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This Survey is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.
The economic situation and policies of Chile were reviewed by the Committee on 16 and 17 July 2020. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 3 August 2020.
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The previous Survey of Chile was issued in 26 February 2018.
Information about the latest as well as previous Surveys and more information about how Surveys are prepared is available at http://www.oecd.org/eco/surveys.

Basic statistics of Chile 2019

(Numbers in parentheses refer to the OECD average)[1]

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million, 2018)	18.7		Population density per km² (2018)	25.2	(37.8)
Under 15 (%, 2018)	19.8	(17.8)	Life expectancy at birth (years, 2018)	80.0	(80.2)
Over 65 (%, 2018)	11.5	(17.1)	Men (2018)	77.6	(77.6)
Foreign born (%, 2015)	2.6		Women (2018)	82.4	(82.8)
Latest 5-year average growth (%)	1.3	(0.6)	Latest general election	November 2017	
ECONOMY					
Gross domestic product (GDP)			Value added shares (%, 2018)		
In current prices (billion USD)	282.8		Agriculture, forestry and fishing	4.0	(2.5)
In current prices (billion CLP)	198 440.7		Industry including construction	32.8	(27.3)
Latest 5-year average real growth (%)	2.1	(2.2)	Services	63.3	(70.2)
Per capita (000 USD PPP, 2018)	24.8	(46.4)			
GENERAL GOVERNMENT					
Per cent of GDP					
Expenditure (2018)	25.4	(40.3)	Gross financial debt (OECD: 2017)	37.2	(109.0)
Revenue (2018)	23.9	(37.3)	Net financial debt (OECD: 2017)	7.1	(69.0)
EXTERNAL ACCOUNTS					
Exchange rate (CLP per USD)	701.76		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	415.68		Crude materials, inedible, except fuels	36.9	
In per cent of GDP			Manufactured goods	26.0	
Exports of goods and services	28.2	(54.2)	Food and live animals	22.8	
Imports of goods and services	28.6	(50.4)	Main imports (% of total merchandise imports)		
Current account balance	-3.9	(0.3)	Machinery and transport equipment	36.1	
Net international investment position	-23.7		Mineral fuels, lubricants and related materials	16.0	
			Manufactured goods	12.3	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate (aged 15 and over, %)	55.2	(57.5)	Unemployment rate, Labour Force Survey (aged 15 and over, %)	7.0	(5.4)
Men	65.3	(65.6)	Youth (aged 15-24, %, 2018, OECD: 2019)	17.6	(11.7)
Women	45.5	(49.9)	Long-term unemployed (1 year and over, %)	1.2	(1.4)
Participation rate (aged 15 and over, %)	59.4	(61.1)	Tertiary educational attainment (aged 25-64, %, 2017, OECD: 2018)	25.2	(36.9)
Average hours worked per year (2018)	1,941	(1,734)	Gross domestic expenditure on R&D (% of GDP, 2016, OECD: 2017)	0.4	(2.6)
ENVIRONMENT					
Total primary energy supply per capita (toe, 2018)	2.1	(4.1)	CO2 emissions from fuel combustion per capita (tonnes, 2018)	4.7	(8.9)
Renewables (%, 2018)	27.5	(10.5)	Renewable internal freshwater resources per capita (1 000 m³, 2014)	49.8	
Exposure to air pollution (more than 10 µg/m³ of PM 2.5, % of population, 2017)	97.3	(58.7)	Municipal waste per capita (tonnes, 2017, OECD: 2018)	0.4	(0.5)
SOCIETY					
Income inequality (Gini coefficient, 2017, OECD: 2016)	0.460	(0.310)	Relative poverty rate (%, 2017, OECD: 2016)	16.5	(11.6)
Median disposable household income (000 USD PPP, 2017, OECD: 2016)	9.6	(23.9)	Education outcomes (PISA score, 2018)		
Public and private spending (% of GDP)			Reading	452	(487)
Health care (2018)	8.9	(8.8)	Mathematics	417	(489)
Pensions (2017, OECD: 2015)	4.4	(8.5)	Science	444	(489)
Education (% of GNI, 2018)	4.6	(4.5)	Share of women in parliament (%)	22.6	(30.7)

1. The year is indicated in parenthesis if it deviates from the year in the main title of this table. Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 80% of member countries.
Source: Calculations based on data extracted from databases of the following organisations: OECD, IEA, ILO, IMF, World Bank.

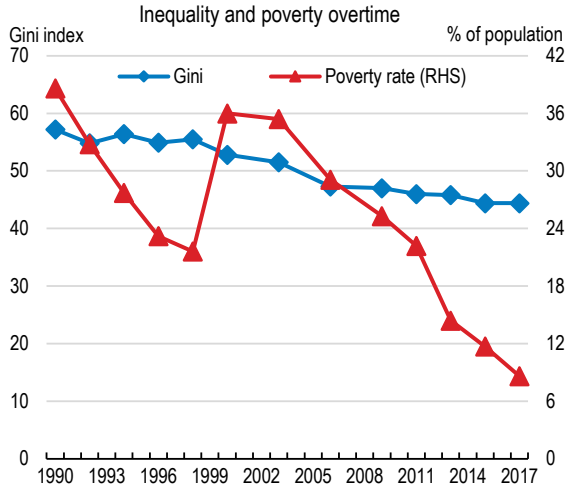
Executive summary

The social protests and the COVID-19 outbreak brought the economy to a halt

Chile has experienced tremendous economic progress and sustained poverty reduction over the past decades (Figure 1)**.** During 2020, Chile faced an unprecedented recession after two large shocks, the social protests at the end of 2019 and the COVID-19 outbreak. A strong institutional and macroeconomic framework is allowing Chile to navigate well the crisis.

In the short term, the policy priority should continue to be preventing contagion, continuing the vaccination programme and avoid future waves, supporting the health system, the most vulnerable families, workers and firms. In the medium term and with the recovery underway, Chile should continue an ambitious structural reform agenda to foster inclusive growth and reduce a persistently high level of inequality. As the economy recovers, a window of opportunity may be open to create consensus among citizens around major pending reforms and continue to reduce inequality.

Figure 1. Progress in poverty reduction has been impressive but inequality remains high



Source: World Bank, World Development Indicators database.

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COVID-19 could continue to strike in future waves, delaying the recovery and leaving deeper scars. Chile is set for a gradual recovery over the next two years, with activity returning to its pre-pandemic levels in late 2022. Private consumption will be a main driver of the recovery, temporarly sustained by extraordinary withdrawals from pension funds, public support to households, and a gradual improvement of the labour market sustained by hiring subsidies. Investment will regain momentum at a slow pace, conditional on the evolution of the pandemic and the effectiveness of the vaccination process in an uncertain environment, and will be driven by public infrastructure plans, supportive financing conditions and tax incentives.

Table 1. Chile is set for a gradual recovery

	2019	2020	2021	2022
Gross domestic product	1.0	-6.0	4.2	3.0
Private consumption	1.1	-7.7	7.5	3.4
Government consumption	0.0	-2.1	5.5	1.5
Gross fixed capital formation	4.2	-13.9	1.8	4.1
Exports	-2.2	-0.7	7.2	4.1
Imports	-2.3	-13.4	8.4	5.6
Consumer price index	2.6	2.9	2.6	3.0
Central government financial balance (% of GDP)	-2.8	-8.7	-4.7	-3.8
Current account balance (% of GDP)	-3.9	0.3	-0.2	-0.7

Source: OECD, Economic Outlook 108 database.

The policy reactions to the pandemic have been swift and bold. Chile entered the crisis with the most fiscal space in the region, solid fundamentals and credible institutions. Containment measures were taken early, and the coordination between fiscal authorities, the Central Bank and the financial market regulator has been smooth and swift. The authorities have introduced unprecedented fiscal and monetary stimulus packages, among the largest in Latin America, to mitigate the impact of COVID-19 and preserve jobs and liquidity needs. An agreement between political parties led to a temporary emergency plan in mid-2020 for the next two years to support support a swift and inclusive recovery and a commitment to fiscal consolidation thereafter. Monetary policy has also significantly eased and should continue to support the recovery.

The outlook is bleak and subject to sizeable risks in a higher than usual uncertain

environment. Limits to international travel, bans on large public events, and some restrictions on bars and restaurants could persist. The economic impact of the pandemic could be long-lasting, driven by an increase in economically vulnerable households and more indedbted firms. The evolution of the pandemic and its effects on households and firms, the ongoing constitutional review and a series of elections during 2021 could further increase uncertainty and dampen investment. The resurgence or the deepening of social conflicts could also delay the economic recovery. Exports and job creation would benefit from a potentially stronger global recovery than anticipated. The recovery could be stronger if herd immunity through vaccination is reached faster.

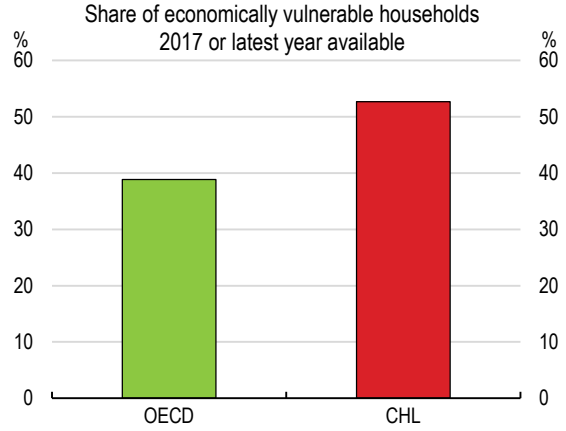
The economic recovery should be accompanied by action to limit the threats from climate change. Chile has a solid track record in this area, but the recovery will give a chance to integrate environmental improvements further in the economic landscape. The unintended negative environmental impacts of new short-term fiscal and tax provisions should be evaluated. The use of financial support measures could be directed towards supporting stronger environmental commitments.

Avoiding hysteresis effects on inequality after the outbreak

More than half of Chileans are economically vulnerable (Figure 2). They are not counted as poor but remain at risk of poverty. They have low productivity, many work in informal jobs associated with little protection and unstable incomes. The outbreak is likely to reinforce these vulnerabilities. Many households will have to deal with plunging incomes, with few financial buffers to cushion themselves and a substantial risk of falling into poverty. Therefore, continuing targeted, temporary income support is crucial in the near term, as done recently with the Emergency Family Income.

Improving educational outcomes would be the most powerful tool to achieve lasting improvements in inequality over time. Access to quality education remains strongly linked to the socio-economic status of the family. Public spending on primary and secondary education is one of the lowest in the OECD. While the effects of these policies will be felt only in the long run, education constitutes a pivotal lever to fight now the consequences that COVID-19 could imprint on inclusiveness. Spending on education should be stepped-up and prioritised on high-quality early childhood, primary and secondary education, as a prerequisite for raising skill levels and expanding tertiary education. Access to affordable childcare would also encourage greater female labour force participation.

Figure 2. The outbreak may reinforce the already high share of vulnerable households



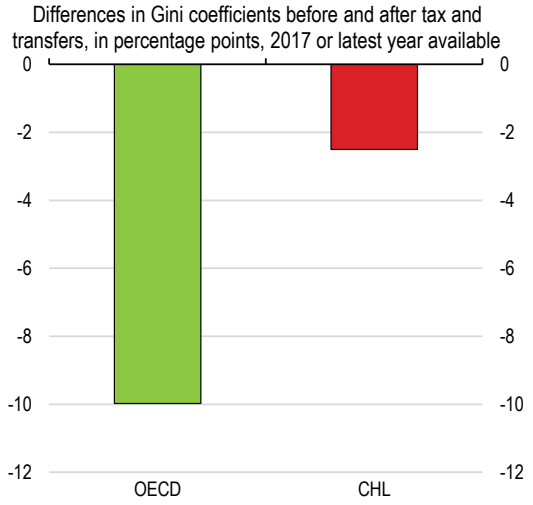
Source: OECD, Wealth Distribution database.

StatLink https://doi.org/10.1787/888934193136

The tax and transfer system could become a key means to reducing economic vulnerability. Taxes and transfers do not provide enough protection against adverse economic shocks (Figure 3). The base of the personal income tax is narrow and broadening it once the recovery is well on its way would raise needed revenue. In return, the extra resources can be devoted to the creation of a negative income tax, which would assure each household and individual a basic benefit.

In response to the outbreak, the government took rapid actions to ensure access to health services for all. There is substantial space to improve the efficiency, quality and equity of the health system. The reform proposal announced at the beginning of 2020 to cover at least 80% of health care costs and the reduction in the price of medications by more than half is a welcome step.

Figure 3. The tax and transfer system could do more to reduce inequality



Source: OECD, Income Distribution and Poverty database.

StatLink https://doi.org/10.1787/888934193155

Closing productivity gaps to support the recovery, notably through digitalisation

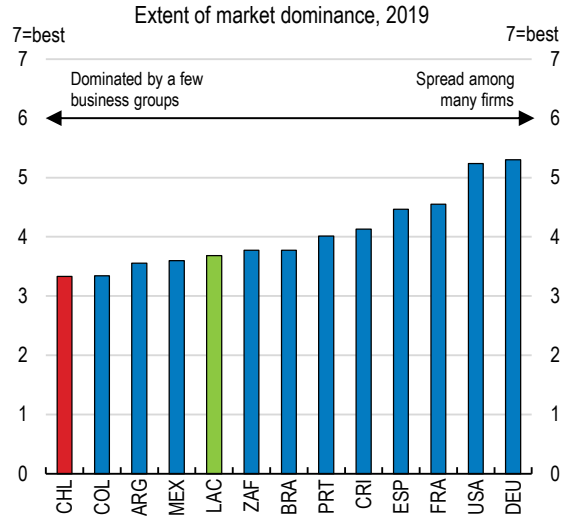
Productivity is low, driven by business polarisation. Chile has a persistent division between a small number of large and productive firms, and a long tail of micro, small and midsize companies with considerably weaker productivity performance. These small firms are likely to suffer more from the lockdown measures adopted to fight COVID-19.

The regulatory environment inhibits competition and the scaling up of firms (Figure 4). Generalising "zero licensing" by involving municipalities in the design of the initiative could ease firm entry and formalisation. This could contribute to reducing inequalities over time by creating better paying jobs.

A further digitalisation of the economy entails great potential to boost productivity in an inclusive way. The COVID-19 outbreak is accelerating the digital transformation, which has seen a surge in e-learning, online shopping and teleworking**.** However, inequality in the adoption of digital tools and digital skills could deepen the already high inequality of opportunities.

The deployment of fixed and mobile broadband infrastructure is essential to fully reap the benefits of the digital era. Replacing the existing burdensome regulation on concessions will be key to fostering deployment of communication infrastructure.

Figure 4. Competitive pressures remain low



Source: World Economic Forum.

StatLink https://doi.org/10.1787/888934193174

Education and training can be a powerful tool to make sure all Chileans can reap the opportunities of digitalisation. Raising the quality of education from early age is a precondition, and boosting digital proficiencies early will be key. Digital skills should be taught early in school, while ensuring that teachers are adequately prepared for this. A profound reform to the lifelong learning system could ensure that no one is left behind.

To boost productivity, businesses need to raise the adoption and use of productivity-enhancing digital technologies. This is especially true for SMEs, which lag behind in terms of digital tools. Strengthening public support in partnership with the private sector would lower barriers for digital adoption, for example through specific programmes to help SMEs to adopt digital technologies like e-commerce or cloud services. Fostering business collaboration for innovation and open-innovation practices would help SMEs and start-ups to thrive in the digital era.

MAIN FINDINGS	KEY RECOMMENDATIONS
Containing the pandemic and its consequences	
COVID-19 could continue to strike in future waves, costing human lives and amplifying further the economic consequences.	Increase capacity for extensive testing and tracing provide further support to health-care workers, and enhance the provision of masks, ICUs and respirators. Continue transitory support to SMES and the most vulnerable families, including non-conditional cash transfers, tax deferrals and reductions, food baskets or suspension of payments of basic utilities for the poorest households, as long as needed. Going forward the fiscal effort should be focused on making efficient reallocations of public spending, including the elimination of exemptions in the tax system, to support the recovery.
Headline inflation will remain contained.	With well-anchored inflation expectations, keep monetary policy accommodative until the economic recovery is well underway.
Fostering inclusiveness	
Educational achievements are low and access to good education is strongly linked to socio-economic status, posing the risk of a long-lasting effect of the pandemic on poverty and social mobility.	Step-up investment in high-quality early childhood, primary and secondary education. Enhance the provision of childcare and early childhood public structures.
The tax and transfer system is ineffective in providing protection for vulnerable households and the base and redistributive power of the personal income tax are low.	Strengthen the redistributive impact of the personal income tax by lowering the thresholds at which the bottom and top bracket apply.
Individuals and workers often lack the foundation and digital skills necessary to flourish in a digital world.	Increase digital literacy in schools giving digital skills more prominence in the national curriculum, and enhancing the digital skills of teachers and school-directors.
Access of vulnerable workers to training courses is insufficient and many of their job profiles might change in the future or even disappear with further automation.	Embark on a full revision of firm-provided training programmes to increase relevance and quality of training and better target participation to vulnerable workers.
Closing productivity gaps	
The complexity of some regulatory procedures remains high, penalising mostly start-ups and SMEs.	Streamline permits and their process by implementing a zero-licensing procedure to encourage investment and simplify regulations for SMEs.
Adoption of digital tools lags behind other OECD countries, particularly for SMEs.	Boost public support to SMEs, in cooperation with the private sector, trough targeted programmes to facilitate the adoption digital tools.
R&D and innovation expenditure is low, especially in SMEs, and comes mainly from public resources.	Foster a collaborative digital innovation ecosystem by strengthening business collaboration and fostering open-innovation practices.
High-speed fixed broadband penetration is low compared to OECD average and rural/urban disparities are large. Entry barriers in the communication sector are high.	Ensure low barriers to entry to the communication sector by replacing the existing regulation for concessions.
Strengthening green growth	
CO2 emissions and energy consumption have risen in line with strong GDP growth. Chile has committed to achieving carbon neutrality by 2050 but the recovery after COVID-19 could jeopardise these commitments.	Carefully screen the environmental impacts of stimulus measures in the wake of the outbreak to avoid unintended environmental consequences. Condition direct financial support measures for pollution-intensive sectors that may be particularly affected by the crisis to cost-efficient and verifiable environmental improvements.

1 Key policy insights

The successes of Chile over the last decades are being challenged by an unprecedented recession after facing two large shocks, the social protests at the end of 2019 and the COVID-19 outbreak. In the short term, the priority continues to be a focus on preventing contagion, supporting most vulnerable families, workers and firms. In the aftermath of the crisis and once the recovery is underway, Chile should continue its reform agenda, to allow all Chileans to share better the fruits of economic growth. This chapter identifies policy priorities to support the large cohort of economically vulnerable individuals that is likely to increase after the pandemic, and increase the number of dynamic midsize firms, helping to sustain the recovery and create jobs.

In the last decades, Chile has made tremendous progress towards greater economic prosperity and lower poverty. Per capita income more than doubled over the past 20 years and is now the highest in Latin America. Chile enjoys solid institutions and a strong macroeconomic framework, with well-recognised features that sustain resilience and encourage investment. These include a prudent fiscal policy supported by a fiscal rule and a well-working inflation-targeting framework with an independent central bank. The financial sector is healthy, and successive governments have sought to broaden the productive base of the economy and to boost entrepreneurship and innovation through investments in education and the reduction of product-market entry barriers.

Growth has come to a halt during 2020. Since October 2019, Chile has faced two unprecedented shocks, the social protests and the COVID-19 outbreak. Income convergence was already slowing before these shocks (Figure 1.1, Panel A) amid modest productivity growth. While the past growth performance has lifted many Chileans out of poverty over the last three decades, income inequality remains high by OECD standards (Figure 1.1, Panel B). Well-being outcomes are also mixed, as Chile ranks relatively low on a large number of dimensions tracked by the OECD's Better Life Index, such as security, education, environmental quality and health status (Figure 1.1, Panel C). A rise in the Santiago Metro's subway fare in October 2019 ignited social protests, revealing mounting social discontent with unequally distributed income and well-being outcomes, as many Chileans struggle to make ends meet and reach better living conditions. The protests and the violence that ensued took a first toll on growth prospects and was further compounded by the COVID-19 outbreak, which will have strong economic and social consequences, accentuating the already complex scenario faced by Chile.

Due to the pandemic, the economy experienced a sharp contraction, unprecedented since the 1982 monetary crisis, in 2020. Chile is set for a gradual and uneven recovery over 2021-2022 in a higher than usual uncertain environment, with activity returning to its pre-pandemic levels only in late 2022. Beyond the direct effect of COVID-19 on human health, the economic impact of the pandemic could be long-lasting, driven by an increase in economically vulnerable households and more indedbted firms. Containment measures are still affecting mobility and activity, especially in tourism, retail, wholesale trade, construction and transport, impacting the recovery in employment in these sectors. The evolution of the pandemic and its effects on households and firms,, the ongoing constitutional review and a series of elections during 2021 could further increase uncertainty and dampen investment. Renewed social protests could also delay the economic recovery. Exports and job creation would benefit from a potentially stronger global recovery than anticipated. The recovery could be stronger if herd immunity through vaccination is reached faster.

The policy reactions of Chile to the pandemic, on the back solid institutional coordination, have been swift and bold to preserve the economy and cushion an unprecedented shock for the households and firms (Box 1.1). In the short term, the priority should continue to focus on preventing contagion and avoiding further resurgences of COVID-19, supporting most vulnerable families, workers and firms. In the aftermath of the crisis and once the recovery is underway, Chile should continue its social agenda initiated before the pandemic (Box 1.2), to allow all Chileans to share better the fruits of economic growth. The digital transformation of the economy, which has been accelerated by the COVID-19 outbreak, can catalyse reforms and help in meeting these challenges by expanding the productive assets of the economy, investing in skills of the people, and by providing an environment where all firms and workers in Chile have the same opportunities to succeed.

Figure 1.1. Growth, inclusiveness and well-being outcomes in Chile

Note: In Panel A, LAC refers to the unweighted average of Brazil, Colombia and Mexico. OECD refers to an unweighted average. In Panel B, the Gini index refers to the Gini index defined by the World Bank. Data show 3-year moving averages. OECD refers to an unweighted average. In Panel C, data for the categories Income and wealth, Jobs and earnings and Work-life balance are based on a sample of 35 OECD member countries, excluding Colombia and Lithuania.

Source: OECD, Productivity database; OECD Better Life Index, www.oecdbetterlifeindex.org; World Bank, World Development Indicators database.

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While the COVID-19 crisis may further deepen social discontent, it gives the opportunity to create consensus among citizens around major pending reforms, strengthen common values around the importance of having strong public services and the relevance of belonging to the formal sector. Achieving such economic and social improvements will require further progress toward reducing inequalities and building a stronger middle-class, modernising the State and public services, and raising productivity, competition and the dynamism of SMEs that will be especially impacted by the outbreak.

This survey charts the road ahead for Chile in the aftermath of the pandemic, with the following key messages:

- COVID-19 could continue to strike in future waves, either directly or indirectly through other economies emphasising readiness to react. The scars left by the pandemic will be also a challenge in the medium term. However, solid macroeconomic foundations, credible institutions and sustainable fiscal policy will help recover a robust growth path.
- To make growth sustainable and benefiting to all, Chile needs to reduce the large cohort of economically vulnerable individuals that is likely to increase after the pandemic and increase the number of dynamic midsize firms helping to support the recovery and create jobs.
- During the pandemic, digital technologies are being critical to sustain continuity in business, jobs or learning from home. Digitalisation will play an ever important role in the recovery, while addressing the persistent low productivity.

Box 1.1. Policy responses to the COVID-19 pandemic

Chile has reacted swiftly by adopting social distancing and targeted lockdown measures, as well as fiscal and monetary measures to protect the most vulnerable and to preserve human, productive and financial capacities to enable a return to normality and avoid hysteresis once the measures are lifted. Among the main measures are:

- **State of emergency**: The 18th of March, Chile entered a state of emergency, as authorised by the Constitution. It has been extended several times until 13th March 2021. This is the second time in the past five months, the first having occurred following the social protests of October 2019. This allows controlling supply and dispatch of basic goods and services, monitoring by the army of the streets and using its medical capacity, and restricting the circulation of individuals.
- **Containment measures**: All schools and universities have been closed while winter holidays were brought forward. Local quarantines, mobility restrictions and night time curfews have been applied across the country. The city of Santiago and other large cities were put under a strict lockdown in May, with most containment measures lifted progressively in mid July, when infections started declining. Since then, sanitary measures indicate if stricter or more flexible local containment measures can be applied, with some parts of the Metropolitan area subject to strictier containment measures from December 10th.
- **A national campaign** was launched to inform the public of prevention measures and detection. Testing for people covered by the National Health Fund is free (subject to a prescription), and the price for people covered by private insurers is capped. 2% of the government general budget has also been allocated to raise health spending. Telemedicine regulation has also been eased to promote its use for several health care services.
- **Monetary policy**: In mid-March, the Central Bank cut the interest rate by 0.75 points to 1%, then to 0.5% at end of March. A new funding facility for banks has been introduced while a programme for purchasing bank bonds has been initiated (up to USD 8 billion). A programme for providing liquidity in pesos and dollars through repo operations and swaps has been

extended, as well the window for possible resumption of FX sales and non-deliverable forward operations, that was opened in November 2019 after the social events. In early August, congress passed a law to allow the Central Bank to buy treasury bonds, enriching the Bank's toolkit.

- **Support to individuals and households**: A subsidy (COVID bonus) for vulnerable households, most of them without formal income, was introduced for 1.5 million households. The "Alimentos para Chile" (Food for Chile) programme is providing food baskets and hygiene products to vulnerable and middle-class families across all Chile. A new fund to protect the income of the 80% most vulnerable was also created. Part of that fund is used to finance cash transfers to vulnerable households during 6 months (Emergency Family Income). This also covers independent and informal workers. In January 2021, a new payment of cash transfers has been announced for regions or local communities in quarantine. An emergency package of USD 5.5 billion to save jobs and help small businesses has also been put in place. In addition, the government has introduced the Act on Distance Work and Teleworking to broaden the use of teleworking, and the Act for the Protection of Work (Ley de Protección de Empleo), to protect labour income and reducing working hours or allowing for the temporary suspension of the contractual relationship when teleworking is not possible. Salary is financed from the unemployment insurance under more flexible criteria and social security and health contributions and the corresponding employment rights should be maintained. This mechanism can be used until January 2021.
- **Support to firms**: Payment to state suppliers has been accelerated. The deferral of various taxes benefits numerous SMEs. An accelerated income tax refund for SMEs (in April 2020 instead of May 2020) is expected to benefit also 500.000 SMEs. The capital of the guarantee fund for SMEs (Fogape) has been increased by USD 3 000 million, and by December 2020 250 000 loans have already been granted to finance labour capital. In January 2021, a law modified benefits and uses from the fund (extending it to investment and repayment of credits) to allow more SMEs acess state-guaranteed credits and extended the repayment period for already issued fogape credits. The capitalization of Banco Estado has been also increased by USD 500 million. The resources will be used to provide financing to individuals and SMEs, and will increase Banco Estado's credit capacity by USD 4.4 billion.
- **Recovery plan for the forthcoming two years**: A national agreement achieved between the government and political parties lead to a new emergency plan in June 2020 to support the economy for the forthcoming two years. Its main pillars are: i) protecting households' income and well-being, with a new emergency family plan, a new solidarity fund at the municipal level, a new health fund, and some improvements to the employment protection law and unemployment insurance scheme ii) a reactivation plan for the economy and the labour market, which includes a public investment plan, hiring subsidies, easing the financing of SMEs, promoting private investment, new teleworking measures, facilitating access to credit and supporting public companies iii) the creation of a new USD 12 000 million fund to finance the recovery plan, to be financed partly by sovereign wealth funds; iv) the creation of a new COVID health fund for the next 24 months; this fund can expire sooner if sufficient economic and sanitary conditions are met.
- **The vaccination plan**: on December 17th, the President announced Chile would start a gradual and progressive vaccination programme on 25h December. About 5 million people will receive the vaccine in the first quarter of 2021, and 80% of the population (about 15 million people) by the end of the first half of 2021.

Box 1.2. Keys features of the social agenda in response to October 2019 protests

In response to the October protests, the government has put forward a number of reforms to bring concrete and effective replies. Among its main proposals are:

- **Temporary measures to support activity and jobs (*Plan de Recuperación Económica*)**, including improving access to and levels of the unemployment benefits, the possibility of negotiating reduced hours for displaced workers after the social events and measures to support micro and SMEs.
- **A major pension reform,** by revamping the pension solidarity pillar to broaden coverage and increasing the pensions of current and future retirees.
- **The creation of a health plan** to benefit 14.5 million Chileans by reducing health care costs and instituting a guaranteed maximum waiting time for treatment.
- **A minimum guaranteed income of CLP 384 000 per month**, subsidised by the government and focused primarily on formal workers whose wages range between the current minimum salary (CLP 320 500) and CLP 384 500. This benefit will be maintained in the case of the suspension of the employment relationship or a reduction of working hours during the pandemic.
- **The creation of a new tax bracket** in the personal income tax for high income taxpayers at 40%.
- **The strengthening of the Municipal Common Fund (*Fondo Común Municipal*)** to establish greater contributions from higher income regions.
- **Cancellation of the rise in subway fare and the freeze of the rise in electricity price.**

In addition, the national referendum held on 25 October 2020 resulted in the decision to adopt a new constitution, to be drafted by a "constitutional convention", made up by members elected solely and especially for the purpose. The election of the delegates will be held on 11 April 2021, together with municipal and regional governor elections. It will be based on universal suffrage, using the electoral system governing the election of the Chamber of Deputies, with additional safeguards for gender parity, a quota for indigenous peoples and promotes the participation of people with disabilities. The process of rewriting the constitution will last two years, before there is a final public referendum in end-2022.

Recent macroeconomic developments and short-term prospects

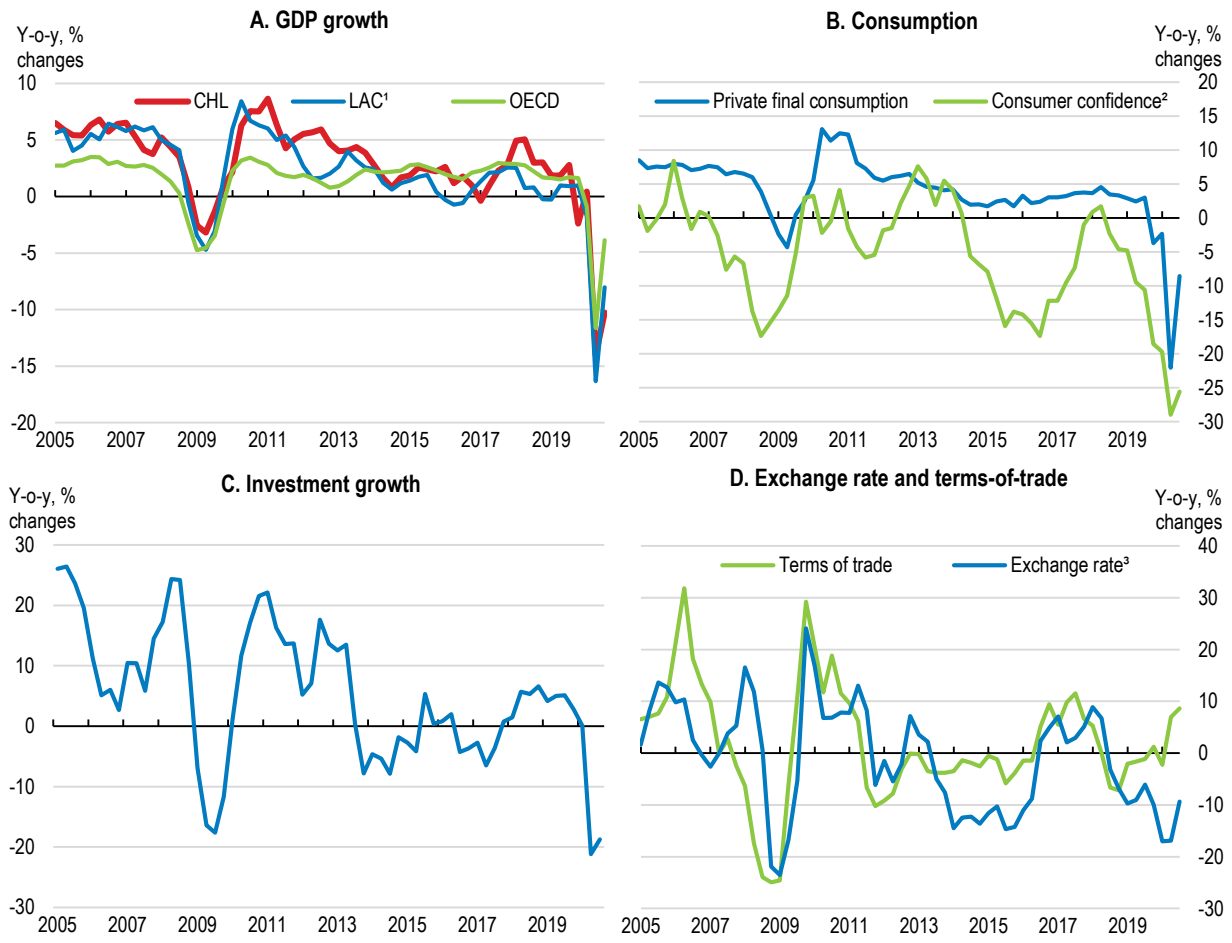
The Chilean economy entered into recession driven by the COVID-19 outbreak

The pandemic has amplified the growth decline following the social protests in the last quarter of 2019. Growth was robust until the third quarter of 2019 led by domestic demand, but has slowed significantly since the start of the social protests towards end 2019 (Figure 1.2, Panel A). Private consumption plunged by 3% in the last quarter of 2019 as consumer confidence dropped (Figure 1.2, Panel B), a trend that the pandemic has aggravated significantly. While investment recovered slightly before the outbreak it has plunged significantly since (Figure 1.2, Panel C and D). Net exports are contributing positively to growth as imports have experienced a much larger slump than exports driven mainly by resilient mining exports.

Economic activity has started to recover in the third quarter of 2020. With containment measures being relaxed gradually since July, short-term and mobility indicators suggested that economic activity started to recover, particularly retail sales and manufacturing output, while tourism and hospitality continue to be weak. The announcements in December of stricter containment measures, mainly in the Metropolitan area, are reflecting a very gradual recovery. Business sentiment has improved considerably and consumer

confidence has picked-up, even if both fell during December 2020 with the resurgence of mobility restrictions.

Figure 1.2. Growth started to decelerate before the outbreak



Note: 1. LAC refers to the unweighted average of Argentina, Brazil, Colombia and Mexico. 2. Consumer confidence is equivalent to 50 minus the value of the index. A value under (over) 50 indicates pessimism (optimism). 3. Nominal exchange rate in US dollars.
Source: OECD, National Accounts database; OECD, Analytical database; Central Bank of Chile.

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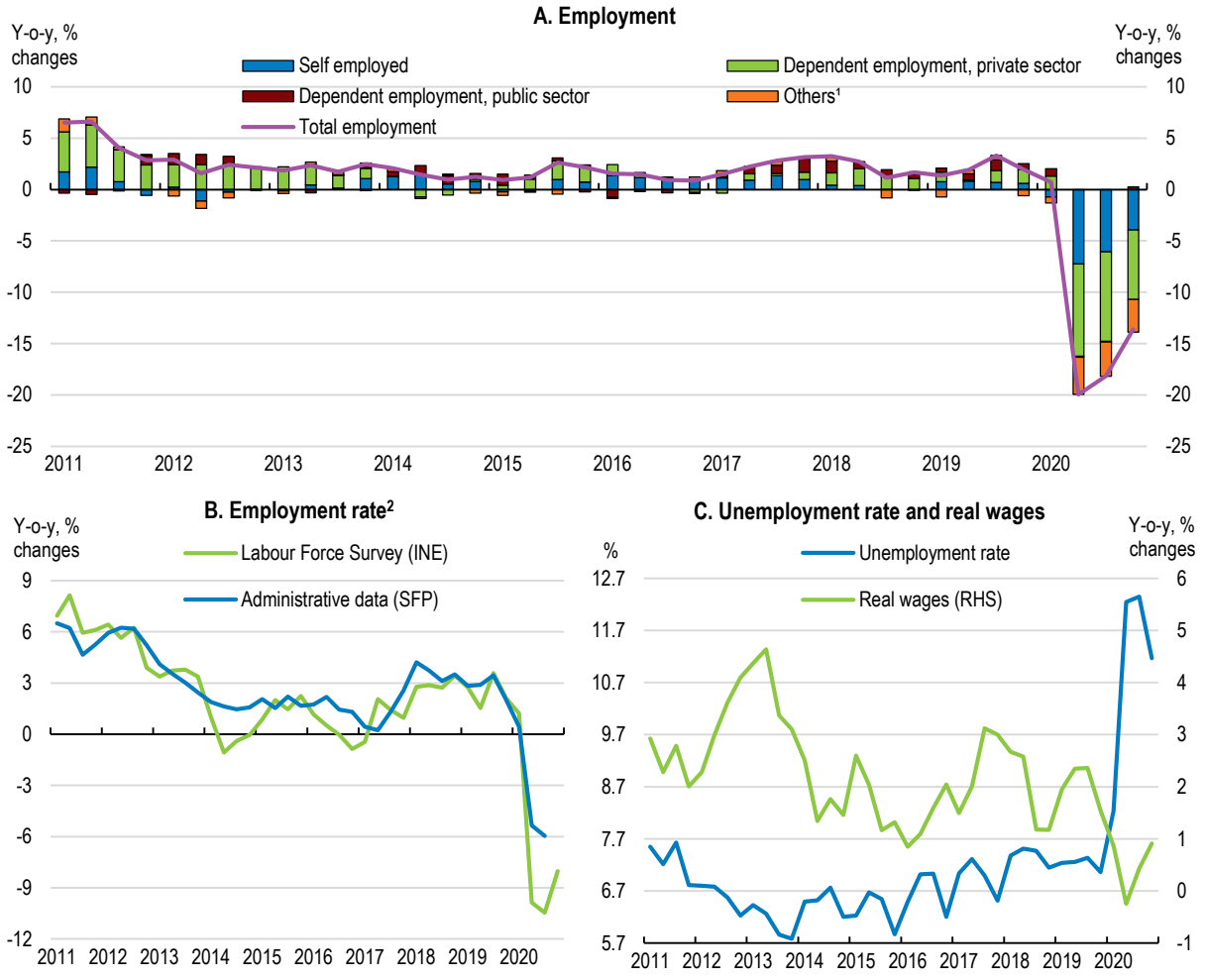
The labour market has been largely impacted by the COVID-19 outbreak. During 2019, the labour market remained subdued (Figure 1.3, Panel A), as the immigration wave of the last five years, with 1.2 million foreign people residing in Chile in 2018 (6.7% of the total population) added to labour supply. The impact on the labour force is potentially significant, considering that immigrants have a greater participation rate than the native population.

Because of the pandemic, 1.6 million jobs have been lost since the beginning of 2020 to September, accounting for around 20% of the workforce. Half of such decline is explained by the destruction of formal employment, deepening the trend started as a result of the social unrests. Informal employment, which regularly acts as a buffer during economic contractions, has also slowed down significantly. The unemployment rate increased to 12.3% during the third quarter of 2020, the worst performance in recent decades. Furthermore, more than 120 thousand firms requested the temporary suspension of contracts

and 9 thousand have reduced working hours, for around 900 thousand workers until October 2020, around 10% of all workers. Moreover, the weakness of the labour market has been reflected in a 13.5% decline of the workforce in September 2020 with respect to the same period the year before. The labour market has started to improve slightly in the third quarter of 2020 (Figure 1.3, Panel B) as the unemployment rate reached 10.8% in November 2020, with informal employment showing better performance. Wages picked up by 0.4% in third quarter of 2020 (Figure 1.3, Panel C).

Figure 1.3. The labour market has been significantly hit



Note: For all panels, data for 2020Q4 refers to the average of October and November 2020. 1. Employers, domestic service and unpaid family members. 2. Considers only employees who contribute to the pension system. Data for all charts refer to quarterly data.
Source: National Statistics Institute (INE).

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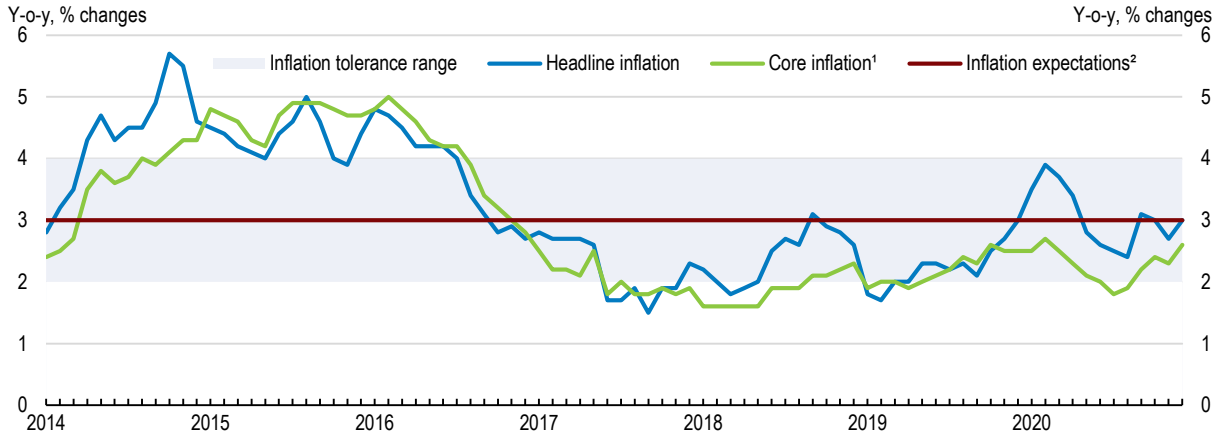
Inflation expectations remain well anchored at 3% in the long-run. While inflation has been around 2% during most of 2019, the lower bound of the tolerance band of the Central Bank target rate, it is now near the target level (Figure 1.4). The drop in the prices of services and a relatively weak pass-through from currency depreciation account for the weakness of inflation before the social protests started. Since then, the pandemic sent the Chilean peso to historical lows in March 2020 with the worsening financial conditions of international markets, accelerating inflation and prompting the Central Bank to extend its intervention programme aimed at ensuring liquidity and stabilising the peso, which was put in place in a welcome move

following the social events. As the peso is starting to recover gradually, this programme will be gradually wound down. Additionally, the extraordinary withdrawals from pension funds have push demand for durable goods, pushing prices and inflation up.

Figure 1.4. Inflation is on target and expectations remain anchored



Note: 1. Core inflation includes all items without energy and fuels. 2. Inflation expectations at 23 months.
Source: Central Bank of Chile; National Statistical Institute (INE).

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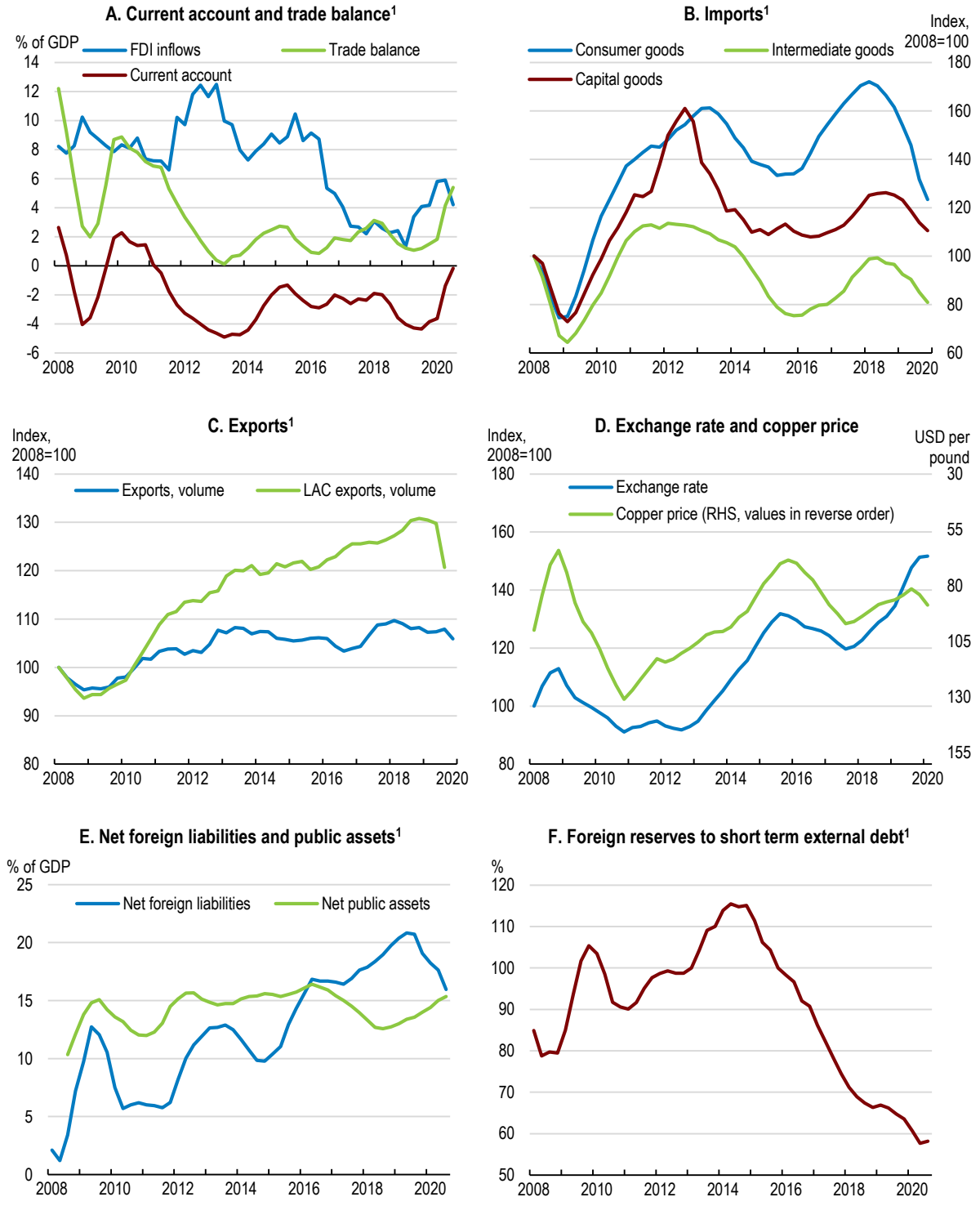
Until the end of 2019, strong domestic demand and moderate exports increased the current account deficit, which has been in negative territory since 2011 (Figure 1.5, Panel A). Imports responded to the higher level of economic activity until the social unrest and the dynamism of investment (Figure 1.5, Panel B). Export performance has been weak even before the pandemic (Figure 1.5, Panel C), affected by weather conditions, lower copper ore grade and an already decreasing international price of copper (Figure 1.5, Panel D). The pandemic has reversed the current account and put it in surplus in the second quarter of 2020 and balance the rest of the year, driven by the surplus in the trade account and a narrow primary income deficit. Driven by a large drop in investment, imports have experienced a much more pronounced decline than exports. Mining exports have been resilient, given the fast rebound of the Chinese economy. In March 2020, copper was the least performing among metals, but its price is now back to pre-pandemic levels. Low oil prices benefit the current account given that Chile is a net oil importer.

The current account deficit has been, and will remain, largely financed by FDI inflows, mainly to the mining sector, while net foreign liabilities remain limited. Net external public assets remained stable at 15% of GDP before the outbreak and reserves have decreased to around 60% of short-term external debt (Figure 1.5, Panels E and F). However, since the beginning of the outbreak the whole region is experiencing substantial capital outflows, surpassing the levels reached in the aftermath of the 2008 financial crisis. On a global scale, FDI is expected to fall between 30% to 40%, decreasing the most in economies that are most severely hit by the pandemic (UNCTAD, 2020[1]). Those outflows have also resulted in strong stock market falls since the beginning of 2020. While the COVID-19 crisis has not originated in the financial sector, it has affected markets and created high volatility. In March 2020, Chile's main stock index IPSA fell by 5.9%, to a four-year low. The arrangement passed with the IMF in May 2020 for a flexible credit-line, combined with the comfortable level of international reserves, should boost confidence among foreign investors.

Figure 1.5. The current account has moved into surplus during the pandemic



Note: 1. Four-quarter moving averages.
Source: OECD, Analytical database; Central Bank of Chile.

