continued to deteriorate, and industrial production contracted in annual terms. In China, first-quarter GDP grew 6.4% annually, exceeding expectations, but industrial production slowed in April, and the May Purchasing Managers' Index (PMI) was near or below the pivot point. In contrast, the consumption outlook in the main economies continues to support a gradual slowdown, mainly because fundamentals, such as the labor market, remain dynamic or on a recovery path. Unemployment rates are very low or on a clear downward trend, and wage growth has been gaining traction (figure I.3). Expectations in the services sector (PMI) point in the same direction, remaining above the pivot point despite declining somewhat in recent months.

Other sources of stress have been reignited, such as the possibility that the United Kingdom will leave the European Union without a deal, in the midst of political changes in the former and parliamentary election results in the latter. There is also ongoing geopolitical tension in several areas, including the Persian Gulf.

Thus, there is still a risk of a sharp deterioration in financial conditions for the emerging economies, especially given that the markets have been quick to react to potentially negative scenarios. As indicated, risk aversion has risen in recent weeks, triggering a global appreciation of the dollar, a drop in long-term interest rates, stock market losses, and capital outflows from emerging markets (figures I.4 and I.5). Nevertheless, financial conditions for emerging economies remain favorable from a historical perspective, through a combination of low long-term interest rates in the main economies—especially in the United States, where long rates are lower than they have been in several quarters—and a slight

<sup>1/</sup> For a more detailed analysis of the expected impact of the conflict on trade, output, and other variables, see the *Monetary Policy Report*, September 2018, box I.1.

increase in spreads. The difference is more notable in countries perceived as having weak macroeconomic fundamentals or idiosyncratic issues that have yet to be resolved, where the perception of risk has increased more sharply.

In the baseline scenario, the external stimulus for the Chilean economy in the next two years will be positive but lower than in previous years and also lower than considered in the *March Report*. World growth, measured at purchasing power parity (PPP), will average 3.2% between 2019 and 2021, which is a little lower than projected in March. By bloc, the estimate for the developed countries holds at 1.6%, on average, in the forecast horizon. The United States, in particular, is expected to grow 2.2% this year, again above its potential (table I.1).

For the emerging bloc, the growth estimate has declined slightly for this year, but is the same for the following two years. In China, the forecast has held at around 6%, based on the demand stimulus injected into the economy. The rest of emerging Asia has been revised downward a tenth of a point in 2019–2020, mainly due to the worse outlook for global trade given its relative share in the GDP of these economies. In Latin America, growth expectations continue to decline for Brazil, Mexico, and Argentina (figure I.6). In Brazil, output grew 0.5% annually in the first quarter (1.1% in the previous), with a quarter-on-quarter contraction after almost two years in positive territory. Furthermore, the delays in the discussion of the structural reforms has undermined confidence. In Mexico, GDP slowed in the first quarter to 1.2% annually (1.7% the previous quarter), reflecting the annualized decrease in industrial production—and that is without taking into account the possible effects of the recently announced tariffs on all Mexican exports to the United States. In Argentina, doubts about future policy conduct have heightened uncertainty, which has translated into greater financial stress for an economy already in the midst of a recession, with a major monetary and fiscal adjustment underway. In the rest of the region, the growth outlook has been stable.

With regard to monetary policy, after a considerable reversal by the main central banks in the first part of the year, there have been new shifts toward more expansionary policy. The U.S. Federal Reserve (Fed) has shown itself to be open to reducing its monetary policy rate in recent weeks. Other central banks, including Australia and New Zealand, cut their policy rate, while China announced that it would continue reducing its reserve requirement rate<sup>2/</sup>. Thus, market expectations in many countries have moved toward less contractionary or somewhat more expansionary monetary policy than previously expected. In the United States, the probability of two rate cuts this year and next has been increasing, with some fluctuation, where the trend has been especially sensitive to output data, changes in risk scenario probabilities, and the aforementioned statements by Fed authorities (figure I.7). This has occurred in a context in which effective inflation increased at the global level due to the rise in fuel prices in the first four months of the year. Nevertheless, inflation expectations have decline somewhat, while core inflation remains low in the majority of countries, especially the developed economies.

<sup>2/</sup> After the cutoff, the European Central Bank announced that it would postpone monetary normalization until mid-2020.

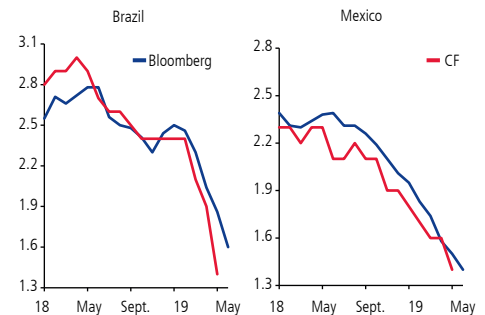
**TABLE I.1**  
World growth (\*)  
(annual change, percent)

	Av. 00-07	Av. 10-16	2017	2018	2019	2020	2021
			(e)	(f)	(f)	(f)	(f)
World at PPP	4.5	3.9	3.7	3.6	3.2	3.2	3.3
World at market FX	3.2	3.1	3.2	3.0	2.5	2.5	2.7
Trading partners	3.6	4.0	3.7	3.6	3.2	3.2	3.3
United States	2.7	2.2	2.2	2.9	2.2	1.7	1.7
Eurozone	2.2	1.2	2.4	1.8	1.1	1.5	1.6
Japan	1.5	1.4	1.9	0.8	0.7	0.5	1.0
China	10.5	8.1	6.9	6.6	6.1	6.0	5.9
India	7.1	7.5	6.7	7.1	7.3	7.4	7.4
Rest of Asia	5.2	4.7	4.4	4.1	3.8	3.8	4.0
Latin America (excl. Chile)	3.4	2.3	1.1	0.5	0.8	2.0	2.5
Commodity exp.	3.1	2.4	2.7	2.2	2.0	2.0	2.2

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

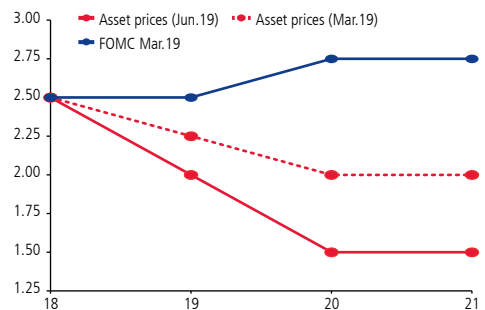
Source: Central Bank of Chile, based on a sample of investment banks, Consensus Forecasts, IMF, and the statistics offices of each country.

**FIGURE I.6**  
Growth outlook for Brazil and Mexico in 2019  
(annual change, percent)



Source: Bloomberg and Consensus Forecasts.

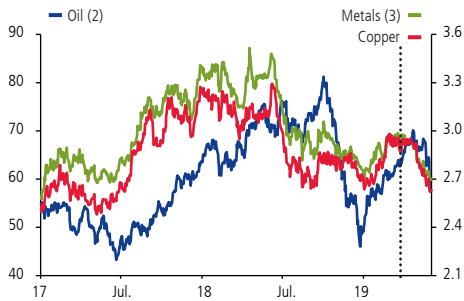
**FIGURE I.7**  
Expectations for the federal funds rate (\*)  
(December of each year, percent)



(\*)The U.S. Federal Reserve sets a range for the FFR. The figure graphs expectations for the upper limit of the range.

Source: Bloomberg and U.S. Federal Reserve.

**FIGURE I.8**  
**Commodity prices (1)**  
 (dollars per barrel; dollars per pound; index: ave. 17–19=3)



(1) Vertical dotted line marks the cutoff date of the March Report.  
 (2) Simple average of the Brent and WTI oil prices.  
 (3) The S&P GSCI Industrial Metals Index, maintained by Standard & Poor's and Goldman Sachs.

Source: Bloomberg.

The terms-of-trade forecast decreased relative to March, as most commodity prices fell to varying degrees, mainly due to the escalation of the trade conflict (figure I.8). The drop was especially steep for metals, including copper, in response to weaker short-term output data from China than the market had expected. Thus, copper fell on the order of 9%, comparing the average of the ten business days before the cutoff dates of this and the last Reports. In the same period, the oil price (taking the average of Brent and WTI) peaked at US\$70 per barrel in late April, after which it followed a mostly downward trend to around the level in the March Report. The Brent oil price continued to be influenced by over-compliance with the OPEC production cuts and the restitution of restrictions on crude oil exports from Iran, as well as the heightened trade tension in the most recent period. In the baseline scenario, the copper price forecast has moved closer to US\$2.80 per pound for the 2019–2021 period (down from US\$2.90 for the three years in March). The average Brent and WTI price is still projected at US\$61 for the 2019–2021 period, with a slight upward adjustment for 2019 and downward for 2021 relative to March.

Internationally, the balance of risks remains skewed to the downside, with an increase in the probability of negative events. The escalation of the trade conflict between the United States and its main trading partners has become the primary risk, combined with the other risks described above. Scenarios in which these risks intensify could lead to a sudden deterioration in financial conditions, in response to which the main central banks would probably further increase their expansionary monetary policy. However, this might not be sufficient to contain the fall in risk appetite and the reduction in asset and commodity prices. Some riskier assets are currently very high—and in some cases are accompanied by increased indebtedness—which makes this sort of scenario especially complex. The materialization of these scenarios could have a negative impact on local expectations and investment decisions.

## II. FINANCIAL CONDITIONS

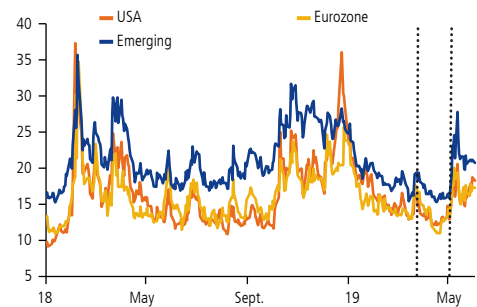
*This chapter reviews the evolution of local and external financial conditions.*

Over the past few months, there have been new episodes of volatility and greater risk aversion, tied to the evolution of a number of factors that have been present for several quarters. The main issue affecting the markets is the escalation of the conflict between the United States and its main trade partners. The possibility of a no-deal Brexit also remains on the table. The intensification of these risks keeps alive the possibility of a sudden deterioration of financial conditions for the emerging economies. Nevertheless, these conditions as yet remain favorable, with the exception of economies that have idiosyncratic issues that have yet to be resolved or weaker macroeconomic fundamentals. In the domestic financial market, the developments overseas have mainly been reflected in movements in the exchange rate, the stock market, and long rates in the fixed-income market. Local risk indicators were relatively stable, recording smaller shifts than external risk measures, while credit conditions remain favorable, with a decrease in interest rates, especially on mortgages.

As indicated, there is still a risk of a sudden reversion of financial conditions for emerging economies, especially given the markets' recent sensitivity to potentially negative scenarios. Since the last *Report*, the escalation of the U.S.-China trade war and its extension to other fronts and other countries have increased financial market volatility and risk aversion (figure II.1). In this context, international stock market returns have declined across the board (figure II.2). Most currencies have depreciated against the U.S. dollar, while capital has flown out of the emerging economies, and the majority of commodity prices have fallen, including copper (table II.1; figures I.5 and I.8).

Nevertheless, global funding conditions remain favorable for the majority of the emerging economies. Long rates have decreased in the main economies, recording levels close to the minimums of recent years (figure II.3). Sovereign and corporates spreads (EMBI Global and CEMBI) have widened in recent weeks, but the magnitude of the increase is small. The exception is economies with weaker macroeconomic fundamentals, which have followed their own trend; for example, spreads have spiked for Argentina and Turkey over the past few weeks. There is thus a risk of some degree of contagion to the rest of the emerging markets.

**FIGURE II.1**  
Implied stock market volatility (1) (2)  
(percent)

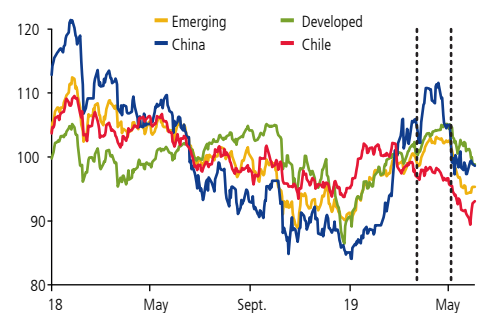


(1) Eurozone: V2X Index; emerging economies: VXEEM Index; USA: VIX Index.

(2) The first vertical dotted line marks the cutoff date of the March 2019 *Report*; the second, the U.S. announcement of an increase in tariffs on imports from China.

Source: Bloomberg.

**FIGURE II.2**  
Stock markets (1) (2)  
(index: 2018–2019 = 100)

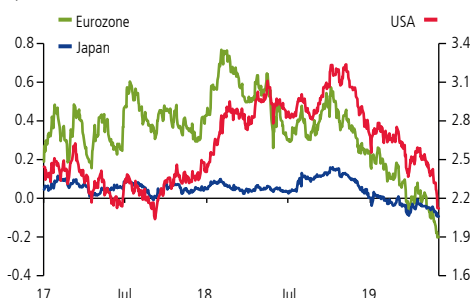


(1) Regional stock indices: MSCI Index in local currency; Chile: IPSA; China: Shanghai Composite Index.

(2) The first vertical dotted line marks the cutoff date of the March 2019 *Report*; the second, the U.S. announcement of an increase in tariffs on imports from China.

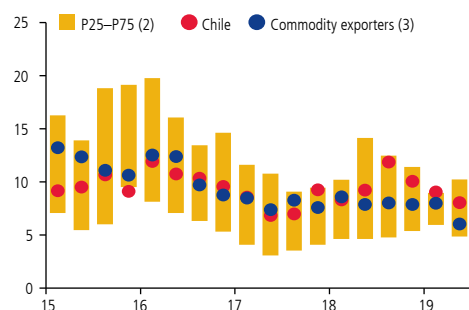
Source: Bloomberg.

**FIGURE II.3**  
Ten-year government bond rates  
(percent)



Source: Bloomberg.

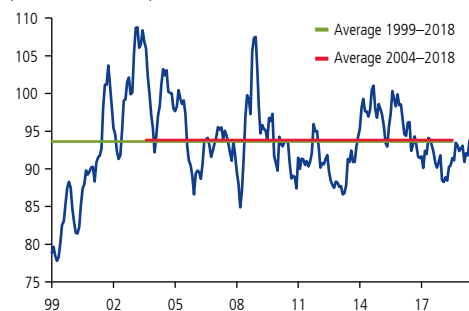
**FIGURE II.4**  
Annualized exchange rate volatility in emerging economies (1)  
(percent)



(1) Data for the second quarter of 2019 are through 3 June.  
(2) Percentiles calculated for a sample of emerging economies including Brazil, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Poland, Russia, and Turkey.  
(3) Calculated as the simple average of the exchange rate volatility of Australia, Canada, Norway, and N. Zealand.

