Inflation and labour markets in the wake of the pandemic: the case of Chile[1]

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Abstract

The COVID-19 crisis resulted in a negative supply shock on labour markets worldwide. This, along with the follow-up of fiscal support measures, caused repercussions that persist to this day on the behaviour of labour markets and inflation. This document revisits the case of Chile throughout the period and examines the consequences on wages, employment, and inflation. The Chilean case constitutes a special one in that, on top of fiscal support measures that were also adopted in other countries, Congress approved pension fund withdrawals equivalent to roughly 19% of GDP that, together with other fiscal measures in year 2020 and 2021, resulted in a liquidity injection into household´s balance sheets of close to 33% of GDP. As a consequence of these measures, along with restrictions to mobility and fear of contagion, internal demand and inflation surged, and the labour market tightened significantly. In recent quarters, as the shock to internal demand started to give in and economic activity slowed down, we argue that the labour market acted as a shock absorber, allowing for lower real wages and more resilient employment than expected. Apart from recent developments, we also review some structural features of the Chilean labour market and wage formation mechanisms and their possible future dynamics. Finally, the last section describes the use of labour market information in the monetary policy process.

Keywords: inflation, labour market.

JEL classification: E31, J21.

[1] Presented at the 2023 Emerging Markets Deputy Governors Meeting of the BIS, March 2023.

Main drivers of inflation dynamics in Chile since the pandemic

Given the nature of the inflation process in a small open economy such as Chile, gauging the relative relevance of supply versus demand shocks, as well as domestic and external shocks, is key to properly calibrate the monetary policy stance and its forward guidance. For forecasting and policy analysis, the Central Bank of Chile (CBC) runs a suite of models, of which the workhorse DSGE (X-MAS)[2] is widely used for structural analysis. According to this analysis, approximately two thirds of the increase in inflation accumulated since the beginning of 2021 can be explained by internal factors and the other third by external ones (CBC, 2022c). Among the former, the rise in private consumption stands out, driven by the strong liquidity injection to households due to the implementation of fiscal stimulus measures during the pandemic and three partial pension fund withdrawals. Also, the depreciation of the CLP, triggered by the increase in local uncertainty, was a contributing factor. Furthermore, cost pressures along with inflationary persistence, explained by second-round and indexation effects, also played a relevant role. With regards to external factors, these were mainly supply-driven, e.g. higher commodity prices, transport costs, and supply chain disruptions.

These findings are robust to significant changes to the estimation strategy. For instance, the same conclusions derived from the structural macro model using aggregated macro data can be obtained when using highly disaggregated consumer price index (CPI) series to identify demand and supply shocks at the micro level. In particular, we still find that approximately two thirds of the rise of non-volatile goods inflation was driven by demand shocks (CBC (2022c)).

Over the course of 2022, domestic imbalances associated with excessive aggregate demand are being solved. Therefore, in the absence of new shocks, local inflationary pressures will continue to ease over the next quarters. Private consumption is falling to sustainable levels within its long-term trend, fiscal consolidation is underway, and local institutional and political agreements are driving uncertainty down.

Against this backdrop, the primary sources of uncertainty for the Chilean economy have changed from domestic to external. In this scenario, the future path of monetary policy and the risk of a deep recession in developed economies, the evolution of the war in Ukraine, and the resolution of imbalances in the euro area and China stand out as some of the main sources of uncertainties.

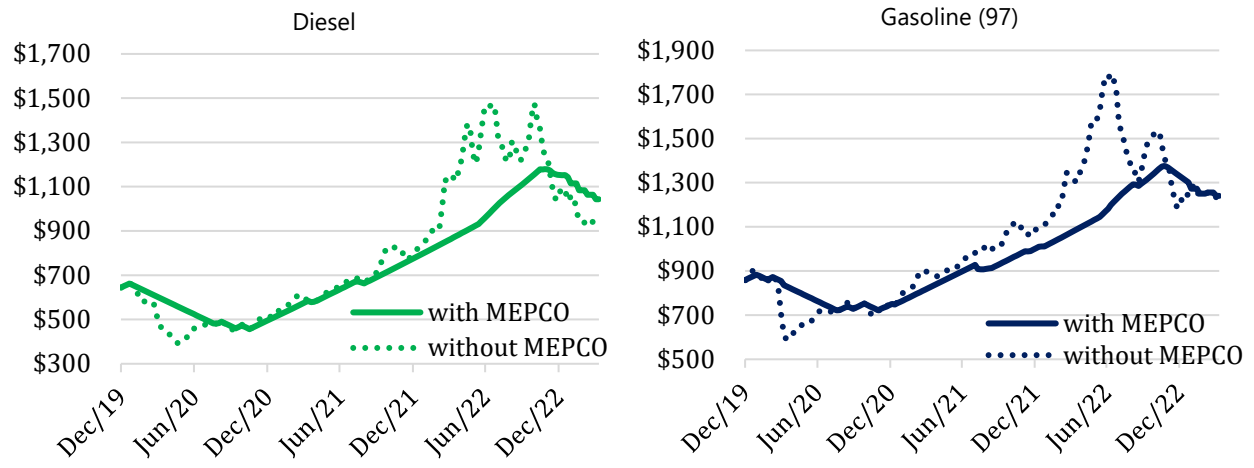
Regarding the role of fiscal measures in relieving external price pressures, the government has applied several changes to its fuel price stabilisation mechanism (MEPCO). This instrument allows the Ministry of Finance (MoF) to avoid a direct pass-through from international price fluctuations to consumers, through weekly changes to a specific fuel tax. Since its initiation in 2014, the mechanism has been allowed to accumulate lost revenues of, at most, USD 500 million (0.16% of annual GDP). In early 2022, this threshold was reached and expanded to USD 750 million. Then, when the new threshold was reached, it was again expanded to USD 1.5 billion, and then in

