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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 at a meeting of the Economic and Development Review Committee on 6 December 2017. The draft was revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 22 December 2017.

The Secretariat's draft report was prepared for the Committee by Antoine Goujard, Paula Garda and Andrés Sansone, under the supervision of Piritta Sorsa. Statistical research assistance was provided by Pedro Herrera Giménez and editorial assistance by Carolina González.

The previous Survey of Chile was issued in November 2015.

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Basic statistics of Chile, 2016

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

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million)	18.0		Population density per km²	24.6	(37.2)
Under 15 (%)	20.8	(17.9)	Life expectancy (years, 2015)	79.1	(80.5)
Over 65 (%)	10.6	(16.6)	Men	76.5	(77.9)
Foreign-born (%, 2014)	2.6		Women	81.7	(83.1)
Latest 5-year average growth (%)	0.9	(0.6)	Latest general election	November 2017	
ECONOMY					
Gross domestic product (GDP)			Value added shares (%)		
In current prices (billion USD)	247.0		Primary sector	4.3	(2.5)
In current prices (billion CLP)	167 227		Industry including construction	31.3	(26.6)
Latest 5-year average real growth (%)	3.0	(1.8)	Services	64.4	(70.9)
Per capita (000 USD PPP)	23.5	(42.1)			
GENERAL GOVERNMENT[2]					
Per cent of GDP					
Expenditure	23.8	(41.6)	Gross financial debt	21.3	(108.5)
Revenue	21.1	(38.7)	Net financial debt	1.0	(69.9)
EXTERNAL ACCOUNTS					
Exchange rate (CLP per USD)	676		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	390		Machinery and transport equipment	39.2	
In per cent of GDP			Chemicals and related products, n.e.s.	16.6	
Exports of goods and services	28.5	(53.9)	Miscellaneous manufactured articles	13.9	
Imports of goods and services	27.6	(49.5)	Main imports (% of total merchandise imports)		
Current account balance	-1.4	(0.2)	Machinery and transport equipment	35.9	
Net international investment position (2014)	-13.7		Miscellaneous manufactured articles	15.0	
			Chemicals and related products, n.e.s.	11.2	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate for 15-64 year-olds (%)	62.2	(66.9)	Unemployment rate, Labour Force Survey (age 15 and over) (%)	6.5	(6.3)
Men	72.4	(74.7)	Youth (age 15-24, %)	15.7	(13.0)
Women	52.0	(59.3)	Tertiary educational attainment 25-64 year-olds (%)[3]	22.5	(35.7)
Participation rate for 15-64 year-olds (%)	66.8	(71.7)	Gross domestic expenditure on R&D (% of GDP, 2015)	0.4	(2.4)
Average hours worked per year	1 974	(1 763)			
ENVIRONMENT					
Total primary energy supply p.c.(toe, 2014)	1.5	(4.1)	CO_2 emissions from fuel combustion per capita (tonnes, 2014)	4.3	(9.4)
Renewables (%, 2014)	38.6	(9.6)	Municipal waste per capita (tonnes, 2015)[4]	0.4	(0.5)
Exposure to air pollution (more than 10 µg/m3 of PM2.5, % of population, 2015)	67.4	(75.2)			
SOCIETY					
Income inequality (Gini coefficient, 2015)	0.454	(0.311)	Relative poverty rate (%, 2015)	16.1	(11.3)
Median disposable household income (000 USD PPP, 2015)	10.0	(22.9)	Education outcomes (PISA score, 2015)		
Public and private spending (% of GDP)			Reading	459	(493)
Health care	8.5	(9.0)	Mathematics	423	(490)
Pensions (2013)	4.4	(9.1)	Science	447	(493)
Education (primary, secondary, post sec. non tertiary, 2014)	3.1	(3.7)	Share of women in parliament (%)	15.8	(28.7)

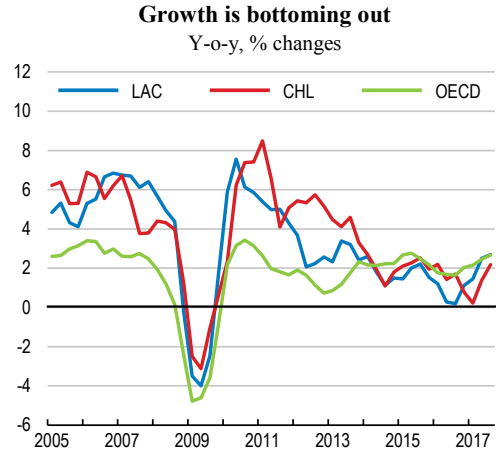
1. Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 29 member countries.
2. For Chile, data refer to Central Government.
3. For Chile, data refer to 2015.
4. For Chile, data refer to 2014.

Source: Calculations based on data from the OECD, IEA, World Bank, IMF, Inter-Parliamentary Union and DIPRES.

Executive summary

- *Growth is bottoming out after a long adjustment to lower copper prices*
- *Reinvigorating productivity and exports to support inclusive growth*
- *Making growth more inclusive with labour market and social measures*

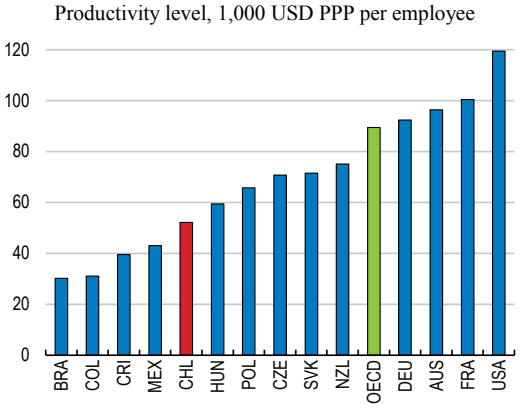
Growth is bottoming out after a long adjustment to lower copper prices



Note: LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: OECD, Economic Outlook 102 Database.
StatLink http://dx.doi.org/10.1787/888933670900

Over the past decades Chile has substantially improved the quality of life of its citizens. However, growth stalled at the end of the commodity boom. In the short term, solid fundamentals, a better global outlook for commodity exports and trade, monetary policy easing and a supportive fiscal stance are helping a gradual recovery. Additional social and education expenditure, notably through the ongoing education reform, will support inclusive growth overtime. However, boosting productivity would raise incomes for all Chileans and help financing high-quality public services, education and health. Too many adults have weak basic skills, while the excessive reliance on self-employment and short-term contracts and an inefficient training system hinder productivity growth and well-being.

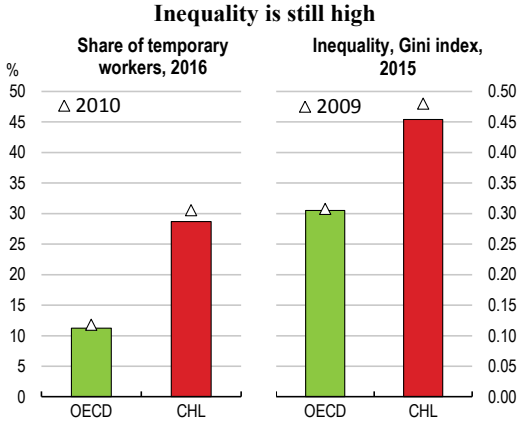
Reinvigorating productivity and exports to support inclusive growth



Note: 2016 or latest available year.
Source: OECD, Productivity Database.
StatLink http://dx.doi.org/10.1787/888933670919

The commodity boom hid weak non-commodity exports and low productivity. The reliance on natural resource intensive sectors limited diversification of exports in terms of goods, firms and destinations. This implies a high vulnerability to external shocks notably to copper developments, and environmental costs. Recent reforms eased firm registration, launched an integrated digital portal for business procedures, improved electricity supply and raised investment in renewables. However, productivity and export performance would be aided by lowering high entry barriers and regulatory complexity in some sectors. Addressing skill shortages, improving international connections and domestic infrastructure would also help create better-quality employment.

Making growth more inclusive with labour market and social measures



Source: OECD, Inequality Database.
StatLink http://dx.doi.org/10.1787/888933670938

Labour market and social reforms, focusing especially on women and the low-skilled, are win-win for inclusive growth. Relative poverty, the share of low-skilled workers, gender participation and wage gaps and youth unemployment remain high by OECD standards. Wide-ranging efforts are under way to raise equity and quality of education. Broader access to childcare and healthcare, higher effectiveness of training policies, additional reforms to the tax system and an expansion of transfers would share prosperity more widely. Reducing severance payments of permanent contracts while increasing the coverage of unemployment benefits would curb the large share of short-term and informal contracts, and improve productivity and well-being for all Chileans.

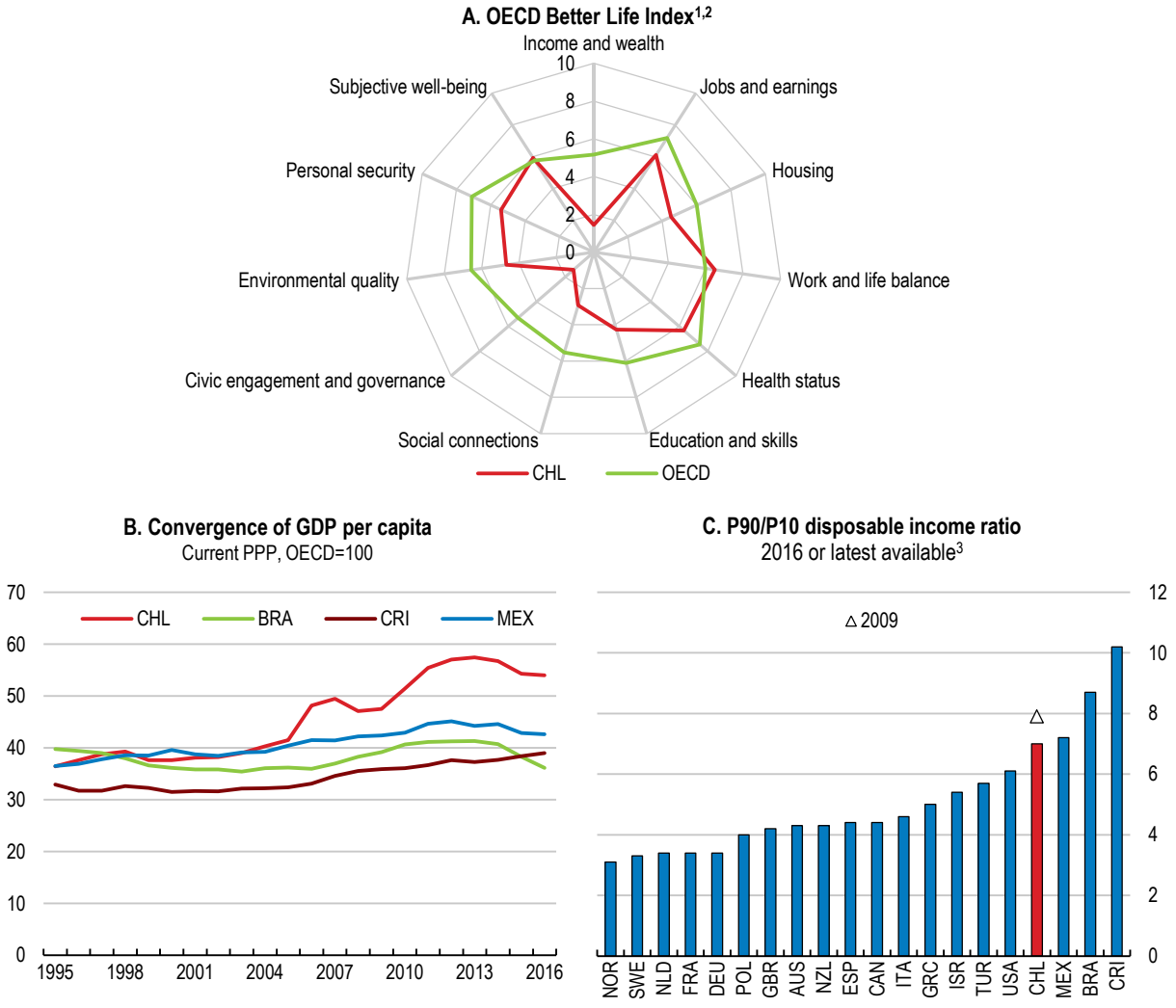
MAIN FINDINGS	KEY RECOMMENDATIONS
Making growth more sustainable	
The macroeconomic policy framework is sound, but financial supervision remains perfectible.	Implement the banking law which incorporates Basel III capital adequacy requirements and strengthens supervision.
The fiscal stance is broadly appropriate. However, public debt has increased from a low level and fiscal revenues are dependent on copper prices.	Increase further public revenues from environmental, property and personal income taxes to increase equity and stimulate growth over time. Secure the mandate, resources and independence of the Fiscal Advisory Council in Law and strengthen its role in medium-term budgetary planning.
Weak and slowing trend productivity growth.	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. 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. Improve further technical assistance and mentoring to small firms, building on the new local business centres.
Social and education spending have increased but inequality remains high.	Further increase social spending to reduce inequalities.
The private pension system does not do enough to reduce inequalities, while population aging will put pressure on public spending.	Raise contributions to increase savings for retirement. Continue to increase the solidarity pillar funded with general taxation. Progressively increase and align the retirement age of women and men.
Improving productivity and export performance	
The competition framework has significantly improved. However, the survival of less productive firms points to weak competition.	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. Ensure that public entities have to comply with the Competition Agency recommendations or to publicly explain their decisions. 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.
Expenditure on R&D is low as a share of GDP, especially in the business sector.	Strengthen policy evaluation by beefing-up data collection, systematic reviews and independent studies. Expand R&D support programmes that are proven to work, and close down or adjust inefficient ones.
Export performance has weakened. Intra-regional trade is low compared to other regions of the world. Non-tariff barriers are pervasive.	Continue efforts to fully integrate the single window mechanism with the domestic logistic infrastructure and with regional partners. Reduce further non-tariff barriers on intra-regional trade by simplifying regulations of preferential trade agreements.
Port connections to railways are weak. Lagging intermodal transport infrastructure and metropolitan coordination increase congestion and environmental damages.	Develop national, regional and metropolitan long-term infrastructure strategies. Integrate the regulation of public and private ports. Fully integrate the environmental and health damages of transport modes in taxes and road pricing to ensure fair competition. Reduce barriers to entry in maritime services and railways.
Enhancing inclusiveness and job quality	
Cash transfers are small.	Strengthen cash benefits, notably employment subsidies and unemployment- and health-insurance support.
Women and youth employment rates are low relative to the OECD. Ongoing efforts will increase equity in access and quality at all levels of education. A high share of adults lacks basic skills. Higher education does not adequately prepare students for the labour market.	Further increase affordable, good-quality child care for the poorest children and in rural areas, and expand opening hours for childcare institutions. Continue ongoing efforts to improve quality at all levels of education. Develop apprenticeships, integrating work and school-based learning, across all levels of education.
A high share of the population holds temporary or informal jobs.	Reduce dismissal costs for permanent contracts and increase coverage of unemployment benefits by reducing the minimum contribution periods.
The share of low-skilled workers is high and they have restricted access to training programmes.	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.

Assessment and recommendations

- *The economy has been resilient to the commodity shock*
- *New sources for broader-based growth are needed over the longer term*
- *Enhancing access to high-quality jobs*
- *Strengthening productivity growth and export performance*

The quality of life of Chileans improved significantly over the last decades, supported by a stable macroeconomic framework, bold structural reforms, such as trade and investment liberalisation, and buoyant natural-resource sectors. The quality of life approaches the OECD average along some dimensions of well-being -- notably jobs and earnings, work-life balance, health and subjective well-being (Figure 1, Panel A). The catch up in GDP-per-capita terms and the reduction in inequalities have been among the most rapid in the OECD in the last few decades (OECD, 2015a). Still, progress has recently slowed (Panel B) and the ratio of the highest decile of disposable income to the lowest decile is among the highest in the OECD, despite being lower than in other Latin American countries (Panel C).

Figure 1. Incomes have risen and well-being is high in many dimensions



1. Each well-being dimension is measured using one to three indications from the OECD Better Life Indicator set with equal weights.
2. Indicators are normalised by re-scaling to be from 0 (worst) to 10 (best).
3. Or latest available year. For Chile data refer to 2015. The P90/P10 ratio is the ratio of income of the 10% of people with highest income to that of the poorest 10%.
Source: OECD (2017), OECD National Accounts Statistics and Income Distribution and Poverty databases; OECD (2016), "Better Life Index 2016".

StatLink http://dx.doi.org/10.1787/888933670957

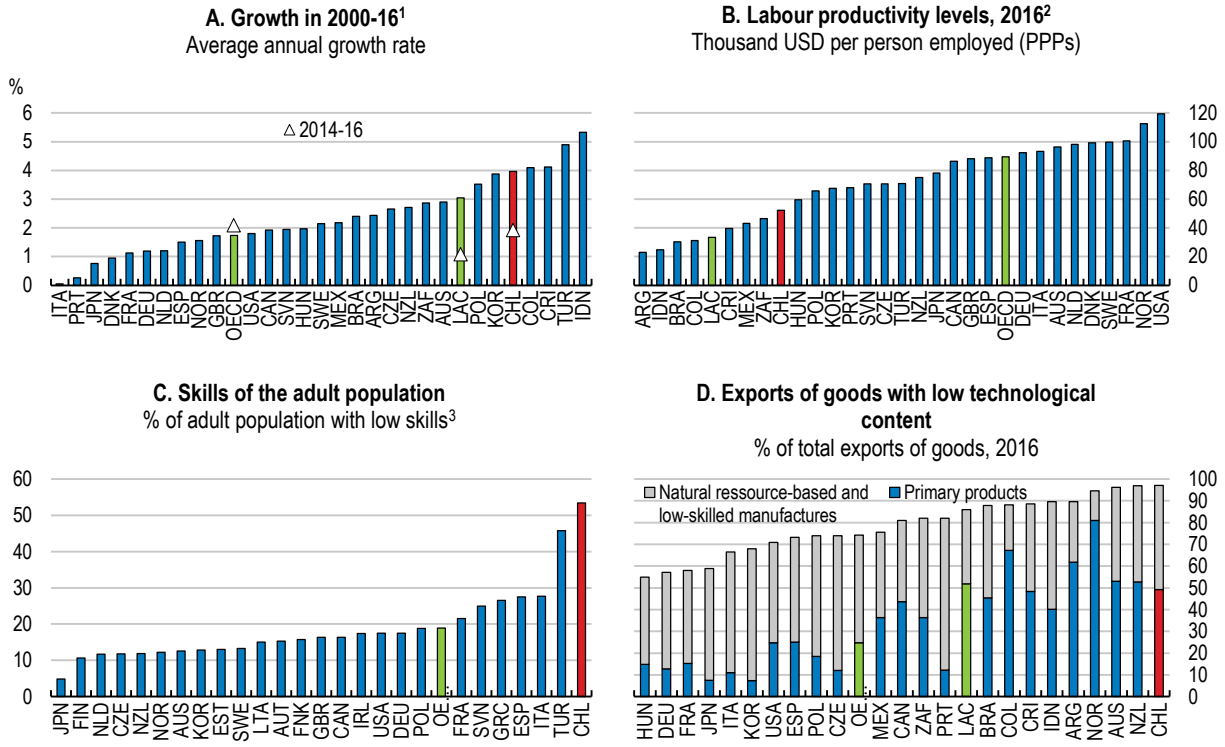
Even though Chile fared relatively well during the global financial crisis, important challenges remain. The end of the commodity cycle and slower global trade have been the main drivers of lower growth, investment and business confidence. Domestic factors have also played a role. The rise in self-employment and involuntary part-time employment due to the decline in growth are undermining incomes and the financing of social protection.

Chile's catch-up in living standards is challenged by low and stagnant productivity and a still high level of inequality. The declining relative poverty rate of 16.1% in 2015 remains high by OECD standards and the income of the highest income decile exceeded 2.8 times the median in 2015 in line with an average of 3.0 in Brazil, Costa Rica and Mexico, but much higher than in the OECD average country (2.0). The very high share of low-skilled workers, gaps in infrastructure and low investment in innovation and R&D hinder productivity and are associated with a persistent dependence of exports on mostly natural resources, notably copper, agriculture and fisheries, and low-technology manufactures (Figure 2). Low levels of activity and employment rates for women, youth, low-skilled and indigenous groups, large earnings gaps between men and women, and the high share of temporary contracts and self-employed exacerbate persistent income disparities. Productivity and inequality are also affected by the education system, whose weak and unequal results strongly reflect socio-economic backgrounds (OECD, 2015a; OECD, 2016a). At the same time, population ageing, projected to be one of the steepest in Latin America, will pose social challenges in terms of inclusiveness and well-being, in the decades ahead.

Ongoing improvements in the education sector, reforms in the labour market, the implementation of the 2014-18 Productivity Agenda, and efforts to raise the efficiency of electricity markets and the sustainability of the pension system have aimed at tackling these challenges. However, further structural reforms are needed for more robust private investment and more inclusive growth, ensuring the provision of high-quality public services over the longer term. OECD simulations show that the implementation of key structural reforms would significantly raise GDP per capita by 5.2% after 10 years, or yearly real GDP growth by around 1.2 percentage points, on average, over this period (Box 3, Table 5). Against this background, the main messages of this Survey are:

- A solid macroeconomic policy framework has smoothed adjustment to the end of the commodity boom, contributing to low unemployment, resilient household consumption and a stable financial sector.
- Raising incomes and well-being further will depend on strengthening skills and greater inclusion of women and low-skilled workers in the labour force. Increasing the quality of education, reforms to ensure the training system benefits the unemployed and inactive and measures to reduce the segmentation of the labour market would enhance productivity and inclusiveness.
- Business entry costs and export procedures have been progressively eased. However, promising firms still lack opportunities to grow, export and innovate. Further simplification of trade and regulatory procedures, and reforms in the transport sector, would strengthen productivity.

Figure 2. Growth has been resilient but productivity and exports' technological content are low



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Or latest available year. The value for Argentina and South Africa are estimates based on the World Development Indicators.
3. Adults with literacy skills of level 1 or below.
Source: OECD (2017), Economic Outlook 102 Database (and updates), National Accounts and Productivity Databases; OECD (2016), Skills Matter: Further Results from the Survey of Adult Skills; and OECD calculations based on Comtrade data.

StatLink http://dx.doi.org/10.1787/888933670976

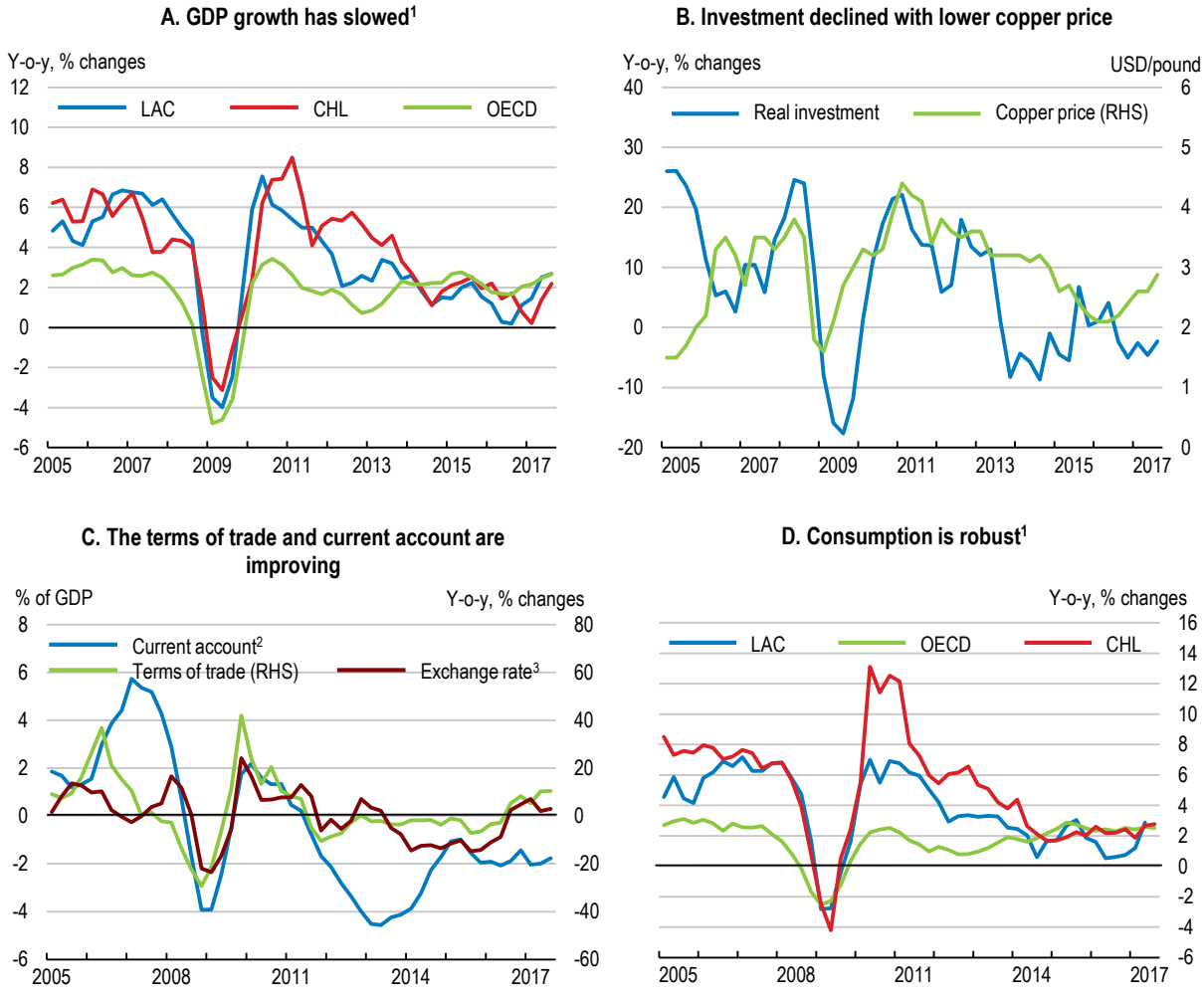
The economy has been resilient to the commodity shock

The economy grew by 5.3% annually between 2010 and 2014, more than double the OECD average (Figure 3, Panel A). This was driven by a sharp rise in terms-of-trade after the 2008 financial crisis as the value of copper exports boomed along with strong external demand. Since mining is very capital intensive, investment grew from approximately 21% of GDP in 2002 to almost 25% of GDP in 2012, generating large spillovers on other sectors, in particular construction.

Growth has slowed since 2014 due to weaker global trade and the fall in copper prices, but by less than in Latin American peers. Together with higher costs from more difficult extraction, lower copper prices have reduced mining profitability and thereby investment (Panel B). Recently, a modest recovery in commodity prices has reversed some of the earlier terms-of-trade losses (Panel C). However, in the first half of 2017, growth decelerated further as a long-lasting strike in the largest copper mine, linked to regular collective negotiations, weighed on exports and activity. The economy appears close to the end of the adjustment, helped by an improving outlook in its main trading partners, notably Latin American countries (OECD, 2017a).

Growth was aided by the solid macroeconomic framework, the floating exchange rate and the stable financial system. Private consumption remained robust (Figure 3, Panel D) thanks to the historically low joblessness, strong credit growth, and a rise in public consumption. Employment is rising and annual wage growth has been robust, partly linked to minimum wage hikes and frequent indexation of wages on past inflation (Pérez Ruiz, 2016), underpinning solid gains in disposable income (Figure 4, Panel A). The unemployment rate, around 7%, remains historically low (Panel B). However, the prolonged growth slowdown raised involuntary part-time employment and self-employment, while, on average, self-employed earn 20% less than a wage employee with the same skills and experience (Barrero and Fuentes, 2017). The long-term decline in informality has stopped over 2013-17 (Ciedess, 2017).

Figure 3. The adjustment to the decline of copper price is easing



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa-Rica and Mexico.
2. Four-quarter moving average.
3. Nominal exchange rate in US dollars per national currency.
Source: OECD (2017), Economic Outlook 102 Database (and updates); Central Bank of Chile (2017), Statistical database.

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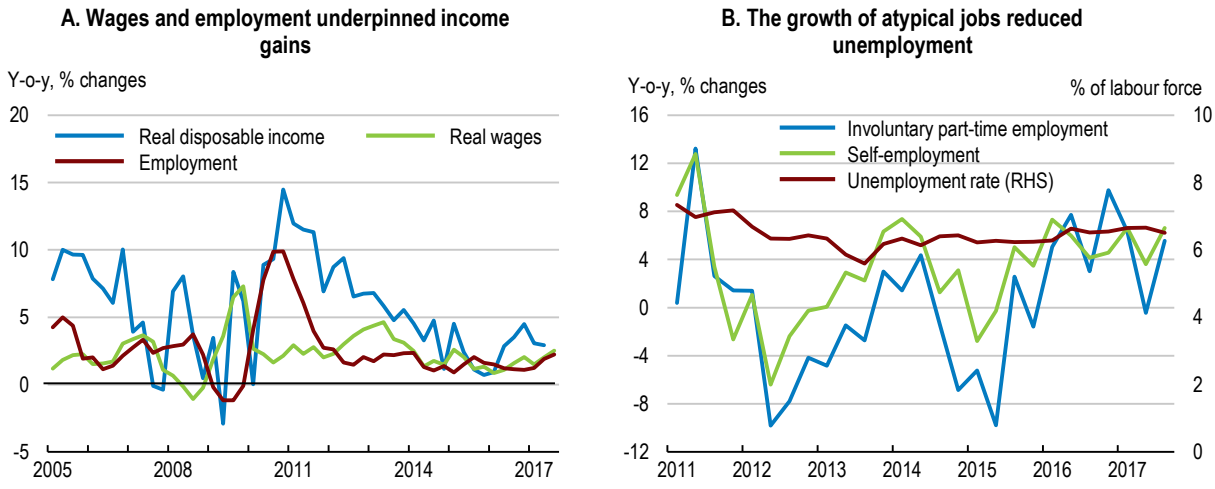
Inflation has been on a downward trend since the beginning of 2016 (Figure 5, Panel A). Inflation exceeded the official target band over 2014-16, mostly due to the pass-through from the sharp peso depreciation. However, the stabilisation and the subsequent appreciation of the exchange rate as well as the wider output gap drove core and headline inflation below the lower bound of the policy tolerance range in the middle of 2017. In this context, monetary policy has been supportive. The Central Bank reacted by cutting its interest rate from 3.5% in December 2016 to 2.5% in May 2017, well below historical norms (Panel B). At the same time, inflation expectations remain well anchored, and prudential measures have moderated lending growth, thereby containing vulnerabilities.

Figure 4. The labour market has been resilient



Source: OECD (2017), Economic Outlook 102 Database (and updates); Central Bank of Chile (2017), Statistical Database; INE (2017), Encuesta Nacional de Empleo.

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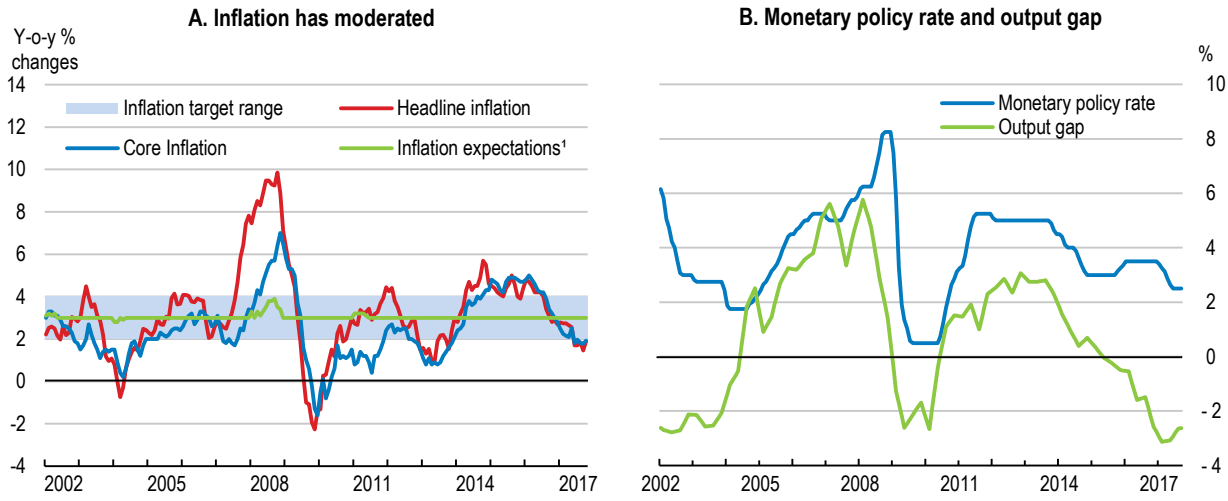
Export recovery has been affected by global trade conditions, commodity developments and structural rigidities. Despite the depreciation of the peso, most of the adjustment to lower copper prices has taken place by import compression. Since 2011, the increase in non-mining exports has been held back by low growth in Chile's main trading partners and negative supply shocks in the salmon and wine sectors (Figure 6, Panels A and B). A strike in the main copper mine further weighed on exports in the first half of 2017. The dependence of the recovery on a few export sectors highlights Chile's competitiveness problems (Figure 8). Indeed, non-price competitiveness is hampered by Chile's specialisation in price-sensitive products and weak innovation. Moreover, product and labour market rigidities reduced the speed of reallocation of labour and capital to more competitive sectors, and reduced potential for more inclusive growth by keeping resources in low paying jobs. This had a tendency to maintain non-productive jobs and income disparities as better quality jobs were not created (Adalet Mc Gowan et al., 2017). Exports are expected to strengthen thanks to revived world demand, in particular from Chile's main Latin American trading partners.