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

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



(\*) Value for May 2019 is estimated.

Source: Central Bank of Chile.

In the local markets, these international developments have mainly been reflected in the exchange rate, the stock market, and long rates in the fixed-income market. The exchange rate has been strongly affected by the global valuation of the U.S. dollar, together with the drop in the copper price and market expectations of a more expansionary monetary policy after the publication of the minutes of the May Monetary Policy Meeting. While the pattern has been similar to the exchange rate trend in most other emerging economies and commodity exporters, it has been more volatile than the latter (figure II.4). Since the March Report, the peso-dollar exchange rate fluctuated between \$660 and \$710. On the cutoff date of the current Report, the peso was trading around \$700 to the dollar, which represents a depreciation of 4.7% vis-à-vis March (table II.1).

The MER and MER-X have depreciated less than the peso-dollar exchange rate, at 2.4% and 1.8%, respectively. The May estimate for the real exchange rate (RER, fixed-base index: 1986=100) shows a recovery after the decline in April, to 94, which is approaching the average of the last fifteen and twenty years (figure II.5). As a working assumption, the baseline scenario projects that the RER will fluctuate around this level over the next two years.

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

	Change in NER June 2019 Report			
	Mar.19 Report	Dec.18 Report	Sep.18 Report	Jun.18 Report
<b>Latin America (excl. Chile) (2)</b>	<b>3.3</b>	<b>0.6</b>	<b>1.6</b>	<b>3.1</b>
Brazil	4.5	4.8	-0.6	6.1
Chile	4.7	4.0	5.6	11.4
Colombia	7.8	4.7	12.4	17.3
Mexico	0.6	-5.6	1.3	-4.3
Peru	1.7	-0.6	1.7	2.7
<b>Commodity exporters (2)</b>	<b>1.7</b>	<b>3.4</b>	<b>3.5</b>	<b>7.9</b>
Australia	2.7	5.0	5.7	9.8
Canada	0.9	1.8	3.3	4.0
New Zealand	5.2	4.4	1.9	7.2
South Africa	0.9	4.2	0.8	14.2
<b>Developed economies (2)</b>	<b>1.2</b>	<b>0.5</b>	<b>2.0</b>	<b>3.7</b>
Eurozone	1.5	1.8	3.3	4.7
Japan	-1.3	-3.3	-1.2	0.0
United Kingdom	4.5	1.2	1.3	5.4
<b>Other emerging economies</b>				
China	2.9	-0.5	0.7	7.8
South Korea	5.0	5.4	6.1	10.7
India	1.0	-2.2	-0.5	3.5
Indonesia	1.3	-1.2	-1.4	3.5
Poland	1.5	1.6	3.3	4.7

(1) The values reflect the percent change between the cutoff date of the corresponding *Monetary Policy Report* and the cutoff of this *Report*. The NER of each series is calculated as the average of the last ten business days. Positive (negative) sign indicates depreciation (appreciation) of the currency against the U.S. dollar.

(2) Includes the currencies of the economies included in this table, using the weights in the April 2019 WEO.

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

With regard to the national stock market, the IPSA decreased around 7% since the March cutoff date. The decline began in the weeks before the escalation of the trade war, due to the exposure of some Chilean firms to the situation in Brazil and Argentina and some one-off factors in the retail sector and lithium mining. Thus, the drop since the last *Report* is steeper than the emerging market average (MSCI emerging), which fell around 5%.

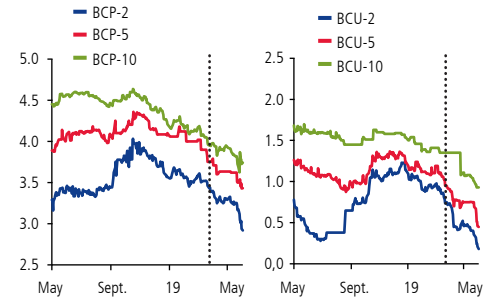
Sovereign and corporate spreads, measured by the EMBI and the CEMBI, remain low from a historical perspective and, despite the increase in recent weeks, are similar to the cutoff date of the last *Report*: +5 and –5 basis points (bp), respectively. With regard to short-term funding costs, the 30-day deposit rate has tracked the monetary policy rate (MPR), with a low spread. Medium- and long-term interest rates—measured by Central Bank bond rates—have continued to move downward, reflecting international rate trends, the lower growth outlook, and market expectations for the MPR. Real rates were further affected by the changes in real and expected inflation. The biggest shift was in two-year BCU rates, which fell almost 50 bp between the cutoff dates of this and the last *Reports*, while five- and ten-year rates fell approximately 40 bp. In the case of nominal rates, two-, five-, and ten-year BCP rates decreased around 40, 35, and 25 bp, respectively (figure II.6).

Bond issues—accumulated in 12 months—continued to grow, with a notable increase in corporate bonds, although bank securities continue to account for the largest share of the local market<sup>1/</sup>. The intended use of the bond proceeds has been stable over the past several quarters. Local corporate issuers continue to indicate that about half the funds will be allocated to refinancing liabilities, while the percent allocated to investment in fixed assets and corporate ownership is about the same as in the last quarter of 2018.

In terms of the cost of bank credit, lending rates have decreased in recent months, especially for residential mortgages, which are currently at the lowest rate on record (figure II.7). The real growth of loans has slowed slightly in the consumer and commercial portfolios, while the mortgage portfolio has been stable (figure II.8). With regard to qualitative sources, the Bank Lending Survey (BLS) for the first quarter pointed to stable lending conditions in the period, with some variation by segment: conditions loosened somewhat for personal banking—consumer and mortgage loans—and SMEs. Demand has eased off slightly, especially in the consumer and corporate portfolios. The *Business Perceptions Report* (BPR) for May shows that the credit supply is perceived as high and interest rates as low, due to strong competition in the sector. The interviewees also indicated that consumer credit is just starting to improve, while mortgage lending remains strong in the central and southern regions of the country. In general, lending continues to be slower in the north than in the other macro-zones, in particular in terms of business credit.

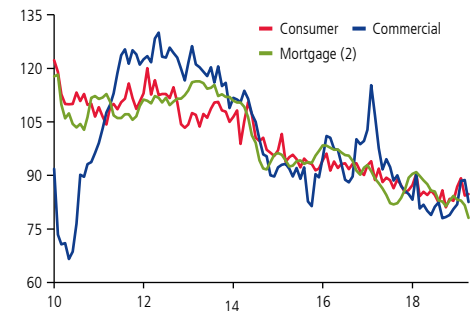
<sup>1/</sup> See the Financial Stability Report, First Half 2019.

**FIGURE II.6**  
Interest rates on Central Bank of Chile bonds (\*) (percent)



(\*) Vertical dotted line marks the cutoff date of March 2019 *Report*.  
Source: Central Bank of Chile.

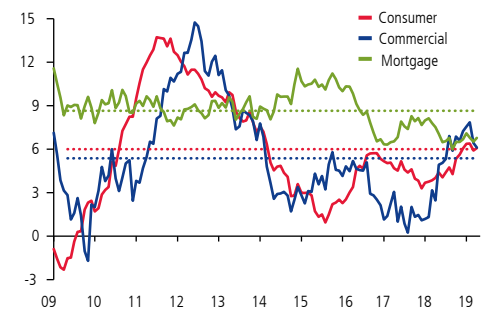
**FIGURE II.7**  
Interest rates by type of loan (1) (index: 2010–2019=100)



(1) Weighted average rates of all operations in each 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 with the spliced CPI series with base year 2018.

(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.



### 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.*

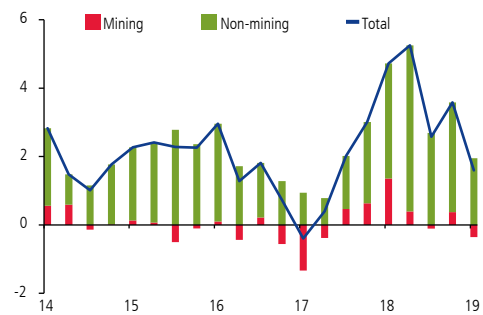
In the first quarter of 2019, the economy grew at an annual rate of 1.6% (3.6% in the previous quarter). Although a slowdown was projected in the baseline scenario of the *March Report*, given the high basis of comparison in the same period last year, the actual rate was lower than expected, reflecting a weak performance in mining, industrial exports, and some more volatile sectors (figure III.1). More persistent sectors and sectors that are more closely linked to the development of macroeconomic conditions were consistent with expectations. On the demand side, the first-quarter data reveal a significant slowdown in gross fixed capital formation (GFCF), mainly due to the performance of the machinery and equipment component, while construction and works were in line with the forecast. The consumption trend was as expected, with a larger share for the nondurables and services segment.

In the baseline scenario of this *Report*, the growth forecast for this year was revised to a range of 2.75 to 3.5% (3.0 to 4.0% in March), largely due to the performance in the first quarter. This forecast is consistent with an economic recovery to higher annual growth rates in the second half of the year.

The Board updated its trend and potential GDP estimates, in both cases upward (box V.1). The former is now in a range of 3.25 to 3.75% for the 2019–2028 period (3.0 to 3.5% in September 2018); the latter, around 3.4% for 2019–2021 (around 3.2% in September 2018). To a large degree, the updated reflects the economy’s accommodation of the high immigration of the past several years. Thus, and taking into account the evolution of output in the first quarter of the year, the baseline scenario estimates a wider output gap than considered in March. Going forward, the gap under this scenario will gradually close over the course of the forecast horizon, albeit more slowly than previously estimated.

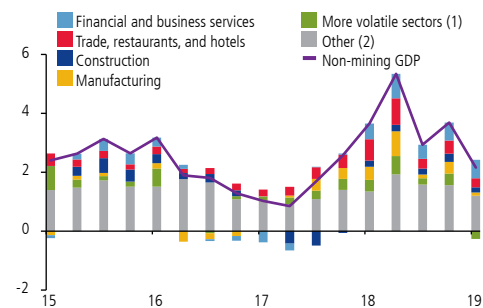
Private forecasts, from the May Economic Expectations Survey (EES), estimate that total GDP growth will be in the upper end of the range used in the baseline scenario, namely, 3.2% (3.4% in the March EES). For non-mining GDP, the survey predicts growth of 3.3% (3.6% in March).

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



Source: Central Bank of Chile.

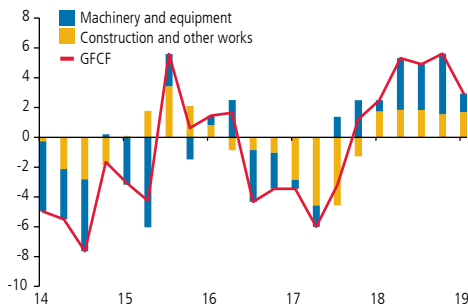
**FIGURE III.2**  
Annual non-mining GDP growth  
(share, percentage points)



(1) Includes Agriculture, livestock, and forestry; Fishing; and Electricity, gas, water, and waste management.  
(2) Includes Transport, Communications, Residential services, Personal services, Public administration, VAT, and Import duties.  
Source: Central Bank of Chile.

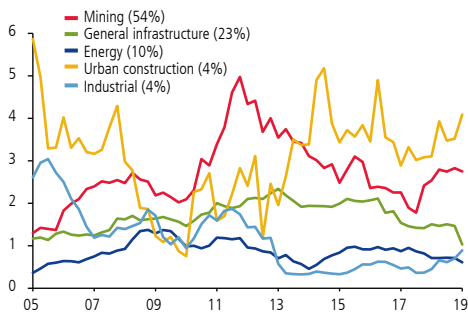


**FIGURE III.3**  
Contribution to annual GFCF growth  
(share, percentage points)



Source: Central Bank of Chile.

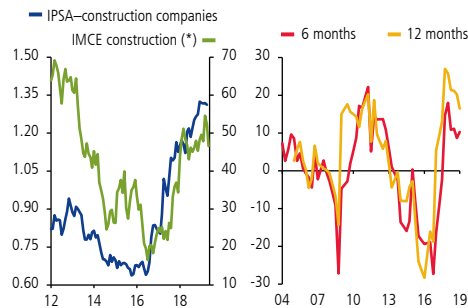
**FIGURE III.4**  
Engineering works by sector (\*)  
(fixed-base index: 1996=1)



(\*) Percents in parentheses indicate the sector's share of total output in 2018. They account for 96% of total.

Source: Association of Engineering Consulting Firms.

**FIGURE III.5**  
Construction sector:  
stock market and  
expectations  
(ratio between IPSA-construction  
and total IPSA; index)  
Sectoral expectations  
of construction  
executives  
(index: 0=neutral)



(\*) A value under (over) 50 indicates pessimism (optimism).

Source: Bloomberg, Chilean Chamber of Construction and Icare/ Adolfo Ibáñez University.

In the first quarter, mining GDP contracted 3.6%, due to a combination of transitory and more permanent factors. The former included the effects of the Altiplanic winter, which affected a larger geographical area and lasted longer than normal, with an impact on mining operations. Additionally, a number of mines were closed for maintenance. Iron mining was affected by operational difficulties, which are expected to be resolved soon, leading to a recovery of production. The more permanent factors include the declining ore quality at several copper mines.

To a large extent, non-mining GDP reflected the output trends in the more volatile sectors, in particular, agriculture, livestock, and forestry; fishing; and electricity, gas, and water; and waste management (figure III.2). The first was affected by a reduction in the area planted to some crops; the second, by small catches in capture fishing; and the third, by scarce water resources and a reduction in the use of renewable energies, which reduced the sector's value added.

In the remaining sectors, manufacturing performance highlighted in the first quarter, mainly the export-related lines, which could be showing the first signs of the impact of the external scenario on the local economy. There are other factors, as well, by subsector. For example, in basic metal manufacturing, the main destination markets are in Latin America, such that the subsector's weak performance is mainly explained by the complex economic situation of some countries in the region. As reported in March, the wine and viticulture industry has accumulated high inventories as a result of the large harvest in 2018–2019. This was expected to quickly translate into exports, but recent data show that this has not yet been the case, in part due to increased competition overseas. In the salmon sector, export data show a reduction in year-on-year growth, which largely reflects the high basis of comparison. In terms of levels, salmon exports remain high and close to historical peaks.

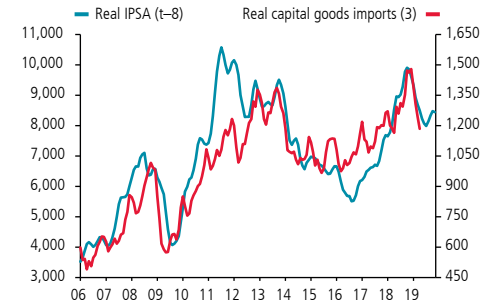
With regard to domestic demand, the first-quarter performance of GFCF was weaker than expected, mainly due to the sharp slowdown in the machinery and equipment component (figure III.3). This coincided with the deterioration in the external scenario in recent quarters and an accumulation of inventories that have not been sold as projected. Construction and other works were positive and in line with projections. Engineering works were particularly dynamic, as evident in data on some sectors of the Association of Engineering Consulting Firms (figure III.4).