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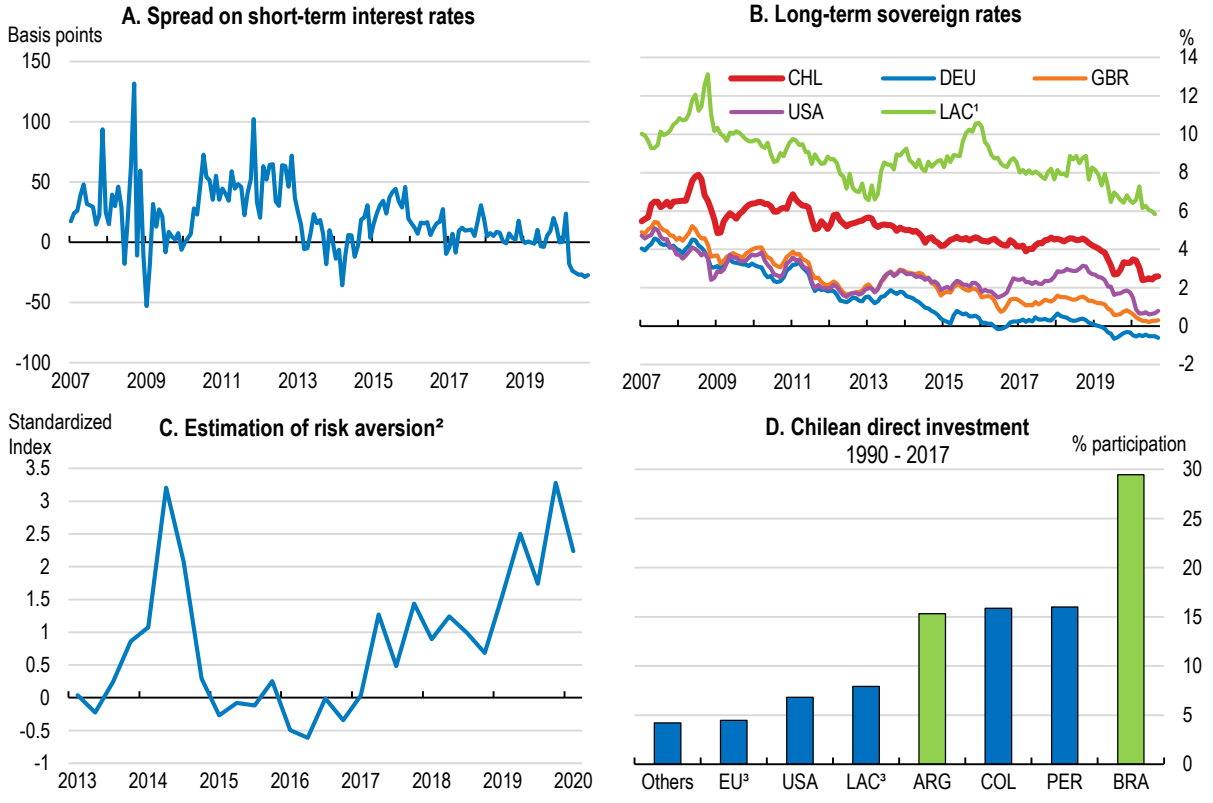
Financial stability remains well preserved but the outbreak poses unprecedented risks

Despite the uncertainties triggered by the social protests and the COVID-19 outbreak, financial conditions remain favourable and the banking sector is solid. The spreads of short-term interest rates are low (Figure 1.6, Panel A). Long-term sovereign rates spiked after the first social protests and at the arrival of coronavirus in Chile, but prompt policy responses contained both these surges and put sovereign-rates on a downward trajectory (Figure 1.6, Panel B). Moreover, stress tests indicate that banks still have sufficient capital to withstand a severe adverse scenario. However, the steady decline in long-term sovereign rates before the events, as elsewhere in the region, has induced greater risk appetite by investors, which could be further reinforced by the outbreak, as investors will search for yields while interest rates are cut on a global scale. This could trigger a potential impact on risk and term spreads (Figure 1.6, Panel C). The drop in international trade following the outbreak could also increase financing costs by raising uncertainty, particularly in emerging countries. The macro-financial vulnerabilities of some Latin-American economies remain also high and will likely be magnified by the pandemic, in particular in highly-indebted Brazil, whose economic cycles are important for Chilean firms with investments there (Figure 1.6, Panel D).

Figure 1.6. Financial conditions stay favourable



Note: 1. LAC refers to the unweighted average of Brazil, Colombia and Mexico. 2. Differential between real and implied volatility of DXY Index. Positive (negative) values indicate higher (lower) risk appetite relative to the historical average. 3. EU and LAC refer to unweighted averages.
Source: Central Bank of Chile database; Central Bank of Chile, Financial Stability Report First Half 2019; OECD, Analytical database; DIRECON, Presencia de Inversiones Directas de Capitales Chilenos en el Mundo 1990- 2017, 2018.

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Resurgence of the pandemic and social tensions are the main risks to the outlook

Similar to most countries in the world, the fight against coronavirus is pushed Chile into recession during 2020, with economic growth expected to decline to -6% (Table 1.1). The economy suffered a sharp contraction in the second quarter of 2020, driven by the hit to global growth, copper prices below their long-term level and the impact of containment measures on consumption and investment, with some sectors such as tourism completely paralysed. However, economic activity began to recover during the third quarter of the year as containment measures started to be lifted gradually in July.

Table 1.1. Macroeconomic indicators and projections

	2019	2020	2021	2022
	Percentage changes, volume (2013 prices)			
GDP at market prices	1.0	-6.0	4.2	3.0
Private consumption	1.1	-7.7	7.5	3.4
Government consumption	0.0	-2.1	5.5	1.5
Gross fixed capital formation	4.2	-13.9	1.8	4.1
Final domestic demand	1.6	-8.3	5.9	3.3
Stockbuilding[1]	-0.6	-1.3	-1.4	0.0
Total domestic demand	1.0	-9.6	4.5	3.3
Exports of goods and services	-2.2	-0.7	7.2	4.1
Imports of goods and services	-2.3	-13.4	8.4	5.6
Net exports[1]	0.0	3.6	0.0	-0.2
Memorandum items				
GDP deflator	2.6	6.7	3.6	2.5
Consumer price index	2.6	2.9	2.6	3.0
Private consumption deflator	1.9	3.1	2.7	3.0
Unemployment rate (% of labour force)	7.2	10.8	9.8	8.7
Central government financial balance (% of GDP)	-2.8	-8.7	-4.7	-3.8
Current account balance (% of GDP)	-3.9	0.3	-0.2	-0.7

Note: Seasonal adjusted data. 1. Contributions to changes in real GDP, actual amount in the first column.
Source: OECD, Economic Outlook 108 database.

Solid fiscal and monetary policy frameworks allowed the authorities to pursue bold measures, which prevented an even stronger contraction and are avoiding deeper scars from the pandemic. The USD 12.1 billion package (4.9% of GDP) passed in March and subsequently completed by a further 2% of GDP in April, among the largest packages in the region, are supporting workers and households and providing liquidities and working capital to companies, particularly SMEs, to prevent the destruction of jobs and capital when a large part of the economy is at halt. Additionally, after an agreement among political parties, an emergency package for the next two years has been agreed to support the economic recovery through enhanced income support for vulnerable households and the middle-class, hiring subsidies, a strong public investment programme, and liquidity measures for firms in need.

Economic recovery will be gradual and uneven in the next two years in a higher than usual uncertain environment. The economy will rebound to 4.2% during 2021 and 3% in 2022. Private consumption will be a main driver of the recovery, driven by measures implemented by the government to support households, the transitory impact of extraordinary withdrawals from pension funds, and a gradual improvement of the labour market supported by hiring subsidies. However, precautionary savings will remain high. Private investment will start to recover only slowly conditional on the evolution of the pandemic in a higher than usual uncertain environment and a worsen financial situation of firms do to the pandemic. The countercyclical fiscal policy response also includes a significant increase in public investment of

infrastructure, while the private investment pipeline over the next five years has increased, amid supportive financing conditions and tax and government incentives. Mining exports have been resilient and Chile will further benefit from recovering global demand, especially from China and the United States.

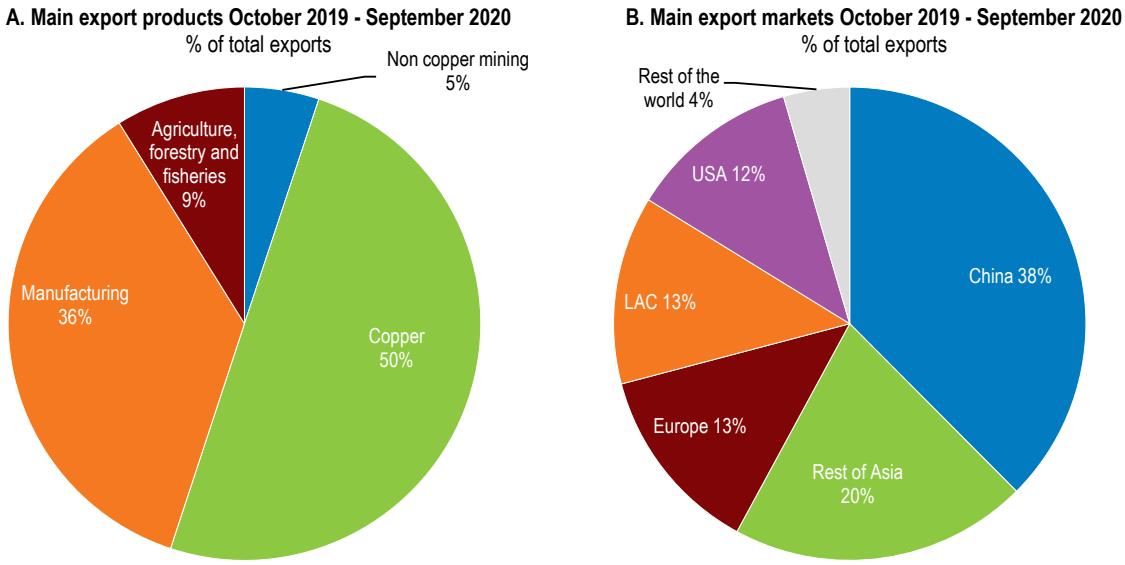
The evolution of the pandemic, which require distancing and local containment measures during 2021, could delay economic recovery. Limits to international travel, bans on large public events, and some restrictions on bars and restaurants could persist, notably if the tracking and isolating system is not strengthened. In that scenario, the prolonged period of depressed output will trigger some hysteresis effects with higher long-term unemployment due to permanently lost jobs, already highly indebted firms facing a weak financial situation could face bankrucies with capital scrapping and a hit to productivity, with the destruction of knowledge and human capital attached to the gone production factors.

The main domestic risks to growth relate to the persistence of the outbreak, with the permanent scars that it could leave on households and firms, and the resurgence of social conflicts after the outbreak. With a programme of vaccination being gradually developed and cumulative infection rates not sufficiently high to generate adequate herd immunity, immediate priorities should be to continue with the vaccination programme and increase capacity for extensive testing and tracking programmes, provision of treatment for all patients, regardless of whether they are insured or not, to provide support to health-care workers, enhancing the provision of masks, ICUs and respirators, and ensuring a timely and effective enforcement of mitigation measures, while sustaining an adequate risk communication strategy. For the economy, monetary measures should be maintained as necessary to provide liquidity to uphold domestic demand and facilitate business. Fiscal measures to support firms, in particular SMEs, and additional cash transfers in support to the most vulnerable families including non-conditional cash transfers, tax deferrals and reductions, suspension of payments of basic utilities, or extending the deliveries of food baskets initiated in May 2020, could be further needed until the recovery is well underway.

Once the outbreak is contained, a failure or a delay to deliver on the social agenda and renewed social instability represent an additional risk to the outlook. The implementation of the announced social reforms will maintain stability. On the contrary, the resurgence and even the deepening of social conflicts may amplify and protract the deep recession due to the outbreak. The uncertainty induced by the process of rewriting the constitution could act as a drag on domestic and foreign investment decisions.

External risks are related to the concentration of exports in copper and the performance of key trading partners (Figure 1.7, Panel A). The effects on the Chilean economy of further waves of COVID-19, globally or particularly in the United States and China could be significant since both countries account for almost half of total exports (38% for China and 12% for the United States) (Figure 1.7, Panel B). This could lead to copper prices below their long-term levels, could deteriorate the fiscal accounts and the terms of trade, create pressures on the Chilean peso and delay the rebound of economic growth, with a potential marked downward adjustment in investment. Overall, it is estimated that for a fall in a percentage point of growth in both China and the United States, Chile grows by one point less (IMF, 2019[2]). On the contrary, an earlier and sustained recovery in China would significantly brighten the outlook for Chile. Finally, the economy could also confront additional unforeseen shocks, which are difficult to include in the projections (Table 1.2).

Figure 1.7. The concentration of specialised exports to China and the United States is a risk to growth



Source: Central Bank of Chile.

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Table 1.2. Events that could lead to major changes in the outlook

Shock	Potential impact
Prolonged global trade disruptions.	Export prospects would decrease.
Increased domestic one-off events such as weather variability and natural disasters.	Depending on the nature and scale of the natural disaster, the fall in output from agriculture and other sectors could be regional or national.
Strong deterioration of the outlook in other LAC countries	Financial linkages could trigger instability, FDI outflows and expose vulnerabilities
Permanent low plateau for copper prices	Deterioration of the fiscal accounts and postponement of recovery

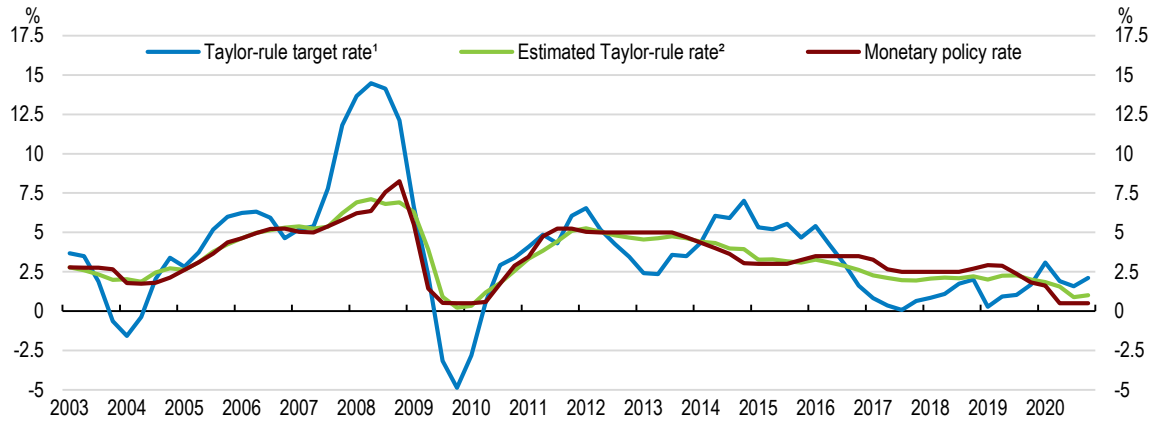
The macroeconomic policy framework is solid

Monetary policy is appropriately accommodative

The Central Bank conducts monetary policy under an inflation-targeting framework and a flexible exchange rate regime. Skilful monetary management and an independent Central Bank have led to strong confidence in the framework, which helped anchor inflation expectations. Inflation expectations remain anchored at 3%, allowing the Central Bank to maintain its sound conduct of monetary policy (Figure 1.8). The Taylor rule shows that monetary policy started to become more accommodative in 2019, supporting activity in an economy operating below potential and in the context of global economic softening and financial market volatility. The social protests and the COVID-19 outbreak have put inflation on a downward trajectory during the first half of 2020. In response to decreasing inflation expectations and to support activity, the Central Bank slashed its interest rate to its lowest level since 2009: after a first cut from 3% to 1.75% in October 2019, the interest rate has now been at 0.5%, the technical minimum, since April 2020 in response to the pandemic. Liquidity lines have also been put in place, alongside the purchase of bank bonds worth USD 5.5 billion. The financial market regulator has also delayed the full implementation of Basel III. These measures allowed credit flows to increase instead of decreasing during such unusual times. Going forward,

with inflation expectations firmly anchored, monetary policy should remain accommodative and support the recovery, although the programme of bank bonds purchasing is coming to a limit as there are now few left on the market. In this context, and in order to enhance the Central Bank's ability to weather further shocks to the financial system, the government passed a Constitutional reform to provide the Central Bank the ability to purchase Treasury bonds on the secondary market under exceptional circumstances. Such purchases had been forbidden by the Constitution before. In January 2021, the Central Bank initiated a programme to to buy USD 12 000 million to restore and expand the country's international reserves.

Figure 1.8. Monetary policy is accommodative



Note: 1.The displayed Taylor rule is computed as: nominal interest rate = real natural interest rate + inflation rate + 0.5 (inflation gap) + 0.5 (output gap); the inflation target is set at 3%; the natural real interest rate is taken to be 1%, as suggested by the Central Bank of Chile (2019).
2.The estimated Taylor rule rate is based on a simple quarterly regression of nominal interest rate on lagged nominal interest rate, current inflation and output gap estimated over 2002-2013.
Source: OECD Calculations and Central Bank of Chile, Monetary Policy Report June 2019, Santiago.

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Chile's fiscal position remains strong

Chile has years of prudent fiscal management driven by a strong fiscal framework, and the structural budget deficit has been broadly stable until 2017 (Table 1.3). The structural rule adopted in 2001 works under the principle of adjusting revenues both by the cycle of economic activity and the fluctuations in the price of copper around its long-term level. This fiscal framework has recently been improved in line with OECD best practices: the periodicity of fiscal reports has increased, while a new Financial Management Evaluation Report and a Public Sector Human Resources Report have been incorporated. Moreover, a welcome newly created Autonomous Fiscal Council, constituted in 2019 and which replaces the previous Fiscal Advisory Council, aims at enhancing the transparency and accountability of the fiscal framework.

The combination of a credible fiscal rule with financial and monetary policies managed by an autonomous Central Bank will allow Chile to maintain its macroeconomic strength and support counter-cyclical policy. However, repeated shocks in recent years (global financial crisis and the 2010 earthquake) have exposed gaps in the framework. Since 2008, the rule has been subject to repeated revisions in the face of these shocks, mainly because of the difficulty of disentangling structural and cyclical factors. The structural balance target set out by decree has been modified several times, given the lack of a well-defined escape clause: in 2010, after the social protests of 2019 and again after the domestic appearance of the COVID-19 outbreak. Defining clear escape clauses would add transparency to the fiscal rule. Additionally, specifying a long-term debt target clearly linked to the medium-term structural balance target, would

provide a direct link with sustainability objectives proving more transparency and credibility to the management of public finances.

Table 1.3. The structural budget deficit was stable until recently

Percentage of GDP

	2011	2013	2015	2017	2018	2019	2020[4]	2021[4]
Total revenues	**22.6**	**20.9**	**21.1**	**21.0**	**22.0**	**21.4**	**19.8**	**22.3**
Copper revenues	2.3	1.0	0.4	0.5	0.6	0.4	0.6	0.6
Non-copper revenues	20.3	19.9	20.7	20.5	21.4	21.0	19.2	19.7
Total expenditures	**21.3**	**21.5**	**23.2**	**23.7**	**23.6**	**24.3**	**28.0**	**32.6**
Social spending[1]	14.3	14.7	15.8	16.5	16.4	17.1		
Other public spending	2.1	2.0	2.6	2.4	2.6	2.6		
Public investment	4.3	4.3	3.9	4.3	3.8	3.7		
Interests	0.6	0.6	0.7	0.8	0.8	0.9		
Fiscal balance	**2.3**	**-0.1**	**-2.6**	**-0.7**	**-0.2**	**-1.3**	**-8.2**	**-4.3**
Structural balance	**-1.0**	**-0.5**	**0.5**	**-2.0**	**-1.5**	**-1.5**	**-3.2**	**-4.7**
Structural primary balance[2]	**-0.8**	**-0.2**	**0.9**	**-1.5**	**-0.9**	**-0.9**	**-2.3**	**-3,9**
Fiscal impulse[3]	**-1.0**	**0.1**	**-1.0**	**0.9**	**-0.6**	**0.0**	**1.4**	**1.6**
Gross debt	**11.1**	**12.7**	**17.3**	**23.6**	**25.6**	**27.9**	**33.7**	**36.4**
Net debt	**1.0**	**-1.3**	**-5.0**	**-13.0**	**-15.6**	**-18.4**	**-26.3**	**-30.8**

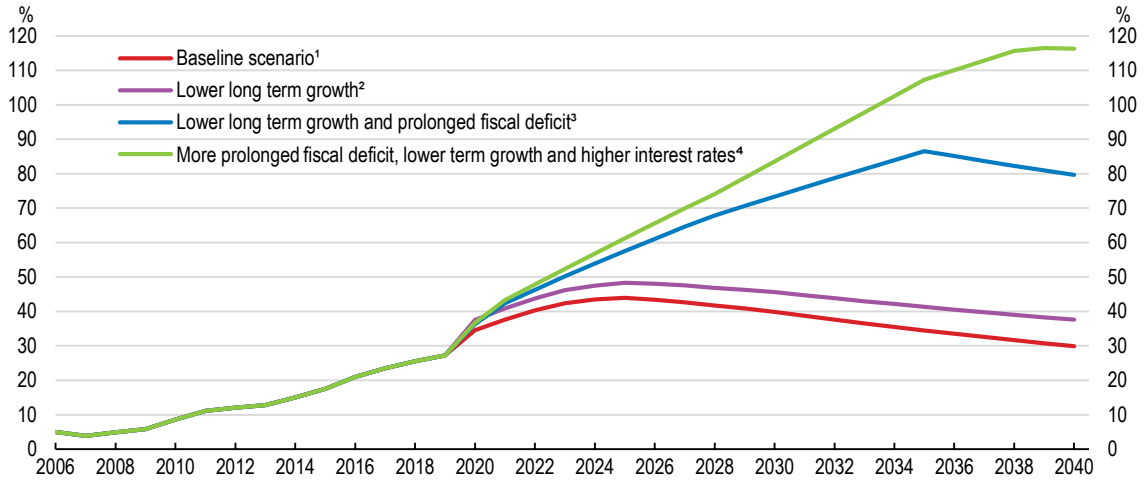
1. Education, health and social protection.
2. Structural deficit (national definition) plus net interest payments. Copper revenues are cyclically adjusted using an estimate of long-term copper prices .
3. Change in structural primary balance.
4. Forecasted by Dipres in the Public Finances Report from the third quarter of 2020.
Source: Dipres.

Authorities remain committed to the fiscal rule and a medium-term fiscal path balancing consolidation and social spending. The social events and COVID-19 entail greater spending in a context of considerably weaker economic activity, leading to plunging revenues. After the social protests, the structural deficit was foreseen to rise to 3.2% of GDP in 2020 from 1.2% foreseen in Budget Law for 2020, as social reforms raised spending permanently as a response to the large-scale social crisis. Most of the increase in spending due to the pandemic is foreseen to revert in the short-term, not affecting the structural deficit. The historically large government response to the pandemic, and low copper prices during the first months of the outbreak will increase the fiscal deficit to 8.2% of GDP in 2020. A strong sovereign balance sheet enables Chile to partly finance deficits through asset drawdowns from its stabilisation fund. The government used USD 2.6 billion in 2019 for the social crisis and will draw USD 3 billion in 2020 for the coronavirus crisis, leaving USD 9 billion available, 3% of GDP, some of which could be used to finance the recovery plan.

Under a baseline scenario where growth recovers in 2021 and then stabilises at around 3% in volume terms, inflation remains close to the central-bank target, and the government implements a gradual fiscal consolidation plan of 0.2% of GDP (until reaching a 0% structural balance), which is below the official path of 0.7% set before the pandemic, gross central-government debt will remain on a sustainable path, after having achieved a peak of 44% in 2022 (Figure 1.9). With lower long-term growth after 2022, at 2% per year, the gross debt-to-GDP ratio would only be slightly above the baseline in 2040. However, if the authorities were only able to shrink the primary deficit by 0.05% of GDP each year, government debt could reach 80% of GDP in 2040, or 120% if the consolidation was further delayed and interest rates on government debt were to rise significantly.

Figure 1.9. Illustrative public debt paths

Public debt to GDP projections under different scenarios



1. Baseline scenario where long-term growth remains close to 3% in volume terms, inflation is close to the central-bank target and ageing costs are included. The nominal interest rate on government assets is set at 2%.
2. Same assumptions as in 1, but nominal long-term growth of 5%.
3. Same assumptions as in 2, except primary deficit achieves balance in 2035.
4. Same assumptions as in 2, except primary deficit achieves balance in 2040 and the real long-term interest rates are higher by 1.5 percentage point over 2020-2040.
Source: DIPRES, OECD Economic Outlook 108, Central Bank of Chile and OECD calculations.

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With the start of the relaxation of lockdown measures, fiscal policy should continue to support public health, providing resources to the health system for monitoring and tracing cases of contagion, and ensuring the availability of diagnostic tests and achieving herd immunization through vaccinations. Similarly, support measures for families and firms should be reviewed and adapted with the gradual return of economic activity, efficiently refocusing transfers to displaced vulnerable workers in the most affected sectors and dropping those who can or could be reintegrated.

Once the pandemic is under control, given the strong impact of the COVID-19 crisis on economic activity, public finances, poverty and inequality, reform could further support both the reconstruction of economic activity and to improve the fiscal situation. The newly agreed economic emergency plan, to run over the course of two years, goes in the right direction to support a swift and inclusive recovery, balancing the need for income and employment support with measures to foster a fast economic recovery. Moreover, prior to the two shocks, the government passed or approved some structural reforms, such as the tax modernisation act, that will notably support consolidation by allowing to raise more revenues (Table 1.4). Going forward the fiscal effort should be focused on making efficient reallocations of public spending, including the elimination of exemptions in the tax systems, which would also support the recovery. Authorities, and particularly a recently formed expert commission, are working to review tax expenditures and aim to set long-term path for fiscal reform reviewing the tax system with particular attention to progressivity and tax evasion.

Altogether public debt remains sustainable and Chile will continue to have the most fiscal space in the region. The new temporary economic emergency plan will protect household incomes and raise spending, particularly for the most vulnerable, while the emergency spending for the outbreak, which also targets the most vulnerable, will help containing the permanent destruction of jobs and capital, allowing to re-start the economy on a growth path close to the one before the events. In fact, in the current low-interest rate

environment it is possible for Chile to support the economy if further outbreaks materialise, and be more ambitious on structural reforms after. The large financial surplus of the private sector will reinforce the downward pressure on interest rates globally, which will remain below Chile's growth potential, keeping the debt sustainable, as long as the temporary fiscal measures are phased out once the recovery is fully underway. The main downside risk to the fiscal situation of Chile remains essentially the political uncertainties and social tensions that could sustain a prolonged recession, affecting public finances. As a result, continuing with the social reforms after the recovery remains essential to stabilise the country further.

Table 1.4. Past OECD recommendations on macroeconomic policies

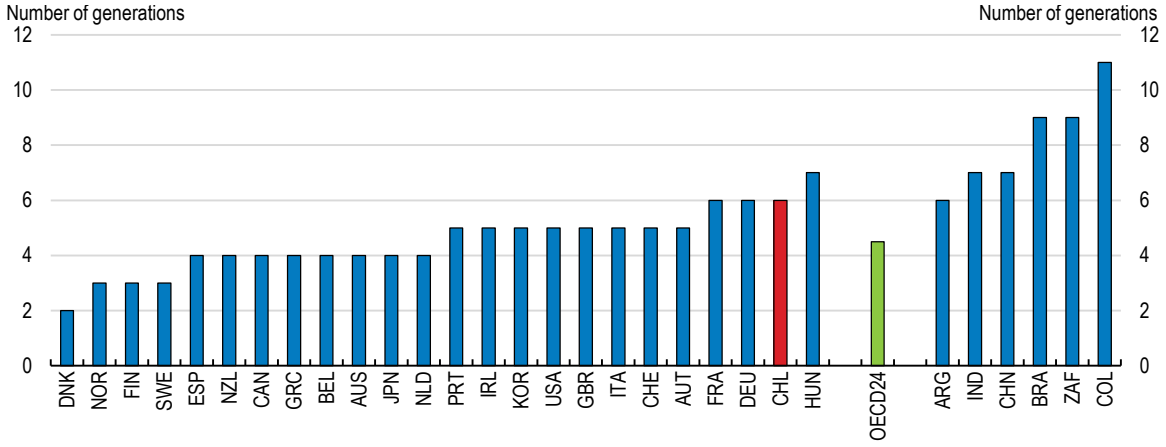
Recommendations	Actions taken since the 2018 survey
Implement the banking law, which incorporates Basel III capital adequacy requirements and strengthens supervision.	In 2019, the National Congress approved the new General Banking Law (GBL), a step toward the convergence process of national regulation with international standards under Basel III. In addition, a new General Banking Law updates the corporate governance and powers of the banking regulator. The implementation of the Basel III requirements has been postponed by one year, but the schedule for the issuance of all regulations for December 1 2020 is maintained.
Secure the mandate, resources and independence of the Fiscal Advisory Council in Law and strengthen its role in medium-term budgetary planning.	The Autonomous Fiscal Council (CFA), created in February 2019, replace the Fiscal Advisory Council. It is constituted as an autonomous body of a technical and consultative nature endowed with legal personality and its own assets.
Increase further public revenues from environmental, property and personal income taxes to increase equity and stimulate growth over time.	The Tax Modernisation Law was approved in early 2020. The main measures are (1) increase in the top PIT rate, from 35% to 40% for individuals that earn more than 15 million Chilean pesos per month (2) return to one single Corporate Income Tax (CIT) regime for businesses. The regime will differ for large firms and SMEs. SMEs that have earned average profits in the last 3 years of less than 75000 UF (approximately EUR 2.45 million) will benefit from a reduced CIT rate of 25% and a full dividend integration regime.; (3) accelerated depreciation to stimulate investment; (4) introduction of a progressive surtax for property with fiscal value exceeding 400 million pesos; (5) changes to Green Tax will tax pollutant emissions rather than capacity to generate these emissions; (6) mandatory e-invoicing; (7) VAT is levied on business to consumer supplies of digital services from non-resident vendors (8) old-age tax relief for low-income property owners.

Avoiding hysteresis effects on inequality after the outbreak and building a stronger middle class

Chile has managed to sharply reduce poverty in the past three decades, as the benefits of the commodity boom and sound government policies lifted 30% of Chileans out of economic deprivation (ECLAC, 2018[3]). However, this momentum has now slowed and the pandemic could reverse this trend, as a large number of households have to deal with the prospect of falling into poverty due to a drop in their income and few financial buffers to cushion the shock. Moreover, limited social mobility perpetuates a high level of inequality in Chile, hampering notably the building of a strong middle class. Currently, it would take 6 generations for the offspring of a poor family to reach the average income standards (Figure 1.10). As a result, COVID-19 could have long-lasting effects on inequality.

Figure 1.10. Social mobility is low in Chile

Expected number of generations it would take the offspring from a family at the bottom 10% to reach the mean income in society



Note: These estimates are based on earnings persistence (elasticities) between fathers and sons and the current level of household incomes of the bottom decile and the mean income, assuming constant elasticities.
Source: OECD publication, "A Broken Social Elevator? How to Promote Social Mobility" (2018); OECD, Income Distribution database.

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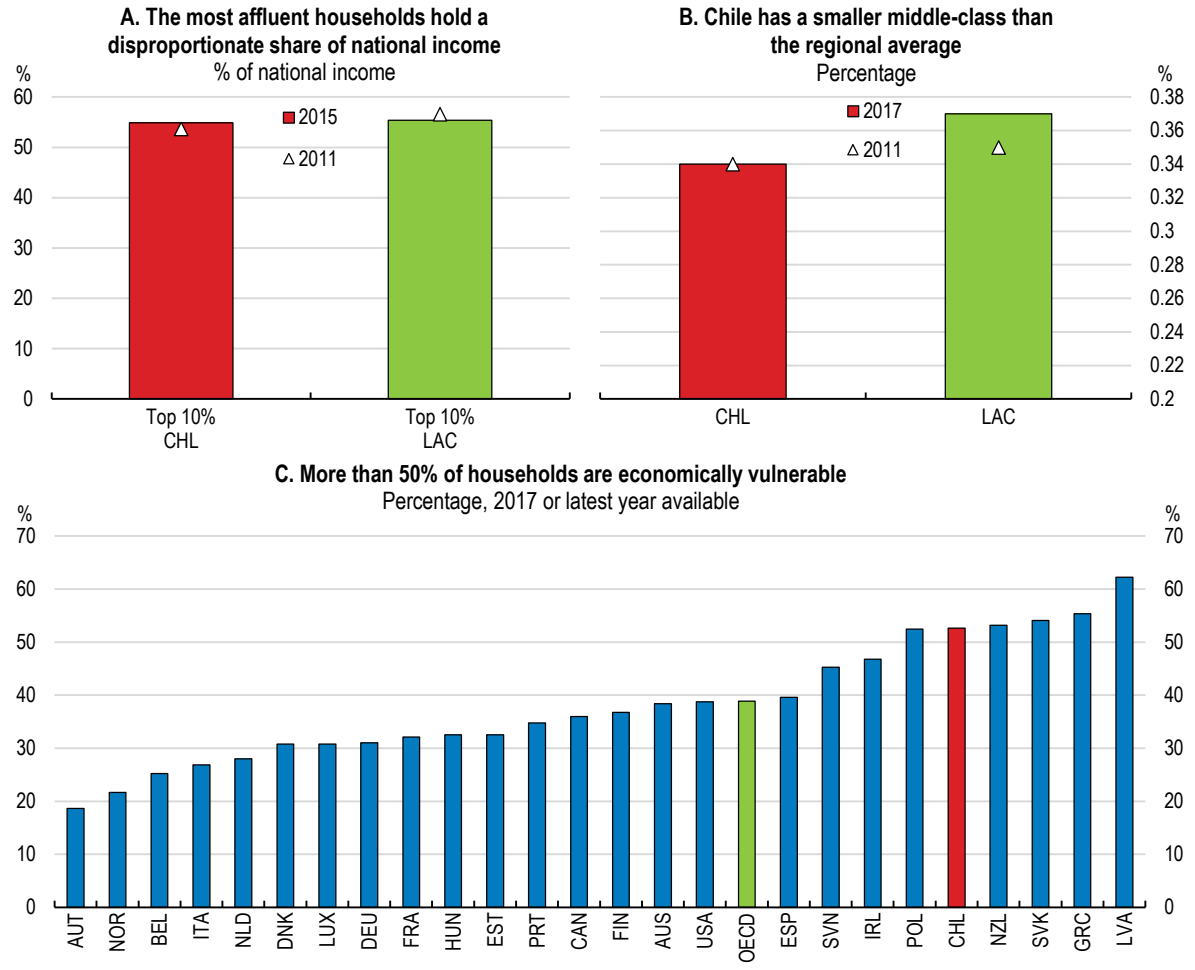
Economic vulnerability is a brake to inclusive and sustainable growth

The structure of inequality in Chile is characterised by income polarization and a relatively thin middle. At the top, the share of income owned by the richest 10% is high, albeit on par with the region (Figure 1.11, Panel A). In the middle, the share of income accruing to the middle class is comparatively low (Figure 1.11, Panel B). Finally, in the bottom poverty is compounded by a further half of the population not counted as poor but economically vulnerable, due to a lack of sufficient minimum liquid financial assets to cope with an adverse income shock. This is one of the highest prevalence in the OECD (Figure 1.11, Panel C), with the majority of vulnerable households generally concentrated above the poverty line but below the median income and at risk of falling back into poverty (Balestra and Tonkin, 2018[4]). The aftermath of the coronavirus outbreak is likely to reinforce these vulnerabilities, putting more Chileans under serious financial strain.

To cope with the adverse income shock due to the outbreak, vulnerable households will have to cut on core, essential spending. Core spending is defined as the spending on consumption categories that are unavoidable to cover necessities and basic needs, such as housing, clothing, food and transportation, on which households have no real possibility of choice, as they cannot live without (Sen, 1981[5]). In Chile, it is already unequally distributed, with households at the bottom of the income distribution allocating 70% of their total spending on core items (at least 50% for 80% of Chileans), while for the richest households it is 45% (Figure 1.12). Stated otherwise, the 20% poorest households can only manage to allocate freely 30% of their budget to non-basic but essential spending such as education and health, but also to other areas such as recreation and culture, which remain important for well-being. Spending on transportation services, which triggered social unrest at the end of 2019, is a case in point: the 20% poorest households allocate twice as much of their budget on them than the 20% richest households. The increase in food prices during the pandemic will also exacerbate the regressive profile of core spending, and the programme “Alimentos para Chile” puts in place recently is a welcome step to cushion such effect.

Figure 1.11. Economic vulnerability is high while income is concentrated at the top



Note: In Panel A, LAC refers to the definition of Latin America in the World Inequality Database. In Panel B, the middle class is defined as the households situated between the 40th and 80th percentiles of the distribution. LAC refers to an unweighted average from the OECD Income Distribution and Poverty database. In Panel C, the "economically vulnerable" are those who are not "income poor" but have equivalised liquid financial assets below 25% of the income poverty line. The OECD average is the simple country average.
Source: World Inequality Database, https://wid.world/; OECD, Income Distribution and Poverty database; OECD, Wealth Distribution database.

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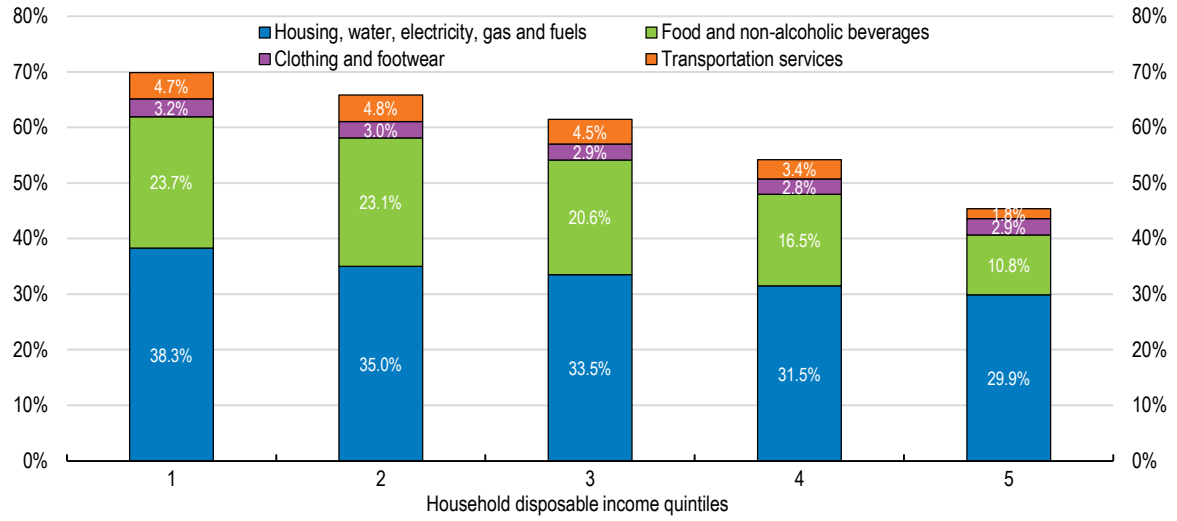
Figure 1.12. Core spending falls disproportionately on the poorest sections of the population

Share of core spending (as a % of total budget) along the income distribution, 2017



Source: OECD computations based on Casen Survey (2017).

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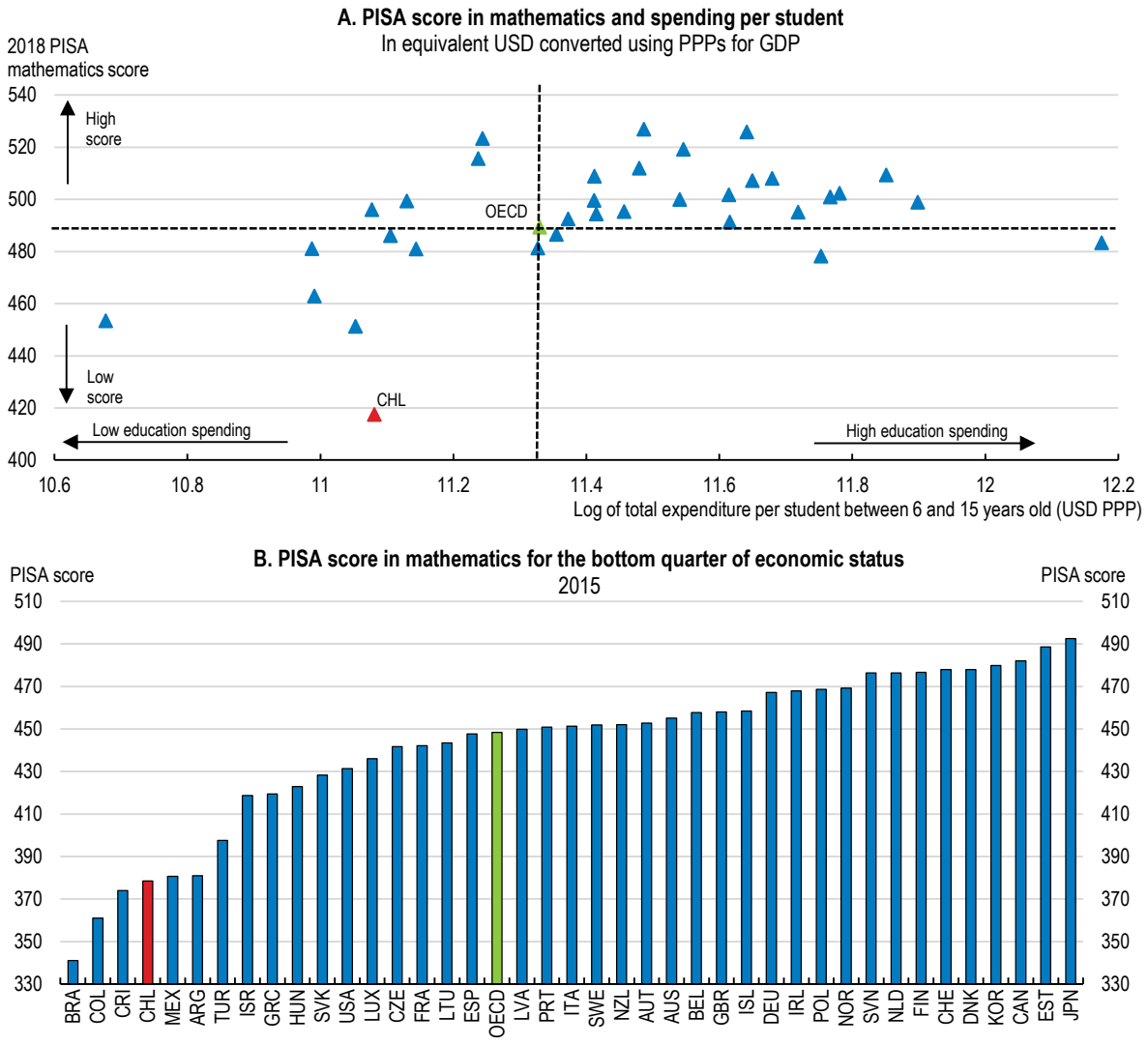
Spending on education should focus more on early levels

To reduce economic vulnerability and foster inclusiveness and long-term growth, Chile must build a strong and prosperous middle-class. Improving the educational outcomes of Chileans would be a powerful tool to achieve this. While the effects of these policies will be felt only in the long run, they constitute a pivotal lever to fight now the consequences that COVID-19 could imprint on inclusiveness in Chile. Indeed, school closures across the countries will have a long-lasting negative impact on the accumulation of human capital, mainly for the children from the most vulnerable households. The actions taken by the government to enhance digital means and online resources for education in the first three months of the pandemic are thus a welcome step to cushion such adverse impact. Nonetheless, despite important improvements during the last decade, public educational spending efficiency and academic achievement are amongst the lowest in OECD countries (Figure 1.13, Panel A). Furthermore, access to good education in Chile is strongly linked to the socio-economic status of the family (Figure 1.13, Panel B).

To address these challenges, several recent reforms have been introduced. The inclusion and equity law of 2015 ends student selection in public schools, which was an important driver of inequality as students from disadvantaged backgrounds tended to be penalised by the selection. In 2018, two laws related to higher education were approved, creating a National System for Quality Assurance of Higher Education (*SINACES*), and strengthening the power of the National Council to develop a National Training Strategy of vocational technical education. The laws also addressed the institutional funding for public universities and established free higher education for students that belong to the bottom 60% of the income distribution. These reforms go in the right direction, but could be complemented by transformations of the educational system at lower levels.

Figure 1.13. Quality and inclusiveness of education are low



Note: In Panel A, data on total expenditure per student between 6 and 15 years old refer to 2017 for Chile and 2016 or latest available year for all remaining countries. The OECD refers to an unweighted average of latest available data for its member countries. In Panel B, Argentina refers to region of Ciudad Autónoma de Buenos Aires. Socio-economic status according to ESCS which refers to the PISA index of economic, social and cultural status.

Source: PISA 2018 Results (Volume I) - © OECD 2019; PISA 2015 Results (Volume I): Excellence and Equity in Education - © OECD 2016; OECD, Education at a Glance database.

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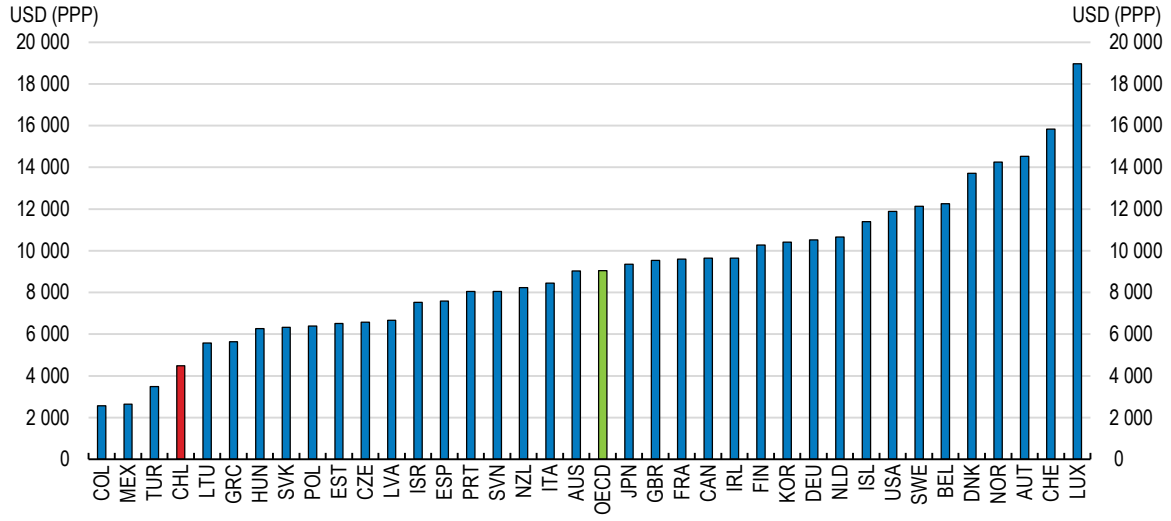
Chile spends half of the OECD average on pre-primary, primary and secondary education (Figure 1.14). Increasing the quality of lower-level schooling across all segments of the population is key for improving productivity, but also for raising participation in higher education (OECD, 2017[6]). Public spending on education should thus be increased and focus on high-quality early childhood, primary and secondary education, as a prerequisite for raising skill levels, expanding tertiary education and raising equality of opportunities. A new programme, currently under discussion and aiming at stepping-up spending on education for child above two years old, would be a welcome step in this regard.

Figure 1.14. Spending in pre-primary, primary and secondary education is lagging behind

In equivalent USD converted using PPPs for GDP, general government expenditure, based on full-time equivalents



Note: Data for Chile refer to 2017. Data for the OECD refer to an unweighted average from 2016.
Source: Education at a Glance 2019: OECD Indicators - © OECD 2019.

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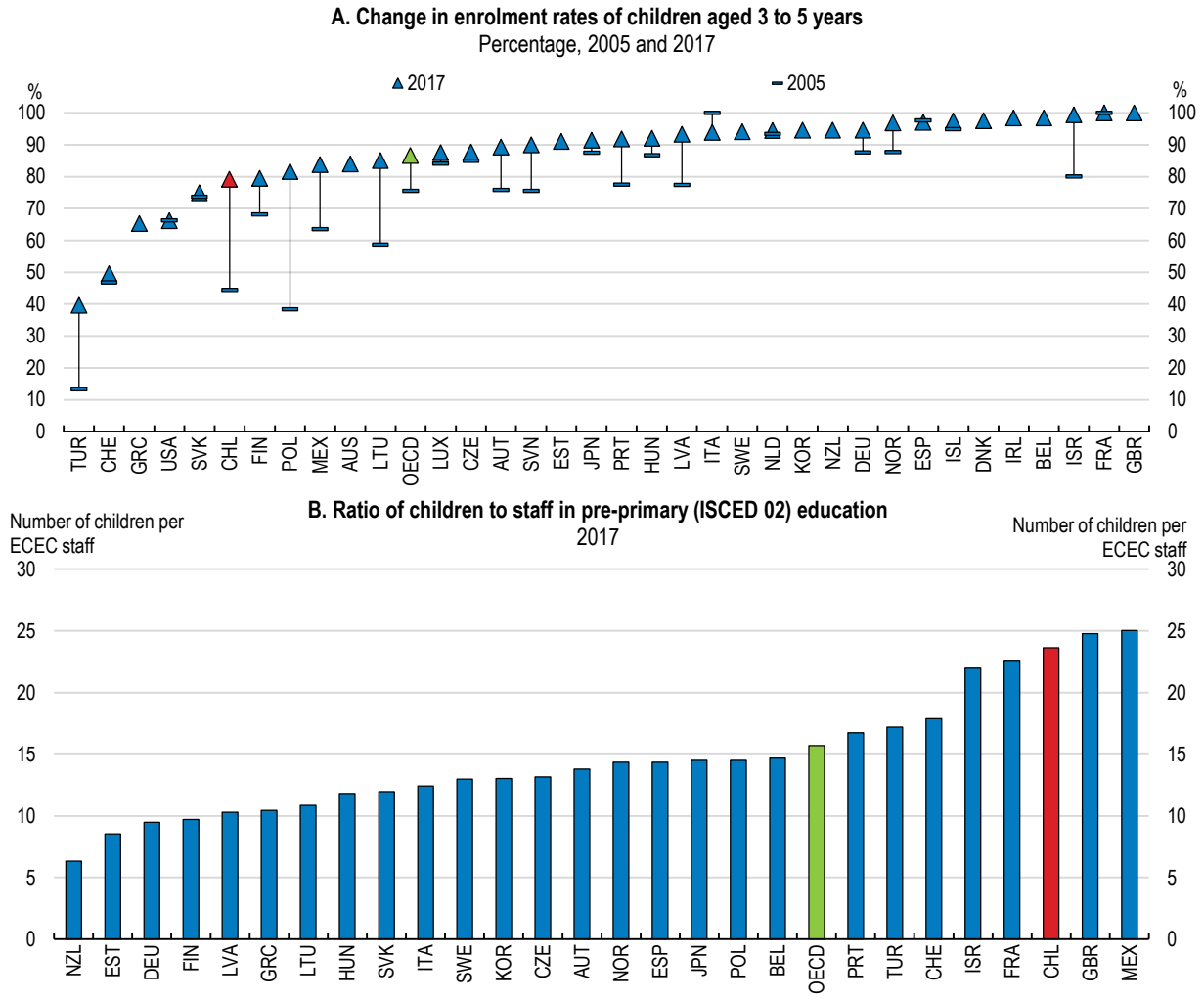
In particular, early childhood education and care has been shown to yield large returns because a person can build on the acquired learning as input in later education stages, resulting in a process of dynamic synergies (Heckman and Mosso, 2014[7]). Returns from early intervention are particularly high for children from disadvantaged backgrounds. Access to affordable childcare and pre-schools are thus strong instruments to ensure equity in compulsory education. Moreover, it entails the double dividend of encouraging greater female labour force participation.