Figure 5. Inflation has moderated



1. Inflation expectations at 23 months.
Source: OECD (2017), Economic Outlook 102 Database (and updates); Central Bank of Chile (2017), Statistical Database.

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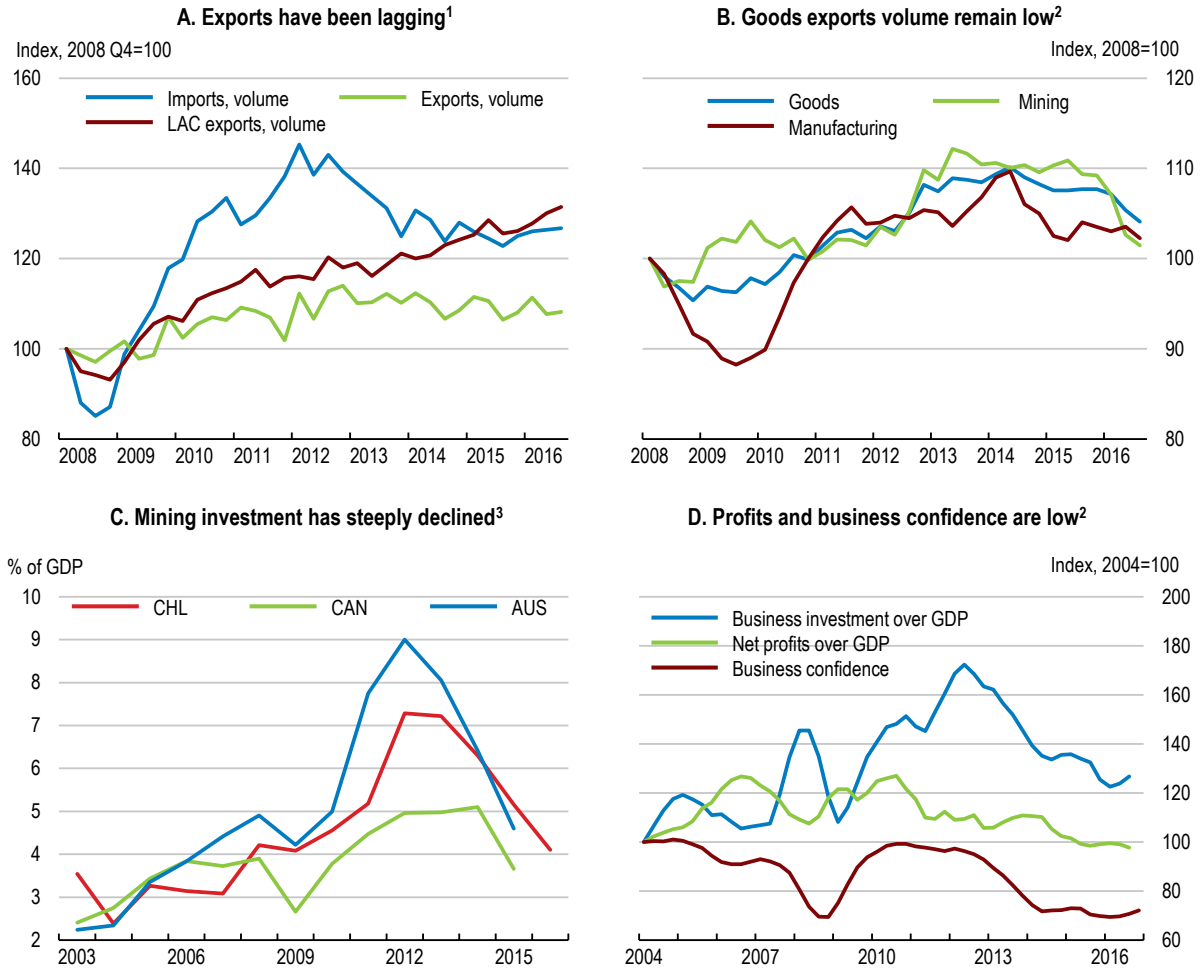
Investment will recover only slowly. The adjustment of investment in the mining sector has been a significant drag on private investment and the recovery (Figure 6, Panel C). Moreover, lower internal financing capacity, uncertainty about the internal and external environment have reduced business confidence and held back business investment, despite historically low interest rates (Panel D). Household investment will also be a drag on growth in the short term. The scheduled end of reduced VAT rates on new home sales in 2016 has pushed forward construction activity, while welcome higher requirements on provisions to housing loans could negatively impact credit conditions.

Chile's current account balance has been in deficit since 2011. However, FDI inflows, mainly to the mining sector, have funded a large part of the deficit (Figure 7). Net foreign liabilities remain limited, net external public assets are above 4% of GDP, due to assets held by the two sovereign wealth funds (Box 1), and reserves are above 80% of short-term external debt.

Figure 6. Exports and business investment are lagging



1. Goods and services. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Four-quarter moving averages.
3. Mining investment in Chile in 2016 is an estimate based on information from listed companies.
Source: OECD (2017), Economic Outlook 102 Database (and updates); Central Bank of Chile (2017), Statistical Database.

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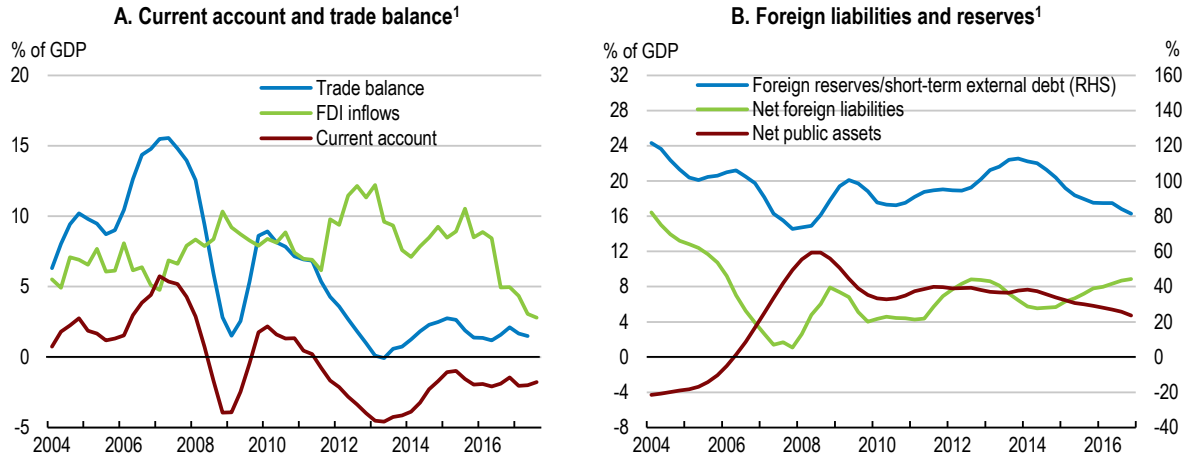
The short-term outlook is improving but Chile faces several medium-term challenges

Growth is projected to gain strength in the short run, accelerating from 1.7% in 2017 to almost 3% in 2018 and 2019 (Table 1). Exports will grow at a more solid pace, underpinned by improving export markets and a rebound in copper prices. Strengthening demand, good financing conditions and recent policy measures to support exports and productivity will reinvigorate business investment. As growth picks up, the unemployment rate will edge down and wage growth will increase. This will lower income disparities and private consumption is projected to accelerate with increasing real disposable incomes.

Figure 7. External imbalances are contained



1. Four-quarter moving averages.
Source: OECD (2017), Economic Outlook 102 Database (and updates); Central Bank of Chile (2017), Statistical Database.

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Table 1. Macroeconomic indicators and projections

Annual percentage change, volume (2013 prices)[1]

	2014 Current prices (CLP billion)	2015	2016	2017	2018	2019
GDP at market prices	148,855.3	2.2	1.5	1.7	2.9	2.9
Private consumption	93,735.5	2.0	2.4	2.6	2.8	2.9
Government consumption	19,080.0	4.5	5.1	3.7	2.8	2.5
Gross fixed capital formation	35,444.7	-0.9	-0.6	-1.4	2.9	4.3
Final domestic demand	148,260.2	1.6	2.0	1.9	2.8	3.1
Stockbuilding[2]	-862.3	0.3	-0.9	1.3	0.0	0.0
Total domestic demand	147,397.8	2.0	1.2	3.2	2.8	3.1
Exports of goods and services	49,212.9	-1.9	0.0	-0.6	3.1	3.5
Imports of goods and services	47,755.3	-2.8	-1.6	5.7	3.4	4.5
Net exports[2]	1,457.5	0.3	0.5	-1.7	-0.1	-0.2
Memorandum items						
GDP deflator	_	4.2	3.8	4.5	3.3	2.7
Consumer price index	_	4.3	3.8	2.2	2.5	3.0
Private consumption deflator	_	5.5	3.7	2.1	2.5	3.0
Unemployment rate	_	6.2	6.5	6.7	6.5	6.3
Central government financial balance[3]	_	-2.1	-2.7	-2.8	-1.9	-1.7
Potential growth	_	3.1	2.9	2.7	2.5	2.5
Output gap	_	0.9	-0.1	-1.6	-2.9	-2.5

1. OECD projections are elaborated from seasonal and working-day-adjusted quarters for selected key variables, from which annual data are derived. Small differences between adjusted and unadjusted annual data may occur.
2. Contribution to changes in real GDP.
3. As a percentage of GDP.
Source: OECD Economic Outlook 102 Database (and updates).

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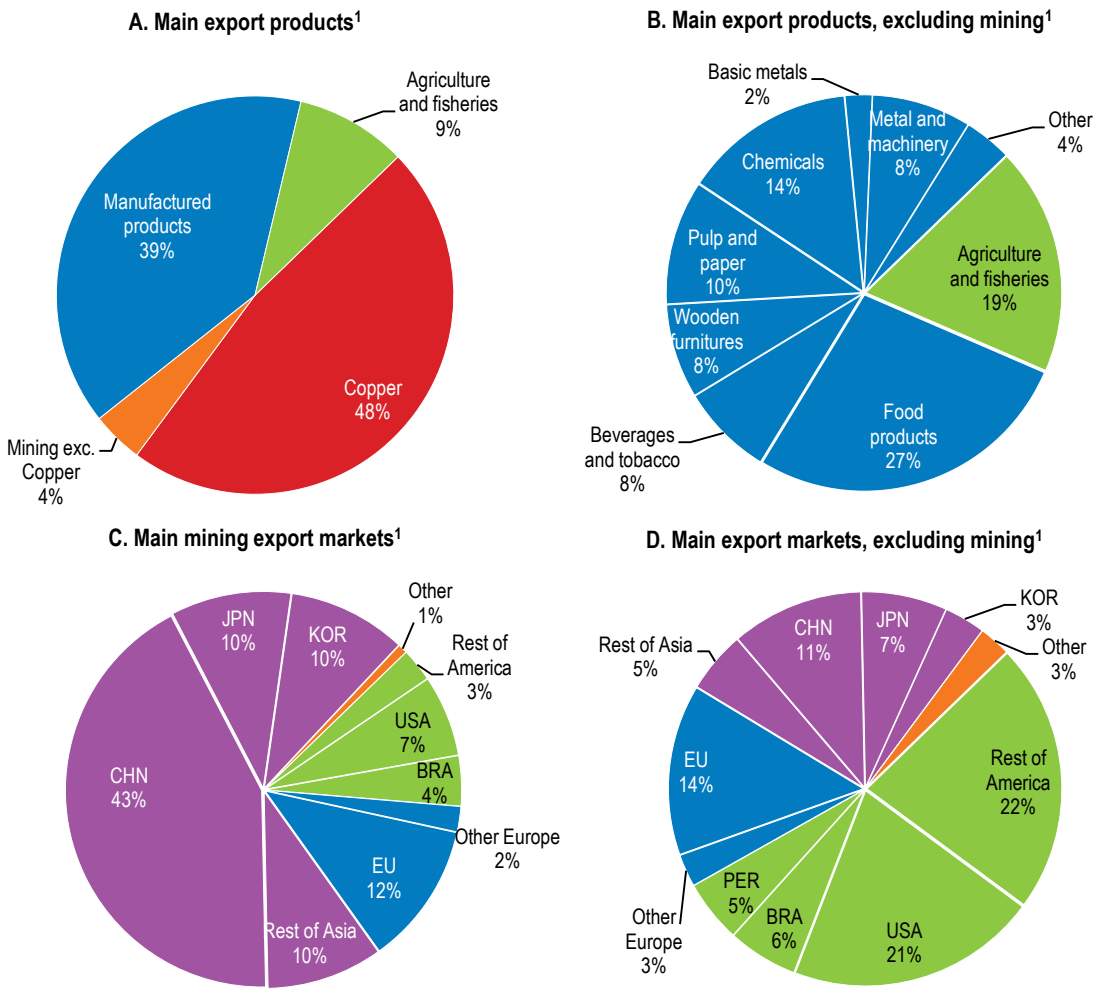
The main risks to growth relate to the performance of Chile's principal trading partners and the evolution of commodity prices. Lower or higher growth in China, the United States and Latin American neighbours could reduce or boost external demand (Figure 8).

In particular, further recovery of copper prices would boost confidence and investment, and increase government revenues. Alternatively, lower export prospects would weigh on growth. Domestic measures to boost competition and productivity and the new infrastructure fund could also increase investment more than assumed. By contrast, growth could be weakened if uncertainty in the business sector does not dissipate. A faster-than-expected rise in global long-term rates would have a limited negative impact on the financial sector and growth (Central Bank of Chile, 2017b). The economy may also confront unforeseen shocks, whose effects are difficult to factor into the projections (Table 2).

Figure 8. Exports remain highly specialised, 2015-16



Note: Average percentage shares over 2015-16 for trade in goods.
Source: Central Bank of Chile (2017), Statistical Database.

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Table 2. Events that could lead to major changes in the outlook

Shock	Possible impact
Rise of protectionism and a slowdown in global trade	The benefits of integrating into the world economy will be lower if global protectionism were to rise. Export prospects would decrease.
Increased weather variability and natural disasters, such as droughts, wildfires and landslides	Depending on the nature and scale of the natural disaster, the fall in output from agriculture and other sectors could be regional or national. Infrastructure would be damaged and ongoing investment projects would be delayed but it could boost reconstruction expenditures.
A hard landing of emerging economies, particularly in China.	Global economic prospects and exports momentum would decline. In particular, copper prices, exports and public revenues would be lower than expected. Financial and real spillovers through other emerging countries would also reduce growth.

Continued fiscal consolidation is needed over the medium term

The commodity price shock and the growth slowdown led to a rise in the fiscal deficit after 2011, broadly in line with the fiscal rule (Table 3, Box 1). Non-mining and mining revenues were hit by the sharp fall in copper prices and lower growth. In addition, new education and social spending exceeded short-term revenue gains from the 2014 tax reform (see below). The deficit remained close to 2.8% of GDP in 2017 and will decline around to 1.7% in 2019 according to OECD projections (Table 1).

Table 3. The central government fiscal situation has deteriorated

Percentage of GDP

	2003	2007	2011	2013	2014	2015	2016
Total revenues	**20.2**	**25.5**	**22.6**	**20.9**	**20.6**	**21.2**	**21.1**
Copper revenues	1.0	8.1	4.1	2.1	1.9	1.3	0.4
Non-copper revenues	19.2	17.3	18.4	18.9	18.7	19.9	20.6
Total expenditures	**20.7**	**17.7**	**21.3**	**21.5**	**22.2**	**23.3**	**23.8**
Social spending[1]	na	na	11.6	12.3	12.6	13.3	13.9
Other public spending	na	na	5.1	5.0	5.2	5.2	5.2
Public investment	3.2	3.1	4.1	3.6	3.8	4.2	4.0
Interests	1.1	0.6	0.6	0.6	0.6	0.7	0.8
Fiscal balance	**-0.4**	**7.8**	**1.3**	**-0.6**	**-1.6**	**-2.1**	**-2.7**
Structural balance	**0.8**	**-1.1**	**-1.0**	**-0.5**	**-0.5**	**0.5**	**-1.1**
Structural primary balance[2]	**1.4**	**1.0**	**-0.9**	**-0.4**	**-0.3**	**0.7**	**-0.8**
Fiscal impulse[3]	**0.0**	**-0.7**	**1.1**	**-0.1**	**0.1**	**1.1**	**-1.5**
Gross debt	**12.7**	**3.9**	**11.1**	**12.7**	**14.9**	**17.4**	**21.3**
Net debt	**6.6**	**-12.9**	**-8.6**	**-5.6**	**-4.3**	**-3.5**	**1.0**

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 (Box 1).
3. Change in structural primary balance.
Source: Dipres.

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Much of the deterioration in the fiscal deficit was cyclical and linked to lower copper prices. The structural budget deficit (national definition abstracting from the cycle and short-term fluctuations in copper prices) has been broadly stable over 2011-16 (Box 1). Furthermore, the structural primary balance has been broadly stable between 2011 and 2016 (Table 3). Prudent fiscal management has been rewarded by the lowest sovereign bond spreads in the region. General-government gross debt at 28% of GDP in 2016, around 131% of revenues, was much lower than the average of Colombia and Mexico

(59.3% of GDP or 207% of revenues). However, persistent headline deficits have increased public debt by around 10% of GDP in gross and net terms since 2011. Concerns about long-term growth also led to credit rating downgrades for long-term foreign-currency denominated sovereign debt from A+ to AA- by Standard & Poor's and from A+ to A by Fitch in the middle of 2017.

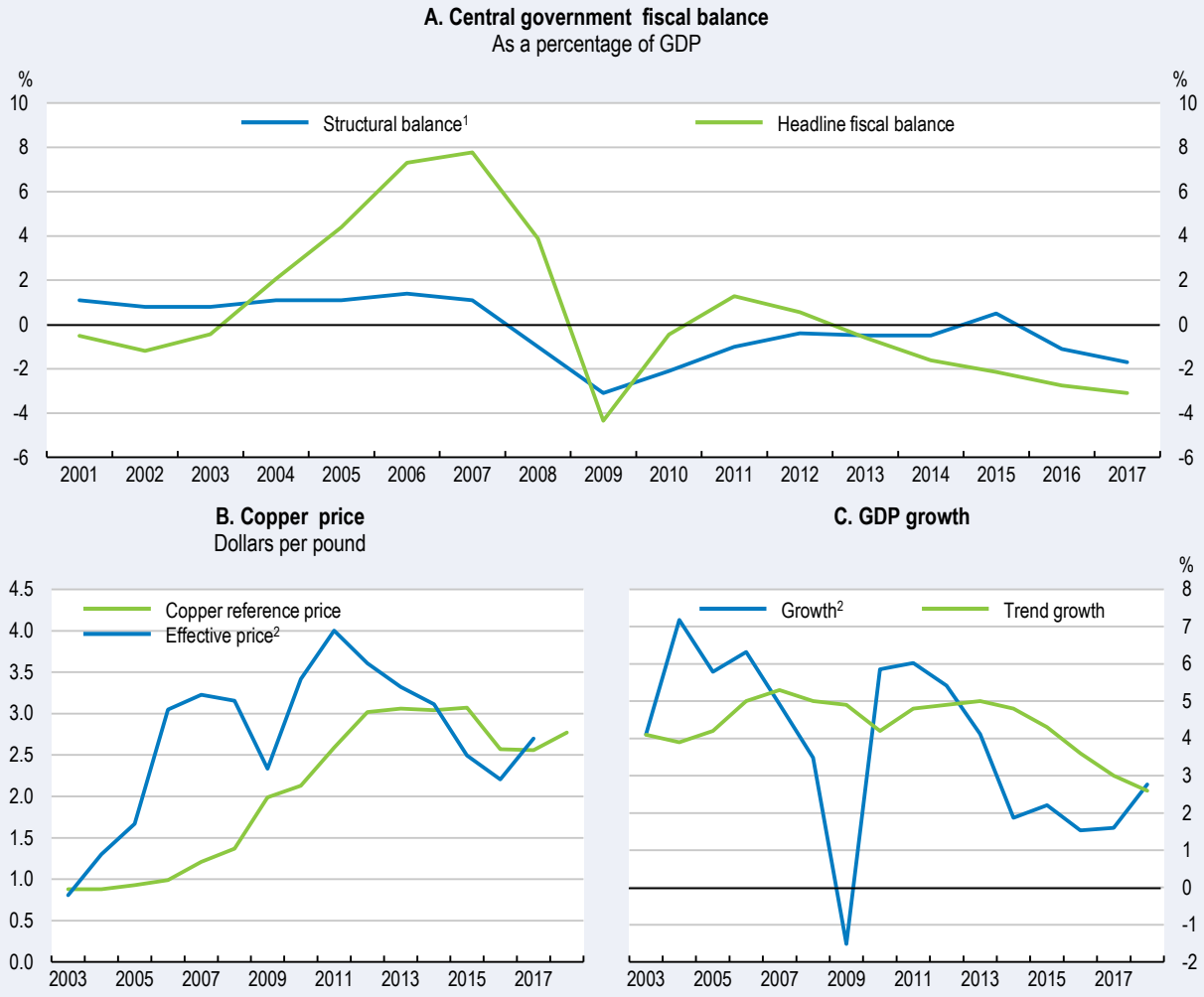
Under a baseline scenario where long-term growth remains close to 3% in volume terms and inflation is close to the central-bank target, if the government continues a gradual fiscal consolidation plan of 0.25% of GDP per year in line with the fiscal rule (Figure 10, Panel A), gross central-government debt will remain on a sustainable path (Panel B). Although long-term growth could be supported by higher immigration and female employment (Central Bank of Chile, 2017a), the effects of ageing could be larger than expected (Braconier et al., 2014; Acosta-Ormaechea et al., 2017) and the prolonged slowdown could push down productivity through hysteresis effects. With lower long-term growth, at 2% per year, the gross debt-to-GDP ratio would only be slightly above the baseline in 2040. However, foreseen increase in health and long-term care expenditures could reach more than 7% of GDP by 2060 (de la Maisonneuve and Oliveira Martins, 2015). If the authorities were only able to shrink the primary deficit by 0.15% of GDP each year, government debt could reach 38% of GDP in 2040 or close to 60% if the consolidation was further delayed and interest rate on government debt were to rise significantly. The literature tends to limit prudent debt levels to 40-55% of GDP in emerging economies and 70-90% in higher-income countries (Fall et al., 2015). As copper-related revenues are likely to remain low, achieving medium-term consolidation objectives in line with the fiscal rule will require substantial new permanent fiscal revenues (see below).

The fiscal rule has been effective at smoothing public expenditures and maintaining a moderate public debt level (Marcel, 2013; Korinek, 2013; IMF, 2016). However, the public financial management framework could be further enhanced to meet forthcoming fiscal challenges. A new public registry of external economic experts improved the transparency of the estimation of the structural balance in 2017 (Annex). However, the mandate and resources of the Fiscal Advisory Council fall short of OECD best practices (OECD, 2014a). Greater independence for the Fiscal Advisory Council should be built in law to ensure independent assessment of compliance with the fiscal rule. Broadening the mandates of the Fiscal Advisory Council to update the elasticities used for structural revenues, provide independent economic projections for the budget and produce more comprehensive public analyses of fiscal policy and medium-term budgetary plans would help maintaining a strong government financial position, and bolster Chile's international reputation for fiscal prudence. Incorporating an explicit medium-term target in the fiscal rule would also help, as fiscal targets have been changed in the current slowdown (Box 1).

Box 1. The fiscal rule and its implementation

Chile's structural balance rule puts an ex ante ceiling on government expenditures. Each year, two committees provide estimates for trend GDP growth and forecasts for long-term copper price (10 years ahead). Revenues are adjusted cyclically for deviation from trend GDP growth and long-term copper price based on the estimates of two committees of experts working for its Advisory Fiscal Council, while expenditures are not cyclically adjusted (Figure 9).

Figure 9. Central government fiscal balance



1. The historical series evaluates the structural deficit using the historical parameters of each budget law.
2. The long-term copper price - an estimate of the average price of copper over the next ten years - and trend growth are determined yearly by two committees of experts working for Chile's Fiscal Advisory Council.
Source: Dipres (2017), Indicador del balance cíclicamente ajustado; OECD Economic Outlook 102 Database (and updates).

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The authorities have progressively reduced annual structural balance targets from a surplus of 1% of GDP over 2001-07 to 0% in 2009, and shifted to a structural consolidation path over 2009-14, as methodological changes in 2011 revealed a larger-than-previously-estimated structural deficit. A Fiscal Advisory Council comments and provides recommendations on the rule implementation since 2013. The structural adjustment was made even more gradual in 2016 in light of lower copper prices and a decline in the projected long-term growth.

The Chilean fiscal framework builds on two sovereign wealth funds, the Social Stabilisation Fund (ESSF) and the Pension Reserve Fund (PRF), that help reduce the impact of commodity fluctuations on activity, as public revenues remain dependent on copper (Box 2). In particular, the Social Stabilisation Fund finance fiscal deficits that may occur in periods of low growth and/or low copper prices and may also be used to finance the payment of public debt (including recognition bonds) and contributions to the Pension Reserve Fund. The Pension Reserve Fund complements the financing of pensions and social welfare arising from the old-age and disability solidarity basic pensions as well as solidarity pension contributions.

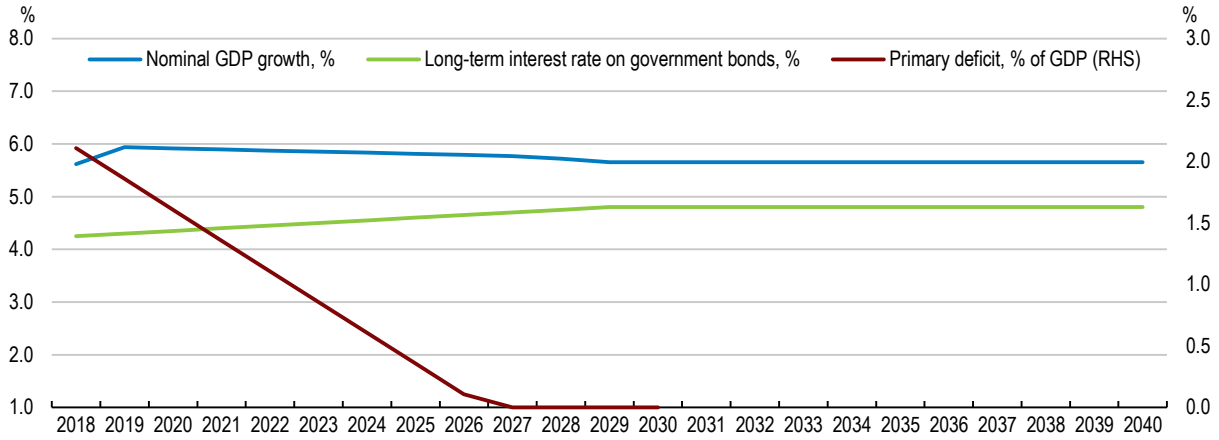
Monetary policy will remain supportive

The Central Bank conducts monetary policy on an inflation-targeting framework and flexible exchange rate regime. Monetary policy has operated in a difficult environment of high inflation and low growth following the end of the commodity boom and the associated exchange-rate depreciation. Inflation remained above the 2−4% target band over 2015-16, but the Central Bank was effective in avoiding a de-anchoring of inflation expectations (Figure 5). In 2018, the Central Bank will reduce the frequency of monetary policy meetings from 12 per year to 8, increase their duration and extend its public statements, including a vote count, the likely change of monetary policy, additional assessments of the economic situation, to raise the transparency of its decisions.

Monetary policy has become more accommodative at the end of 2016. Once inflation started to decline, the Central Bank softened its policy guidance and cut its interest rate from 3.5% in December 2016 to 2.5% in May 2017. This stance is consistent with a Taylor rule (Figure 11). The Central Bank plans to keep its monetary policy interest rate around current levels and to start raising it once the economy starts closing the activity gap (Central Bank of Chile, 2017c). Monetary policy would therefore remain appropriately accommodative over 2018.

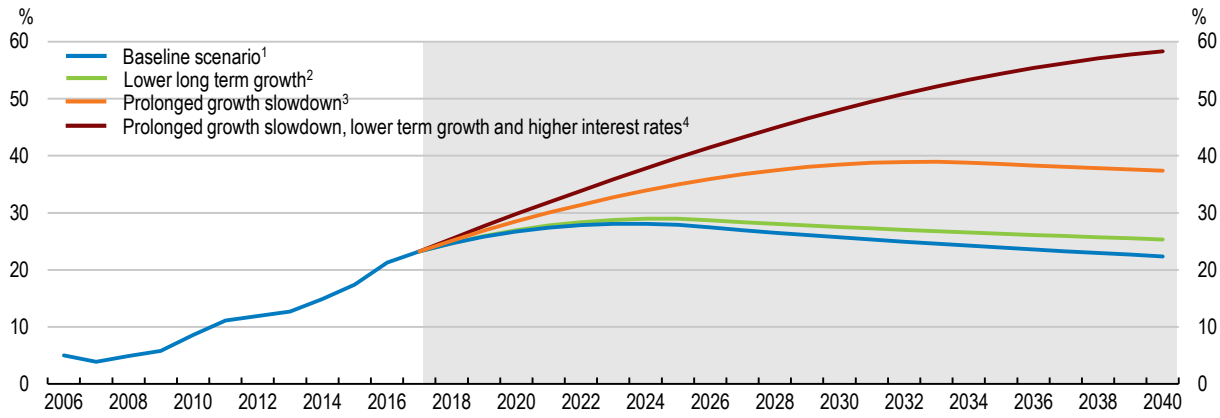
Figure 10. Illustrative public debt paths

A. Baseline long-term assumptions



B. Debt simulations

Public debt to GDP projections under different scenarios



1. Baseline long-term assumptions of Panel A. In addition, 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 real long-term interest rates are higher by 1.5 percentage point over 2019-2040.

Source: OECD calculations based on the OECD Economic Outlook 102, Dipres and Central Bank of Chile.

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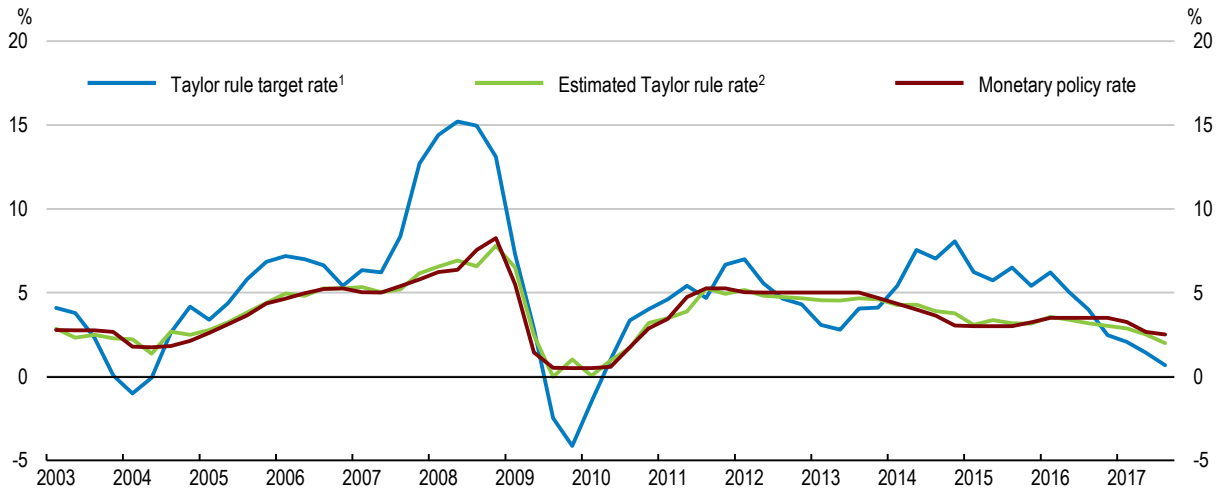
Figure 11. Monetary policy has become more accommodative



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 Central bank of Chile (2017).
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 (2017), Monetary Policy Report - September, Santiago.