Despite the performance of the real GFCF data, the outlook is for higher growth rates going forward, assuming that domestic financial conditions remain favorable and there is a continued absence of internal and external macroeconomic imbalances. On the one hand, large investment projects that are currently underway have not suffered any major setbacks and are developing as planned. The different surveys of investment projects—namely, the Office of Sustainable Project Management (OGPS) and the Capital Goods and Technological Development Corporation (CBC)—continue to point to higher investment for 2019–2020, relative to 2017–2018. On the other hand, while residential investment started off the year with a zero contribution to GDP from the construction sector, home sales remain high and the outlook is positive, as shown in the *May Business Perceptions Report* (BPR), particularly in the central and southern regions of the country. Construction expectations, measured by the IMCE, have recently declined but remain around their historical average, while executives in the sector (Chilean Chamber of Construction) continue to have high expectations. Stock market information for the sector points to favorable development (figure III.5). However, the outlook is less optimistic when looking at the trend for the total stock market, considering that the tradables component of investment fairly closely tracks its movements. In fact, capital goods imports have decreased relative to the second half of 2018 (figure III.6). At the same time, the increase in the relative price of tradable goods, due the recent exchange rate depreciation, also puts a note of caution on the development of this component of investment going forward.

Private consumption performed in line with projections, with a growth that accelerated in the first quarter, led by the nondurable goods and services component (figure III.7). Services consumption again drove the trend, mainly due to private health and tourism spending<sup>1/</sup>. Nondurable goods kept an annual growth rate of around 2%. A number of sources point to a weakening of retail trade, but this is only a partial indicator of total consumption, given the importance of services consumption and trade activity as a whole. Thus, although there is a correlation between retail data and private consumption estimates in the national accounts, it is not a comprehensive reflection of the behavior of this part of spending (box III.1). As could be expected, the durables segment reflected the drop in car sales, following a historical peak in 2018. However, sales of other durable goods, such as household appliances, have improved this year (figure III.8). In contrast to other components of the Consumer Confidence Index (IPEC), opinions on buying this type of product have been in positive territory for some time.

<sup>1/</sup> Tourism services consumption is measured as the difference between residents' spending overseas and non-residents' spending in national territory.

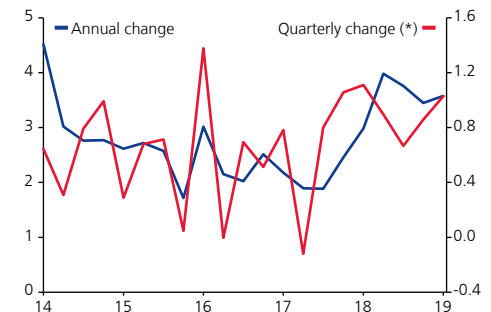
**FIGURE III.6**  
Real capital goods imports and IPSA (1) (2)  
(real level in 2013 dollars; millions in 2013 dollars)



(1) Rolling quarterly average.  
(2) Series deflated by the capital goods import price index, with base year 2013=100. Spliced with the base year 2008=100 series of this index using annual changes. Due to the quarterly frequency of the data, values are assumed to repeat in the three months of each period.  
(3) Excluding other transport vehicles.

Source: Central Bank of Chile and Bloomberg.

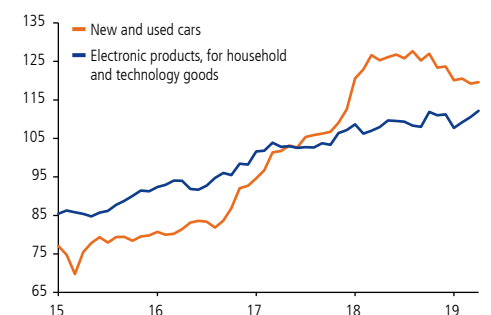
**FIGURE III.7**  
Nondurables and services consumption  
(percent)



(\*) Seasonally adjusted series.

Source: Central Bank of Chile.

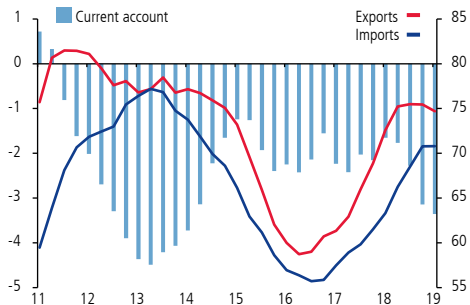
**FIGURE III.8**  
Durable goods sales (RTAI) (\*)  
(index: 2015–2019=100, three-month rolling average)



(\*) Seasonally adjusted series.

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

**FIGURE III.9**  
Current account and the trade balance (\*)  
(percent of GDP; US\$ billion)



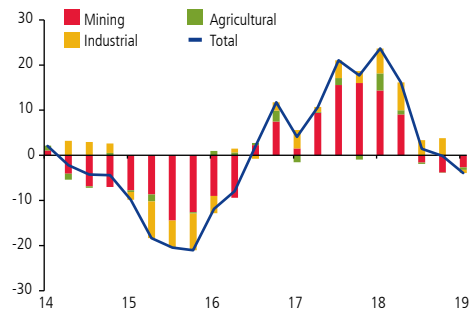
(\*) Accumulated in a rolling year.

Source: Central Bank of Chile.

The outlook for consumption is very similar to the forecast in the March *Report*, as this component of spending is expected to continue to grow in line with GDP. Consumer goods imports—other than car—have remained high, while the IMCE for the trade sector is still optimistic. In the labor market, both qualitative and quantitative sources are more positive on jobs, while the unemployment rate was 6.9% in the last INE report. According to the same source, the annual growth rate of nominal wages has been increasing in recent months, to just under 5% on the cutoff date. The continuation of favorable financial conditions also supports the consumption outlook, in terms of both low interest rates and good lending conditions.

Finally, the current account deficit in a rolling year increased to 3.4% of GDP in the first quarter of the year (3.1% in the previous quarter). To a large extent, this reflects the reduction in the trade balance, due mainly to a lower value of total goods exports (–3.9% annually in the first quarter), deriving from both price and volume effects (figure III.9). The biggest contraction was in mining shipments, especially refined copper, followed by manufacturing products (figure III.10). Imports also grew at a lower rate. Income paid overseas due to FDI in the country also pushed up the current account deficit. Measured at trend prices, the deficit was 4.3% of GDP in the rolling year ending in the first quarter of 2019.

**FIGURE III.10**  
Nominal annual growth of exports  
(share, percentage points)



Source: Central Bank of Chile.

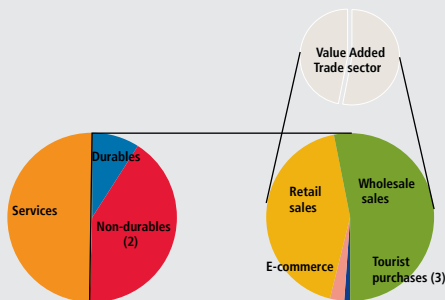
## BOX III.1 HOUSEHOLD CONSUMPTION, RETAIL SALES, AND VALUE ADDED IN TRADE

There is a tendency in public discussion to try to extract information on the behavior of private consumption based on indicators of activity in the trade sector. Although the interest in projecting the private consumption trend is understandable given its weight in domestic demand (63% in 2018), it is important to bear in mind that there are important differences between consumption and the information obtained from the trade sector. This box explains these differences on two levels: first, between private consumption as a component of demand and value added (VA) in the trade sector, both measures in the System of National Accounts; and, second, between both national accounts aggregates and sales indicators for some segments of trade.

are purchased from retail businesses (both storefront and e-commerce), private consumption also includes some goods that are purchased elsewhere, as well as all services (purchased both domestically and overseas). Services represent almost half of household consumption (figure III.11). Trade, in turn, includes not only household consumption, but also wholesale transactions with industrial consumers and retail businesses, as well as retail sales to foreign tourists in national territory.

The data on trade in GDP are thus a partial and imperfect substitute for a measure of household spending. This is due to the fact that the trade indicator includes the VA on wholesale and retail sales for all new and used products. The VA is calculated as the difference between the value of production, which in the case of trade is mainly the sales margin<sup>1/</sup>, and intermediate consumption. There are important differences between the series, in both the short and medium terms (figures III.12 and III.13).

**FIGURE III.11**  
Relationship between household consumption and retail sales (1)

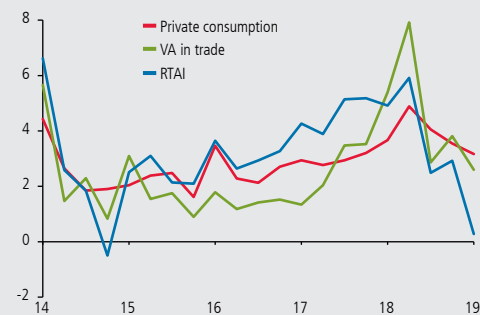


- (1) Shares do not represent real data.
- (2) Electricity, gas, and water is included in non-durables consumption even though it is not purchased through trade activity.
- (3) Spending by foreign tourists in national territory is included in the trade data, but not in private consumption. The latter, in turn, incorporates overseas spending by resident households of the Chilean economy.

Source: Central Bank of Chile.

The household consumption compiled for the national accounts uses various sources of information, one of which is sales from trade. While almost all the goods consumed by a household

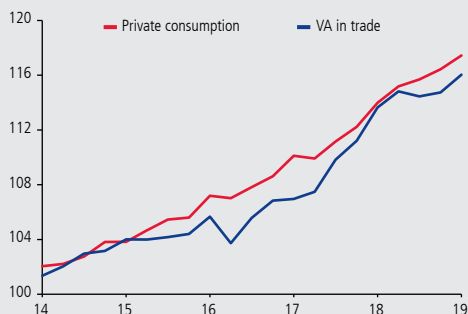
**FIGURE III.12**  
Private consumption, value added in trade, and retail sales indicator  
(real annual change, percent)



Sources: Central Bank of Chile and INE.

<sup>1/</sup> Calculated as the income from sales excluding value added, minus the cost of goods sold.

**FIGURE III.13**  
Private consumption and value added in trade (\*)  
(real index: av.2013=100)



(\*) Seasonally adjusted series.  
Source: Central Bank of Chile.

There are also multiple indicators for some trade segments. The best known are the Trade Activity Index (TAI) from the INE and the Retail Sales Index from the Chilean Chamber of Commerce (CCC). The TAI is a short-term indicator that measures the monthly evolution of trade activity, using sales at constant prices for firms involved in wholesale trade (wholesale TAI) and retail trade (retail TAI) throughout Chile. In contrast, the CCC indicator only measures the evolution of retail sales<sup>2/</sup> and only for the Santiago Metropolitan, Valparaíso, Biobío, and Araucanía regions. Furthermore, the CCC indicator only includes storefront businesses, excluding online commerce.

These retail sales indicators, like the VA in trade, differ from private consumption in three specific ways:

(I) Retail sales data capture the final spending on goods sold by local businesses, but do not incorporate household spending on goods acquired through other channels, such as electricity, gas, water, and waste management (EGW), direct sales from manufacturers, and goods produced at home for personal consumption (such as agricultural goods). Nor do they capture spending on services, such as housing, transportation, communication, education, recreation, health, and financial services. In contrast, household consumption includes all the goods and services consumed by the household to satisfy its needs.

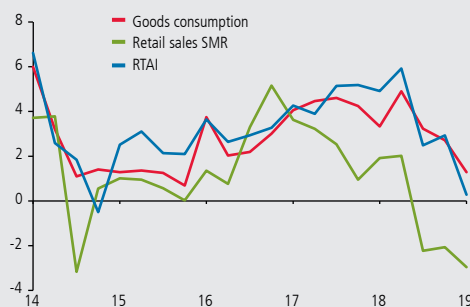
<sup>2/</sup> Clothing, footwear, electrical appliances, household goods, furniture, and traditional supermarkets.

(II) Spending by foreign tourists in national territory is included in the trade data, but not in private consumption, while the private consumption data incorporates the overseas spending by the resident households of the Chilean economy.

(III) Although retail trade is the channel through which almost all goods are traded (excluding EGW), methodological differences mean that private goods consumption and trade do not necessarily follow the same trend. The VA in trade is measured using sales margins, and since different products have different sales margins, there is a significant composition effect. For example, if one person spends a million pesos on a car or a million pesos on clothes, the impact on private consumption is the same. However, these purchases have very different impacts on the VA in trade, since the implied sales margins are different for cars versus clothing<sup>3/</sup>.

Trade indicators can be used to interpret the evolution of private consumption, since, on average, they are highly correlated with the goods component of household consumption. However, given the differences between trade activity and household consumption mentioned above, it is important not to over-interpret the data. In particular, changes in relative prices could lead to a greater consumption of services than goods; tourism levels could fluctuate; or there could be shifts in sales channels or increases in wholesale trade related to more dynamic investment.

**FIGURE III.14**  
Goods consumption, retail sales index, and retail sales in the Santiago Metropolitan Region  
(real annual change, percent)



Source: Central Bank of Chile, Chilean Chamber of Commerce, Services, and Tourism, and INE.

<sup>3/</sup> See the Supply and Use Table (input-output matrix) in the National Accounts.

For example, between 2015 and mid-2018, retail trade was favored by a strong influx of visitors from Argentina who came to Chile to purchase goods that were relatively cheaper here than at home (*Monetary Policy Report*, March 2019, box III.1). Throughout much of that period, the retail TAI was higher than private consumption (figures III.12 and III.14). Since the latter excludes consumption by foreign tourists, it showed neither a positive impact from the increase in tourists, nor a negative effect when they stopped coming. Similarly, starting in 2018, the growth of services consumption significantly exceeded the growth of goods consumption. A similar argument can be made with respect to the dynamics of retail sales and the VA in trade. The latter incorporates the wholesale component of trade, which was weak in 2015–2017 in line with the investment trend in that period. More recently, the trend has reversed, and the VA in trade is being supported by a dynamic wholesale component.

Thus, care should be taken in evaluating trade statistics, since they are not always a reliable indicator of private consumption. For a more comprehensive perspective of the trends in this component of demand, it is important to use the household consumption series from the national accounts and its components.