The enrolment rate has almost doubled in Chile over the past 15 years for children aged 3 to 5 years (Figure 1.15, Panel A). Yet, the ratio of children to teaching staff, an important indicator of the resources devoted to, and the quality of, education, remains one of the highest in the OECD (Figure 1.15, Panel B). This ratio should be lowered, which would be conducive to improve the quality of education in the earliest stages. Smaller ratios can be particularly beneficial for children from disadvantaged backgrounds, because they allow staff to focus more on the needs of each child.

Figure 1.15. Enrolment in early childhood education has increased but quality remains low



Note: In Panel A, countries are ranked in ascending order of the enrolment rates of 3-5 year-olds in 2017. In Panel B, data for France exclude independent private institutions. Data for Japan on staff do not cover all ECEC services. Data for Sweden cover ISCED 0 instead of pre-primary education (ISCED 02).
Source: Education at a Glance 2019: OECD Indicators - © OECD 2019.

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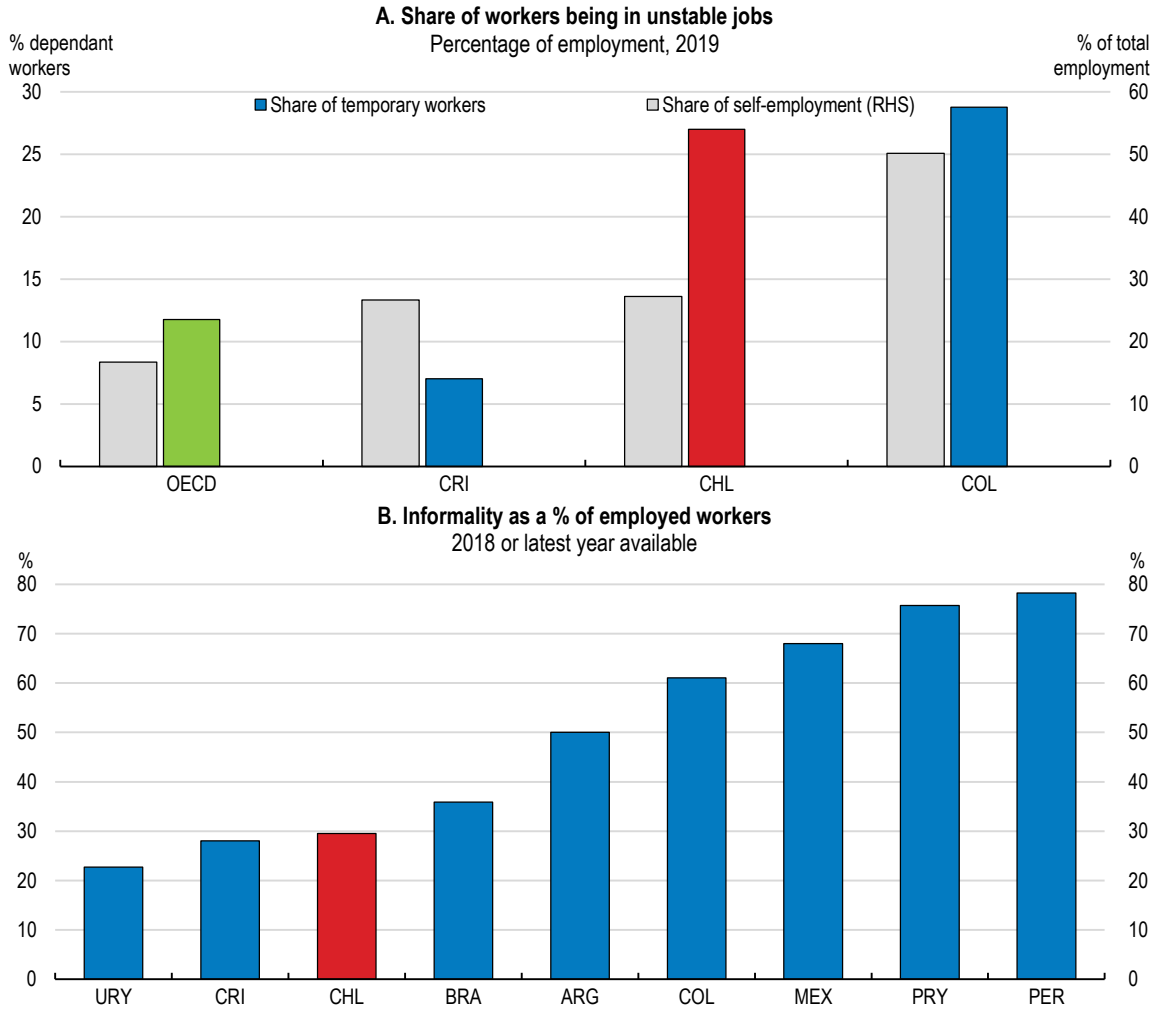
Raising equality of opportunities through labour market inclusion

The quality of employment opportunities is crucial for equal chances of succeeding in life, by enhancing career prospects over the lifecycle and reducing inequality from a dynamic perspective. The Chilean labour market shows an entrenched duality, with almost 40% workers being in formal but unstable jobs (Figure 1.16, Panel A). Informality, notably through self-employment, is also important, with almost one third of the total workforce being in the informal sector, although this is among the lowest shares in Latin America (Figure 1.16, Panel B). Both are preventing many workers from accessing unemployment insurance, severance pay, childcare, training and pensions. As such, the recent reform that incorporates independent workers to social security goes in the right direction. Moreover, moving out of informality and precarious jobs is difficult, and starting a career with such jobs may have negative consequences for future labour market prospects, hampering workers to move up along the income distribution (Petreski, 2018[8]).

The coronavirus outbreak will also deteriorate the precarious conditions of informal workers, despite the financial support provided by the government for this population (e.g. *Ingreso Familiar de Emergencia* and *Bono Covid*). The outbreak may also increase informal employment as laid-off workers struggle to survive. Migrants, youth and the low-skilled are particularly affected by precarious work (OECD, 2015[9]), and the outbreak is likely to amplify this prevalence. Access to quality jobs is difficult for young and low-skilled workers who are often trapped in informal or temporary jobs, or joblessness. The same applies to students who have the additional burden of combining education with a job, albeit the recently passed reform on alternative part-time aims at easing such balance.

Figure 1.16. Duality and informality remain high



Note: In Panel B, informal workers are defined as those workers not contributing to the pension system.
Source: OECD, Labour Force Statistics database; IADB, SIMs database.

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More opportunities for women need to be created, as overcoming gender inequalities in the labour market is fundamental to achieve inclusive growth. The COVID-19 pandemic has also amplified the gender gap in the labour market, with a decrease of 9 percentage points in a year of the women participation rate to 44%. Women are less likely to have paid work than men, are more frequently unemployed and, when employed, they are more likely to hold non-standard jobs, work in the informal sector, be self-employed or

have low-paid jobs. The provision of quality childcare and early childhood education is key in this respect and will also promote equality of educational opportunities for children from disadvantaged backgrounds (see above). Similarly, the bill for elderly care would alleviate a responsibility that tends to impact disproportionally women, while the Act on Distance Work and Teleworking passed during the pandemic aims at setting the right balance for women to manage family responsibilities.

Progress along these lines is fundamental to allow women to better combine family and work responsibilities. The bills currently in discussions, to put men and women at the same level in the civil code and create more efficient and simpler legal tools to fight violence, are also important steps to empower women in the Chilean society and ensure equality of opportunities, notably on the labour market. Moreover, the reduction of the standard work-week from 45 to 40 hours could be a way to improve work and life balance, and more generally well-being (Lepinteur, 2016[10]). However, its overall potential effects on labour market performance and productivity are uncertain (Raposo and Van Ours, 2010[11]; CNP, 2020[12]) and need to be carefully evaluated, particularly to set the economy on a right path of recovery after the outbreak.

Adequate protection and strong job search and training policies should be put in place to tackle economic vulnerability and keep workers attached to the formal sector, as part of an inclusive recovery. Currently, the minimum contribution period required to get access to the unemployment benefits is too high compared to the average duration of employment contracts (Central Bank of Chile, 2016[13]). The temporary reduction in required minimum contribution periods implemented to support workers after the social protests and COVID-19 should be made permanent or at least become available when economic activity is reduced below certain thresholds. Additionally, to avoid misreporting, there needs to be a greater effort to ensure that contributions are paid in full for the correct amount of earnings. For example, ensuring that the Ministry of Labour has access to both tax and social contribution records could minimise evasion on the part of employers.

Underperforming job search and training policies, which poorly match workers with employers, also complicate the access to formal, good quality jobs. Such policies should allow vulnerable workers to acquire and maintain relevant skills. By doing so, these policies can improve the quality of workers as well as achieve higher productivity growth. This is especially important given the low skill levels of Chileans. The lifelong learning system should help adults to regularly update, upgrade, and sometimes even acquire entirely new skills and competences while in and out of work. This is even more critical in the context of population ageing, where the majority of the future workforce has already left initial education. The skills of the older workers will become obsolete more quickly as a result of rapid technological change and they will be required to stay in the labour force for longer to sustain pension systems.

Although Chile's expenditure in training as a proportion of GDP is low (0.08% in 2015) compared with the OECD average (0.13%), it is higher than in other Latin American countries, including Mexico and Brazil. However, it is poorly distributed, and vulnerable, low-skilled workers and those facing labour market difficulties receive less training (Figure 1.17).

Figure 1.17. Training programmes do not reach the most vulnerable

Note: Data refer to 2015. Training is defined as participating in training of at least 8 hours in the last 12 months. Panel B is people aged 25-64.
Source: OECD calculations based on CASEN (2015).

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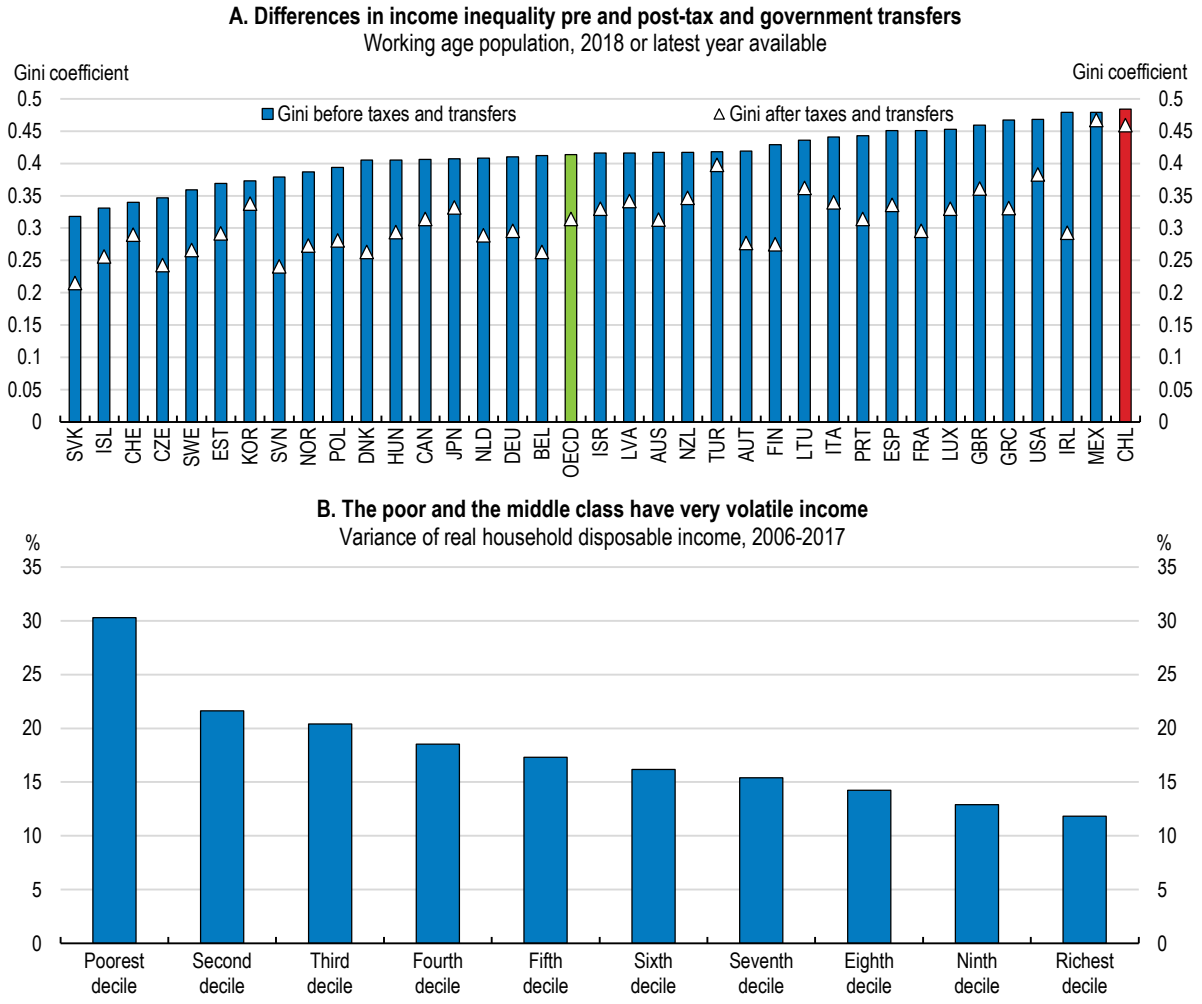
Chile lacks a lifelong learning system with a clear national regulatory framework and a clear national plan. Most expenditure on active labour market programmes (ALMPs) are channelled into job training or regular training and executed by SENCE (the National Agency on Training and Employment). Public spending in training is channelled through tax credits for on-the-job training (*Franquicia Tributaria*), training programs targeted primarily at vulnerable groups (e.g. *Fórmate para el Trabajo*), programs for training and hiring older adults (e.g. *Experiencia Mayor*), programs for reconversion in digital skills (e.g. *Talento Digital*) and employment subsidies, among others. One-third of public spending in training goes to the tax credit but this programme benefits mostly large firms, which tend to already have less vulnerable, highly educated workers, and does not reach those most in need. This programme should be thoroughly reviewed by limiting the universe of eligible workers to those with medium and low salaries, to allocate public resources to those who are less able to pay and have greater deficiencies in labour competencies (see Chapter 2). Quality and relevance of training courses will also be key to have an impact on the labour market.

The tax and transfer system can be a strong catalyst for reducing inequality

Currently the tax and transfer system lacks traction in reducing income inequality: the Gini coefficients before and after taxes and transfers are almost identical (Figure 1.18, Panel A). With half of Chilean households being economically vulnerable, the tax and transfer system does not provide any protection from adverse economic shocks. Hence the incomes of the most deprived households and the lower middle-class follow overall macroeconomic trends, increasing in good times and decreasing in bad ones (Figure 1.18, Panel B).

Figure 1.18. The tax and transfer system could provide more protection for vulnerable households



Note: In Panel A, data for Chile refers to 2017. Data for Chile are not directly comparable to other countries due to pension's contributions that are not taken into account, but which reduce pre-transfers and taxes income dispersion. OECD refers to the unweighted average of latest available data of 36 member countries, excluding Colombia. In Panel B, household disposable income in current prices deflated by CPI.
Source: OECD, Income Distribution and Poverty database; OECD, Consumer and Producer Price Indices database.

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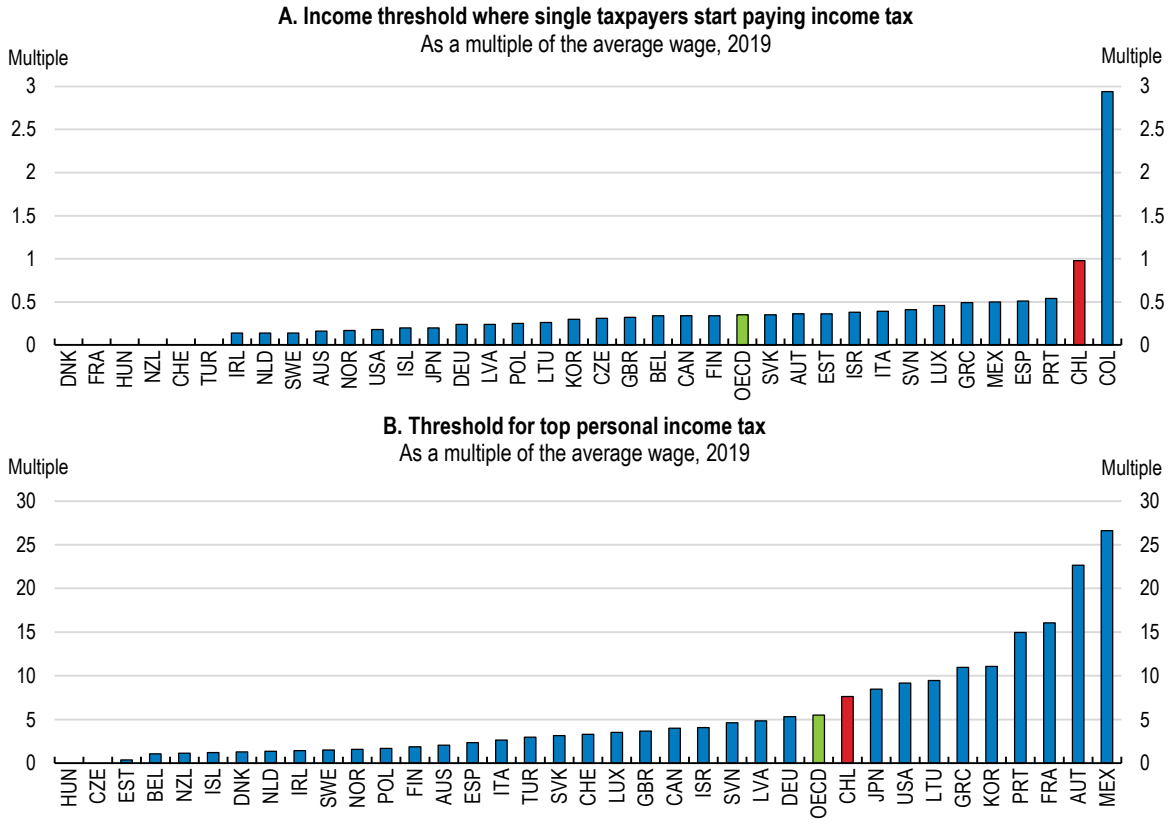
A solution to increase income protection would be to strengthen the redistributive impact of the personal income tax. Currently, only the 25% richest pay income taxes, and the top marginal tax rate applies at around 10 times the average wage (Figure 1.19). Such a structure leads to untapped redistributive potential. Given that the ratio between the average wage of the 10% highest earners and the national average wage is around four in Chile, the top marginal tax rate only applies to very few affluent households. In the wake of the social events, the government enacted, as part of the tax modernisation act, a new top marginal tax bracket of 40%, while aiming at broadening the tax base and the efficiency of the overall tax system. This is a welcome but limited step as it applies at 21 times the average wage. Lowering the thresholds at which the bottom and top bracket apply would lead both to a significant increase in revenue and also an increase in the redistributive profile of the personal income tax, thus lowering disposable income inequality in Chile.

Other tax instruments could also be considered, such as the creation of a negative income tax as part of the personal income tax schedule, replacing other local subsidies and government allowances. Such an instrument would assure each household and individual a basic benefit related to the size of the tax unit to which it pertains and would define an income level beyond which the tax unit would become a net taxpayer (Box 1.3). It does not entail alteration to the existing tax structure and would be a way to consolidate all income support programmes targeted at the poor into a single programme. Moreover, beyond poverty this would be a way to support working but vulnerable households, for example by setting the breakeven income level above the median wage. This would reduce economic vulnerability, strengthen the income of the middle class and increase employment, in particular for single women with children (Agostini, Perticara and J., 2014[14]; Center on Budget and Policy Priorities, 2018[15]). Beyond income taxes, a strengthening of property taxes could also be considered. More generally, a more progressive tax and transfer system would reduce significantly income gaps across Chileans (Box 1.4).

Figure 1.19. The personal income tax structure has little redistributive power



Note: For Panel A, in Denmark, France, Hungary, New Zealand, Switzerland and Turkey, personal income tax is levied on the first earned currency unit. In both panels, OECD refers to the unweighted average of data shown.
Source: OECD calculations based on the Taxing Wages models; OECD, Tax database.

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Box 1.3. How does a negative income tax work? The example of the Earned Income Tax Credit in the United States

A negative income tax is a way to provide individuals below a certain income level with financial resources. In contrast to a standard income tax, where individuals pay money to the government, people with low incomes would receive money back from the government. In principle, a negative income tax operates by giving to individuals a percentage of the difference between their income and an income cut-off, or the level at which they start paying income tax. For instance, if the income cut-off is set at USD 40 000, and the negative income tax percentage was 50%, a tax unit with an income of USD 20 000 would receive USD 10 000 from the government. If the income is USD 35 000, USD 2 500 is received. It must be noted that a negative income tax is different from a universal basic income in which everyone, regardless of income level, receives the same amount. However, the goal of the two mechanisms is identical such as no one is allowed to fall below a certain income threshold. Moreover, a negative income tax has generally a weak impact on labour supply, as it is designed so that individuals who work will always end up with more income than individuals who do not, which would ideally not impinge on working incentives.

Currently, the mechanism closest to a negative income tax in OECD countries is the Earned Income Tax Credit (EITC) in the United States, albeit by design it provides support only to working families (97 percent of benefits from the credit go to families with children). With the EITC, workers receive a credit equal to a percentage of their earnings up to a maximum credit. Both the credit rate and the maximum credit vary by family size, with larger credits available to families with more children. After the credit reaches its maximum, it remains flat until earnings reach the phase-out point. Thereafter, it declines with each additional dollar of income until no credit is available. The EITC is concentrated among the lowest earners, with almost all of the credit going to households in the bottom three quintiles of the income distribution (Center on Budget and Policy Priorities, 2018[15]).

Research shows that the EITC encourages single people (in particular women) and primary earners in married couples to work (Dickert, Houser and Scholz, 1995[16]). However, it appears to have little effect on the number of hours they work once employed (Meyer and Rosenbaum, 2000[17]). In 2018, the EITC lifted about 5.6 million of individuals out of poverty, including about 3 million children. The number of poor children would have been more than one-quarter higher without the EITC (Center on Budget and Policy Priorities, 2018[15]). The EITC also reduced the severity of poverty for another 16.5 million people, including 6.1 million children.

Box 1.4. Illustrative impacts of a more inclusive tax system on income inequality

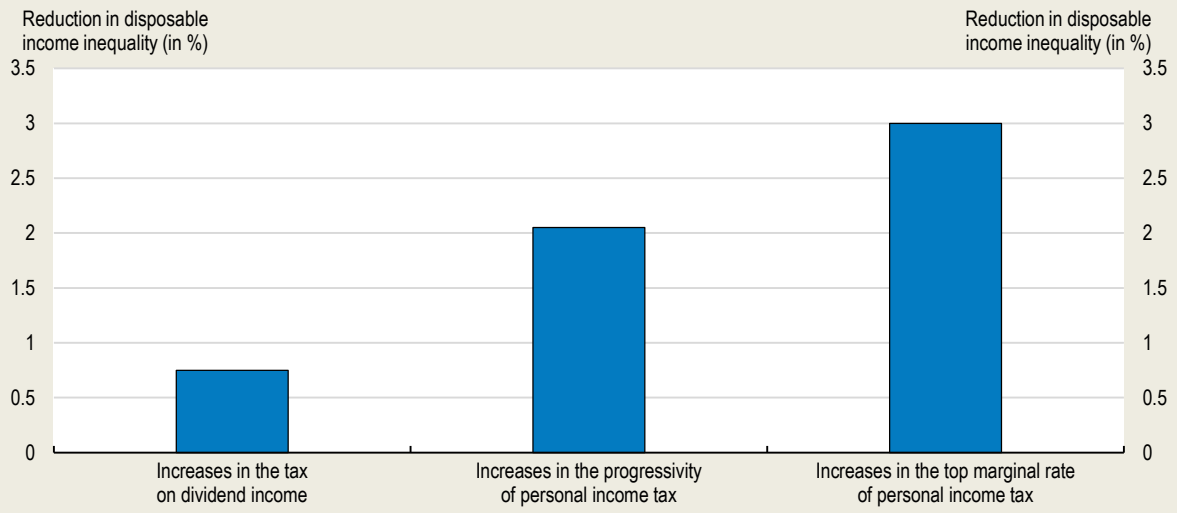
Recent empirical investigations conducted by the OECD on the drivers of income redistribution through taxes and transfers can be used to quantify the effects on income inequality of increased redistribution in Chile. Redistribution is measured as the relative reduction in market income inequality achieved by personal income taxes. As income inequality is quantified by the Gini coefficient, the redistributive effect of taxes is defined as the difference between the Gini coefficient of household market incomes and the Gini coefficient of household disposable incomes (see Causa, Vindics and Akgun (2018[18])).

Tax reforms scenarios suggest substantive potential policy-driven redistribution gains in Chile (Figure 1.20). For example, closing the gap between Chile and the OECD median in term of overall progressivity of the personal income tax would reduce disposable income inequality by 2%. Similarly,

increasing the top marginal tax rate on personal income to the OECD median level would reduce disposable income inequality by 3%. While purely illustrative, these scenarios provide an indicative view of the considerable policy space in Chile to improve redistribution.

Figure 1.20. Illustrative income redistribution effects of selected tax reforms

Closing the gap with the OECD median



Source: Based on (Causa, Vindics and Akgun, 2018[18]).

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More inclusive health care services

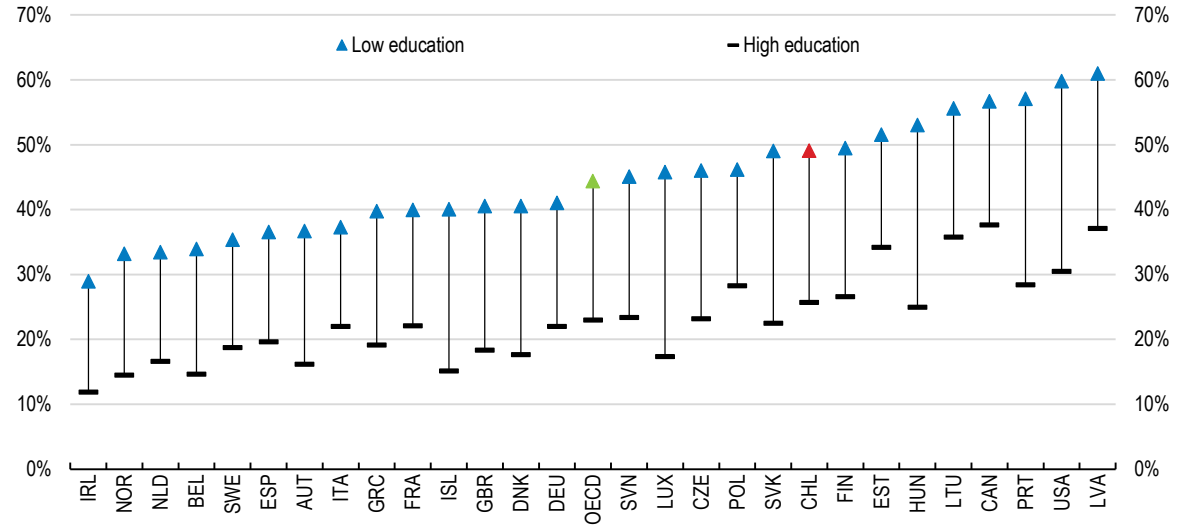
In response to the COVID-19 outbreak, the government took rapid actions to ensure to ensure the access to health services for all, though structural inequalities remain. The cost of tests taken for public health purposes and for all the beneficiaries of the public insurer (Fondo Nacional de Salud, FONASA) that comply with the clinical criteria defined by the Ministry of Health will be covered. Matched with an ambitious national campaign to inform the public of prevention measures and detection, this will ensure the affordability of diagnostics for all in the immediate term. However, it should be noted that while universal affordability is a prerequisite to access to diagnostics and treatment, organisational barriers and the health system capacity issues play a crucial role. For example, access to testing depends on a test being both physically available, as well as laboratory capacity. Moreover, surge demand has put particular pressure on access to diagnostics, hospitalisations, and critical care treatment of the most complex cases. The increase in health spending up to 2% of the general government budget passed at the very beginning of the outbreak in Chile aims at easing such constraints.

These short-term measures are welcome, but more is needed in the medium-term to tackle deeply entrenched healthcare inequality in Chile (Figure 1.21). Healthcare is predominantly public, with around 78% of the population covered by FONASA. 22% are enrolled in private insurers (ISAPRE). The financing is underpinned by a mandatory requirement to be insured. However, stark inequalities characterise the range and quality of health care services that Chileans can access. ISAPREs compete in a weakly regulated market, selecting good risks and differentiating the premiums paid by the insured. Women, people with pre-existing conditions and the elderly pay more, resulting in a segregated system where FONASA provides coverage for the most in need and to lower and middle-income groups. However, the

coverage provided is insufficient: individuals' out-of-pocket spending for health care are amongst the highest in the OECD (Figure 1.22).

Figure 1.21. Chile has the one of the highest gap in health status between education groups

Probability of reporting a poor self-assessed health status by education level



Note: Results correspond to age-sex standardised predicted probabilities. OECD refers to the unweighted average of data shown.
Source: OECD estimates based on national survey data; OECD publication, "Health for Everyone? Social Inequalities in Health and Health Systems", 2019.

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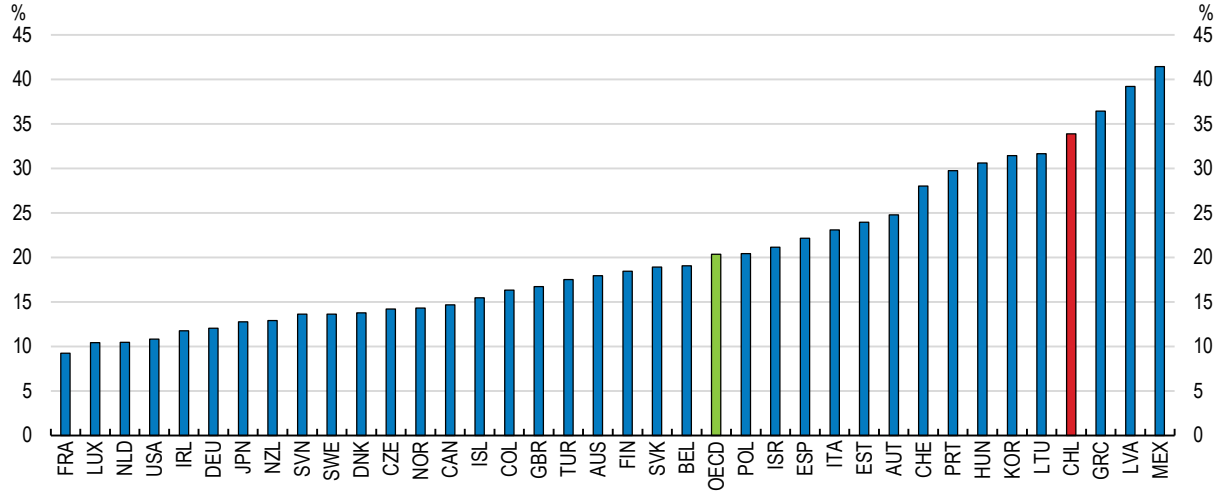
Figure 1.22. Out-of-pocket spending for health care are amongst the highest in the OECD

Out-of-pocket spending as a % of health spending, 2019 or latest year available



Note: OECD refers to an unweighted average of latest available data for all its member countries.
Source: OECD, Health Expenditure and Financing database.

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There is substantial space to improve the equity of the health system but also its quality and efficiency (CNP, 2020[19]). The reform proposal announced at the beginning of 2020 is a welcome step, with the speeding up of treatment by setting new maximum wait times for surgeries, the coverage of at least 80% of health care costs, a lowering of healthcare costs for women with a new and unique factor table, and the reduction in the price of medications by more than half. The temporary increase in health spending, by 2% of the overall public budget, to face the outbreak is also welcome insofar as Chile lacks notably of ICU beds and ventilators to cope with the most severe cases of the disease.

Nonetheless, the fragmented (different sub-systems) and segregated (different population groups in each sub-system) model of the Chilean health system remains different from most OECD countries. For instance, public and/or private insurers and providers co-exist in a regulated market in countries like Germany, the Netherlands, Switzerland, Belgium and Israel. National health insurance models exist in countries such as Australia and Canada, where a public entity covers the whole population and people can hire complementary private insurance, with the presence of public and private providers. In all these countries, several mechanisms are in place to avoid the problems of selection described above. As a result, establishing a single national pool of healthcare funding to cover a common package of services for the whole population, revising the collection of resources for the health system to rely more on general taxation than on social contributions, defining a better integration between a strong primary care and public-private services and devising schemes in addition to subsidies to control out-of-pocket expenditures should be implemented. More generally, undertaking an OECD Health Systems Reviews to benchmark Chile's performances regarding other OECD countries in terms of access, financial protection, quality of care, and equity would provide the backbone to support a major health reform.

Table 1.5. Past OECD recommendations on inclusive growth

Recommendations	Actions taken since the 2018 survey
Further increase social spending to reduce inequalities.	The coverage and focus of the Ethical Family Income (for extremely poor households) will be increased by 40% to improve the income of the most vulnerable families in 2021. The social spending is the main emphasis of the 2019 Budget, mainly in education, which represents 24% (with a growth of 2.9% compared to 2018); health 19% (increases of 6%); labour and social security 16% (increases of 2%) and housing represents 5% (increases of 5%).
Raise contributions to increase savings for retirement.	A bill, which has been modified several times and is still in Congress, establishes a 6 percentage point increase in the mandatory contribution (to be paid by the employer).
Continue to increase the solidarity pillar funded with general taxation.	In response to the social events at the end of 2019, the solidarity pillar and the basic solidarity pension were increased, both by 20%, benefiting almost 1.5 million pensioners which were at high risk of poverty.
Progressively increase and align the retirement age of women and men.	The pension reform also incorporates incentives for workers to voluntarily postpone their retirement age.
Strengthen cash benefits, notably employment subsidies and unemployment- and health-insurance support.	In response to the social protests of end-2019, a Minimum Guaranteed Income (subsidy for those earning the minimum wage) was created. The Budget for 2021 increases coverage for the main employment subsidies (Subsidio al Empleo Joven and Bono al Trabajo Mujer). In response to the pandemic and in face of the recovery, the Government created hiring subsidies aimed at creating new jobs or recovering those under the Employment Protection Law (with contracts suspended because of COVID-19). In May 2019, the government sent the Protected Middle Class System bill to Congress. This bill will provide security to middle class households at the risk of being affected by an adverse event. The main events to be covered are (1) improve catastrophic disease insurance, as well as facilitate the use of these insurance; (2) creation of dependency insurance for the elderly; (3) improve the network of labour intermediation and conversion programs; (4) improve credit mechanisms for scholarship.
Further increase affordable, good-quality childcare for the poorest children and in rural areas, and expand opening hours for childcare institutions.	In March 2019, the government announced the implementation of the time extension programme in kindergartens and nurseries part of the Integra Foundation (one of the main pillars of public early childhood education). The objetive is to add, over the next two years, 142 nurseries to the programme. In 2019, the Senate approved the Universal Nursery bill, which is currently under constitutional review. This project will allow all children under 2 years of all working parents

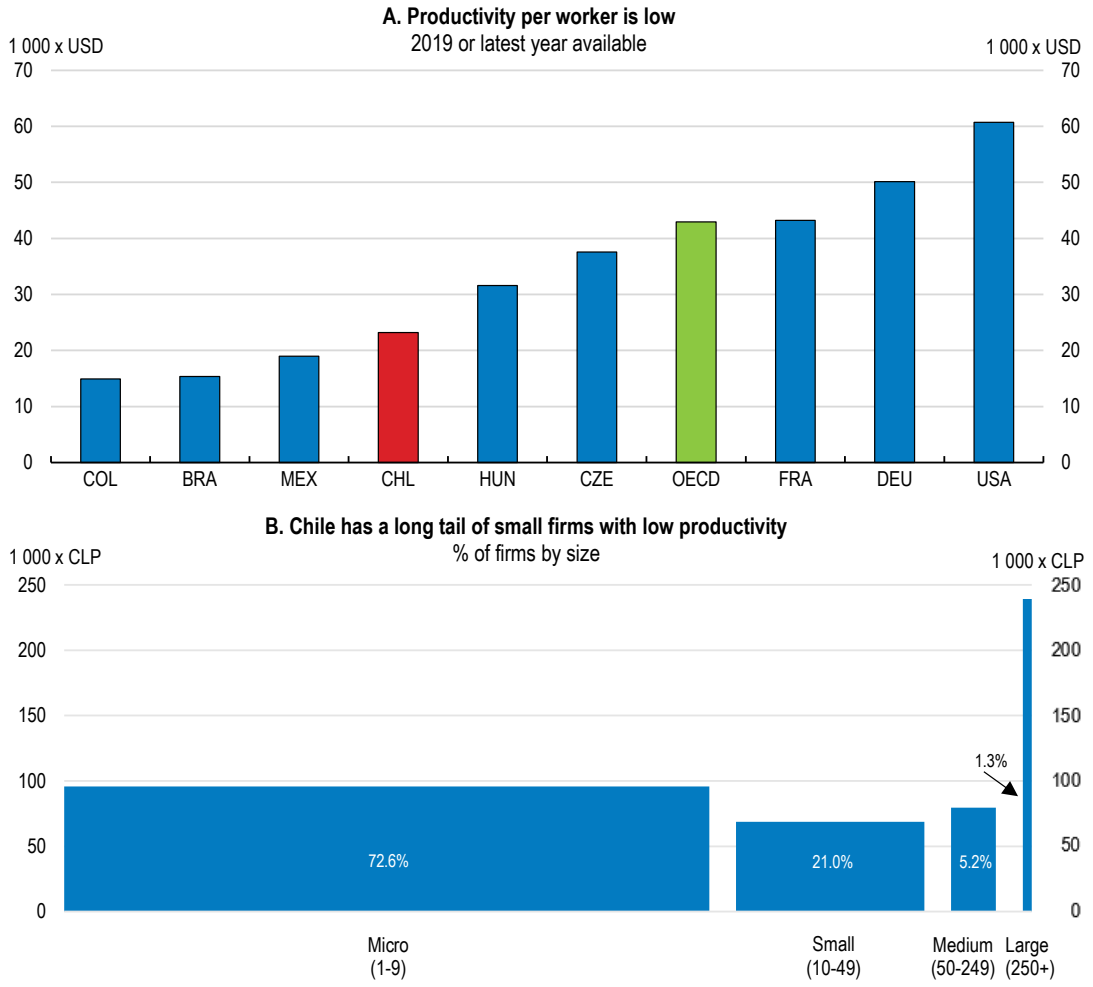
	affiliated to the social welfare system to have this benefit, regardless of the number of women hired by the company. In addition, the government sent to the Congress the Equity in Early Childhood bill, which creates a subsidy for the middle levels of the first educational level and new quotas for the most vulnerable families.
Continue ongoing efforts to improve quality at all levels of education. Develop apprenticeships, integrating work and school-based learning, across all levels of education	The government implemented and agenda to modernise professional technical education. The main items of this agenda are the introduction of new schools of excellence, the expansion of gratuity for young people belonging to the 70 % poorest families, the assignment of "Technical Scholarships for Chile" to improve higher level technicians, unlicensed professionals and teachers of secondary and higher professional technical education, and the implementation of state technical training centres in five regions.
Reduce dismissal costs for permanent contracts. Increase coverage of unemployment benefits by reducing the minimum contribution periods.	No action taken
Better target firm-provided training programmes to the most vulnerable workers. Continuously evaluate active labour market policies, public and firm-provided training, to focus funding on those that are performing well.	In March 2019, the government sent to the Congress a bill that modernises the training and public employment system. The bill modifies the way that the current training system responds to the needs of the productive sector and allows the acquisition of new technological skills. It modernises the National Training and Employment Service (SENCE) in order to improve the results of training programmes.

Closing productivity gaps to make mid-size firms thriving and support the recovery

In international perspective, productivity per worker continues to lag behind (Figure 1.23, Panel A), entailing a lack of high-productivity and high-wage jobs. This has led to the emergence of a sizable cohort of "vulnerable" households at risk of poverty. They have low productivity, usually informal jobs associated with low social protection and low, unstable income. As a result, they remain at high risk of falling back into poverty in a recession or in the event of an employment or health crisis like the one that is currently unfolding.

This shortfall can partly traced back to business polarisation. Chile has a persistent division between a small number of large and productive firms and a long tail of small and midsize companies with considerably weaker productivity performance (Figure 1.23, Panel B). The lack of a cohort of vibrant midsize companies is a brake to business dynamism and competitive pressure. It prevents the expansion of productive and well-paying jobs, and keeps the middle income class small. Moreover, these small firms are likely to suffer more from the lockdown and distancing measures that have been adopted to fight COVID-19. They are likely to have less resilience and flexibility in dealing with the costs these shocks entail, due to the costs of under-utilised labour and capital weighing greater on SMEs than larger firms, the extent of informality, and, in many cases, lower levels of digitalisation precluding e.g. teleworking when that would have otherwise been possible or selling on-line. Thus, the period over which SMEs can survive the shock may be shorter than for larger firms. To avoid further polarisation in the aftermath of the outbreak, there is room in several policy areas to raise productivity and support the recovery of small and midsize firms and set in motion a virtuous cycle of improved productivity growth, strengthened middle class and greater inclusiveness.

Figure 1.23. Productivity is low and polarised



Note: In Panel A, units are measured in thousand USD per person employed (PPPs).
Source: OECD calculations based on Quinta Encuesta Longitudinal de Empresas (ELE-5), 2017; OECD, Productivity database.

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The regulatory environment inhibits competition

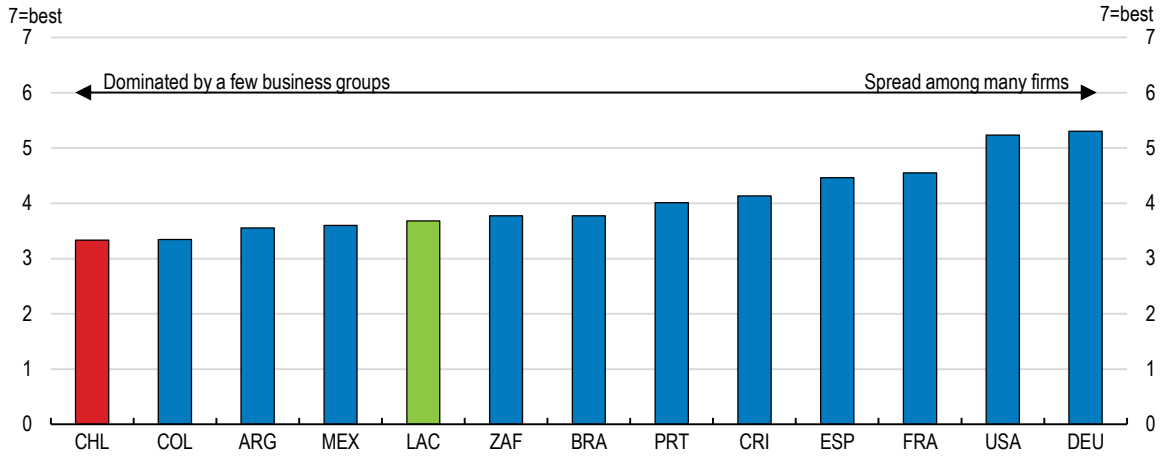
The lack of strength in SME productivity can be partly traced back to weaknesses in the competitive environment in product markets. Over the recent years, Chile has made important improvements to its competition policy framework. The 2016 reform introduced criminal sanctions for cartels, introduced merger controls, a leniency programme and private enforcement, and increased fines against anti-competitive behaviour. The reform also boosted the competition agency (*Fiscalía Nacional Económica*) powers and resources to undertake market studies, in line with OECD recommendations. Along the same lines, a bill currently in discussion aims at establishing stronger penalties for cartels on markets for necessity products, a welcome move given that these products represent a large share of the spending for the most vulnerable households (see above). Other measures under development would give the competition agency higher monitoring powers, such as bank transactions and access information from the telecommunications. However, further actions could still raise competitive pressures.

An overly strict regulatory environment accounts for still weak competitive pressure in Chile and is an important barrier to SME growth (Figure 1.24). It could also represent an important obstacle to a swift recovery from the COVID-19 recession. The amount of time and/or money needed to comply with

regulations is proportionately greater for SMEs than for larger firms, discouraging entry and scaling-up. According to a recent study from the National Productivity Commission, the regulatory system is characterised by low efficiency in the permitting process and a low degree of legal certainty (CNP, 2019[20]). The low efficiency is reflected in long processing times, and is the result of a lack of coordination between agencies and the low use of technologies for traceability. There are also inconsistent rules and areas of contradiction and confusion around the jurisdictions of different agencies. The limited legal certainty gives rise to a lack of predictability with respect to the criteria for the admissibility and granting of the permit, and clarity with respect to the ways in which it may be revoked.

Figure 1.24. Competitive pressures remain low

Extent of market dominance, 2019



Note: This indicator shows the extent of market dominance, 1-7 (best). In the World Economic Forum, Executive Opinion Survey, it is the answer to the following question: In your country, how do you characterise corporate activity? [1 = dominated by a few business groups; 7 = spread among many firms]. LAC refers to the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: World Economic Forum, The Global Competitiveness Index 4.0 2019 dataset (version 04 October 2019).