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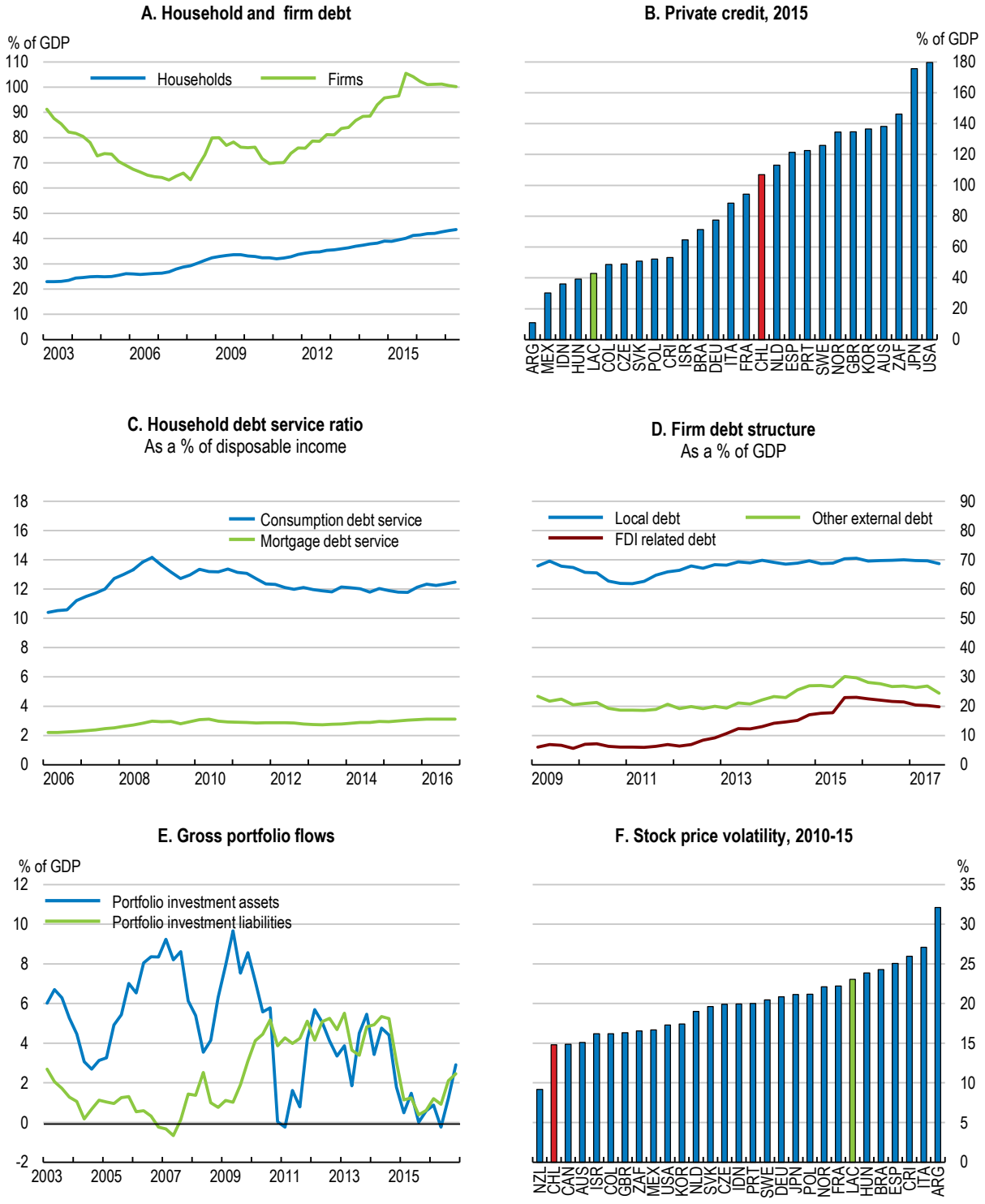
Banking regulation and supervision are being strengthened

Compared to many other emerging markets, Chile's financial markets are open and deep, supported by a free-floating currency and a sound fiscal and monetary policy framework. The Central Bank (2017b) considers that risks from household and firm debt are contained, despite the rapid increase in private indebtedness (Figure 12). Home purchases and household debt rose in anticipation of the 2016 housing VAT hike (IMF, 2016), but the average household debt service ratio decreased with lower interest rates. In addition, the Banking Supervisor adjusted the provision requirements on housing loans with high loan-to-value ratios to better capture expected losses and limit housing market risks going forward.

Figure 12. Financial developments have been mixed



Note: LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: OECD (2017), National Accounts Database; Central Bank of Chile (2017), Statistical Database; IMF (2017), Financial Soundness Indicators Database; BIS (2017), Total credit statistics; World Bank (2017), Global Financial Development Database.

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Similarly, the increase in non-financial corporate debt does not necessarily imply a significant risk to financial stability thanks to a series of mitigating factors. Long maturities, natural hedges through exports and the use of currency derivatives limit rollover risks and currency mismatches (Central Bank of Chile, 2017b). Moreover, almost half of firms' external debt is through parent-subsidiary commitments, where the associated risks for borrowing firms are lower than for bank debt and bond debt between unrelated parties (Ahrend et al., 2012; Caldera Sánchez and Gori, 2016). However, a prolonged period of lower growth could increase servicing risks (Central Bank of Chile, 2017b).

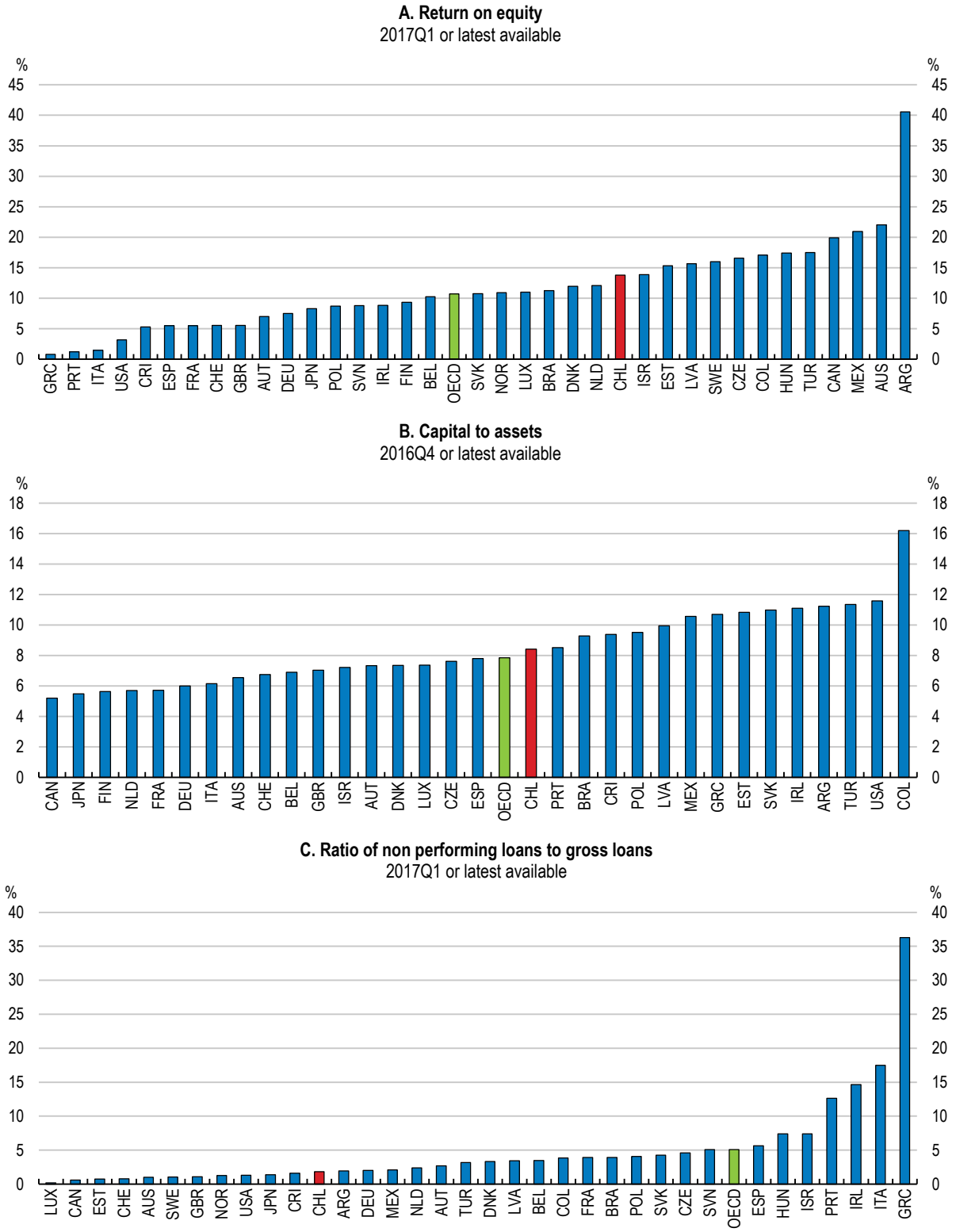
The banking sector has been resilient to adverse economic developments. Banks' profitability is above the OECD average, despite the growth slowdown (Figure 13, Panel A). The banking system is mostly well-capitalized and non-performing loans are low (Panels B and C). According to the Central Bank's stress tests, the banking system would face most stress scenarios without significant financial stability risks (Central Bank of Chile, 2017b).

The government is strengthening financial regulation. A 2015 bill strengthened the financial stability council with a specific mandate to oversee systemic risks and those arising from financial conglomerates. The 2017 draft banking law would gradually incorporate Basel III capital adequacy requirements. The bill also introduces macro prudential tools and a legal framework covering prevention and early intervention for banks, and strengthens the governance of the bank supervisor. The rapid adoption of the bill would strengthen the regulatory framework. In addition, a Financial Market Commission (FMC) was created in 2017 (Annex). However, the transfers of some core competences, such as banking supervision, would only take place with the adoption of the draft banking law. Moreover, establishing a consolidated credit register for bank and non-bank credit providers as was foreseen by a 2011 draft legislation will be key to improve risk monitoring.

New sources for broader-based growth are needed over the longer term

To sustain growth Chile needs to diversify the economy towards non-resource activities. The economy remains highly dependent on copper (Box 2) and commodity prices and salmon diseases have challenged the traditional engines of growth. Mining, fisheries and aquaculture and forestry exports, with the exception of fruit and wines, have seen a sharp reduction in their growth rates over the past decades. Progress towards more resilient and inclusive growth is held down by low skills, pervasive labour market mismatches, and difficulties of small and young dynamic firms to grow. According to OECD simulations, structural reforms could boost new sources of growth substantially (Box 3). Largest gains come from improving product market regulations in network sectors and streamlining business regulations and permitting procedures.

Figure 13. The financial sector remains stable



Source: IMF (2017), Financial Soundness Indicators Database.

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Box 2. Copper and the economy

Chile's copper resources are estimated at 29% of the world's copper reserves and is the largest copper producer, having produced 37% of the world's copper in 2016 (Cochilco, 2017). However, the employment contribution of the sector is close to only 3% owing to the high capital intensity of the sector. Public revenues from the copper industry constitute an important share of government income but have recently been affected by the low copper prices.

Table 4. Copper dependence in Chile in 2010-16

	2010-2016	2016 or last available data
Mining gross value added (% of constant prices GDP)	11.0	10.3
Of which copper gross value added (% of constant prices GDP)	9.8	9.2
Employees in the mining sector (% of total employment)	2.9	2.5
Mining exports (% of current prices total goods exports)	56.6	50.9
Of which copper exports (% of current prices total goods exports)	52.1	46.4
Mining investment (% of constant prices gross fixed capital formation)	25.2[1]	22.2
Copper revenues (% of central government fiscal revenues)	11.4	1.7
Of which state-owned companies (% of central government fiscal revenues)	6.1	1.7
Of which private companies (% of central government fiscal revenues)	5.3	0.0

1. 2010-2015.
Source: Central Bank of Chile (2017), Statistical database, Cochilco (2017), 1997-2016 Yearbook: Copper and Other Mineral Statistics and Dipres (2017).

Revenues from the copper sector are (OECD, 2014): i) a special tax on the profits of Codelco, the largest state-owned mining firm which produce around one third of Chilean copper; ii) a tax (10%) on copper exports of Codelco-owned mines that goes directly to the Ministry of Defence (Ley Reserveda del Cobre); iii) corporate taxes on private mining firms; and iv) the 2006 royalty fees (Royalty minero) for medium and large mining firms which rates depend on the firm's profit (between 0 and 14%). Changes in government revenues related to changing copper prices are smoothed thanks to the fiscal rule (Box 1).

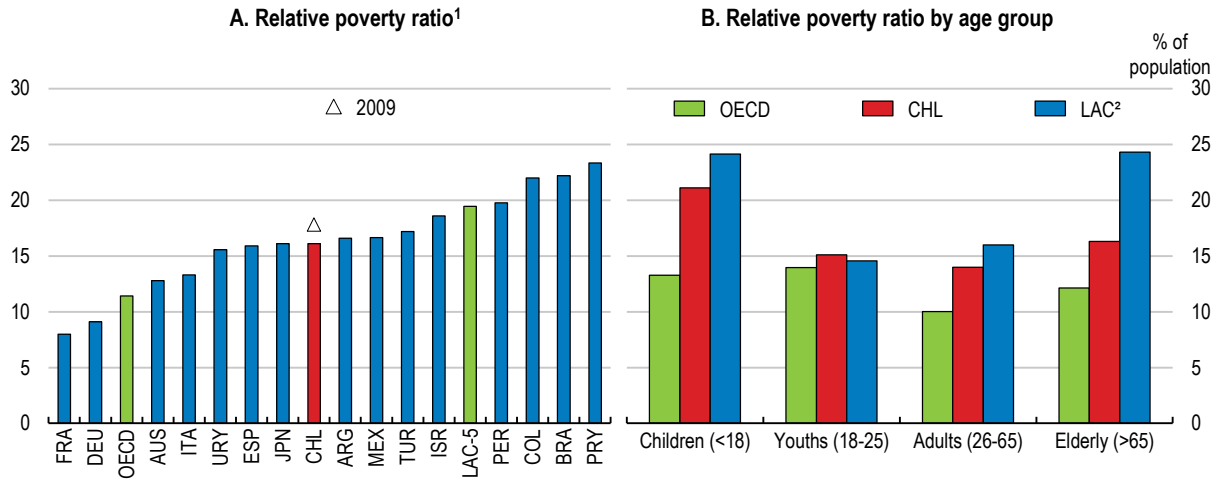
Source: OECD (2014), Export restrictions in raw material trade: facts, fallacies and better practices 2014, OECD Publishing; Cochilco (2017), 1997-2016 Yearbook: Copper and Other Mineral Statistics.

Sustainable growth also needs to be more inclusive. The illustrative structural reform package in Box 3 would have a positive impact on inclusiveness outcomes, notably by improving job quality, while competition and innovation policies may also contribute to enhance equity, by reducing firms' rents and market dominance (OECD, 2017b). Income inequality and poverty have declined substantially and they are lower than in other countries of the region. However, inequality remains high. Poverty rates remain high in some groups, notably for the youth, young adults and those with children (Figure 14). The significant intergenerational transmission of income levels also points to entrenched inequalities (Daude and Robano, 2015; OECD, 2010). In addition, poverty varies significantly across regions (Figure 15). High inequalities among regions relate to differences in economic diversification, the quality of education and skills and public services provision (such as, training, health and job search assistance). For example,

differences among municipalities in the provision of training courses, and technical and professional formation are large and lead to unequal opportunities, notably for rural households and some indigenous groups (Correa and Dini, 2017; World Bank, 2017).

Challenges of making growth more inclusive will rely on reducing informality, improving social spending, and creating high quality opportunities in the labour market and through education. Equity would rise with higher social spending and a reform of the pension system that currently leave many with very low entitlements. Better access to quality jobs and education are also important avenues for inclusiveness, which also help raise incomes through higher productivity and better export performance. These are discussed in more detail below.

Figure 14. Poverty has declined substantially but remains high



1. Relative poverty rates after taxes and transfers (threshold of 50% of the median income). Data for Argentina are from the third quarter of 2016 and are representative of urban centres of more than 100.000 inhabitants. Data for all other countries refer to 2014 or Chile for 2015. LAC-5 refers to Argentina, Brazil, Colombia, Mexico and Peru.
2. LAC refers to Bolivia, Chile, Dominican Republic, Ecuador, Mexico, Peru, Paraguay, Panama and Uruguay.
Source: CEDLAS (2017) and OECD Income Distribution Database (2016).

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Box 3. Illustrative simulations of the potential impact of structural reforms

Simulations, based on historical relationships between reforms and growth in OECD countries, allow gauging the impact of the structural reforms proposed in this Survey and are based on specific examples of reforms, spending and tax changes (Table 5). These estimates assume swift and full implementation of reforms in three main dimensions (Table 6): product market regulations, investment policies and employment protection of regular contracts and other measures to increase labour supply, notably pension and childcare.

Table 5. Potential impact of structural reforms on GDP per capita after 10 years

Structural policy	Policy change		Total effect on GDP per capita	Impact on supply side components		
	2016	After reform		MFP	K / Y	L / N
			in percent	in percent		in pp[2]
Product market regulation[1]						
Improve regulation in network sectors (Rail, telecoms and post)	2.0	1.5	1.4	1.0	0.2	0.2
Streamline business licensing and regulations	1.5	1.2	1.4	0.7	0.2	0.5
Investment specific policies[1]						
Increase business R&D expenditures	0.1	0.3	0.5	0.5		
Labour market policies[1]						
Improve labour market regulations	2.6	2.3	0.6		0.5	0.2
Increase spending on activation	3.3	7.0	0.3	0.1		0.1
Increase family benefits in kind	0.8	1.0	0.4			0.2
Increase the legal retirement age	62.5	65.0	0.6			0.4
Total			5.2			

1. Table 6 presents the detailed measures.
2. Percentage points.
Source: OECD calculations based on Balázs Égert and Peter Gal (2017), "The quantification of structural reforms in OECD countries: A new framework", OECD Journal: Economic Studies, Vol. 2016/1 and Balázs Égert (2017), "The quantification of structural reforms: taking stock of the results for OECD and non-OECD countries", OECD Economics Department Working Papers, forthcoming.

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Table 6. Type of reforms used in the simulations

Structural policy	Structural policy changes
	Product market regulation
Improve regulation in network sectors (Rail, telecoms and post)	Eliminate the constraints on the number of competitors in freight and passengers services. Creating an accounting and legal separation between infrastructure managers and service providers. Remove barriers to entry for service providers by imposing local loop unbundling. Remove entry barriers on providing basic letter services.
Streamline business licensing and regulations	Develop further the single digital contact point (*Escritorio Empresa*) at the national and integrated agencies at the local level for all licensing procedures. Use systematic "silent is consent" rules to speed up procedures.

Investment specific policies	
Increase business R&D expenditures	Increase public incentives by 0.1% of GDP to raise business R&D from 0.1% of GDP to 0.3% of GDP. This assumes a long-run elasticity of business R&D around 0.5: on average, one extra dollar of public incentives induces half a dollar of recorded private R&D spending.
Labour market policies	
Improve labour market regulations	Lower severance payments from 1 month per year of tenure and a minimum of 6 months to 1/4 monthly salary per year of tenure and drop the minimum cap.
Increase spending on activation	Increase expenditure per unemployed as a percentage of GDP per capita from 3.3 to 7.
Increase family benefits in kind	Increase family benefits in kind, such as childcare services, from 0.8% of GDP to 1%.
Increase the legal retirement age	Raise the legal retirement age of women to 65.

Strengthening social support

The tax and transfer system could do more for redistribution (Figure 16). Although recent efforts improved social protection and lowered poverty, public social expenditures on families accounted for only 1.8% of GDP in 2015, below the OECD average of 2.2%. The government has strengthened the cash transfers system for vulnerable households. However, cash-based redistribution among the working-age population remains low by international standards (Panels C). Higher redistribution could be achieved by higher cash transfers towards vulnerable populations and spending on universal assistance, such as family or education-related transfers (Causa and Hermansen, 2017).

Eligibility to means-tested cash transfers and in-kind benefits has recently been revised. A new tool (*Registro Social de Hogares*) has been implemented in 2016 building mainly on administrative data (Annex). It improves transparency and reduces potential bias in the estimation of the vulnerable population that was previously based on self-reported data (Larrañaga et al., 2015). The new system is perceived by Chileans as fairer and more transparent (IDS, 2017). It should be carefully evaluated and corrected in case of need to better target vulnerable groups.

Raising equity with ongoing pension reform

Chile's private funded pension system, complemented by a public solidarity pillar, is delivering modest pensions for middle-income individuals. Low contributions, a low retirement age of 60 years for women (65 for men), and contribution gaps caused by self-employment, informal employment, unemployment or professional inactivity reduce old-age pensions, notably for women (Bravo et al., 2015). In the absence of reform, the projected replacement rate for an individual that retires in 40 years is low according to the OECD pension model (Figure 17). Weak lifetime savings contribute to old-age poverty. The adoption of a 2017 draft bill would improve pension replacement rates and equity for middle-income individuals and complement the 2008 public solidarity pillar that helped reduce old-age poverty. In line with past OECD recommendations (OECD, 2016b), the 2017 draft bill foresees a gradual increase in mandatory employers' contributions by five percentage points until 2021 and increase the ceiling on contributions of high-income workers (Annex and Box 4).

Box 4. The 2017 draft pension bill

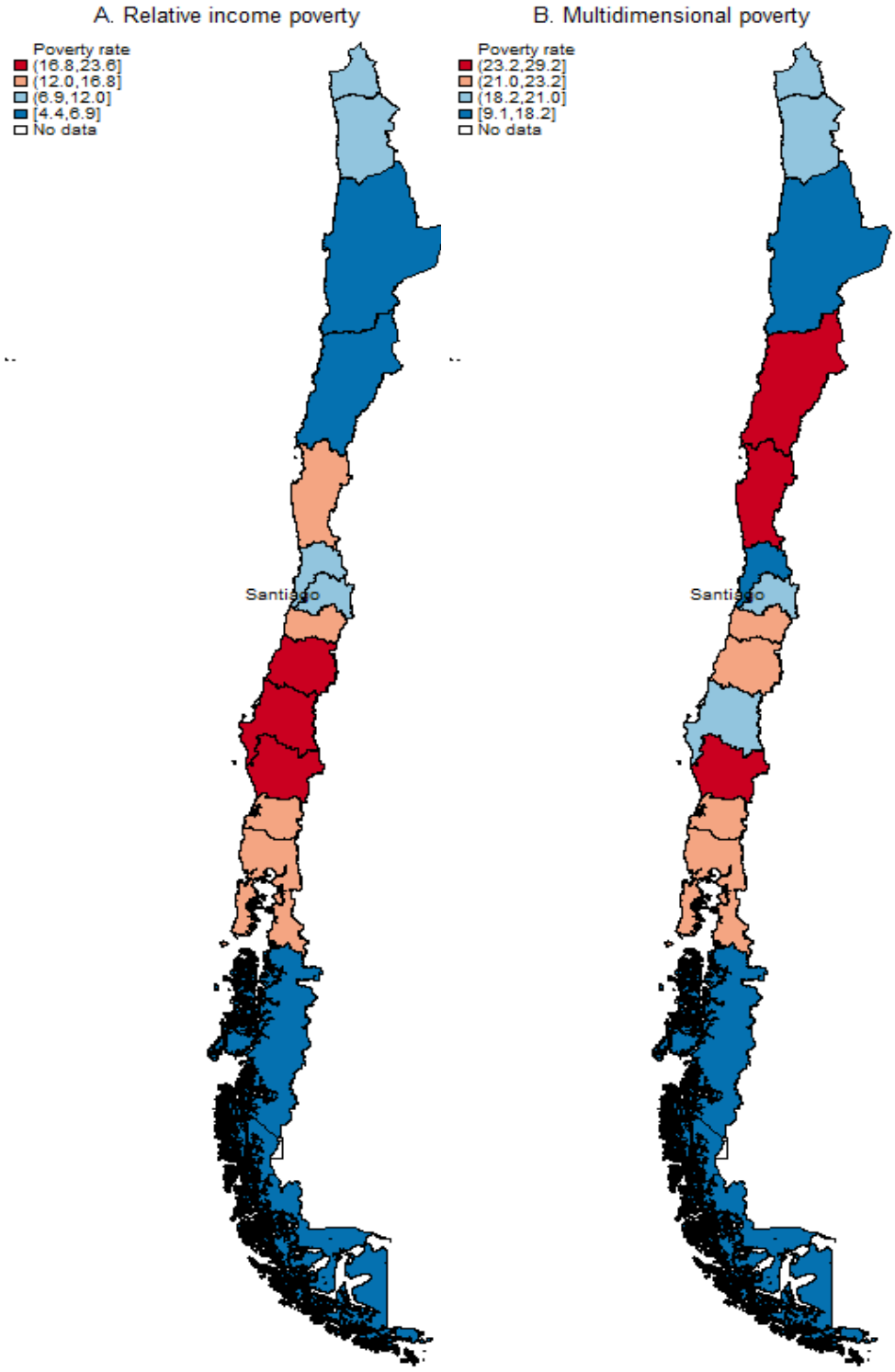
The 2017 draft bill would increase the pension contribution rate by five percentage points. These additional employer contributions would be managed by a new public entity. Three percentage points from the additional contributions would be allocated in new individual public accounts and two percentage points would finance a new redistributive fund. This would complement the 2008 public solidarity pillar targeted at the lowest-income retirees. The new redistributive fund would have three elements:

- A transitory inter-generational component: this would complement the current pensions from the private pension system and increase private pensions by 20% initially and be progressively phased out as the impact of higher contributions would fully kick in around 2080.
- A permanent women top-up: women would receive transfers to bring their pensions at a level comparable to men over a longer time span. The compensations would depend of the retirement age and women would receive the same pension of a male retired with the same age and savings only if they retire at age 65 or later. This would increase incentives to delay retirement.
- A permanent intra-generational component across retirees: once the inter-generational component and women top-ups are financed, the remaining additional contributions would be transferred to the new public individual accounts. Each individual would receive contributions based on the number of months they contributed during the year and independent of their monthly earnings.

The draft bill would also expand the coverage of pension contributions to unemployed workers under private individual unemployment insurance accounts, while today pension contributions are only paid by unemployed under the unemployment solidarity pillar (*Fondo Solidario*). In addition, the reform would make pension contributions mandatory for the self-employed who issue invoices, with a phase-in period of six years. Finally, for new low-income pensioners, the bill would improve longevity risk protection by ensuring a defined-income-tested pension through the pension supplementary complement (*Aporte Previsional Solidario*).

Overall these measures would go in the right direction. However, extending the retirement age, especially for women, could raise GDP per capita by 0.6% after 10 years (Box 3) and establishing a link between retirement ages and life expectancy would also help maintain reasonable pension replacement rates and sustainability over the medium term. Further increasing the non-contributory safety net (*Pensión Básica Solidaria*) and the provisional solidarity support (*Aporte Previsional Solidario*) would reduce old-age poverty, even if a high increase could have adverse effects on public finances, household savings and formalisation (OECD, 2013). The OECD had also recommended separating the sources of financing for non-contributory and contributory public pensions (OECD, 2016b).

Figure 15. Regional disparities in poverty rates are high



Note: Relative poverty rates after taxes and transfers (threshold of 50% of the median income) in 2015. The multidimensional poverty measure captures deprivations in education, health, jobs and social security, housing, and network and social cohesion.
Source: OECD calculations using CASEN 2015.

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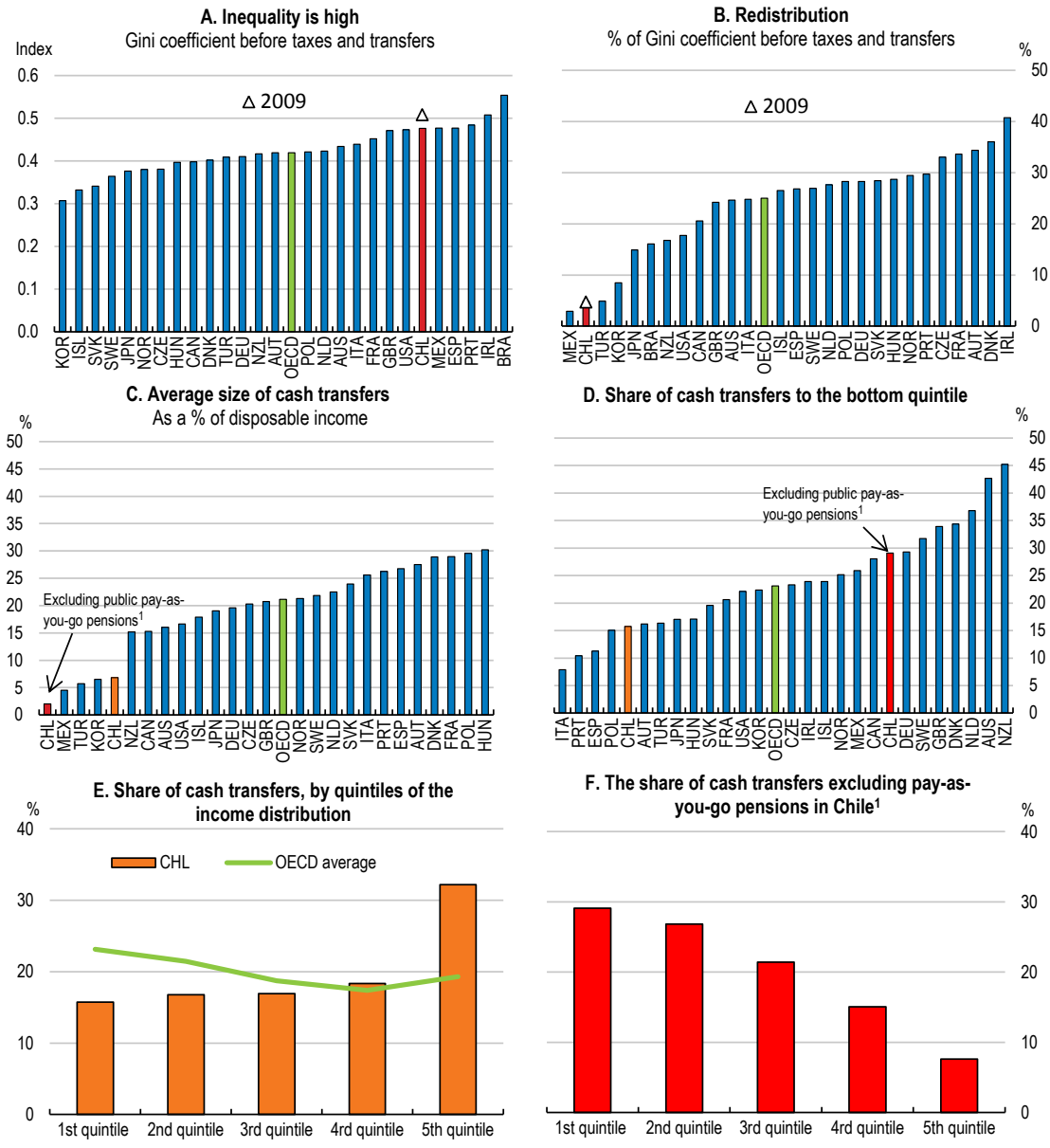
Figure 16. Low cash transfers to the working-age population hamper redistribution



1. Cash transfers excluding pensions from the old pension system and military pensions for Chile.

Note: Data refer to the working-age population and the latest available year (2015 for Chile). Redistribution is measured by the difference between the Gini coefficients before and after taxes and transfers, in per cent of the Gini coefficient before taxes and transfers. Monetary subsidies include cash support, such as work-related insurance transfers (i.e. unemployment insurance, sickness, maternity leave, work-injury benefits); universal transfers (i.e. disability, family, education-related transfers covering the whole population or part of it on the basis of criteria other than income or previous employment); and assistance transfers (i.e. social, unemployment, family and education assistance, often subject to income or assets tests). In-kind transfers, such as health or educational services are not included. Housing benefits are not included.

Source: OECD, Income Distribution Database and Causa, O. and M. Hermansen (2017), "Income redistribution through taxes and transfers across OECD countries", OECD, Economics Department Working Papers, No. 1453.

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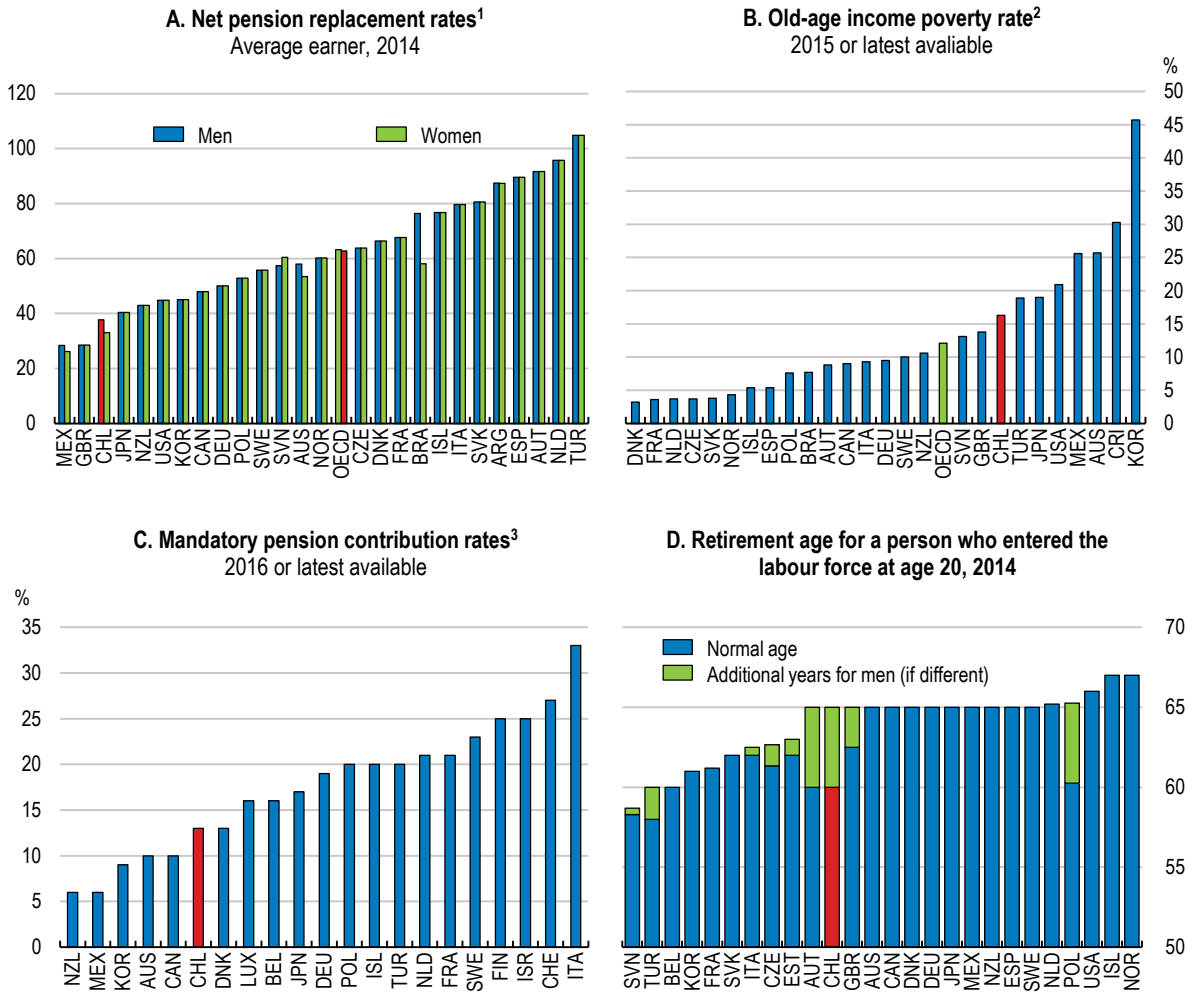
Figure 17. Pensions remain low and unequal



1. The net replacement rate is calculated assuming labour market entry at age 20 in 2014 and a working life equal to the pensionable age in each country The net replacement rates shown are calculated for an individual with the average worker earnings.
2. Percentage of the population aged over 65 with equivalent incomes below half median household disposable income.
3. Includes the average private pension management fee of 1.16% as well as the disability insurance of 1.41% of the employees' gross income the employer has to pay the pension fund manager (2016).
Source: OECD (2015), Pensions at a glance 2015 and; OECD (2017), Income Distribution Database.