[2] Central Bank of Chile, 2020, "Use of macroeconomic models at the Central Bank of Chile".

mid-2022 to the current level of USD 3 billion (1% of GDP). In addition, throughout 2022, greater resources were provided to stabilise paraffin, public transport, electricity and natural gas prices to deal with the external turmoil observed in global energy markets. Finally, as of December 2022, the MoF introduced a new project to Congress that aims to stabilise fuel prices for up to three weeks in a row (ie consumer prices will change only once every three weeks), including special measures to avoid significant changes in diesel fuel prices until April 2023.

Although MEPCO's goal is smoothing fuel price fluctuations, not reducing their level, successive increases in its threshold have caused relevant effects on price levels. Considering a counterfactual scenario without the mechanism, the price of petrol would have been, on average, 5% lower in 2020, and 7% and 17% higher in 2021 and 2022, respectively.[3] Taking into account first-round effects only, in this scenario, average inflation would have been 0.2% lower in 2020, and 0.2% and 0.6% higher in 2021 and 2022, respectively.

Fuel prices with and without MEPCO (CLP) Figure 1



Sample: Dec/30/2019 - April/10/2023, weekly.

Source: Based on data from the Ministry of Finance and Bloomberg.

Recent Dynamics in Chile´s Labour Market

The labour market in Chile appears less tight than in some advanced economies, and with wage indexation that appears to be somewhat more muted over the last year (see Andalaft et al., 2022). The ratio of available vacancies to the number of unemployed workers has reduced in the second half of 2022, and this was accompanied by lower real wages during the past year. In addition, based on administrative records for 2021–22, the authors show that the indexation of nominal

[3] The price of diesel would have been 8% lower in 2020, and 4% and 22% higher in 2021 and 2022, respectively.

wages to above inflation has been 50% lower compared with the pre-pandemic period, which helps to explain the drop in real wages.

There is also evidence that the wages of workers who voluntarily change jobs are higher compared with previous periods, although they are decreasing in both real and nominal terms. This imposes a degree of caution on the overall assessment of a loose labour market.

In the future, our central monetary policy rate (MPR) scenario assumes that nominal wages will return to growth rates in line with usual indexation patterns. This implies that a recovery in real wages is expected. Additionally, the main drivers of employment will continue to deteriorate in view of the decline of vacancies, and firms' pessimistic expectations.

At the beginning of the pandemic, both labour demand and supply decreased significantly due to mobility restrictions and fear of contagion. Since mid-2020, labour demand, as measured by the internet job advertisement index constructed by the central bank, showed a substantial recovery that was not accompanied by a commensurate increase in labour participation rates. This opened a significant demand-supply gap that continued to widen until late 2021. In fact, according to a business perceptions report published by the central bank, in February 2022 (CBC (2022a)), 88% of the firms surveyed were experiencing difficulties in finding workers.

Currently, although participation rates have not fully recovered compared with pre-pandemic levels, labour market tightness has substantially eased as economic activity has normalised and labour demand has moderated.

By age classification, participation rates of men and women between 25 and 54 years old have recovered almost completely. In contrast, people younger than 25 and older than 54 have had a slower recovery and show stagnation in participation levels (around 4 and 6 percentage points, respectively, below the pre-pandemic period).