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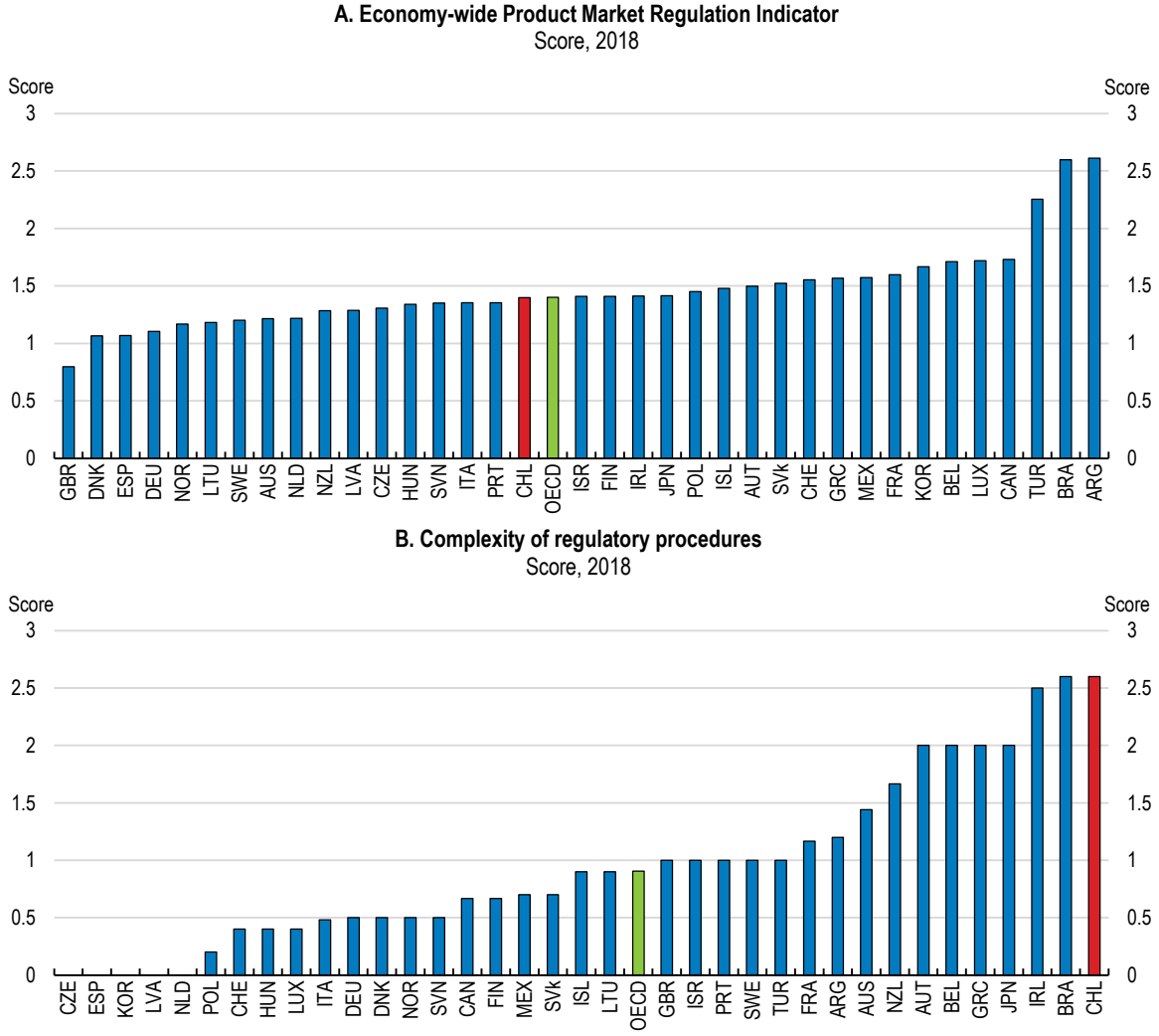
Significant steps have been taken over the last decade to ease regulations. In 2018, a reform aimed at simplifying procedures and licenses now reduces the time and number of procedures related to water permits. It also created a one-stop shop for licensing from different sectors. The “Open” office for reducing bureaucracy has also been created in 2018. The new vintage of the OECD Product Market Regulation indicators shows that economy-wide, Chile is below the OECD average (Figure 1.25, Panel A). However, the complexity of some regulatory procedures remains the highest in the OECD (Figure 1.25, Panel B). In particular, municipal licences and authorisations are entangled with national ones, imposing an excessive burden on SMEs (CNP, 2019[20]).

Figure 1.25. The complexity of some regulations remains the highest in the OECD



Source: OECD, 2018 PMR database.

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Generalising "zero licensing procedures" by involving municipalities in the design of the initiative, as was done for instance in Portugal (Box 1.5), could ease firm entry and formalisation, by reducing administrative burden and focusing instead on ex-post control. As part of the COVID-19 recovery plan, in a welcome steps, authorities are implementing measures to reduce burocracy, particularly for SMEs, such as providing provisional patents for SMEs to start operations and have one year to obtain the necessary permits for their final commercial patent.

Reforms of the notary profession and reducing the use of notary procedures could also ease significantly the administrative burden for firms and households. The competition authority has recently concluded a market study on Chilean notaries highlighting that notaries are involved in more than 200 procedures, such as certifying bank guarantees or concluding real estate sales. They are also unequally spread across municipalities, lengthening procedures, and appear to frequently overcharge for their services (FNE, 2019[21]). The study highlights the need to open the market of notaries and allow introducing technological innovations and data sharing with the administration in a systematic way to reduce the time of procedures and increase efficiency. There has been good progress in the use of electronic signatures, and the bill under discussion to broaden it and establishing equal legal validity with physical ones goes in the right

direction. Further expanding it on all notarial activities and notaries would further ease administrative burdens.

Box 1.5. The Zero Licensing Initiative in Portugal

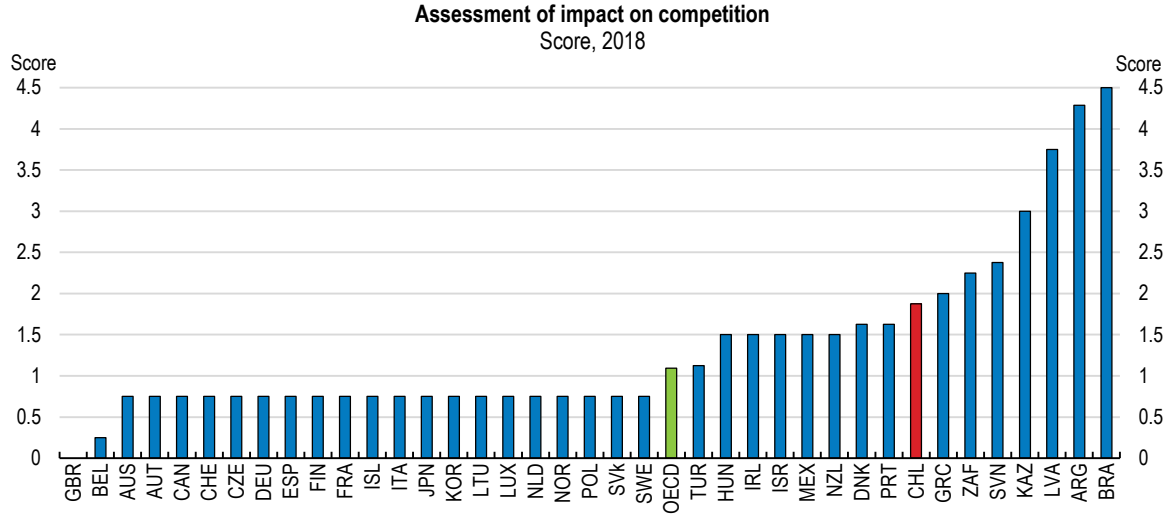
The Zero Licensing Initiative, implemented in 2013, aimed to make the exercise of commercial economic activities more simple, faster, transparent and cheaper, helping to increase the competitiveness of the municipalities and the country. It involves several central administration entities, with a direct impact on the operation of local authorities, in the capacity of authorities competent for matters of licensing and collecting taxes. Under this initiative:

- A new and very simplified regime for setting up and modifying the establishment of commercial activities was passed.
- Licenses were eliminated and substituted by a simple prior notification to the authorities.
- The notification to the authorities is now done electronically in a Point of Single Contact (PSC), dematerialising the licensing process, therefore reducing the administrative burden and the economic costs.
- The State reduced the pre-control mechanisms, increasing the responsibility and accountability of the economic agents, and reinforced the post-control mechanisms, through inspections and sanctions for noncompliance.

This initiative was a complete shift of paradigm, modifying significantly the licensing process in Portugal. For example, it created a single form to be used in all of the municipalities, while before every municipality had their own form. As such, a key feature in the success of this initiative was the involvement of the municipalities in the design of the innovation, which were an integral part the process and of the culture change entailed

Some size-dependent thresholds in regulations can also be especially harmful for SMEs in Chile. Employment thresholds for safety, staff-representativeness, and quotas for foreign workers or mandatory childcare provision can unduly complicate the scaling-up of firms and should be made progressive. Some have been recently lifted, but the impact of all new regulations should also be thoroughly assessed by the competition agency, by conducting market studies and ex ante regulatory impact assessment (Figure 1.26). The competition agency opinions and recommendations, including those on market studies, should be carefully considered by the government, and if they are not followed the reasons should be explained publicly.

Figure 1.26. The impact of new regulations should be systematically assessed



Source: OECD, 2018 PMR database.

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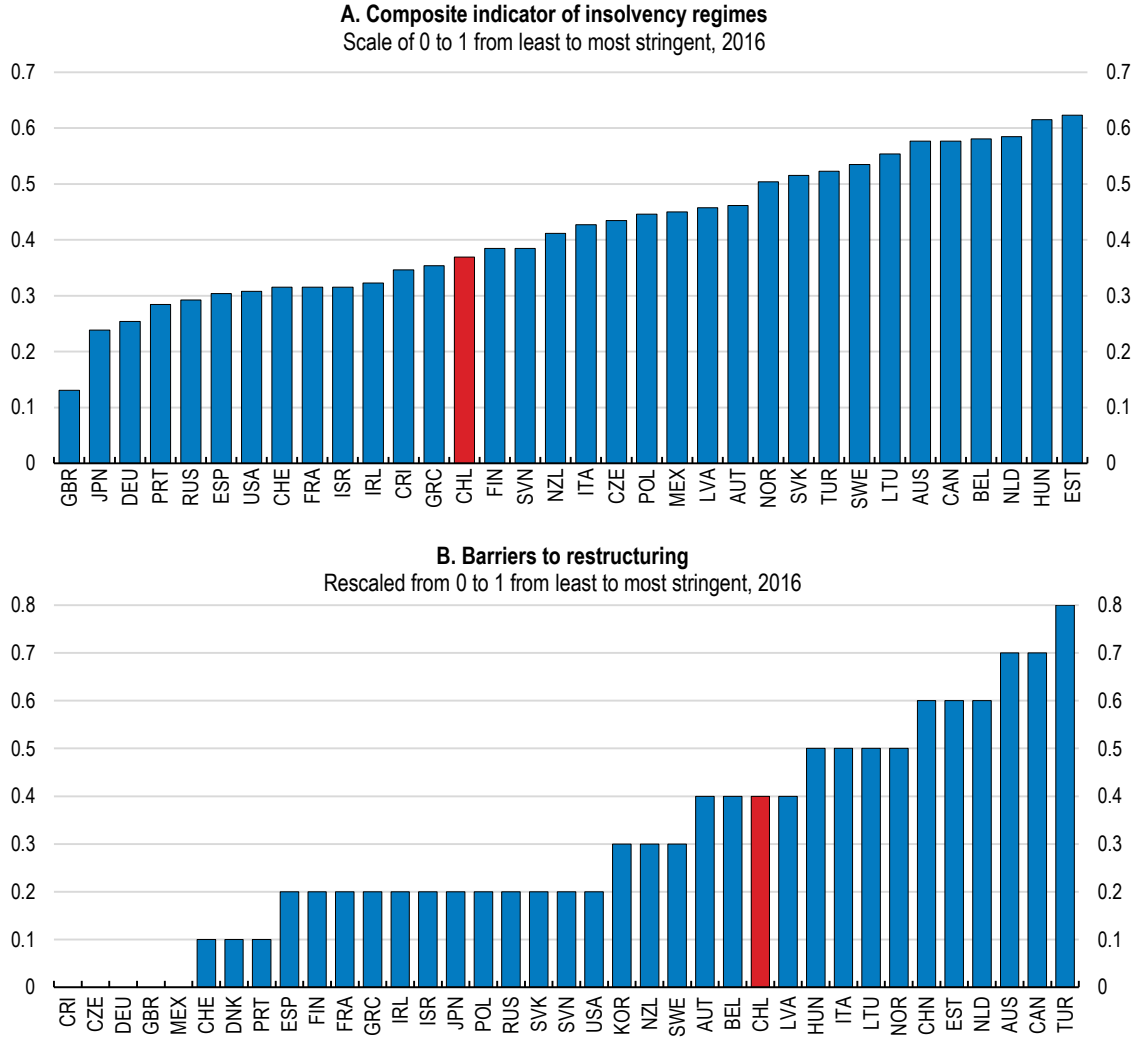
Improving exit policies

While the policy environment should incentivise firms to grow, at the same time it should also encourage unsuccessful firms to close down. In the aftermath of the outbreak, this will turn out to be of particular importance for a successful recovery. Despite the large stimulus provided to preserve firms and capital during lockdown and social distancing measures, business closures will be unavoidable and the resulting strained assets should be freed up quickly to promote an efficient reallocation of capital. An enterprise failure needs to be recognised as an opportunity for the entrepreneur to learn and rebound, finding new opportunities which lead to quicker recovery, and thus to new employment opportunities. In practice, this calls for a number of measures on bankruptcy legislation that does not excessively penalise business failure and proceed quickly to liquidation.

The 2014 revised liquidation law was much needed and welcome. Before its introduction, only 6 firms were declared bankrupt in 2014, while the number rose to 295 in 2016. Nonetheless, the overall design of the insolvency regime could be improved (Figure 1.27 Panel A). Barriers to restructuring are currently high and should be eased to support the rehabilitation of viable firms (Figure 1.27, Panel B). In particular, creditors should be able to initiate restructuring and not only liquidation. This would allow non-viable firms to exit the market quicker and viable firms, which encounter temporary financial distress, to be less likely to become impaired due to a lack of impetus to restructure. The bill currently under discussion to improve the Law on Reorganization and Liquidation of Companies and People aims at closing some of those gaps, by streamlining and simplifying the bureaucratic aspects of current bankruptcy procedures, creating simplified procedures for quick processing with low administration costs, and increasing credit recovery rates by promoting liability restructuring rather than settlement.

Figure 1.27. The insolvency regime can be eased further



Source: (Adalet-McGowan and Andrews, 2018[22]).

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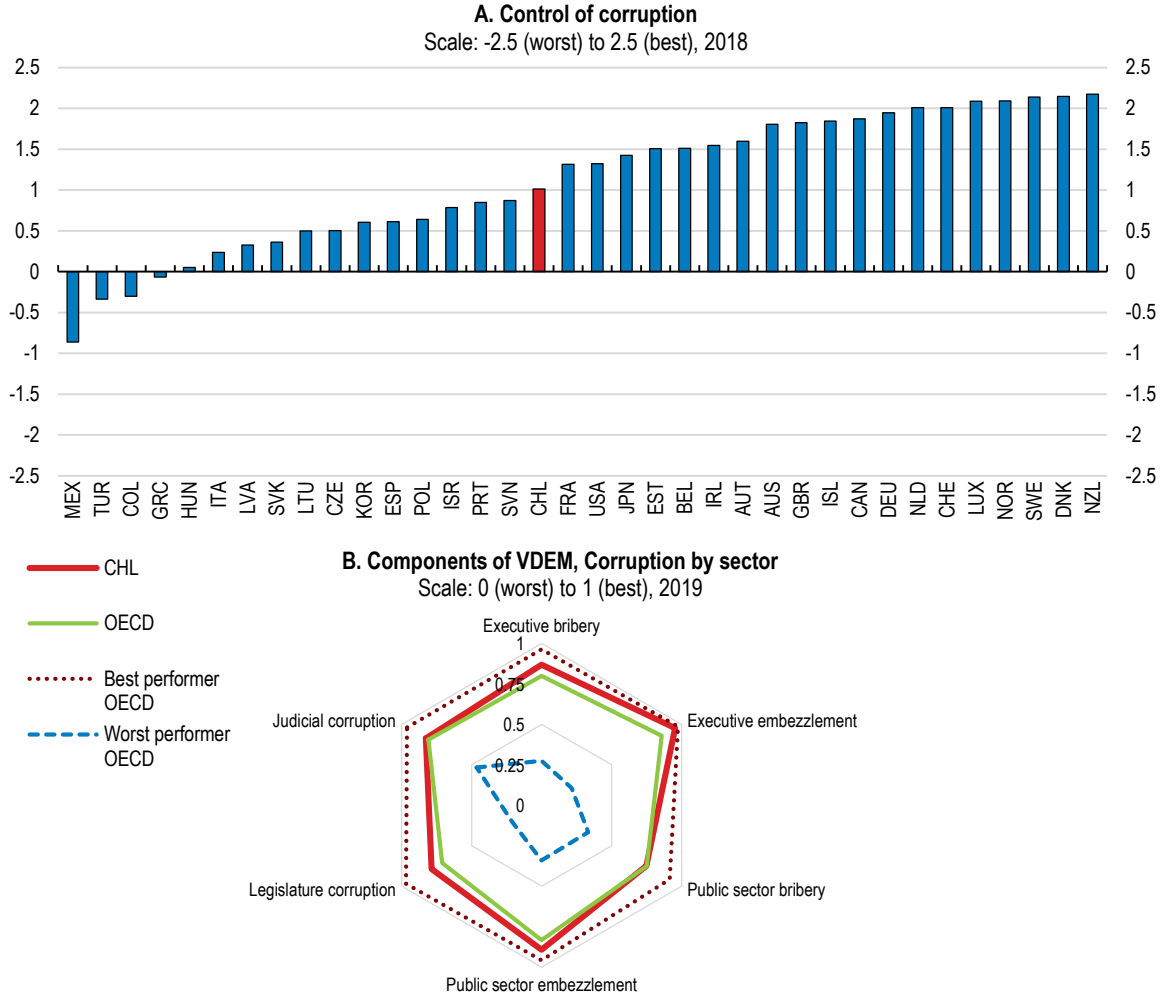
Public procurement must ensure a level playing field for SMEs

The fact that corruption is low in Chile makes its economic fabric a favourable environment for entrepreneurial talent to be directed towards productive activities (Figure 1.28, Panel A). The 2018 various modifications to Chilean criminal law on corruption crimes have further increased the punishment of certain existing crimes and incorporating new criminal offenses to the legislation, strengthening the position of Chile as a regional leader on transparency and anticorruption matters. In particular, public procurement is exempt from corruption (Figure 1.28, Panel B), although it still represents a potential source as there tends to be a strong connection between politicians and the economy, with ex-ministers or high public officials often taking jobs in firms operating in sectors they had previously overseen (Bertelsmann Stiftung, 2018[23]). Moreover, given the rapid expansion of liquidity facilities in the economy as a reply to the pandemic, Chile should continue its efforts to carefully monitor corruption.

Moreover, the relative lack of competition in public procurement procedures represents a hindrance to the involvement of SMEs in public purchasing. Stepping-up this involvement would result in a double dividend: i) higher competition for public contracts, leading to better value for money for contracting authorities; ii) a

more competitive and transparent public procurement practices that would allow SMEs to unlock their growth and innovation potential, given the fact that public procurement is increasingly used as a mainstreaming strategy to accelerate the diffusion of innovation.

Figure 1.28. Corruption remains low



Note: The "Control of corruption" indicator compiles individual indicators. Panel A shows both the point estimate and the margin of error. Panel B shows sector-based subcomponents of the "Control of Corruption" indicator by the Varieties of Democracy Project. OECD refers to an unweighted average of all its member countries.
Source: World Bank, Worldwide Governance Indicators; Varieties of Democracy Institute; University of Gothenburg; and University of Notre Dame.

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While SMEs account for 90% of suppliers under the current procurement system (Chilecompra), they represent only 48% in terms of value, and 46% in terms of the number of purchase orders (OECD, 2017[24]). Moreover, on average around 60% of suppliers have no transactions. ChileCompra should further engage with suppliers and contracting authorities to enhance competition. Its committee for SMEs (Propyme) to promote the engagement of SMEs and the new expedited purchase programme (*Compra Ágil*), created as part of the reply to the pandemic, are good initiatives, but further progress can be made. For instance, and given Chile unique geography, procurement needs should be disaggregated into regional lots. This would foster the participation of SMEs in the corresponding competitive procurement process, in which

they may otherwise not have been able or interested to participate. It would also introduce environmental considerations.

Finally, in many countries, such as those under the European Union directive, contracting authorities are obliged by law to accept a group of suppliers submitting a bid. In this case, the group or consortium may rely on the capacities of all participants. ChileCompra does not currently allow for this kind of co-operation among suppliers, even for the second stage competition. While rationalising the number of suppliers, ChileCompra could consider allowing the grouping of suppliers in order to further remove barriers to participation for SMEs.

Table 1.6. Past OECD recommendations on productivity

Recommendations	Actions taken since the 2018 survey
Systematically review competitive pressures in key sectors, such as telecommunications and maritime services, by conducting market studies and applying the guidelines of the OECD's Competition Assessment Toolkit.	In September 2019, the National Productivity Commission presented a study on regulatory quality in Chile in order to stimulate productivity through the implementation of administrative and regulatory simplification for large investment projects in five sectors: mining, infrastructure, energy, industry and real estate. In addition, the "Agenda de Reimpulso Económico" contains proposals to facilitate the installation of telecommunications infrastructure in public spaces and deploy 5G technology, and to increase competition in the cabotage freight transport.
Ensure that public entities have to comply with the Competition Agency recommendations or to publicly explain their decisions.	During 2018, The National Economic Prosecutor's Office (FNE) increased the number of strategic actions that led to changes in behaviour of agents and published the complaints guide. In the area of ??collusive agreements, the FNE presented during 2018 a total of 3 requirements in front of the Free Competition Court, which represented 60% of the total cases during the year and an increase with respect to the previous years. The 3 Requirements presented requested fines.
Streamline permits and their process to encourage investment and simplify regulations that depend on firm size, such as childcare provision, to limit their impact on firm growth.	The government sent three bills that allow simplifying regulations for companies: (1) a bill that promotes legislative simplification; (2) a bill that establishes measures to boost productivity and entrepreneurship. Among the proposals is to increase the maximum hiring limit for foreigners from 15% to 30% for companies that have more than 25 workers; (3) Universal nursery, whose main objective is to allow all children under 2 years of all working mothers and fathers to have this benefit, regardless of the number of women hired by the company.
Strengthen policy evaluation by beefing-up data collection, systematic reviews and independent studies.	In August 2018, the Ministry of Science, Technology and Innovation was created to promote research and development, contribute to the formation of scientific culture, promote inter-ministerial coordination and collaborate and develop joint initiatives in the private-public sector. It has a special coordination mandates with the Ministry of Education defined for improving the link between science-development-innovation and universities.
Expand R&D support programmes that are proven to work, and close down or adjust inefficient ones.	The latest evaluation of government programs developed by DIPRES concluded that the majority of them had sufficient performance. However, the Agency Corporation for the Promotion of Production (CORFO) was evaluated with low performance regarding early financing for entrepreneurship.
Continue efforts to fully integrate the single window mechanism with the domestic logistic infrastructure and with regional partners.	In March 2019 started the interoperability between SICEX, the port systems of Coronel and San Vicente, Directemar and the National Customs Service. This digital connection is materialised with the DUS (Single Departure Document). The Unified System of Logistics Networks (SURLOG) was also implemented, which consists of a single electronic and integrated portal in which users (exporters, importers, dispatchers, etc.) can carry out international trade operations. This system will be integrated to the single windows of commerce of the countries of the Pacific Alliance in a first stage and then of the Region.
Reduce further non-tariff barriers on intra-regional trade by simplifying regulations of preferential trade agreements.	Since 2018, Chile has worked on 7 international trade negotiations. 4 agreements are now signed (United Kingdom, Brazil, Indonesia and CPTPP) and 3 are still under negotiations (Pacific Alliance and Associated States, Chile and European Union Association Agreement, Free Trade Agreement with South Korea). Among the objectives of these negotiations is to update the current norms in matters such as rules of origin, sanitary and phytosanitary measures, technical obstacles to trade, labour, environment and intellectual property, in order to favour and strengthen the exchange of goods and services.
Develop national, regional and metropolitan long-term infrastructure strategies.	In line with the 2018-2022 government program, the National Infrastructure Plan was prepared by the Ministry of Public Works, which proposes an integrated network of roads, ports and airports and a portfolio of strategic projects. This infrastructure programme includes investments of USD 4 billion for 2019, totalling USD 20 billion for the four-year period.

Integrate the regulation of public and private ports.	In March 2019, it was formalised a Special Investigative Commission to evaluate the impact of the law that modernises the state port sector. The Commission recommended to overcome the current asymmetry in the use and conditions of maritime concessions and of the operational regulations between public and private ports.
Fully integrate the environmental and health damages of transport modes in taxes and road pricing to ensure fair competition.	In 2019, the Ministry of the Environment submitted to public consultation the draft framework law on climate change in order to comply with the international commitments assumed by the State of Chile. This draft establishes the obligation to develop a national long-term and multisector climate strategy that, among others, defines a path to carbon neutrality emissions and assigns sectoral reduction targets, which should be fulfilled through mitigation and adaptation plans developed by the respective sector authorities. Among the climate management instruments, the preliminary draft considers the development of a climate financing strategy by the Ministry of Finance, and a law that defines greenhouse gas emission limits and creates a surplus transfer system.
Reduce barriers to entry in maritime services and railways.	In February 2019, the Congress approved a law that authorises cabotage of passengers for foreign flag tourist cruises of more than 400 passengers.
Strengthen existing national e-procedures for firm registration and authorisation, and focus on ex-post controls for businesses that have low associated sanitary and environmental risks.	In October 2019, the Senate approved the Public Sector Digital Transformation Law that seeks to materialise a series of principles associated with technological change, simplifying several procedures for company creation and administration, investments, digital authentication, and public bidding. In addition, the “Agenda de Reimpulso Económico” creates an institutional framework to tackle the problems that affect productivity and competitiveness of the country. Under this Agenda, measures to facilitate the operation of “Tu Empresa en Un Día 2.0” were established and created a special agency in the Ministry of Economy called "GPS", responsible for unlocking the coordination between companies and the State, was created.
Improve further technical assistance and mentoring to small firms, building on the new local business centres.	The Ministry of Economy created a programme called “Digitaliza tu PYME”,along with Corfo and Sercotec, which seeks for smaller companies to increase sales, lower costs and improve their relationship with customers and suppliers using digital technologies.
Involve stakeholders further in the design of regulations through early consultation procedures. Conduct systematic ex-ante and ex-post evaluations of regulations, notably through the existing productivity assessments.	In 2018, the government inaugurated the Office of National Productivity and Entrepreneurship (OPEN). It has directly based on citizens' recommendations with a virtual participatory process called “Enciende tu Ampolleta”. There has been a survey of regulatory improvement opportunities, based on the recommendations of the National Productivity Commission, other institutions, unions and the virtual participatory process. In August 2018, the government sent a bill that establishes measures to boost productivity and entrepreneurship in order to, among other things, formalise productivity and regulatory coherence by strengthening the ex-ante control mechanism.

Box 1.6. Potential impact of structural reforms on per capita GDP

Selected reforms proposed in the Survey are quantified in the table below, based on the framework from (Égert and Gal, 2017[25]). The estimates are based on cross-country empirical relationships between past structural policy settings and productivity, employment and investment. The estimates assume direct and full implementation. Being based on cross-country estimates, they do not incorporate Chile's specific economic and institutional settings. As such, these estimates are meant to be illustrative.

Table 1.7. Illustrative GDP-per-capita impact of recommended reforms

Reform	Percentage increase in GDP per capita	
	2 years effect	10 years effect
Streamline business licensing and regulations	0.6%	1.4%
Increase family benefits in kind	0.4%	1.0%
Increase spending on activation	0.3%	1.1%
Increase business R&D expenditures	0.5%	2.2%

Notes: The permanent policy changes assumed for the scenarios in the table are:
1. Reducing the complexity of regulatory procedures (reducing the 2013 PMR indicator from 1.5 to 1.2);
2. Increasing spending on early childhood education and care from 0.7 to 1% of GDP;
3. Increasing spending per unemployed as a % of GDP per capita, from 3.3 to 7;
4. Increasing spending on total R&D from 0.1 to 0.3% of GDP.
Source: OECD calculations based on (Égert and Gal, 2017[25]).

Box 1.7. Quantifying the fiscal impact of structural reforms

The following estimates roughly quantify the fiscal impact of selected recommendations. The estimated fiscal effects are static, abstracting from behavioural responses and consequent second-round GDP effects that could be induced by the given policy change. Limitations in available estimates and data mean the reform examples differ from those shown in the companion box illustrating GDP impacts.

Table 1.8. Illustrative fiscal impact of recommended reforms

Policy	Measure	Annual fiscal balance effect % of GDP
Increase family benefits in kind	Increasing spending on early childhood education and care from 0.7 to 1% of GDP	-0.3
Increase spending on activation	Increasing spending per unemployed from 3.3 to 7% per unemployed as a % of GDP per capita	-0.4
Increase business R&D expenditures	Increasing spending on total R&D from 0.1 to 0.3% of GDP	-0.2
Balance		-0.9

Notes: 1. Impact of efficiency gains in human services and in early childhood education calculation based on the OECD's Social Expenditure Database;
2 Activation spending calculation based on OECD public spending on labour markets indicators;
3. R&D expenditure based on (Westmore, 2013[26]).
Source: OECD calculations.

Continuing to decouple economic growth from environmental impacts

CO2 emissions and energy consumption have risen in line with strong GDP growth (Figure 1.29, Panel A and B). Greenhouse gas emissions have risen by 22% since 2010, although they are still only half the per-capita emissions of the OECD area. A large share of primary energy supply is renewable (Figure 1.29, Panel C), mostly the firing of biomass, which meets a large part of industrial and residential energy demand. Hydro, wind and solar sources account for about 45% of electricity generation and this share is expected to reach 60% by 2023 (IEA, 2019[27]), but only for 7% of primary energy use. This share has barely increased in recent years, reflecting the strong growth of energy demand and modest electrification of energy. Coal contributes to 40% of electricity generation.

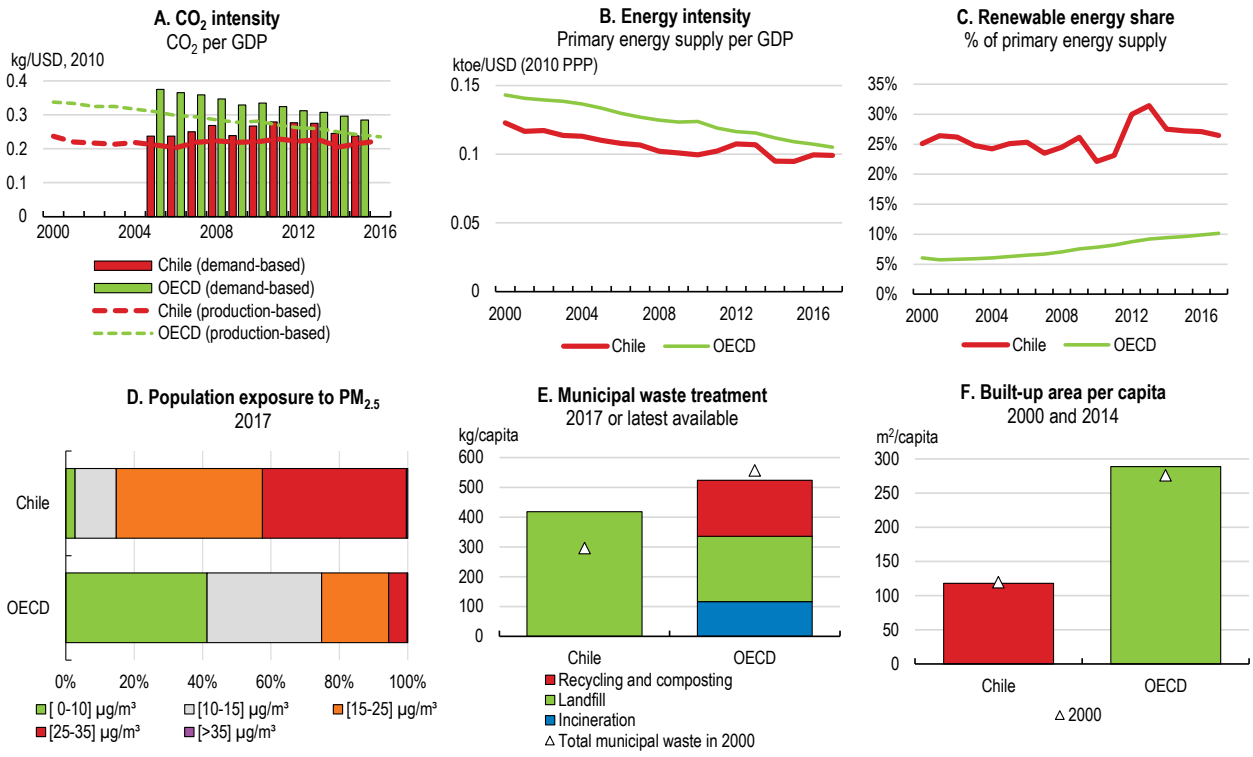
Recently Chile has made a series of commitments, which, if implemented, may reverse these trends. In particular, it has committed to achieving carbon neutrality of its economy by 2050. This is in line with the need to reach net zero CO2 emissions worldwide by 2050 to limit global warming to 1.5 degrees (Intergovernmental Panel on Climate Change, 2018). By 2024, Chile will close 20% of its coal electricity capacity and phase out coal completely by 2040. The electro mobility strategy sets out an action plan to achieve a 40% share of the private vehicle fleet—and 100% of public urban transport—being electric by 2050 (Climate Analytics, 2018[28]). Chile was also the first country in Latin America to have issued green bonds in 2019, as a tool to channel investments towards green assets. Chile will also hold the COP until December 2021, and in that context reaffirmed during the pandemic its commitments concerning carbon emissions.

The immediate effect of widespread virus containment measures in Chile has resulted in some short-term environmental improvements, including significant reductions in local air pollution and greenhouse gas emissions, particularly in the Santiago Metropolitan region. However, these effects are likely to be temporary when economic growth will reinvigorate, and with oil prices slated to stay low for a long time, there is a risk to jeopardise the commitments taken. For example, the reluctance of users to continue using public transports could have negative effects on the environmental sustainability of Santiago. The recent steps taken for managing the density of public transport, ensuring the deep cleaning of stations and the creation of new cycling lanes are thus welcome.

Beyond the immediate health crisis, supporting economic recovery will be essential but should not undermine action to limit the threats from climate change and environmental degradation, which could be as destabilising as COVID-19 but are on a different time scale. Recovery will give Chile a chance to make further environmental improvements an integral part of an inclusive economic recovery, rather than such measures being perceived as an additional burden at a time of crisis. In particular, stimulus measures can be an opportunity to invest in the economic transformations and technological innovations that are deemed necessary to deliver sustainable improvements in people's lives that depend, amongst other things, on a healthy environment, in particular for the most vulnerable, which are disproportionately affected by environmental changes.

As a result, to build back better, the unintended negative environmental impacts of new short-term fiscal and tax provisions should be evaluated (OECD, 2020[29]). While the priority will rightly be on providing urgent relief to impacted businesses and individuals, a careful screening of the environmental impacts of stimulus measures would significantly add coherence to policies and avoid creating unintended environmental consequences. Moreover, the concession of financial support measures such as preferential loans, loan guarantees and tax abatements should be conditional on achieving, in a cost-effective way, stronger environmental commitments and performance in pollution-intensive sectors that may be particularly affected by the crisis.

Figure 1.29. Green growth indicators



Note: In Panel A, data include CO2 emissions from combustion of coal, oil, natural gas and other fuels. Gross Domestic Product (GDP) is expressed at constant 2010 USD using PPP. Data in Panel E concern waste collected by or for municipalities and includes household, bulky and commercial waste, and similar waste handled at the same facilities.

Source: OECD (2019), Green Growth Indicators, OECD Environment Statistics database, OECD National Accounts database; IEA (2019), IEA World Energy Statistics and Balances database; OECD (2019), Exposure to air pollution; OECD (2019), Municipal waste; OECD (2019), Land cover.

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MAIN FINDINGS	RECOMMENDATIONS
Containing the pandemic and its consequences	
COVID-19 could continue to strike in future waves, costing human lives and amplifying further the economic consequences.	**Increase capacity for extensive testing and tracing, provide further support to health-care workers, and enhance the provision of masks, ICUs and respirators.** **Continue transitory support to SMES and the most vulnerable families, including non-conditional cash transfers, tax deferrals and reductions, food baskets or suspension of payments of basic utilities for the poorest households, as long as needed.** **Going forward the fiscal effort should be focused on making efficient reallocations of public spending, including the elimination of exemptions in the tax system, to support the recovery**.
Repeated shocks in recent years have exposed gaps in the fiscal framework.	Define clear escape clauses to the fiscal rule and specify a long-term debt target clearly linked to the medium-term structural balance target.
Headline inflation will remain below-target during and after the COVID-19 outbreak.	**With well-anchored inflation expectations, keep monetary policy accommodative until the economic recovery is well underway.**
Fostering inclusiveness	
Educational achievements are low and access to good education is strongly linked to socio-economic status, posing the risk of a long-lasting effect of the pandemic on poverty and social mobility.	**Step-up investment in high-quality early childhood, primary and secondary education.** **Enhance the provision of childcare and early childhood public structures.** Lower ratio of children to teaching staff.
The tax and transfer system is ineffective in providing protection for vulnerable households and the base and redistributive power of the personal income tax are too low.	**Strengthen the redistributive impact of the personal income tax by lowering the thresholds at which the bottom and top bracket apply.** Consider other tax instruments, such as the creation of a negative income tax or strengthening property taxes.
Individuals and workers often lack the foundation and digital skills necessary to flourish in a digital world.	**Increase digital literacy in schools giving digital skills more prominence in the national curriculum, and enhancing the digital skills of teachers and school-directors.**
The coverage and levels of unemployment benefits are low.	Make the temporary measures to increase protection for unemployed workers permanent or automatically triggered when unemployment reaches certain thresholds.
Access of vulnerable workers to training courses is insufficient and many of their job profiles might change in the future or even disappear with further automation.	**Embark in a full revision of firm-provided training programmes to increase relevance and quality of training and better target participation to vulnerable workers.**
Closing productivity gaps	
The complexity of some regulatory procedures remains high, penalising mostly start-ups and SMEs.	**Streamline permits and their process by implementing a zero-licensing procedure to encourage investment and simplify regulations for SMEs.**
Notary procedures are burdensome for firms and households.	Open the market of notaries and allow introducing technological innovations and data sharing with the administration in a systematic way.
Barriers to restructuring are currently high	Allow creditors to be able to initiate restructuring and not only liquidation.
A relative lack of competition in public procurement procedures represents a brake to the involvement of SMEs in public purchasing.	Disaggregate procurement needs into regional lots and consider allowing the grouping of suppliers.
Adoption of digital tools lags behind other OECD countries, particularly for SMEs.	**Boost public support to SMEs, in cooperation with the private sector, trough targeted programmes to facilitate the adoption digital tools.**
R&D and innovation expenditure is low, especially in SMEs, and comes mainly from public resources.	**Foster a collaborative digital innovation ecosystem by strengthening business collaboration and fostering open-innovation practices.**
High-speed fixed broadband penetration is low compared to OECD average and rural/urban disparities are large. Entry barriers in the communication sector are high.	**Ensure low barriers to entry to the communication sector by replacing the existing regulation for concessions.**
Strengthening green growth	
CO2 emissions and energy consumption have risen in line with strong GDP growth. Chile has committed to achieving carbon neutrality by 2050 but the recovery after COVID-19 could jeopardise these commitments.	**Carefully screen the environmental impacts of stimulus measures in the wake of the outbreak to avoid unintended environmental consequences.** **Condition direct financial support measures for pollution-intensive sectors that may be particularly affected by the crisis to cost-efficient and verifiable environmental improvements.**

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2 Making digital transformation work for all in Chile

The sanitary crisis, created by the outbreak COVID-19, is accelerating the country's digital transformation, which has seen a surge in e-learning, streaming, online shopping and marketing and teleworking. The digital transformation has the potential to revamp productivity and inclusiveness, although it comes with adoption barriers and transition costs. Connectivity has increased substantially in the last decades, and Chile is ahead of the region. However, fixed high-speed broadband adoption, essential for the digital transformation, lags behind. Firms have started to adopt digital technologies but micro firms and SMEs are well behind. Rural areas have lower connectivity and many workers lack the skills to thrive in the digital world. Lowering the entry barriers in the communication sector and making regulations simpler and clearer would ease infrastructure deployment. Targeted policies for SMEs, such as development of sources of financing or specific programmes for adopting digital tools, would help them access and use digital tools, increasing productivity. Reforms to the innovation ecosystem, competition and the regulatory framework are also needed. To reap the benefits of digitalisation for all, it is necessary to continue investing in quality foundational skills, adult and lifelong learning and in high-skilled ICT specialists. Labour market policies need to be adapted to face the challenges and exploit the benefits posed by the digital transformation. An effective safety net would address possible labour market disruptions.

Digital transformation can boost productivity growth and living standards. Digital technologies are transforming the way business, households and governments interact, transact, buy and sell. The trends that are pushing digital transformation in economies and societies are, for example, the Internet of Things, Artificial Intelligence, cloud computing, automated supplier, blockchain or online platforms.

Chile has made great progress in digitalisation and is leading in the region. The country has been able to lead also worldwide in some areas of hard sciences, such as astronomy. Authorities are also working to become a data observatory and has developed several open public data sets. Moreover, Chile has pioneered the signing of a Digital Economy Partnership Agreement with Singapore and New Zealand to help exporters and SMEs take advantage of opportunities from digital trade. Based on this experience, Chile has a great potential to use and exploit digital transformation to boost productivity and well-being.

Despite the ongoing digital transformation, productivity has been declining in Chile. Like in other OECD countries, this may, at least in part, reflect slow digital technology diffusion, which could offset other restraints on productivity growth. Other factors affecting the productivity slowdown have been declining commodity prices, the fall of ore grades, and an over-exploitation of fisheries, while the adoption of new technologies remains low in many firms (OECD, 2018[1]). The adoption of digital technologies has been concentrated among the largest and most productive firms, that benefit from innovation and organisational capital. If the numerous micro and small firms are to catch up with large firms, adoption and use of digital technologies needs to speed up.

The digital transformation can bring many new opportunities for workers and improvements in job-quality. There are also fears that digital technologies and automation could potentially displace some workers or, at least, transform the tasks they are doing. Adjustment costs may be significant, and are more likely to be borne by the low-skilled and low and middle-income households, who may lack the skills needed to thrive in the digital era. This, together with an increase in the demand of higher skill professionals, could lead to higher inequality and more informal or low-quality jobs when vulnerable workers do not possess the skills needed.

The sanitary crisis, created by the COVID-19 outbreak, is accelerating the digital transformation of the country. As a result of the pandemic, many firms had to adopt several digital technologies, such as video conferencing, document sharing, cloud solutions, information security, or online selling and buying, to keep their operations running. Employers have been pushed to work with remote teams and employees have started to learn to interact with colleagues virtually and manage their time online from home. This is resulting in a steep learning curve. Authorities approved a telework act that entitles workers to provide their services from home or any other place other than the establishments of the firm, maintaining the same working conditions as on site workers. A proof that the pandemic is changing and accelerating the digital transformation of the economy is the share of citizens using the digital identity that has stepped up to 40% in 2020. The Government is also using digital applications to help in the containment of the propagation of the virus, notably through online education and the virtual police station, an application by which all citizens need to ask for permissions to go out during mandatory quarantines.

However, inequities in digital adoption and digital skills, precluding teleworking, online selling, distance learning, or even asking for permission to go out during quarantines, could deepen the already high inequality of opportunities for workers and firms. Indeed, while around 20% of workers have high possibilities of teleworking, the likelihood decreases sharply for workers without tertiary education and with lower levels of numeracy and literacy skills (Espinoza and Reznikova, 2020[2]). This chapter presents an analysis of the starting point of firms, households, workers and the government. It analyses the policies needed to accelerate the digital transformation while at the same time lowering possible transitions costs and intrinsic inequities.

As digital transformation has widespread and complex effects across the economy and society, a holistic and co-ordinated policy approach is essential. The OECD Going Digital Integrated Policy Framework helps governments and stakeholders to develop an integrated approach to policy making in the digital age and

to shape policies for an inclusive digital future (OECD, 2020[3]). The framework includes seven interrelated policy dimensions: 1) access to communications infrastructures, services and data; 2) effective use of digital technologies and data; 3) digital and data-driven innovation; 4) quality jobs for all; 5) social prosperity and inclusion; 6) trust in the digital age; and 7) market openness in digital business environments. Transversal policy issues (e.g. skills, digital government, SMEs and data) cut across several policy dimensions. This chapter discusses some of the key aspects of each of the framework's policy dimensions and transversal policy issues for Chile. It builds on many of the key policy recommendations from the OECD's Going Digital project (OECD, 2019[4]).

The chapter argues that to boost productivity through the digital transformation and leave no one behind, a comprehensive set of reforms is needed. To take full advantage of the digital transformation, Chile must further extend broadband coverage and use, including through a comprehensive package of regulatory and governance reforms, and also invest in complementary assets. In particular, policies should empower everyone with a mix of skills to thrive and trust in a digital world; boost adoption and diffusion of digital tools to drive productivity growth in firms, in particular small and medium-sized enterprises, boost the innovation capacity of firms; and make digital government services more user-centred.

Promote connectivity and close the digital divide

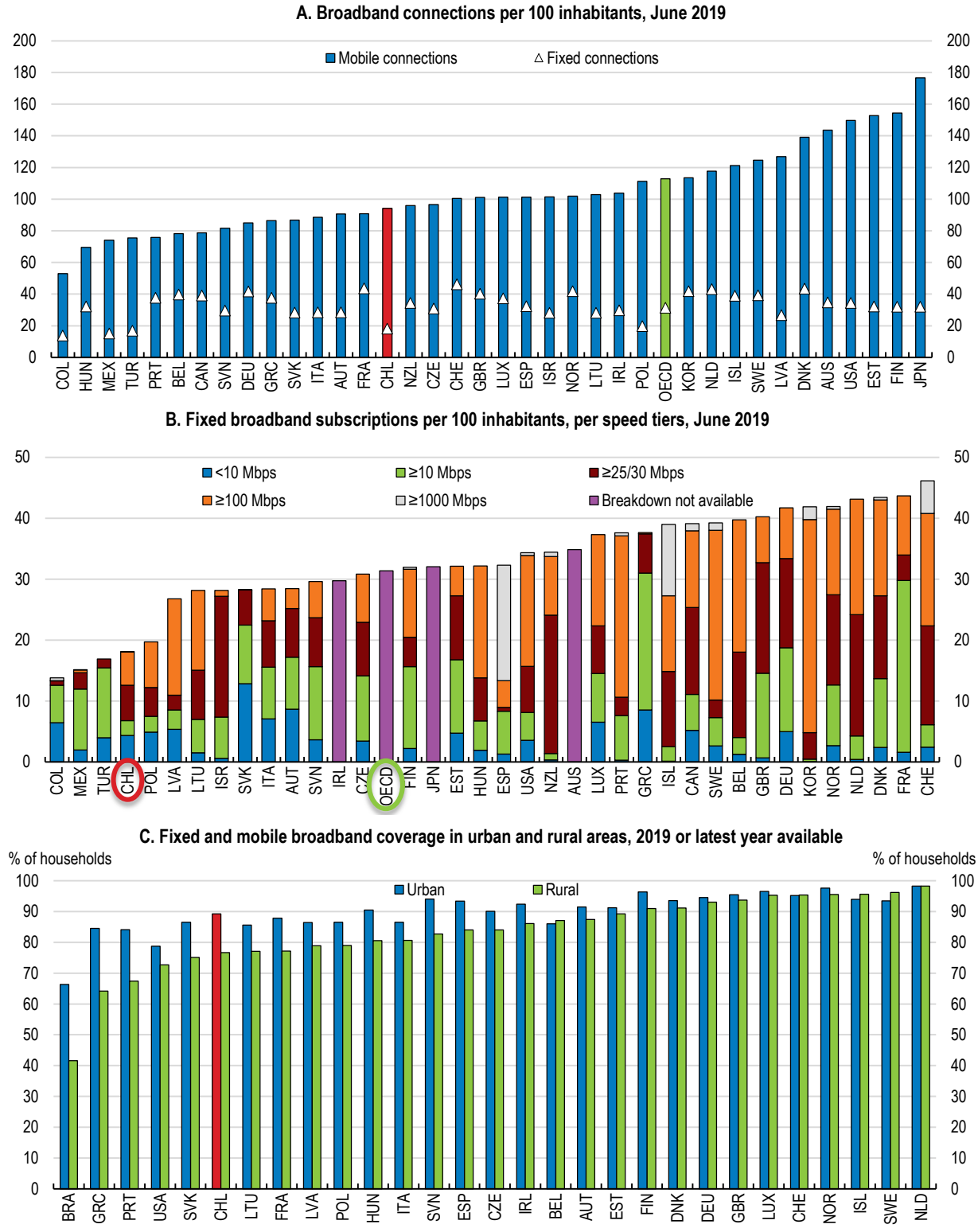
Fostering infrastructure deployment to boost connectivity

In recent years, the telecommunications sector in Chile has experienced rapid and impressive advances. In 2010, Chile was the first OECD country to legislate in favour of network neutrality and prohibit the blocking of unreasonable discrimination of services. Between 2010 and 2018, Chile experienced one of the most rapid adoption of mobile broadband in the OECD, with a 10-fold increase in subscriptions to 92.4 per 100 inhabitants by June 2019 (Figure 2.1), although from low levels. The share of Chilean households with a fixed or mobile broadband connection is similar to the OECD average of 87.5%. Business broadband connectivity is also high at 89.6%, according to the first Chilean ICT survey conducted in 2019.

One of the biggest connectivity challenges of the country is the low fixed broadband penetration. Even if Chile has greatly advanced in internet connectivity with one of the highest rates of annual growth of fibre subscriptions across OECD, at 66.5% between 2018 and 2019, the country lags well behind the OECD average in fixed broadband penetration and high-speed connection (Figure 2.1, Panels A and B). The deployment of high-speed fixed networks is not only important to increase fixed broadband penetration in the country, but also for the newer generation of mobile networks, with 5G networks relying mostly on fibre backbones. Connections to fibre optic, the most rapid broadband connection, is low with only 25% of total broadband connections and 50% of these connections concentrated in the Región Metropolitana, according to SUBTEL data. Expanding quality broadband to rural and remote areas will be also a key challenge as differences in coverage between urban and rural areas are large (Panel C). This is particularly true for fixed connections in which coverage in rural areas is 21% of households, while in urban areas accounts for more than 60% of households.

Improving the existing legal, regulatory and governance frameworks that incentivise investment in high-speed broadband networks will be key for Chile's digital transformation. Lowering entry barriers and easing both fixed and mobile network deployment is essential to increase the access and use of high-speed broadband services at competitive prices.