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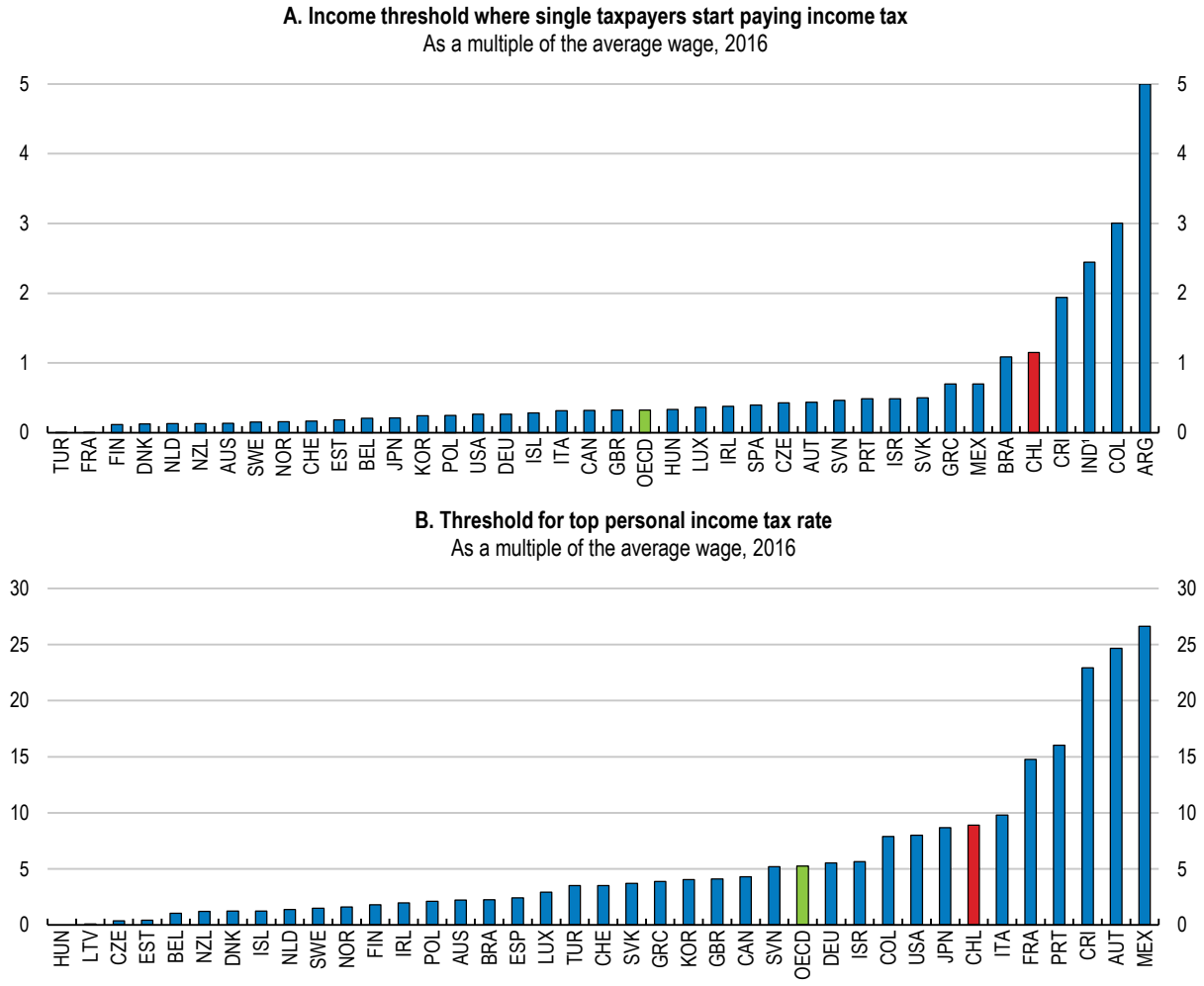
Financing higher social spending and increasing redistribution through tax reform

Higher social spending will require continuing to reform the tax system to increase revenues and improve growth and equity in the medium term (Box 5). The 2014 tax reform was phased in over 2015-17 and involved significant changes in corporate and personal income tax liabilities, particularly regarding shareholders taxation. It increased the overall effective tax rates on higher-income individuals, because of the immediate – accrual - taxation of firm profits (World Bank, 2014) and introduced welcome

environmental taxes. However, additional revenues could still be raised in a productivity-, environmentally-, and equity-friendly way, as argued in the previous Surveys (OECD, 2013a and 2015e). The personal income tax yields a low share of overall revenue mainly because the tax base is very narrow. Almost 76% of tax payers are exempted and the top rate applies only at very high income levels (Figure 18). As a result, the current personal income tax has poor redistributive power in Chile (Barreix et al., 2017). Making significant changes in the personal income tax rate schedule, especially by lowering the bands at which the personal income tax and the higher income rate are levied could lead to an increase in revenues of 1.3% of GDP (IADB, 2013).

Figure 18. Personal income tax structure



1. For India, the average worker income is for the organised manufacturing sector as reported in the Annual Survey of Industries.
Note: For Chile, data refer to the 2017 thresholds divided by the 2016 average wage.
Source: OECD, Taxing wages in Latin America and the Caribbean 2016; OECD, Taxing Wages 2011; OECD, Tax Database; Servicio de Impuestos Internos and; OECD calculations.

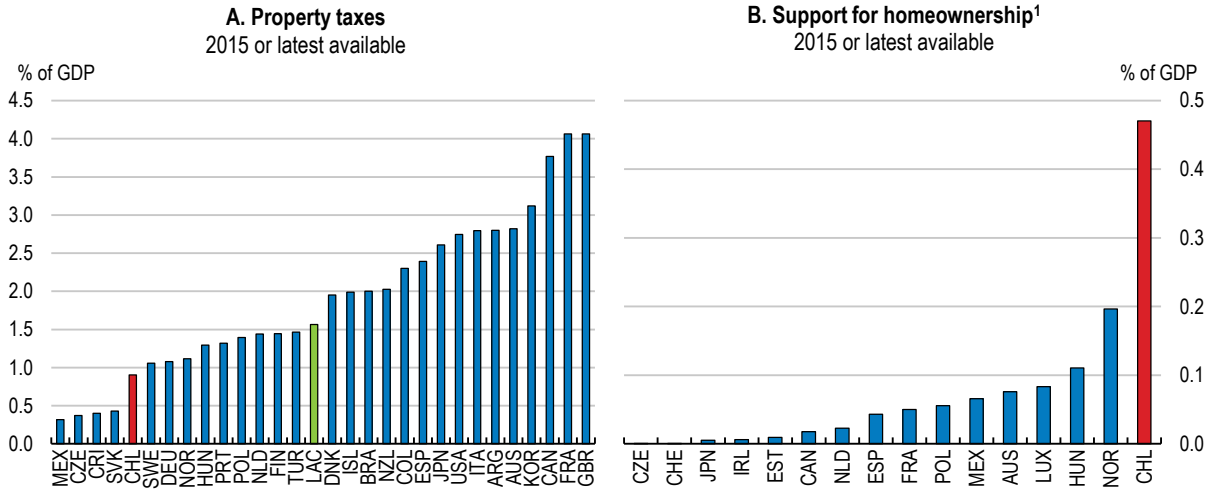
StatLink http://dx.doi.org/10.1787/888933671280

In a welcome move, the 2014 tax reform eliminated the VAT exemption on the customary sale of new or used property in 2017. It also included a capital-gain tax on the sale of residential property acquired after 2004. Over the lifetime of each taxpayer capital

gains over around USD 310 000 are taxed. This could mitigate the negative impact on the residential mobility of households. Despite these advances, there is room to reform housing taxes and support programmes, so that owning is not favoured over renting, thus easing the geographic mobility, notably of low-income households, by developing the rental sector (Caldera Sanchez, 2012; Salvi Del Pero, 2016). Property tax revenues were amongst the lowest in the OECD in 2015 (Figure 19, Panel A). Exemptions of housing tax and inheritance tax for housing and mortgage interest deduction should also be progressively eliminated (Panel B) as they tend to be capitalised into real house prices. This would redistribute income from insiders towards new entrants in the housing market and lower-income households and would avoid overly penalising newly indebted household through a sharp decline in housing values (Caldera Sanchez, 2012).

Developing green taxes will also be crucial to internalise the externalities associated with production and consumption. Since 2014, the tax rate on new car purchases is based on emissions and fuel efficiency. Chile also introduced a carbon tax and a tax on local air pollutants in 2017. The carbon tax will help to increase the currently very low effective tax rates on fuels (OECD, 2013b). However, its base should be broadened as it covers only a small share of energy users, while its rate is low (OECD, 2016c). Revenues from environmentally-related taxes remain among the lowest of all OECD countries (Figure 39). Energy taxes are only levied on road fuels and at a very low level and the petrol-diesel tax differential is among the largest in the OECD. Heavy trucks get a refund on diesel taxes, and energy used outside the transport sector is effectively not taxed (OECD, 2013b; 2016b). Chile should increase taxes on fuels to levels that are aligned with their external costs, phase out the tax refund for the diesel for trucks, and broaden the coverage of the vehicle tax to commercial vehicles.

Figure 19. Property taxes are low and support for homeownership is high



1. The estimate for Chile is a lower bound. It includes the "Solidarity Fund for Housing Choices" and "Integrated Housing Subsidy System", but spending on the "Extraordinary Programme for Economic Re-launch and Social Integration" is not included.

Source: OECD (2017), Revenue Statistics and Affordable Housing databases; OECD/ECLAC/CIAT/IDB (2017), Revenue Statistics in Latin America and the Caribbean 2017, OECD Publishing.

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Box 5. Estimated long-term fiscal effects of some key OECD recommendations

Table 7 presents an order of magnitude of the long-term fiscal effects of some of the OECD recommendations presented in this Survey. These estimates are based on illustrative scenarios for specific spending and tax items, existing estimates for the elasticity of taxes to GDP, and the Ministry of Finance's evaluation of the pension reform announced in 2017. The effects of the structural reforms quantified in Box 3 are decomposed into their impact on GDP, including estimated behavioural responses, and their direct fiscal costs.

Table 7. Illustrative long-term fiscal effects of some OECD recommendations

Measure	Change in fiscal balance (% GDP)
Accounting effects of the structural reforms proposed in Box 3	
Increase family benefits in kind, such as childcare services, from 0.8% of GDP to 1%.	-0.2
Increase expenditure per unemployed as percentage of GDP per capita from 3.3 to 7.	-0.4
Increase public support for business R&D to raise business R&D from 0.1% of GDP to 0.3% of GDP. This assumes a long-run elasticity of business R&D around 0.5: on average, one extra dollar of public incentives induces half a dollar of recorded private R&D spending (Westmore, 2013).	-0.1
Accounting effects of other revenue and spending measures	
Increase property tax, notably recurrent taxes on housing, from 0.9% of GDP to OECD median (1.7%)	0.8
Increase green taxes from 1.2% of GDP to OECD median (2.2%)	0.9
Increase spending on the solidarity pillar from 0.8% of GDP to 1.0%.	-0.2
Expected impact of other measures as evaluated by other institutions	
Lower the bands at which the personal income taxes and the higher income rate are levied to the OECD average (IADB, 2013).	1.3
Raise employer pension contributions by 5 percentage points. The measure increases contributions on public employees and lower personal income tax revenues for public and private workers (Dipres, 2017).	-0.5
Effect of structural reforms in Box 3 on the budget through higher GDP growth	
The estimated impact on GDP per capita (Box 3) would lead to higher GDP by 5.2%, abstracting from population growth. The public-spending-to-GDP ratio of 23.8% of GDP in 2016 would be lowered to 23.8/1.05222.6% of GDP and, assuming a long-run tax revenues to GDP elasticity of one (Frickle and Sussmuth, 2014), the estimated effect on the fiscal balance would be 1.2% of GDP.	1.2

Source: OECD calculations based on IADB (2013), Recaudar no basta: los impuestos como instrumento de desarrollo; Frickle, H. and B. Sussmuth (2014), "Growth and volatility of tax revenues in Latin America", World Development, Vol. 54, pp. 114-138; Dipres (2017), Informe Financiero: Proyecto de ley que crea nuevo ahorro colectivo, aumenta cobertura de pensiones y fortalece el pilar solidario; and Westmore, B. (2013), "R&D, Patenting and Growth: The Role of Public Policy", OECD Economics Department Working Papers, No. 1047, OECD Publishing.

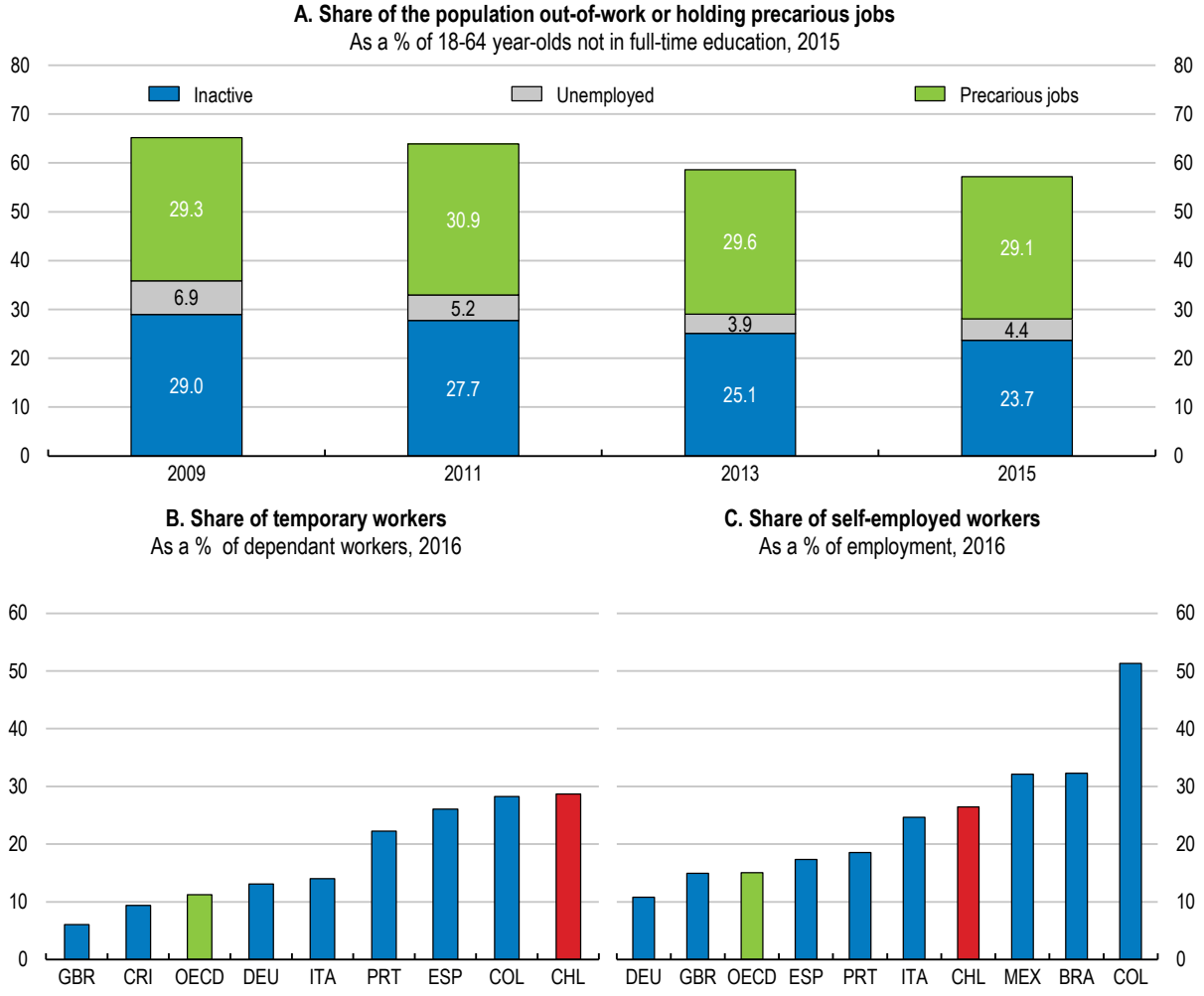
Enhancing access to high-quality jobs

Job quality, in the form of earnings, labour market security and the quality of the working environment can raise well-being, foster productivity while reducing labour market inequalities (Cazes et al., 2015). Chilean workers do not perform badly in many dimensions of job quality when compared to other workers in emerging economies, while, they experience relatively poor job quality compared to other OECD countries (OECD, 2015b). Low average earnings and high levels of inequality weigh on workers' well-being, as well as a relatively weak social protection.

The segmented labour market weighs on productivity and the quality of jobs

Excessive reliance on self-employment and short-term contracts has led to a high share of workers holding precarious jobs (Figure 20). The share of temporary contracts, although decreasing since 2012, is the highest among OECD countries. Informality, the share of wage earners and self-employed without contributions to the pension system, was 32% of employment in 2015 and has been stable since 2006 held back by cyclical conditions. Informality affects particularly the low-skilled, women, youth, immigrant and indigenous workers. Temporary and informal workers typically face a wage penalty and frequent unemployment and inactivity spells (Gonzalez and Huneeus, 2016; OECD, 2015b) and are less likely to receive on-the-job training (Carpio et al, 2011).

Figure 20. A high share of the population holds precarious jobs



Note: Precarious jobs are defined as unstable jobs (all those jobs being not permanent) or informal jobs (not affiliated to the pension system) or having near zero earnings (monthly labour income is lower than the first decile) or jobs with restricted hours (working less than 20 hours a week).
Source: Garda and Undurraga, "Employment barriers of vulnerable groups in Chile", *forthcoming* and; OECD Labour Force Statistics Database.

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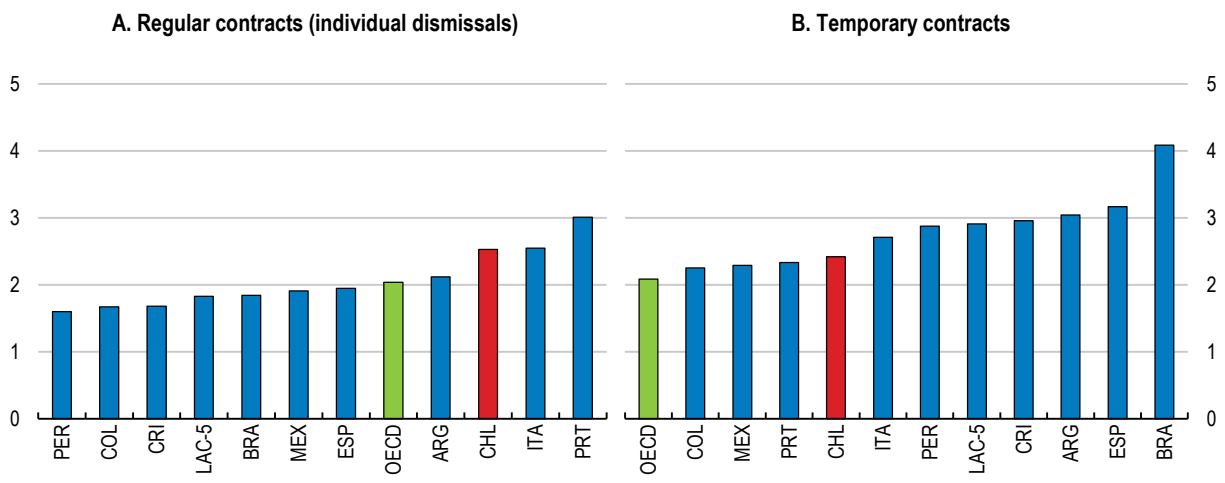
A 2016 reform expanded the coverage and scope of collective bargaining, extended collective bargaining rights, and eliminated the replacement of workers on strike. So far, the implementation of the reform did not have an impact on litigation (Ministry of Labour, 2017). During the first six months of 2017, compared to the same period over 2010-15, the proportion of firms going to strike went down while the duration of strikes remained stable. Increasing worker's negotiating power is important, particularly in a country characterised by vast inequalities, but further reforms need to address the segmentation of the labour market.

Decreasing labour market rigidities would help to generate more permanent and formal jobs (Di Porto et al., 2017; IDB, 2015; OECD, 2008). Employment protection legislation on open-ended contracts is relatively restrictive in Chile (Figure 21). Reducing the costs of dismissing a permanent worker, notably the high severance payments, would increase the chance of workers obtaining permanent contracts and training, increasing productivity and wages. It would also facilitate better job matches and mobility of high-ability workers towards innovative firms (Adalet McGowan and Andrews, 2017). Reducing dismissal costs on permanent contracts could increase GDP per capita by 0.6% after 10 years (Box 3). An alternative would be to introduce a contract with employment protection increasing with tenure, as similarly done in Italy and Spain (OECD, 2017c; OECD, 2017d). To further enhance formalisation expanding existing wage subsidies for young and low-paid workers in newly formalised jobs would be advisable. This would benefit the most vulnerable by decreasing the cost of formalisation and could increase their access to high-quality jobs. These reforms would boost inclusiveness, given that informal and temporary workers have both the lowest salaries and the lowest levels of protection, and increase growth by curbing low-productivity and low-quality jobs.

Figure 21. Formal employment protection legislation appears to be restrictive overall

Index scale of 0 to 6, from least to most restrictive, 2013[1]



1. Or most recent available year.
2. LAC-5 refers to the simple average of Argentina, Brazil, Colombia, Mexico and Peru. OECD refers to the simple average of OECD countries.
Source: OECD (2017), Employment Protection Legislation Indicators Database.

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Reforms to the employment protection legislation should be accompanied by a more effective social safety net and efficient on-the-job training, placing and re-skilling policies. The unemployment benefit system, which is based on individual accounts with complements from an insurance fund (Solidarity Fund), assures that workers have savings in the event of losing their jobs and avoid work disincentives (Reyes et al., 2010). Recent measures increased replacement rates and eased access to the Solidarity Fund increasing its take-up rate. However, the coverage and benefits of the unemployment system remain limited, in part due to self-employed workers. The main reason is the short duration of employment contracts and their high turnover (Gonzalez and Huneeus, 2016; Central Bank of Chile, 2016). 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 et al., 2017). Reducing the required minimum contribution periods would increase coverage of vulnerable jobseekers, in line with the short duration of contracts.

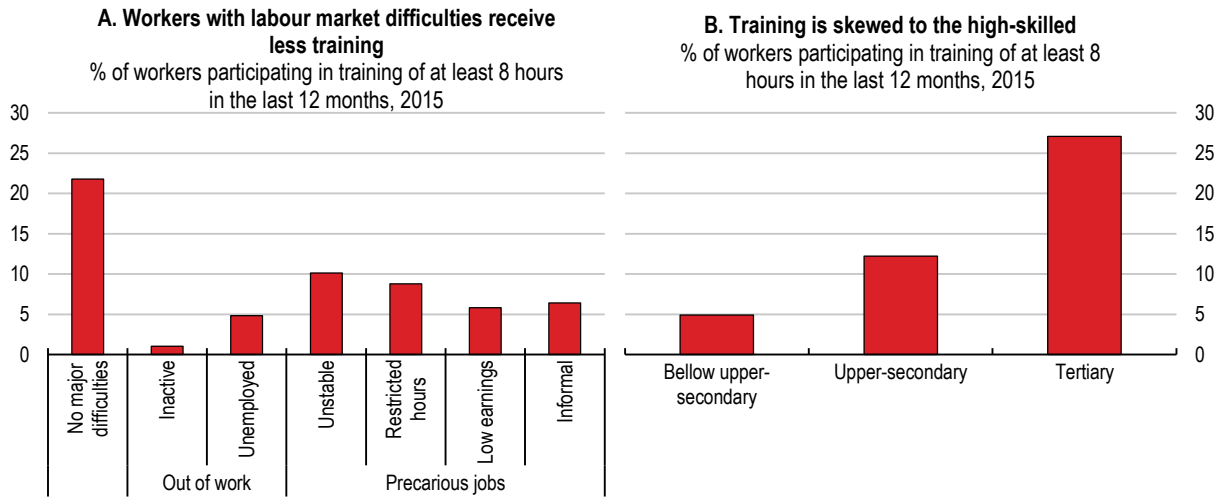
Improving the effectiveness of active labour market policies

Chile lacks a lifelong learning system with well-defined objectives and a clear national regulatory framework. Inequities in the access to training have hold back productivity and inclusiveness. Low-skilled workers and those facing labour market difficulties receive less training (Figure 22). Several studies have concluded that publicly funded training programmes and the life-long training system are ineffective and poorly targeted (Larrañaga et al., 2011). The main public programme (*Impulsa Personas*), allocated to firms through tax credits, has benefited mostly large firms, which tend to have less vulnerable and more educated workers (Larrañaga et al., 2011; Rodriguez and Urzúa, 2011).

Training programmes should be re-thought to target the workers most in need. Recently, some efforts to raise the inclusiveness and effectiveness of training policies have been undertaken (Annex). These efforts should continue and more coordination among the actors providing or receiving training should be achieved. Quality certification should become a requirement for public training programmes. Another desirable change is to limit their eligibility to workers with medium and low salaries, so as to allocate public resources to those who have less ability to pay and greater deficiencies in labour competencies.

A systematic and regular assessment of the labour market impact of activation programmes should be implemented, so as to focus funding on those that are performing well. This would allow investing in more effective programmes, such as *Más Capaz*, targeted to the most vulnerable, including women, young 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), especially for the unemployed in Chile (Brown et al., 2016). However, it would be desirable to include modules for the development of socio-emotional skills and on-the-job training to achieve a larger impact, especially for those out of work (IDB, 2015).

Figure 22. Training programmes are badly targeted



Note: Panel A refers to people aged between 18 and 64 not in full-time education. People facing labour market difficulties are out-of-work (unemployed or inactive). Workers holding precarious jobs are defined as unstable jobs (all those jobs being not permanent) or informal jobs (not affiliated or contributing to the pension system) or having near zero earnings (monthly labour income is lower than the first decile) or jobs with restricted hours (working less than 20 hours a week). See Garda and Undurraga (*forthcoming*) for definitions. Panel B refers to people aged 25-64.
Source: OECD calculations based on CASEN (2015).

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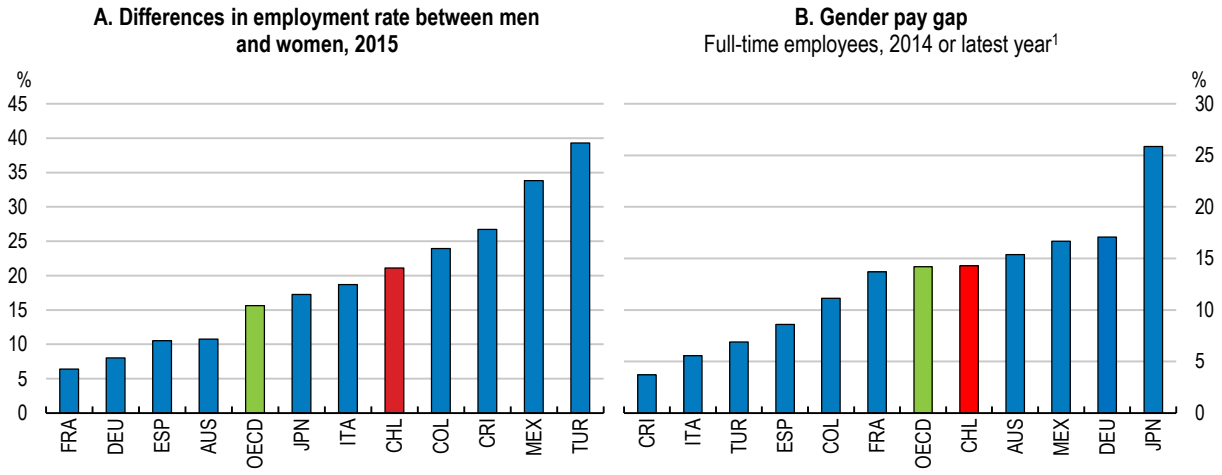
Creating more opportunities for women

Despite progress, the difference in employment rates between men and women at 20 percentage points is clearly larger than in the average OECD country (Figure 23). This holds back growth and equity, as increased employment opportunities for women could contribute to a more equal income distribution (Causa et al., 2015). Women also get substantially lower pay and their jobs are usually of lower quality, informal or temporary. The participation of women in the labour market or in good quality jobs is held down at least in part by economic barriers related to costly childcare (Garda and Undurraga, *forthcoming*).

Reforms to increase coverage and raise the quality of early childhood education and childcare were recently introduced (Annex). Efforts towards universal early education have raised coverage to 86% and 93% for 4 and 5 year olds respectively in 2015, very close to the OECD average. Still, for children aged 3, at 56% the coverage remains far from OECD average (78%) (OECD, 2017e). Cultural and social factors also play a significant role in explaining the low female labour force participation. Parents need to understand the importance of sending the children to early education, while centres need to provide high-quality education, be near the house or work, with accessible transport and compatible opening hours. Continuing to expand opening hours, access to high-quality public early childcare and measures to promote the up-take of early education are needed to facilitate quality employment for mothers, notably for the poorest children and in rural areas. This will also have a positive impact on children skills. Furthermore, policies to promote flexible work arrangements, shared mother and father parental leave together with incentives to allow fathers to take parental leave, breaking stereotypes,

would reduce female unpaid work (OECD, 2012). In addition, a law requiring firms with more than 20 female employees to provide childcare is a barrier to female employment and is partly capitalised in lower female wages (Rojas et al., 2016; Prada, et al., 2015). Financing childcare through general revenues would raise female employment and wages in medium sized and large firms.

Figure 23. Gender gaps remain large



1. Gender pay gap is difference between male and female median wages divided by the male median wages.
2. For Chile and Mexico, data refer to 2015. For France and Spain, data refer to 2012.
Source: OECD, Employment Database.

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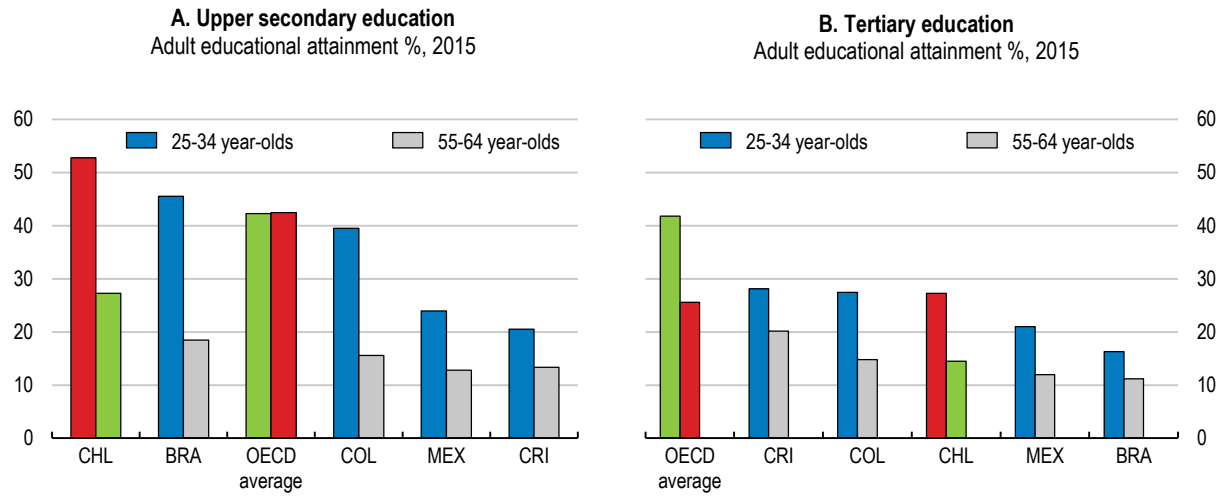
Strengthening the quality of education is key to increasing supply of quality workers

The quality of education is a win-win policy for raising both productivity and inclusive growth. Chile's education system has made substantial progress in improving coverage and performance (Figure 24). Nonetheless, important challenges remain related to quality and equity. For example, PISA scores in science remain below the OECD average and are largely dependent on socio-economic backgrounds (Figure 25). Chilean students also have larger performance gaps related to gender than in other OECD countries, with boys outperforming girls in science and mathematics (OECD, 2017e).

Figure 24. Education attainment has progressed over the recent years



Source: OECD (2016), Education at a Glance.