## IV. PRICES AND COSTS

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

### RECENT EVOLUTION OF INFLATION

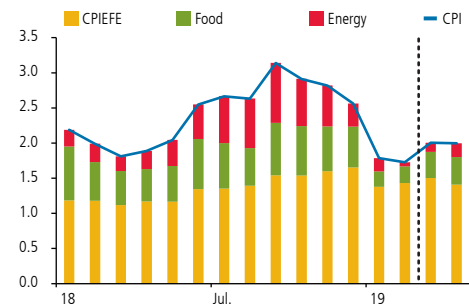
Annual headline inflation—measured using the INE series with base year 2018=100—has been around 2% over the past few months, in line with the forecast<sup>1/</sup>. The slight increase relative to the start of the year mainly derived from food and fuels. Annual core inflation—the CPI excluding food and energy (CPIEFE)—and its components were practically unchanged (figure IV.1). As indicated in the last *Report*, the current level of inflation is consistent with increased competition in some markets, the lower pass-through of the peso depreciation relative to the historical average, and a larger output gap than previously estimated. The latter reflects both the revision of the structural parameters and the weak performance of the Chilean economy in the first quarter of the year (box V.1).

Since the last *Report*, inflation has been in line with the forecast, with some positive surprises in food and fuels that were partially offset by lower-than-expected inflation in some of the goods in the CPIEFE. In this context, the baseline scenario in this *Report* assumes that annual CPI inflation will approach 3% in 2020. Core inflation will reach that level in early 2021, more slowly than projected in March due mainly to the larger output gap estimated in the policy horizon. Food and electricity prices will help headline inflation return to levels closer to 3%, given that annual food price inflation in early 2019 was substantially below the historical average. Finally, an increase in electricity rates will enter into effect in May of this year.

Annual CPI inflation has not changed substantially and has been in line with the forecast, fluctuating around 2% in the past few months. This trend is largely explained by the contribution of the more volatile items in the basket, in particular food and fuels (figure IV.2). Among the former, dairy products and

<sup>1/</sup> Based on data available on the cutoff date of this *Report*, so it does not take into account the May inflation rate published by the INE on 07 June 2019.

**FIGURE IV.1**  
Contribution to annual headline inflation (1) (2)  
(percentage points)

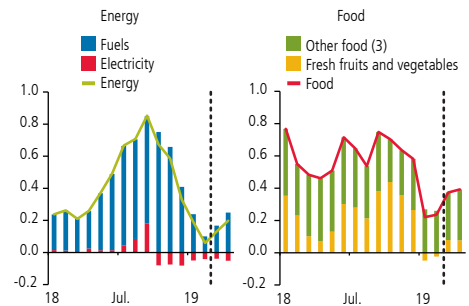


(1) Vertical dotted line marks the cutoff date of the March 2019 Report.

(2) Starting in January 2019, the new indices are used, with base year 2018=100, so they are not strictly comparable with the previous data.

Sources: Central Bank of Chile and National Statistics Institute.

**FIGURE IV.2**  
Contribution of energy and food to annual headline inflation (1) (2)  
(percentage points)



(1) Vertical dotted line marks the cutoff date of the March 2019 Report.

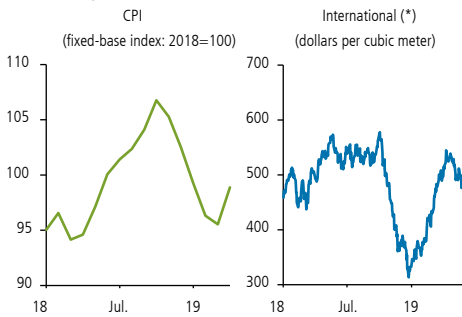
(2) Starting in January 2019, the new indices are used, with base year 2018=100, so they are not strictly comparable with the previous data.

(3) Includes food and non-alcoholic beverages, excluding fresh fruits and vegetables.

Sources: Central Bank of Chile and National Statistics Institute.

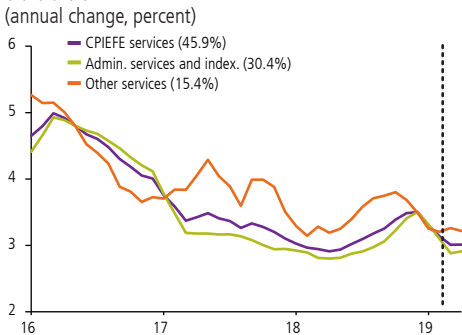


**FIGURE IV.3**  
Gasoline price



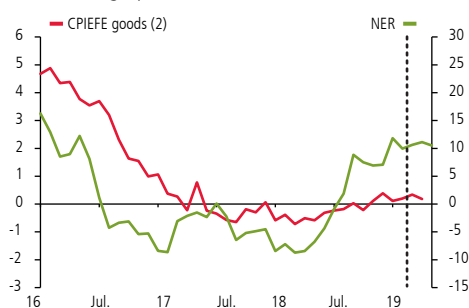
(\*) Daily data on 87 octane gasoline in the U.S. market.  
Sources: Bloomberg and National Statistics Institute..

**FIGURE IV.4**  
CPIEFE services inflation and disaggregation (1) (2)  
(3) (4) (5)



(1) Vertical dotted line marks the cutoff date of the March 2019 Report.  
(2) Starting in January 2019, the new indices are used, with base year 2018=100, so they are not strictly comparable with the previous data.  
(3) Three-month rolling average of annual changes.  
(4) In parentheses, share in the total CPI basket.  
(5) For more details see the *Monetary Policy Report*, March 2017, box IV.1.  
Sources: Central Bank of Chile and National Statistics Institute..

**FIGURE IV.5**  
Exchange rate and CPIEFE goods inflation (1)  
(annual change, percent)



(1) Vertical dotted line marks the cutoff date of the March 2019 Report.  
(2) Starting in January 2019, the new indices are used, with base year 2018=100, so they are not strictly comparable with the previous data.  
Sources: Central Bank of Chile and National Statistics Institute..

some fresh fruits and vegetables. Tomatoes recorded price hikes that deviated from their usual seasonal pattern. The contribution of energy to annual headline inflation also increased. This was mainly due to the rise in fuel prices in pesos, which in turn reflected the upward trend in these prices in international markets between the last Report and late April of this year—in particular, gasoline—and, to a lesser extent, the depreciation of the nominal exchange rate (figure IV.3). Electricity rates maintained a stable contribution to annual headline inflation, but they will soon rise according to announcements by the regulator.

The annual CPIEFE inflation rate has fluctuated around 2% since mid-2017, in line with the spare capacity in the economy. The main components have not recorded any major changes. For example, services stayed around 3% (figure IV.4), due, in part, to supply factors in some sectors, such as passenger air transport, telecommunications packages, and mobile phone services, as indicated in the last Report.

Annual goods inflation held near 0%, despite the depreciation of the peso over the past quarters (figure IV.5). As mentioned in the last Report, the weak inflation response of the goods component of core inflation to the evolution of the exchange rate could reflect a lower pass-through coefficient to local prices, to the extent that the movement in the nominal exchange rate in 2018 was driven, in part, by a global appreciation of the dollar. The inflationary pressures deriving from external prices are somewhat lower than recorded in the March Report. Imported consumer goods (IVUM) contracted just over 2% annually in the first quarter of 2019 (–0.7% annually in the previous quarter), mainly due to an across-the-board reduction in durable and non-durable products. The external price index (EPI) in dollars has been contracting in annual terms since the middle of last year, mainly due to the depreciation of most currencies against the dollar.

Other important components of CPIEFE goods inflation included alcoholic beverages—in particular wine—and clothing and footwear. In the case of the former, the decline could reflect larger inventories in the local wine industry, associated, in part, with strong competition from Argentina in international markets, which could be hurting national exports. In the case of clothing and footwear, the shift is consistent with the findings of the *Business Perceptions Report* (BPR), where a large share of the retail companies interviewed attributed the drop in the prices of these items to strong competition in the sector and the measures that have been adopted to stimulate demand.

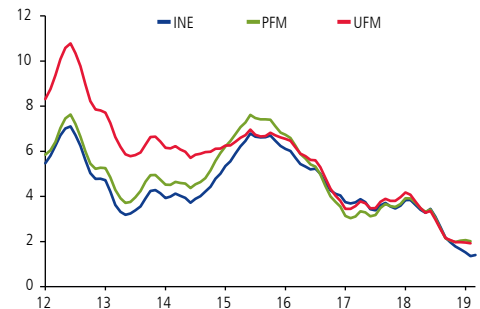
With regard to costs, nominal wages continue to grow below historical averages. The INE indices (WI and LCI) had risen to just under 5.0% on the cutoff date of this *Report*, although the increase was largely driven by the entry into effect of the new minimum wage. Other sources, which are published with a longer lag, were between 4.0 and 4.5% annually in February. The annual growth of the unit labor cost (ULC)—based on data from the INE, the pension fund managers (PFMs), and the Unemployment Fund Management Corporation (UFM)—has been declining for the past several years (figure IV.6). Qualitative information collected in recent BPRs is consistent with the evolution of the ULC and wages captured by administrative data. In particular, the interviewees continue to identify scarce wage pressures, mainly due to an increase in the supply of workers in recent quarters, mostly foreigners, as well as efficiency gains in recent years and generally stable costs.

### INFLATION OUTLOOK

In the baseline scenario of this *Report*, annual CPI inflation will approach 3% in 2020. This headline inflation trend will be supported by the strong contribution of the more volatile items in the basket. In foods, this reflects a less demanding basis for comparison deriving from low annual inflation at the start of this year, below historical averages. In addition, an increase in electricity rates has been announced for May of this year. CPIEFE inflation, in turn, is projected to end the year at 2.6% (2.4% in the *March Report*) and reach 3% in early 2021. The convergence is slower for core than headline inflation due to the larger output gap estimated throughout the forecast horizon. As a working assumption, the real exchange rate (RER, index: 1986=100) is projected to fluctuate around its average of the last 15 and 20 years.

Private inflation expectations have increased since the last *Report*, although more markedly in the short term. This is in line with the positive surprise for the market in March (inflation of 0.5% versus 0.3% in the March Economic Expectations Surveys), combined with the aforementioned factors tied to energy prices. For December of this year, inflation insurance and the May EES project annual CPI inflation of 2.8 and 2.9%, respectively, up from the cutoff date of the last *Report* (2.6 and 2.7%, respectively). Two years ahead, the different measures of expectations are still around 3% (figure IV.7).

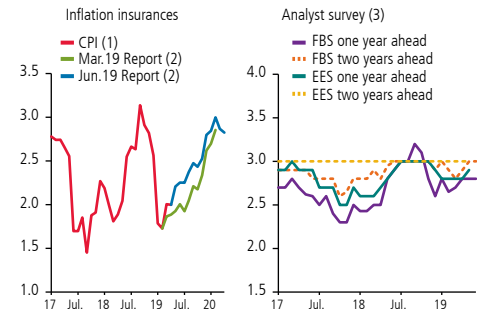
**FIGURE IV.6**  
Nominal unit labor cost (\*)  
(annual change, percent)



(\*) Annual change in the three-month rolling average.

Sources: Central Bank of Chile, National Statistics Institute, Superintendencia de Pensions (PFMs), and Unemployment Fund Management Corporation (UFM).

**FIGURE IV.7**  
Inflation expectations  
(annual change, percent)



(1) Starting in January 2019, the new indices are used, with base year 2018=100, so they are not strictly comparable with the previous data.

(2) For the March and June 2019 *Monetary Policy Reports*, uses the average of the last ten business days through 26 Mar 2019 and 03 Jun 2019, respectively.

(3) The FBS is for the first half of each month through January 2018. From February 2018 on, the data are from the last survey published in the month. In months when the survey is not published, the last available survey is used.

Sources: Central Bank of Chile and National Statistics Institute.



## V. FUTURE EVOLUTION OF MONETARY POLICY

*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 certain changes in the baseline scenario.*

### MONETARY POLICY STRATEGY

In this *Report*, the Board has updated the estimations of structural parameters that are used in evaluating the state of the economy, its outlook and the calibration of monetary policy. Most importantly, this allowed to quantify the effect of the strong immigration flow of recent years on both trend and potential growth, increasing both. At the same time, the neutral MPR has been revised downwards by 25 basis points (bp), partly reflecting the fall in neutral rates around the world. The wider gaps resulting from the updating of parameters together with weak activity and demand in the first quarter are consistent with the recent inflationary dynamics. All these elements combined led the Board to estimate that for effective growth to close the activity gap and inflation to converge to the target, it is necessary to recalibrate the monetary impulse. Accordingly, at its June meeting the Board decided to lower the MPR by 50bp.

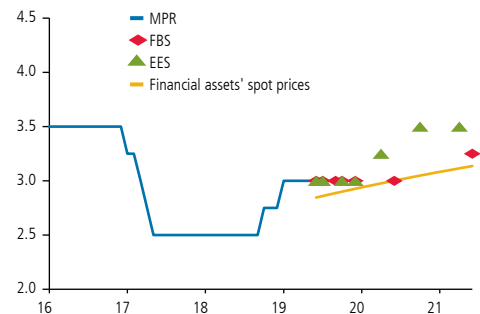
Going forward, the timing of the MPR normalization will depend on inflation being in a clear process of convergence to the target. For this evaluation, especially important will be how the labor market absorbs the massive immigration, the response of investment and the developments in the external scenario.

For forecasting purposes, the working assumption is made that in the coming quarters the MPR will stay flat, and will begin a gradual normalization process during next year.

As is the norm, the conduct of monetary policy will be conditional on the effects of incoming information on the projected inflation dynamic. Thus, developments in either direction will trigger the necessary monetary policy adjustments.

In recent months, the different measures of market expectations available prior to the June Monetary Policy Meeting have adjusted the expected trajectory for

**FIGURE V.1**  
MPR and market expectations (\*)  
(percent)



(\*) Uses interest rates at the statistical closing of swap contracts up to 10 years. Smoothed trajectory.

Source: Central Bank of Chile.



the MPR downwards, assuming a prolonged flat line. Thus, projections have been reducing the point of arrival of the MPR at the end of the policy horizon. The Economic Expectations Survey (EES) shows that the MPR will stand at 3.5% in two years' time, the Financial Brokers Survey (FBS) places it at 3.25% in the same period and estimates based on financial asset prices see it at 3.14%. This compares with values closer to 4% estimated earlier in the year (figure V.1 and table V.1).

**TABLE V.1**  
MPR expectations  
(percent)

	One year ahead		Two years ahead	
	Mar.'19 Report	Jun.'19 Report	Mar.'19 Report	Jun.'19 Report
EES (1)	3.25	3.25	3.75	3.50
FBS (2)	3.25	3.00	3.50	3.25
Financial asset prices (3)	3.19	3.00	3.42	3.14

(1) Corresponds to March and May 2019 surveys.

(2) The *Reports* of March and June 2019 use the surveys previous to the monetary policy meetings of March and June, respectively.

(3) The *Reports* of March and June 2019 use the averages of the last ten working days up to 26 March 2019 and 3 June 2019, respectively.