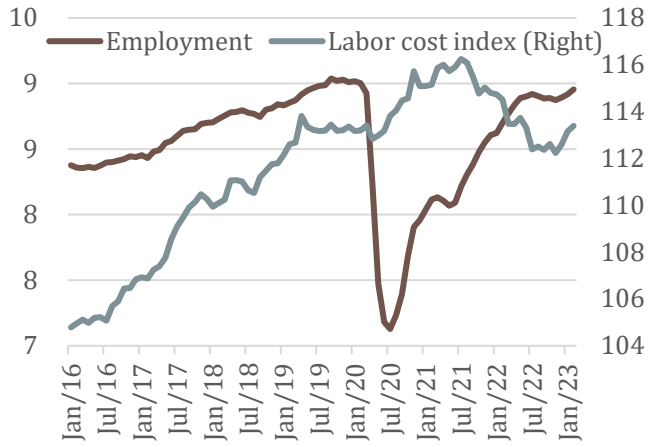
As for economic activity, retail, communal services (including teaching, health, hospitality and others) and construction have recovered to pre-pandemic levels. Agricultural employment is still lagging.

Between the formal and informal sectors, differences are still observed. While formal employment has recovered to pre-pandemic levels, the informal sector has flattened approximately 6% lower than 2019 levels.

Regarding real wages, these are still falling, although with some heterogeneity across sectors. Whereas construction, retail and communal services are the main laggers, the manufacturing sector has shown a slight decrease in the last two quarters. Mining, on the other hand, had a significant increase in that period.

Employment and Real wages

(million people; index 2018=100; seasonally adjusted) Figure 2

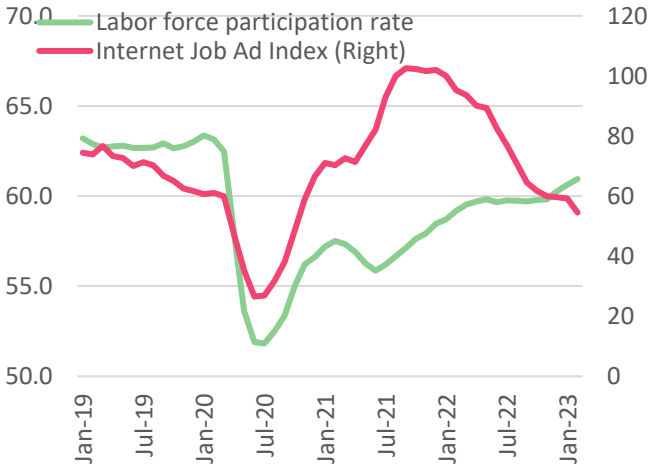


Note: Wages adjusted by CPI. Sample: Jan/2016 - Feb/2023.

Source: Instituto Nacional de Estadísticas and Central Bank of Chile.

Labour force participation and vacancies

(percentage; index January.15=100) Figure 3



Sample: Jan/2019 - Feb/2023.

Source: Instituto Nacional de Estadísticas and Central Bank of Chile.

Structural aspects of labour markets in Chile

Main structural factors on wage formation

Some of the structural features that influence wage formation in the Chilean labour market are: (i) the fall in labour productivity and high mobility across firms; (ii) flexibility; and (iii) human capital characteristics (CBC (2018b)).

Recent estimates of trend GDP have revised productivity downwards (CBC (2021, 2022d)). This is based on a decreasing trend that began in the early 1990s, that was only temporarily reversed during the commodity price boom during the second half of the 2000s. Thus, although the mean (median) of total factor productivity (TFP) annual growth rate between 1997 and 2019 was +0.7% (+0.5%), it falls to minus 0.4% (minus 0.3%) when considering the 2011–19 period. Using data at the firm level, the decline in productivity is confirmed as well. Moreover, this analysis shows that reallocation as a dynamic driver of productivity has declined.

On the other hand, an empirical study on the Chilean labour market shows that mobility is high compared with other countries (CBC (2018b)). As an example, the average duration of employment in Chile is 42 months (INE[4] 2018) while Brazil and Portugal show 84 and 136 months, respectively (OECD (2018)). Despite the above, 49% of the transitions in Chile are not related to a salary increase. Therefore, high rotation is correlated with lower earnings, lower returns from transitions and lower incomes compared with workers that transition less frequently.

With respect to flexibility in the labour market, even though higher mobility may be correlated with lower-quality jobs, a higher degree of flexibility allows for the absorption of macro shocks more easily. Our current scenario could be a good example of how the labour market is absorbing a negative macro shock. Inflation is showing signals of stabilisation, the level of private consumption is decreasing and a significant fiscal adjustment is underway. In this context, employment has shown a higher degree of resilience than was expected six months ago, but real wages have evolved below our projections. An internal structural VAR model that tries to identify demand and supply shocks in the labour market shows that a supply shock is operating: workers are seeking jobs more intensely than firms are offering positions, which pressures real wages downwards. In a more rigid labour market, real wages would go up, hindering inflation convergence coupled with higher unemployment.