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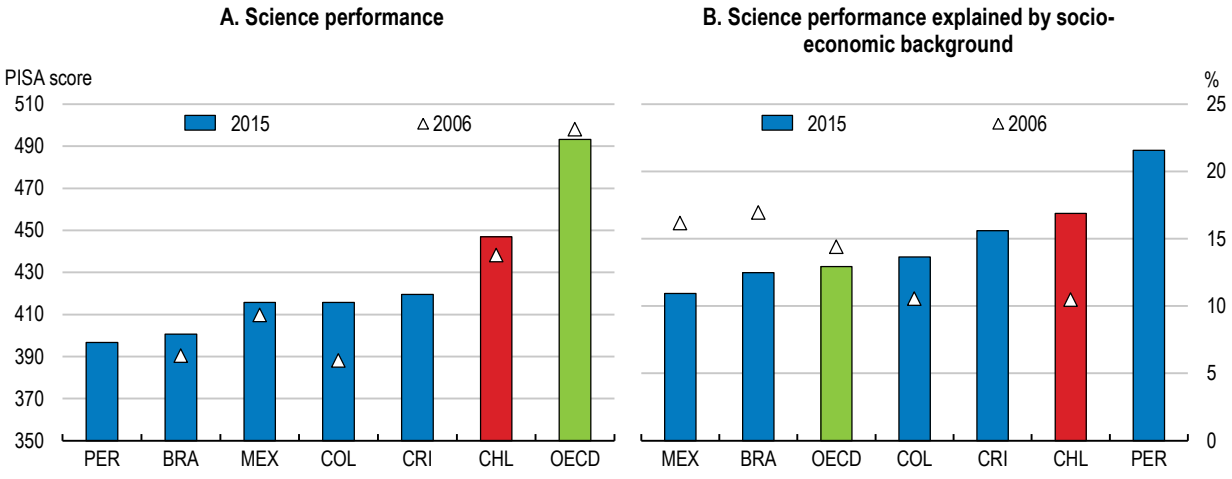
Figure 25. School results have improved, not equity



Note: Panel B displays the percentage of variation in science performance explained by the PISA index of economic, social and cultural.
Source: OECD, PISA 2006 and 2015.

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A wide-ranging educational reform was introduced in 2015 to improve quality and equity from early childhood education and care (ECEC) to higher education (Annex). The Inclusiveness law prohibits three widespread practices that historically have contributed to inequity in educational opportunities: student selection, profit making, and co-payment. The reform also increases teacher performance incentives by providing them with better career prospects at all levels of education.

The school reform will help improve social mobility and skills outcomes for all. The country should continue to monitor and discourage school level practices that hinder

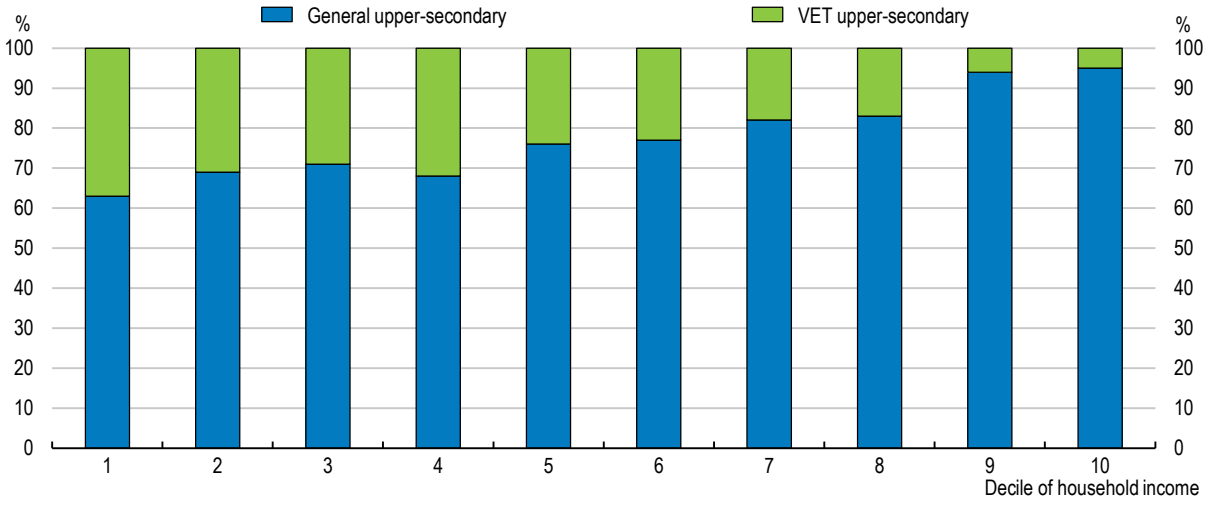
equality of educational opportunity based on socio-economic status, gender, ethnicity, or immigration status (OECD, 2017f), while pursuing efforts to develop stronger professional pathways for educators and school leaders. Inclusiveness will depend on encouraging girls' entry into fields of study traditionally dominated by men, such as mathematics and science. Also, maintaining and strengthening the Preferential School Subsidy, which favours schools with larger proportions of vulnerable students, notably indigenous and immigrant children, ensuring that the resources reach schools, monitoring their impact, and creating incentives to invest the majority of the funds in capacity building for continuous instructional improvement, can improve further the quality of education (OECD, 2017f).

Enhancing Vocational Education and apprenticeships to meet labour market needs

Improving Vocational Education and Training (VET) can substantially enhance skills and inclusiveness. Students in VET tend to come from more disadvantaged backgrounds (Figure 26). VET in upper-secondary education is well-developed but inequities and quality remain an issue. Workplace training, as part of VET programmes, is poorly developed and the mechanisms to assure its quality are weak (OECD, 2015a; Kis and Field, 2009). In particular, there is no coordination with VET and the Chilean certification organisation (*ChileValora*), though some efforts have aimed at raising quality and equity in VET (Annex). In a welcome step, the Advisory Council for Professional Technical Training, (an entity headed by the Ministry of Education in collaboration with other ministries, agencies and experts) is developing the Professional Technical Training Strategy 2018-2030, which seeks to establish a road map to improve vocational training.

Figure 26. Students in VET tend to come from a more disadvantaged background

Distribution of students in upper-secondary education, by access programme, 2015



Note: Vocational education and training (VET) upper-secondary refers to Technical-Professional Mid-level Education (Técnico-Profesional) and general upper-secondary to Humanistic-Scientific Mid-level Education, (Enseñanza Media Científico-Humanista).
Source: OECD (2017), Education in Chile, Reviews of National Policies for Education, OECD Publishing.

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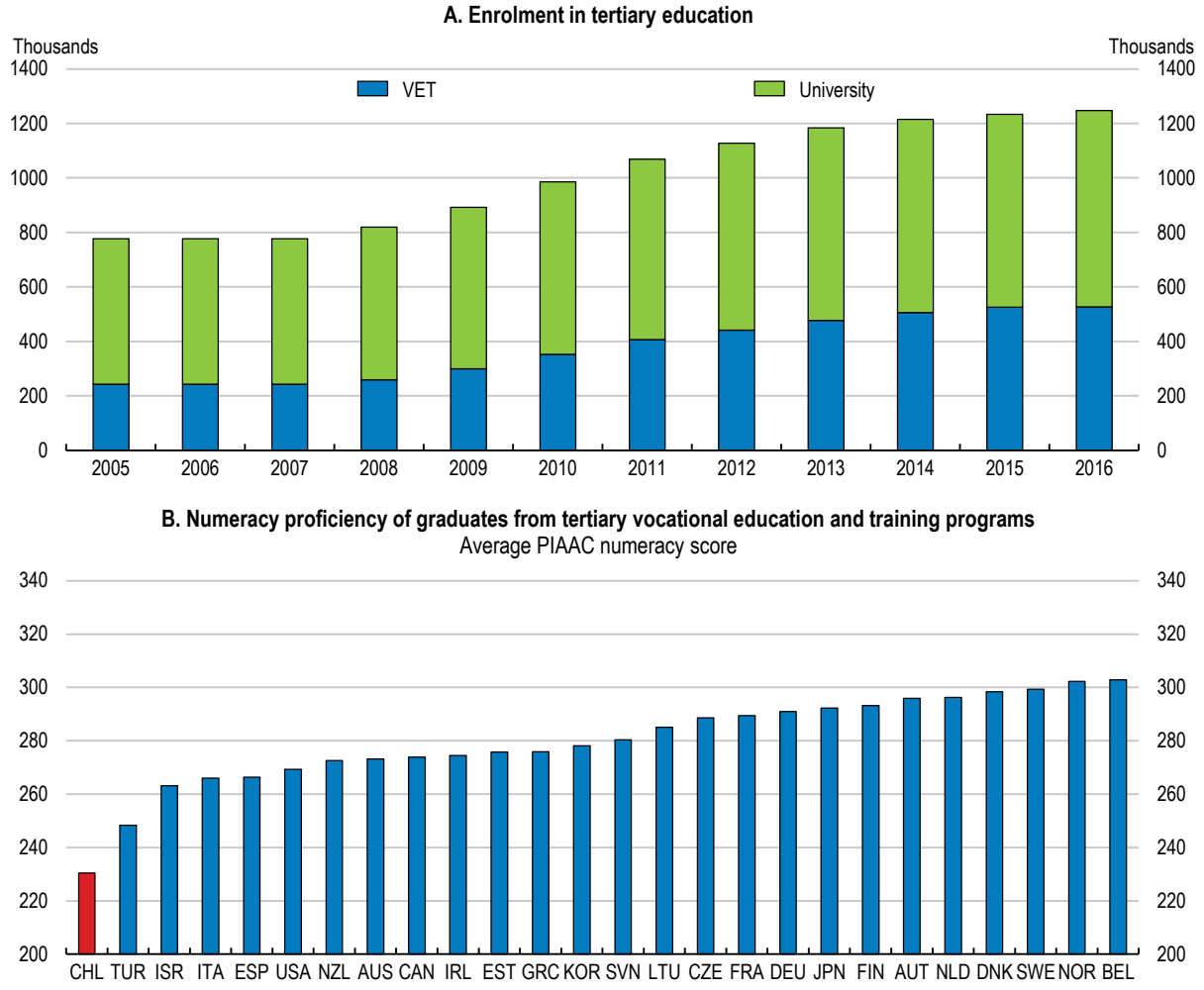
Developing an apprenticeship system and enhancing the work-based component in VET would improve youth's opportunities to get better quality jobs. A welcomed national qualification framework is being developed. Also, a system of control and monitoring of firm-based training, to ensure minimum quality standards, needs to be set up. Offering the possibility to link it to formal education creating a dual-VET system (at secondary and post-secondary education) can increase work-based learning in formal education while making it more relevant for youth and employers. The apprenticeship system may require a co-funding system by public resources and employers. For example, an apprenticeship levy depending on the firm size, such as in France, or a levy payed only by the largest firms, such as in the United Kingdom would encourage the involvement of the private sector, especially small and medium firms (Kuzcera, 2017). This could be accompanied by targeted subsidies to encourage participation of the most vulnerable.

Improving quality and access to higher education

Enrolment in higher education institutions almost doubled in the last decade (Figure 27), including among the less advantaged. In 2017, 85% of Chilean students in undergraduate studies were enrolled at private institutions, VET or universities, with around 12% of them attending non-accredited institutions (SIES, 2017; OECD, 2017e). Typically, students from rich families get state-subsidised university places, while lower-income tend to attend lower quality private institutions and accumulate debt (OECD, 2017e). The government recently created two public universities and 15 public VET centres, and a wide-ranging higher education reform, approved in January 2018, would address access and quality issues (Annex).

Tuition fees relative to average income in Chile are high and households finance most of tertiary education spending, 64% in Chile compared to 30% in the OECD (OECD, 2017e). The student aid system is complex, consisting in scholarships and loans. Since 2016 grants through the "free education" (*gratuidad*) programme make access to education more equal, favouring the admission of vulnerable students. This policy has been gradually implemented and will benefit students from the bottom six deciles of family income in 2018. From 2019, a mechanism based on structural fiscal revenues would extend free higher-education to higher income deciles. The financial aid system could be simplified and merged to better target low income students, as the existing scholarships and loans favour universities that attract the less vulnerable (OECD, 2017f). Expanding the *gratuidad* programme to higher deciles of income would require large public resources. The higher-education funding system should better balance access and quality, providing more incentives to enhance the latter.

Figure 27. The rapid increase in tertiary education enrolment has created quality challenges



Note: Vocational education and training (VET) institutions include Professional Institutes (Institutos Profesionales- IP) and Technical Training Centres (Centros de Formación Técnica, CFT).
Source: OECD calculations based on PIAAC (2012 and 2015) and; Servicios de Educación Superior, Ministerio de Educación, Chile.

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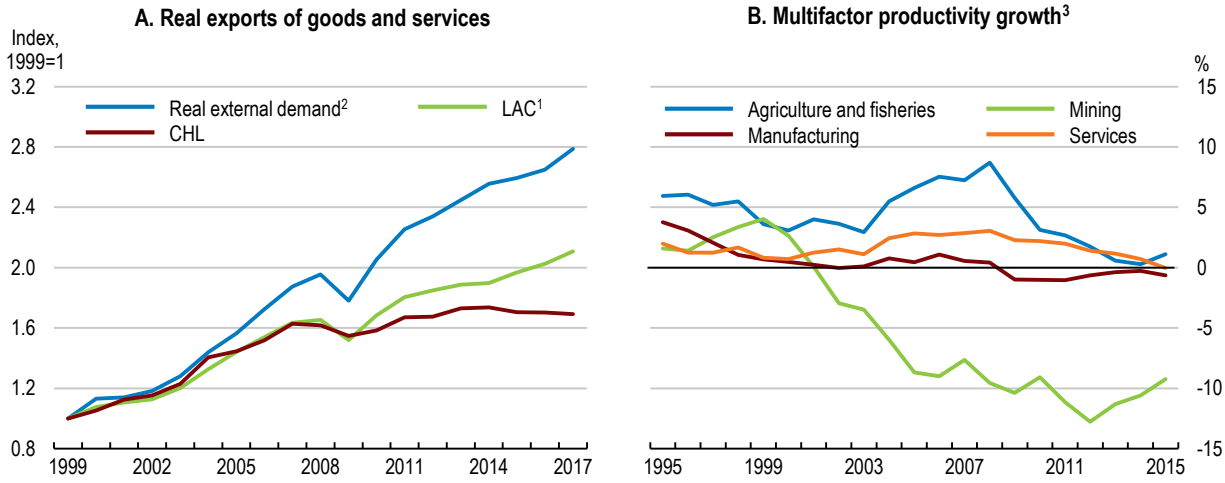
Strengthening productivity growth and export performance

A broad-based decline in multi factor productivity (MFP) growth weakened labour productivity performance. Resilient wage growth has weighed on cost competitiveness and exports (Figure 28). The productivity slowdown is affected by declining commodity prices and investment as in much of Latin America. However, there are factors specific to Chile, such as the fall of ore grades, which forces copper producers to process more ore to produce the same quantity of refined copper (CNP, 2017), and over-exploitation of fisheries, while the adoption of new technologies remains low in many firms.

Figure 28. Exports and productivity have stalled



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Export markets' growth for Chilean goods and services, in volume terms (with export markets as of 2010).
3. Five-year moving average. Multi-factor Productivity is adjusted for human capital and hours of work (CNP, 2017).
Source: OECD (2017), Economic Outlook 102 Database; CNP (2017), Informe de Productividad Anual 2016, Comisión Nacional de Productividad and OECD calculations.

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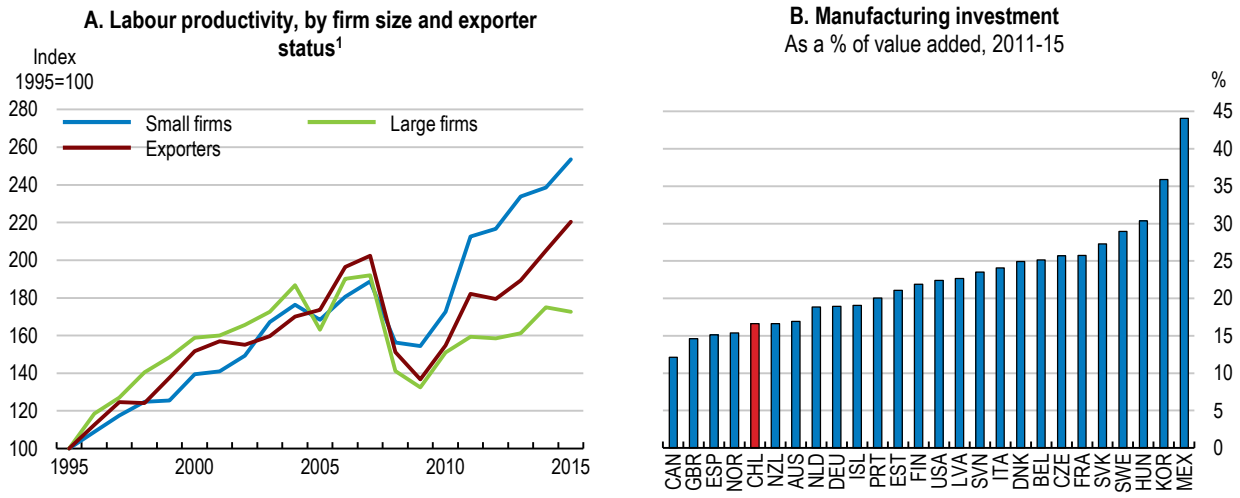
In the manufacturing sector, a large decrease in allocative efficiency, notably for exporters, led to lower productivity growth (Figure 29, Panel A) and is partly linked to labour and product market rigidities. Disappointing productivity outcomes are also attributable to low capital intensity, resulting from a high labour force growth rate and persistently weak investment (Panel B). The large share of low skilled workers and micro and small firms and low management capacity weigh on labour productivity (Syverson, 2014), as well as Chile's lack of scale and geographical remoteness that constrain benefits from international connections and agglomeration (Boulhol and de Serres, 2010; OECD, 2015c).

Figure 29. Manufacturing investment is weak and allocative efficiency has declined



1. Median establishment. Exporting establishments sell directly some of their production abroad. Small establishments have less than 50 employees and large ones have 200 employees or more.
Source: OECD (2017), National Accounts Database; OECD calculations based on the Encuesta Nacional Industria Anual (ENIA).

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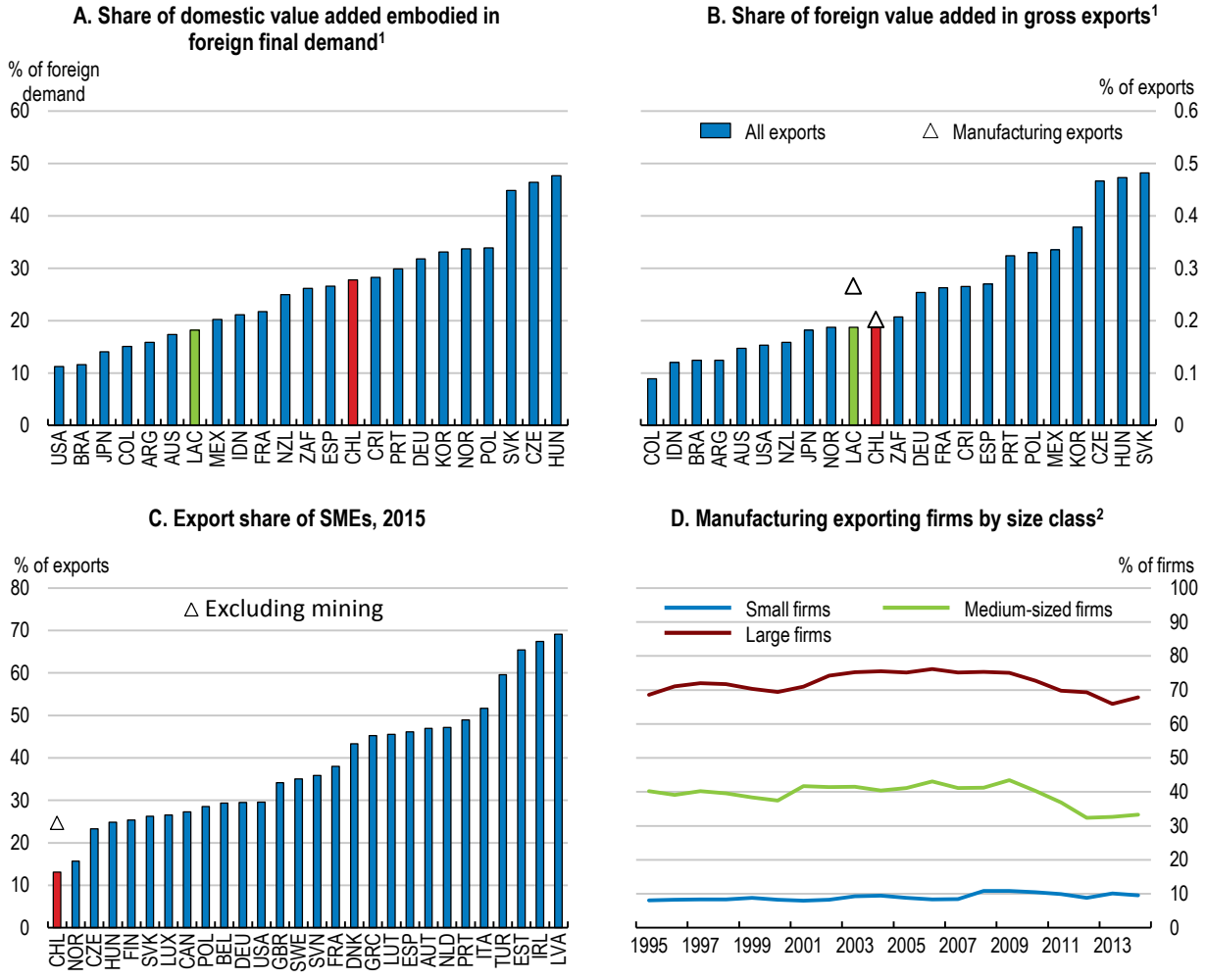
Improving the regulatory environment to boost dynamism

Chile has broadly open international trade and Foreign Direct Investments (FDI) policies (OECD, 2015c). However, the internationalisation of SMEs is still lagging. Multi-lateral tariffs are low and are further reduced by an extensive network of preferential trade agreements. The share of domestic value added embodied in foreign final demand is relatively high, linked to the large share of commodity exports and natural-resource intensive manufactured products (Figure 30, Panel A). By contrast, the foreign value added content of exports is modest (Panel B), as sectors typically associated with dynamic downstream GVC participation like transport and electrical equipment are little developed, despite the high FDI stock (Figure 31). SMEs' share in overall exports is low and their propensity to engage in direct exports has been stable or declining in the manufacturing sector (Figure 30, Panels C and D).

Figure 30. Chile's trade integration is highly concentrated



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Exporting firms sell directly some of their production abroad. Small firms have less than 50 employees, medium-size firms between 50 and 199 employees and large firms have 200 employees or more.
Source: OECD (2017), TiVA nowcast estimates and TEC databases; OECD calculations based on the Encuesta Nacional Industria Anual (ENIA) and ELE4.

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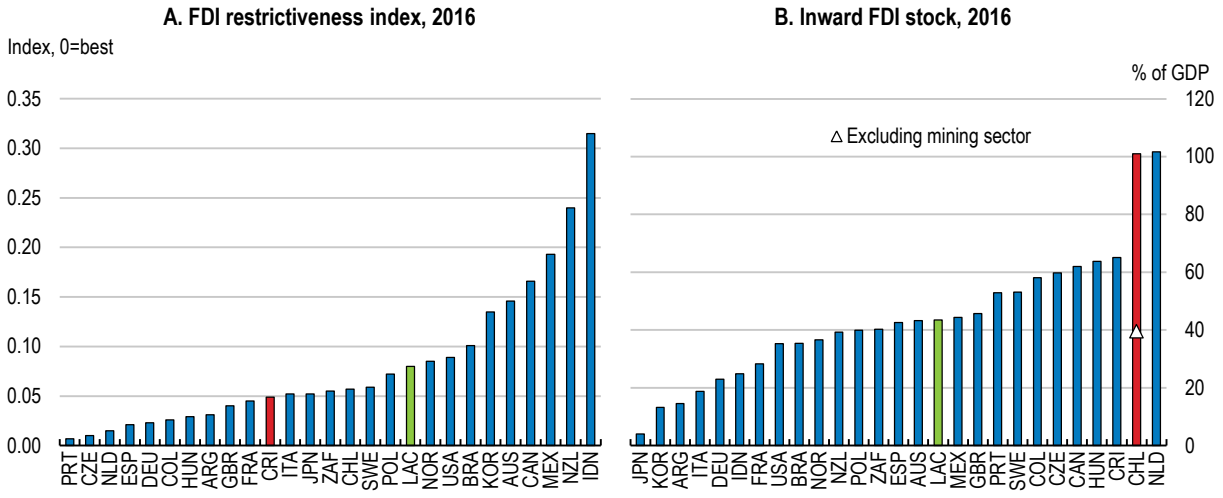
An important barrier to the development of young firms and potential exporters is the adverse impact of overly strict product market regulations. Major reforms have been undertaken to ease entrepreneurship, notably a law in 2013 that allows businesses to be started in only a day. Building on earlier efforts to coordinate different public agencies, Chile has developed since 2015 an integrated platform of public electronic services (*Escritorio Empresa*) for different administrative procedures for firms, that is progressively integrating new procedures and public agencies. As of 2017, the platform offers 50 on-line procedures, with 18 public institutions and 114 municipalities. It handled nearly 20 000 procedures per month in 2017. Advances in e-invoicing have been made in the last few years and online pre-filled VAT forms were introduced in 2017. Nevertheless, the complexity of some regulations remains high (Figure 32 and Figure 33),

and further simplification measures could boost GDP per capita by 1.4% after 10 years (Box 3). In particular, municipal licenses and authorisations are intertwined with national authorisations, and impose significant administrative burden on firms, notably SMEs (CNP, 2016). Strengthening *Escritorio Empresa* by integrating more procedures and public agencies is essential. Generalising "zero licensing procedures", as was done in Portugal (OECD, 2014b), could further ease firm entry and formalisation, by delaying the administrative burden on start-ups and focusing on ex-post control.

Figure 31. Foreign direct investments are high



Note: LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: OECD (2017), FDI positions and FDI Restrictiveness Index Database; ECLAC (2017), Foreign Direct Investment in Latin America and the Caribbean.

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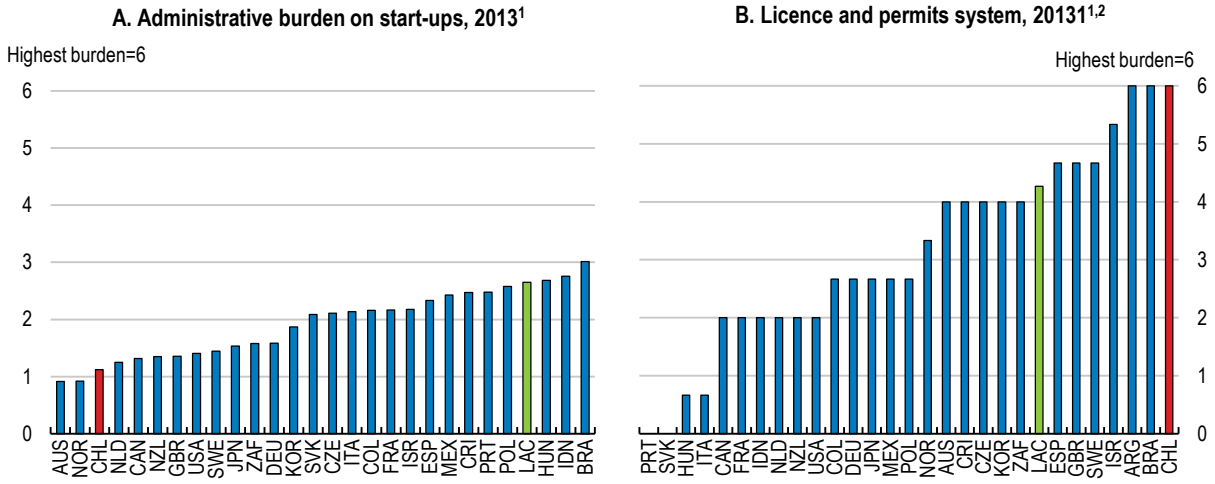
Size-related thresholds in regulations may also limit the capacity of dynamic firms to scale up and carry out innovative and exporting activities. Obligations linked to employment thresholds, such as the design of internal rules of order, hygiene and safety, different rules governing staff representatives, employment quotas for foreign workers or the mandatory provision of childcare, can affect firm growth. They complicate firm adjustment process, notably for high-skilled activities for which the labour market is tighter (Micco and Repetto, 2014).

Efficient firm exit procedures are important to facilitate reallocation of resources to the most productive firms and restructuring rather than liquidation of viable businesses (Adalet Mc Gowan et al., 2017). Chile scores close to the OECD average on the OECD's indicator of efficiency of insolvency regimes. A reform in 2014 significantly eased procedures, notably by introducing specialised courts. Formal restructuring and liquidation procedures have increased by 116% over 2014-16 (Superir, 2017). However, only 9% of the cases concerned the restructuration of businesses and it still takes much longer to resolve an insolvency case than in most OECD countries. Recovery rates are also low. Facilitating the exit of non-viable firms would require developing early warning systems and arbitration to reduce courts' burden. At the same time, giving the possibility for creditors to initiate restructuring and strengthening second chance policy would be positive steps.

There is also some room to improve trade facilitation (Figure 34) and a number of positive measures are ongoing. The authorities have developed a voluntary single window operator (SICEX) since 2011. A 2017 reform also gave new powers to national customs services, improved auditing procedures and introduced tax facilities for exporting SMEs and services. In addition, a new authorised economic operator scheme is available to customs brokers and exporters with simplified customs procedures. However, this welcomed scheme should be extended to importers. Moreover, the take up of SICEX remains overall low, even though during 2017 the export module has increased its use by 20% each month in value, and completing the functionalities of SICEX, notably its integration with logistics platforms and its interoperability with other Latin American single window schemes, should be a priority. Recent progress has been made in this direction, with the creation in 2017 of a public trade facilitation unit, notably in charge of proposing measures to increase competitiveness in the tradable sector and promote services exports. A public private committee is also in charge of identifying bottlenecks in services exports. The ongoing integration of the ports' systems should continue, as past import simplifications in other countries have significantly raised Chilean exports (Lopez and McQueeney, 2017).

Figure 32. Some business regulations remain complex



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. The burden of the license and permit system is based on the absence of "a silence is consent" rule for administrative procedures and the absence of single contact points for information about and the issuance of licenses in 2013.
Source: OECD (2017), Product market regulation database.

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Chile's trade intensity is highly dependent on international trade liberalisation (Haugh et al., 2016). Its wide-ranging network of preferential trade agreements led to low tariffs and higher trade, GDP per capita and employment (Schmidt-Hebbel, 2017), and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership could allow further gains. However, at the international level, notably within Latin America (OECD, 2015c), the large number of trade agreements has added different rules of origin and, by accommodating a wide diversity of quality and safety standards and regulations across specific countries, may have created trade barriers with others. This can be a major impediment to trade, notably for smaller firms, multi-product and multi-destination

exporters. A careful streamlining of existing rules of origin, as it is currently pursued in the Pacific Alliance and the Trans-Pacific Partnership, and, in the longer-term, simplifying and more cooperation in regulations and standards across trade agreements would be needed (Cadestin et al., 2016).

Some domestic regulations are especially harmful to competition in maritime transport and digital services that are key for exports and productivity (Figure 33). Maritime transport represents 96% of goods exports (CAMPORT, 2017), but Chile maintains a foreign equity limit for establishing a shipping company and be able to register vessels, along with nationality requirement for board members. Foreign participation in the cabotage market is also restricted to Chilean-flag vessels and to strict case-by-case authorisations (OECD/ITF, 2016b). In addition, prices are relatively high in telecommunications, and the rules applying to the dominant supplier in fixed line services need further strengthening. Chile should develop a high-capacity telecommunications infrastructure. However, access to the incumbents' public telecommunications networks is not yet mandated and, although there has been an increase in transparency requirements imposed on incumbent operators, local loop unbundling is still not the norm (OECD, 2016d). Eliminating the current competition restrictions in telecoms could reduce price-cost margins by around 9 percentage points, yielding tangible gains for downstream firms and households (Rouzet and Spinelli, 2016). This would foster digital technology adoption, as foreseen by Chile's digital agenda 2020, and improve digital and non-digital trade prospects.

Institutional strengthening has considerable potential to help improve regulations and procedures. Since 2015, the national productivity commission (CNP) advises the government in productivity. The productivity commission released a first inquiry of productivity in the mining sector in 2017. However, the commission has only limited resources and a short-term mandate (Renda and Dougherty, 2017). Strengthening its powers regarding data access and making its mandate permanent would support public-private dialogue. Moreover, as in the case of Australian productivity commission, the productivity commission could be charged to provide ex post analysis of regulatory policies and the simplification of existing regulations (OECD, 2016e). These new powers could be used to conduct a systematic ex post review of existing national regulatory provisions and costly product standards in line with the OECD (2011) toolkit principles. This would help the public sector to identify pro-competitive alternatives. Following the commission's assessment and previous OECD recommendations, new economic legislative proposals are also subject to an ex ante productivity impact assessment. In addition, engagement and consultations of stakeholders in the elaboration of regulations should be mandatory, as they are not systematically used in practice (Querbach and Arndt, 2017).