Source: Central Bank of Chile.

As aforesaid, one important factor behind the change in the monetary policy strategy has to do with the results from the updating of the structural parameters (i.e., trend GDP, potential GDP and neutral MPR). These are used to evaluate the current state of the economy, construct the baseline scenario and calibrate monetary policy (boxes V.1 and V.2).

Trend GDP is the GDP that results in the absence of transitory productivity shocks and when inputs are used to their normal capacity. It is, therefore, the economy's growth capacity in the medium term. The massive immigration that the country has received in recent years, and its particular characteristics, have increased this capacity for growth<sup>1/</sup> for a number of reasons. First is its magnitude. According to the latest estimates and population projections published by the National Statistics Institute (INE), between the end of 2014 and the end of 2018 the immigrant population in the country went from almost 490 thousand people to more than 1.25 million. This implied an increase in the population and the labor force of nearly 4.3% and 6.4%, respectively. Second is the level of skills of the newcomers. Immigration over the last year and a half (roughly 470 thousand people) has been dominated by Venezuelan citizens (43%), whose average schooling (15.6 years) exceeds that of the average

<sup>1/</sup> Strictly speaking, the immigration-related increase in the population does not affect economic growth in the long haul. This, provided that the flow is normalized and demographics resume their previous numbers. In the medium term, however (i.e. the next 10 to 20 years for these purposes) the phenomenon does affect the country's growth capacity by affecting labor force growth, capital accumulation and productivity.

Chilean (11 years)<sup>2/</sup>. Moreover, compared with other countries, Chile poses fewer legal impediments for being immersed in the labor market, and unlike other migratory waves that have occurred in the world, it shares the language and other cultural aspects with an important fraction of the immigrant population (box V .3). However, the very magnitude of the immigration flow implies that the economy must undergo an adjustment process towards the full absorption of the sharp increase in the labor supply, so that the new workers can find positions that match their skills. The international experience is inconclusive regarding how long this transition may take, since the characteristics of each migratory process vary widely. Initially, the strong increase in the labor force reduces labor productivity and increases the capital stock that the economy requires. Therefore, absorbing the flow of immigrants not only means that there must be a period of adjustment in the labor market variables, but also in the accumulation of capital and productivity.

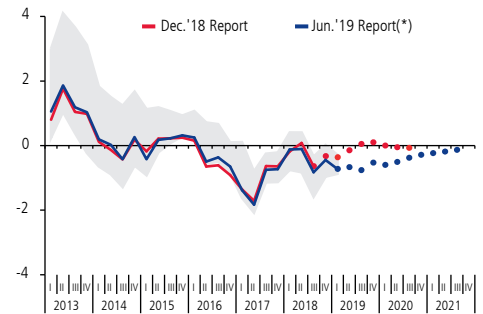
The Board estimates that the Chilean economy's trend growth is in the 3.25% to 3.75% range for the 2019-2028 period (3.0% to 3.5% in September 2018). This range inputs the uncertainty surrounding several of the aforementioned factors (box V.1). Particularly, this projection considers that total factor productivity of the non-mining sector will grow 1% in the next 10 years, however, there is uncertainty considering this variable's low dynamism in recent years.

Updating trend GDP is important for the determination of the economy's potential GDP, understood as GDP growth consistent with stable inflation, and, therefore, it is relevant for gauging the activity gap associated with inflationary pressures in the short term. It corresponds to the current level of productive capacity, including the various transitory productivity shocks and resource allocation problems that shape the economy at a given time.

The estimation made for this *Report* yields that for the period 2019-21 non-mining potential GDP is around 3.4%, comparable to the September 2018 estimate (near 3.2%) and somewhat lower than its trend growth. This calculation combines the initial fall in productivity with the labor force increase and the expected lags in the adequacy of the capital stock in response to this phenomenon. The updating of potential growth, together with the economy's first-quarter performance, cause the activity gap to be wider than previously thought: -0.7% in the first quarter of the year (figure V.2).

<sup>2/</sup> The second largest migratory force came from Haiti (24%), whose average schooling is less than Chile's (9.5 years).

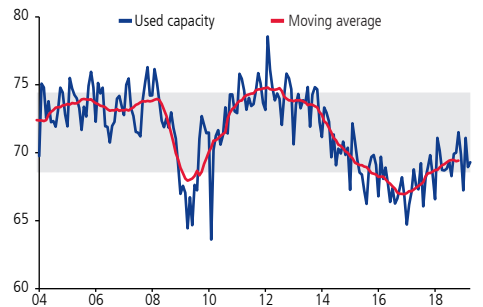
**FIGURE V.2**  
Activity gap (1) (2)  
(percent)



(1) Gray area shows minimum and maximum ranges for gap estimates, using different potential GDP inference methods (trivariate, FMV-X, HP, SVAR, MEP, SSA and XMAS Migration gap). See Aldunate et al. (2019).  
(2) Dotted lines show forecast.

Source: Central Bank of Chile.

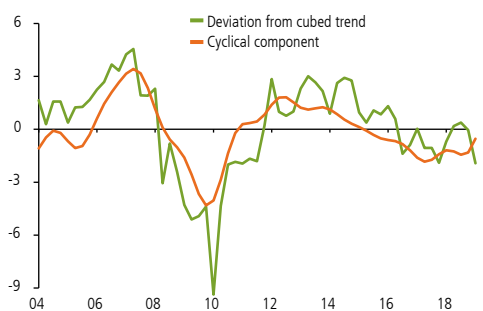
**FIGURE V.3**  
Manufacturing IMCE: capacity utilization (1)  
(percentage use of installed capacity)



(1) Gray are shows mean (71.5) +/- one standard deviation.  
(2) Moving average centered on +/- six months.

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

**FIGURE V.4**  
Electric generation, SIC (\*)  
(deviation from trend)

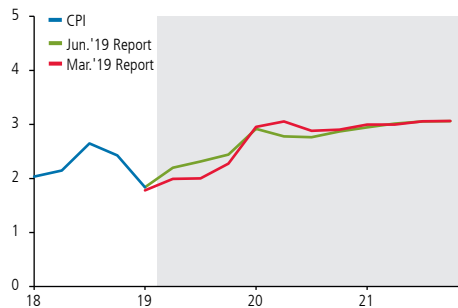


(\*) Obtained from a band pass filter (see Christiano and Fitzgerald, 2003).

Sources: Central Bank of Chile and CDEC-SIC.



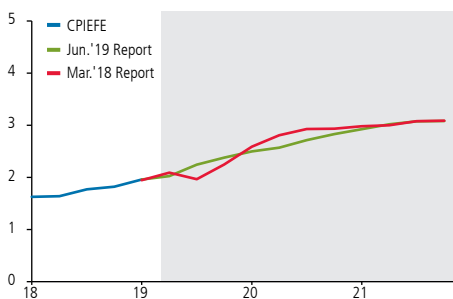
**FIGURE V.5**  
CPI inflation forecast (1) (2)  
(annual change, percent)



For 2018, the annual variation of CPI is obtained by splicing the 2013=100 series with the monthly variations of the 2018=100 basket starting in February 2018. See box IV.1, March 2019 Report. (2) Gray area, as from second quarter 2019, shows forecast.

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

**FIGURE V.6**  
CPIEFE inflation forecast (1) (2)  
(annual change, percent)



For 2018, the annual variation of CPIEFE is obtained by splicing the 2013=100 series with the monthly variations of the 2018=100 basket starting in February 2018. See box IV.1, March 2019 Report. (2) Gray area, as from second quarter 2019, shows forecast.

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

## CAPACITY GAPS

Measuring the structural parameters is subject to a high degree of uncertainty, both because of the variables' unobservable nature and because the data used in their estimation and the very estimation methodologies, are constantly changing<sup>3/</sup>. Therefore, it is a must to complement this information with other indicators. All combined, they point to persistent capacity gaps in our economy.

It is worth noting developments in the labor market, which show wages growing more slowly than their historical averages, in a context in which the supply of workers has increased significantly due to immigration. The very persistence of core inflation levels near 2% signals the existence of capacity gaps. However, other measures, such as capacity utilization in manufacturing industry and electricity generation, show that, beyond the volatility of these series, gaps have been gradually closing (figures V.3 and V.4).

The information garnered under the *Business Perception Report* (IPN) also points to persisting gaps. Respondents continue to mention that they perceive limited room to raise their sale prices, because of greater competition in their markets and buyers that are better informed and more sensitive to price changes. Many say that the costs, in general, have not changed significantly. On the labor market side, wage pressures are still contained by the labor supply increase of recent quarters, owing especially to the presence of immigrants. This is said to have brought some relief to the former difficulty to hire skilled labor in some sectors and regions.

## CONVERGENCE OF INFLATION

Inflation numbers known in the last few months show no big changes from the beginning of the year and are in line with projections. Thus, both the CPI and the CPIEFE have posted annual variations of the order of 2% (figures V.5 y V.6).

In the baseline scenario, annual CPI inflation is forecast to approach 3% during 2020, while CPIEFE inflation would reach that value in early 2021, at a slower pace than was foreseen in March, mainly because of the wider activity gap estimated for the entire policy horizon. As for the exchange rate, its forecast uses as a working assumption that the RER will fluctuate near its average levels of the last 15 to 20 years.

<sup>3/</sup> Using the standard deviations of historical revisions to the gap as a measure for uncertainty, the range including the estimation's 50% confidence covers  $\pm 1$  percentage point (see box V.1, *Monetary Policy Report*, September 2018).

The more volatile components of inflation (i.e. foodstuffs and energy) will help the CPI to return to the vicinity of 3% (figure V.7). Mainly, because food products, whose annual increases in early 2019 were significantly below their historical averages, left a low basis of comparison going forward. The rise in electricity rates that took place in May this year has to be considered as well.

### THE GAP AND ACTIVITY IN THE BASELINE SCENARIO

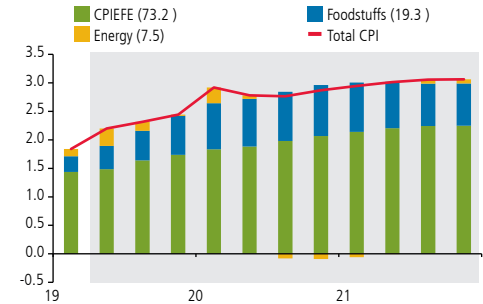
The baseline scenario estimates that the activity gap will close steadily throughout the projection horizon, time in which the economy will accumulate above-potential growth.

For 2019, the projected growth range is revised downward in the baseline scenario, responding mainly to the performance of the first quarter. Although the developments of the first months of the year are estimated to be largely transitory, their effects will have an impact on the GDP level for the rest of the year. Thus, 2019 GDP is foreseen growing between 2.75 and 3.5%<sup>4/</sup>. For 2020 and 2021, growth rates are projected to outperform this year, between 3% and 4% in both years. This considers that the macroeconomic effects of the immigration phenomenon will be more evident, driving up salaried employment, investment and consumption. This is supported by a greater monetary impulse, as determined by the Board. On the fiscal side, it is foreseen that in 2019 the impulse that the economy will receive will be 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, compared with March, the main adjustments are made to gross fixed capital formation (GFCF), a component which, instead of increasing 6.2% this year, is estimated to grow 4.5%. This projection adjustment responds to the weak performance of its machinery and equipment component in the first quarter. Partial second-quarter data suggest this weakness has not eased. This occurs within a context of high inventory build-up towards end-of-2018 and increased uncertainty regarding the international economy.

All in all, construction and works has maintained an important dynamism and forward signs are also positive. On the one hand, stock market information points to a favorable development of this component (figure III.5). On the other, the ongoing large-scale investment projects—especially in mining—do not register delays and have been unfolding according to plan. Along the same lines, the various surveys of investment projects—the sustainable project management office (OGPS) and the survey of the Capital Goods Corporation

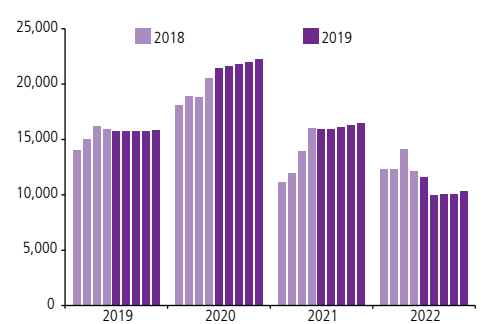
**FIGURE V.7**  
Contribution to annual CPI inflation (\*)  
(percentage points)



(\*) In parentheses, shares in CPI basket (2018=100 basket). Gray area, as from second quarter 2019, shows forecast.

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

**FIGURE V.8**  
OGPS: Investment projects survey (\*)  
(US\$ millions)

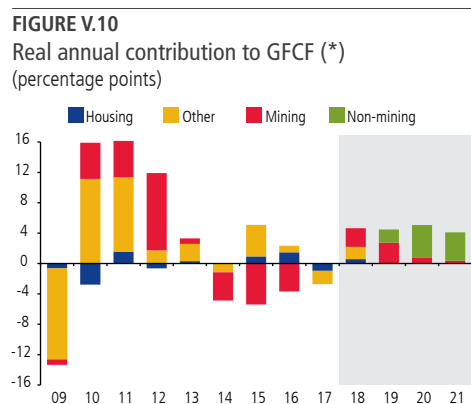
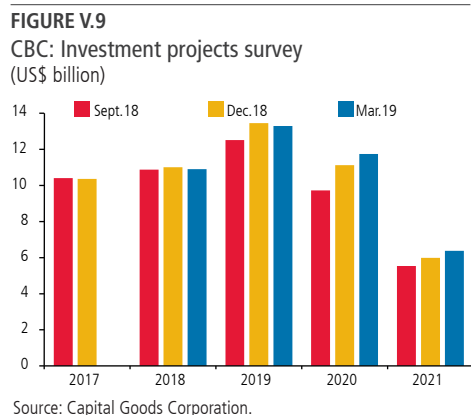


(\*) The bars for 2018 survey issues correspond to the months of September to December, both included, in consecutive order. The same applies to 2019, for the months from January to May.

Source: Sustainable project management office (OGPS), Ministry of Economics.

<sup>4/</sup> As is usual in every June's Report, the projection range for the year must be shortened from 100 to 75 basis points.





(CBC)— have not seen downward corrections and continue to consider larger amounts for 2019-2020, compared with investments in the period 2017-2018 (figures V.8 and V.9). On the concessions side, the authorities have announced a significant increase beginning in 2020, specifically for hospitals, roads and airports. Information from the Association of Engineering Consulting Firms (AIC) for the first quarter of 2019 shows that the detailed engineering (which handle projects in the pipeline for one or two years) show high annual growth rates, comparable with those of 2010- 2012. Regarding housing investment, although it began the year with a null contribution to construction GDP, sales levels remain high and the prospects that are reflected in the May IPN are positive. In any case, the IMCE for the construction sector showed a decrease most recently, that still maintains it above its historical average.