Human capital also influences wage formation. Returns to experience in Chile are low in an international context, with high heterogeneity among workers (CBC (2018b)). Compared with OECD countries, the coverage and quality of education are low: (i) the share of the population between 25 and 64 years old with a university degree in Chile reached 31% in 2020 (compared with an OECD average of 39%) (OECD (2020)); and (ii) it has the lowest scores in PIAAC[5] tests both in numeracy and literacy (PIAAC (2015a, 2015b)). These differences are directly correlated with salary increases throughout the working life cycle. Lagakos et al (2018) conducted an international

[4] National Statistical Office.

[5] Programme for the International Assessment of Adult Competencies or also known as Survey of Adult Skills.

study on returns to experience, showing that Chile's profile is flatter compared with more developed countries, and there is a higher dispersion at each educational level. This is evidence of significant heterogeneity in the level of education among Chilean workers.

Demographic and social trends

Demographic transitions, cultural changes and policy reforms impact labour dynamics and productivity, and this affects wages heterogeneously. In a historical comparison, women's participation has increased in line with reforms to parental leave and changes in cultural values (Contreras and Plaza (2010)). According to OECD statistics, the gender wage gap in Chile indicates that men earn, on average, 8.6% more than women (OECD (2021)). In addition, empirical research that controls for the level of education finds a bigger gap, especially at the top of the distribution, providing evidence of a glass ceiling effect (Siravegna (2021); Ñopo (2006)). Therefore, greater participation of women in the labour market should pressure aggregate wages downwards, but a reduction in the raw gender gap would pressure wages upwards for women who are already participating.

Younger cohorts have reduced their participation, driven by an increase in educational coverage. This would push wages up since higher educational levels exhibit higher returns. On the contrary, returns from tertiary education are decreasing overall (CBC (2018b)), putting less pressure on wages. In addition, other policies, such as minimum wage adjustments, have also contributed to increasing labour participation (Castex and Sepúlveda (2014)) and could have inflationary effects on wages in the short term, although our estimates have found it to be small.

Migration has also affected the labour market in recent years. Research from the Central Bank of Chile shows two transmission channels of migration shocks (CBC (2018a)). First, an increase in the population increases aggregate demand for the consumption of goods and services, pressuring inflation upwards. Additionally, the higher labour supply holds back salaries and pushes real wages down, pressuring inflation downwards. Overall, a general equilibrium model for the Chilean economy suggests that the greatest effect would have been demand pushing prices upwards.

Informality

Currently, 29% of employment in Chile is classified as informal, a figure that is much higher than the median in OECD countries (12%). In 2017, salaried workers comprised 72% of total employment, below the median among OECD countries (84%), but higher than the median in Latin America (63%). Within salaried workers, 17% are informal, far above the OECD median (4%). In contrast, self-employed workers are mostly informal (65% in Chile compared with a median figure of 60% in OECD countries).

Using data covering the period between 2010 and 2017, Marcel and Naudon (2016) classify work transitions for four cohorts: formally employed, informally employed, unemployed and inactive. Their findings show that formal employment has a high degree of persistence: a large majority of formal employees remained in

the same category one quarter later (87%), and of those that left this status, more than half moved to the informal sector.

Informal employment is less persistent (63% were in the same category one quarter later), and those with this status are more likely to move into inactivity than into a formal job. On the other hand, informal employment is the main gateway for new hires. It receives 55% of the transitions from unemployment to employment, and 73% of the transitions from inactivity. These results suggest that the informal sector includes, to a greater extent than formal employment, those workers who occasionally participate in the labour market, going in and out depending on the macroeconomic conditions. Therefore, informality may function as an automatic smoother of the macro cycle, increasing the labour force when real wage growth is high and reducing it when it is low.