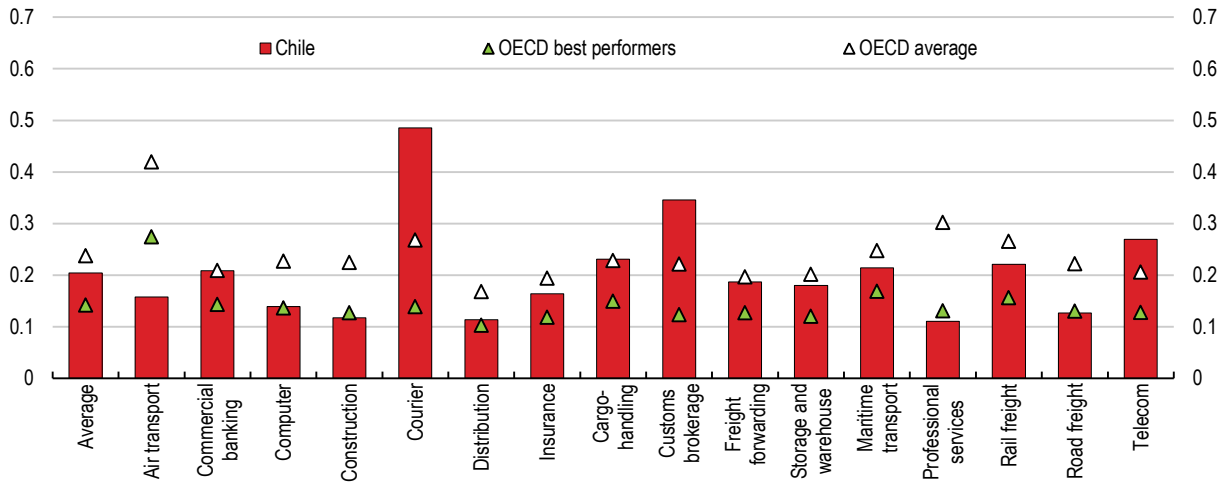
The strengthening of the competition framework is welcome. A 2016 reform introduced criminal sanctions for hard-core cartels, introduced merger controls, the leniency programme and private enforcement, and increased fines against anti-competitive behaviours (OECD, 2016f). The reform also boosted the competition agency (FNE) powers and resources to undertake market studies in line with OECD recommendations. This has allowed the FNE to initiate two market studies on the annuity market and on notary services in 2016-17. These initiatives will allow the FNE to issue recommendations on how to promote stronger and more effective competition in these markets. In particular, reforms of the notary profession and to reduce the use of notary procedures could ease significantly the administrative burden for firms and households. Chilean 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, 2017). These efforts should continue by targeting other key sectors of the economy, such as telecommunication and maritime services, in line with the guidelines OECD's Competition Assessment Toolkit (OECD, 2016g). In addition, the functioning of the consumer protection agency (SERNAC) was improved to ease class actions for follow-on damages procedures, raise consumer information and limit the impact of unduly complex or restrictive regulations in 2017.

However, further measures could still raise competitive pressures. First, the competition agency should be consulted whenever a new draft law or regulation has a potentially restrictive impact on competition. Second, the public-sector addresses of the competition agency opinions and recommendations, including those on market studies, should carefully consider the points raised by the agency and, should they decide to depart from them, they should have to publicly explain their reasons. Third, in network industries, further boosting the independence of regulators and civil servants would lower potential conflict of interests and regulatory uncertainty. Regulators should have fixed-term, non-renewable mandates during which they cannot be dismissed without fault. In addition, revolving-door opportunities should be further contained for regulators and senior civil servants by expanding the 6-month cooling-off periods.

Figure 33. Service trade barriers remain important in some key sectors, 2017

Index scale from 0 to 1 (most restrictive regulations)



Note: The group of OECD best performers is the average of the five OECD countries with the regulations the most conducive to trade.
Source: OECD (2017), Services Trade Restrictiveness Index.

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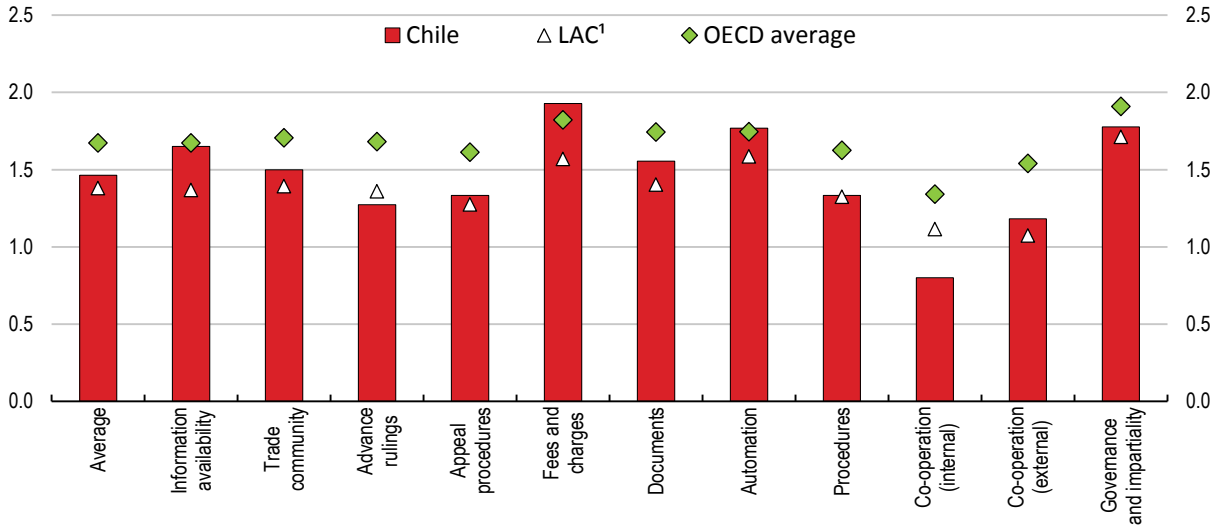
Figure 34. There is scope to raise trade facilitation in some areas, 2017

Index scale from 0 to 2 (best performance)



Note: LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: OECD (2017), Trade facilitation indicators.

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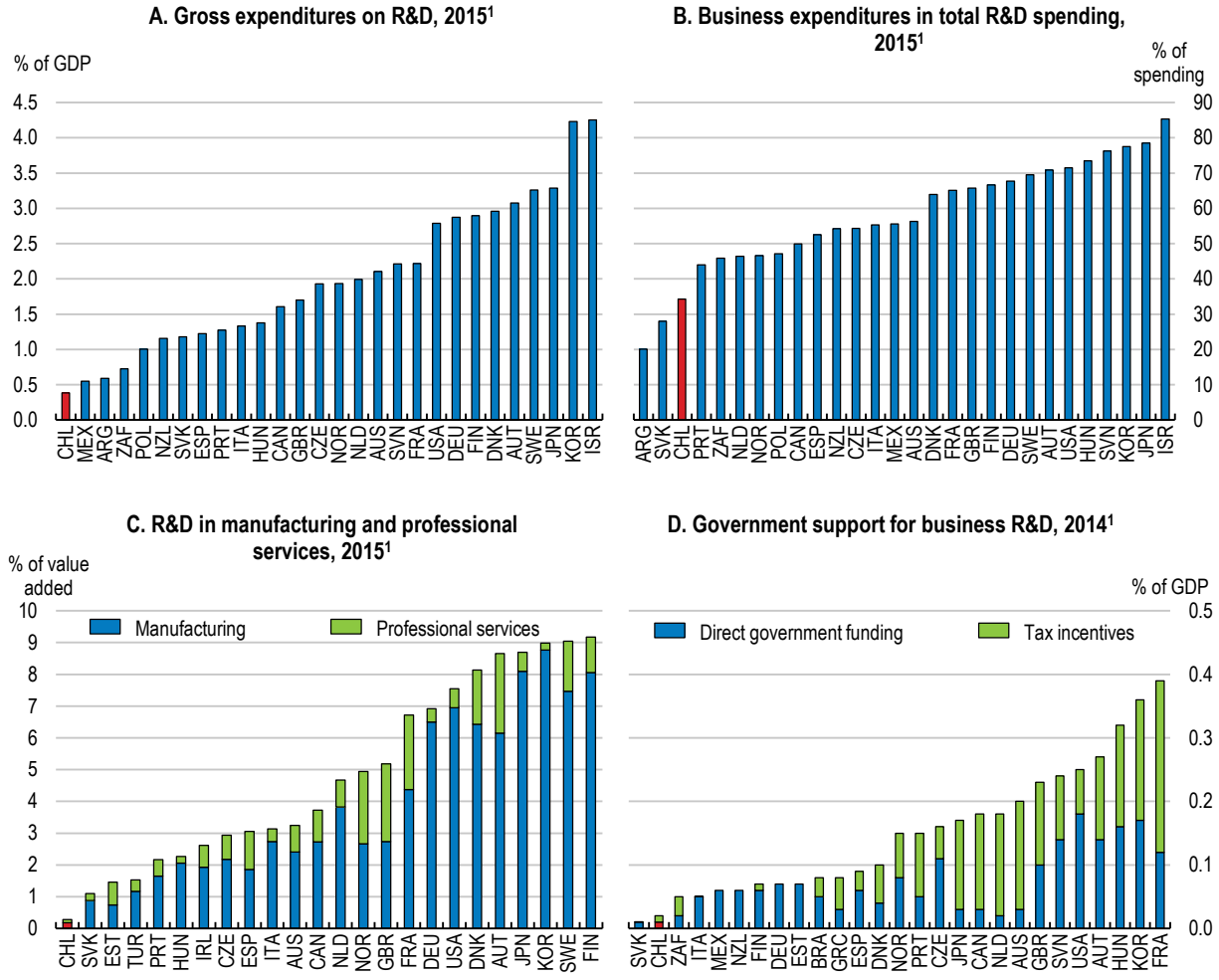
Raising innovation and promoting entrepreneurial skills

The limited R&D expenditures are heavily publicly-funded (Figure 35, Panels A to C), and co-operation between firms and universities is low (OECD, 2016h). Innovation output, particularly among SMEs, the quality of scientific publications and science-industry collaboration, and per capita patenting activity, though improving, are also well below most OECD countries (Pinto et al., 2017). Management skills are much lower than in the USA and close to other Latin American countries, notably for SMEs (Syverson, 2014). Business support programmes from the development agency (CORFO) and the government's Technical Cooperation Service (SERCOTEC) aim to support entrepreneurs. In addition, a network of small business centres has been set up across regions and will provide additional support, mentoring and training for entrepreneurs and potential exporters.

Support for innovation remains limited (Figure 35, Panel D), despite some progress. The 2012 reform of the R&D tax credit broadened its scope to internal expenditures, increased the annual tax ceiling, simplified administrative requirements and eased domestic and international collaboration. This significantly raised the eligibility and the take-up of the programme, notably for large firms (Intelis, 2017). However, making the scheme refundable, and developing information about potential university partnerships, would be beneficial for young innovative firms. At the same time, adding incremental incentives based on their past R&D spending could improve its effectiveness for larger firms (Appelt et al., 2016). A permanent increase of public support for business R&D by 0.1% of GDP could boost productivity by 0.5% after 10 years (Box 3).

Figure 35. R&D spending and innovation are low



Note: Or latest available year.
Source: OECD (2017), Research and Development Statistics and National Accounts databases.

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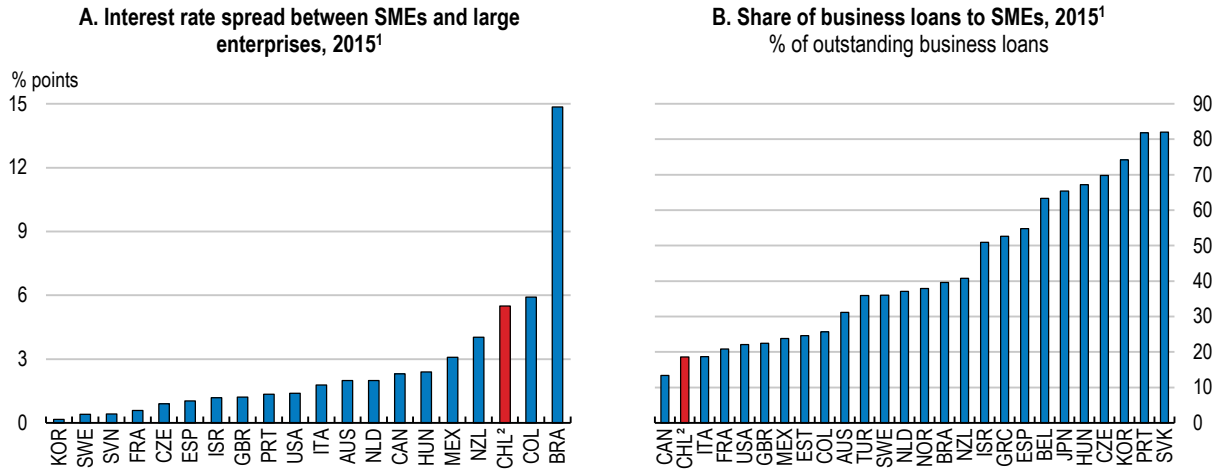
Chile has developed significant efforts through its development agency, CORFO, to target promising sectors, in particular through direct R&D support. For example, the agency sealed an agreement in 2017 with Albemarle for the production of lithium. The recent Transforma agenda defined 8 priority industries, according to the methodology of the EU smart specialisation strategy. The programme aims at developing regional innovation policies and a closer dialogue with stakeholders. However, Transforma has a relatively limited public budget (around 0.1% of 2015 GDP over 2014-18), albeit leveraged by private participation in the projects. Another challenge is to move from a list of targeted technologies to a learning process allowing diffusion, and to develop exit procedures for activities that do not have the anticipated potential. Evaluations are not systematic and with few exceptions they are qualitative in nature rather than attempting to quantify economic effects of public support. Beefing up programme evaluation by improving monitoring based on ex-post indicators would help. Collecting and diffusing hard indicators to independent researchers as well as building in pre-determined experimental and non-experimental evaluation designs in some programmes to identify good practices would be a prerequisite. Integrating the different support programmes for

applied innovation and exports through local one-stop shops and a unique national website would strengthen the coherence of business support measures and ease firm access and monitoring.

Access to funding may limit growth for innovative firms and exporters, as credit is costly for young and smaller firms that rely more on banks (Figure 36). The level of development of venture capital has increased rapidly thanks to CORFO initiatives, such as Start-up Chile for seed capital (Figure 37, OECD, 2016i). A new program that supports private investment funds targets high-growth firms. However, easing conditions for SMEs by lowering stamp-taxes on credit and costs to access the stock and bond markets would also help. Together with reform on corporate insolvency, this would strengthen public efforts to develop venture capital, by providing venture capitalists with a way to exit and monetise their investments.

Figure 36. SME loans remain relatively costly



1. Or latest available year.
2. Chilean classification based on the amount of firm debt: up to (around) USD 171,000 for small firms and more than USD 7.7 million for large firms.
Source: OECD (2017), Financing SMEs and entrepreneurs 2017, OECD Publishing; SBIF (2017), Cartera comercial segregada por tamaño deuda, Superintendencia de Bancos e Instituciones Financieras.

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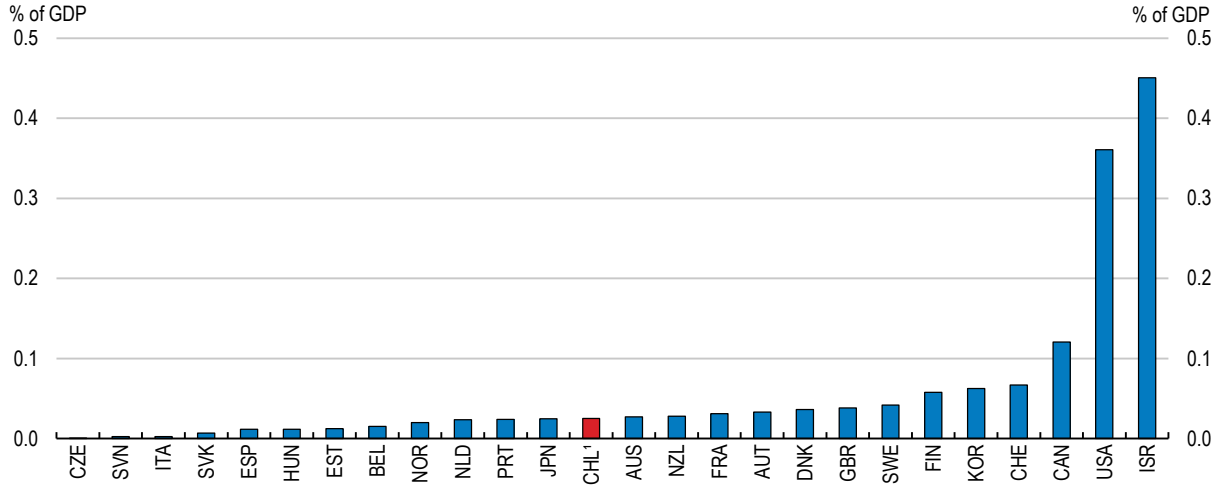
Tackling infrastructure and logistics gaps

High-quality infrastructure is a key factor underpinning the success of firms, in particular those operating in international markets. Infrastructure in Chile has been upgraded significantly over recent years, benefiting from large amounts of public and public-private investment (OECD, 2017g). The quality of infrastructure is perceived as higher than in other Latin American countries (Figure 38, Panel A). However, some bottlenecks remain in logistic infrastructure, which partly reflects the lack of interoperability of ports with railways, and missing road connections and intermodal terminals for combined transport (Panel B; OECD/ITF, 2016b).

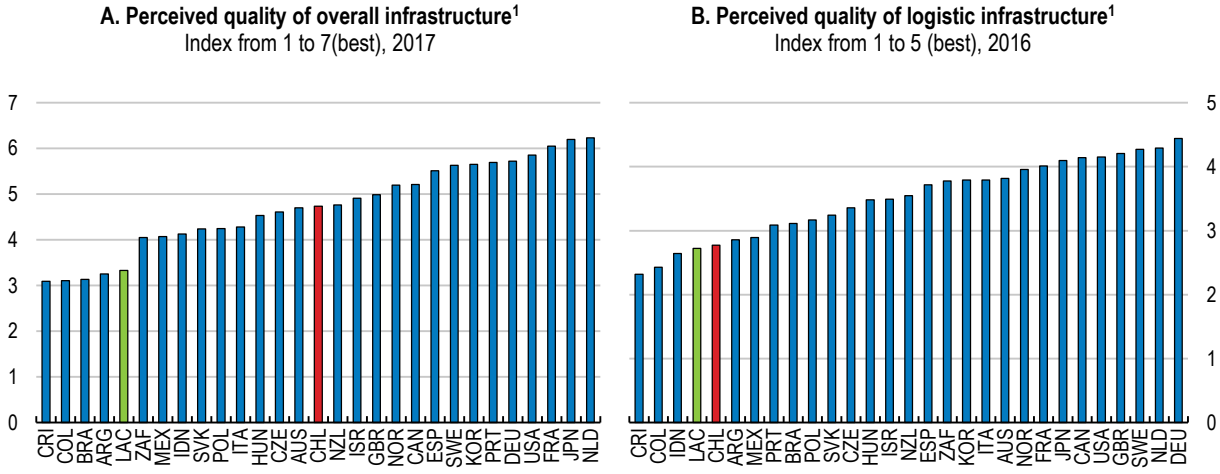
Figure 37. Venture capital investment could increase, 2015



Note: For Chile data refer to 2016.
Source: CORFO (2017), Informe Público de Capital de Riesgo Resultados Acumulados al 31 de diciembre de 2016, Corporación de Fomento de la Producción.

StatLink http://dx.doi.org/10.1787/888933671641

Figure 38. The perceived quality of infrastructure remains weak



Note: LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: World Bank (2017), Logistics Performance Index Database 2016 (LPI) and; World Economic Forum (2017), Global Competitiveness Index dataset.

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Transport costs constitute an obstacle for exporters, due to infrastructure weaknesses and regulations. In particular, some firms have only access to distant ports as some terminals are specialised in copper (OECD/ITF, 2016b) and congestion is high in some cities (OECD, 2016j). Some key projects are coordinated in the 2030 infrastructure plan. In particular, a new major port on the central coast of Chile will serve growing demand for container traffic in Central Chile. The 2016 *Red Logística de Gran Escala* initiative would integrate this project through road and railway connections and is coordinated by a

formal committee of all the ministries. This is welcome, but the continued containers transit will continue to stress the hinterland transport infrastructure as well-designed railway links are missing in many other ports (OECD, 2017g). Beyond strengthening port authorities and coordination with local public authorities (OECD/ITF, 2016b), developing the railway sector would require to remove barriers in access to infrastructure and to create an efficient and independent regulator, as the lack of clear accounting separation and widespread public ownership may hamper investment (Égert, 2009).

Co-ordination of land-use and transport planning will be essential for the large expected returns on infrastructure investment to materialise in a catching-up country like Chile (Fournier, 2016). In 2017, in line with OECD recommendations (OECD/ITF, 2016a), the authorities launched a logistics observatory. A new infrastructure fund is being discussed in Congress to leverage private funding of new projects. Building on these efforts, developing a unified logistic and transport strategy is necessary (OECD, 2017g). At the local level, cooperation between municipalities and ministries in charge of different urban policies needs to be strengthened by promoting metropolitan municipal associations, for example through higher tax autonomy and central government incentives, to ensure coherent infrastructure development and maximise agglomeration benefits (OECD, 2017h).

Ensuring a level playing field between transport modes would require integrating more fully environmental and health damages in road pricing and general taxation (Figure 39). Congestion charges, as well as logistic demand management tools, should be developed together with updated local Pollution Prevention and Decontamination Plans (PPDA) at the metropolitan level to reduce excessive traffic and pollution at peak hours in ports and cities, and incentivise the use of railways and public transports.

Greening the electricity and water sectors

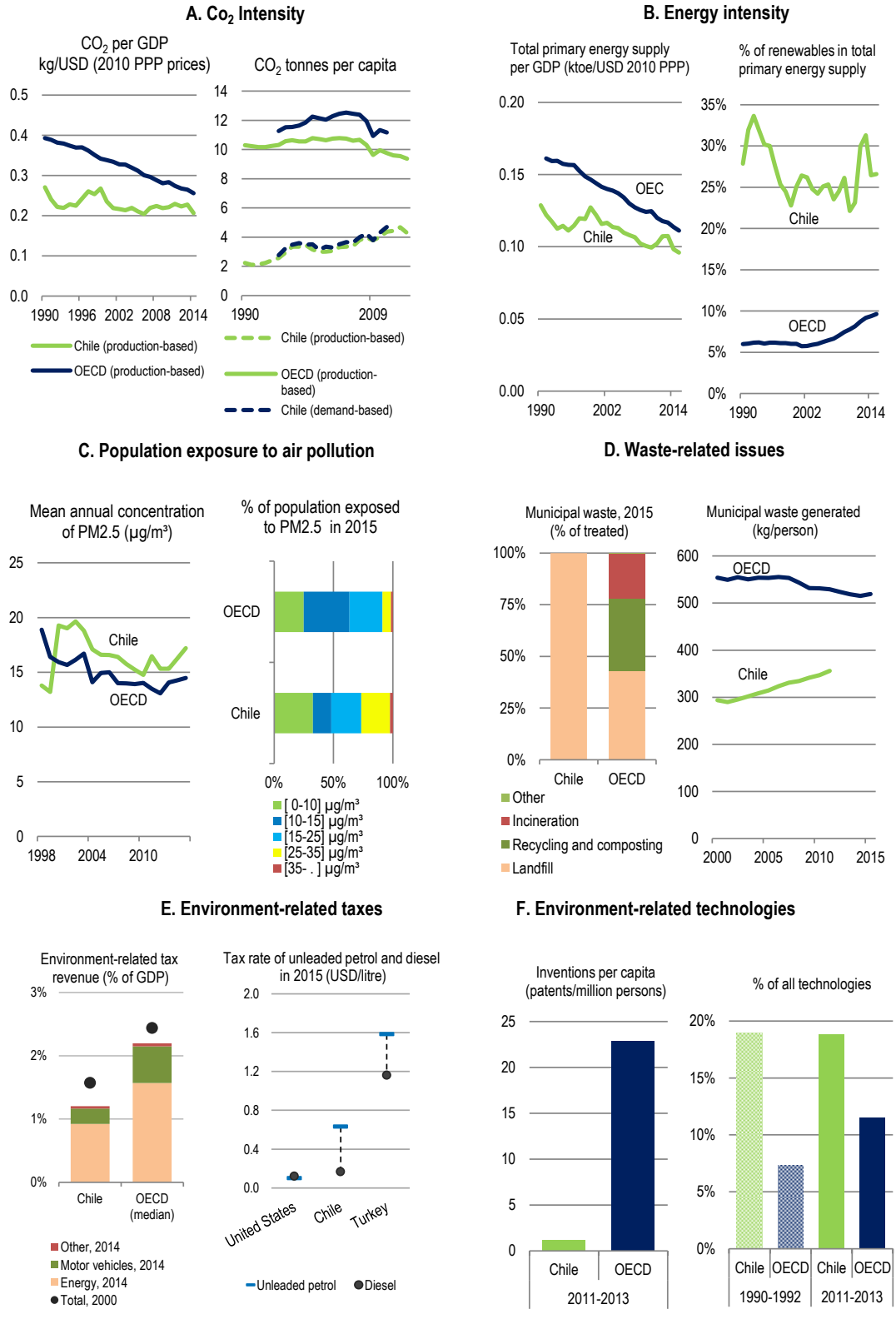
Chile's strong growth based on natural resources has increased risk of water shortages, habitat loss, and soil and water contamination (OECD, 2016j). CO2 and energy intensities have not been reduced as fast as other OECD countries (Figure 39). However, in 2015, Chile committed to reducing greenhouse gas emission intensity measured against GDP by 30% by 2030 compared to the 2007 level, and by up to 45% if sufficient international support is provided (OECD, 2016j). Achieving this commitment will be part of the Paris Agreement, and much will depend on the energy sector that account for 77% of Chile's greenhouse gas emissions.

Positives steps have been made in the electricity sector since 2014. New power auctions, the 2016 transmission law, additional network connections and the publication of the 2050 roadmap for the energy sector strengthened investment incentives for renewables – excluding the large hydropower sector. The government foresees to reach a share of 70% of renewables in the electricity mix in 2050. Investment in cost-competitive wind and solar power already took off and electricity prices declined by around 12% in real terms for households and firms over the 2011-16 period, but the implementation of significant infrastructure investment is needed to strengthen the regional electricity grid and balance intermittent and unequal energy supply and demand, reducing further the risk of blackouts, as well as wholesale prices and their volatility.

Water policies should be further strengthened to ensure a greener development, as demand is set to rise with the high degree of specialisation in water-intensive sectors. The current water-use system has exacerbated overexploitation of some aquifers, leading to drinking water shortages in rural villages and conflicts between local and indigenous

communities, farmers, mining and hydropower companies (OECD, 2016j). Reform proposals for water rights go in the right direction (Annex) and new techniques such as desalination plants have been developed to raise water supply, but discharge sites and energy costs need to be monitored to avoid potential negative impact on ecosystems and energy resources. A long-term water strategy and a reform of water pricing are needed to take into account externalities and incentivise more sustainable infrastructure and business projects as well as efficiency of water supply and irrigation (OECD, 2016j and 2017g). At the same time, systematic assessments of the risks from soil and water contamination from mining and agricultural activities are currently limited, as is the capacity for testing and assessing risks from industrial chemicals.

Figure 39. Green growth indicators: Chile



Source: OECD(2017), Green Growth Indicators Database

StatLink http://dx.doi.org/10.1787/888933671679

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Annex
Progress in structural reforms

Recommendations	Actions taken since the 2015 Survey
Fiscal policy	
Fiscal policy should focus on gradual budget consolidation.	Since 2016, the authorities have defined a gradual path of fiscal adjustment in structural terms.
Further enhance the transparency and accountability of the fiscal framework by strengthening the independence of the newly constituted Fiscal Advisory Council.	Since 2017, the Fiscal Advisory Council selects a preliminary list of experts in charge of presenting estimates of trend GDP and long term copper prices to determine the structural balance. However, the final decision lies on the Ministry of Finance.
Simplify the 2014 income tax reform, especially for businesses.	A 2016 amendment to the reform aimed at providing more guidance to firms, reduced firms' possibilities to choose between attributed regime and semi-integrated system. It also simplified the new 2014 corporate tax regimes.
Shift the tax towards real-estate property and environmental damages; review the taxation of natural resources.	In 2018 an estate tax law establish an additional 10% tax rate on capital gains from the sale of a property that has undergone a redefinition of land use from rural to urban.
Financial stability	
Accelerate the adoption of Basel III banking regulation.	The government sent a draft banking law adapting Basel III regulations to Congress in mid-2017.
The government must continue to modernise the institutional framework of financial supervision.	A Financial Market Commission was created in 2017. It is initially in charge of regulating and supervising the whole financial system, with more independence and regulatory powers than previous institutions. In addition, the 2017 draft banking law would introduce macro prudential tools and an improved legal framework for bank early intervention. It would also incorporate banking supervision (currently under the SBIF) to the Financial Market Commission.
Introduce a consolidated credit register for household credit, including on debt from non-banks.	No action taken.
Improving social support	
Strengthen poverty alleviation policies as planned, better targeting them to vulnerable populations, including indigenous groups.	In 2016, the Social Household Registry, an integrated social and administrative data system, replaced the *Ficha de Protección Social* (based on self-reported data) to select the beneficiaries of social programmes. The Security and Opportunities Subsystem was reformulated to focus on the most vulnerable population. Income poverty measurement was updated and multidimensional poverty measurement expanded. A new system of labour inclusion for disabled individuals established hiring quotas and training support. A register of homeless individuals was implemented. A draft bill would also establish a new institutional framework on indigenous issues (Ministry of Indigenous People and the National Council and Councils of Indigenous People) and a Participatory Indigenous Constituent Process.
Pensions	
Increase mandatory pension contribution rates.	A 2017 draft pension bill would gradually increase by five percentage points monthly pension contributions paid by employers.
Equalise the retirement age of men and women at 65 years.	A 2017 draft pension bill would introduce an incentive for women to postpone their retirement age.
Link the retirement age according to changes in life expectancy.	No action taken.
Boost the level of the solidarity pension.	In 2017, the government increased by 10% in real terms the *Pensión Básica Solidaria*.

Labour market policies	
Reduce duality in the labour market between protected indefinite contracts and precarious fixed-term contracts.	A draft bill would reform contracts for specific tasks (*contratos por obra o faena*) by defining more clearly the tasks for a specific contract. The reform would also grant rights to annual holidays and set dismissal costs similar to permanent contracts.
Strengthen public employment services to deliver targeted active labour market programmes for youth, the low skilled and the unemployed.	A new online training programme for employment offices (OMILs) was launched in 2016, to ensure they all run similar service protocols. Firms are now allowed to use the tax credit (*Impulsa Personas*) to finance evaluation and certification of competencies, levelling programmes for basic and adult education and conducting a study on training needs within their sector.
Increase spending in active labour market policies.	The budget for training programmes increased 14% in 2016. However, the Budget for *Más Capaz* in 2017 is reduced by 40%, and replaced by employment subsidies.
Gender equality	
Improve the access to quality child-care for children under-3 years of age.	The reform of the Early Childhood Education and Care (ECEC) system is being implemented by creating new institutions in charge of monitoring, updating curricula and setting quality standards. Childcare centres (for children aged 0-5) are being built and more than 70 000 new places are being created (32 500 for children aged 0-3). The reform ensures higher quality of ECEC by incorporating nursery educators in the teaching career with better labour conditions, better infrastructure standards, a new curriculum and a new framework for good teaching.
Promote gender diversity in leadership positions in parliament and private companies.	A proportional system for parliamentary elections was implemented in 2015, including two temporary measures (until 2029):1) no more than 60% of candidates can be from the same sex; 2) political parties will receive a monetary compensation for each woman elected. In the lower-house, women participation raised from 15.8% to 23% following the 2017 elections. The fraction of women in boards of directors of public companies has increased from 5% in 2012 to 40% in 2017.
Promote women participation in the fields of engineering and computer sciences.	No action taken.
Bring gender issues into the public debate through information campaigns.	A Ministry of Women and Gender Equity was created in 2016 with the mission of promoting equity, autonomy, no discrimination and life without violence for women.
Developing skills	
Implement legislation to end school selection. Make funding responsive to students' and school needs.	The Inclusion and Equity Law of 2015 gradually ends student selection in schools receiving public funding and co-payment mechanisms. 600 000 students that were paying for their education have now access to free education. The Law also provides greater public resources to the Preferential School Subsidy, increasing the number of beneficiaries. The law increases requirements for schools to access public funding were increased.
Increase support to and retention of high quality teachers.	A New System of Teacher Professional Development was adopted in 2016. It includes: raising requirements for university accreditations; providing initial teacher training; salary increases for the whole profession (200 000 teachers); bonuses for teachers working in socio-economic disadvantaged schools; and additional non-teaching time for class preparation. The new system includes VET and early childhood education teachers.
Hold schools accountable for their students' university access exams. Develop a funding system of universities that better links education to current and future labour market needs, and provides incentives to enhance quality. Expand and improve income-contingent loans to finance tuition fees. Increase efforts to provide individuals and families with timely information on the market returns of various career paths, and on appropriate education and quality training programmes. Strengthen the co-operation between education and training providers (including universities) and employers.	The higher education reform includes: 1) creation of a new vice-ministry of Higher Education covering higher education and VET at tertiary level to define policies, allocate resources, among others; 2) strengthen quality assurance processes, through the reinforcement of a national quality assurance system for higher education and the creation of a new VET Advisory Committee (*Consejo Asesor de Formación Técnico Profesional*) composed by the higher education Subsecretary, the Superintendency and the National Council of Education; 3) enhanced equity through universal free education – *gratuidad* - for students from disadvantaged backgrounds (over 262 000 beneficiaries), subject to state income as a share of GDP; 4) creation of new regional public higher education institutions

Develop a national qualification framework to promote labour market relevance, make it easier for young people to signal clearly what skills they possess, and facilitate recruitment processes. Encourage end-of-studies internships by combining flexibility and obligations to firms. Improve both higher education and vocational education and training (VET) programmes by integrating high-quality work-based learning components and ensuring that they also develop cognitive, social and emotional skills.	The National VET Policy (*Política Nacional de Formación Técnico-Profesional*) has four key elements: 1) VET quality: development of more transversal skills in VET incorporating VET teachers in the reform for teachers and the creation of new regional centres; 2) the creation of a VET qualifications framework together with the creation of the new VET Advisory Committee (*Consejo Asesor de Formación Técnico Profesional*); 3) better connecting agencies related to training and education in the system and the labour market; 4) creation of a new council for technical and professional education.
Improving the business environment	
Fully roll out the Productivity Agenda, to strengthen the capacity of dynamic firms to scale up and carry out innovative activities.	The Productivity Agenda is progressively implemented. In addition, most of the 22 measures announced in 2016 have been adopted. The initiatives are concentrated in three areas: promoting economic diversification and investment attractiveness, increasing services exports and the competitiveness of SMEs, and rising innovation and entreneurship.
Improve stakeholder input into the rule-making process and introduce systematic regulatory impact analysis	Since 2017, draft bills related to economic matters have to include a regulatory impact assessment to be submitted to congress.
Further reduce the complexity of administrative procedures for business and simplify sector-specific regulations.	A digital one-stop shop (*Escritorio Empresa*) is increasing e-procedures and services for firms since 2015. It integrates over 20 public institutions and around one third of municipalities. A 2018 draft bill aims at developing further administrative simplification and e-procedures.
Pass the competition bill that strengthens sanctions for cartels, reform the merger control regime and facilitate market studies.	A 2016 reform criminalised cartels, raised fines for collusion, made merger notification compulsory and eased introduced a merger control regime and specific powers concerning market studies.
Greening the economy	
Gradually increase the tax rate on diesel at least up to the level that applies for petrol. Consider revising the new tax on emissions of local air pollutants and CO2 from large stationary sources.	No action taken.
Improve the management of water resources by developing effective mechanisms to optimise water use in areas where water rights have been over-allocated, such as through the buying-back or forfeiture of unused water rights.	A 2011 draft bill is now under discussion in the Senate. It would create new temporary water rights (maximum 30 years) coherent with the assessed resilience of freshwater systems. It would identify priority water uses when granting new rights, introduce provisions for termination of non-used rights, and strengthen possible public restrictions of user rights (e.g. in case of drought).
Improve waste management, including through enactment and enforcement of the new Law on Waste and Extended Producer Responsibility, and establish an industrial chemical management system to ensure that chemicals produced and used in Chile are tested and assessed and that their risks are managed appropriately.	The 2016 Waste Framework Law reformed waste management to encourage waste reduction and recycling. The Law introduced a system of extended producer responsibility for a wide range of environmentally harmful products.
Continue to invest in urban public transport systems to counteract the continuous shift from public to private passenger transport and reduce congestion and emissions of GHGs and air pollutants.	The extension of the metro network in Santiago is in process. During 2016-17, other important projects have been launched, such as Metrotren Nos and Metrotren Rancagua and a subsidised maritime transport link between Caleta Tortel and Yungay.