Figure 2.1. Increasing access to fixed broadband and reducing the regional disparities are the main challenges



Note: In Panel C, urban areas refer to large urban areas.

Source: OECD, Broadband Portal, www.oecd.org/sti/broadband/oecdbroadbandportal.htm; OECD ICT Access and Usage by Households and Individuals database.

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The Government's agenda (2018-2022) goes in the right direction. It includes plans to foster investment, increase competition by eliminating entry barriers for new operators and better regulation, a comprehensive plan on investment in communication infrastructure and providing communication services for the most vulnerable. As a result, in recent years, especially the mobile communication market has become more competitive with the market entry of a challenger firm, and several measures such as the introduction of number portability. In addition, SERNAC, Chile's National Consumer Agency created a webpage "Me quiero Salir" (I want to break free) for any consumer who wants to cancel a contract can now do so online, making easier to switch internet providers. Prices for mobile broadband services have also decreased. In terms of international traffic exchange, the country is enhancing its capacity through new submarine cables (Box 2.1). The government agenda also includes a "national digital highway", aiming at doubling the current fibre backbone capacity, from 18 to 36 thousand kilometres over the next three years.

Box 2.1. Ongoing projects to extend fibre cables throughout Chile

FOA (Fibra Optica Austral): Submarine cable from Puerto Montt to Puerto Williams, in the south of Chile and has a maximum capacity of transmission of 16 Tbps (USD 100 million in investments);

Cable Prat: Submarine cable of 3 500 kilometers, between Arica and Puerto Montt, landing in another 5 cities on the way and has a maximum capacity of transmission of 4 Tbps (USD 80 million in investments);

Curie Optical Fiber (Google): International submarine cable of 10 500 kilometres, from Valparaíso to Los Angeles,California (USD 150 million in investments);

South Pacfic Subsea Cable (America Movil): Submarine cable of 7 200 kilometers from the San Jose Port, Guatemala, to Valparaíso landing in Ecuador and Peru, it has a total capacity of 108 Tbps (USD 100 million in investments);

Transpacific Cable (under evaluation): Cable to connect South America and Asia.

Source: Ministry of Economy of Chile

There are also plans to rollout 5G technology, which will demand significant investment in infrastructure, including in new towers capable of providing more capacity, and bigger data centres running on efficient energy. 5G technology can act as a 'leapfrog' technology, allowing to fast-track digital development in rural areas. This would require more fibre deployment and new last mile connectivity solutions to make sure people have potential access to faster, better quality network. Chile's public policy for the development of 5G is the result of six fundamental principles: neutrality of networks; technological neutrality; open access; free foreign investment; free and fast licensing regime; and finally alignment with the national cybersecurity policy. The first bidding for rolling out 5G began in 2020 and the auction will take place at the beginning of 2021.

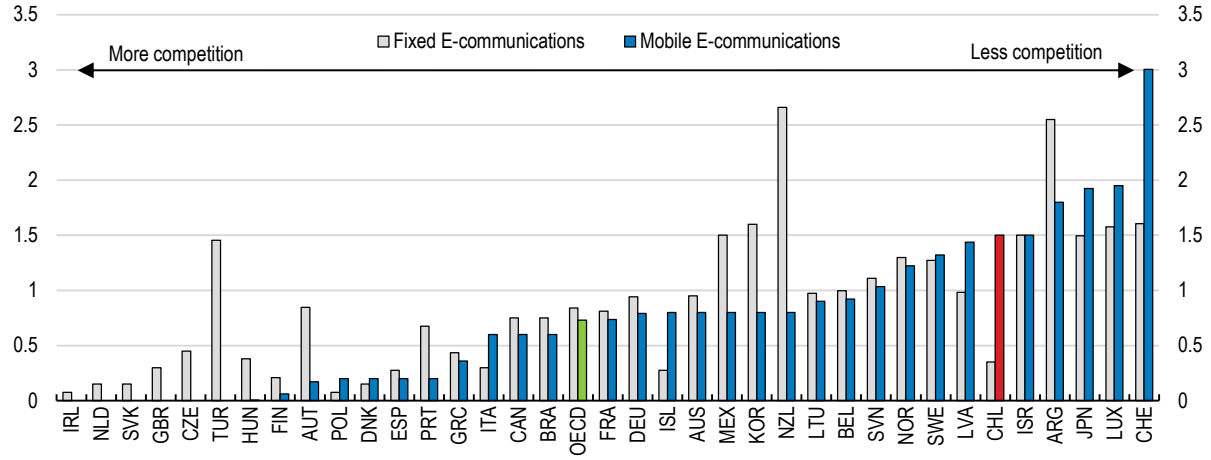
A recent OECD policy note analyses in detail the communications sector in Chile. It describes in detail, the policy recommendations and actions to take to ease market entry, boost infrastructure deployment, improve the efficiency of spectrum management and strengthen the governance of the sector (OECD, 2021[5]), all of which are key to boost connectivity. Some of the recommendations will be summarised below.

Boosting infrastructure deployment will hinge on lowering the existing high entry barriers (Figure 2.2) and easing the deployment of fixed and mobile communication infrastructure. Lower entry barriers and a contestable communication market could be achieved by eliminating the existing regulation for concessions, which is burdensome for operators (OECD, 2021[5]). It is necessary to adopt a single licensing regime whereby operators are authorized to engage in all communication services throughout the entire Chilean territory. This would encourage potential operators to enter the market and engage in infrastructure

deployment, thus reducing barriers to entry. Incumbent operators would also be encouraged to engage in new communication services and prices could be further reduced although from relatively low levels (ITU, 2020[6]).

Figure 2.2. Regulatory barriers on communications are high

Product market regulation index for e-communications, 2018



Note: E-communications include both voice services and data services.
Source: OECD, 2018 PMR database.

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One of the main barriers operators face in the sector is the existence of various regulations (and regulators), acting as a barrier for infrastructure deployment and making it hard for new operators to enter the Chilean market. Although regulations to grant permits for deployment of passive infrastructure are at the national level, the actual power of authorisation of deployment is the responsibility of municipalities. Municipalities, in turn, have different and unique legal frameworks that are not necessarily harmonised. Streamlining the various regulations at different government levels and a unique and central entity providing guidelines and standards for communication infrastructure deployment would lower the barriers to entry in the market (OECD, 2021[5]). An already existing platform (SUPER) (on which more below) could be used as the platform to achieve this.

To boost infrastructure deployment, Chile would greatly benefit from a National Information Transfer System through which actors and public entities can share information regarding preferable zones for infrastructure deployment. The Government agenda for economic revival (*Agenda de Reimpulso Económico*) of end of 2019 proposes that the Undersecretary of Telecommunications in agreement with the public companies should put out to tender public spaces to telecommunications companies for the installation of the necessary telecommunications infrastructure to deploy 5G technology. Furthermore, the Antennas Law and other relevant laws could include an obligation for Municipal Works Directorates to share cadastre information about the preferential zones for infrastructure deployment with SUBTEL and other national authorities periodically. This would increase operators' incentives to verify preferential areas for infrastructure deployment throughout the national territory and rural zones.

Provisions for passive infrastructure sharing and the establishment of clear criteria regulating rights of way are needed to boost infrastructure deployment in the sector. Current regulation is cumbersome for the obtainment of permits, and operators (particularly incoming ones) face serious difficulties in deploying their infrastructure and networks. Chile could benefit greatly from a revision of its heterogeneous rules for the obtainment of rights of way and requiring dominant players to share their infrastructure with competitors. Creating an infrastructure sharing system between sectors that contains a prior regulation for the use of poles, pipelines, cables, and other infrastructure of the electrical, aqueduct, and sewer sectors would

greatly benefit the country (OECD, 2021[5]). The European Union Broadband Cost Reduction Directive (2014/61/EU) could provide some guidance on provisions that allow communication network operators to access other utility networks.

Infrastructure deployment for rural and remote areas will be key for an inclusive digital transformation. However, there is no clear universal-access obligation for operators. Hence, there is no incentive to undertake public bids to provide communication services in rural and remote areas. The Telecommunications Development Fund was created to promote the coverage of telecommunications services, preferably in rural areas and urban areas with low income households. The projects, eligible for subsidies, are based on connectivity requirements or demands made by communication services concessionaires, municipalities, neighbourhood councils, and other social or community organisations or third parties (OECD, 2021[5]). In March 2020, the government launched the tender for a telecommunications connectivity project benefiting rural areas to improve connectivity and provide a wider range of Internet and mobile phone services.

An efficient spectrum management usually translates into better communication infrastructure and investment, adequate coverage for the population, higher service quality and lower prices (OECD/IDB, 2016[7]). In 2018, the Supreme Court declared as anticompetitive the holding of spectrum in the 700MHz band of the three biggest telecoms following a call for tenders in 2013, which have not respected the 60 MHz limit imposed in 2009. This generated severe challenges for the latest spectrum assignments and several players had to return spectrum licences. This has led to uncertainty in the market, including with respect to future assignments. It is important to establish a strong spectrum policy to provide clear and transparent targets that looks at both licensed and unlicensed spectrums. SUBTEL has proposed a new spectrum cap by operator in each band, which has been ratified by the Supreme Court and the bidding was announced in August 2020. Technical and economic criteria should be clearly defined, to contribute for the determination to reasonable obligations for the assignees in the future spectrum assignment processes for mobile telecommunication services. Determining the priority sectors for digital transformation, to be addressed at the national and regional level and considered in future spectrum assignment processes would also help boost deployment of services in all regions of the country, including areas without mobile service coverage (OECD, 2021[5]).

Chile would benefit from establishing a dedicated economic and technical regulator independent from the executive, in line with OECD policy recommendations (OECD, 2021[5]). Today, SUBTEL, the Sub secretariat of Telecommunications, is a centralised organism of the Ministry of Transport and Telecommunications and as such, its resourcing framework differs from the requirements of a stable, independent and technical regulator for the communication sector, in line with OECD policy recommendations and practice across OECD member countries. An example of a reform in this area is Mexico in 2013 that created the Federal Telecommunications Institute as an autonomous public agency, independent in its decisions and function, with its legal status and resources, for the purpose of regulating and promoting competition and efficient development of the communication and broadcasting sectors. Robust and transparent governance of Chile's communication regulator will be key to assuring the efficiency of the sector, in particular in deploying new technologies and infrastructures, such as future 5G.

Closing digital divides

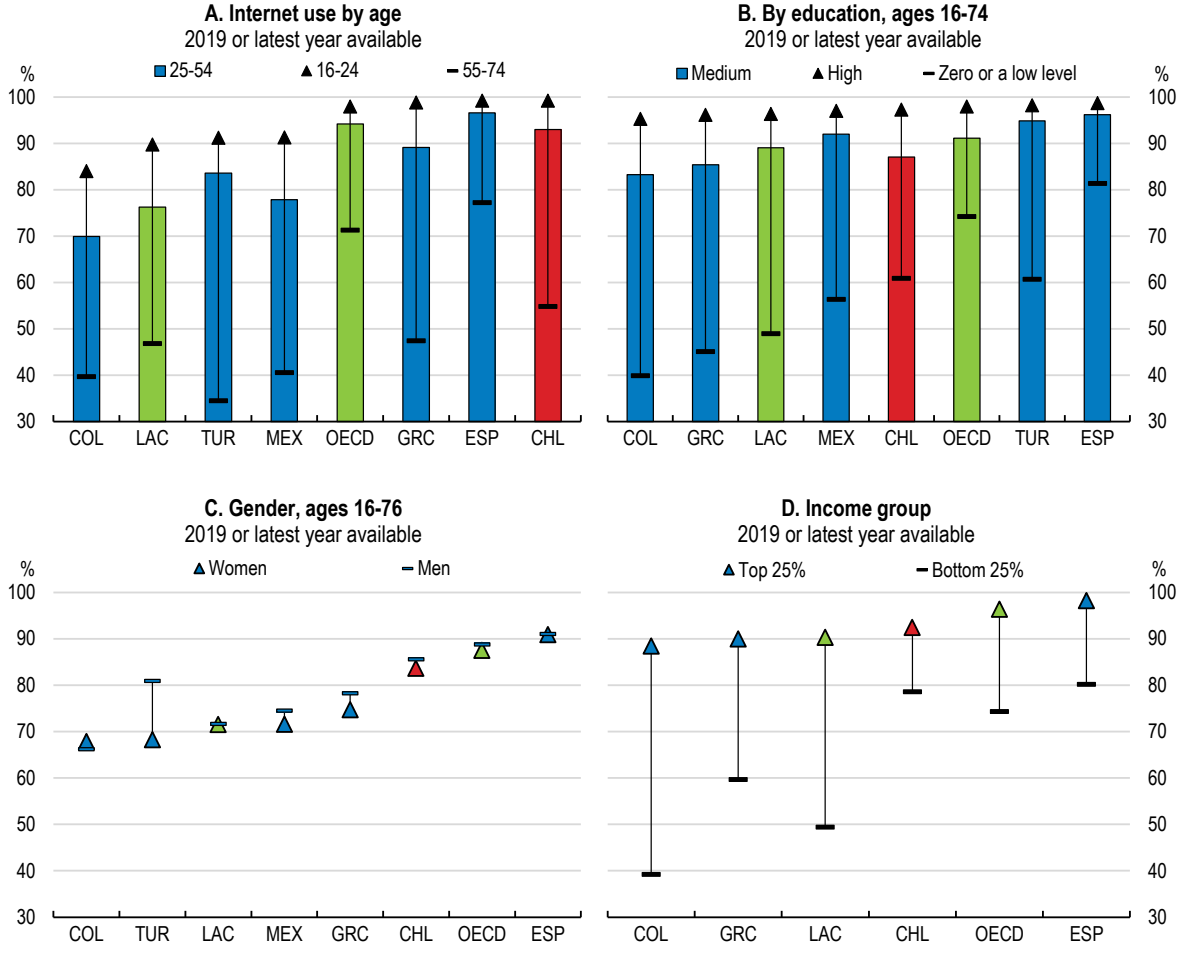
With the surge of the COVID-19 pandemic access to the internet has become more important than ever, as it means access to education and work. Although average internet usage is at the same levels as OECD countries, there are still clear disparities (Figure 2.3). As a result, many people are at risk of being left behind, with 35% of those without Internet access reporting high costs as the main barrier for not accessing the Internet, and 25% declaring not having the skills to use the Internet (Subtel, 2017[8]).

Observed differences in Internet use reflect the inequalities in the Chilean society, with education being the most important factor (Box 2.2). Internet use by the highly educated is nearing saturation levels, while

use of the Chile's large cohort with lower education is below OECD average (Figure 2.3). Age also plays an important role in Internet use, with old-aged being less likely to use the Internet. Labour market determinants, such as being unemployed or inactive, having an informal or temporary job, negatively affect the probability of connection to the Internet. This is worrying, since distance learning and online job search would be particularly important for these type of workers. Household income also plays an important role in determining Internet usage, with Chile showing an 11 percentage points gap between high and low income. The rural-urban divide is also important, with rural dwellers having 10-percentage points lower probability of using the Internet. This gap is even more important for broadband Internet, with a 30-percentage points gap. However, Chile has a small gender and indigenous gap in Internet use.

Figure 2.3. There are wide disparities in Internet use

Internet use in the past 12 months as a percentage of reference population



Note: In Panel B, the level of education refers to the highest level of education attained: at most lower secondary (ISCED 0, 1 or 2) = Zero or a low level; upper or post-secondary, but not tertiary (ISCED 3 or 4) = Medium; or tertiary (ISCED 5 or above) = High. OECD refers to an unweighted average of latest available data. LAC refers to an unweighted average of Brazil, Colombia and Mexico in Panels A, B and C. LAC refers to an unweighted average of Brazil and Colombia in Panel D.
Source: OECD, ICT Access and Usage by Households and Individuals database.

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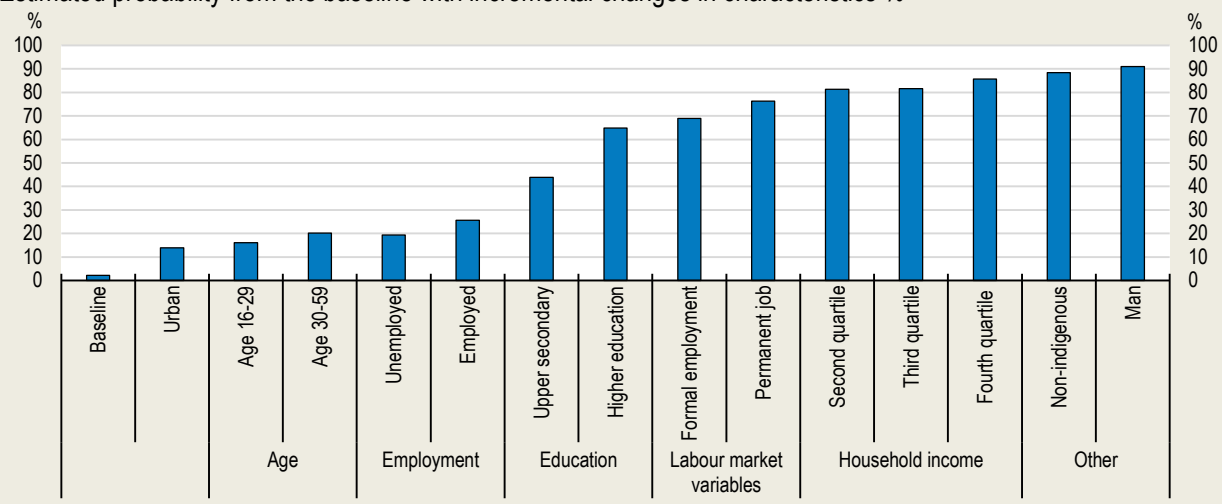
Box 2.2. The divide in household Internet usage in Chile

Analysis based on microdata from Chilean household survey (CASEN) for the year 2017 allows gauging the drivers in the divide for Internet access. A model for the household probability of having a subscription to the Internet (fixed or mobile broadband) is used. It includes individual characteristics (such as, age, gender, education, indigenous), household characteristics (household income, region and if living in a rural or urban region) and labour market variables (informality, unstable job, low earnings).

The estimated probability of being connected to the Internet at home for an indigenous inactive woman aged 60-75 years old, with low education, living in a rural area and in a household with low income, is practically zero (Figure 2.4). If the same woman would move to an urban area, the probability of using the Internet at home would increase by around 15 percentage points. If this same woman would be middle-aged, the probability would be almost 20%, and if the woman would have achieved higher education the probability would jump to above 60%. Labour market variables, even after controlling by household income, are also important.

Figure 2.4. Access to Internet at home is widely determined by socio-economic variables

Estimated probability from the baseline with incremental changes in characteristics %



Note: The baseline refers to a woman aged 60-75, indigenous, with low education (with low secondary or lower), inactive, living in a household within low household income (first quartile) and in the rural area. The bar shows the estimated average probability of being connected at home to Internet (broadband or mobile). Estimates are obtained through a probit estimation controlling for age, gender, education, indigenous, rural area, per-capita household income, and regional effects. Informality is defined as not contributing to the pension system. The stability of the job is defined as having a temporary contract. Standard errors are clustered at regional level.
Source: OECD calculations using Household survey data (CASEN, 2017).

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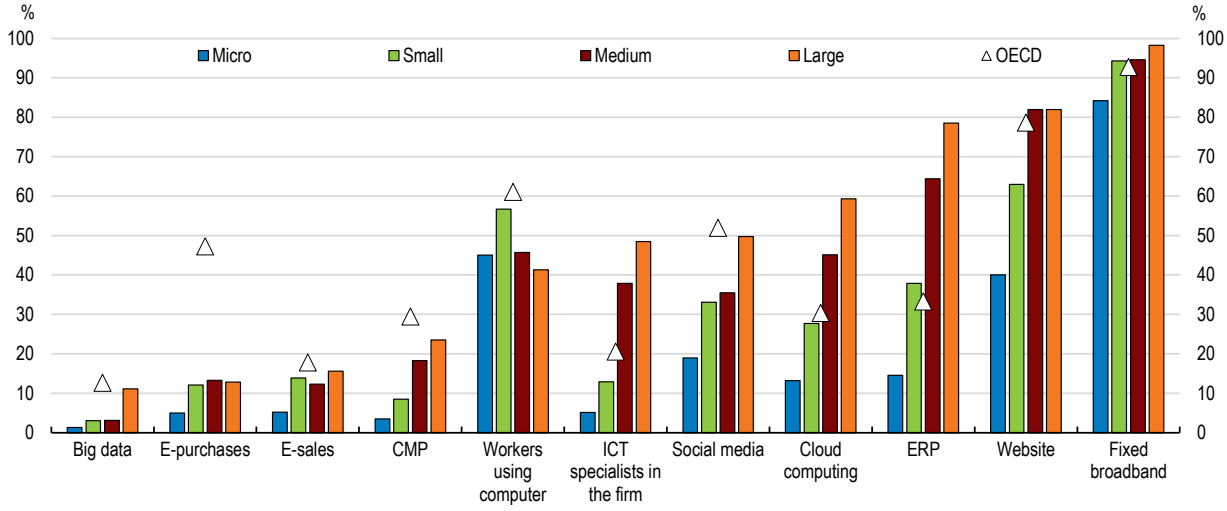
Regarding firms, although there has been great progress in digitalisation among firms of all sizes and Chile is well ahead in the region, there is still a wide divide between large firms and SMES. Large firms innovate and adopt digital technologies while the more numerous micro and small ones struggle to keep pace with digitalisation (Figure 2.5). This could be creating a divide between those working for large firms and the others, in terms of employment quality and wages. This might be a source of earnings inequality and put the middle class, which is usually employed in micro and small firms, under pressure.

Chile needs measures to close the existing digital divide. Providing pathways to Internet access, computer access and digital learning opportunities for all should be a priority. Chile has recently put in place policies to increase affordability and boost Internet adoption for households, firms and the government, as evident from the digital agenda of the Government. This agenda has as main objectives guaranteeing minimum levels of speed and quality of Internet access, the reduction of tariffs for all mobile phone users, extending coverage to remote areas, and connecting to Internet all the public educational establishments.

Figure 2.5. Digital adoption lags behind mainly in micro firms

Share of businesses using different digital tools



Note: Data refer to 2018 for Chile and 2019 or latest year available for the other countries. LAC refers to the unweighted average of Brazil, Colombia and Mexico. OECD refers to an unweighted average of 34 member countries. Size is calculated on the basis of numbers of persons employed. Micro firms are those employing less than 10 workers. SMEs are defined as businesses with 10 to 249 employees and large firms as businesses with 250 employees or more. The stratification in the Chile innovation survey is done by sales and hence it could be not statistically representative by number of employees.

Source: For Chile, data come from the ICT survey 2019, Ministry of Economy. Data for the other countries come from OECD, ICT Access and Usage by Businesses database.

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Unlocking digital skills development and innovation capacity

Empower people with the right skills to succeed in a digital world

Ensuring that everyone has the right skills for an increasingly digital economy is essential to promote inclusive labour markets, spur innovation, productivity and growth. Thriving the digital transformation requires several types of skills. For example, ICT problem-solving skills, such as the ability to navigate technology-rich environments and use the Internet in a variety of ways. Specialised ICT skills for workers who drive innovation and the functioning of the digital eco-system. Also, ICT complementary “soft” skills, such as leadership, communication, management and teamwork skills, on top of good foundation skills, such as solid literary, numeracy and problem solving skills (OECD, 2018[9]; OECD, 2016[10]). Providing everyone with the right mix of skills will hinge on updating education, training contents, teaching methods, while upgrading the institutional capacity, and streamlining the norms governing the education and training system.

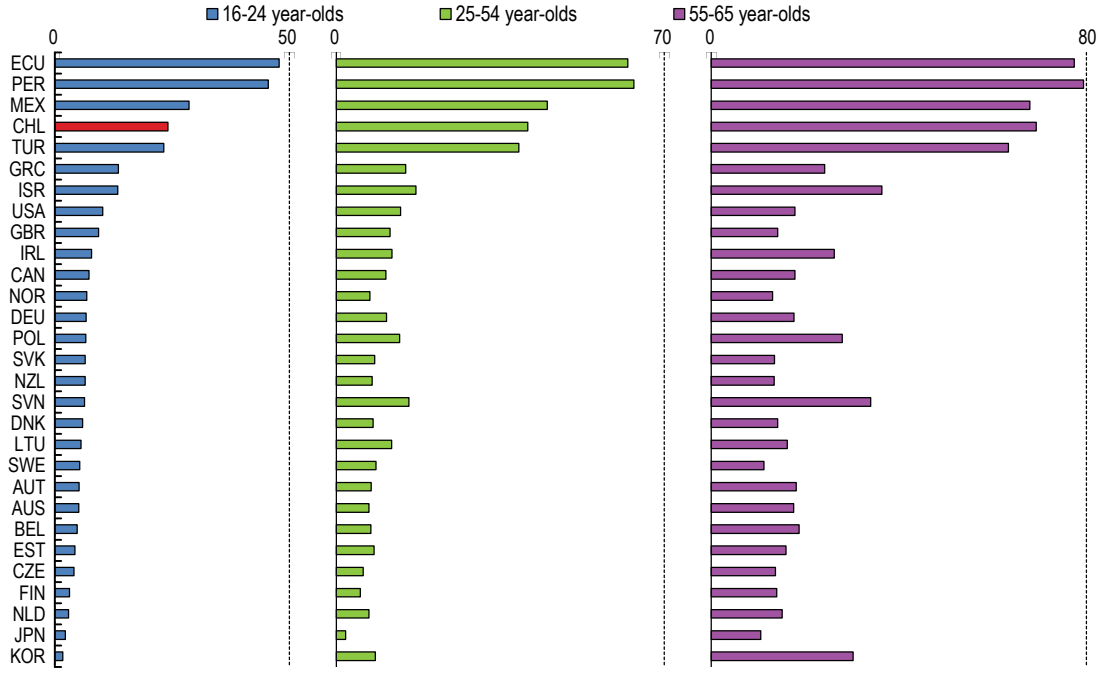
Digitalisation calls for all workers to have a relatively high minimum level of ICT skills, even those in low-skilled jobs. This has become evident as the fight against the COVID-19 pandemic forced schools and universities closures. In this context, Chile has accelerated and mobilised different forms of online education and digital education resources. However, both teachers and students need to be very familiar with these technologies and their use in order for them to be effective. Pre-existing unequal digital skills among students, parents and teachers could determine unequal long-term consequences of the pandemic.

Enhancing foundational skills and developing digital skills in schools

Individuals in Chile often lack the foundation skills necessary to flourish in a digital world (Figure 2.6). Quality education and better access to education have been important objectives for the authorities in Chile, as reflected in recent educational reforms. More efforts to ensure access to high-quality initial education for everyone will be key, as it is a precondition for developing these skills to benefit from digitalisation, and hence has the potential to foster an inclusive society and would help reduce the digital divide.

Figure 2.6. Chilean workers lack the skills to thrive in the digital era

Share of youth (16-24), prime age adults (25-54) and older people (55-65) lacking basic skills, percentage



Note: Individuals lacking basic skills score at most Level 1 (inclusive) in literacy and numeracy and at most Below Level 1 (inclusive) in problem solving (including failing ICT core and having no computer experience). Chile, Greece, Israel, Lithuania, New Zealand, Slovenia and Turkey: Year of reference 2015. Ecuador, Mexico, Peru and United States: Year of reference 2017. All other countries: Year of reference 2012. Data for Belgium refer only to Flanders and data for the United Kingdom refer to England and Northern Ireland jointly.
Source: OECD calculations based on the Survey of Adult Skills (PIAAC), www.oecd.org/skills/piaac/publicdataandanalysis using the methodology of the OECD Skills Outlook 2019.

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Improving the digital skills of individuals is an important component of the Government's agenda. The authorities have put in place programmes to support the development of a wide range of digital skills, from

software development to basic digital literacy, such as I connect to learn (*Me Conecto Para Aprender*) and I choose my PC (*Yo elijo mi PC*). These programmes deliver a laptop computer (including mobile broadband for one year) to each student in all public schools and vulnerable and good students in subsidized schools during the 7th year of basic education. These programmes have been extended in March 2020 with the programme ICT scholarship (*Becas TIC*). The initiative "Programme your Ideas" (*Programa tus Ideas*) seeks to bring the programming of mobile applications closer to the children and the young population.

Chile would benefit from a revised national curriculum to reinforce digital skills. The national curriculum already includes the teaching of computer skills, but Chile would benefit further from including the teaching of ICT skills in a transversal way. The curriculum should emphasise the development of computational thinking, coding skills, and creative expression through software, including the use and development of ICT skills in different knowledge areas. For example in Sweden, education for ICT is integrated in curricula as a learning outcome: "every pupil, on completing primary and lower secondary school, must be able to use modern technology as a tool for knowledge-seeking, communication, creation and learning". The new Schools Act from 2011 introduced new/revised syllabuses and a new curriculum for Swedish primary and lower secondary schools. The upper secondary school has also acquired new syllabuses, and a new qualification descriptor has been introduced for teacher and preschool teacher training programmes. The latest initiative, ICT for everyone a Digital Agenda for Sweden in 2011, reiterated that "Everyone of working age must have good digital skills to be employable or be able to start up and run businesses" (OECD, 2016[10]).

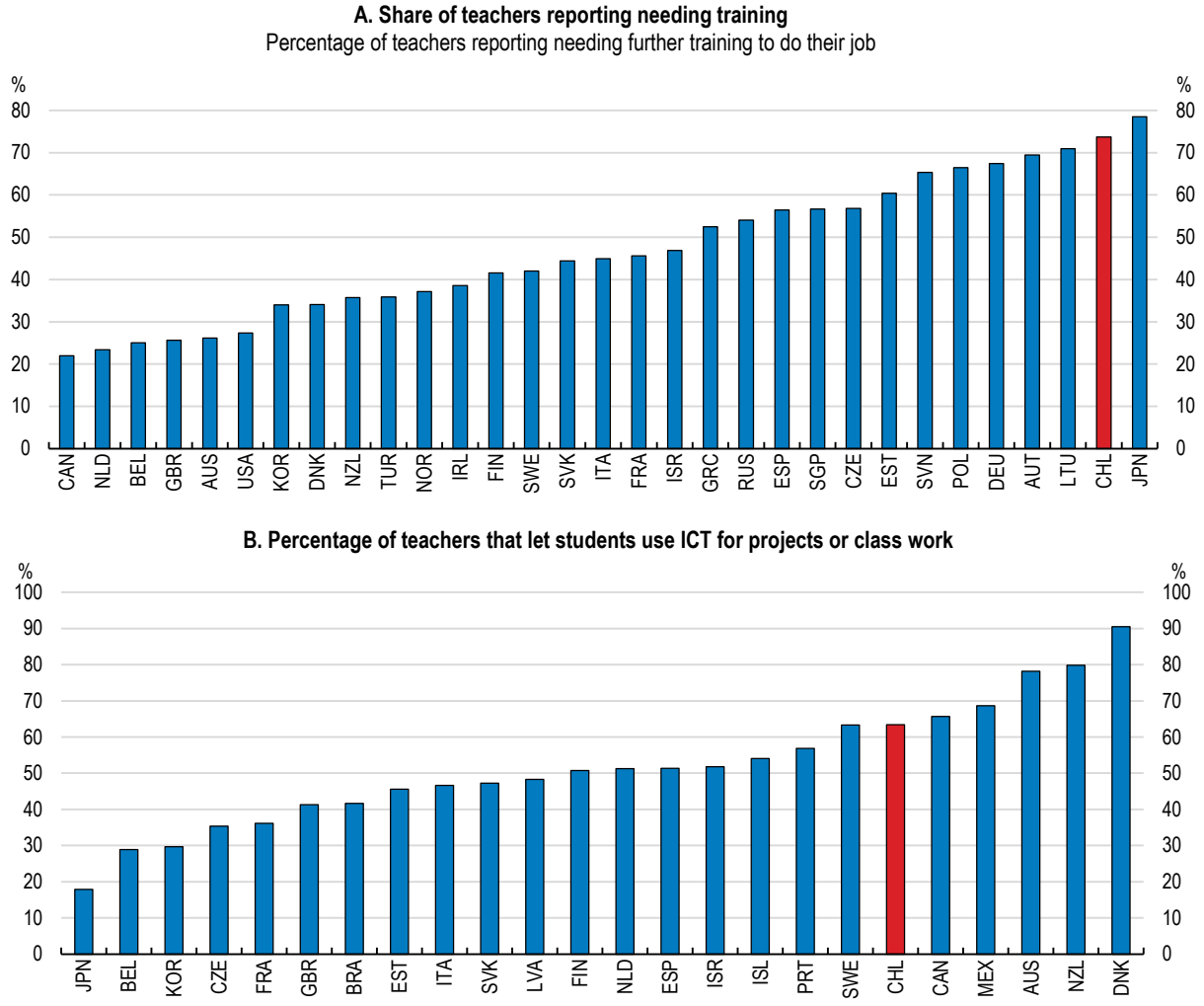
Teachers and schools are natural candidates to support the development of digital skills. Teachers are primarily responsible for all educational change and gaps in the digital skills of teachers could prevent the economy from reaping the benefits of digital transformation (Figure 2.7, Panel A). Furthermore, the teachers' preparedness was essential in the transition to remote teaching and learning during the school closures because of the COVID-19 pandemic. A high share of teachers in Chile uses ICT tools in the class for teaching (Panel B). However, teachers usually have difficulties in locating high-quality digital learning resources and software, lack clarity over learning goals, and insufficient pedagogical preparation on how to blend technology meaningfully into teaching (OECD, 2015[11]). In Chile, 51% of teachers reported that ICT skills for teaching were included in their professional development activities, which is lower than the average of the OECD countries in TALIS (60%) (OECD, 2020[12]). At the same time, in Chile 17% of teachers reported a high level of need for professional development in ICT skills for teaching. During 2018, the *Plan Nacional de Lenguages Digitales* (Digital Languages National Plan) has been implemented to train teachers in the use of tools to promote the teaching of computational thinking and programming in the classroom. However, there is a need to incorporate the teaching of digital competences into the teacher's initial training, into the Good Teaching Framework and into the pedagogical and disciplinary assessments of the new teaching career. School directors should be supported and integrate digital development in the planning and management of their schools, including physical and technological infrastructure, digital resources and platforms, teacher training, coordination, planning and support for teaching practice.

Parents should also be aware and trained. Experience from Colombia shows how important is to give training to parents too. *Escuela TIC Familia* was an ICT project that aims to help parents and teachers develop skills to look after children. The Computers to Educate (*Computadores para Educar*) programme has been successful in providing Colombian schools with computers as well as training teachers and parents on the use of ICTs for educational purposes.

The strategy on how to integrate ICT in schools, teacher training, educational resources are complementary to digital infrastructure. A good example of a coherent programme supporting the transformation of society is Brazil and its Connected Education (*Educacão Conectada*) programme. The programme supports the universalisation of high-speed Internet access and promotes the pedagogical use of digital technologies in basic education, integrating them in the same programme: digital training for

teachers, guides institutions to include innovation and technology as elements of education, brings together quality educational resources and invests in expanding access to high quality connectivity (OECD, 2020[13]).

Figure 2.7. Training teachers to be drivers of digital transformation should be a priority



Note: In Panel A, data refer to the share of workers answering "Yes" to the question "Do you feel you need further training in order to cope well with your present duties?" Teachers are defined based on the population of adults aged 25-65 years old. Teachers are adults self-reporting working in the following two-digit occupations as classified by the International Standard Classification of Occupations (ISCO-08): Teaching Professionals (ISCO 23). Chile, Greece, Israel, Lithuania, New Zealand, Singapore, Slovenia and Turkey: Year of reference 2015. All other countries: Year of reference 2012. Data for Belgium refer only to Flanders and data for the United Kingdom refer to England and Northern Ireland jointly. Data in Panel B refer to 2018.
Source: OECD calculations based on Survey of Adult Skills (PIAAC); OECD, TALIS 2018 database.

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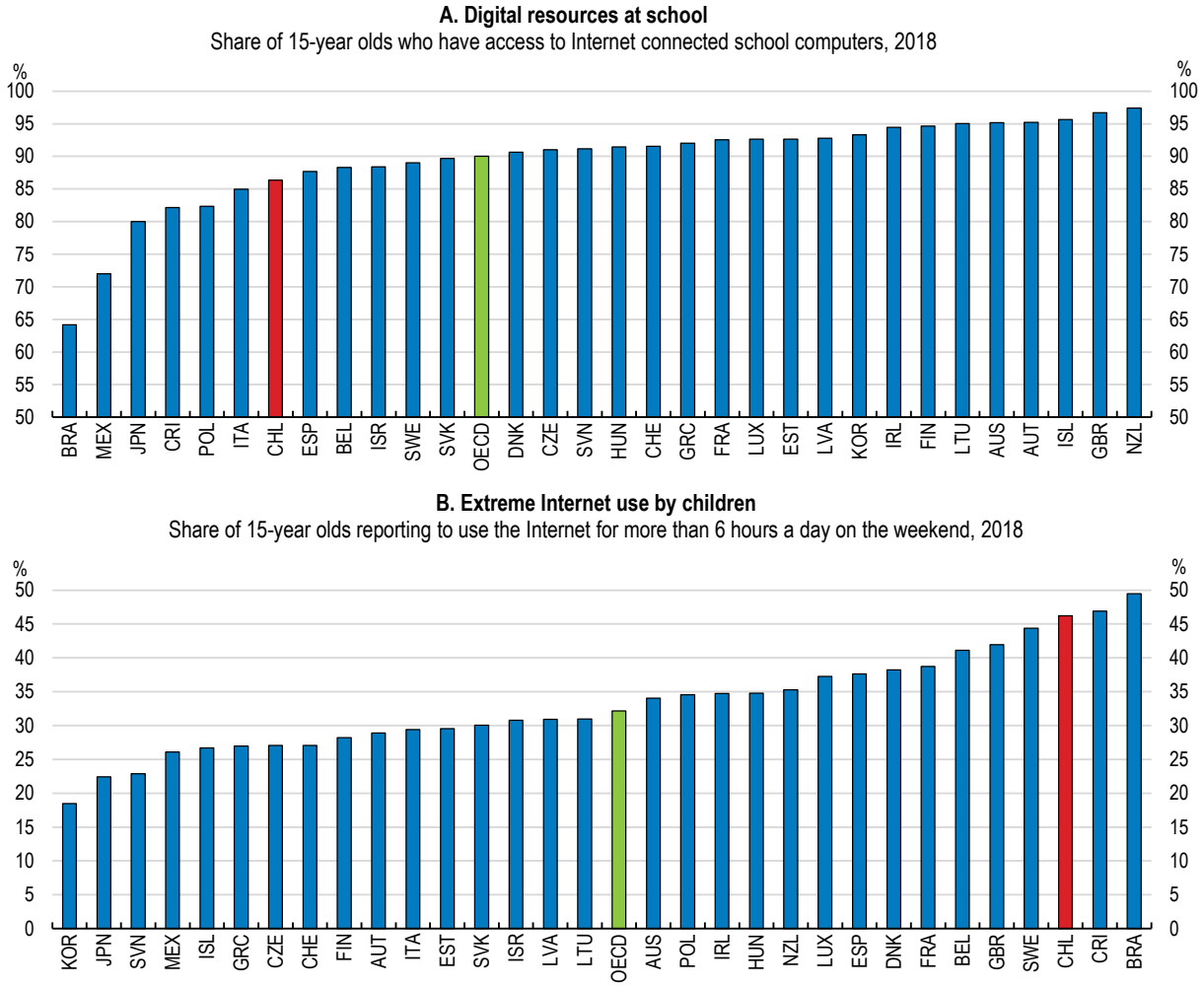
The digital transformation of the economy brings along opportunities, but also entails some societal risks. Although access to Internet by 15-year-old students is at the OECD level, there is high exposure to risks and low utilization of opportunities in the use of technology as they make an extreme use of the Internet (Figure 2.8). Benefiting from digital opportunities depends not only on meeting the skills requirements, but also on managing digital security risks. Teachers should receive specialised training in software education

and professional development programmes needed to prepare teachers and schools to educate students on digital security and privacy, understand the implications of some online behaviours and identify various forms of online harassment that build up in schools. Integrating digital security or digital citizenship responsibilities in the curriculum needs to be considered.

Figure 2.8. Risks of digital transformation and extreme use of Internet should be avoided



Note: In Panel A, data refer to students who have access to Internet connected school computers and who use them. In both panels, the OECD average is population weighted.
Source: Programme on International Student Assessment (PISA) 2018.

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Developing ICT specialists

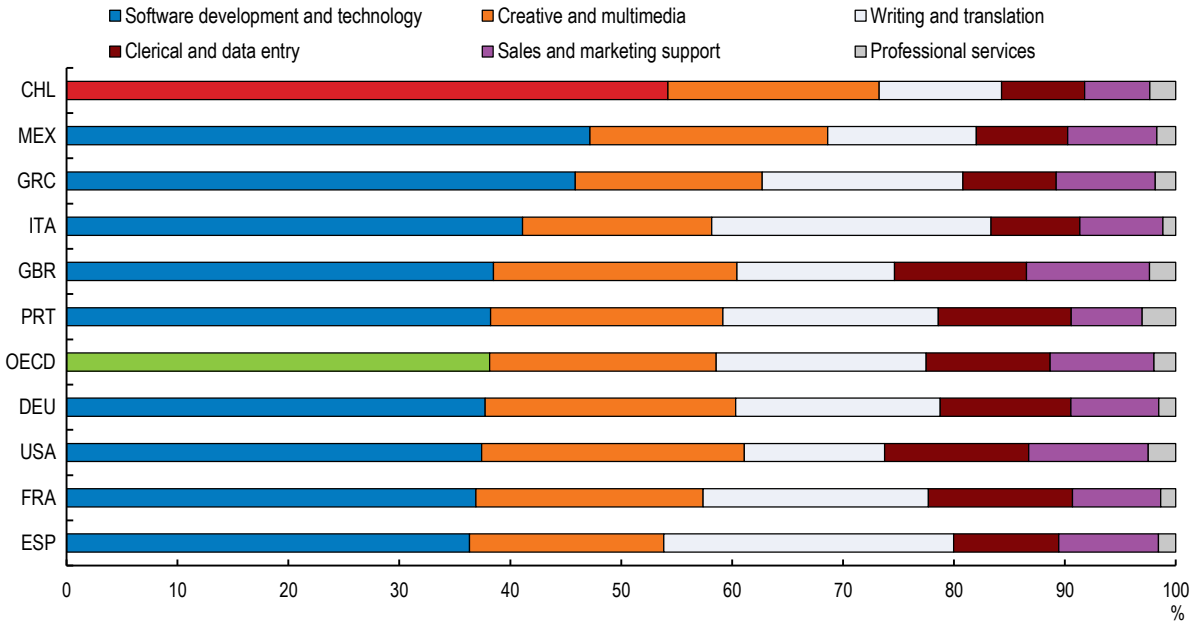
Seizing the benefits of technological change depends on the availability of ICT specialists: workers who can code, develop applications, manage networks and manage and analyse Big Data, among other skills. These skills enable innovation in a digital economy to flourish, but also support the infrastructure that firms, governments, commerce and users rely on.

Potential shortages of ICT professionals have been flagged in Chile, as in several OECD countries (e.g. OECD, (2017[14]); OECD, (2019[15])). Although according to the OECD skills for jobs data base there is no

a big shortage of ICT professionals at the moment, this could be driven by a not particularly high demand. However, ICT skills demand is likely to increase, particularly in the aftermath of COVID-19, and outstrip supply in the near future. This is problematic in a context where there is an increasing demand for jobs that require specialised ICT skills (Figure 2.9). Specialists in mathematics and computer science have experienced the fastest growth in demand in Chile between 2010 and 2015 (Amaral et al., 2019[16]). A growing number of Chileans pursue graduate degrees, but few do so in relevant areas for future competitiveness: 3% of graduates are in information and communication technology (ICT), and only 1% in natural sciences, mathematics and statistics (the lowest share of all OECD countries). Conicyt (currently ANID, the national agency for research and development), established in 2017, has a special call for pursuing graduate studies in Digital transformation through a programme Becas Chile. Approximately 20% of the budget was allocated for this "priority area".

Figure 2.9. ICT skills are increasingly demanded in Chile

Main skills demanded in the online labour market. Share of project/task occupations.



Note: Each bar displays employer countries' share of projects/tasks posted on online labour platforms between January and July 2018 by the occupation of project/task. The Online Labour Index is based on tracking all projects and tasks posted on the five largest English-language platforms, which account for at least 70% of all traffic to online labour platforms. OECD refers to an unweighted average.
Source: Online Labour Index in (Kässi and Lehdonvirta, 2018[17]) .

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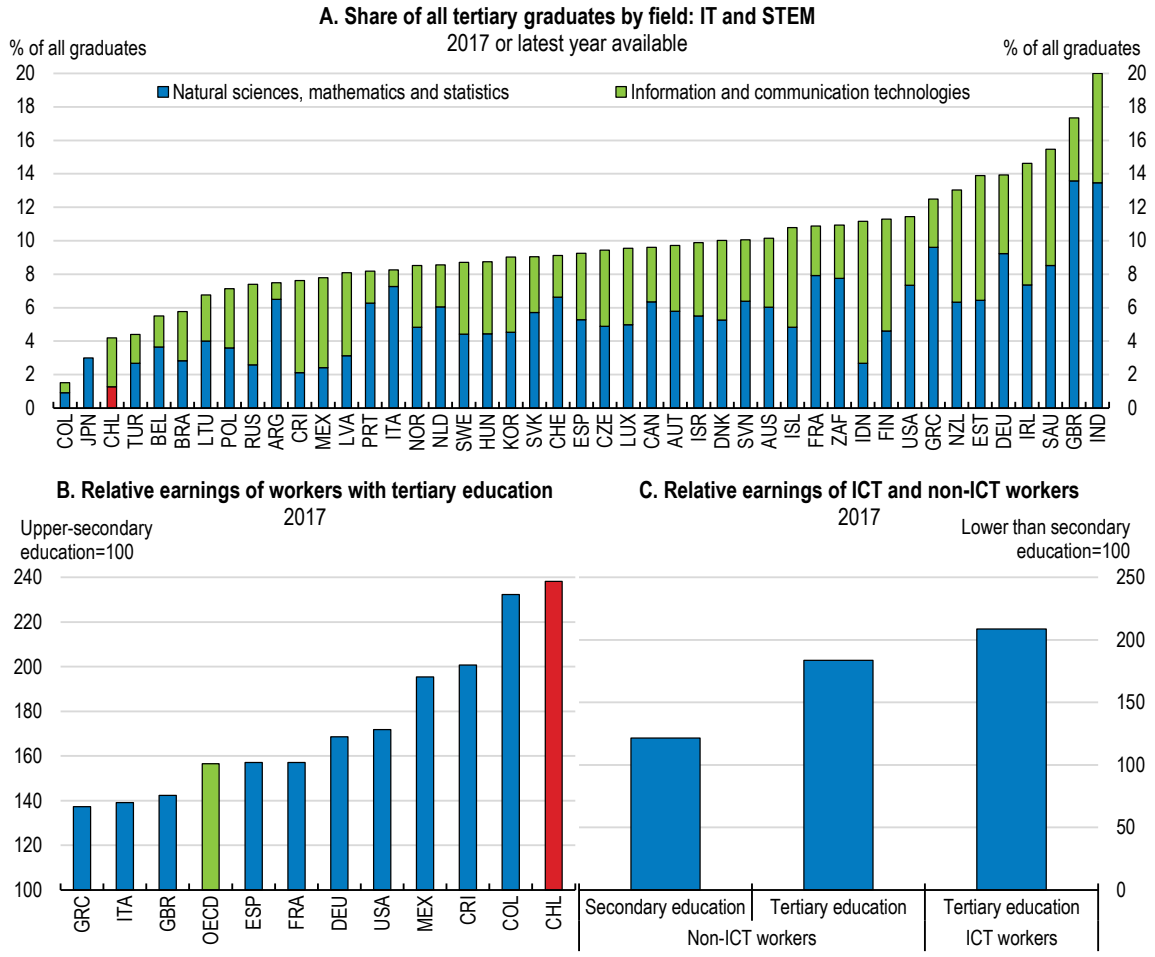
The shortage of high-skilled and tertiary educated workers in ICT-related professions leads to a particularly high wage premium (Figure 2.10). Computer and information technicians are some of the better paid technicians in the country with high employability levels on the first year of the programme, according to the web portal MiFuturo. In 2015, Chile experienced a 31% gap in the number of available network professionals as percentage of the total demand of these skilled professionals, mainly in the areas of data centre, virtualization, software development and video (IDC, 2016[18]). The quality and relevance of those professionals' skills are also an issue (IDC, 2016[18]). Chile has a Visa Tech Program to attract international talent. Software companies such as Evernote and Everis have opened up locations in Chile, taking advantage of this programme and repatriating Chileans that have been working in tech companies in the Bay Area.

Figure 2.10. Chile is experiencing a clear shortage of ICT workers



Note: Panel B refers to 25-64 years old with income from full-time and part-time employment. Panel C refers to 25-64 years old with income from full-time employment. In Panel C, the bars show the estimated effect on labour earnings. Estimates are obtained through a mincer regression controlling for age, gender, education, if temporary contract, if informal job (defined as those not contributing to the pension system), self-employment and regional effects. ICT workers are ICT professionals (ISCO-08=25) and ICT service manage workers (ISCO-08=133).
Source: OECD, Education at a Glance database; Education at a Glance 2019: OECD Indicators - © OECD 2019; OECD calculations based on CASEN 2017.