In the medium term, various elements point at investment regaining strength. For one thing, the lower basis of comparison that will result from adjusting its 2019 growth will help to raise the figure for 2020, for which year the baseline scenario estimates GFCF growth at 5.1%. The capital-to-GDP ratio has remained low in recent years (under 22% in real terms), with productive investment—excluding that in mining and housing—that grew practically zero in 2016-2018 (figure V.10). Moreover, the strong immigration of recent years reduced the relationship between capital and labor. Absorbing this greater workforce requires adjusting the capital stock, so that, short of a more significant change in vision about productivity, and/or the various costs associated with investment projects’ red tape, it should resume its dynamism (box V.1). The domestic conditions to finance this greater investment are favorable: local interest rates have remained low, which will be reinforced by Board’s decision at the June monetary policy meeting. Likewise, external financing conditions have remained positive and, in fact, the interest rates of U.S. Treasury bonds are at their lowest of several periods. All this occurs in a context in which the local financial system shows no imbalances, there are no elements that could hinder the flow of financing towards them and the fiscal deficit remains bounded.

However, the evolution of investment in the first quarter puts a note of caution as some of its fundamentals may be more persistent, particularly the more severe external uncertainty. Actually, it has resulted in lower asset prices and, thus, reduced the incentives to invest (figure III.6). Add to this the currency depreciation that could erode purchases of capital goods, mostly imported. The evolution of inventories also poses a risk on investment dynamics. Already at the end of 2018 there had been some build-up, which at the time was believed would be turned into investment, but not only did this not happen, on the contrary, inventories accumulated further in the first quarter of this year. This, in a context in which, according to the IMCE, the percentage of surveyed in wholesale trade who judge their inventories as undesired has increased, and in which the interviewees for the IPN from companies selling machinery and equipment point to sales below expectations, particularly in the northern areas of the country. All in all, local machinery and equipment production and wholesale sales have continued to grow and are expected to continue to do so,

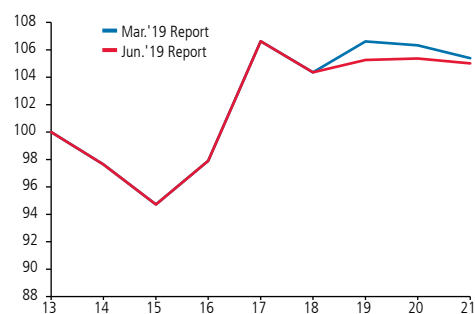
contributing to some depletion of inventories. Finally, it should be noted that a large part of investments in 2019 goes to mining and, in particular, to a handful of projects involving large amounts of investment, that to this day have not suffered any delays. The baseline scenario foresees that other sectors will also see an upturn in the near future.

Consumption has behaved in line with forecasts and the baseline scenario assumes that, after expanding 3.1% in 2019, it will average 3.5% in the next two years. Accordingly, the projection for this component of expenditure is virtually unchanged from that in the *March Report*. The higher growth rates for 2020 and 2021 are consistent with economic growth speeding up somewhat. The labor market has shown more positive signs regarding employment, as can be seen in the INE figures, the administrative records and the IPN information. Imports of consumer goods have remained high (with the exception of cars) and retailers' expectations remain optimistic (IMCE). All this in a context in which financial conditions remain favorable, thanks to both still low interest rates and good lending conditions.

The baseline scenario estimates that the economy will continue to receive momentum from abroad, but it will be milder than it was in the last two years and foreseen in March. Trading partners' growth is adjusted slightly downwards for 2019 and remains stable over the next two years. Thus, it should reach 3.2% in 2019 and 2020 and 3.3% in 2021. In 2019, this adjustment has to do mainly with expected poor performance of Latin America, where Argentina, Brazil and Mexico have shown weaker growth rates. Argentina is still in a recession and is going through substantial fiscal and monetary tightening. Brazil, meanwhile, has seen a contraction in growth in a context where delays in the discussion and approval of structural reforms have eroded investor confidence. Finally, in Mexico, activity has also disappointed, compounding the effects of the possible tariff increase decreed by the U.S. on the Mexican economy. About the main economies, the projections have very marginal adjustments for this year and remain the same for the next two years. In several of these countries, actual first-quarter numbers were positive, but the most conjunctural indicators, especially manufacturing output, point to more limited performances the rest of the year. Still, the evolution of world trade figures puts a note of caution with respect to the impact that the escalating trade conflict is having and could continue to have on the performance of the global economy.

The terms of trade will post more limited growth this year estimated in March, particularly due to both the actual and expected evolution of the copper price (figure V.11). This has been reduced in recent months as a response to the escalating trade conflict and activity data that in the margin have been below market expectations. Thus, the baseline scenario foresees copper prices closer to US\$2.8 per pound, which compares with the near US\$2.9 per pound expected in March. The oil price has risen since March, reflecting new sanctions on Iran, lower oil shipments from Venezuela and over-compliance with the cuts adopted by OPEC members. However, later on, the fears about how the worsening of the trade conflict could affect global demand for crude oil, led to undoing the

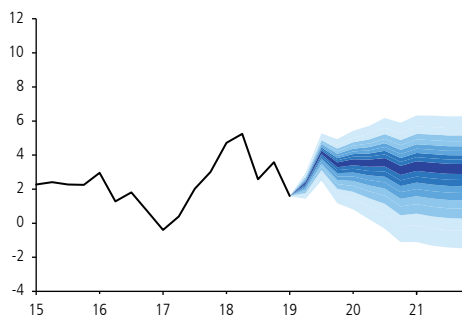
**FIGURE V.11**  
Terms of trade  
(index, 2013=100)



Source: Central Bank of Chile.



**FIGURE V.12**  
Quarterly GDP growth scenarios  
(annual change, percent)



(\*) The figure shows confidence interval of baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. Confidence intervals are built based on the RMSE of averaged MAS-MEP models from 2009 to 2017. Also, the intervals contain the risk evaluation on growth performed by the Board. For forecasting purposes, the working assumptions is used that over the coming quarters the MPR will remain flat and will begin a gradual normalization process during 2020.

Source: Central Bank of Chile.

previous increases. In line with this, the price projections for 2019 that are derived from the futures available in the last ten business days prior to the statistical closing of this *Report*, point to Brent–WTI prices somewhat higher than estimated in March. For the next two years, prices will have a downsloping trajectory. Thus, this year the terms of trade should rise 0.9%, 0.1% in 2020, to then contract by 0.3% in 2021.

Although our trading partners' growth is adjusted slightly, there has been a marked deterioration in the growth of world trade, which is captured in the worsened evolution that is expected for Chilean exports. The baseline scenario projects they will lose some dynamism, particularly in 2019, mainly due to the difficulties encountered by some manufacturing export sectors, and because of reduced copper output that will affect copper shipments. As for imports, the downward adjustment to consumer goods stands out, in response the situation of car sales in the local market, but the decrease in imports of machinery and equipment (trucks, most specifically) is also worth noting, which is estimated to last beyond the first quarter. This is reflected in a current account deficit that will be somewhat below 3% of GDP in the projection horizon. At trend prices<sup>5/</sup> the deficit will be slightly below 4% of GDP.

Despite the evolution of the international outlook, and in particular how the risk scenarios have taken shape, financial conditions have remained favorable for emerging economies. This owes mainly to the behavior of interest rates, which have dropped faced with increased uncertainty. The baseline scenario foresees that this uncertainty will endure, without the underlying factors resulting in an unforeseen outcome with a sharp deterioration of financial conditions.

## SENSITIVITY SCENARIOS

The monetary policy strategy that is consistent with inflation converging to the target is conditional on the economy evolving according to the baseline scenario depicted herein. There are risks, however, that if materialized, may alter the macroeconomic outlook and the course of monetary policy. On this occasion, the Board estimates that the balance of risks is downward biased for activity, and unbiased for inflation (figures V.12, V.13 and V.14).

Although any change in the baseline scenario must be assessed taking the full picture, it is possible to quantify some potential deviations of the baseline scenario and its effects on the main macroeconomic variables.

<sup>5/</sup> This measure adjusts the value of mining exports and fuel imports considering deviations in the prices of copper and oil from their long-term values. Same thing for the income and transfers associated with copper exports. Other exports and imports are valued using current prices. In addition, it does not correct possible changes in the quantities exported or imported due to movements in copper and oil prices. The calculation uses long-term prices of US\$2.7 per pound of copper and US\$70 per barrel of oil (boxes V.2 in the September 2012 *Report*, and V.1 in the December 2015 *Report*).

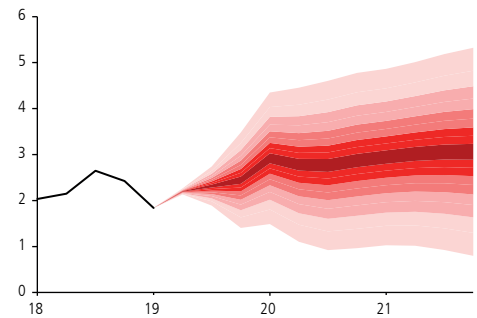
One of the main risks has to do with the effects of the strong immigration flow into the economy. The baseline scenario assumes that this has positive effects on both trend and potential growth, widening the activity gap and affecting the inflationary dynamics along the policy horizon. However, these effects may vary. In the first place, it is possible for the significant increase in the labor force to have more persistent effects on productivity. As immigrants are initially employed in jobs that are below their skills—thus being less productive than they could be—the baseline scenario assumes that as time passes they “climb” towards jobs more in line with their ability, so their productivity improves. However, this process may be hindered, either by legal factors, lack of proper networks compared to native workers or the reluctance of Chilean employers to hire foreigners, for example. Whatever the reason behind lower productivity growth, this would reduce the projected increase in potential GDP, would narrow the gap and increase inflationary pressures. To ensure the convergence of inflation over the two-year horizon, the MPR should follow a trajectory running above the path considered in the baseline scenario.

A second immigration-related sensitivity scenario considers a faster immersion of the foreign population into the labor market. This process is boosted either because they seek employment with greater intensity or because they are willing to work for less pay. Although this is expansionary from the activity standpoint, such a scenario translates into a wider activity gap and lower inflationary pressures, with which monetary policy should be more expansionary to ensure the convergence of inflation to the target.

Another important risk in the baseline scenario comes from the evolution of the external scenario. If there is a more marked deterioration in our trading partners’ growth—by between 0.5 and 1 percentage point—this could trigger a rise in risk premiums, drops in commodity prices, and therefore bring the copper price to US\$2.3 per pound by the end of this year. Its effects on the local economy would be amplified by a deterioration in expectations, which would result in lower consumption and investment in 2019-2020. Thus, the Chilean GDP would see a reduction of the order of 1 to 2 pp accumulated in 2019-2021 and the convergence of inflation would be compromised, so the MPR should follow a trajectory that runs below the path described in the baseline scenario.

The simulations just analyzed are scenarios that, without completely modifying the baseline scenario, do reflect the magnitudes of the monetary policy adjustments that certain deviations from it might require. As always, the Board reiterates that it will review possible deviations from the baseline scenario that could jeopardize the convergence of inflation to the target over the policy horizon and that therefore 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.

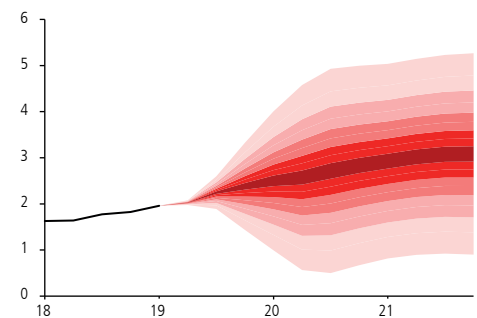
**FIGURE V.13**  
CPI inflation forecast (\*)  
(annual change, percent)



(\*) The figure shows confidence interval of baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. Confidence intervals are built based on the RMSE of averaged MAS-MEP models from 2009 to 2017. Also, the intervals contain the risk evaluation on growth performed by the Board. For 2018, the annual variation of CPI is obtained by splicing the 2013=100 series with the monthly variations of the 2018=100 basket starting in February 2018. See box IV.1, March 2019 Report. For forecasting purposes, the working assumptions is used that over the coming quarters the MPR will remain flat and will begin a gradual normalization process during 2020.

Source: Central Bank of Chile.

**FIGURE V.14**  
CPIEFE inflation forecast (\*)  
(annual change, percent)



(\*) The figure shows confidence interval of baseline projection over the respective horizon (colored area). Confidence intervals of 10%, 30%, 50%, 70% and 90% around the baseline scenario are included. Confidence intervals are built based on the RMSE of averaged MAS-MEP models from 2009 to 2017. Also, the intervals contain the risk evaluation on growth performed by the Board. For 2018, the annual variation of CPI is obtained by splicing the 2013=100 series with the monthly variations of the 2018=100 basket starting in February 2018. See box IV.1, March 2019 Report. For forecasting purposes, the working assumptions is used that over the coming quarters the MPR will remain flat and will begin a gradual normalization process during 2020.

Source: Central Bank of Chile.



## BOX V.1 TREND AND POTENTIAL GDP

This box presents the revised potential growth estimate for the Chilean economy, which is periodically updated by the Board. This year, the Board also updated the estimate of trend growth, which was last revised in 2017, to incorporate the effects of recent immigration on medium- and long-term growth. As explained on past occasions, potential GDP refers to the GDP level consistent with stable inflation; as such, it is the appropriate measure of the output gap associated with short-term inflationary pressures. Trend GDP, in turn, is related to the economy's medium-term growth capacity. In the long term, potential and trend growth converge to the same number. However, transitory factors that alter productive capacity, such as temporary production shocks and limitations on factor utilization, generate differences between the two in the short term. It is therefore important to analyze them separately<sup>1/</sup>.

The main results are as follows. First, the Board estimates that trend GDP growth will be between 3.25 and 3.75% for the next ten years. This implies an increase of 0.25 percentage points (pp) relative to two years ago, when trend growth was calculated at 3.0 to 3.5%. Second, potential GDP growth will average around 3.4% in the 2019–2021 period. The output gap is estimated to be a negative 0.7% in the first quarter of 2019, which is higher than the estimate in March. This reflects new data, the revision of some earlier data, the effect of filters, and, most importantly, the surprise in the evolution of the labor force deriving from immigration.

### Trend growth of non-mining GDP

Following the logic of past exercises, the estimation of trend growth disaggregates GDP into the mining and non-mining sectors<sup>2/</sup>. For non-mining GDP, the estimation is based on a production function, which assumes that trend growth can be decomposed as follows:

$$\Delta Y = \Delta \text{PTF} + \alpha \Delta L + (1 - \alpha) \Delta K,$$

where  $\Delta Y$  is trend GDP growth,  $\Delta \text{TFP}$  is the trend growth of total factor productivity (TFP),  $\alpha$  is the share of labor in GDP,  $\Delta L$  is the trend growth of hours worked adjusted for labor quality, and  $\Delta K$  is the growth of capital (adjusted for the intensity of capital use).