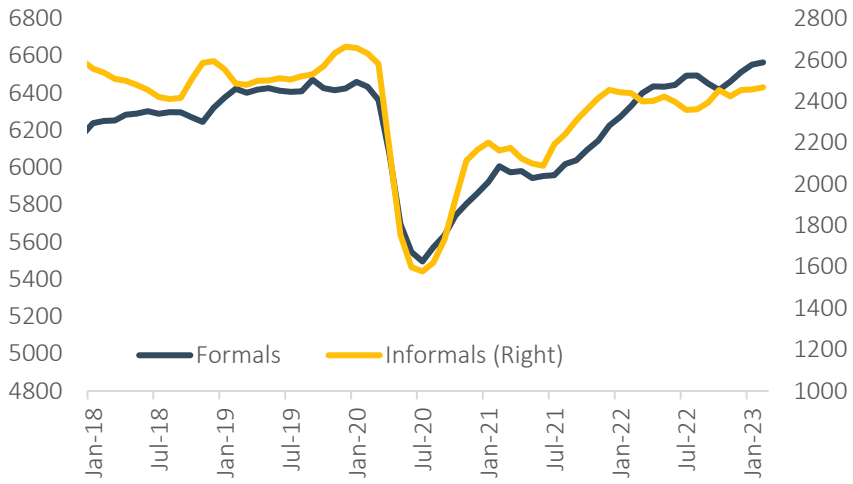
Informality is associated with greater wage dispersion and lower income levels. However, it can also serve as an adjustment mechanism for more disadvantaged workers during a contractionary stage of the macro cycle (Loayza and Rigolini (2011); Maurizio (2016)). For Chile, Contreras et al (2008) find that the probability of working in the formal sector increases with years of education and work experience. Contreras et al (2007) and Contreras et al (2017)) find similar results, showing that greater educational attainment is associated with a lower likelihood of self-employed status. Barrero et al (2018) show how workers in the informal sector, apart from being on average less educated, receive lower salaries than those observed in formal employment, even after adjusting for educational attainment.

Hence, the informal sector in Chile seems to operate as a shock absorber, helping to stabilise employment and wages along the macro cycle. Still, the quality of informal jobs is far lower than that of formal ones in every relevant dimension, so that the policy challenge is to reduce the informal sector without introducing too much rigidity in the labour market.

Importantly, the shock absorbing mechanism did not work during the pandemic, when the informal sector was even more affected than the formal one. For instance, in July 2020, informal employment decreased 37% year on year, in contrast to a decrease of 14% in the formal sector. Mobility restrictions and fear of contagion are probably the main reasons that prevented the normal functioning of the informal sector.

Informality

(thousand people) Figure 4



Sample: Jan/2018 - Feb/2023.

Source: Instituto Nacional de Estadísticas.

Collective bargaining and wage indexation

Centralisation of the bargaining process is relatively limited in Chile. Typically, wages are negotiated at the firm level, with some exceptions in which workers are grouped in federations or sectoral unions, such as the unions of teachers and doctors.

Before 1973, the bargaining process was driven by unions across economic sectors and companies (Cox (2017)), labour conflict and strikes were common, averaging 1,000 strikes annually between 1961 and 1969 (Armstrong and Aguila (2006)). During the first years of the dictatorship, unions and strikes were forbidden, and in 1979 new legislation allowed unions at the firm level, setting out the basis for the current framework, yet, with several restrictions that were subsequently eliminated, such as a 60-day limit for strikes and a prohibition on establishing unions at the industry level. Wages were fully indexed to the CPI during this period, until the national banking crisis of 1982–83, when mandatory indexation was eliminated. With the return to democracy in 1991, the prohibition on intercompany unions was lifted, and strikes were allowed to take place without a limited duration.

Subsequent reforms increased incentives to join unions and increased costs for anti-union behaviour by companies and the replacement of strikers. Since 1990, the number of unionised workers has represented between 9 and 13% of the labour force (Government of Chile (2021); INE (2022a)).

Overall, unionisation rates and centralisation of the bargaining process do not seem to be relevant hindrances to the goal of controlling inflation in Chile, as they are relatively low. The current situation may be a good example of how the labour market is not hindering inflation convergence. Inflation continues at high levels, but

real wages are shrinking, partly because of low indexation rates during the Covid pandemic (CBC (2022d)).

According to ENCLA (2019), which covers formal employment only, 80.7% of companies, representing 89.7% of formal workers, say that they have adjusted wages in some way according to CPI. Considering that 73% of workers are formal, at least 65% would have received a wage adjustment either for implicit or explicit wage indexation mechanisms. Informal workers may also have received some inflation adjustment, but this information is not available.

By contrast, empirical estimates based on administrative records suggest that formal wages, either according to the terms of contracts or as a result of ad hoc negotiations, were almost fully indexed until the Covid-19 crisis. Since 2020, indexation has fallen by 50% with respect to previous levels, in a context of diminishing labour market tightness (Andalaft et al (2022)).

During 2022, public employment represented 17% of total employment. Wages from the public sector are subject to specific governmental adjustments, which are negotiated and approved by the parliament on an annual basis. Changes during 2021 and 2022 reached 6.1% and 12% in nominal terms, respectively, or a drop of 1.1% and 0.8%[6] in real terms, respectively.