Thematic chapters

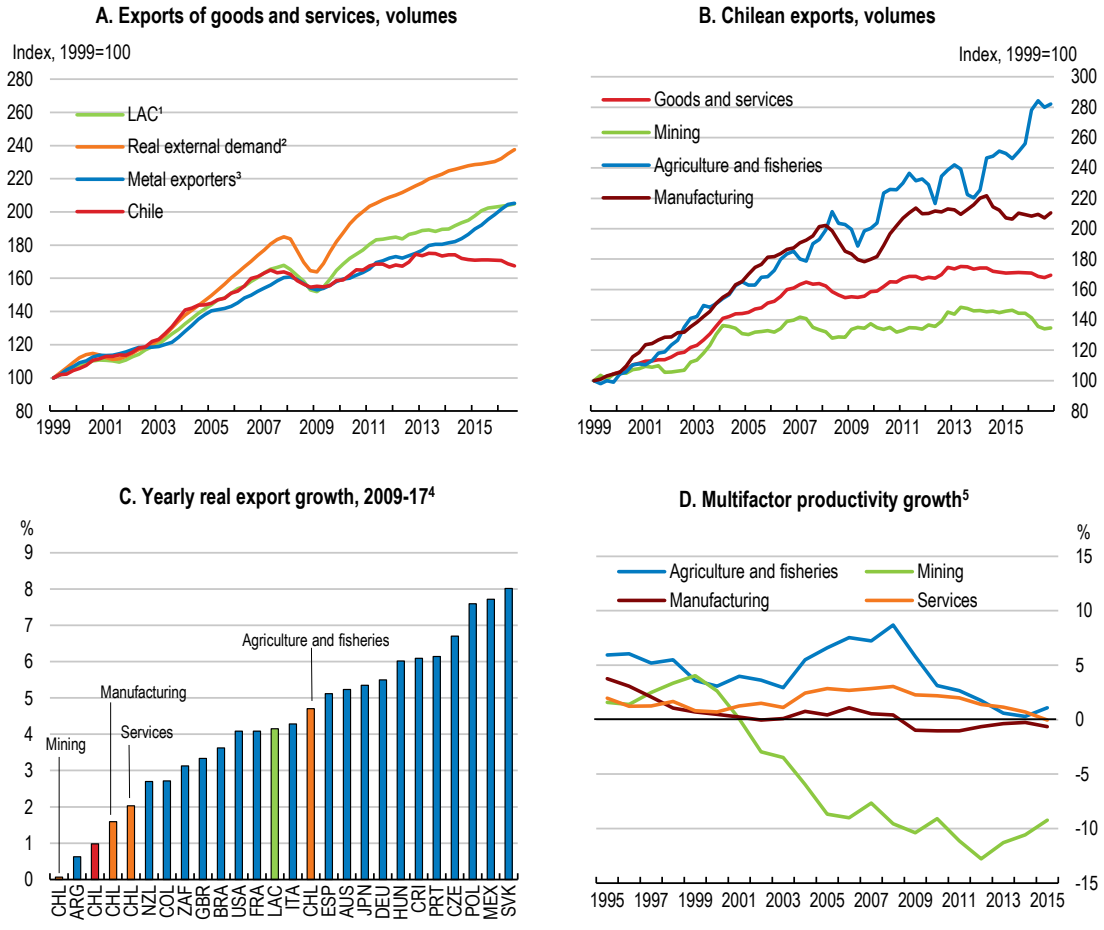
Chapter 1.

Boosting Export Performance in Chile

Over the past three decades, Chilean exports have contributed to higher growth and well-being, supported by a stable macroeconomic framework, bold structural reforms, such as trade and investment liberalisation, and buoyant natural-resource sectors. However, export performance has disappointed since the global financial crisis. The commodity boom hid weak non-commodity exports and low productivity. Exports remain concentrated in terms of goods, firms and destinations. Many micro and small firms have low productivity and the quality of the public and private capital stock is lagging, which weighs on potential new exporters and export performance. The regulatory framework remains complex, infrastructure gaps hamper exports and competition is limited in some key sectors affecting competitiveness. Recent measures have aimed at simplifying the opening of new businesses, improving competition and energy supply and easing trade procedures. Additional reforms are needed to offset the geographical remoteness and improve exports and productivity over the medium term. This includes further enhancing competition and increasing investment in innovation, removing barriers to capital and labour reallocation, promoting railway and international connections and increasing benefits from agglomeration by improving urban planning.

Over the past three decades Chile has grown faster than most OECD countries, thanks to sound macroeconomic policies and strong natural-resource based exports, particularly of copper and copper-related products. However, Chile was hit hard by the meltdown of international trade following the 2008 global financial crisis and the plunge in commodity prices (Figure 1.1, Panels A to C). Mining and manufacturing exports stalled, and services exports remained low. Lower external demand and declining multifactor productivity (MFP) growth affected most sectors (Panels A and D). In addition, negative supply shocks, such as salmon diseases, algal bloom, high ocean temperatures and bad weather conditions, affected exports of agro-food sectors. Mining exports have also lately been influenced by higher costs of extraction from the need to dig deeper in the mines (CNP, 2017).

Figure 1.1. Exports and productivity have stalled



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Export markets' growth for goods and services, in volume terms (unweighted average of Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico with export market shares as of 2010).
3. Metal exporters is the unweighted average of Australia, Canada and Peru.
4. Annualised growth between 2009 and the last four available quarters.
5. Five-year moving average. Multi-factor Productivity is adjusted for human capital and hours of work (CNP, 2017).
Source: OECD (2017), Economic Outlook 102 Database; Central Bank of Chile (2017), Statistical Database; Central Bank of Peru (2017), Statistics database; CNP (2017), *Informe de Productividad Anual 2016*, Comisión Nacional de Productividad and OECD calculations.

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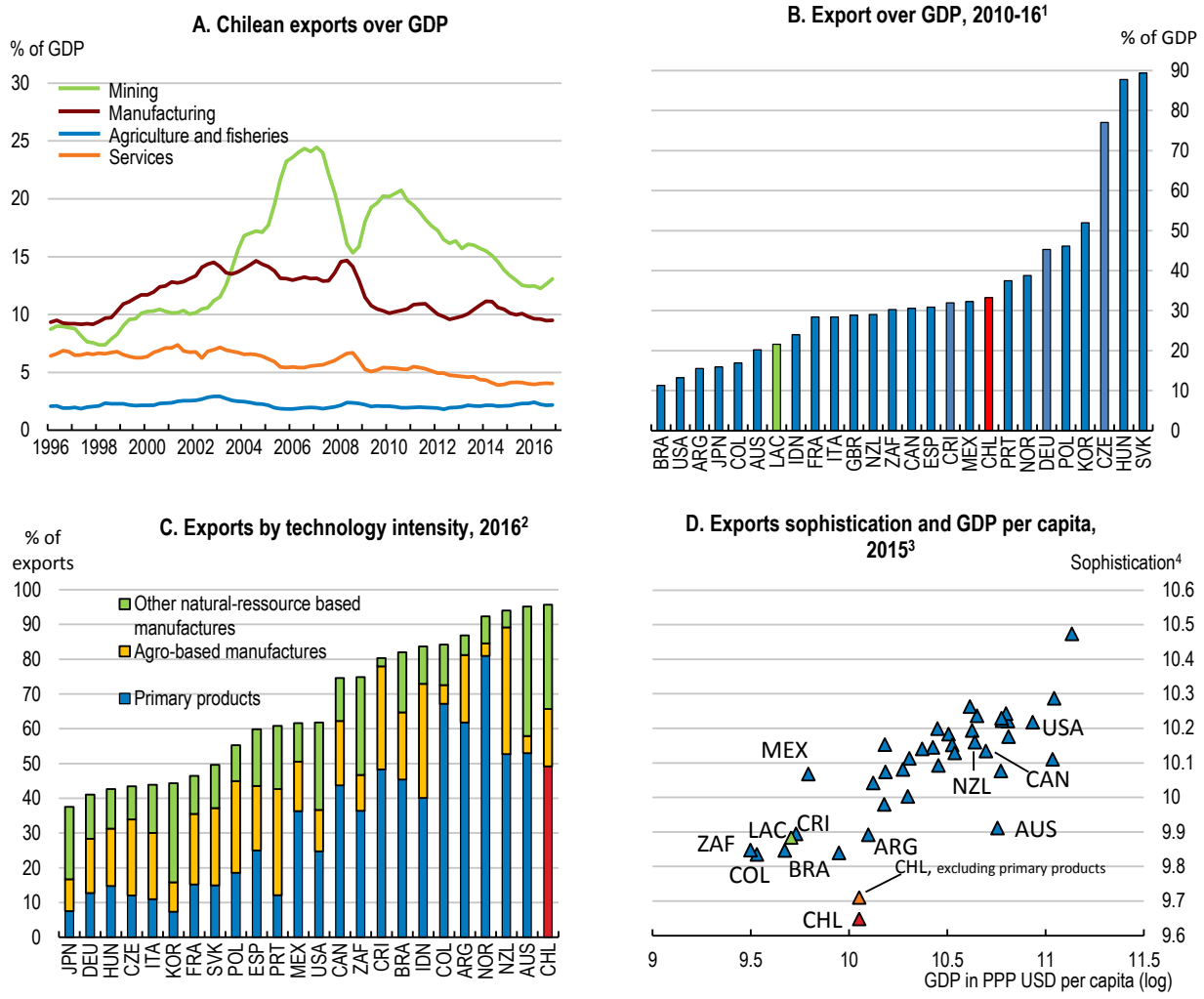
Figure 1.2. There is room to raise exports and their sophistication



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. According to Lall (2000)'s classification.
3. OECD countries, excluding Belgium and Luxembourg, and Argentina, Brazil, Colombia, Costa Rica and South Africa.
4. Export sophistication is defined as an average over Chilean exported goods as in Hausmann et al., (2007). For each good, a proxy for its sophistication is the average GDP per capita (in 2015 in PPP terms) of its destination markets. Computations use 180 destination countries and 6-digit good classification (1992 - HS6 classification). Primary products are defined as in Lall (2000).
Source: OECD (2017), National Accounts Database. OECD calculations based on CEPII (2017), BACI Database and World Bank (2017), World Development Indicators; Comtrade Database and Lall, S. (2000), "The technological structure and performance of developing country manufactured exports, 1995-1998", *Oxford Development Studies*, No. 28 (3), pp. 337-369.

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The export intensity of the economy has declined since 2008 (Figure 1.2, Panels A and B). Multilateral tariffs are low and an extensive network of preferential trade agreements has brought the average paid tariff to internationally low levels. The OECD FDI restrictiveness index also shows few restrictions to inward FDI (OECD, 2017a). However, the end of the commodity boom did not lead to changing export patterns. Natural resource-based sectors, including agro- and mining-based remain the bulk of

exports (Panel C), and exports are still relatively less sophisticated than those of its Latin American neighbours, even after disregarding primary products (Panel D; Hausmann et al., 2007).

The reasons for the persistent weakness of exports since the global financial crisis are both cyclical and structural. Exports have been affected by lower external demand, notably for mining and manufactured exports (Fornero et al., 2017). Weakened competitiveness also played a role. The nominal and real effective exchange rates have remained historically high, weighing on cost-competitiveness (Figure 1.3, Panel A), though the stronger peso reflects the recovery in copper markets and sound macroeconomic fundamentals (IMF, 2016). In addition, Chile's relative unit labour costs have outgrown most other Latin American countries. Wages outpaced productivity in most sectors, as the labour market remained relatively tight and domestic demand for construction and services was dynamic (Panel B). High and volatile energy prices further complicated firms' adjustment until 2015.

Investment has also weakened weighing on productivity growth and export performance. Overall investment has been strongly related to copper prices and exports (Figure 1.3, Panel C). FDI inflows, which represented one third of investment over the past ten years, have recently decreased (Panel D), as declining rates of returns of new investments in the mining sector due to lower profitability were only partly compensated by higher investment in renewable energies (OECD, 2017b). In non-mining sectors, investment has also been stagnant for the past four years (Figure 1.4, Panel A). The overall investment rate of non-financial corporations remained high until 2015, due the investment-intensive mining sector (Panel B). Weak investments on business research and development (R&D) and in the manufacturing sectors are worrisome, given their links with higher labour productivity growth (Panels C to D).

Export performance is further influenced by structural factors. The geographical distance to large export markets and advanced economies partly hinders integration in global value chains. Moreover, the business environment remains complex despite recent reforms to ease entrepreneurship and increase competition. Infrastructure bottlenecks also tend to reduce flexibility of economic structures making it difficult for new firms to enter and thrive. These raise adjustment costs for workers and firms, preventing capital and labour to move to more productive sectors and new export opportunities, influencing cost and non-cost competitiveness. Reducing these bottlenecks would not just help export performance, but raise productivity, notably by allowing firms to grow, which would allow for more inclusive growth and quality jobs.

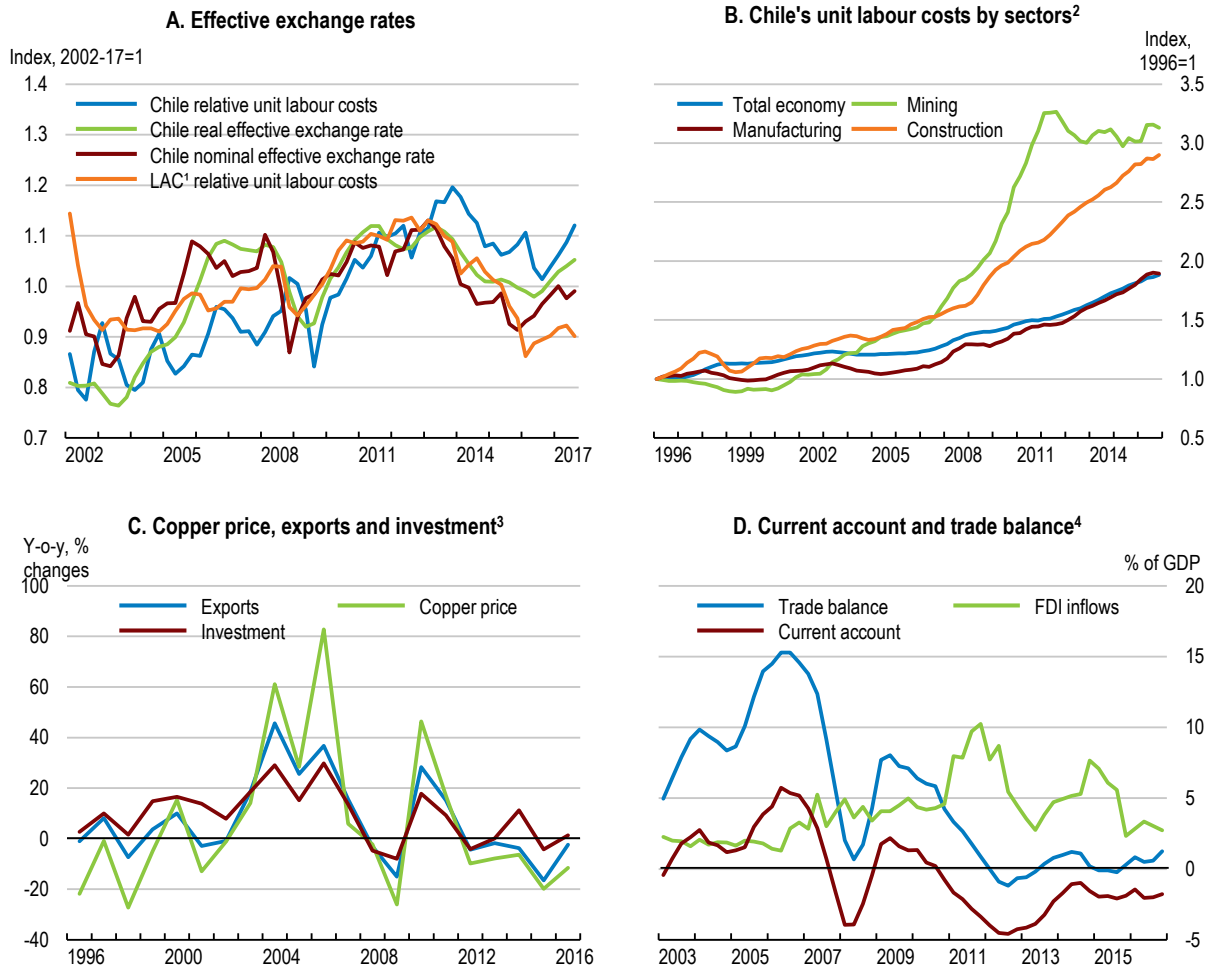
This chapter discusses in more detail what can be done to raise export performance. The main challenges are:

- Raising productivity. Mining and non-mining exports have lagged since the global financial crisis and the end of the commodity boom. Chile is also facing environmental and social challenges from its high specialisation in natural-resource based goods and exports, while intraregional trade and participation in global value chains are low.
- Reducing regulatory barriers and stepping up efforts of to improve productivity and innovation would raise broader-based export performance. Since 2014, administrative business and trade procedures have been somewhat simplified (Box 1.1), and funding of R&D and innovation activities increased. However, many regulations and taxes, such as municipal business licenses and entry restrictions in maritime transport and custom brokerages, restrict firm entry and

growth. Regulatory reform would also raise inclusiveness as it helps reduce informality and create better quality jobs.

- Lowering trade and adjustment costs for workers and firms would raise inclusive growth and promote better skill matches between workers and jobs. The ongoing strengthening of training and mentoring for smaller firms, and the development of the digital infrastructure would help smaller and younger firms to reach more easily foreign markets. However, capacity bottlenecks remain in key sectors, such as infrastructure and transportation services. Promoting retraining and active labour market policies (Chapter 2), lowering bankruptcy costs, raising second chance policies for entrepreneurs and developing the rental sector for low-income households would facilitate adjustment of labour and capital to changing export opportunities and increase productivity.

Figure 1.3. Development in copper prices and cost competitiveness



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Yearly moving average of hourly nominal wages over real labour productivity by sectors.
3. All values are in current US dollars.
4. Four-quarter moving average.

Source: OECD (2017), Economic Outlook 102 Database; Central Bank of Chile (2017), Statistical Database.

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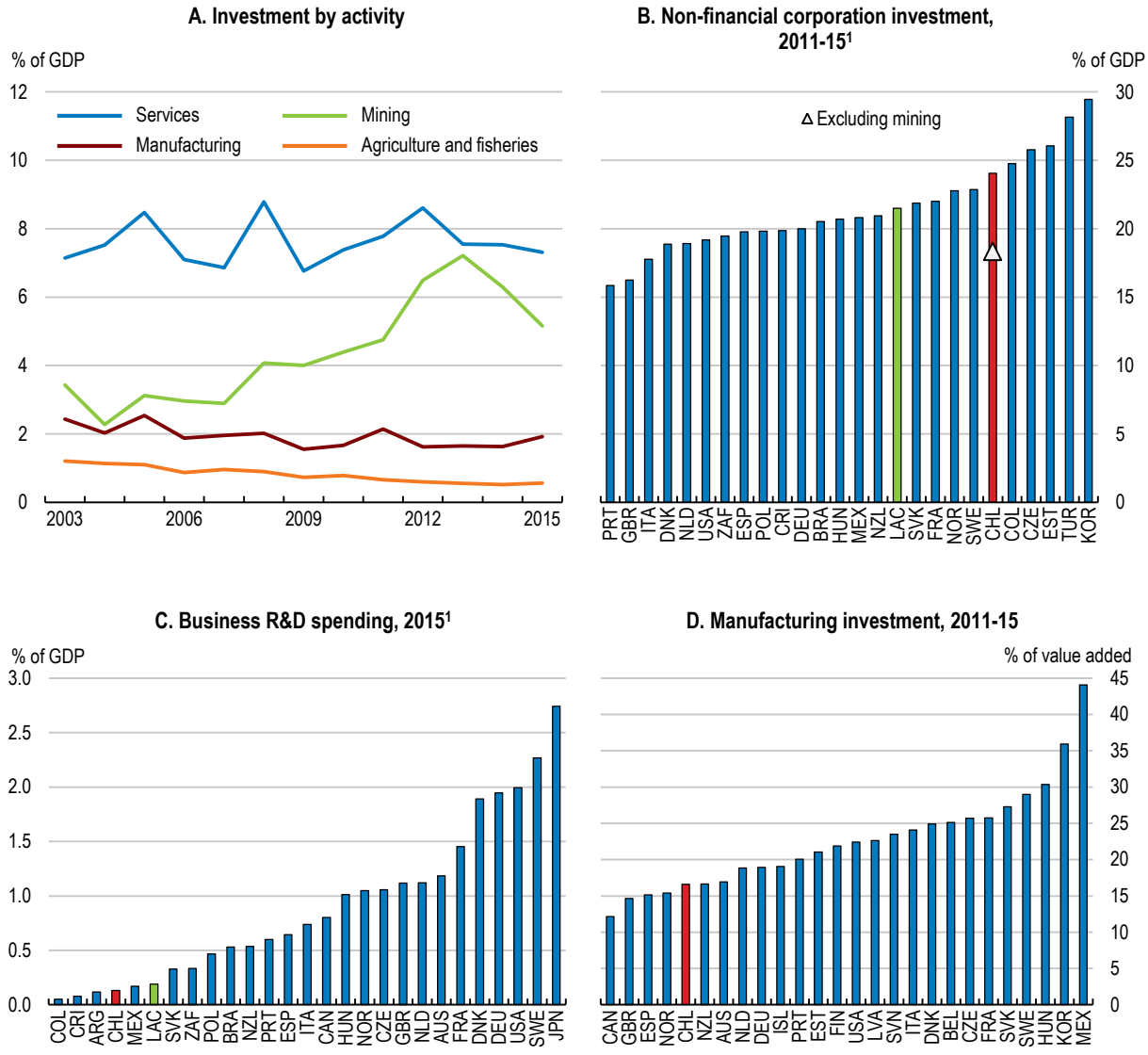
Figure 1.4. Investment has weakened



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: OECD (2017), National account database and Science, Technology and R&D Statistics; Central Bank of Chile (2017), Statistical database.

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Box 1.1. Recent measures to improve productivity and exports

Chile adopted a productivity and innovation agenda in 2014. The agenda focuses on promoting the diversification of the economy, boosting sectors with high growth potential, the expansion of programmes for early-stage start-ups, improving competitiveness and attracting new investments.

The agenda has seven pillars: (1) strategic investments and sectoral development plans (Box 1.2); (2) infrastructure; (3) funding and management support for SMEs; (4) boosting entrepreneurship and innovation; (5) efficiency in regulation and in the provision of public services; (6) improved markets; and (7) new institutional framework, notably with the creation of the productivity commission in 2015. It focused on developing public-private co-operation. In particular, the agenda launched:

- A digital one-stop shop (*Escritorio Empresa*) that is progressively integrating municipalities, private institutions and public agencies;
- A new investment fund (*Fondo de Inversión Estratégica* - FIE -) to manage projects in six strategic sectors: healthy food; solar industry; intelligent industry; sustainable construction; technological and sustainable mining; and sustainable aquaculture. Over 2015-18, its public funding amounted to about USD 163 million – 0.05% of 2015 GDP - for total investment worth USD 865 million or 0.3% of 2015 GDP.

In 2016, 22 additional measures were introduced to expand financing for companies, promote services exports and simplify administrative procedures.

A foreign trade facilitation unit was created in 2016. It leads, coordinates and manages public and private initiatives aimed at promoting trade. The facilitation unit has two areas of action in support of foreign trade:

- A digital single window for international trade transactions (SICEX) that allows to export and import goods through a single online portal, and aims to simplify and streamline customs, sanitary, health and tax procedures associated with exports and imports;
- The promotion of services exports. In 2016, the productivity law provided benefits for services exporters, notably to limit the double taxation of services exports and to exempt from VAT services that are used abroad.

A public committee for services exports was created in 2015. It is finalising a USD 35 million loan with the Inter-American Development Bank to promote foreign direct investment and capital-market development from 2018.

In 2016, the authorities also reformed the investment promotion agency, InvestChile. In addition, they created 16 regional centres for small and medium-sized firms through ProChile to ease their access to foreign markets.

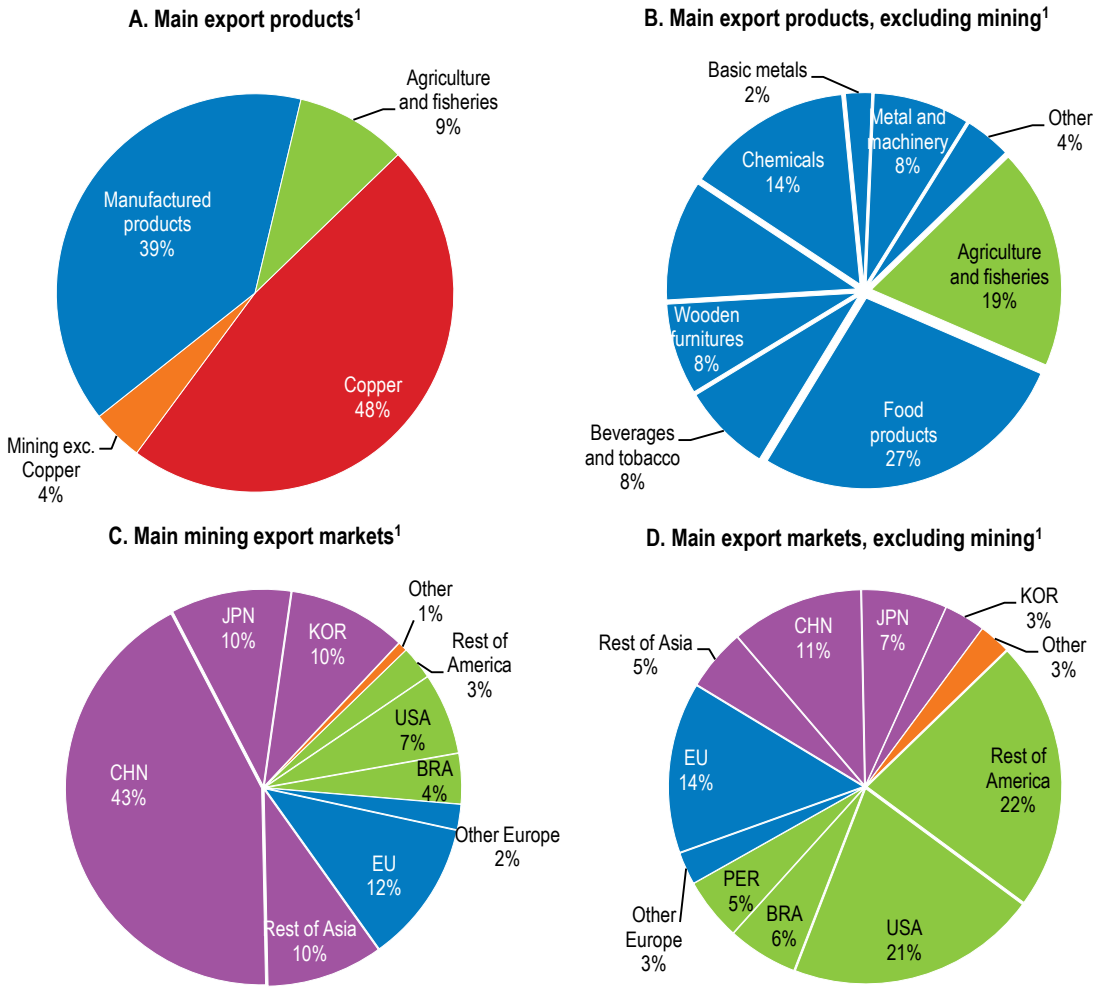
A snapshot of the structure of exports

Export patterns and integration in global value chains

Goods exports are highly concentrated in a few key sectors and markets (Figure 1.5 and Table 1.1). Refined copper and mining industries account for half of exports, notably

towards China and Asia. Natural-resource based manufactures such as the processed food and wood products dominate non-copper exports mainly to countries in the region.

Figure 1.5. Exports remain highly specialised, 2015-16



Note: Average percentage shares over 2015-16 for trade in goods.
Source: Central Bank of Chile (2017), Statistical Database.

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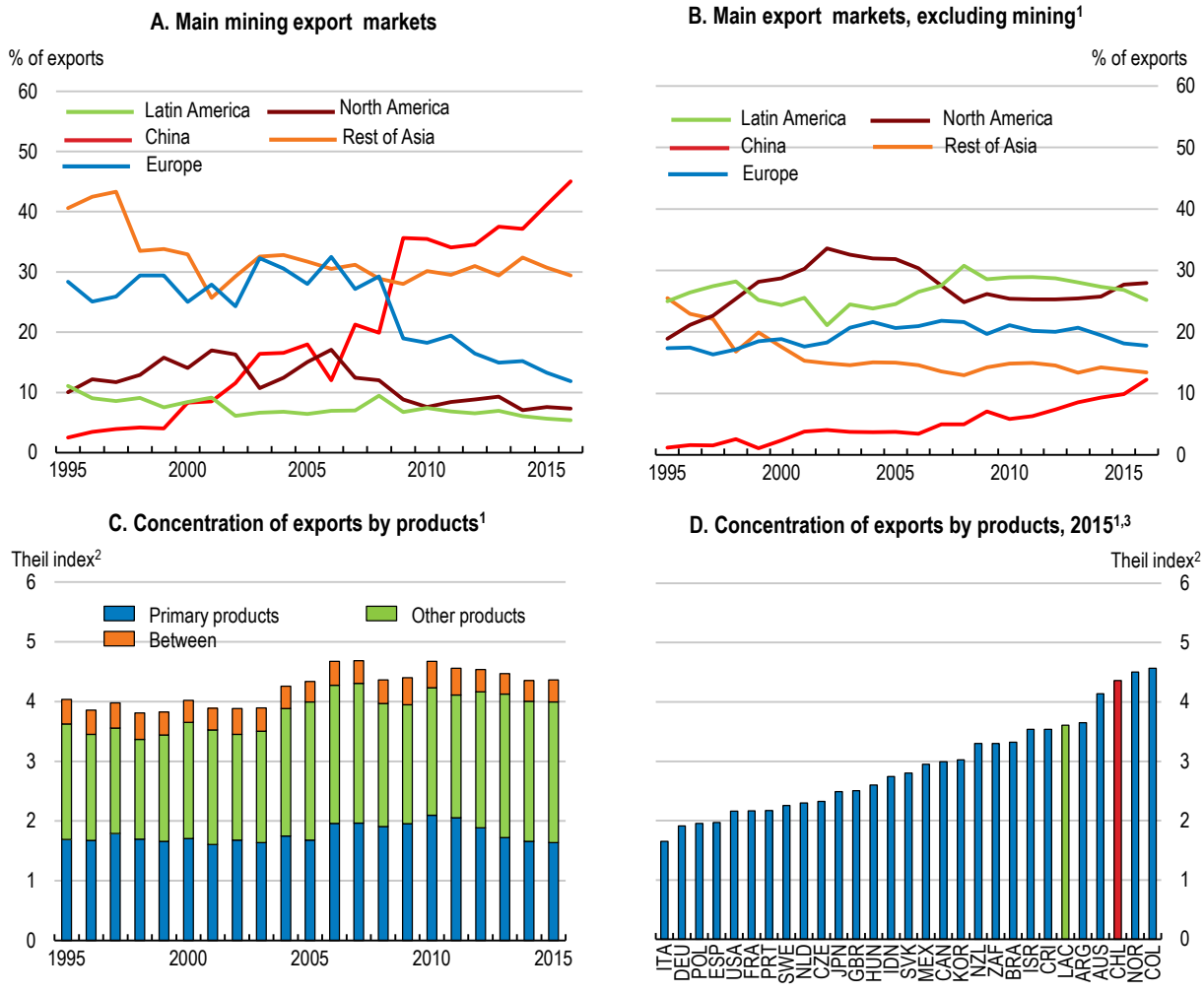
Before the global financial crisis, dynamic non-mining exports were mainly explained by an expansion of export markets across countries (Figure 1.6, Panels A and B) and an increase in exporting firms, but the number of exported products remained much below other Latin American countries (Claro, 2017; World Bank, 2017a). In turn, the end of the commodity boom did not lead to rebalancing of exports towards non-traditional products and services. The diversification of goods exports, as measured by the Theil index across 5 000 products, has even decreased since 1995 in primary and non-primary products, notably with increasing concentration of exports of food and wood products (Panels C and D). The number of products whose exports exceed USD 50 million that was growing with the increasing demand for Chilean goods prior to the crisis, has been stagnant since 2010 (Ministry of Finance, 2017).