The main change in this revision is the population forecast for 1992–2050, published by the INE in late 2018. This forecast incorporates the high immigration observed since 2015, which is expected to continue over the coming years<sup>3/</sup>. The intensity of this phenomenon was not incorporated in prior population forecasts (figure V.15), which has important consequences for the labor forecast and, therefore, the growth capacity of the economy. The rest of the forecast assumptions have not changed significantly since 2017, except for the incorporation of an explicit model of how capital and TFP respond to the increased labor due to immigration.

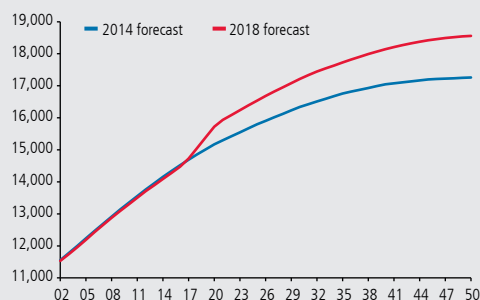
<sup>2/</sup> Through 2017, the decomposition was between natural resources GDP—mining, fishing, and EGW—and other GDP (for more details, see Fuentes, Fornero, and Rubio (2018)). The results of this exercise are very similar using either decomposition.

<sup>3/</sup> The immigrant population as a share of the total population grew from 3.3% in 2014 to 6.7% in 2018.

<sup>1/</sup> For more details, see Central Bank of Chile (2017, chapter 1).

FIGURE V.15

Working-age population forecast  
(thousands of people, 2002–2050)



Source: National Statistics Institute (INE).

Thus, the contribution of labor to trend growth is estimated at 0.9% for 2019–2028, versus 0.7% for the same period using the population estimates available in 2017. The difference between the two figures derives from the higher projected immigration, especially for 2019 and 2020. The projected labor participation, hours worked, and labor quality, as well as the secular demographic trend toward an aging population with a lower birth rate, are in line with the dynamics of the previous exercise.

With regard to the increase in the capital stock, the contribution to trend growth over the next ten years is estimated at 1.7%, which is similar to the 2017 estimate for 2017–2026. The investment response to the growth of the labor factor from immigration, which increases the return to capital, contributes a tenth of a point to that growth<sup>4/</sup>. Finally, the trend growth of the TFP of non-mining GDP is around 1% for the next ten years. This figure is in line with a somewhat higher historical average, deriving from the last revision of the national accounts, and the modeling of the effects of immigration on the productivity trend<sup>5/</sup>. However, there is also substantial uncertainty given the undynamic performance of this variable in recent years.

To calculate the trend growth rate of total GDP, the growth forecast for the mining sector is added in. This projection is based on information from Cochilco and the analysis of the historical evolution of the copper ore grade. As has been the trend in recent years, the mining forecast is lower than non-mining GDP: 2% for the next ten years. Thus, in the baseline scenario, total GDP growth for 2019–2028 is 3.4% (table V.2).

<sup>4/</sup> For more details on the modeling strategy, see Aldunate et al. (2019).

<sup>5/</sup> The international literature suggests that immigrants are initially employed in jobs that do not take advantage of their skills, implying a loss in productivity. With the passage of time, they move into jobs that are more in line with their skills, bringing an improvement in total productivity. For more details on the model and calibration assumptions, see Aldunate et al. (2019).

TABLE V.2

Trend GDP growth forecast  
(percent)

	Trend growth (*)			Contribution to non-mining GDP growth		
	GDP total	Non-mining GDP	Mining GDP	TFP	Labor	Capital
2019-2028	3.4	3.5	2.0	1.0	0.9	1.7

(\*) Mining accounts for 11.9% of total GDP. VAT and import duties are assumed to grow at the same rate as non-mining GDP.

Source: Central Bank of Chile.

As usual, this number represents a central estimate. The Board considers that a range of 3.25 to 3.75% adequately captures the uncertainty associated with the calculation. This has to do with the different assumptions for the evolution of the factors of production, including different scenarios for the evolution of the determinants of the labor factor, TFP, the speed of the capital response, and the specific productivity associated with the new workers that are integrated into the labor market due to immigration<sup>6/</sup>.

### Potential GDP growth and the output gap

Potential GDP can differ from trend GDP, because transitory shocks to productivity and/or temporary limits on factor utilization can alter productive capacity in the short term, without modifying medium-term capacity. With the passage of time, the two rates converge to the same value, once these factors dissipate.

The calculation of potential GDP and the output gap is based on a battery of statistical models (time series filters) anchored on the so-called Phillips Curve, which describes the relation between inflation and the output gap. In these models, long-term growth is anchored on the estimate of trend growth described above, which ensures consistency in the two approaches<sup>7/</sup>.

The results show an increase in the potential growth rate of non-mining GDP. For the 2019–2021 period, this figure averages around 3.4% (versus an estimated 3.2% in September 2018). With regard to past years, the potential growth of the 2016–2018 period is revised upward somewhat, with the correction concentrated in 2016 (table V.3).

<sup>6/</sup> For a discussion of the scenario see Aldunate et al. (2019).

<sup>7/</sup> The multivariate filter, one of the filters used, is extended to anchor trend non-mining GDP growth. For a description of the methodology, see Aldunate et al. (2019).



**TABLE V.3**  
Potential growth estimates and output gaps for non-mining GDP (1)

Year	Non-mining GDP (2)		Potential (2)		Gap (2) (3)		
	Sept. 18	Jun. 19	Statistical mod. (4)		Av.	MEP (5)	
			Sept. 18	Jun. 19		Sept. 18	Jun. 19
2016	1.6	2.0	2.2	2.4	-0.5	-0.5	-0.3
2017	1.9	1.6	2.5	2.5	-1.1	-1.1	-1.2
2018	4.1	3.9	3.1	3.1	-0.1	-0.1	-0.4
2019	3.2	3.0	3.2	3.3	-0.1	-0.3	-0.7
2020		3.7		3.4			-0.4
2021		3.6		3.4			-0.1

(1) For each column, data after the dashed line are forecasts contained in the *Monetary Policy Report* for each year. Non-mining GDP at seasonally adjusted factor costs.

(2) Average for the year.

(3) The difference (in logarithms) of the real and potential GDP levels, expressed in percent.

(4) Statistical models average the potential levels calculated with trivariate and multivariate filters.

(5) MEP output gap model.

Source: Central Bank of Chile.

The output gap is estimated at  $-0.7\%$  in the first quarter, wider than estimated in March. This reflects the revision of potential growth and the lower growth of the economy in early 2019 (figure V.2). The high immigration of the past several years increased the velocity of potential growth in recent quarters, which contributed to a wider output gap in the first quarter of 2019. As highlighted in March, the larger gap is consistent with the low inflation deriving from the change in the CPI measure. Going forward, the increase in potential GDP is the factor that tends to dominate in the evolution of the gap, especially starting in 2020. In 2020 and 2021, the forecast for non-mining output is slightly above potential, such that the gap will gradually close over the course of the forecast horizon (table V.3).

## BOX V.2

### NATURAL RATE OF INTEREST

The natural rate of interest (NMPR), sometimes called the neutral rate, is one of the structural parameters that the Board uses to evaluate the current state of the economy, the growth outlook, and the calibration of monetary policy. Monetary policy is considered to be expansionary (contractionary) when the real MPR is below (above) the NMPR. Thus, regularly updating the estimate of the natural rate is important for both the application of monetary policy and the communication of its future orientation.

In recent years, there have been a number of developments in the macroeconomic scenario that may have affected the level of the NMPR. These include the drop in external interest rates and the impact of high immigration in recent years on trend and potential growth (box V.3). In addition, the Bank has developed and expanded the use of new methodologies for estimating the NMPR, following the practice of other central banks and taking into account the need to incorporate the various changes in the economy.

This box presents the results of the estimation of the natural rate of interest for the Chilean economy. The results show that the NMPR lies in a range of 0.75 and 1.25% in real terms. Taking into account the inflation target and the degree of uncertainty associated with these estimates, the Board gauges that in nominal terms, the NMPR is between 3.75 and 4.25%. This range is 25 basis points (bp) lower than previously calculated. Some of the estimates show that the immigration shock has had a small upward impact on the NMPR, which has been more than offset by the downward pressure from the drop in international interest rates, particularly since the global financial crisis of 2008–09.

#### Definition and significance

The natural MPR is defined as the rate that is consistent with equilibrium—or trend—GDP and inflation equal to the target (3%), once the effects of transitory shocks on the economy have

dissipated. Therefore, the NMPR is inherently a long-term rate, to which the real MPR can be expected to converge gradually, in the absence of perturbations that drive the economy from its trend level. Thus, the NMPR is understood as a natural or neutral trend rate<sup>1/</sup>.

As indicated, the NMPR is a key variable for calibrating monetary policy, since it provides a benchmark for evaluating the monetary stimulus implied in the real MPR.

#### Methodologies used

The NMPR is a variable that cannot be directly observed, but rather must be inferred from other observable variables. This inference can be made using different methodologies, and the results can vary between approaches. In the case of the natural rate of interest, central bank practice has been to choose a wide range of models, given that the estimators are subject to considerable uncertainty<sup>2/</sup>.

In choosing the methodologies for calculating the NMPR, the Bank weights several factors: (a) prior use of the methodology, so as to maintain consistency over time; (b) its use by other central banks; (c) the applicability of each method to the Chilean economy; and (d) the degree of certainty in the inference of the level of the natural rate. Based on these criteria, three approaches were selected<sup>3/</sup>.

(i) Direct observation of market expectations for long-term rates. The NMPR is the level that the MPR should have in the absence of shocks. In general, it is possible to think that in a period between 5 and 10 years, the cyclical effects of transitory

<sup>1/</sup> The academic literature also considers the concept of a short-term neutral rate, characterized by the absence of price rigidities, which fluctuates substantially across the economic cycle. However, the Board's estimate of the NMPR is associated with the concept of the long-term or trend natural rate of interest.

<sup>2/</sup> Aldunate et al. (2019) discuss estimates by other central banks and the associated uncertainty.

<sup>3/</sup> For a detailed description of the methodologies used, as well as others considered, see Aldunate et al. (2019).

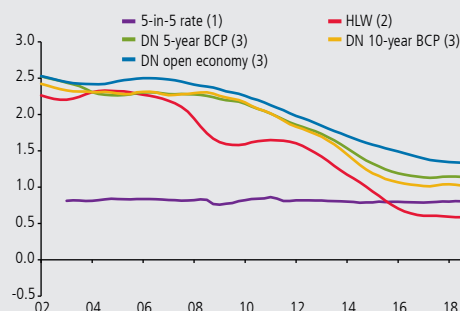


shocks will have dissipated, such that the level of the expected real rate in five to ten years represents a possible approximation of the NMPR. This rate, called the 5 in 5 (i.e., the five-year rate in five years), is derived from financial asset prices after correcting for the term premium. Based on this methodology, the current NMPR is 0.8% in real terms, with a recent dynamic that does not show significant changes<sup>4/</sup> (figure V.16).

(ii) Inference based on movements in inflation and GDP. This measure, based on the methodology proposed by Holston, Laubach, and Williams (2017), is widely used by central banks. It aims to infer the trend level of the interest rate based on observations of output, inflation, and interest rates. To do so, it uses restrictions derived from economic theory, which relate output with the inflation rate, and the interest rate with trend growth factors, among others. This methodology, with an inherent degree of uncertainty, delivers an expected value for the current NMPR of 0.6% in real terms, with a decreasing trend in recent years (figure V.16). However, there is a considerable degree of uncertainty in this inference (Aldunate et al. 2019).

(iii) Inference based on movements in inflation and financial asset prices. Following the methodology described by Del Negro et al. (2017), the trend natural rate is estimated based on the observation of a broad set of financial asset prices, inflation, and market expectations for these variables, considering theoretical restrictions and common trends. The estimation draws on three specific cases for the application of the methodology to the Chilean case: data on the five-year BCP bond (figure V.16); data on the ten-year BCP bond; and a modification of the approach to consider an uncovered interest rate parity between (trends of) local and external rates and the real exchange rate. This allows the inclusion of considerations for a small open economy, which are relevant for Chile. The real NMPR real estimated with these methodologies is 1.1%, 1.0%, and 1.4%, with a decreasing trend over time in all three versions.

**FIGURE V.16**  
Estimates of the real natural rate of interest (percent)



- (1) The 5-in-5 rate is derived from financial asset prices corrected for the term spread.
- (2) Based on Holston, Laubach, and Williams (2017).
- (3) Based on Del Negro et al. (2017), using data on the 5-year BCP, the 10-year BCP, and considerations for a small open economy.

Source: Central Bank of Chile.

### A structural approach

While the approaches described thus far allow the inference of the NMPR, none of them have a sufficient economic structure for simultaneously identifying and isolating the macroeconomic developments that may have affected interest rates in Chile. This is especially important given the drop in international interest rates and the effects of the immigration shock on growth<sup>5/</sup>. Therefore, the analysis is complemented with the Bank's baseline structural model, which can isolate each of these two channels. However, it is important to note that this model is used for short-term fluctuations, such that by construction, it cannot shed light on long-term rates, which are given and used as an input for the model<sup>6/</sup>. What this structural approach can do is generate expectations for short rates at long horizons, and given its structural nature, it can associate changes in these expectations with explicit economic phenomena<sup>7/</sup>.

<sup>4/</sup> Aldunate et al. (2019) show the evolution of the NMPR without correcting for term spreads, which do exhibit a decreasing trend in recent years. However, given that there is a relative consensus that term spreads have narrowed in recent years, it was decided to retain the methodology that corrects for term spreads, despite the uncertainty inherent in the correction.

<sup>5/</sup> The first method only allows inferring these effects through the rate expectations. The second can isolate the effects of immigration through real growth, but it considers the external rate channel. The third captures changes in external rates, but it cannot identify the direct effect of immigration.

<sup>6/</sup> In the strict sense, the steady-state rate is an exogenous parameter in the model.

<sup>7/</sup> Del Negro et al. (2017) show that these expectations are comparable to those estimated using methods like Holston, Laubach, and Williams, described earlier.