In addition, the government sets the evolution of the minimum wage. The proportion of workers who earn the minimum wage was close to 10% in 2022. Since 2016, the minimum wage is typically adjusted twice a year by specific laws (before 2016, adjustments took place once a year). Between 2010 and 2022, it was raised from CLP 172,000 to CLP 400,000. This represents average annual real growth of around 4% per year.

The effect of minimum wage increases on inflation is typically low. For instance, the last raise from CLP 350,000 to CLP 400,000 (+14%) in August 2022 would have generated an increase of around 0.2% on the headline inflation figure.

Recent migration trends

In recent years, Chile has experienced a significant migratory flow. According to INE and the Department of Immigration (INE (2022b); Department of Immigration (2022)), between 2015 and 2019, over one million immigrants entered the country. Accordingly, the foreign-born resident population increased from 2.3% to 7.6% of the total population. This figure places Chile near the OECD average (7.7%).

Previously, Chile exhibited a low migration rate compared with international standards. The percentages of the foreign population in 1992 and 2002 were only 0.8% and 1.3%, respectively (Figure 5).

During 2021, according to population projections from the 2017 Census, data from INE and the Department of Immigration (INE (2022b); Department of Immigration (2022)), immigrants are characterised as being younger than Chileans. The segments between 25 and 49 years old correspond to 38% of Chileans, whereas

[6] Using effective data until November 2022 and forecasted inflation for December 2022 from Central Bank of Chile (2022d).

among foreigners, this group comprises 65%. For the population over 65 years old, the share reaches 3% among immigrants (13% for Chileans). In addition, consistent with international evidence (Peri (2016)), immigrant workers have a higher labour participation rate than locals.

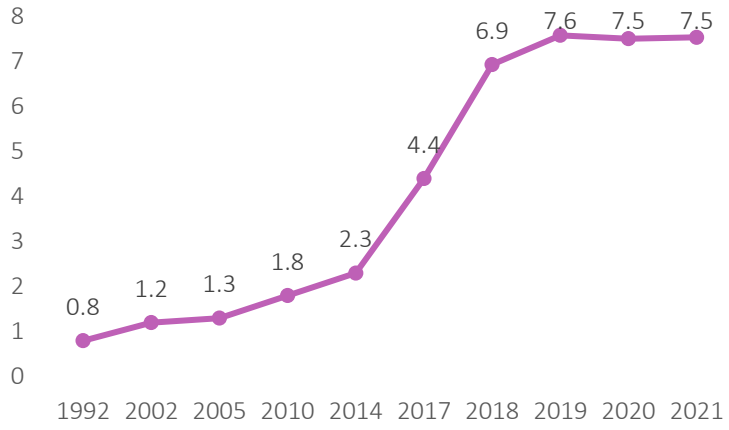
Nevertheless, immigration in Chile exhibits differences from what is typically observed abroad. In contrast to the evidence summarised in Dustmann et al (2016), immigration has not been concentrated among those with the lowest levels of education. In fact, the educational level of immigrant workers is, on average, somewhat higher than that of Chileans, although there is significant heterogeneity in the distribution of education depending on the country of origin. In 2017, the percentage of immigrants with tertiary education reached 34%, compared with 29% for Chileans. Despite this, immigrants are, in general, employed in jobs below the level of their qualifications. The international evidence suggests that this is common for immigrants when they have recently migrated, and that they move into high-skilled jobs over time (Lubotsky (2007)). By industry, it highlights a greater weight of immigrant workers in the domestic services sector, particularly women.

In the short run, the entry of young workers into low-skilled jobs would push aggregate wages downwards. Similarly, from an aggregate perspective, the impact of the migration shock implied a sudden increase in the working age population (CBC (2018a)). This supply shock holds back salaries and pushes real wages down. In the long run, according to the literature, immigrants should move to higher-productivity jobs which would push aggregate productivity and wages upwards.

According to the 2017 Census (INE (2018)), the average unemployment rate for immigrants was 7.5%, compared with 7.0% for Chileans. However, when controlling for the year of arrival to the country, significant differences emerge. The unemployment rate among immigrants who arrived after 2016 is almost triple that of foreigners who entered before that date. This suggests that an adjustment period takes place between the arrival of an immigrant into the country and their ability to find a job. Therefore, in the short run a migration wave pushes the unemployment rate upwards (CBC (2018a)).

Immigration

(percentage of the total population) Figure 5



Note: Until 2002 the data comes from Census, afterwards are estimations. Sample: 1992 - 2021.