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Given the rapid pace of digital transformation, it is important to implement forward-looking programmes that strive to match current ICT training programmes with expected skills needs in various industrial sectors. This is the case of artificial intelligence, data science and cloud computing, for example. A good example in the country is the Data Observatory Foundation. Chile has a Natural Laboratory for space observation, attracting 70% of the world's observation capacity. There are approximately 700 students of astronomy in Chile, which is the country with the highest number of astronomers per capita. The exploitation of this Natural Laboratory confers Chile an opportunity to lead in the development of algorithms and technologies to process large amounts of data coming out of such observatories. The Data Observatory Foundation seeks to make available large datasets for science and industry to develop algorithms and train the next generation of data scientists in the country. Continuous updating of vocational programmes, as well as of university curricula, while providing career guidance, will be essential to close the gap between supply and demand in the labour market. Strengthening technology and communications

specialties in technical and vocational secondary education would benefit mainly the most vulnerable students, who attend more technical and vocational secondary education (OECD, 2018[1]).

Higher education institutions and SENCE, the government training and employment institution, usually create new engineering or technical programmes. Involvement with and from the private sector to align and predict their needs is key for the relevance of the programmes. Chile does not have an institutional mechanism that allows the integration of the requirements of the productive sector to the training offer in a systematic and binding way (CNP, 2018[19]). The contents and curricula are defined by the Ministry of Education for secondary education, and by each educational centre for higher education. Technical and vocational training policy generally does not consider the productive sector. Although there have been advisory bodies in which the productive sector has participated (the most recent being the Advisory Council on Technical and Vocational Training), they are not representative of sectors and firms, and they only have an advisory role (CNP, 2018[19]).

Few examples have worked well when integrating the private sector. One example of collaboration with the private sector is "*Talento Digital para Chile*" focused on inactive, unemployed, vulnerable and female workers in coordination with all relevant public agencies and the private sector. A new national policy for Artificial Intelligence is under development and will consider the development of specialised education in training programmes. CORFO's New Engineering 2030 programme aim at the redesign of engineering education, enhancing applied research, and creating entrepreneurial ecosystems around engineering campuses. Some initiatives (such as "Destino Empleo" and the National Labour Observatory from the Labour Ministry) aim to gather and analyse labour market information to contribute and orient the decision making of different stakeholders, such as the system of Certification and Training, public and training institutions, and students. A web platform shows the information gathered by these initiatives. Destino Empleo shows the most demanded digital skills and occupations in the local labour market based on job postings. In coordination with SENCE (National Training and Employment Service), it also enables users to search for training courses related to those skills. Another good experience is the Advisory Council on Technical and Vocational Training, in which Ministries, public agencies, educational institutions and some business associations participate to detect skill needs and support the elaboration of educational programmes. The council is developing a national skill strategy. It will be important that results are aligned with programmes of technical educational.

Chile would benefit from consolidating and expanding the current initiatives, and a greater involvement of private sector in technical, graduate and post-graduate levels, modernising vocational training and updating curricula to endow the next generation of workers and managers with the skills needed. Vocational and professional education in Chile is usually pursued by vulnerable students, hence providing it with higher relevance and quality would boost growth and equity. Another challenge for skills development is the system of career accreditation and certification, which requires an update to bring it in line with the demands of the digital age, for example by shortening the training cycle and including digital skills into process (OECD/UN, 2018[20]). Also, integrating working experience for students will be key, as there is evidence of the high importance for the future employability. Putting in place incentives for firms to provide apprenticeship and internship programmes for students and teachers could help foster working experience.

As in most OECD countries, an overwhelming majority (81%) of people employed as ICT specialists were men in 2017. Young men (16-24 year-olds) are more likely than young women to have programming skills in Chile, and elsewhere (OECD, 2019[21]). The share of female students in science, technology, engineering and mathematics is only 21% of all graduates in Chile, the lowest share in OECD countries (Mostafa, 2019[22]). This gender imbalance reflects in part educational choices. Only 5% of ICT students are female. However, usually women tend to use ICT more intensively at work (OECD, 2019[21]). To ensure a more diverse pool of talent in specialised ICT positions, and to counteract gender divides in ICT skills, consorted efforts should be carried out to increase girls' interest in ICT from early stages. Providing high-quality ICT education from a low age would be essential. Government initiatives, such as "*Ingeniosas:*

ciencia y tecnología para todas", fostering the vocation for STEM among girls and adolescents, should be amplified and further supported.

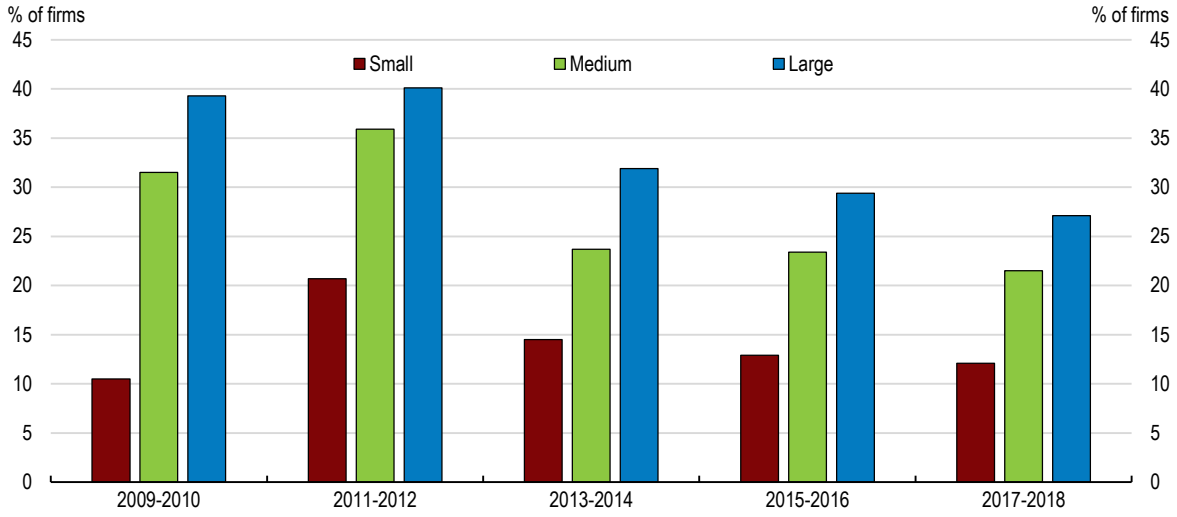
Mobilise the private and public sector for digital innovation

Digital innovation is a fundamental driver of the digital transformation. Digital technologies and data also drive innovation itself. But to start, to seize the opportunities of the digital transformation, it is necessary to have innovative firms. Closing the digital divide means also closing the innovation divide (Figure 2.11). Investment in ICTs is a necessary but not a sufficient condition for the diffusion of digital tools; a second condition is investment in complementary assets, knowledge-based capital (KBC) in particular, including innovation and research and development (R&D). For example, incentives to invest in R&D appear to be associated with greater adoption of most advanced digital technologies, such as customer relationship management (CRM) software and cloud computing (Andrews, Nicoletti and Timiliotis, 2018[23]).

To unleash digital innovation, policies should promote entrepreneurship by promoting start-ups and young firms; facilitate access to finance; support basic research, knowledge diffusion and open science; and open up government data (OECD, 2019[4]). Policies should also encourage experimentation and new business models across sectors, including by promoting the flexible application or enforcement of regulation (e.g. regulatory "sandboxes").

Figure 2.11. Bridging the innovation divide is necessary to increase productivity

Percentage of firms that innovate



Note: Innovation in products, processes, organizational or marketing. Small size companies are defined as companies with annual sales between 2,400 Chilean unit of account (UF adjusted for inflation) and 25,000 UF. Medium size companies are defined as companies with annual sales between 25,000 UF and 100,000 UF. Large size companies are defined as companies with annual sales higher than 100,000 UF.
Source: Chile Innovation survey (Encuesta Nacional de Innovación), Ministry of Economy.

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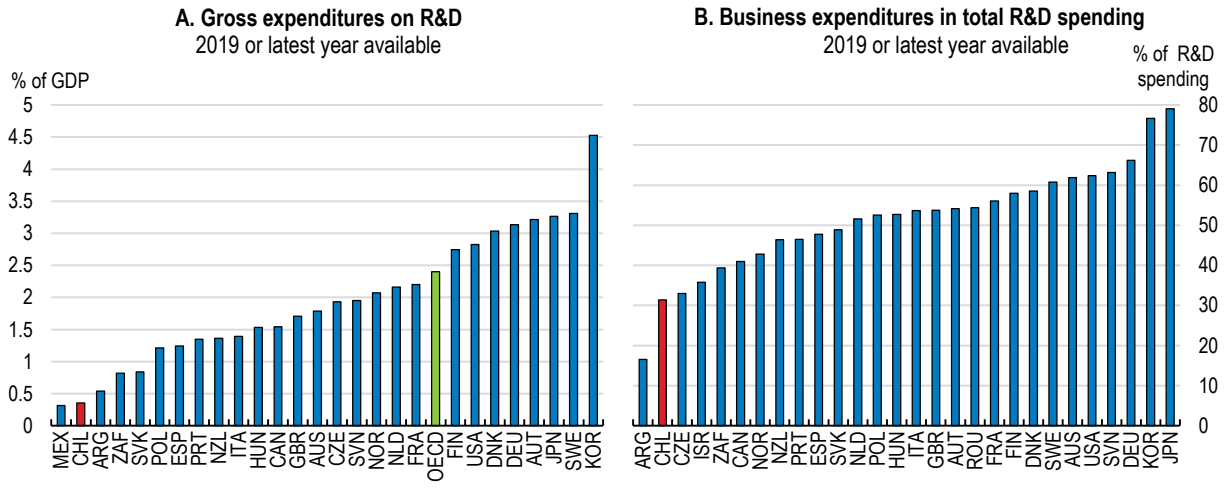
Chile spends relatively little on R&D and innovation (Figure 2.12), with the R&D intensity of information industries the lowest in OECD countries (0.01% of GDP relative to 0.6% in OECD). Most of the resources spent in R&D come from the public sector and the gap in business R&D with OECD countries is especially pronounced (Panel B). According to national innovation surveys, only 11% of the companies have introduced technological innovations, as opposed to 35% in the rest of OECD countries.

Figure 2.12. R&D and innovation spending remains low



Source: OECD, Main Science and Technology Indicators database.

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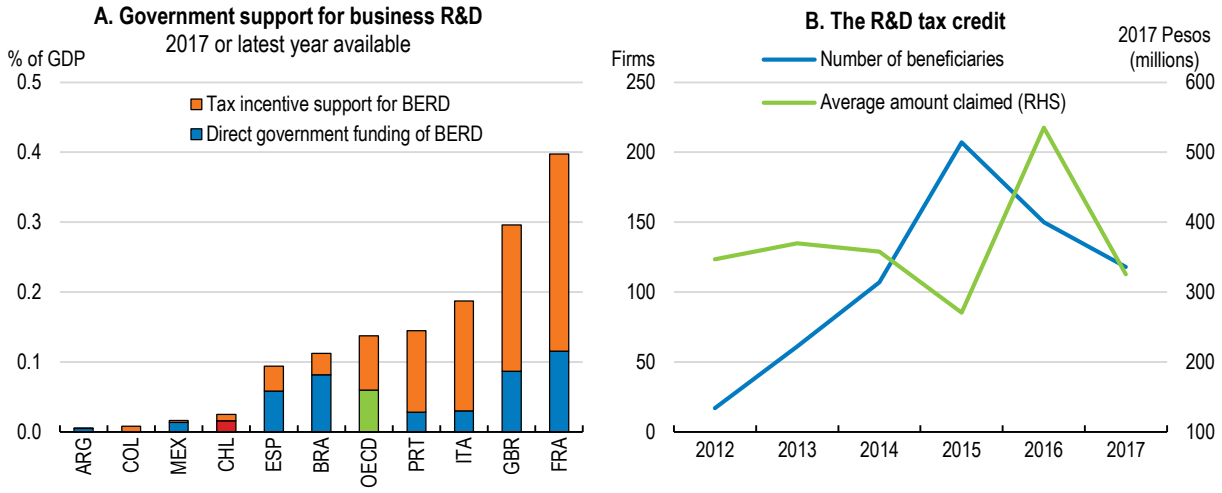
Chile has introduced a multitude of policies, implemented by various agencies, to promote R&D and innovation. However, the scale and take up of innovation programmes has remained limited (Figure 2.13). One of the main instruments to foster innovation is a generous R&D tax credit that can be carried forward indefinitely. The number of SMEs doing R&D is on the rise, tripling over the last 6 years until 2017, as evidenced by the latest R&D Survey (MEFT, 2019[24]). As of 2015, firms can simultaneously apply to subsidies and the R&D tax incentive. Take-up of the programme has increased in the last decade (Panel B), benefiting mostly large firms (Intelis, 2017[25]). The government should make the incentive refundable, which would be beneficial for small and young innovative firms. Authorities should also consider an extension of the ceiling of the tax credit and measures to simplify certification process. Further incentives for SMEs to innovate should increase available financing, given that this is one of the main barriers for SMEs to innovate (Zahler, Goya and Caamanio, 2018[26]; MEFT, 2019[24]). Usually SMEs are not aware of the generosity of the R&D tax credit system, so further efforts to raise awareness are warranted.

Available public support to firms' R&D and innovation activity are complex, with many programmes having overlapping aims (OECD, 2018[1]). Numerous programmes are run jointly by different agencies, reducing accountability. In a welcome move, the Ministry of Science, Technology and Innovation was created in 2019 for advising and collaborating with the Presidency in the design, formulation, coordination, implementation and evaluation of policies aimed at promoting and strengthening science, technology and innovation. It is also responsible for fostering inter-ministerial and interregional coordination and collaboration, and the development of joint initiatives within the public sector and public-private cooperation. The Ministry needs to foster articulation, coordination and connection of the different initiatives to streamline and boost the system's effectiveness. Greater coherence and integration between the different programmes at a national level should be achieved. A good example of this is the recently streamlined and simplified offer of CORFO, one of the main technological promotion agencies in Chile.

Figure 2.13. Public support for innovation has increased but remains limited



Source: OECD, R&D tax expenditure and direct government funding of BERD database; CORFO (2018), Informe de Gestión 2014 - 2018, Logros y resultados de INNOVA CORFO.

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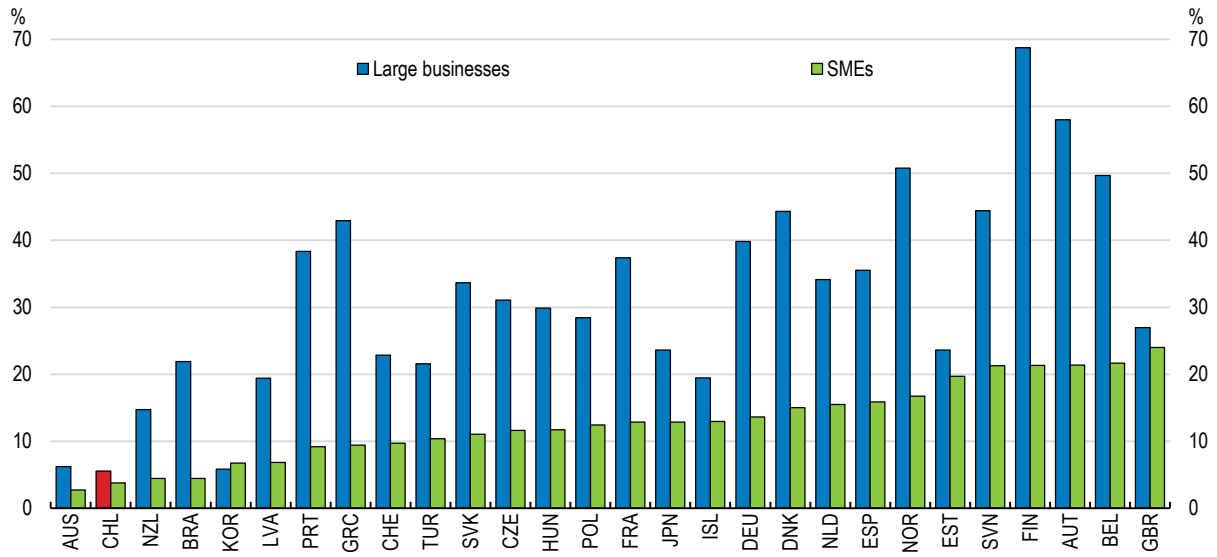
Strengthening business collaboration for innovation is key for start-ups and SMEs, but it stands currently low in Chile (Figure 2.14). In other OECD countries, traditional R&D departments in large companies still exist, but there is a clear trend in the direction of appealing to open innovation — often by setting up start-up incubators under the tutelage of a large corporation (OECD, 2019[15]). Fostering open innovation practices, such as crowdsourcing, platforms for collaboration, and open and living labs, would help to find innovative solutions to pressing challenges and nurture co-creation. Some examples on open innovation in Chile are the Fundación Chile's Expande Program in Mining or the CORFO's recent call to develop ventilators for the COVID-19 crisis. Strengthening intermediary organisations would allow to connect different actors in the innovation ecosystem (innovators, big firms, SMEs and investors) and facilitate their matching and collaboration for research and innovation. These innovation intermediaries are centres that connect firms, research centres, venture capital and service providers (e.g. intellectual property management) to find solutions to common problems. They could be particularly helpful for SMEs, since they can lower the costs related to innovation.

Collaboration is taking on greater importance in the digital era. In many countries, there are already special instruments to encourage industry collaboration, such as conditional grants (Guellec and Paunov, 2018[27]). Governments have also funded industry-level support programmes (e.g. the Dutch Top sectors), which include developing a strategic vision, investing in technology upstream, and encouraging co-operation between firms. Authorities might think of moving more of its support to developing linkages between firms while avoiding collusion between players, as collusion would hamper new entry. Knowledge intermediaries such as Fraunhofer in Germany or Catapult Centres in the United Kingdom also have an important role to play in facilitating interactive and collective innovation in the digital age. An example of policy initiatives to support collaborative innovation is the Dutch HTSM Roadmap Automotive 2018-2025, developed in collaboration among industry, research institutes and government. The roadmap identifies medium-term industry needs and sets research and innovation priorities in the fields of green and smart mobility. It highlights the importance of cross-sectoral co-operation and collaboration with international partners. Similar strategies have been adopted by many other European research agendas and priorities, such as those of the European Road Transport Research Advisory Council, the European Platform on Smart Systems Integration.

Figure 2.14. Business collaboration should be strengthened

Percentage of businesses collaborating on innovation (product and/or process) with higher education or research institutions, 2012-2014



Note: Size is calculated on the basis of numbers of persons employed. SMEs are defined as businesses with 10 to 249 employees and large firms as businesses with 250 employees or more.
Source: OECD Science, Technology and Industry Scoreboard 2017.

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Service innovation is at the centre of the digital transformation. To fully benefit from the potential of digital technologies, service innovation needs to be reinforced. Available support for service innovation is more limited and financial constraints tend to be a more important barrier for innovation (Alvarez, Zahler and Bravo, 2013[28]). As in most countries, many innovation policies have been conceived for manufacturing innovation, which is R&D-intensive and results in patents, etc. (OECD, 2019[15]). Service-type innovation relies less on R&D, and thus may not be eligible for policy support (such as the R&D tax incentives). However, service innovation requires business to have a deep understanding of digital technologies that is not yet widespread, especially among SMEs of non-digital industries. Supporting service innovation may include supporting R&D projects aimed at developing new services using new digital technologies (e.g. the Smart and Digital Services Initiative in Austria), or supporting manufacturing SMEs that will help them develop services related to their products (e.g. service design vouchers for manufacturing SMEs in the Netherlands) (OECD, 2019[15]). Addressing the specific needs for service innovation and design new programmes to address emerging needs will boost services innovation, which are pivotal for the digital era. One example is the programme Join to Innovate (Sumate a Innovar) that allows presenting service innovation proposals.

A characteristic feature of innovation today is that it is increasingly driven by the collection, processing and analysis of vast amounts of data. The public sector can drive “data-driven innovation” (OECD, 2019[4]). One of the most important things that the public sector can do to drive innovation is to enhance public sector data access. Open government data initiatives foster transparency and can increase civic trust, but also take on particular significance in a knowledge-based economy, where data and information are fundamental to innovation. The Chilean authorities have started to open data (see datos.gob.cl), however much potential exists to further open up public sector data, as is one of the OECD countries with lowest open useful reusable government data index (OECD, 2019[4]). Another recent example is the open data on COVID-19 (see github.com/MinCiencia/Datos-COVID19/).

Boosting business dynamism and the diffusion of knowledge in the digital era

The adoption of digital technologies is already supporting firm productivity growth in Chile (Box 2.3), although aggregate productivity has been on a downward path (Clapes, 2020). This is, at least partly, because digital technology diffusion has been slow and unequally effective across firms, failing to offset other headwinds on productivity. In Chile, there is a persistent division between a very small number of large and productive firms and a long tail of small and midsize companies with considerably lower productivity (see Key policy insights). As evidenced by other OECD countries, this productivity differential signals a low diffusion of knowledge and low business dynamism, holding back the reallocation of resources towards the most productive companies (Sorbe et al., 2019[29]). The adoption of digital technologies has been concentrated among the largest and most productive firms, which benefit from the human and organisational capital that is key to harnessing their full potential. Boosting digital adoption, mainly of productivity-enhancing tools and in micro and small firms, will be key to fully reap the benefits of digital transformation.

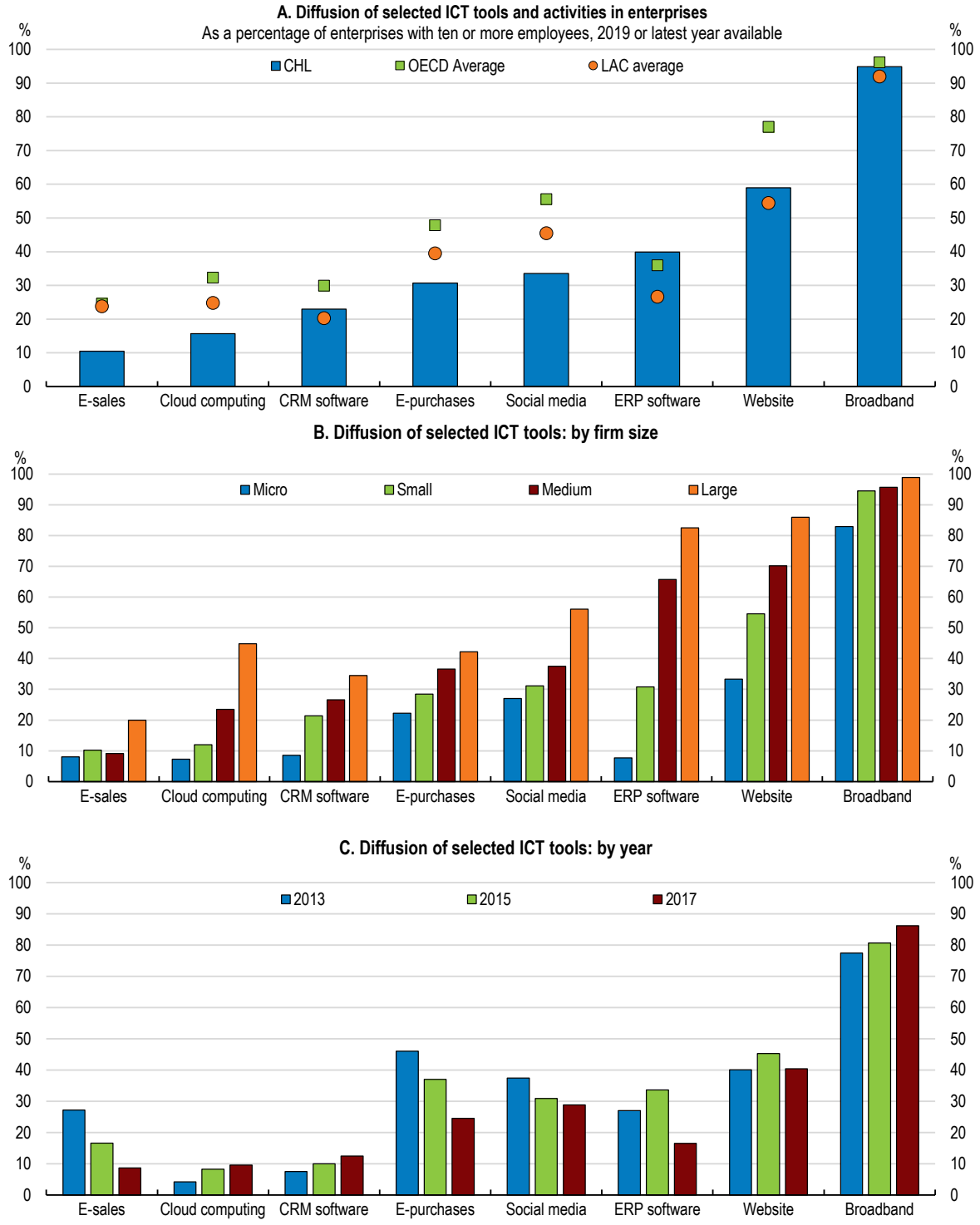
Boost adoption and diffusion of digital tools in firms, especially small and medium-sized

While Chilean firms are increasingly adopting digital tools, the gap with OECD countries remains considerable driven mainly by SMEs as large firms are almost on par with OECD standards (Figure 2.15). Although the penetration of Internet and mobile devices has increased significantly, few firms have adopted digital technologies associated with higher productivity, such as Enterprise Resource Planning systems (ERP), Customer Relationship Management software (CRM) and Cloud Computing. The gap between SMEs and larger firms are narrow with respect to simple connectivity, but large in the uptake of more sophisticated tools (Panel C). The use of productive applications is still highly concentrated in a few export companies and the service sector (INTAL, 2020[30]). The gaps are larger for micro firms, i.e. less than ten employees, bearing in mind that Chile has a large number of micro-firms that are not reported in OECD statistics. Lagging behind in terms of the diffusion of digital technologies implies bleaker prospects of reverting the decreasing trend of productivity and closing the existing productivity gap with more advanced countries.

Digital technologies are opening up new opportunities for young firms and SMEs to innovate and grow, including through e-commerce, digital business platforms, big data and Fintech. However, their current underuse by micro firms and SMEs highlights important barriers to adoption, which can include a lack of collateral to take risk and to access finance to invest in technologies, or a lack of key capabilities, e.g. human resources and management expertise. The lack of investment of in-house innovation and organisational capabilities limits the capacity of firms, especially in the case of SMEs, to take full advantage of innovation (Sepulveda, Alfaro and Vasquez, 2014[31]), but also of data analytics, engage in e-commerce and participate in knowledge networks. Furthermore, structural factors, such as competition laws and the regulatory burden, may deter the business dynamism and a thriving SME population.

A lack of awareness of potential gains, a prerequisite to motivate firms to adopt digital technologies, may also explain the slow digital adoption notable in micro and SMEs. Some OECD countries, such as Estonia, have put in place programmes to increase entrepreneurs' awareness of the positive impact of digital transformation. Enterprise Estonia offers grants to industrial firms covering the costs of digital diagnostics performed by private consultancies to identify areas where digital transformation could be implemented in the company. The grants cover most of the costs of the diagnostics exercise and range between EUR 5 000-15 000. Publishing take-up rates and disseminating success stories would also help to boost digital adoption.

Figure 2.15. The diffusion of digital tools needs a boost



Note: In Panel A, OECD refers to an unweighted average of its members countries. LAC refers to an unweighted average of Brazil, Colombia and Mexico. Panel A only includes small, medium and large firms. Panel C includes micro, small, medium and large firms. Year 2017 for Chile in panels A and B.

Source: OECD Digital Economy Outlook 2017; OECD calculations based on the Quinta Encuesta Longitudinal de Empresas (ELE5).

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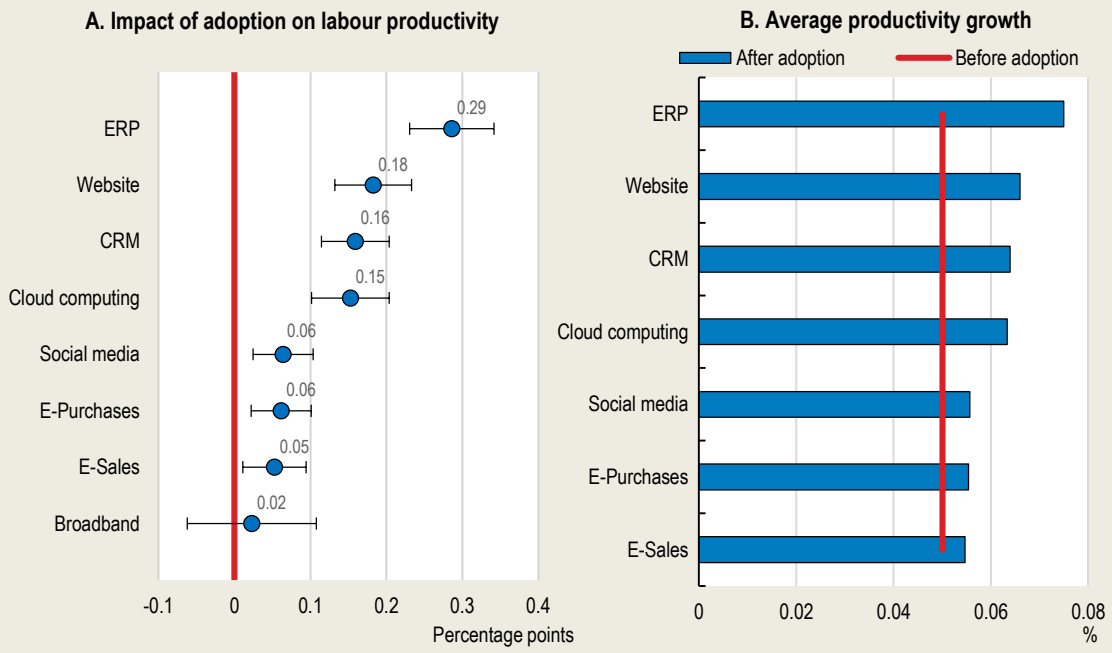
Box 2.3. Digitalisation is already having a positive impact on Chilean firms' productivity

The impact of digital adoption on productivity has been analysed using microdata from a panel of Chilean enterprises (Hitschfeld, Garda and Ruiz, forthcoming[32]). Results indicate that with the exception of broadband, where the level of adoption is more than 90%, all digital technologies are positively and significantly associated with productivity growth (Figure 2.16). Enterprise resource planning software (ERP) has the largest productivity impact, of 0.3 percentage points. Customer relationship management software (CRM), having a website and cloud computing also have a large impact. Results also suggest that the large and the most productive companies are more willing to adopt new technologies and derive greater benefits from them, which is related to the limited capabilities of, or lack of incentives for, SMEs to adopt best practices.

Across industries, particularly between manufacturing and services, the effect of digital technologies varies significantly, with a larger effect in manufacturing. Additionally, for companies that carry out R&D activities, the effect of the adoption of digital technologies tends to be greater, especially when they are linked to more complex technologies, such as ERP.

Figure 2.16. Digital adoption leads to higher firm level productivity



Note: Productivity is defined as labour productivity computed as total operational revenue over total workers and the adoption of each digital technology is measures through binary variables (dummies) at the firm level. Broadband is defined as any fixed broadband, ADSL or cable, dedicated Internet (fibre optic or private IP network), and mobile broadband via USB. A Pooled OLS model was used on a sample that includes all possible observations after a defined cleaning (unbalanced panel). Firm-level productivity growth is regressed on average productivity growth of the frontier, the firm's lagged gap to the productivity frontier, age and size, sector fixed effects and the dummy indicating the adoption of individual digital technologies. The frontier is defined as the 2 percent firms with highest productivity in each sector-year cell. Horizontal spikes correspond to 95% confidence interval. In Panel B, a company is "non-adopter" if it has not adopted that technology. The line shows the average labour productivity growth for the sample before adoption. Blue bars show the average labour productivity growth of the sample after all "non-adopters" adopt that technology. Standard errors are clustered at firm level.
Source: OECD calculations based on the last three waves of *Encuesta Longitudinal de Empresas* (ELE).

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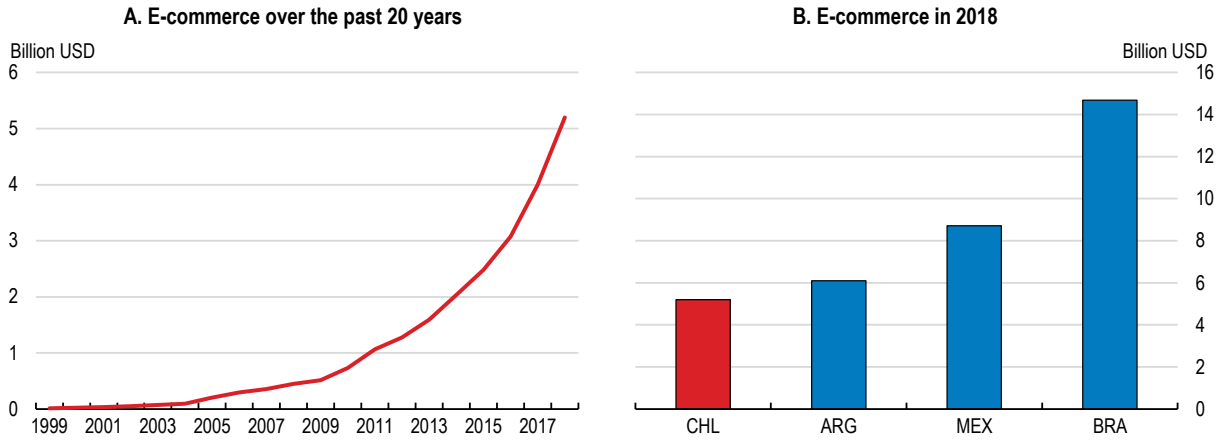
E-commerce has been growing in Chile in the latest years (Figure 2.17), and the pandemic has further deepened this trend. During the CyberDay of early September 2020, 3 days that canalise more than 10% of online sales in Chile, more than 4 million transactions were generated, with sales estimated at USD 370 million, doubling the transactions of 2019. This has the potential to let firms grow and have access to larger markets and adapting to new customer needs and forms of consumption. Targeted training, mostly focused on the digital transformation of business services, e-commerce, or on the effective use of digital media, can boost digital adoption among SMEs. Recently, the Government has launched "*Digitaliza tu Pyme*" (Digitalise your SME), a program of the Ministry of Economy along with CORFO, that seeks to create awareness, deliver training and foster the adoption of tools such as e-commerce (*Pymes en Línea*), social media, delivery and logistics, digital tax matters (*Despega Mipe*) and business management. The aim is to digitalise 250 thousand SMEs by 2022. Other sub-programmes help SMEs to self-diagnose their level of digital maturity and guide them in terms of the actions to improve digitisation (*Chequeo digital*). After receiving training small firms will be able to access a Digital Toolkit that will allow them to finance the adoption of digital tools (*Ruta Digital*). After the appearance of COVID-19, authorities extended the programme seeking to arrive to 250 thousand SMEs. CORFO is also offering scholarships to learn on digital marketing, which can also help SMEs grow and increase productivity. Another programme, *Innova Fosis*, has the objective to increase sales of entrepreneurs from vulnerable backgrounds through the adoption of digital technologies.

Figure 2.17. E-commerce in Chile has been growing at a fast pace



Note: Chamber of Commerce of Santiago de Chile, calculations based on Transbank and other surveys data. In Panel B, data for Mexico are from 2017.
Source: Chamber of Commerce of Santiago de Chile; Statista.

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To help SMEs overcome barriers to the effective use of more advanced digital tools, the government needs to amplify existing programmes and better target policies to SMEs. Online Platforms offer practical digitisation support for SMEs, especially during COVID-19 pandemic. For example, the United Kingdom offers free access to an online platform that gives both practical advice and inspiration, including instructions on how to set up a web page. Another platform provides advice on how to start and run a digital business, including building online brands and developing marketing campaign. A Massive Open Online Course (MOOC) offers cyber security advice for all firms. In of line of this, CORFO launched in 2020 a programme (*Fortalece Pyme*), seeking to support the installation and operation of centres to help SMEs improve their levels of productivity through the provision of services aimed at the adoption and use of digital technologies.

Firms can be motivated to adopt digital technologies in response to stronger competition from their rivals (Sorbe et al., 2019[29]). However, the particularly large dispersion of productivity between large and micro and small firms in Chile suggests inefficient allocation of resources, and a lack of competitive forces to push less productive firms out of the market (Albagli et al., 2019[33]; OECD, 2018[1]). Indeed, evidence from the National Commission of Productivity indicates that the lack of competition in local markets explains at least part of the slowdown in productivity since 2000 (CNP, 2019[34]). Although there has been some progress in the right direction, such as reforms to competition laws, a small number of large firms still dominates the economy (Figure 2.18, Panel A) and competition remains low in some key sectors, such as communications and banking.

Competition policy in the banking sector is being modernized. Authorities have passed a law to include financial portability, similar to the numerical portability in the communications sector, which would make it easier for people and firms to change financial institutions. It is expected that financial portability will increase competition in the financial services, reduce costs and time to carry out procedures for users firms and households as it allow firms and households to access financial services and products in better conditions.

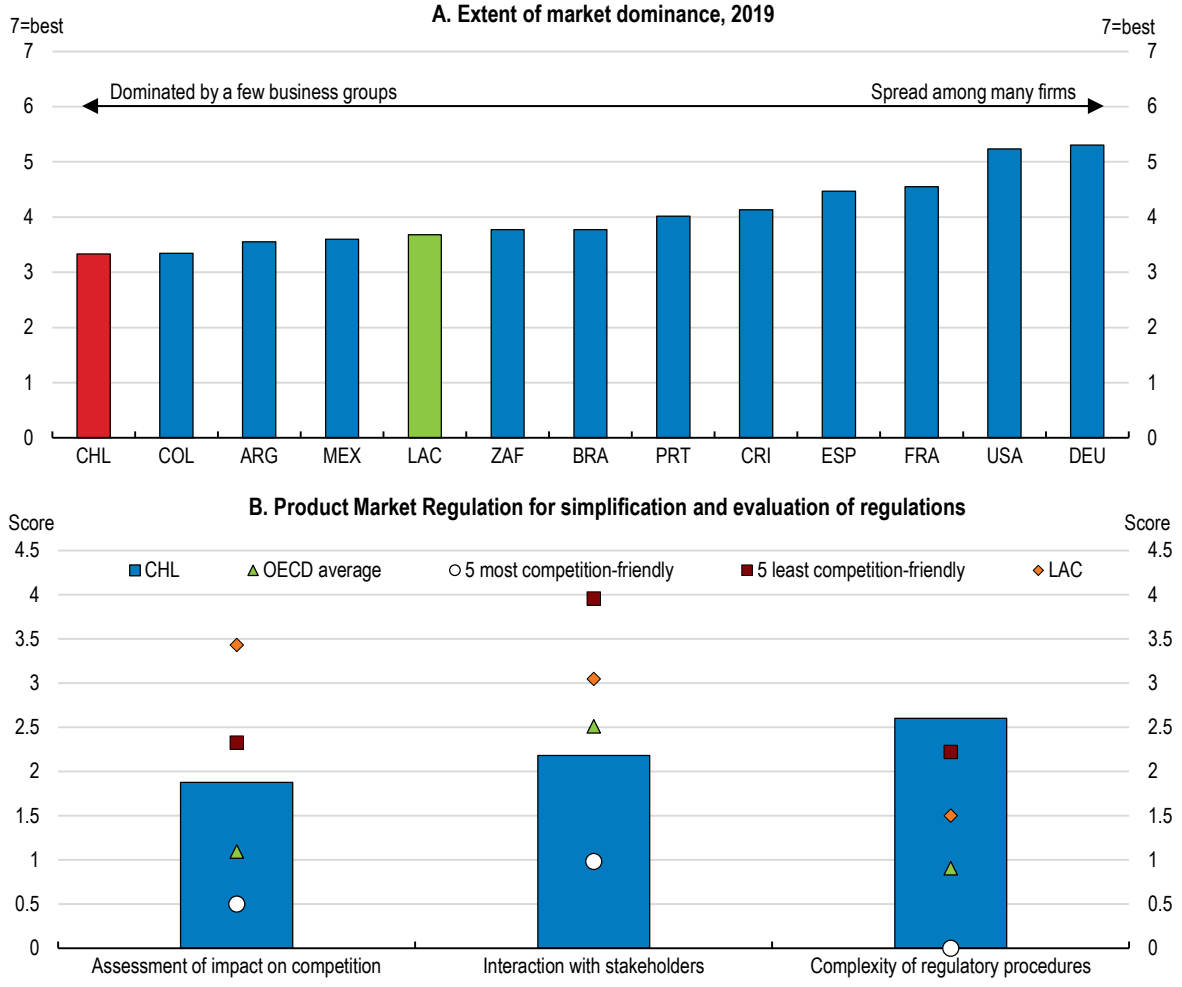
Innovation in financial services and the development of FinTech has the potential to transform finance and capital markets, enhance competition, and increase the number of companies and people with access to financial products and services. It also makes it easier to facilitate transactions in other markets. Since the COVID-19 pandemic, Fintech has become even more important. During 2020 Chile announced that it is working on a Fintech bill with the aim of providing the same opportunities for those companies that provide financial services with a more intensive use of technology than traditional companies, and thus reduce the regulatory gap among them. The bill has the potential to promote competition in the financial markets and financial inclusion.

Fintech has lagged behind, driven at least in part by a lack of competition in the payments system. Indeed, the payment system has been dominated by Transbank, which charges high fees for every transaction banks and merchants do. Until recently, Chile operated a three-part model in which card issuers also hold the acquirer's license, concentrating on the same agents the roles of issuer and acquirer. In addition, the main card issuers, which are banks, have delegated the acquiring function to a single company, Transbank. Authorities are implementing a modification to the current payment system and establishing a four-part model considering the merchant, the user, the acquirers and the issuers. The aim is to give more competition and transparency to the transactions payment market, putting an end to Transbank's monopoly in the market. The proposal incorporates the card brands as a new player, with which the acquirer would lose the ability to set prices to issuers and merchants. New acquirers can also join, as has already started to happen. Increased competition could bring payment fees down by letting merchants choose the acquiring company with which they wish to operate, generating more competition. However, this will depend on how many acquirers join the market and the adequate regulation of the actors. Along with the Fintech bill, there is a bill to regulate the interchange rates ("swipe fees") for the payments system. The project establishes: the interchange rates for national transactions with payment cards will be subject to maximum rates, differentiated by card type (credit, debit, or prepaid); the Central Bank will determine the maximum interchange rates by card type; the levels and structure of the maximum interchange rates will be established through an economic study carried out by an independent technical entity with proven international experience.

Unnecessarily burdensome regulation (Figure 2.18, panel B) is a barrier for SMEs and start-ups to grow and emerge. The amount of time and/or money needed to comply with regulations is proportionately greater for SMEs than for larger firms, discouraging digital adoption. According to a recent study from the Productivity Commission, the regulatory system is characterized by low efficiency in the permitting process and a low degree of legal certainty (CNP, 2019[35]). The low efficiency is manifested in long processing times, and is the result of a lack of coordination between agencies and the low use of technologies for traceability. There are also inconsistent rules and areas of contradiction and confusion around the

jurisdictions of different agencies. The lesser legal certainty alludes to a lack of predictability with respect to the criteria for the admissibility and granting of permits, and clarity with respect to the ways in which it may be revoked.

Figure 2.18. Competitive pressures remain low and the regulatory burden is high



Note: The indicator in Panel A shows the extent of market dominance, 1-7 (best). In the World Economic Forum, Executive Opinion Survey, it is the answer to the following question: In your country, how do you characterize corporate activity? [1 = dominated by a few business groups; 7 = spread among many firms]. In Panel A, LAC refers to the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico. In Panel B, LAC refers to the unweighted average of Argentina, Brazil and Mexico.
Source: World Economic Forum, The Global Competitiveness Index 4.0 2019 dataset (version 04 October 2019); OECD, 2018 PMR database.

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Increasing the efficiency and transparency in the granting of permits and in their legal certainty would lower barriers to market entry, especially for smaller and young players, thus supporting competition. A reform of the permitting process would require the definition of the processing time for all existing permits, the digitalisation of all processes, including a mapping of all existing processes and incorporating internal positive silence rules. Authorities have also put in place a portal to denounce bureaucratic obstacles to SME entrepreneurship to lift them. An agency from the Central Government should be responsible for the surveillance of the whole process. Going in the right direction, the Government has set up a digital platform, SUPER, a Unified System of Permits, which acts as a single digital window for all sectorial permits that a project requires for its approval, allowing to follow the progress in all agencies. The portal is already working

with 10 permits. Integrating more permits and procedures and public agencies is essential. Generalising positive silence rules could further ease firm entry and formalisation, by delaying the administrative burden on start-ups and focusing on ex-post controls. As part of the COVID-19 recovery plan, authorities are implementing measures to reduce burocracy, particularly for SMEs, such as providing provisional patents for SMEs to start operations and have one year to obtain the necessary permits for their final commercial patent.

Reforms of the notary profession and to reduce the use of notary procedures could ease significantly the administrative burden for firms, especially SMEs, and households. The competition authority has recently concluded a market study on Chilean notaries, highlighting that notaries are involved in more than 200 procedures, such as certifying bank guarantees or concluding real estate sales, but they are unequally spread across municipalities, lengthening procedures, and appear to frequently overcharge for their services (FNE, 2019[36]). The study highlights the need to open the market of notaries and allow introducing technological innovations and data sharing with the administration in a systematic way to reduce the time of procedures and increase efficiency. There has been good progress on the use of the electronic signature and a bill being discussed in congress seeks to modernize it, but further expanding it on all notarial activities and notaries would ease the administrative burden. Another project aims at diminishing the number of tasks that require a notary, which would be welcome.

Promote start-ups and young firms

The progress on broadband infrastructure has allowed Chile to reap the benefits of the rising start-up scene in Latin America (OECD, 2016[37]). Chile is the fourth largest hub by number of start-ups in Latin America after Brazil, Mexico and Argentina, and the fifth largest by investors in venture capital (LAVCA, 2017[38]). Start-ups in Chile cluster in the traditional industrial hubs of the capital, with the metropolitan region of Santiago concentrating 80% of all start-ups (OECD, 2016[37]).

Digital transformation is driving the rise of start-ups and young firms of different forms, from online platforms to Fintech firms and in many different sectors, such as education, health, data-intensive services, etc.. Promoting the emergence of start-ups operating in the digital markets and nurturing the growth process of these start-ups and young firms into scale ups would lead to higher productivity and high-quality jobs.

Chile pioneered the start-up promotion in Latin America with the introduction of Start-Up Chile in 2010, a public business accelerator programme created for high-potential entrepreneurs to bootstrap their start-ups using Chile as a platform to go global. The programme's objective is to generate a socio-economic impact through the acceleration of innovative technological firms that allow the sophistication and diversification of Chile's economic matrix. Ten years after its creation Start-Up Chile has supported 1 960 start-ups, has generated more than 7 thousands jobs in Chile and accumulated sales of USD 1.2 billion, and has managed to raise an important public and private capital. The programme is now being amplified. Authorities are increasing the number of start-ups supported by the programme from 180 to 400 and are creating a regional acceleration programme to ensure that, at least, 60 start-ups come from the regions outside the capital city.

Lack of financing seems to be one of the most important barriers for start-ups and firms to emerge and grow. Almost two out of three firms in Chile think that lack of funding is an important barrier for growth. This is even more problematic for micro firms and SMEs. According to the Commission for the Financial Market (CMF), credit activity, measured as the growth of credit placements, grew by 9.35% in 2017-2018. However, the participation of SMEs in outstanding commercial loans decreased in 2018 to 19.9%. Microenterprises and small businesses are responsible for the increase of outstanding SME loans, and Banco Estado has been the key financial institution working to improve access of SMEs to financing, together with the Corporation for the Promotion of Production (CORFO).

CORFO and Start-Up Chile's programmes are the main instruments of SME capital financing, although other private and public initiatives have also developed. In 2017, CORFO launched the SME Credit Programme to improve SME access to alternative sources of finance and non-bank financial intermediaries. Digitalisation is creating a range of innovative financial services for SMEs and start-ups, from peer-to-peer lending to alternative risk assessment tools and Initial Coin Offerings (ICOs). Blended models are on the rise, and the Fintech (including crowdfunding) is becoming more central in the SME finance landscape (Koreen, Laboul and Smaini, 2018[39]).