Figure V.17 shows the results of considering, separately, the effects of the immigration shock and the decrease in external rates on the structural model. The immigration shock is captured by simulating an increase in the immigrant population, similar to the assumption in the trend GDP exercise (box V.1). The effect of the drop in external rates is captured by simulating a reduction in U.S. rates in line with the finding on the neutral rate for that country by Holston, Laubach, and Williams (2017). The results, presented in figure V.17, are deviations from the steady state that are assumed as given. The immigration shock causes the rate to rise above its trend (purple bars), due to the acceleration of investment in response to the initial decline in capital per worker deriving from the increase in the labor factor, although the magnitude is small (6 bp) and concentrated primarily from 2015 on. This effect is more than offset by the drop in external rates, especially after the global financial crisis of 2008–09 (15 bp). The net effect of these two forces is a deviation below the long-term rate of almost 10 bp.

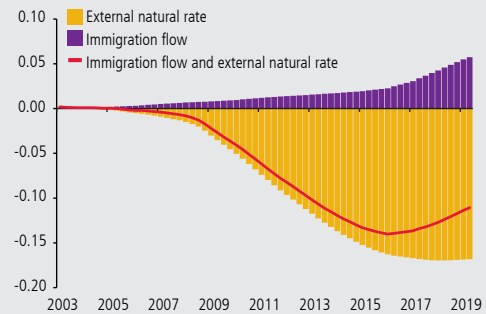
## Conclusions

The updated estimate of the NMPR shows that the level—taking the simple average of five estimations—is around 1% in real terms. Adding the inflation target and taking into consideration the uncertainty inherent in the estimates, the Board deems that in nominal terms, the NMPR is in the range of 3.75 to 4.25%.

The 25 bp difference relative to the prior estimate is explained by the consideration of a larger number of estimation models. This captures the effects of reductions in the natural rates of interest in the developed economies, particularly after the global financial crisis, which is partially offset by the greater domestic growth capacity, due to immigration.

**FIGURE V.17**

Structural model: deviations of the expected real natural rate (\*) (percent)



(\*) Purple bars show the deviations of the real natural rate from its trend level, as predicted by the structural model given the immigration flow. Yellow bars correspond to the deviations generated by adding to the model a drop in the external neutral rate similar to the reduction observed for the U.S. by Holston, Laubach, and Williams (2017). The red line graphs the combined effect of both factors.

Source: Central Bank of Chile.

## BOX V.3

### IMPACT OF IMMIGRATION IN CHILE: LESSONS FROM COMPARABLE CASES

Immigration flows into Chile have increased significantly in recent years. According to data from the National Statistics Institute (INE), the foreign population in Chile grew from 490,000 people in December 2014 to over 1.25 million in December 2018. This implied a 4.3% increase in the population and a 6.4% expansion of the labor force. This phenomenon has accelerated in the last two years. Between April 2017 and December 2018, the net entry of migrants was almost 470,000 people—2.5% of the population and 3.8% of the labor force—with the majority coming from Venezuela (43%) and Haiti (24.3%) (table V.4). Given the magnitude of this immigration phenomenon and its implications for the Chilean economy, there is increasing interest in understanding and quantifying its impact<sup>1/</sup>. This box reviews the international experience with high immigration and discusses possible transmission mechanisms to the labor market, growth, and inflation.

**TABLE V.4**  
Characteristics of the immigrant population in Chile

	Total immigrants		Immigration flow	
	Dec.14	Jan.15 – Apr.17	Apr.17 – Dec.18	
Total (thousands)	489.7	293.6	467.9	
Percent of the labor force (1)	4.1	2.4	3.8	
	Composition, by country of origin (2) (percent of total)			
Peru	31.7	17.9	5.7	
Argentina	16.3	0.7	1.1	
Bolivia	8.8	11.1	6.4	
Colombia	6.1	23.0	7.7	
Venezuela	1.9	21.3	43.0	
Haiti	1.0	16.6	24.3	
Other	34.2	9.4	11.9	
	Demographic characteristics (3)			
Average age (years)	33.8	31.4	30.6	
Average education (years) (4)	12.2	12.2	12.9	
Labor participation rate (percent)	77.3	83.4	85.1	

(1) Estimated, for each group, based on the working-age population and its respective labor participation rate. Data on immigration flows are relative to the labor force at the start of the respective period.

(2) For 2014, decomposition based on the National Statistics Yearbook: Migration in Chile, 2005–2014. In the case of Haiti, estimated based on entry and exit flows recorded by the Investigative Police of Chile through December 2014.

(3) Years of schooling, labor participation, and average age of each group/year correspond to the average of each variable and country of origin in the 2017 census (INE).

(4) Average years of schooling of the population aged 25 and over.

Source: Central Bank of Chile, based on data from the INE, the Department of Immigration (DEM), and the Investigative Police of Chile.

#### Possible effects of immigration: international evidence

As discussed in box III.3 of the December 2018 *Monetary Policy Report*, the macroeconomic impacts of an immigration wave can be significant in the receiving country, through its effects on both the labor supply and aggregate demand. While the result depends on the combination of multiple factors, some aspects are particularly important: first, the intensity of the immigration phenomenon (how many people over how much time); second, how long the immigrants stay in the destination country, which determines whether the shock is temporary or permanent, and the subsequent effects on the decision-making of the various economic agents; third, the immigrants' qualifications (formal education, skills, experience), which is one of the main determinants of labor productivity. These factors, in turn, depend on the immigrants' ability to adapt in the local labor market, which is related to legal restrictions, cultural factors, language, and so forth.

#### Motives for immigration: attraction and expulsion factors

Immigration phenomena can be characterized according to whether they are motivated by attraction to the destination country or expulsion from the country of origin. The former are generally more gradual over time and comprise relatively young migrants with a high labor force participation rate. Examples include Latin American immigration to the United States and Peruvian and Colombian immigration to Chile. Migration processes caused by expulsion factors result from the deterioration of economic conditions or armed conflict in the home country. These phenomena are more sudden and usually affect a larger share of the population.

One interesting immigration phenomenon for analysis occurred in the Western Balkans<sup>2/</sup>, which was motivated by expulsion factors and thus may have some similarity with the current case

<sup>1/</sup> The Bank has published a number of assessments, including its report on "Trend Growth: Medium-Term Forecast and Analysis of the Determinants" (2017); box III.1 in the September 2018 *Monetary Policy Report*; and box III.3 in the December 2018 *Monetary Policy Report*.

<sup>2/</sup> Currently, Albania, Bosnia and Herzegovina, Kosovo, Montenegro, the Republic of North Macedonia, and Serbia.

of Venezuela. The process began in the 1970s, due to the poor domestic economic conditions, and accelerated in the 1990s, peaking during the armed conflict following the dissolution of Yugoslavia. The immigration phenomenon has systematically continued through the present day, as a result of the worsening of socioeconomic conditions. By 2013, 5.7 million people had left the region, equivalent to 31.2% of the population (Vračić, 2018). This type of episode suggests that migration caused by expulsion factors tends to be persistent, to the extent that the political economic conditions in the country remain difficult.

### The role of human capital

An interesting aspect of immigration to Chile in recent years is the diverse education profile of the migrants. According to the 2017 census, Chileans have 11 years of schooling, on average,<sup>3/</sup> versus 9.5 years for Haitian immigrants and 15.6 years for Venezuelans. The case of Russian immigration in Israel provides a basis for analyzing the possible effects of an influx of immigrants who are more educated than the local population. After the fall of the Berlin Wall, there was a significant outflow of migrants from the former Soviet Union, many of whom settled in Israel. As a result, the working-age population in Israel increased 15% between 1989 and 1997 (almost 2% per year). Moreover, the education level of the immigrants was higher than the average for the native population<sup>4/</sup>. A quantification of the impact shows that between 1990 and 1991—the peak years of the immigration process—the average wage of native workers fell, while the return to capital increased. Since 1997, however, both wages and the return to capital have recovered to their initial levels, due to an investment boom associated with the immigration. Despite their high qualifications, the immigrants were initially employed in less productive jobs, and the transition to more productive jobs was slow, in part due to language differences. While it is difficult to quantify their contribution, the evidence also points to a deflationary effect. A price comparison of areas that were affected differently by the immigration process estimates that for each percentage point of increased population due to immigration, prices fell around 0.5% (Lach, 2007).

A more recent phenomenon is the influx of immigrants into Western Europe, in particular the United Kingdom and Germany, following the incorporation of several Eastern European countries into the European Union in 2004.<sup>5/</sup> In particular, from 2004 to 2017, there was a net inflow of over 3.5 million people to the United Kingdom, equivalent to 5.6% of the population. The impact of this phenomenon is analyzed in an exhaustive report by the U.K. Migration Advisory Committee (2018). The estimates suggest that, in the long term, the immigration shock had a significant positive effect on labor productivity and wages, fundamentally due to the entry of highly skilled immigrants (Campo et al., 2018). However, given the high concentration of immigrants in some services sectors with a medium to low skill level, unemployment has been relatively higher and real wages have risen less in those sectors. There have also been mixed effects on prices: lower wage pressure and a larger labor supply have had a negative impact on the prices of personal services, while housing prices have risen.

### Barriers to entry and labor market assimilation

In the case of Germany, in addition to immigration from new members of the European Union, there has also been a recent influx of people displaced by the civil war in Syria. Thus, net immigration between 2011 and 2018 exceeded 4 million people, equivalent to 5% of the population. A report by the German central bank (Deutsche Bundesbank, 2018) estimates that between 2014 and 2017, immigration—generally of less skilled workers than the local population—reduced wage growth by 0.6% per year, constraining the cost pressures associated with a tight labor market. A study by the German Institute for Economic Research (Clemens and Hart, 2018) estimates that immigration could explain up to 0.4% of additional GDP growth per year between 2011 and 2016. Syrian immigration in Germany could provide a useful benchmark for the case of Haitian immigrants in Chile, in particular with regard to the difficulties of labor market integration deriving from the lack of a common language. A recent report by the OECD (2017), based on surveys of a wide sample of German firms, finds that the main barriers to entry for Syrian immigrants were the lack of clarity on their permanent immigration status (namely, whether they would qualify for legal refugee status, with the accompanying work permit) and language difficulties.

<sup>3/</sup> Estimated over the population aged 25 and over.

<sup>4/</sup> Around 60% of Russian immigrants have some university education, versus 30–40% for native Israelis (Cohen and Hsieh, 2001).

<sup>5/</sup> Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia.



## Venezuelan immigration: evidence for Latin America

The mass exodus from Venezuela has affected several Latin American countries (table V.5). Colombia has received on the order of 1.25 million people (2.6% of the population); Peru, 750,000 (2.3%). In its 2018 *Annual Report*, the Central Reserve Bank of Peru concludes that the immigration flow from Venezuela “would reduce the wage costs and potentially the prices of activities in the services sector” and “would have contributed, through private consumption, with 0.33 percentage points to the GDP growth rate recorded in 2018.” In the case of Colombia, the World Bank (2018) suggests that Venezuelan immigration could have a negative impact on jobs and wages for less skilled local workers in the regions that have been most affected by the shock. The same report emphasizes that the medium- and long-term effects on GDP should be positive.

**TABLE V.5**

Main destinations of Venezuelan migrants

Country	Total (thousands)	Percent of population	Percent of labor force (*)
Colombia	1,260	2.6	4.4
Peru	750	2.3	3.4
Chile	288	1.6	2.7
Ecuador	221	1.3	2.3
Argentina	130	0.3	0.5
Brazil	96	0.0	0.1
Panama	94	2.3	3.7

(\*) Number of Venezuelan migrants in the labor force is estimated, for all countries, using the share of working-age Venezuelan migrants in Chile (89%, INE) and their labor participation rate (88,7%, 2017 census). The total labor force, for each country and year, is from the World Development Indicators (World Bank).

Sources: World Bank, Chilean Department of Immigration, Chilean National Statistics Institute, International Organization for Migration, and, for some countries, statements by the respective authorities.

## Implications for Chile

While every case is unique to some degree, making international experiences a limited source of knowledge, it is still possible to extract some conclusions based on the international evidence. First, the scale of immigration into Chile in recent years is significant, and there are reasons to believe that this influx of migrants, in particular from Venezuela and Haiti, will not be reversed in the short term—especially considering that migrating to Chile implies higher costs than migrating to neighboring countries. Second, the population of recent immigrants is, on average, less skilled and younger than the Chilean population, with a higher labor participation rate. Third, relative to other countries, Chile puts up fewer legal impediments to labor market insertion and, in contrast to the European cases discussed above, shares a common language and other cultural characteristics with the majority of the immigrant population.

Consequently, the effects on the labor market can be expected to continue, to the extent that immigrants are able to gain entry. Concretely, real wages and inflationary pressures should both be contained. Investment can also be expected to increase. In the medium term, there should be a positive effect on trend growth, given the expansion of the labor force and the shift in productivity (box V.1).

# GLOSSARY

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**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 April 2019 WEO).

**CPIEFE:** CPI excluding food and energy prices, leaving 73% of the total CPI basket.

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

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

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

**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 1990–2018 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 April 2019 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 2019, 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.

**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-mining sectors (non-mining 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 April 2019 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 dollars, published in the IMF World Economic Outlook (WEO, April 2019). The sample of countries used in the calculation represent around 90% of world growth. For the remaining 10%, an average growth rate of 2.3% is used for the 2019–2021 period.

**World growth:** Regional growth weighted by share in world GDP at PPP, published in the IMF World Economic Outlook (WEO, April 2019). World growth forecasts for the period 2019–2021 are calculated from a sample of countries that represent about 86% of world GDP. For the remaining 14%, the average growth rate of advanced and emerging economies is used.

## ABBREVIATIONS

<b>BCP:</b>	Central Bank bonds denominated in pesos
<b>BCU:</b>	Indexed Central Bank bonds denominated in UFs
<b>BLS:</b>	Bank Lending Survey
<b>BPR:</b>	<i>Business Perceptions Report</i>
<b>CBC:</b>	<i>Corporación de Desarrollo Tecnológico de Bienes de Capital</i>
<b>CPI:</b>	Consumer price index
<b>CPIEFE:</b>	Consumer price index excluding food and fuels
<b>EES:</b>	Economic Expectations Survey
<b>FBS:</b>	Financial Brokers Survey
<b>FFR:</b>	Federal funds rate
<b>IMCE:</b>	Monthly Business Confidence Index
<b>IMF:</b>	International Monetary Fund
<b>INE:</b>	National Statistics Institute.
<b>IPEC:</b>	Consumer Confidence Index
<b>IPSA:</b>	Selective Stock Price Index
<b>LCI:</b>	Labor Cost Index
<b>MER:</b>	Multilateral exchange rate.
<b>MPR:</b>	Monetary policy rate
<b>MSCI:</b>	Morgan Stanley Capital International
<b>OECD:</b>	Organization for Economic Cooperation and Development
<b>OPEC:</b>	Organization of the Petroleum Exporting Countries
<b>PDBC:</b>	Central Bank discount promissory notes
<b>RER:</b>	Real exchange rate.
<b>SBIF:</b>	Superintendence of Banks and Financial Institutions
<b>SNA:</b>	System of National Accounts
<b>WI:</b>	Wage Index



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