Source: Instituto Nacional de Estadísticas and Department of Immigration

The Persistence of the Pandemic and Technology Shocks on the Labour Market

The pandemic and the measures adopted to curb it implied a significant negative labour supply shock in Chile and a reduction of labour participation. In respect of the young and the elderly, there has still not been a full recovery. At the beginning of the pandemic, the fear of infection, mobility restrictions and early retirement negatively affected the labour market. Later, the amounts of fiscal transfers and pension fund withdrawals explained part of the delay in returning to the workplace. This would particularly affect low-skilled workers, and within this group the elderly and women were especially impacted (CBC (2022b) and Bertinatto et al (2022)).

However, the effects appear to be more persistent with respect to the participation of the young and elderly (Figure 6), the rates for which are still approximately 4 and 6 percentage points below their pre-pandemic levels, respectively. Older workers may have retired earlier due to greater exposure to the pandemic, and some may not return to the labour force.

A possible explanation for young workers is that the pandemic may have caused a change in their preferences in favour of remote work and more flexible schedules. This could generate a mismatch between what companies are looking for and what workers are willing to do. While there is evidence suggesting a change in workers' preferences (Duval et al (2022)), there is no robust support for the contention that this explains for the disconnect between the post-pandemic economic recovery and current levels of youngsters' participation rates in Chile.

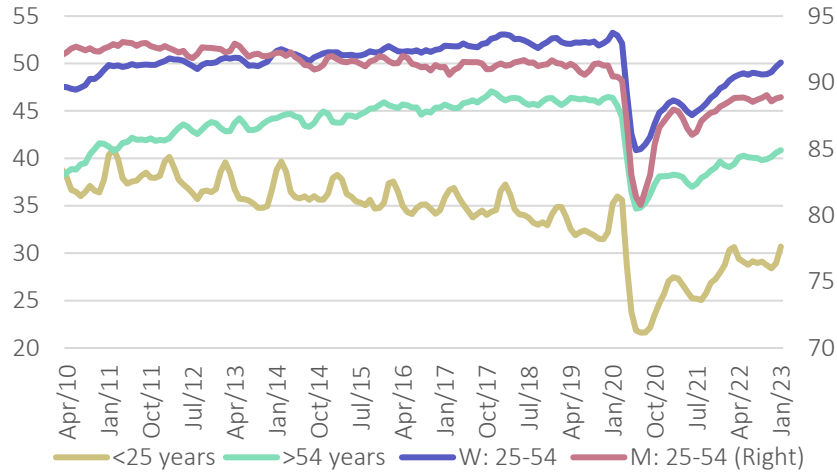
Finally, the boost of automation during the pandemic could have long-lasting effects in the labour market, affecting employment in the short run as companies replace workers with machines or software. Long-run effects will depend on how flexible the market is in relocating the lost positions.

As a first signal of structural change towards more automation, the demand for business services – including online sales platforms, externalisation and engineering, among others – has been booming, even in sectors which have stagnated or are in decline (mining, retail and manufacturing).

The unemployment rate in Chile presents persistent differences by age group. In the last 30 years, unemployment among those under 25 years old (18.4% on average) has doubled the total unemployment rate (7.7%) and is almost five times higher than that among those over 55 years old (3.8%). On the other hand, although women have a higher average unemployment rate than men, this difference has decreased in recent years.

Labour force participation rate by group

(percentage) Figure 6



Sample: Mar/2010 - Feb/2023.

Source: Based on data from Instituto Nacional de Estadísticas

To understand the impact of demographic factors on the unemployment rate, we estimated the unemployment rate that we would have observed had the composition of the labour force in 1992 remained constant, both among men and women, and among different age groups (CBC (2018)). Results show that the unemployment rate would have been approximately 1.5 percentage points higher, suggesting that the change in the composition between young and older workers implies a relevant decrease in the unemployment rate.

Regarding the increase in female labour participation (Figure 6), there are two opposite effects: (i) women have a higher unemployment rate, in average, than men and therefore an increase in female labour participation should increase the overall unemployment rate; and (ii) women also present a downward trend in their unemployment rate, which tends to reduce the aggregate unemployment rate. The evidence shows that both effects cancel each other out, such that changes in female participation have not had a significant impact on aggregate unemployment.

With respect to innovation and automation, we expect a negative impact on employment in the short run, as the highly skilled positions generated by the automation process are significantly fewer than the lower skilled ones that are destroyed. In a general equilibrium setting for Chile, Rivera (2019) finds that a 1% decrease in the international price of robots would have a short-run negative impact of between 0.05 and 0.25% in employment and wages. Frey and Osborne (2017) estimate that with new developments, 57% of jobs across OECD countries are susceptible to automation. How this would affect average wages and employment, in the long run, is not evident, since it will depend on whether lost positions are reallocated and at which wage rate.