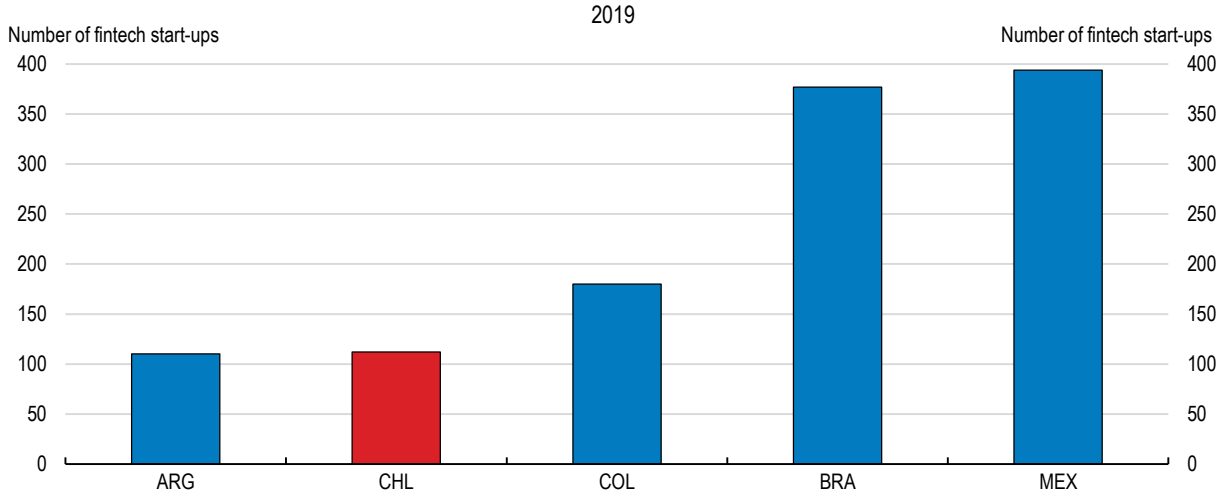
Digital transformation increasingly creates both new opportunities and new challenges for SME financing. This includes new approaches to credit risk assessment and new digital tools for SME financing. Fintech, defined as technology-enabled innovation in financial services, is becoming more and more important in easing SMEs' access to finance. It is also ensuring financial inclusion for some segments of the SME population that are traditionally unserved or underserved by financial institutions and markets. SMEs use FinTechs to help them with their financial needs, including securing working capital, hedging foreign exchange risk and managing cash flow. Evidence shows that efficiencies generated by open banking in the SME sector can be significant, and that the products and services powered by open APIs bring real value to SMEs (FinteChile and EY, 2019[40]). Fintech has also contributed to decrease transaction costs for lenders wishing to reach out to underserved segments of the SME population, such as firms in rural and remote areas, micro-enterprises and informal ventures (OECD, 2020[41]).

Policy makers around the world are encouraging open banking, whereby financial institutions are obliged to share their data with third-party financial service providers, in the expectation that this will spur competition in the financial industry. The aim is that small business owners and entrepreneurs can share banking data securely and easily within a well-functioning open banking protocol. Such regulation could also encourage financial innovation by making banking data available to financial sector start-ups, as well as established actors (OECD, 2020[41]). For instance, the Australian government agreed to the recommendations made in a review on open banking in May 2018. Over the 2019-22 period, open banking will be implemented in several phases in the country. Similarly, the PSD2 (Revised Payment Service Directive) is being implemented in the European Union since 2018 (with certain provisions becoming mandatory only later, so as to allow the financial sector time to adapt). PSD2 obliges banks operating in the area to provide third-party financial providers access to their customers' accounts through open APIs.

Some countries have made their legislative framework more favourable to innovation in the financial sphere (OECD, 2020[41]). In addition to new regulations concerning investment-based crowdfunding Fintechs implemented in 2017, Brazil decided to regulate credit Fintechs in 2018. Two specific business models have been authorised: the peer-to-peer lending model is regulated as a Sociedade de Crédito entre Pessoas (SEP), and the balance-sheet lending is regulated as a Sociedade de Crédito Direto (SCD).

Fintech's ecosystem in Chile has registered a 2-fold increase in the number of start-ups between 2016 and 2019 to more than 100 start-ups (Figure 2.19) (Finnovista, 2019[42]). The Fintech industry has grown by 34% in 2017 and 29% in 2018 (OECD, 2020[41]). This rapid growth highlights a thriving ecosystem offering a wide range of financial services for SMEs, ranging from payments and remittances to loans and crowdfunding and scoring services. This was taken into account by the Ministry of Finance, which announced in April 2019 the sending to Congress of a Bill that will regulate and strengthen this industry. Chile has the opportunity to lead the development of the Latin American Fintech sector, boosting growth and innovation.

Figure 2.19. Chile has room to increase the number of Fintech start-ups



Note: Data refer to 2018 for Argentina and Brazil.
Source: Finnovista.

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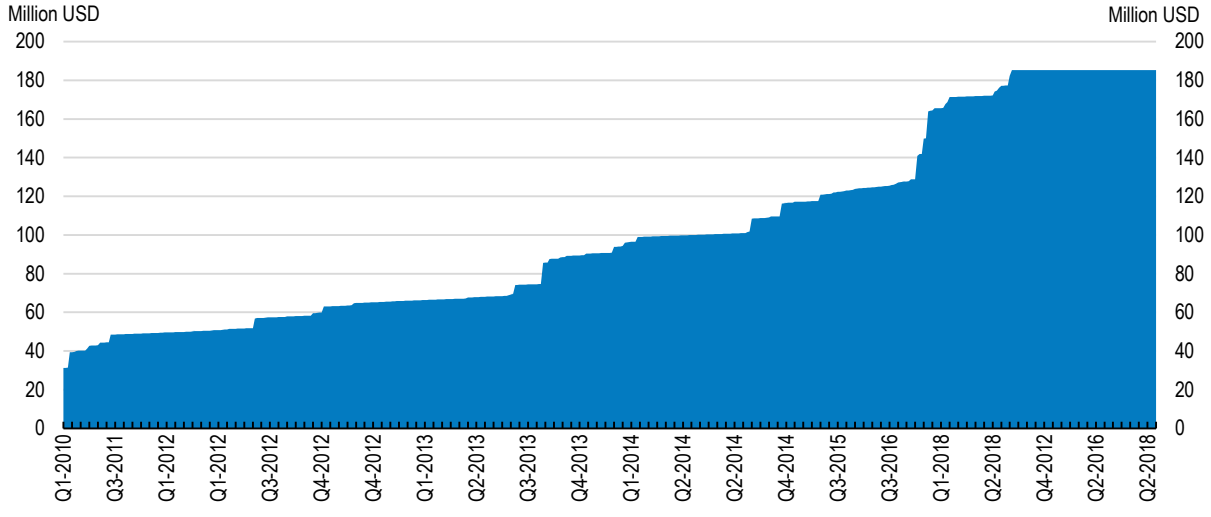
The availability of venture capital and angel investors is one of the essential determinants for FinTech, and more general for all start-ups development (FinteChile and EY, 2019[40]). Research has shown that cross-country differences in the availability of risk capital are significant and positively related to the speed of technological diffusion (Saia, Andrews and Albrizio, 2015[43]). Venture capital has increased, and Chile has one of the most developed industries in Latin America, but the development has stalled (Figure 2.20). There is also an issue of low amounts of investment in venture capital (FinteChile and EY, 2019[40]). Angel investors have played an important role financing start-ups, but remain weak (FinteChile and EY, 2019[40]).

Figure 2.20. The development of venture capital has stalled in Chile



Source: Production Transformation Policy Review of Chile - © OECD 2019.

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Overall, there is a need for more diversified financing options for start-ups, including alternative forms of debt and hybrid tools (OECD/G20, 2015[44]). Increasingly, tax incentives are being used in a number of countries as a way to address asymmetries in the treatment of profit and losses which can help in removing barriers and encouraging more investment in start-ups, particularly important for venture and angel investors (OECD, 2019[45]). Other way OECD countries have been facilitating the growth of venture funding is, directly, through funds or co-investment funds (in which public money is used to encourage and leverage private investment). Also, fund-of-fund vehicles have been used (a "fund of funds" is an investment strategy consisting of holding a portfolio of other investment funds rather than investing directly in shares, bonds or other securities). The Yozma Fund in Israel is an often referenced example of effective government policy for developing the local venture capital community (OECD, 2019[45]). Finally, developing a healthy entrepreneurial ecosystem is critical for the development of angel investors and venture capital markets.

Fintech can support productivity and growth by strengthening financial development, inclusion, and efficiency, but may pose risks to consumers and investors and, more broadly, to financial stability. There is a need to incorporate Fintech activities into the financial regulatory perimeter, such as crowdfunding and the activities associated with cryptocurrencies. In a welcome move, the Ministry of Finance has announced it would work with the Financial Stability Council to develop regulation for the industry.

A regulation that generates greater confidence in the Fintech sector and promotes investment, balancing the opportunities and risks of Fintech and coupled with incentives for companies to invest in the sector through Corporate Venture Capital models, would help developing further the sector. Examples in the region can be found in Colombia or Brazil. The Colombian Superintendence of Finance has launched a broad strategy for the promotion of sustainable and responsible innovation in the financial sector. As part of this strategy, channels have been established to exchange with the financial sector on innovation (elHub) as well as a sandbox environment (laArenera) allowing firms to test new technologies and business models under observation (OECD, 2019[46]). Several companies have initiated its activities under the scheme since February 2019. In Brazil, the Central Bank, the Commission for Security Markets and the Private Insurance Regulators are currently elaborating proposals for regulatory sandboxes, allowing firms to experiment with innovative business models and products, while at the same time enhancing regulatory capabilities (OECD, 2020[13]).

Sandboxing offers a regulatory perimeter for innovative business ideas to be tested in a controlled environment (OECD, 2020[41]). The rationale behind such an approach is to allow for more flexibility and experimentation for innovative (and typically small-scale) financial activities. Certain conditions are imposed on the businesses in order to ensure consumer protection, and consumer feedback (concerning both the business idea and its regulation) is an essential component of this kind of framework. Apart from the establishment of a regulatory sandbox, flexible regulation may take the form of reduced licencing requirements, like in the Netherlands and the United Kingdom. In return, businesses benefitting from these schemes can be obliged to remain below a certain number of customers or sales figures, like in Australia. Under certain conditions, a business idea that has failed may also be exempt from certain legal requirements. Often, conditions regarding consumer protection are relatively strict, including the designation of a dedicated point of contact or advisor within the business, with whom regulators can remain in dialogue throughout the process.

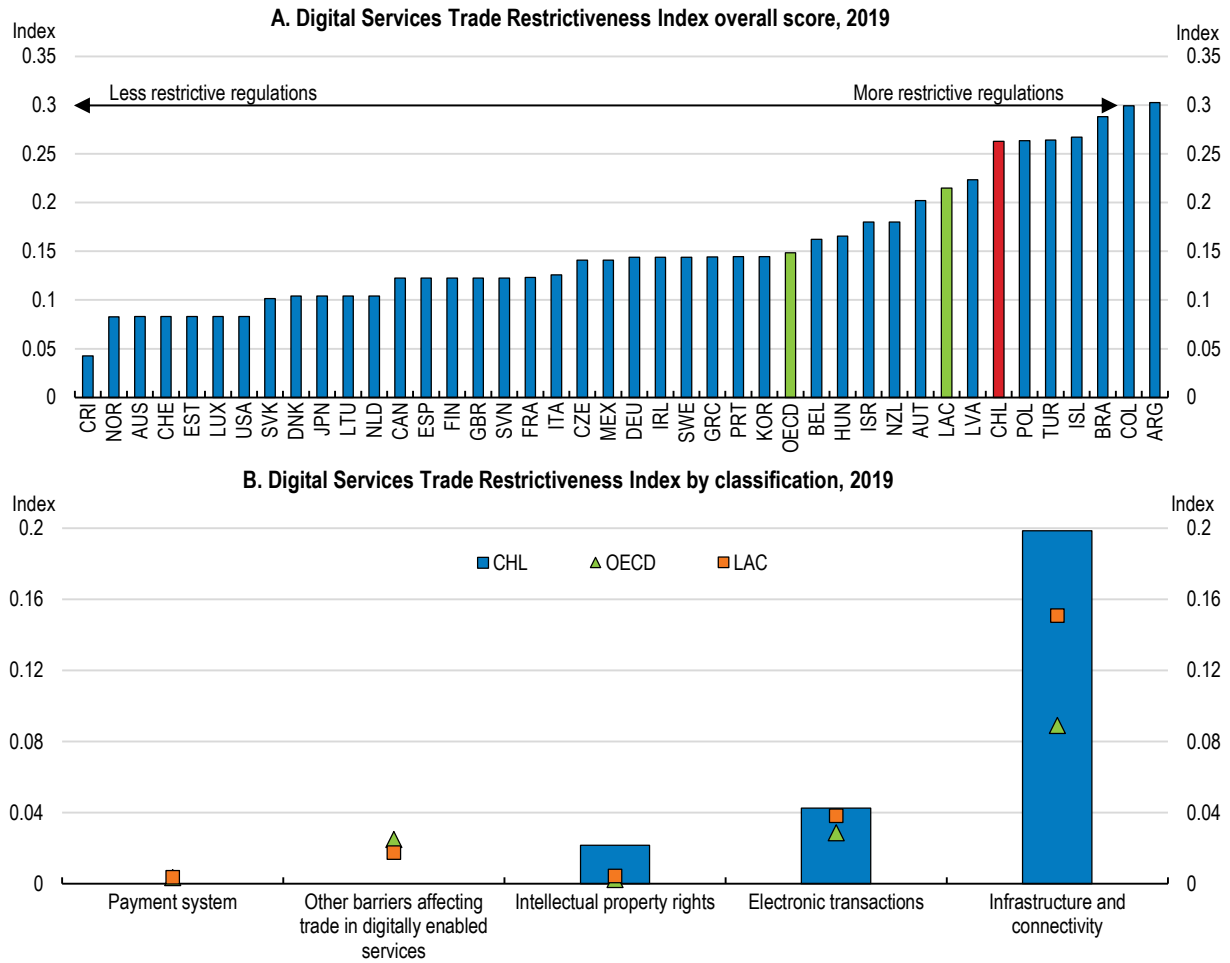
Prepare for changes in international trade

Digital transformation can help Chile to diversify its export basket and gain markets, transforming the country from a commodity-based to a high value-added goods and services economy. Digital transformation is creating new trade opportunities for firms to sell more products to more markets. It is increasing trade in goods and services across all sectors and allows countries to draw greater benefits from their trade agreements (López González and Ferencz, 2018[47]). These new opportunities are particularly beneficial for SMEs as they reduce trade costs, allowing for more efficient co-ordination of

global value chains, enabling the diffusion of technologies across borders and connecting businesses and consumers globally (López González and Ferencz, 2018[47]; López González and Jouanjean, 2017[48]; WTO, 2018[49]).

Services play a crucial role in enabling digital trade transactions. The benefits of digital transformation can be derailed by restrictive policies on digitally enabled services that impose cumbersome and costly trading conditions on firms. There is room to improve the regulatory environment affecting digitally enabled services (Figure 2.21). As in other countries, the regulatory environment affecting infrastructure and connectivity, among which are measures affecting the movement of data, are increasingly relevant (Ferencz and Gonzales, 2019[50]). Barriers related the electronic transactions are also the main contributors to the restrictiveness. This is due to lack of pro-competitive regulations on interconnection measures, online tax registration and declaration is not available to non-resident foreigners, and international standards for cross-border transaction deviate from internationally standardised rules. Also, Chile has regulations that fail to provide equal treatment to foreigners and nationals with regard to the protection of trademarks, copyright and related rights. In June 2020, in a welcome step, Chile introduced a VAT simplified registration and compliance regime for non-resident suppliers of B2C digital services.

Figure 2.21. Digital Services Trade Restrictiveness is high



Note: STRI indices take the value from 0 to 1. Complete openness to trade and investment gives a score of zero, while being completely closed to foreign services providers yields a score of one. LAC refers to the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico. OECD refers to an unweighted average of its member countries.
Source: OECD, Digital Services Trade Restrictiveness Index database.

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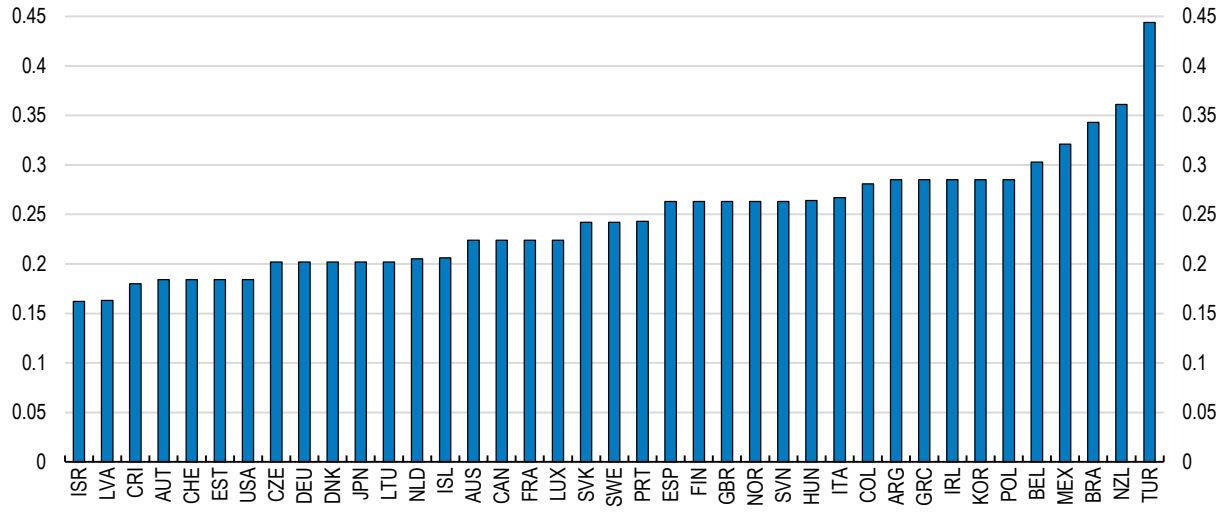
The interoperability of national regulatory frameworks is becoming an increasingly important determinant for international trade (Casalini, López González and Moïsé, 2019[51]). Figure 2.22 shows that Chile's regulatory environment in 2018 was most similar to regulation in many European countries and the Unites States. However, differences in regulations are relatively large with regard to the region, including Argentina, Brazil, and Mexico. The government, therefore, should pursue multilateral solutions and enhanced international co-operation to reduce regulatory frictions with the region.

Working with the region to modernize and harmonize e-commerce and digital regulations and ensure interoperability of the Internet across the region would be especially helpful for SMEs and start-ups. Common regional regulatory and policy frameworks in areas, such as free circulation of digital goods and services, privacy, consumer protection laws, cybersecurity, taxation of products and companies would help lower the costs for companies to operate across the regional market, incentivize start-up formation, and fuel the expansion of digital services (Suominen, 2017[52]).

Figure 2.22. The interoperability of national regulatory frameworks with the region could improve

Regulatory heterogeneity of Chile compared to each country in the figure, 2019



Note: The figure shows the OECD DSTRI heterogeneity index. The index assesses – comparing Chile with respect to each country showed in the figure– whether or not the countries have the same regulation as Chile. For each country pair (Chile-other country), the index reflects the (weighted) share of measures for which the two countries have different regulation. Hence, the index reflects heterogeneity with regard to Chilean regulation.
Source: OECD, Digital STRI Heterogeneity Indices database.

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Monitor competition to avoid the concentration pitfall

The digital economy poses new challenges for competition policy. Concerns about "winner take all" dynamics unleashed by digital technologies and the market power that some digital firms have developed are legitimate. Network effects (increased utility of a product/service with an increased number of users) and "scale without mass" (a possibility of adding new users at virtually no cost), which characterise some digitalised markets, tend to create "winner-take-all" or "winner-take-most" outcomes (OECD, 2019[53]).

Digital transformation may also support or facilitate new forms of anticompetitive conduct, limiting competition and generating substantial harm. For example, the increasing use of pricing algorithms can potentially enhance competition but also, on occasion, increase the risks of collusion (OECD, 2017[54]). A bill currently in discussion aims at establishing stronger penalties for cartels on markets for necessity

products, a welcome move given that these products represent a large share of the spending for the most vulnerable households. Other measures under development would give the competition agency higher oversight capabilities, such as the ability to monitor bank transactions and access information from the telecommunications. Small businesses may also be discouraged to innovate and to grow if large or international players have dominant market positions, which may well be the case in an economy where technology leaders increasingly capture most market shares. The developments in AI, with data generated by those who have created and own the technologies and platforms that gather the data, may, to the extent it cannot easily be reproduced, enhance barriers to market entry, leading to increased market concentration, raising competition concerns.

Recent trends in the global economy support concerns of the competitive intensity of more digitalised sectors. There is evidence of declining business dynamism and growing industry concentration (Bajgar et al., 2019[55]). Mark-ups, which measure the difference between the market price that a firm charges for its output and the firm's average per-unit production cost, have been increasing on average across firms and countries, especially in the most digitally-intensive sectors (Calligaris, Criscuolo and Marcolin, 2018[56]). Additionally, the number of merger and acquisitions doubled globally during 2003-2015 (Bajgar, Criscuolo and Timmis, 2019[57]).

When it comes to concrete changes to the competition policy framework to address the challenges digital transformation possesses, there is no clear consensus yet. There are also views that establishing a new digital regulator, which could have responsibilities ranging from facilitating portability, interoperability and micro-payments, to participating in merger reviews would help. There are also calls for ensuring anticompetitive digital sector mergers are notified and assessed through new merger notification requirements.

There are also some non-controversial measures to promote competition in digital markets. Namely, better and faster co-operation among competition authorities, continuing to use existing enforcement tools in digital markets when warranted, and further reliance on market studies to understand competition problems in digital markets outside the framework of enforcement action.

The Chilean competition authority, *Fiscalía Nacional Económica*, has an active competition advocacy role to play to prevent collusion and monopolisation in digital markets. The *Fiscalía* could continue systematically reviewing the competitive pressures focusing on digital sectors by conducting market studies and applying the guidelines of the OECD's Competition Assessment Toolkit, which has been revised in 2019, in light of the global digital transformation developments. It will be required monitoring carefully network and economics of scale effects, including mergers and acquisitions in digitally-intensive sectors and concerns about pricing algorithms that could function in the same way as explicit collusion.

Competition policy will increasingly need to assess how conduct and mergers affect innovation as well as new dimensions of quality, such as consumer privacy (OECD, 2018[58]) or the concentration of personal and non-personal data as a result of a merger. Stronger tools, such as joint investigations, are needed to enhance international cooperation between competition authorities, and their cooperation with other regulators, such as consumer protection and data protection authorities.

Preserving social cohesion and helping workers make the most out of a dynamic labour market

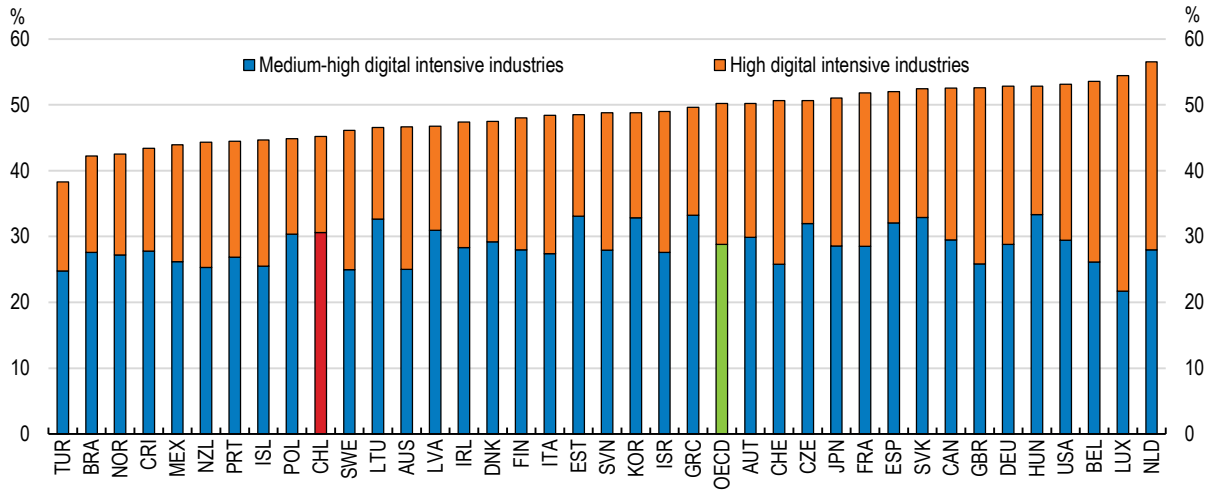
Digital transformation creates new jobs, but is also challenging 50% of the existing ones

Digital transformation may bring many new opportunities for workers, improvements in job-quality and foster inclusive growth. Digital transformation can boost job creation in digital-intensive sectors, which is still low in Chile (Figure 2.23). It can bring efficiency gains as sharing-economy platforms expand, and

improve labour market inclusion for individuals typically excluded from the labour force, such as women and youth, helping to close existing marked gaps. Digital transformation can also make possible working at a distance, as evident during the lockdowns put in place to reduce the propagation of COVID-19. In a welcomed move, in March 2020 the congress in Chile passed the teleworking law given teleworkers the same status as any other contract worker, regulating security, hours of work and other workers' rights.

Figure 2.23. Employment in digital-intensive sectors remains low in Chile

Employment in digital intensive industries, percentage of total employment, 2016 or latest year available



Source: OECD Going Digital Toolkit.

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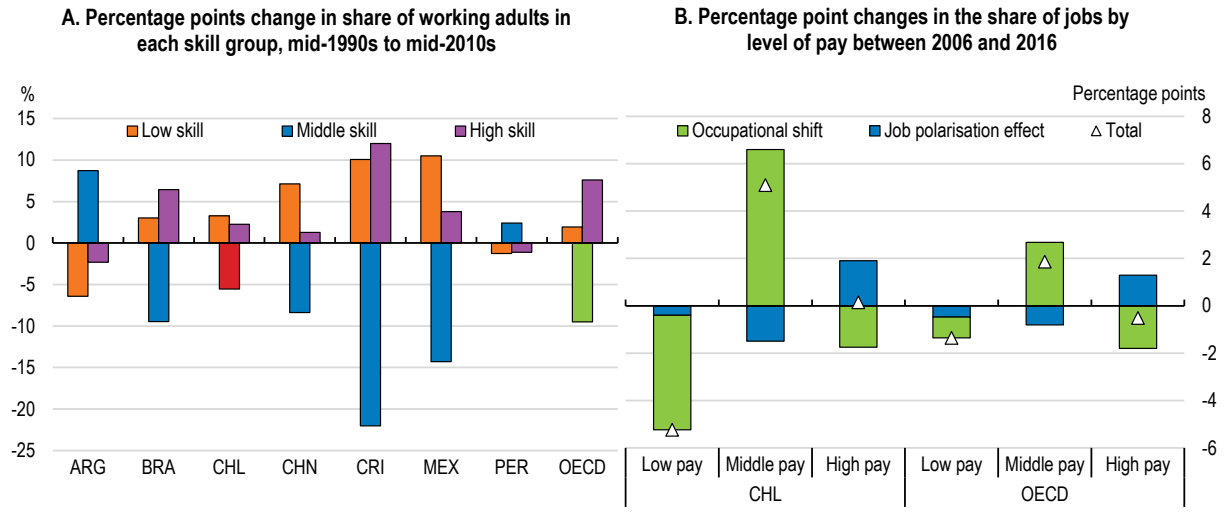
However, the benefits provided by digitalisation could be associated to some risks. The Chilean labour market is experiencing polarisation, i.e. the share of middle-skilled jobs has decreased relative to the share of workers in high and low-skilled occupations (Figure 2.24, panel A), as in other emerging economies and many advanced economies (Alonso Soto, 2019[59]). This effect was not accompanied by an increase of the share of middle-pay workers, because an occupational shift led to an increase in the propensity of different occupations to pay medium wages (Figure 2.24, Panel B). The raise in the share of middle-paid jobs reflects that people with high skills are increasingly being paid middle wages. Polarisation can be exacerbated by digital transformation if not everyone has the skills needed to take advantage of the opportunities digitalisation could deliver.

Figure 2.24. The Chilean labour market shows signs of polarisation



Note: In Panel A, high-skilled occupations include jobs classified under the ISCO-88 major groups 1, 2, and 3, that is, legislators, senior officials, and managers (group 1), professionals (group 2), and technicians and associate professionals (group 3). Middle-skilled occupations include jobs classified under the ISCO-88 major groups 4, 6, 7, and 8, that is, clerks (group 4), skill agricultural and fisheries workers (group 6), craft and related trades workers (group 7), and plant and machine operators and assemblers (group 8). Low-skilled occupations include jobs classified under the ISCO-88 major groups 5 and 9, that is, service workers and shop and market sales workers (group 5), and elementary occupations (group 9). OECD refers to the unweighted average of 23 member countries. In Panel B, low-paid jobs are those paying less than two thirds of the median wage, while high-paid jobs are those paying more than 1.5 times the median wage. OECD refers to the unweighted average of 31 member countries. The time period covered is 2006-2015 for Chile.
Source: OECD 2019 Employment Outlook.

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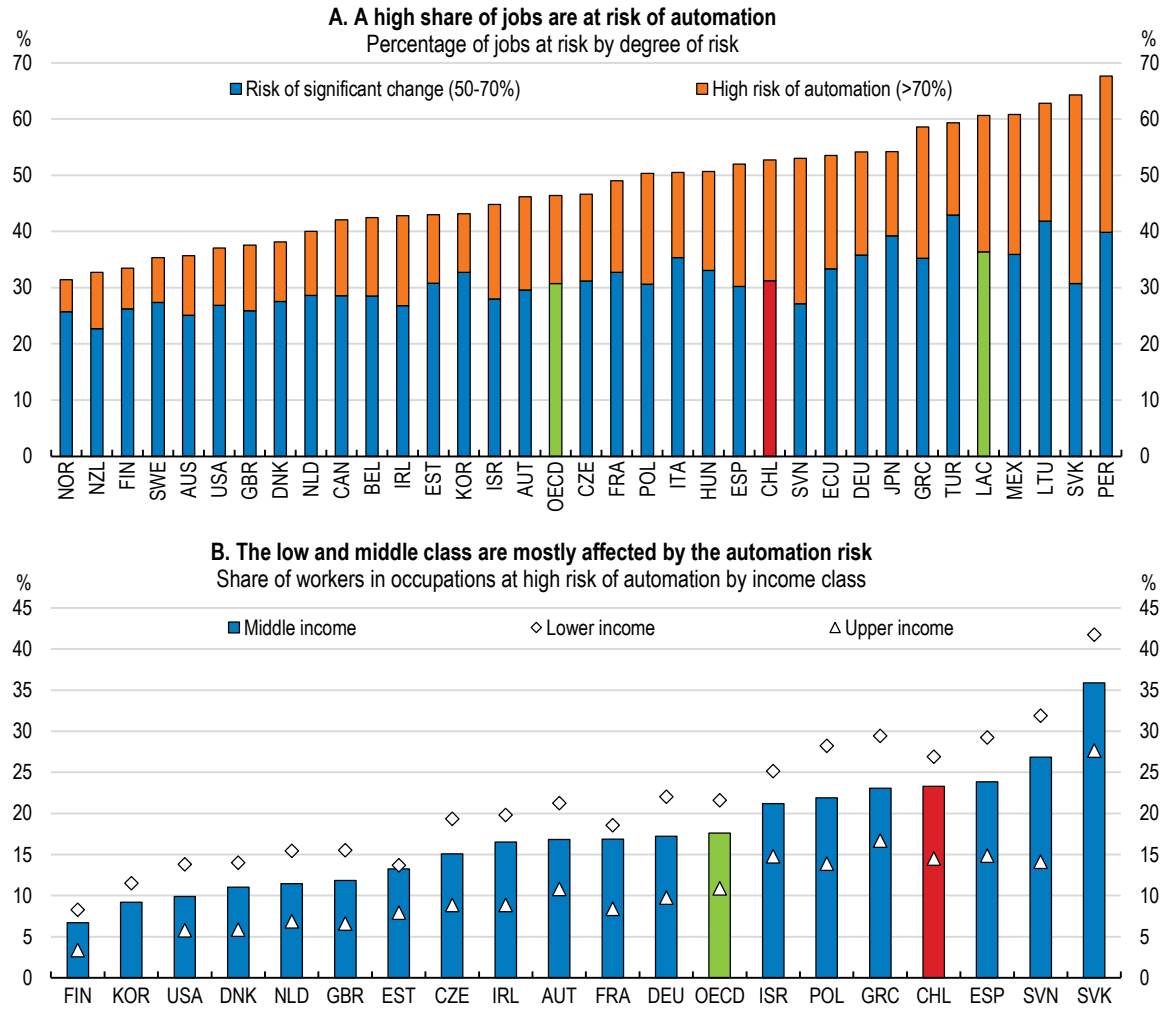
Some jobs will be created, some jobs will be replaced, and many jobs will be transformed (Figure 2.25). Digital transformation is dramatically transforming the demand for skills, occupations and tasks performed by workers (Grundke et al., 2018[60]; OECD, 2019[61]; Weller, Gontero and Campbell, 2019[62]). More than half of Chilean workers are in jobs likely to be impacted by automation, or that will face significant changes, affecting the middle- and low-class households disproportionally (Panel B). Even when taking into account informality as an activity of subsistence, almost 24% of total employment is likely automatable in Latin America, with this share being higher at 36% in Chile (Weller, Gontero and Campbell, 2019[62]). In fact, digitalisation and automation are already affecting the labour market dynamics in Chile (Box 2.4). Employment in jobs with high risk of automation have already decreased in the last decade and this has happened mainly in jobs that are mainly routine and manual (Figure 2.26).

Figure 2.25. More than half of jobs are at risk of automation, affecting more low and middle-classes



Note: In Panel B, "Lower income" households defined as households with income below 75% the national median. "Middle income" households are households with income between 75% and two times the national median. "Upper income" households are households with income above two times the national median. The risk of automation is calculated as the average of the risks of automation by occupation, weighted by the share of each occupation in the income class. LAC refers to the unweighted average of Ecuador, Mexico and Peru. For both panels, data are from 2015 or latest year available.

Source: Nedelkoska, L. and G. Quintini (2018), "Automation, skills use and training", OECD Social, Employment and Migration Working Papers, No. 202, OECD Publishing, Paris. http://dx.doi.org/10.1787/2e2f4eea-en; OECD (2019), Under Pressure: The Squeezed Middle Class, OECD Publishing, Paris, https://doi.org/10.1787/689afed1-en; OECD secretariat calculations based CASEN 2017 for Chile and PIAAC.

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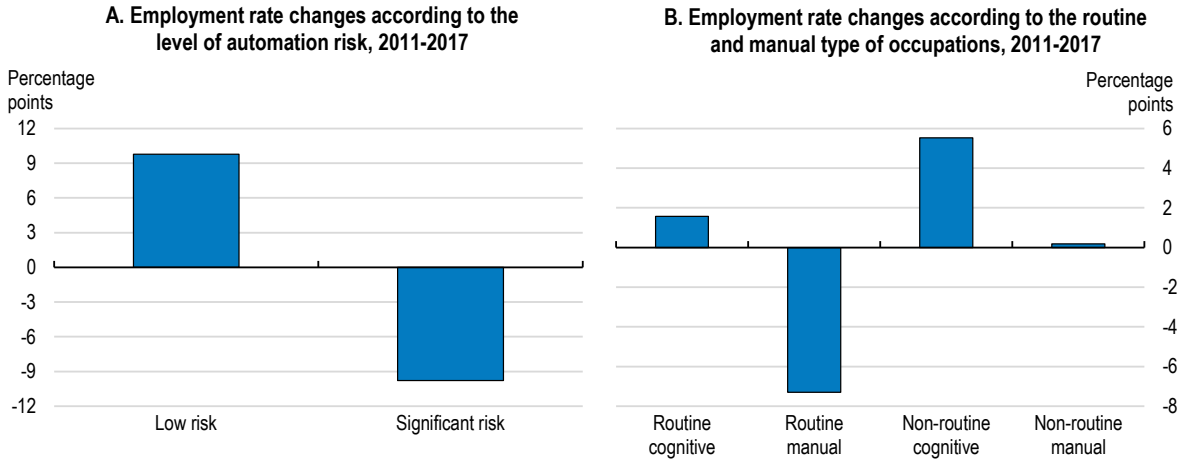
Figure 2.26. Employment in routine manual occupations and those with high risk of automation has decreased in the last decade



Note: The bars show changes in employment rate in each occupational classification between 2011 and 2017. The relative importance of the change for each group depends on the distribution of occupations. In Panel A: Significant risk – above 50% probability of automation; low risk – below 50% probability of automation as defined by Nedelkoska and Quintini (2018). In Panel B: intensity of task content of occupations as identified by Marcolin et al. (2016) and Nedelkoska and Quintini (2018) using PIAAC.
Source: OECD calculations based on CASEN (2011-2017), PIAAC (2012 and 2015), Marcolin et al. (2016) and Nedelkoska and Quintini (2018).

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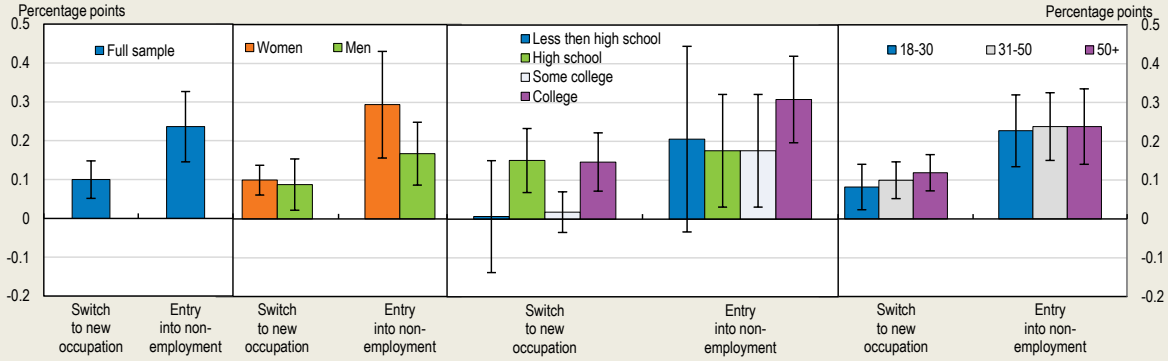
Box 2.4. Is the impact of digital technologies already visible in the Chilean labour market?

Research conducted for this Economic Survey (Markööö and Garda, forthcoming[63]) investigates the impact of digital technologies on employment dynamics in Chile. The analysis uses individual labour history data from the 2015 Social Protection Survey (EPS) to observe individual month-to-month employment transitions between 2009 and 2015. Different measures at the occupational level are used to capture different aspects of digital transformation, such as the automation risk or the advancement in artificial intelligence.

The results suggest that both destructive and transformative effects of digitalisation on employment dynamics are already observable in the Chilean labour market (Figure 2.27 and Figure 2.28). Higher automation risk is associated with higher likelihood of becoming non-employed. These risks are unequally distributed among workers. For example, a 10-percentage points increase in the automation risk of the occupation increases the monthly probability of becoming non-employed by 27% of the baseline monthly probability of transitioning to non-employment for men and 32% for women. The findings also indicate that automation adversely affects highly skilled occupations, as the risk of entering non-employment increases with the educational level. This is particularly true for women. The likelihood of switching occupations increases with age. This may suggest that older individuals have difficulties adopting new technologies in their occupation, and instead need to choose to change occupations. This could imply reskilling and potential negative impact on wages.

Figure 2.27. Automation risk and labour market transitions in Chile

Estimated average marginal effect of a 10 percentage point increase in automation risk on month-to-month individual transitions



Note: The employment transitions are modelled in a random utility framework using two multinomial logit models. The dependent variable distinguishes between three choices for those in employment: i) remaining in employment in the same occupation 4 digit level (base category); ii) remaining in employment but changing occupation at 4 digit level; iii) exiting employment to unemployment or inactivity. The measure for automation risk is widely used by the OECD and has been developed by (Nedelkoska and Quintini, 2018[64]). It captures the automation risk of occupations at 2-digit level. Lines indicate the 95% confidence interval. Estimates are obtained through a multinomial logit model controlling for educational attainment, age, age squared, marital status, gender, if the respondent has children, region and industry. To control for business cycle and seasonal effects, year and month dummies are included. Standard errors are clustered at 2-digit occupational level.

Source: (Markööö and Garda, forthcoming[63]).

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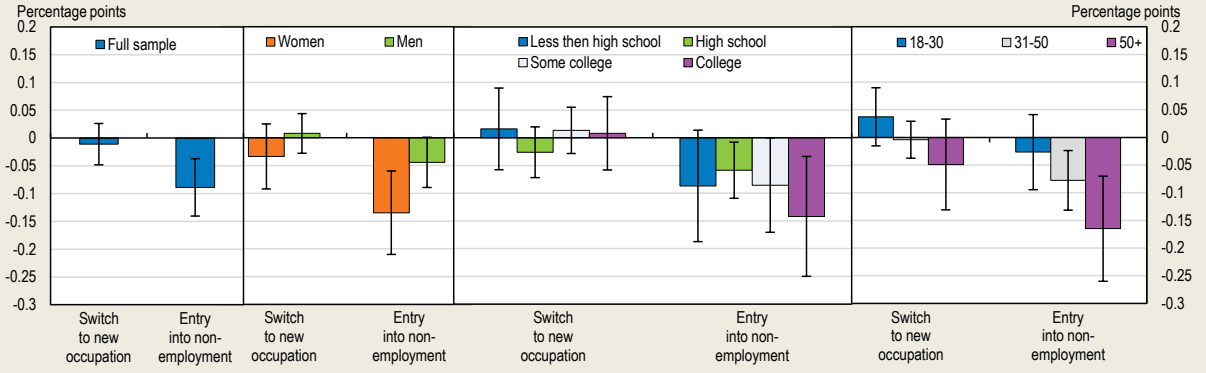
Advances in artificial intelligence seem to be associated positively with employment stability of an individual. This reflects the idea that advances in artificial intelligence are complementary to labour. One standard deviation higher score in occupational advances in artificial intelligence is linked to a lower probability of exiting employment by approximately 12% of the baseline monthly transition probability. This positive effect on employment stability increases with education and age, suggesting that individuals with higher levels of education and experience can adapt more easily to AI technologies, as a complement to their work. However, the likelihood of switching occupations also increases with higher AI advancement, notably for highly educated or young individuals.

Figure 2.28. Artificial intelligence and labour market transitions in Chile

Estimated average marginal effect of a 1 standard deviation increase in advances in AI on month-to-month individual transitions



Note: See note previous figure. The measure for advances in AI is developed by (Felten, Raj and Seamans, 2019[65])and estimates recent advances in artificial intelligence of occupations at 4-digit level. Lines indicate the 95% confidence interval. Standard errors are clustered at 4-digit occupational level.

Source: (Markööö and Garda, forthcoming[63]).

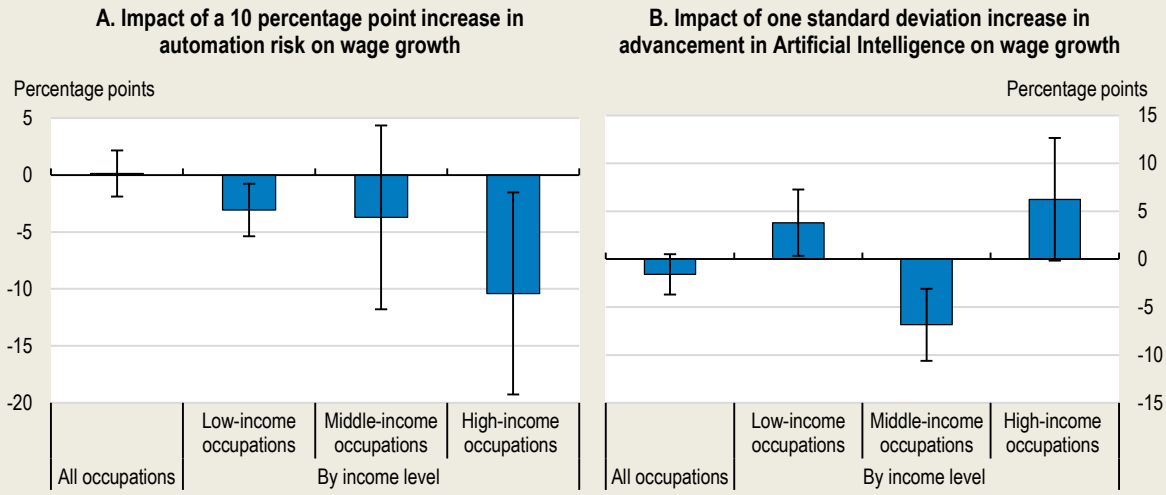
StatLink https://doi.org/10.1787/888934194257

Box 2.5. The impact of digital transformation on wages in Chile

An analysis conducted for this study investigates the impact of digital technologies on wage dynamics between 2015 and 2017. The study employs measures reflecting different aspects of digital technologies (see Box 2.4) and uses data from household surveys (CASEN) between 2013 and 2017 to observe within-occupation changes in wages at the regional level.

The analysis provides evidence that wages of low-income and high-income occupations are negatively affected by the automation risk (Figure 2.29). A 10-percentange point increase in the occupational automation risk leads to a reduction of 3-percentage points of the median wage for low-income occupations, and a 10-percentage point for high-income occupations. However, both low-income and high-income occupations also seem complements to new digital technologies, such as artificial intelligence, increasing wages due to higher productivity at the firm level. On the contrary, middle-income occupations are negatively affected by the advancement of AI. These findings suggest that productivity-enhancing digital technologies, such as artificial intelligence, mostly affect and largely complement high-skilled workers relying on non-routine tasks (Felten, Raj and Seamans, 2019[65]).

Figure 2.29. Automation risk leads to lower wages for the low-income, but artificial intelligence has a positive impact



Note: The bars show the impact in percentage points of median wage growth 2015-17. Wage growth is calculated at the region-occupational level. The measure for automation risk is widely used by the OECD and has been developed by Nedelkoska and Quintini (2018). It captures the automation risk of occupations at 2-digit level. The second measure is developed by Felten et al. (2019) and estimates the advancement in artificial intelligence of occupations at 4-digit level. Occupations are classified as low-, middles- and high-income based on terciles of the median annual income for an occupation in 2013. Estimates are obtained through an ordinary least squares regression controlling for lagged wage growth (2011-13). Standard errors are clustered at the regional level.
Source: (Markööö and Garda, forthcoming[63]).

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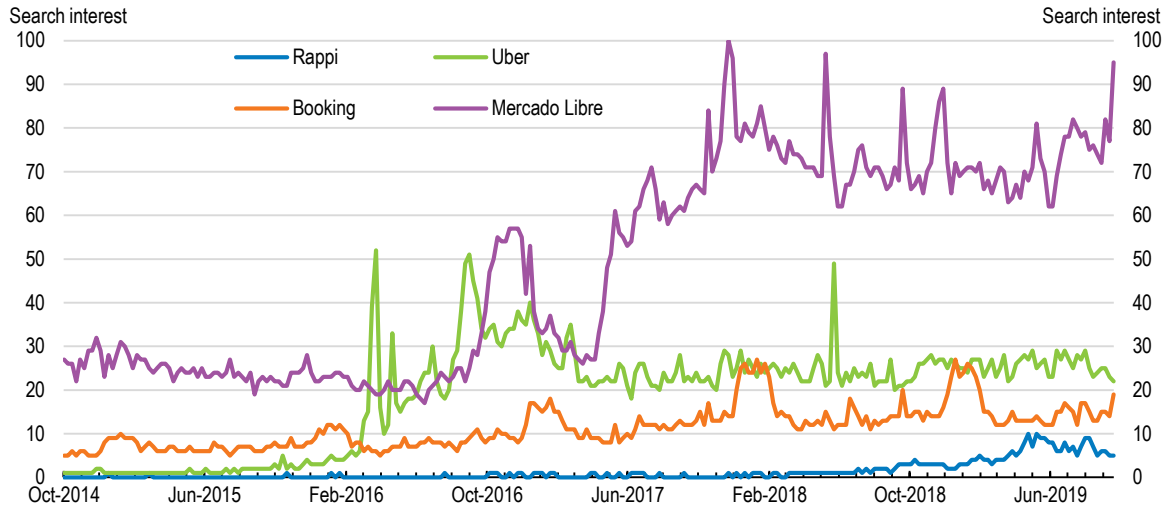
Promote job quality to cope with emerging forms of work

Across the OECD, the recent wave of digital transformation and technological change has been likely at least one of the drivers increasing job turnover (OECD, 2019[21]). There is an increasing trend of workers who, throughout their careers, hold more jobs, each of them for shorter periods, often with intermittent and different hiring modalities (LinkedIn, 2016[66]). These changes foreshadow the challenges to employment and social protection systems, pension schemes, and the training system.

Firms are changing the way they hire and organize work within a firm (OECD, 2019[21]). Some firms are increasingly hiring external contractors, temporary staff or self-employed to address their skill gaps (WEF, 2018[67]). Many companies are also working on projects and hire workers to perform specialized tasks and are using more flexible work, remote offices and decentralizing operations, trends that are likely to deepen with the pandemic. The platform economy and its rapid expansion (Figure 2.30) is a clear example of the trends. Although no official data exist, around 150 thousand workers (1.7% of employment) participate in the platform economy in Chile according to figures provided by the Labour Minister in an interview with CNN in February 2019.

Figure 2.30. Online platforms have increased at a fast pace in Chile



Note: The numbers reflect the search interest in relation to the maximum value of a chart in a given region and period. A value of 100 indicates the maximum popularity of a term, while 50 and 0 indicate that a term is half popular in relation to the maximum value or that there was not enough data for the term, respectively.
Source: Google Trends.