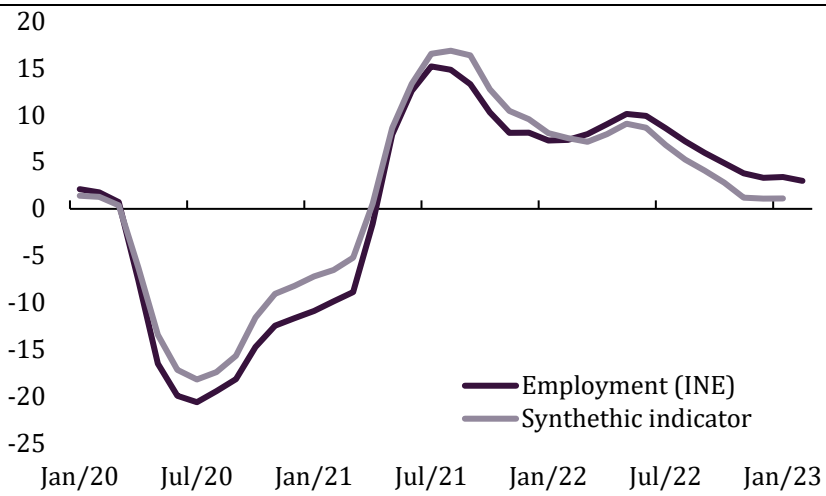
Use of labour market indicators in the policy process

The key indicators are wages, employment and the unemployment rate. Recently, we have added the monitoring of administrative data not only for empirical research but also for the purpose of short-run analysis of the labour market. Microdata is also analysed monthly and regularly presented to the board. Additional analysis is exhibited in board members' presentations, reports and working papers.

Because of the difficulty of collecting labour market data with traditional surveys, administrative data were especially useful during the pandemic. In fact, the recovery of formal employment appeared in official figures several months later than in administrative records. Hence, for short-run analysis, we monitored what we called a "synthetic employment indicator", which combines formal dependent employees from administrative records with official data for non-dependent or informal employment (Figure 7).

Employment

(annual growth rate) Figure 7



Note: Synthetic indicator uses formal dependent employment from SP and other categories of work from INE.

Sample: Jan/2020 - Jan/2022 (employment INE: Feb/2023).

Source: Instituto Nacional de Estadísticas, Superintendencia de Pensiones (SP) and Central Bank of Chile.

For short-run forecasting, we use cointegrated VAR models that include employment, wages and other relevant macro variables. These models are used to forecast two quarters ahead. For medium-run forecasts, we use structural models.

Labour market variables are introduced in the structural model, incorporating search and matching frictions following the seminal work by Mortensen and Pissarides (1994). In this specification, firms publish vacancies to hire workers, and the unemployed seek employment. In addition, pairings are allowed to be broken both endogenously, as they respond to economic shocks, and exogenously. For simplicity, it is assumed that an agent negotiates a single contract, on behalf of workers, based on average productivity. In this context, all workers receive the same salary and work the same number of hours. The evolution of employment, on the other hand, depends

on the number of employees who lose their jobs and on new pairings. The latter depends on the number of unemployed people and the number of vacancies that companies decide to open. The greater the number of workers looking for work and the greater the number of vacancies available, the greater the creation of new jobs.

Disaggregated data are key for heterogeneity analysis in the labour market. Microdata are available from the monthly labour market survey conducted by INE, which allows for analysing trends within age, gender, migrants, education, geographical region and other characteristics. Additionally, supplementary information from administrative records has become quite relevant. These data sources are used to complement survey data and are merged with other economic data sets whenever possible.

These statistics are useful for a broader examination of the labour market and to better understand the broad signals coming from key aggregated indicators such as the unemployment rate, where averages may mask potential risks from a specific group of workers or consumers.

Furthermore, empirical researchers on medium- and long-term trends of the labour market, as well as firm productivity, use these datasets, and the results are then used for short-term analysis (eg Albagli et al (2019)).

The MPR and press releases after the monetary policy meeting refer to labour market evolution as part of the domestic economic analysis, focusing on key indicators such as the unemployment and employment rates, job creation expectations and wages. It has also focused on participation rates, among other matters, depending on whether they were considered key to the monetary policy analysis.

Additional research or analysis related to specific issues that are considered in the decisions are published as boxes and reports that complement a central paragraph – some recent topics include female participation, migration trends and indexation pressures on wages. When additional research is required, working papers and special documents are cited in the MPR.

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