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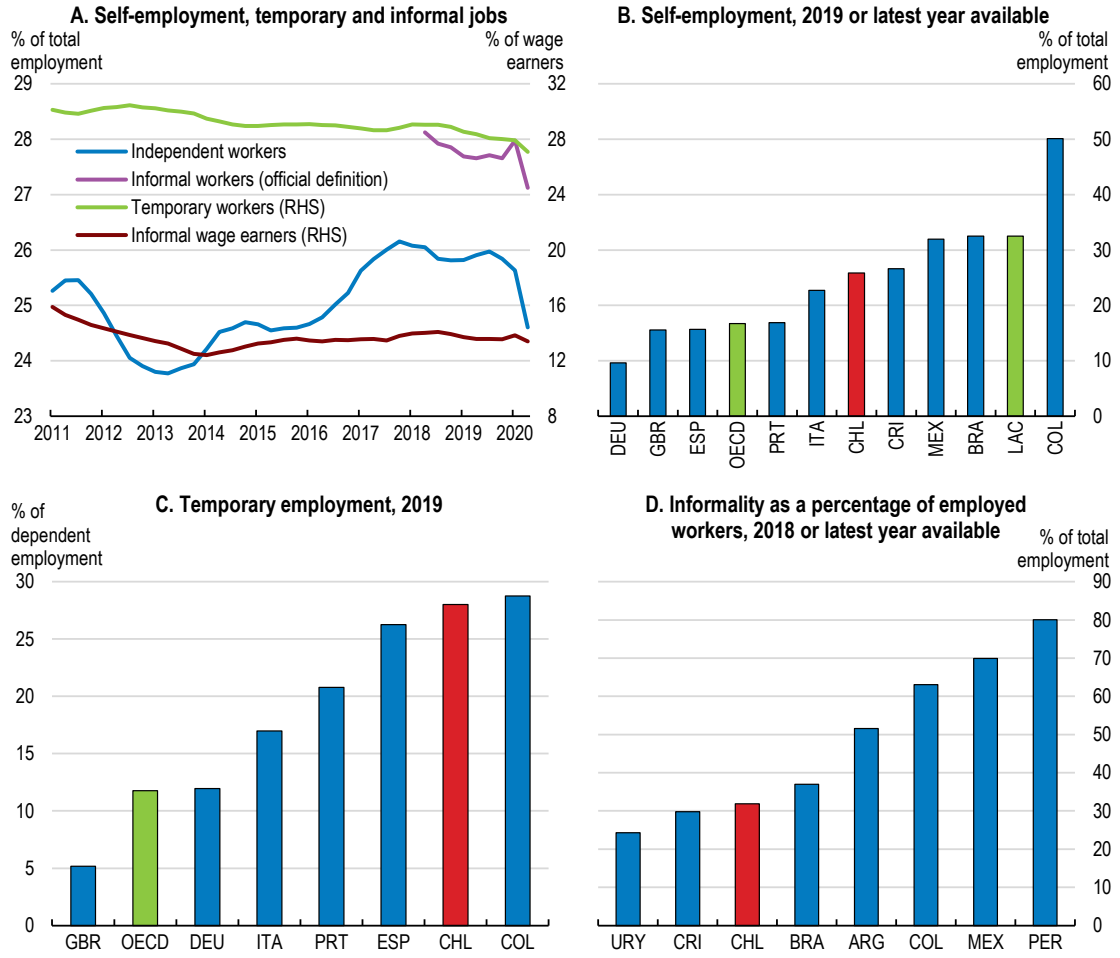
Governments should aim to ensure that differences in rights of employment, social protection, and access to training are reduced across different contract types. Some of the new jobs in the platform economy are thought to reduce job quality because they tend to lack or have limited access to training, lack employment and social protection and have limited benefits and rights (OECD, 2019[21]). Many of these workers find themselves classified as self-employed, even though they share some characteristics and therefore vulnerabilities with employees. Yet, because they are classified as self-employed, these workers will not have access to the same rights and protections as employees. At the same time, not all of these jobs necessarily equate to poor quality employment. Those may allow both employers and workers to escape the constraints of a “one-size-fits-all” approach and find arrangements that are in the best interest of both. For example, many high-tech professionals sell their services as independent contractors (OECD, 2019[21]). The challenge for governments is to ensure that all workers, regardless of contract type, have access to adequate rights and protections, and also that there are no abuses of the existing legislation

(e.g. when companies falsely classify workers as self-employed in order to escape regulatory and fiscal commitments).

Non-standard employment arrangements are not new in Chile (Figure 2.31). The share of temporary contracts, although decreasing since 2012, is the highest among OECD countries. Self-employment, often associated with low access to protection or social benefits and low productivity, is high at 26% of total employment in 2010-18. Informality, as measured by the lack of social security, is high at 29% of employment, although among the lowest in the LAC region. The share of informal wage earners at 16% has been decreasing, explained partly by the rise of other non-standard employment arrangements, such as outsourcing or self-employment (Perticara and Celhay, 2010[68]; Ministry of Labour, 2017[69]). Youth, women and low-skilled hold more frequently non-standard jobs.

Figure 2.31. Self-employment, temporary and informal jobs are prevalent in Chile



Note: In Panel A, data are 4-quarter moving averages. The official definition of informal employed includes dependent and independent workers with informal occupations. It includes: dependent workers who do not have access to social security (pensions and health); independent workers who are owners of an informal company or business (not registered in the internal tax service) or who engage in an activity classified as informal; and employed persons classified as unpaid family workers. Official informal employment figures are only available from September 2017. In Panel B, data refers to the population of 15 years old and above. LAC refers to the unweighted average of Brazil, Colombia, Costa Rica and Mexico. OECD refers to unweighted average of 34 member countries. In Panel D, informal workers are defined as not contributing to the pension system.

Source: Data for Chile for Panels A:C are from OECD calculations based on the Encuesta Nacional del Empleo (ENE) from the Instituto Nacional de Estadísticas, Chile; OECD, Annual Labour Force Statistics database; OECD, Labour Market Statistics database; IADB SIMs database.

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Platform workers are heterogeneous and sometimes difficult to classify as salaried or autonomous. Yet some consensus seems to be emerging that many of these workers lack basic rights and protection, and this has become even more evident during the COVID-19 crisis. Many countries in Europe are moving in the direction of providing a minimum floor of rights and guarantees for all platform workers. Labour market regulation should seek to provide a set of rights to all workers, regardless of their employment contract, minimizing the differences between different types of jobs (OECD, 2019[21]).

The employment status acts as a gateway to various worker rights and protections, including employment and social protection, but also access to training. There is a need to strengthening the penalties for misclassification (between the self-employed, usually informal, and employees, for example), reducing any incentives for firms and workers to misclassify employment relationships and enforcing it (OECD, 2019[21]). For workers who remain in the grey zone, where there is genuine ambiguity about their employment status, the government should seek to extend rights and protections.

Fostering hiring under permanent standard contracts and avoiding informality could be a way of avoiding misclassification of workers. There are a number of programmes in Chile promoting formalisation that could be enhanced. For example, the youth employment subsidy (*Subsidio al Empleo Joven*), targeted at workers aged 18-24 years-old from the 40% most vulnerable households, gives also a subsidy to firms hiring these young workers. The programme also covers self-employed workers who are up-to-date with pension contributions. Unfortunately, the programme's coverage has been recently reduced and is planned to benefit 280 thousand youth, more than 42 thousand less than in 2018. These wage subsidies are important to promote formality for youth (Centro de Microdatos, 2012[70]; Bravo and Rau, 2013[71]) since the first job and its working conditions largely determine the employment and career paths of young people.

Authorities approved, as a response to the social events of end of 2019, the minimum guaranteed salary, which works as an employment subsidy for formal low-income workers. The subsidy is for formal workers with nominal income below CLP 380 thousand and is to benefit 480.2 thousand workers in 2020. The subsidy could create incentives for workers to become formal (Almeida, Orr and Robalino, 2014[72]), but at the same time create incentives for firms to maintain low wages. The measure will need to be carefully evaluated and adjusted as necessary.

Policies promoting quality jobs and protecting informal workers would help promoting formality. They include introducing progressivity into social security contributions, subsidising low-income workers; adapting contributions for independent workers (e.g. frequency, payment method, simplified tax system); reducing administrative cost and burden associated with formal status.

The platform economy and jobs can be used to reduce informality (Alonso Soto, 2020[73]). The ability to monitor the data (traceability) offered by the digital platforms is a great promise: all transactions are recorded, and the workers receive their income via bank transfer (Alaimo, Chaves and Soler, 2019[74]). In this aspect, the platforms are a source of information essential to make workers visible and structure social protection schemes that suit the particular circumstances. Streamlining regulations on online job platforms to provide platforms and workers with incentives to share data with tax and labour authorities could help reduce informality.

Regulation of how much algorithms can do and decide for workers is needed to protect platform workers (OECD, 2019[21]). Platform workers do not have one employer as traditional workers do. Instead, it is an algorithm that regulates employment (Alaimo, Chaves and Soler, 2019[74]). Customer evaluations, acceptance or rejection of an order and delivery times, among others, are some of the indicators automatically measured by artificial intelligence algorithms and used to give or not employment. The European legislation makes mandatory that the person responsible indicates the reasons that led to that decision (the right to an explanation). In this sense, regulations have a lot to contribute, promoting the decisions affecting work are resolved by people, and that the artificial intelligence is under human control. The right not to being discriminated against by an algorithm deserves special attention.

Improve social protection to leave no-one behind

The existence and the growing trend of more flexible employment modalities or non-standard employment relationships implies that labour market regulations and social security systems need to adapt to leave no-one behind. For this, regulations must, where appropriate, reduce this distinction between wage-earning and self-employed, and between formal and informal, and incorporate the new ways of working.

Digital transformation could intensify existing contributory gaps in the pensions and social protection because of more job changes and more unemployment spells. In Chile, average-wage workers who experience a 5-year unemployment spell during their career face a pension reduction of almost 15% in mandatory schemes compared to the full-career scenario (OECD, 2019[75]). It is necessary to include atypical workers with fluctuating income and/or intermittent work so that they can be covered against risks, such as illness, unemployment or retirement.

Aware of these challenges, authorities are increasing the coverage of the pension system for non-standard workers. Contributions of independent workers to social protection systems who issue receipts, accounting to 7.5% of the labour force, was made mandatory starting in 2019, with a gradual increase in contributions from 10% in 2018 to 17% in 2028, except for older workers and low income earners. In the first few years, it will be possible to contribute for only a fraction of the taxable income. Additionally, a draft bill is in Congress to regularise the social protection of those providing services on digital and intermediation platforms. The bill defines this group of workers as independent, making mandatory for these workers to issue receipts, and that the platform withhold the corresponding taxes and social security contributions. The bill would also expand the coverage of the pension contributions while unemployed for those under private individual unemployment insurance accounts, while today this is only the case for those under the solidarity pillar.

Fully including all non-standard workers in mandatory pensions in the same way as standard workers limits the financial incentives employers and workers might have to misuse non-standard employment (OECD, 2019[75]). International experience indicates that social security contributions should be harmonised across forms of employment as much as possible to decrease incentives to hiring on non-standard work (OECD, 2018[76]). If lower mandatory pension contributions for the self-employed are used as an instrument to promote self-employment or to support those in low-earning activities, resulting lower entitlements should be avoided by topping up the lower implied contributions through subsidies, at least for low earners. Appropriate compliance measures might be needed to ensure enforcement.

Encouraging voluntary savings for retirement is needed to get better pensions and digital technologies can be exploited with this objective. There are pilot exercises in the region that could serve as an example. The pilot of savings plan for Cabify drivers in Peru is a good example. The project gives access to drivers of Cabify to an automatic saving option through the digital platform. Since their income is accumulated on the platform, workers have the option to save through the application. The Smart and Flexible Savings Plan takes into account the variation in workers' incomes and allows drivers to save, for example, 10% of the income above a certain level threshold and not to contribute when their income is below this threshold (Alaimo, Chaves and Soler, 2019[74]). Other innovative ways to encourage voluntary savings of workers should be thought. Chile has already a pilot example with Übank, a Chilean start-up, which developed an application that allows people to save automatically based on a set of rules, defined by themselves. Results show that it has been successful raising savings for retirement (FIAP, 2018[77]).

An effective social safety net would help individuals cope with transitions from one job to another. The Chilean unemployment benefit system is based on individual accounts with complements from an insurance fund (Solidarity Fund), and assures that workers have savings in the event of losing their jobs (Hartley, van Ours and Vodopivec, 2011[78]). However, the coverage and benefits of the unemployment system remain limited, in part due to self-employed workers, but also because of the short duration of employment contracts and their high turnover (Huneeus, Leiva and Micco, 2012[79]).

Chile has a large share of workers on fixed-term contracts with high rotation, a trend that could be amplified by digital transformation. Two out of every three workers that claim unemployment benefits were on a fixed term contact, and only 15% accessed the Solidarity Fund. Moreover, only 50% of employees that terminate a contract in a year have enough contributions in their accounts to access benefits. Also, 50% of the workers under fixed-term contracts have non-contributing periods lasting more than three months in 2015, which impedes their access to the Solidarity Fund (Sehnbruch, Carranza and Prieto, 2019[80]). Reducing the required minimum contribution periods would increase coverage of vulnerable jobseekers, and allow the system to better protect vulnerable workers under short duration of contracts.

In December 2019, after the social unrest, and again because of the pandemic, authorities have temporarily improve protection for unemployed workers affected by the social crisis. After the social unrest the changes included the increase of the amount of payment in the two (three) first months for temporary (permanent) workers, the reduction of the required minimum contribution periods from 12 to 10 (6 to 5) for permanent (temporary workers), and from 12 to 10 months for accessing the Solidarity Fund. It also introduces the possibility of negotiating a 15-50% reduction in working time for a maximum period of five continuous months, while receiving a complement from unemployment benefits. These are welcome measures and should become permanent, at least when the economy or the unemployment rate surpasses certain thresholds.

Chile is facing an important training challenge

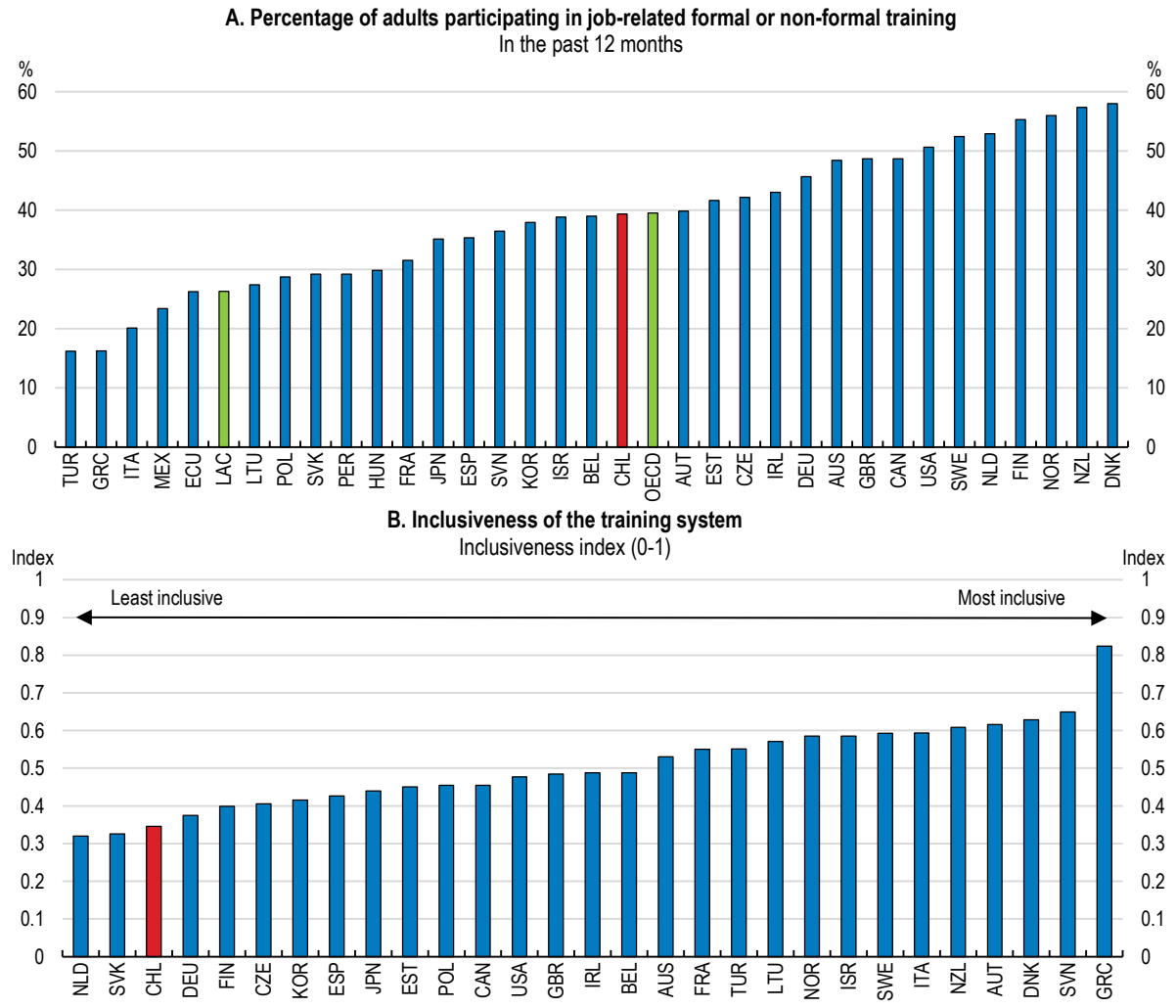
Chile needs a comprehensive lifelong learning strategy to face the challenges of digital transformation and to ensure that all workers, particularly the most vulnerable, have adequate opportunities for retraining throughout their careers. An efficient adult lifelong learning system should help workers to regularly update, upgrade, and sometimes even acquire entirely new skills, facilitating labour mobility and responding to the changing tasks and skills (OECD, 2019[21]; OECD, 2019[81]). This is even more important in the context of population ageing, where the majority of the workforce has already left initial education. This adult learning provision must also become more flexible and less tied to the traditional model of employer-provided training, accompanying the emergence of more flexible labour markets.

Participation in training is relatively high in Chile, but inclusiveness of the system is poor (Figure 2.32). Those who need training the most, train the least: low skilled, workers in vulnerable households, out-of-work individuals, those whose jobs are most at risk from automation, as well as non-standard workers train the least (Figure 2.33). In addition, training is not always of good quality and insufficiently aligned to the needs of the labour market (CNP, 2018[19]). Recent improvements adding requirements of results (such as job placement, higher wages or formalisation depending on the program) to the training offer go in the right direction.

Chile lacks a lifelong learning system with a clear national regulatory framework and a national plan, as already highlighted in the previous Economic Survey of Chile (OECD, 2018[1]). The life-long learning system is formed by: firm-provided on-the-job training (channelled by a tax credit: *Franquicia Tributaria*), training programs targeted at vulnerable groups (e.g.*Capacitación en Oficios*) or the middle-class (e.g. *ReInvéntate, an* upskilling programme targeted at unemployed from the middle-class) and employment subsidies. Although the Ministry of Labour is responsible for training policy, it does not have a specific unit responsible for the design, formulation, monitoring and evaluation of these policies (CNP, 2018[19]). SENCE, the state agency of training and employment in charge of the main training programmes targeted at vulnerable groups and active labour market polices, which depends on the Ministry of Labour, concentrates the largest number of beneficiaries for training programs, 77% of the total in 2016. SENCE mission is to contribute to the increase of national productivity, promoting training, both in firms (through the tax credit, *Franquicia Tributaria*) and in the vulnerable people (through targeted programmes). The system is fragmented, leading to a diversity of programs with similar purposes and target populations. Agencies lack a mechanism to coordinate with each other, resulting in dispersion of unconnected efforts

among different public agencies. One clear exception to this is the development of the national qualification framework, under development, a concerted effort led by the Ministry of Education, in collaboration of the Ministries of Labour, Economy and Finance.

Figure 2.32. Participation in training is high in Chile



Note: In Panel A, LAC refers to the unweighted average of Ecuador, Mexico and Peru. OECD refers to the unweighted average of 31 member countries. In Panel B, the index ranges between 0 (least inclusive) and 1 (most inclusive). For both panels, data are from 2015 or latest year available. Panel B is based on the Priorities for Adult Learning (PAL) dashboard that highlights the importance of providing inclusive learning opportunities in particular for those groups most in need of up- and re-skilling. It features indicators measuring participation gaps between disadvantaged adult learners and their more advantaged peers, where disadvantages may relate to socio-demographic characteristics of adults or their employment and contractual situation. It includes old-age, gender, low-skill, low-wage, unemployment, long-term unemployment, temporary workers and SME participation gaps.
Source: OECD Priorities for Adult Learning Dashboard, using PIAAC data; OECD publication: "Getting Skills Right, Future-Ready Adult Learning Systems".

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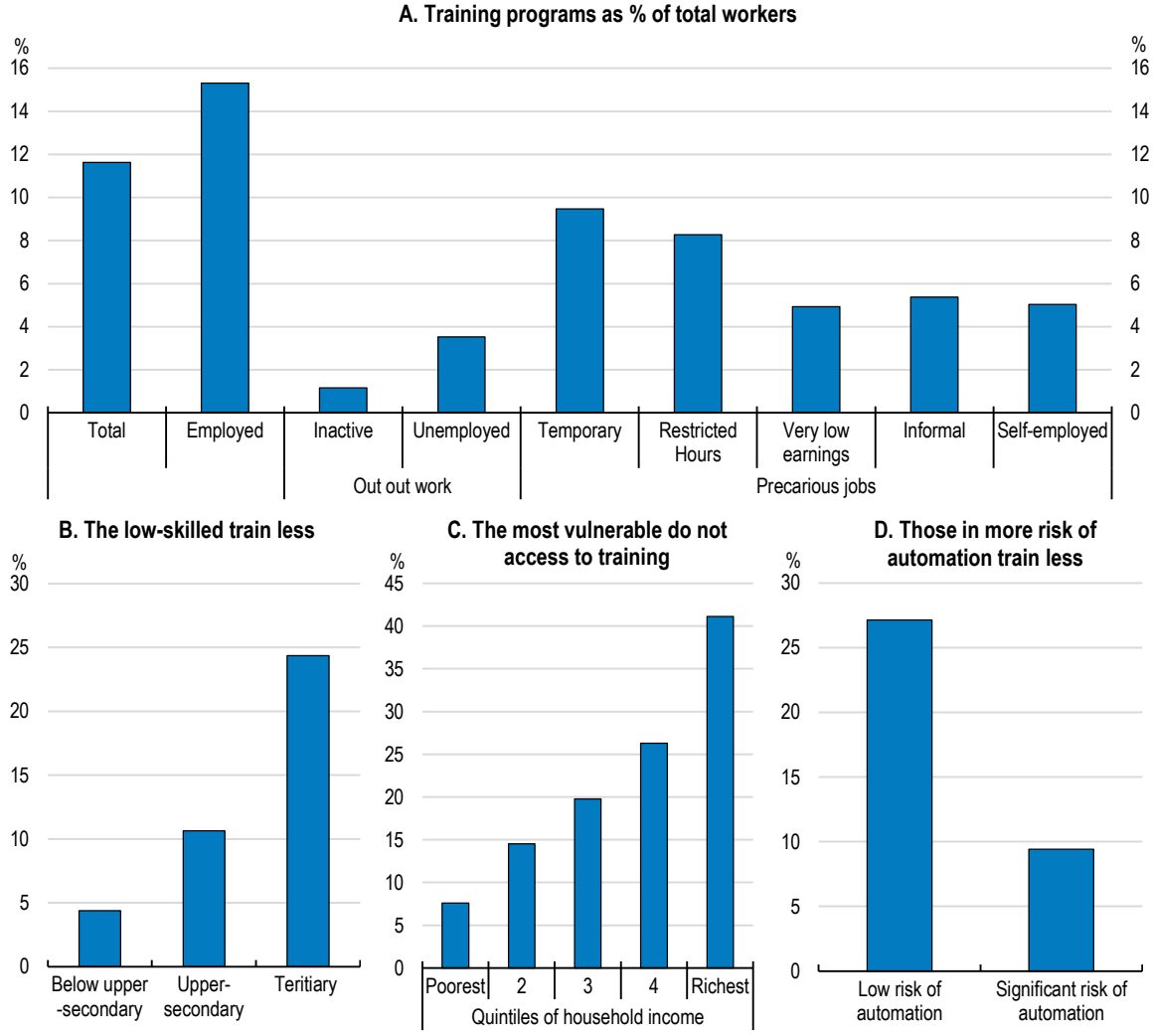
Franquicia Tributaria, the tax credit to firms who send workers on training with certified institutions, is one of the main training programmes, equivalent to around 28% of public spending on training in 2019. Two out of three trainees do so within the tax credit, whose training programs are short lasting less than 40

hours, with an average of 21 hours (CNP, 2018[19]). This programme benefits mostly large firms, which tend to already have less vulnerable, highly educated workers (Larrañaga, 2011[82]; Rodriguez and Urzúa, 2012[83]) and does not reach the self-employed, which have accounted for a large share of job creation in the latest years. The tax credit has been found to be not effective due to the short duration and lack of relevance of training programmes. The programme also lacks the requirement of certification of courses, and problems in the design of incentives for firms, suppliers and intermediaries (CNP, 2018[19]; Bravo, García and Schlechter, 2019[84]). Most training programmes are fundamentally theoretical programs, and measure their success by attendance and teaching hours. Recently, in a welcome move, modifications to the scheme allow firms to train workers before starting to work in the firm or after with the objective of increasing incentives for unemployed to undertake training courses.

Figure 2.33. Most vulnerable workers receive less training



Note: Year 2017. Workers participating in training in the last 12 months.
Source: OECD calculations using CASEN (2017).

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Another 30% of public spending allocated to SENCE in 2016 is targeted to the most vulnerable, including women, youth and low-skilled workers. These types of training programmes have proven to be modestly (but persistently) effective in terms of the quality of the jobs found in the region (IDB, 2015[85]). More work-based training could be introduced to help beneficiaries get relevant experience. Also, better information

on the type of skills needed or demanded by the market as well as on the variety and quality of the courses offered by providers is key for the success of these programmes.

Aware of the challenges, the authorities have submitted a reform to modernize SENCE. The bill seeks to finance courses through SENCE under the requirement of certain employability measures. It also seeks to enhance the tax credit, by introducing a minimum co-payment of 20% for all courses. This should incentivize firms to choose higher quality courses due to the greater control in expenses. The reform also has the objective to increase quality and alignment of the training offer, including the requirement of formulating programmes based on available information on required competencies and making programme evaluation mandatory. As part of the bill, and in order to include small businesses, funds assigned through bidding, will allow the design of specialized training programs in different sectors for small business associations.

A full revision of the tax credit and better aligning training courses with labour market needs is required for a well-functioning adult training system. The productivity commission has recommended redirecting all public resources for training, including those of the tax credit, to a training fund (CNP, 2018[19]). The focus should be on those that need training the most, unemployed, inactive and those working on non-standard contracts and vulnerable workers. Training programmes should assure the development of skills in occupations that are expanding, but with insufficient supply in the market. All training courses would require skills certification related to the national qualifications framework and could be part of the VET (Vocational educational and training) system in order to allow individuals to follow a learning path.

Sustainable financing is key for an efficient adult training system (OECD, 2019[81]). To encourage firms to invest in training of their workers and promote continuous learning and skills development opportunities, Chile could direct resources to the training funds collected from training levies imposed on employers through the pay-roll. Examples of training funds can be found in Italy or France (OECD, 2019[86]). By way of example, the contribution rates are equal to 0.8% in Ireland, up to 1% in France, 1.5% in Hungary, up to 2% in the Netherlands, and up to 2.5% in the UK (OECD, 2019[87]). In some countries (e.g. the Netherlands; France) training funds' resources include, on top of employers' mandatory contributions, also employers' voluntary contributions, employers' sectoral contributions negotiated through collective agreements, government funding, and/or European funding.

Encouraging small firms to participate and train their workers and make sure vulnerable workers have access to training opportunities is paramount to upskilling the Chilean workforce. Contribution rates of training levies can vary depending on the firm size or sector. Some countries have exempt, or reduce, contributions paid by SMEs encourage them to take up training levy schemes. For example, In France, training levies are 0.55% for firms with less than 10 employees, and 1% for larger firms. in the case of France, all workers have a personal training account valid from when they first join the labour market until they retire and an employee who changes jobs or alternates between work and unemployment retains his or her right to training. The individual learning account provides more generous credits to the low-skilled. Off course, for training funds to work well access to quality and relevant training is key (OECD, 2019[81]). In France, courses must be training programmes awarding a professional qualification which meet the anticipated needs of the economy in the short or medium term and which benefit the employee by safeguarding his or her career path. The Government establishes a set of quality standard criteria to which all training providers need to comply to in order to be able to access funding by training funds and other public financing bodies.

Access to training for self-employed and platform workers should be strengthened. Although SENCE has programmes targeted at vulnerable and middle class groups, including self-employed, dependant and unemployed people, participation should be ensured. Usually, the cost of training is a major barrier to train for own-account workers (OECD, 2019[81]). This is not surprising, considering that own-account workers often have no or limited access to public financial support for training, typically conceived for employees or the unemployed population. Those who work regularly for the same employers are also less likely to

receive employer-sponsored training, as employers tend to privilege investment in the skills of standard employees. Financial incentives should be in place to help these workers get training and access to the training funds would be key. In France, since January 2018, entitlements to the individual learning account has been extended to independent workers.

Efforts to better link training to labour market needs in coordination with employers are warranted. A very good example is the programme "*Talento Digital*", launched recently by the Government. This is a public-private effort to develop digital skills mainly for unemployed and inactive, women and other vulnerable groups. Feedback from national skills anticipation and assessment exercises to understand better skill needs and how these match the skills of the workforce would be valuable for the creation and update of the training offer. Furthermore, a systematic assessment of the labour market impact of programmes should be put in place. SENSE evaluates periodically all the agencies' programmes in terms of employability, and even if there are some experiences with impact evaluations, rigorous evaluation mechanisms should be implemented to identify what works better for firms as well as workers, particularly in terms of earnings quality and job security. The emphasis should be on ensuring that resources are channelled towards programmes that proved to be effective in helping people gain employment or retrain their skills as needed.

Achieving sustainable and reliable digital infrastructures

The momentum on digital government must continue

Governments have little choice but to provide the necessary leadership in using data and technology to maximise the potential of the digital transformation for improving social well-being. Digital technologies can have a substantial impact on government's capacity to effectively design and implement policies, and to be transparent and accountable in delivering outcomes and outputs. Not only can they enhance civil servants' productivity, but also they can significantly change how governments plan and deliver services, making them more user-driven, more convenient to access and tailored to needs i.e. to design, develop, deliver and monitor public policies and services centred around people and user needs (citizens and businesses). Through the improvement of data management and processing, digital technologies can also help turn data into opportunities producing knowledge for evidence-based policy making, effective monitoring of implementation and scaling up of "what works". However, reaping the full benefits of digital technologies requires a solid governance framework to spur a coherent approach across the public sector and equal access for all citizens to digital services.

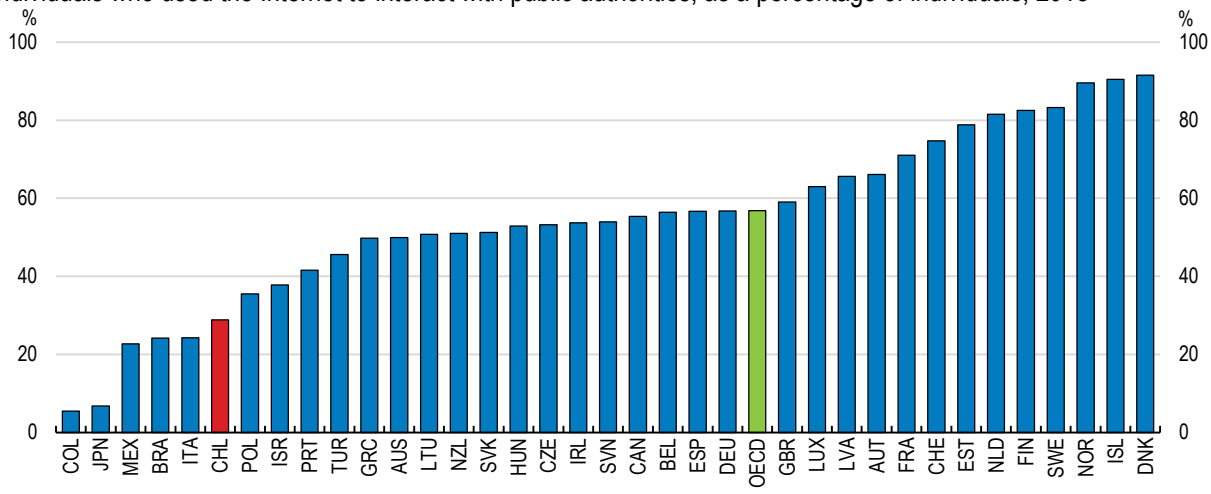
Chile has continuously demonstrated its commitment to making its digital ambitions a reality (OECD, 2019[88]). The fight against COVID-19 pandemic is demonstrating authorities' capacities to use digital technology, for example with the development of the virtual police registration allowing citizens to ask for virtual permission to go out during quarantines. While Chile is substantively ahead of regional digital government performance, it must continue to strive for excellence in its transformation efforts. The uptake of digital government services remains comparatively low in Chile, albeit it has increased significantly, confirming the momentum initiated a decade ago in this area (Figure 2.34).Significant potential remains in Chile for a wider uptake of digital government services. Chile's ongoing implementation of the Digital Transformation of the State Law (Ley de Transformación Digital) (MINSEGPRES, 2019) promises to digitalise interactions between Chileans and the government. The simplification and elimination of unnecessary procedures, the greater interoperability of State institutions in requesting information as well as the complete digitalisation of their internal processes, are proposed steps that offer opportunities to increase access to quality of public services in Chile. Further digitalisation of ChileAtiende, a cross-governmental one-stop-shop providing public services would reduce the burden and cost of interactions between citizens and the state whilst increasing satisfaction, effectiveness and trust (OECD, 2020[89]). Moreover, the creation of a single digital identity would also improve the quality of services in online

procedures and eliminate the need for citizens to have different keys to complete a single procedure (OECD, 2019[90]).

Data is a strategic asset towards a data-driven public sector. Chilean authorities have put emphasis in strengthening interoperability and promoting digital integration of the public sector to facilitate data sharing and integrated service delivery in the public administration. Continuous and stronger efforts to improve data governance and management in the country's public sector would help it prepare for the advent of increasingly sophisticated data-processing capabilities, such as artificial intelligence (OECD, 2019[90]). Developing a comprehensive strategy and/or policy for public sector data and its chain value would be key (OECD, 2019[90]). This involves: i) establishing an authority responsible for developing and co-ordinating an overall strategy for public sector data, ii) identifying key data assets and gaps, iii) establish standards for data management, iv) strengthening the overall data value chain for the public sector, v) dupporting the identification of public sector data assets, registries and interoperability nodes, and help conceive their governance and data sharing architecture to protect sensitive data, vi) ensuring the highest standards in terms of data security and privacy in public sector operations and make public sector data open by default.

Figure 2.34. The uptake of digital government services remains low

Individuals who used the Internet to interact with public authorities, as a percentage of individuals, 2018



Note: For Chile, data refer to 2017. OECD refers to an unweighted average.
Source: OECD, ICT Access and Usage by Households and Individuals Database, http://oe.cd/hhind, December 2018.

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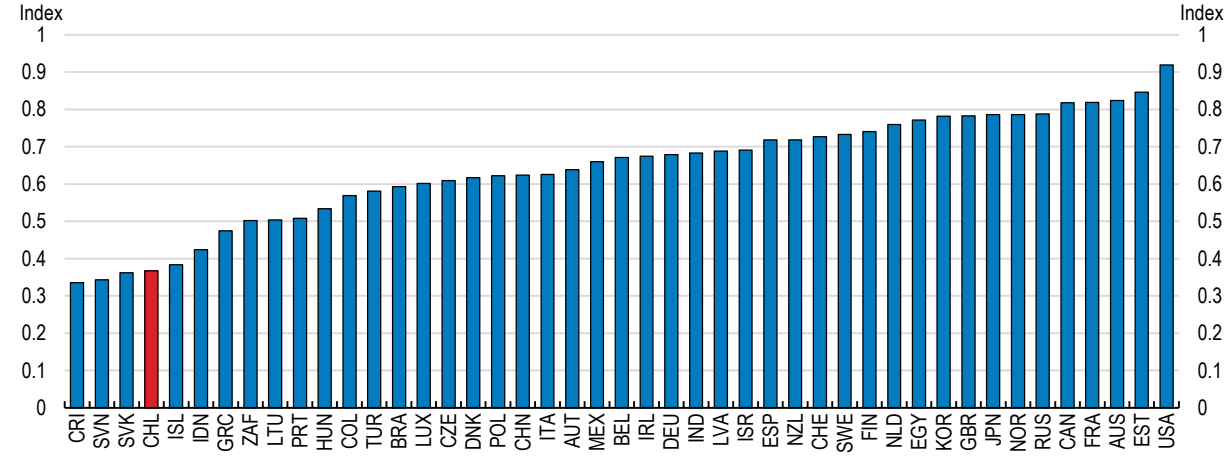
Digital security capacity must be stepped-up

Rapid digitisation and network connectivity in Chile are creating new challenges for the protection of sensitive data and network communications, affecting the trust of businesses and individuals in online activities and entailing some potential disruption of economic and social activities by digital security incidents. Such incidents can negatively impact the activities of all businesses, both SMEs and larger firms, governments and individuals, and generate financial and reputational harm. The 2018 digital security attack on Bank of Chile, where hackers siphoned USD 10 million of funds by releasing fake fraudulent transactions, puts into question digital security regulations in Chile, which have not been updated since 1993. This also highlights the necessity of significant actions in this area, given that the risk of digital security incidents grows as digital transformation deepens. Currently, Chile stands as one of the OECD countries with the lowest digital security capacity (Figure 2.35).

One important challenge of digital transformation is the increasing role taken on by smaller actors such as SMEs, which extends digital security risks beyond the realm of large central players such as banks or electricity companies. Such SMEs include start-ups offering innovative payment systems or block chain-based technologies. Besides start-ups, well-established SMEs are often the weakest link in larger firms' value chains. Therefore targeting them to manage digital security risks is important for direct consequences but also indirect through impact to larger firms. Public policies can foster digital security by creating the conditions for these firms to better manage digital security risks, and for individuals to better understand risks and use digital devices more responsibly. Chile recently took steps in that direction with the 2022 Cybersecurity plan, which aims at establishing a robust and resilient information infrastructure, prepared to face and recover from digital security incidents on the basis of a risk management approach. The plan also seeks to promote a cybersecurity culture at all levels of society with the purpose of making the tools and knowledge available better understand the benefits and challenges of using digital technologies, and appropriately manage the risks.

Figure 2.35. Cybersecurity capacities are lacking

Global Cybersecurity Index, 2017



Note: The Global Cybersecurity Index (GCI) is computed on the basis of the following pillars: legal (legal institutions and frameworks dealing with cybersecurity and cybercrime); technical (technical institutions and frameworks dealing with cybersecurity); organisational (policy co-ordination institutions and strategies for cybersecurity development at the national level); capacity building (existence of research and development, education and training programmes, and certified professionals and public sector agencies fostering capacity building) and co-operation (refers to partnerships, co-operative frameworks and information-sharing networks).
Source: ITU (2017), Global Cybersecurity Index, Geneva. https://www.itu.int/en/ITU-D/Cybersecurity/Pages/global-cybersecurity-index.aspx.

StatLink https://doi.org/10.1787/888934194390

Promoting a cybersecurity culture is essential to develop common grounds across the society about how to manage risk in a manner that does not reduce the economic and social opportunities of using digital technologies. This will notably present many challenges to Chile's educational system. Early and advanced education of the Chilean population should be a part of these challenges: digital gaps generated by inequitable access to resources, skills, infrastructure and connectivity should be addressed to create a common digital security culture.

Establish an interoperable privacy framework

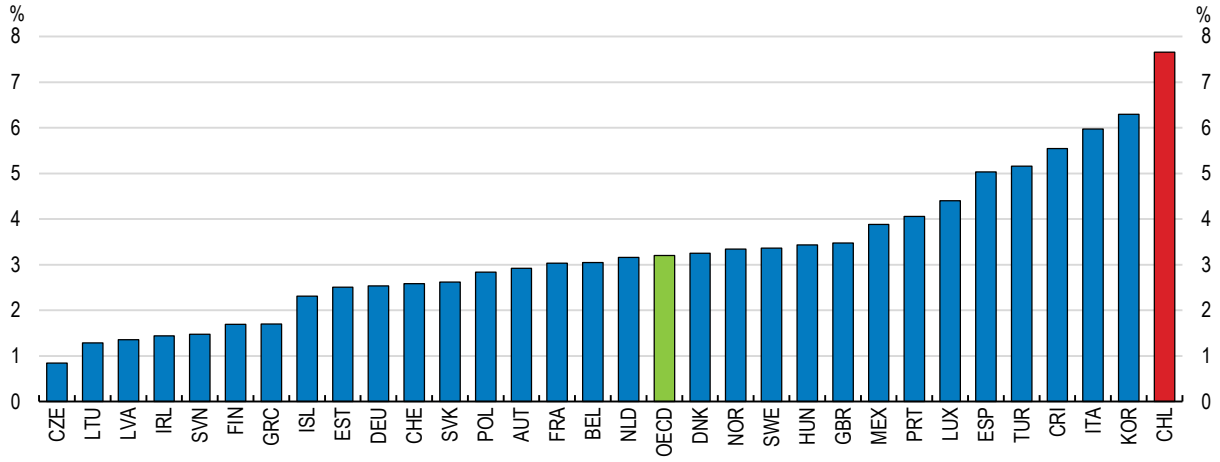
As digital transformation gains momentum, privacy, the protection of personal data in particular, is emerging as a critical issue. With the ongoing deployment of high-speed broadband and 5G networks, personal data will be increasingly collected and will come to play an increasingly important role in the

economy and the everyday lives of Chileans. This can potentially yield great societal and economic benefits. At the same time, this will increase the risks to individuals' privacy. Chile has the highest reported rates of privacy violation in all OECD countries (Figure 2.36). These violations implicate not only the individuals concerned, but also the core values and principles which privacy and personal data protection seek to promote, including individual autonomy, equality and free speech, which may have a broader impact on society as a whole.

Privacy is not only a recognised fundamental value that merits protection, but a condition for the free flow of personal data across organisations and borders, and with it data-driven innovation, economic growth and social prosperity (OECD, 2019[4]). In 1999, Chile became the first South American country to pass a comprehensive data privacy law. It has been amended since, with the addition of personal data protection in the Chilean Constitution in 2018. This new legal framework is a welcome step to confront forthcoming challenges. It enacts a new basis for the legal processing of personal data, establishes the duties of information, transparency and the duty to report security breaches to the authorities and, in certain serious cases, to data subjects. It also regulates the sharing of data with third parties. However, in several areas the legal framework can be strengthened further, as some of its elements are partially defined while others are simply missing. For example, the notion of data breach is not defined, which makes it difficult to state when a privacy violation occurred. Also, the new law does not regulate or establish a Data Protection Officer or similar body in charge of monitoring data privacy and enforcing sanctions if necessary.

Figure 2.36. Data privacy violations are the highest in the OECD

Individuals who experienced privacy violations, as a percentage of Internet users, 2015



Note: Except otherwise stated, Internet users are defined as individuals who accessed the Internet within the last 12 months. For Chile, data refer to 2014. From 2015 onwards, information was collected through an independent thematic survey, unlike previous years during which information was obtained through a module administered in various surveys. OECD refers to an unweighted average.
Source: OECD (2019), Measuring the Digital Transformation, https://dx.doi.org/10.1787/9789264311992-en, based on OECD, ICT Access and Usage by Households and Individuals database.

StatLink https://doi.org/10.1787/888934194409

It will be important for Chile to foster the interoperability of its data protection regulations with those in other countries, and in particular its key trading partners. This will help to enhance trade. Finally, interoperability provisions should be established. Currently, the law does not set forth specific requirements or restrictions on transfers of personal data abroad. As a result, when Chilean firms receive data from the European Union, they have to be compliant with the standards established by the EU legislation, as well as the Chilean one for Chilean subjects, which is costly and complex. However, while countries apply different

privacy frameworks, they are nonetheless largely pursuing the same goals, and frequently use similar approaches, as demonstrated by agreement on high-level guiding principles and good practices or legislation (OECD, 2019[4]). The European Union's General Data Protection Regulation (GDPR), which harmonises data protection laws of all countries in the European Economic Area, is a practical example of how privacy rules can work for countries that do not recognise each other's data protection laws. It includes mechanisms for multinational enterprises to implement "binding corporate rules" on all affiliates to enable transfers of data between them, even if the sub-entities are based in countries that have not forged a specific mechanism or agreement. For Chile, in the context of the Asia-Pacific Economic Cooperation (APEC) organisation, the enforceable system of Cross-Border Privacy Rules (CBPR), through which participating APEC economies work to lift the overall standard of privacy across the region, should be pushed further to establish clear interoperability of data.

MAIN FINDINGS	RECOMMENDATIONS (Key recommendations are bolded)
Unlocking digital skills and the innovation capacity	
Fixed broadband penetration is low by OECD standards and rural/urban disparities are large. Entry barriers in the communication sector are high.	**Ensure low barriers to entry to the communication sector by replacing the existing regulation for concessions.**
Individuals and workers in Chile often lack the foundation and digital skills necessary to flourish in a digital world.	Continue to improve quality of general education from early years. **Increase digital literacy in schools giving digital skills more prominence in the national curriculum, and enhancing the digital skills of teachers and school-directors.**
The country faces a clear shortage of ICT professionals.	Promote ICT programmes for the high-skilled jobs involving the private sector in the design of curricula and needs.
An overwhelming majority of ICT specialists are men, reflecting early educational choices.	Increase girls' interest in digital skills by targeting mandatory ICT classes and voluntary ICT hobby activities towards girls from the early stages of compulsory schooling.
A large share of Internet users are either unaware of or passive towards IT security and privacy issues.	Integrate digital security and awareness throughout the educational system and in adult education activities related to digital skills.
R&D and innovation expenditure is low, especially in SMEs, and comes mainly from public resources.	**Foster a collaborative digital innovation ecosystem by strengthening business collaboration and fostering open-innovation practices.**
Services innovation is key to lead digital transformation, but they face several barriers for development.	Revise existing support initiatives that exclude services innovation, and design new-targeted programmes if needed.
Boosting business dynamism and the diffusion of knowledge	
Adoption of digital tools lags behind other OECD countries, particularly for SMEs.	**Boost public support to SMEs, in cooperation with the private sector, trough targeted programmes to facilitate the adoption digital tools.**
Low competition in the payment system could have hampered the Fintech sector development.	Monitor closely the competition in the financial and electronic payment sector and take further actions if needed.
One the most important barriers to start-ups to emerge and grow is lack of financing.	Promote further the development of the Fintech sector, venture capital, angel investors and alternative financing for start-ups and SMEs.
Digital services are key to lead digital transformation, but they face several barriers for development.	Implement international standards for electronic contracts for cross-border transactions.
The digital economy poses new challenges for competition policy.	Systematically review the competitive pressures on digital sectors by conducting market studies and applying the guidelines of the OECD's Competition Assessment Toolkit.
Preserving social cohesion and helping workers make the most out of a dynamic labour market	
%50 of jobs are at risk of automation. The low and middle-income classes particularly affected by automation risks. Vulnerable workers have the lower access to training courses.	**Embark in a full revision of firm-provided training programmes (tax credit) to increase relevance and quality of training and better target participation to vulnerable workers.**
Training programmes lack most of the times sufficient relevance and quality.	Better align training courses with labour market needs by collaborating more with the private sector and conducting national skills anticipation and assessment exercises.
Most self-employed do not contribute to the pension system.	Increase incentives so that self-employed contribute to the pension system and raise awareness of its importance.
The coverage and levels of unemployment benefits are low.	Make the temporary measures to increase protection for unemployed workers permanent or automatically triggered when unemployment reaches certain thresholds.
Informality is high by OECD standards.	Expand the existing wage subsidies in formal jobs for young and low-wage workers.
Achieving sustainable and reliable digital infrastructures	
The legal framework on privacy is weak and hampers digital engagement.	Establish clear interoperability provisions for personal data.
Digital security is lagging behind while the emergence of new types of threats can have a significant impact on financial stability.	Step-up investment in digital security and promote information across the society about how to manage risk.

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CHILE

In the last decades, Chile has made tremendous progress towards greater economic prosperity and lower poverty. Per capita income more than doubled over the past 20 years and is now the highest in Latin America. These progresses have now come to a halt. Since October 2019 Chile has faced two unprecedented shocks, the social protests and the COVID 19 outbreak. Income convergence was already slowing before these shocks amid modest productivity growth and while the past growth performance has lifted many Chileans out of poverty over the last three decades, income inequality remains high by OECD standards. However, such unprecedented times gives the opportunity to create consensus among citizens around major pending reforms, strengthen common values around the importance of having strong public services and the relevance of belonging to the formal sector. Achieving such economic and social improvements will require further progress toward reducing inequalities and building a stronger middle-class, raising productivity and the dynamism of SMEs, that will be especially impacted by the outbreak. Moreover, during the pandemic digital technologies are being critical to sustain continuity in business and jobs. Digitalisation will play an ever important role in the recovery, while addressing the persistent low productivity.

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