Figure 1.6. Exports diversification has been limited



1. For trade in goods.
2. Higher values of the index indicate higher concentration of export products. The Theil index is computed over export values in a 6-digit good classification (HS6 1992 classification) with 5,039 products per year. Panel C decomposes the Theil index (T) between primary (p) and non-primary (np) products and a between term describing shift in exports between the two categories, such that $T = s_p \times T_p + (1-s_p) \times T_{np} + T_{between}$, where s_p is the share of primary export products in value.
3. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: OECD (2047), International Trade by Commodity Statistics; OECD calculations based on CEPII (2017), BACI Database.

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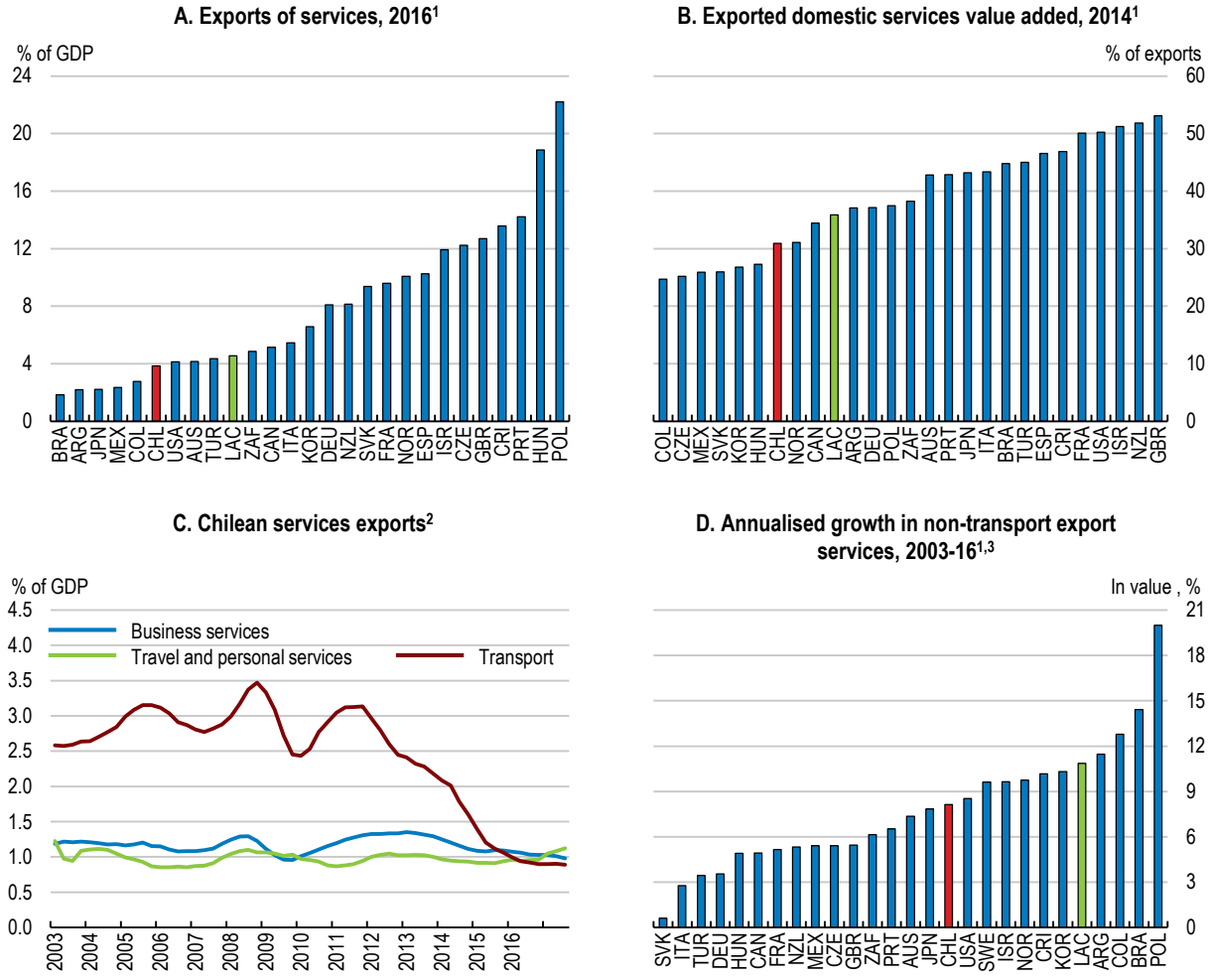
Competitiveness in the services sector is hampered by various restrictions and has weak links to international trade (Figure 1.7, Panel A). Value added of domestic business services incorporated in other products, such as engineering services related to mining consulting and customer relationship management, remains low in exports (Panel B). Over recent years, despite a fast increase in international visitors, the tourism sector, for which the country's climate, coastline and cultural assets provide a natural competitive advantage, remained constant as a share of GDP. Indeed, the share of tourism in employment, at 5.1% in 2016, remains lower than in the average of Argentina, Brazil,

Colombia, Costa-Rica and Mexico (6.8%; OECD, 2017c). The growth of personal and business services has also been below that of other Latin American countries (Panels C and D). However, a common time-zone with the USA, the development of Information and Communication Technologies (ICT) and availability of high skilled personnel and ongoing measures (Box 1.1) could raise services exports, notably to Latin American neighbours and the United States (Direcon, 2016).

Figure 1.7. Services exports remain relatively low



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Four-quarter moving average.
3. Growth in current USD value. 2003-16 or nearest available years.
Source: OECD (2017), Trade in Services Database; Central Bank of Chile (2017), Statistical Database; World Bank (2017), World Development Indicators and IMF (2017), Trade in Services Database.

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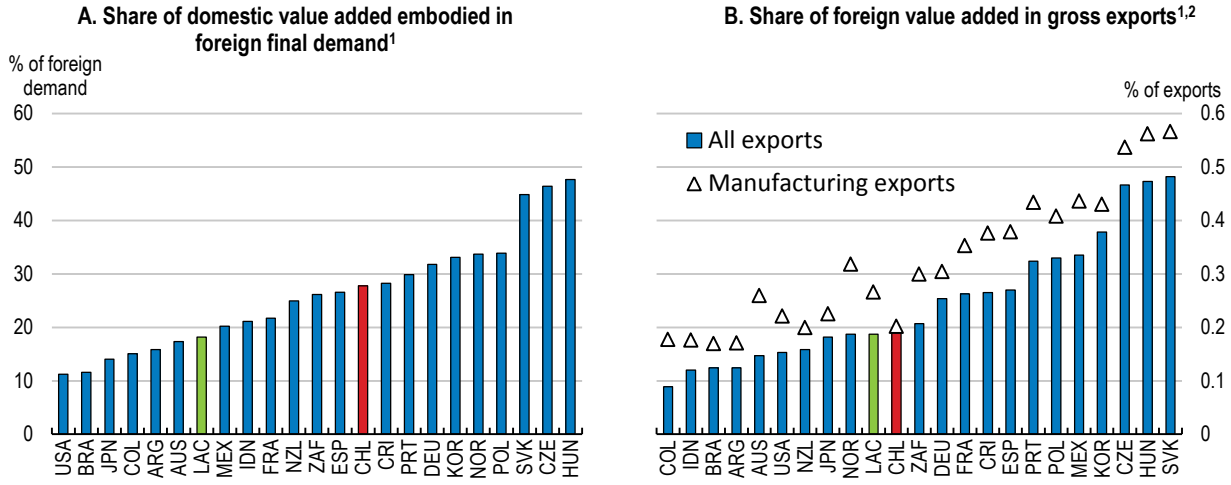
Integration in global value chains (GVCs) that often help boost higher value-added exports and diversification, remains limited. The share of domestic value added embodied in foreign final demand is relatively high, linked to the high level of commodity exports and natural-resource intensive manufactured products, such as refined copper and food products (Figure 1.8, Panel A; OECD, 2015a). By contrast, the foreign value added

content of exports is low (Panel B), as sectors typically associated with dynamic downstream GVC participation like transport and electrical equipment are little developed (Table 1.1).

Figure 1.8. Chile is positioned upstream in global value chains, 2014



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. The foreign value added content of Chilean exports does not capture the extent to which foreign intermediates enter supply chains for products eventually absorbed by Chile's domestic demand. Chilean firms import a significant part of their intermediate inputs, notably machinery and equipment.
Source: OECD (2017), TiVA nowcast estimates Database.

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Table 1.1. Structure of exports by sectors

	2003	2007	2012	2016
A. Gross exports of goods and services				
Exports as a share of GDP (%)	36	45	34	29
Share of goods in gross exports (%)	81	88	86	86
B. 10 main exported products (% of goods exports)				
Copper and articles thereof	25	37	34	25
Ores, slag and ash	15	27	24	24
Edible fruit and nuts; peel of citrus fruit or melons	9	5	6	10
Fish and crustaceans, molluscs and other aquatic invertebrates	7	4	5	7
Pulp of wood or of other fibrous cellulose material	4	4	3	4
Wood and articles of wood; wood charcoal	6	3	3	4
Beverages, spirits and vinegar	3	2	2	3
Inorganic chemicals	2	2	2	2
Natural or cultured pearls, precious or semi-precious stones	2	2	3	2
Meat and edible meat offal	1	1	1	2
C. Services exports (% of services exports)				
Transport	53	57	51	31
Travel and household services	22	20	21	33
Business services	25	24	28	36

Source: OECD (2017), International Trade by Commodity Statistics (ITCS) – Harmonised classification 2002; Balance of payment statistics; National account database; Central Bank of Chile (2017), Statistical database.

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Geography and natural resources partly explain the lack of diversification

Geography and natural resources are important factors in Chile's export structure. Beyond its comparative advantage in natural resources, the productivity gap and participation in GVCs can partly be explained by remote access to markets and suppliers and high international trade costs (Figure 1.9, Panels A and B; Boulhol and de Serres, 2010; OECD, 2015a). Chile's trade with its neighbours is affected by the Andes and transport and insurance costs with close neighbours, such as Argentina, are high (Miao and Fortanier, 2017). As in other Latin American countries, intra-regional trade remains weak, notably for non-primary products, with a low development of joint production networks and regional value chains in manufacturing (Panels C and D; Cadestin et al., 2016).

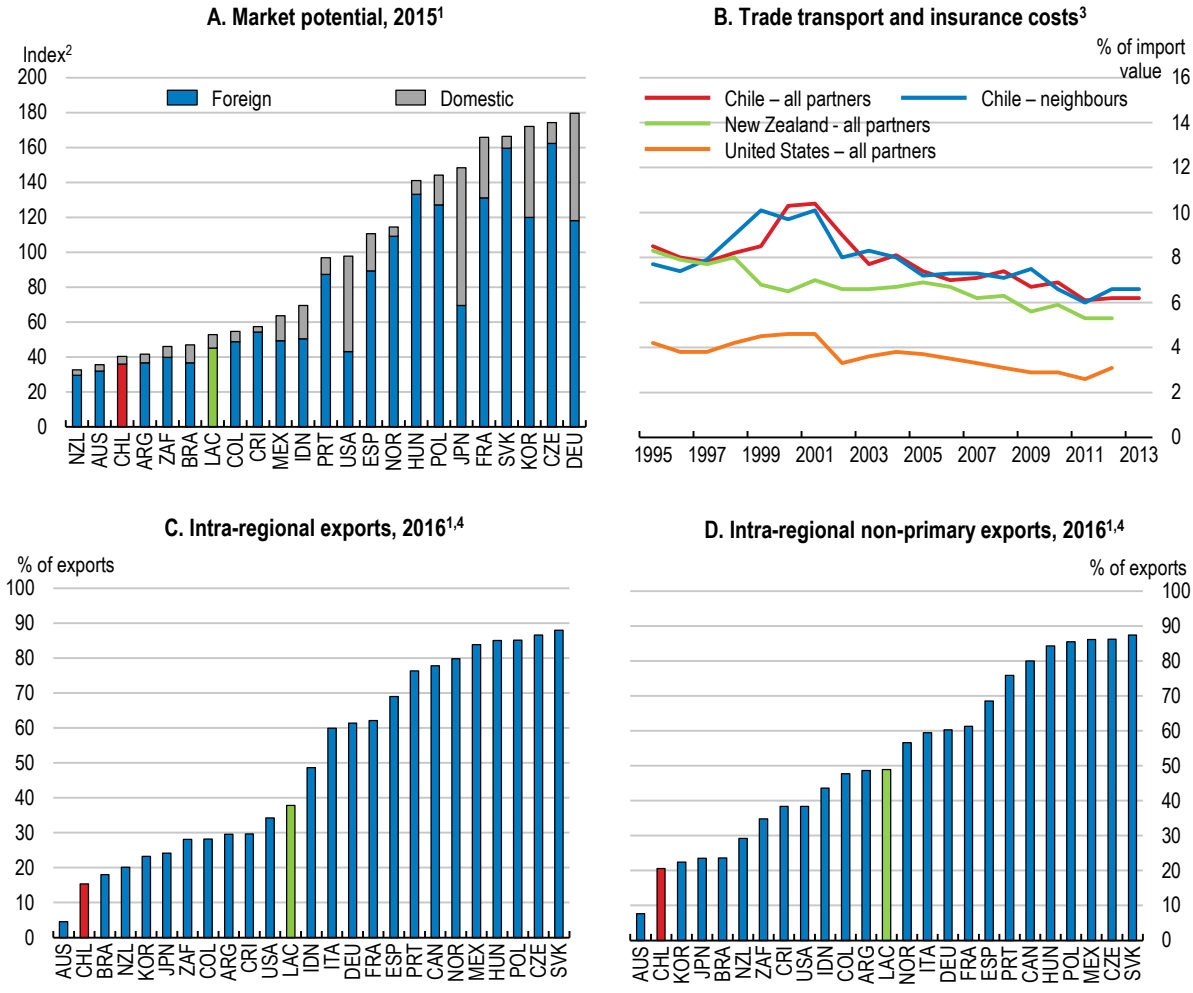
Internal geography also plays a role. In particular, Chile's copper mines are close to the sea, making it potentially more profitable to export concentrates rather than to process ores in distant manufacturing plants at high inland transport and energy costs (Jouanjean et al., 2017). This hampers up-scaling and up-skilling in mining-related services. Moreover, internal geography and natural resources tend to concentrate economic activities and settlement patterns in a few geographic areas, contributing to very high levels of regional inequality (OECD, 2014a and 2017d and e). This creates challenges for managing connections among individuals, firms and regions, and developing accessibility and connectivity to international markets.

Natural resources could offer new opportunities in the lithium industry. The demand for commodities needed for battery manufacturing, such as lithium, cobalt and other materials required by future battery technologies is increasing with electric vehicles. Chile holds around 85% of the worldwide reserves of lithium (Ministry of Finance, 2017), while the electric car fleet is set to rise from around 2 million vehicles in 2016 to between 9 and 20 million in 2020 and between 40 and 70 million in 2025 (OECD/IEA, 2017). Electric cars require lighter inputs and more efficient and long-lasting batteries and will open new opportunities for Chile if it manages to leverage its natural advantages and enter into more sophisticated parts of the battery value chain.

A closer look at the characteristics of exporting firms and productivity across sectors

To understand better the issues with export performance it is useful to look at firm characteristics. Exporting firms are different from average firms, even within narrowly defined sectors (Bernard and Jensen, 1999). In Chile as in other OECD countries, it is typically only a few high-performing firms that become successful exporters (Table 1.2; Pavnick, 2002; Arellano and Astorga, 2015). Exporters tend to be larger than non-exporting firms, more capital intensive and more productive, even in agriculture or professional services. The academic literature has traced this back to the existence of fixed costs of entering foreign markets which only the most productive firms can recover once they become exporters (Melitz and Ottaviano, 2008).

Figure 1.9. Market potential and trade costs



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Foreign market potential of a country (i) is the sum of all other countries' GDP (in 2015 USD PPP) weighted by the inverse of their bilateral distance to i. The domestic component is i's GDP divided by the average internal distance based on i's surface area.
3. Import weighted difference between merchandise imports reported including cost, insurance and freight (CIF) and free on board (FOB), as a % of their FOB value (Miao and Fortanier, 2017).
4. Based on goods exports.
Source: OECD calculations based on CEPII (2017), Distance dataset and World Bank (2017), World Development Indicators; Miao, G. and F. Fortanier (2017), "Estimating Transport and Insurance Costs of International Trade", *OECD Statistics Working Papers*, 2017/04, OECD Publishing; and OECD (2017), International Trade by Commodity Statistics (ITCS) Database.

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Table 1.2. Basic characteristics of firms by export status and sectors, 2015

	Exporters, % of:		Average non exporter			Average exporter		
	Firms	Employees	Employees	Capital/ worker[1]	Labour productivity[1]	Employees	Capital/	Firms
Agriculture and fisheries	16.9	32.6	10.2	112.0	18.8	24.1	120.0	30.7
Mining	6.8	62.6	17.2	85.6	17.2	397.6	1068.7	45.9
Manufacturing	5.4	44.1	13.2	30.0	13.0	183.8	123.8	26.2
Construction	0.2	3.7	24.1	27.7	9.0	419.9	109.5	15.6
Wholesale and retail trade	2.7	17.2	7.2	20.6	15.1	54.3	109.7	39.8
Transport and storage	2.2	9.8	11.7	55.2	26.9	56.4	161.5	77.2
Personal services[2]	2.9	3.6	15.7	23.9	12.8	19.4	59.0	13.7
Professional services[3]	6.2	23.4	12.3	40.5	13.9	56.9	74.3	36.3
Financial services	1.7	3.5	33.1	366.2	58.8	71.7	72.0	88.0
Electricity, gas and water	4.3	1.5	133.6	1615.8	29.0	46.4	49.5	21.4
Total sample	4.4	17.4	13.5	65.0	16.6	62.4	118.9	34.2
Direct exporters[4]	2.9	15.2	13.5	65.0	16.6	80.7	117.9	41.2

1. In thousands of 2015 USD. Capital is fixed assets (land, buildings and machineries). Labour productivity is value-added per employee, computed as in Arellano and Astorga (2015).
2. Accommodation, catering and recreational services.
3. Professional services are information and telecommunication services and professional, scientific and technical services.
4. The calculations exclude indirect exporters and compare direct exporters to non-exporting firms.
Source: OECD calculations based on the Encuesta Longitudinal de Empresas (ELE-4) and Arellano, P. and R. Astorga (2015), Informe de resultados: Productividad laboral sectorial y por tamaño de empresa a partir de microdatos Tercera Encuesta Longitudinal de Empresas, Ministerio de Economía, Fomento y Turismo.

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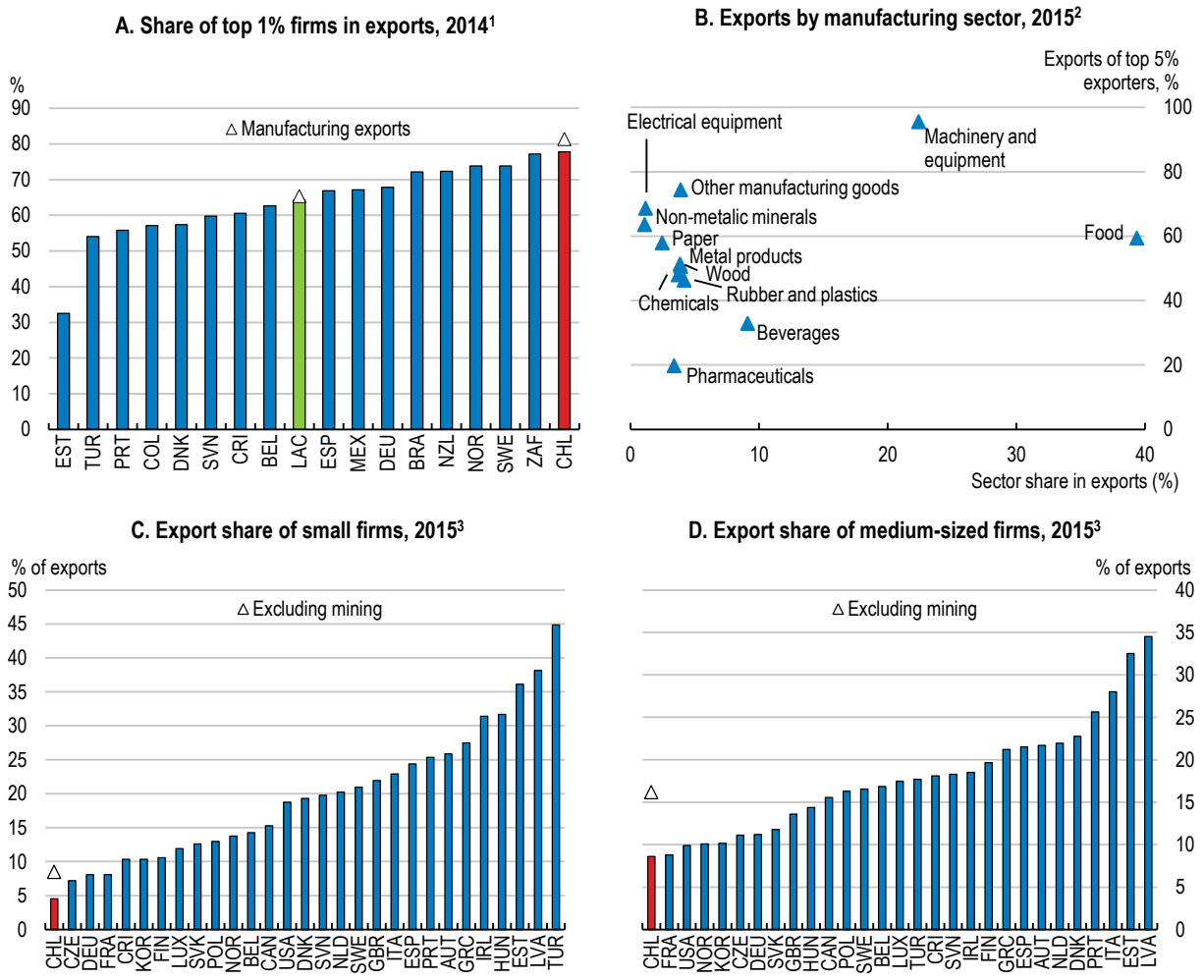
In practice, potential exporters in Chile appear to face fixed costs related to the need to collect information about export markets, establishing commercial contacts, hiring multi-lingual staff or adapting products to be sold abroad, that are particularly binding for smaller firms (Morales et al., 2014). The geographical position of Chile may also particularly unfavourable for small firms that do not have the size to invest in the knowledge and capabilities that are required to export. However, some of the difference between exporters and non-exporters is also explained by "learning by exporting": Chilean exporters have managed to leverage their experience in international markets to raise their productivity and R&D spending (Bas and Ledzema, 2010; Bravo-Ortega et al., 2014).

A few firms dominate exports of goods, even within the Chilean manufacturing sector (Figure 1.10, Panel A). According to firm-level data from the manufacturing census *Encuesta Nacional Industria Anual* (ENIA) covering around 4 000 firms in 2015, exports of the main export products, such as food and machinery and equipment, are highly concentrated across establishments (Panel B). This structure implies higher business cycle sensitivity to exports, as the largest firms contribute the most to aggregate output fluctuations (di Giovanni and Levchenko, 2012). Moreover, the share of SMEs in exports is particularly low (Panels C and D), while 98.5% of firms were classified as SMEs in 2014 (OECD, 2017f). Only about 2% of SMEs participate in international trade compared to around 25% in the EU (EC, 2017).

Figure 1.10. A few firms concentrate most exports



1. Or latest available year. LAC is the unweighted average of Brazil, Colombia, Costa Rica and Mexico.
2. In panel B, firms are defined as establishments, excluding micro-firms. Each observation is a 2-digit ISIC4 sector.
3. Small firms have less than 50 employees. Medium-sized firms have between 50 and 250 employees. OECD calculations based on ELE4 for Chile. Mining corresponds to mining and quarrying activities as defined in the international standard industrial classification (ISIC rev4).
Source: OECD (2017), TEC Database and OECD calculations based on ELE4, World Bank (2016), Exporter Dynamics Database and the Encuesta Nacional Industria Anual (ENIA).

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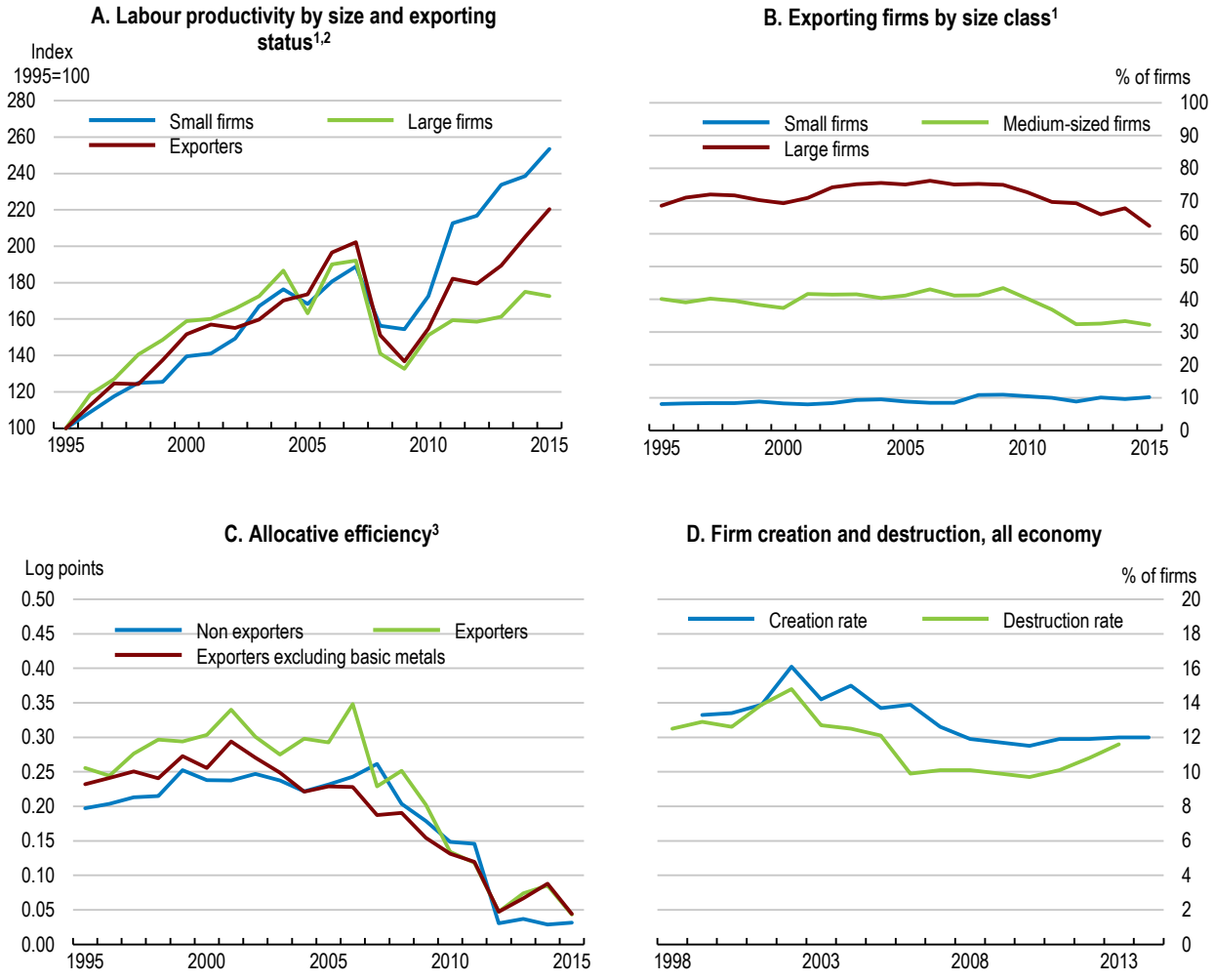
In manufacturing, contrary to most OECD countries (Berlingieri et al., 2017), productivity among the largest firms has declined more than that of smaller firms (Figure 1.11, Panel A) which was also reflected in the diminishing share of medium and large-sized exporters (Panel B). The ability of exporting firms to adjust to shocks appears limited: their productivity only regained their pre-crisis level in 2015. Older firms and exports markets, the intensive trade margins, appear as the main reasons for the non-mining exports slowdown since the global financial crisis (Claro, 2017).

Figure 1.11. Exports and productivity in the manufacturing sector



1. Exporting firms sell directly some of their production abroad. Small firms have less than 50 employees, medium-size firms between 50 and 199 employees and large firms have 200 employees or more.
2. Nominal value-added over employment.
3. Allocative efficiency is computed as the difference between the aggregate level of productivity and the sum of the simple average of firm-level productivity. This corresponds to the Olley-Pakes covariance term. If there were no systematic relationship between productivity and the size of firms, the covariance term would be zero, and the higher it is, the larger is the market share held by more productive firms.
Source: OECD calculations based on the *Encuesta Nacional Industria Anual* (ENIA). Arellano, P. and E. Jiménez (2016), "Dinámica Empresarial Brechas regionales y sectoriales de las pymes en Chile - Periodo 2005-2014", *Working paper Ministerio de Economía, Fomento y Turismo*, February 2016.

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Rigidities in resource allocation between firms have reinforced the export slowdown. This is reflected in a decline in the ability of more productive manufacturing firms to attract larger shares of aggregate employment (allocative efficiency) even among exporters (Figure 1.11, Panel C). Most of the 2009-15 productivity deceleration can be attributed to growing input misallocation in the manufacturing sector: the distribution of resources between heterogeneous firms is increasingly skewed towards low labour productivity firms. The number of firm creations and destructions also declined, pointing

to the particular output costs of labour- and product-market rigidities in a persistent growth slowdown (Panel D).

Reinvigorating export performance through productivity gains

Putting in place policies that constantly promote activities in which firms and workers are competitive would help reap additional gains from trade (OECD, 2017g). The concentrated structure of the economy makes it difficult for young firms to enter some markets and compete. This is partly because large incumbents are able to take advantage of economies of scale and scope (Schwellnus, 2010) and the regulatory burden particularly weigh on smaller and younger firms growth. Lowering market power in some sectors would reduce rents that allow companies to block new competitors from entering the market, with positive effects on employment and labour market inclusiveness (Gal and Theising, 2015; Causa et al. 2015).

Reducing administrative costs for potential exporters

The burden of anti-competitive regulations has substantially decreased since 2008, according to the Product Market Regulation (PMR) indicators developed by the OECD (Koske et al., 2015). In particular, starting up a business has significantly eased (Figure 1.12, Panel A). New laws in 2010 and 2011 reduced red tape for SMEs (*Estatuto Pyme*) and regulatory barriers for start-ups, including by facilitating the use of temporary licenses and the payment of taxes, and by streamlining notification requirements. The perceived burden of government regulations is among the lowest in Latin America (Panel B; WEF, 2017). However, the burden of regulations is considered as high in comparison to other potential business barriers such as the skills of the workforce, the macroeconomic framework or tax rates (Panel C). This is notably due to the system of municipal licenses and environmental permit procedures (Panel D).

A number of restrictions remain in key services sectors, such as customs, maritime and telecom services (Figure 1.13, Panel A). Though discrimination against foreign firms is in general relatively low (OECD, 2017h), weak regulatory transparency and complex administrative procedures tend to add to firm operational expenses, ultimately borne by consumers and downstream business customers (Panel B). For example, barriers to trade in the maritime freight transport and telecommunications in Chile were estimated to be equivalent to a 21% and 16% sales tax, respectively (Rouzet and Spinelli, 2016). This setting weigh particularly on SMEs and potential exporters, in goods and services sectors, as larger firms are better equipped to succeed in complex regulatory environments because of their broader resources, in-house legal expertise, existing networks of business partners at home and abroad, and the benefits of scale to absorb overhead costs (Rouzet et al., 2017).

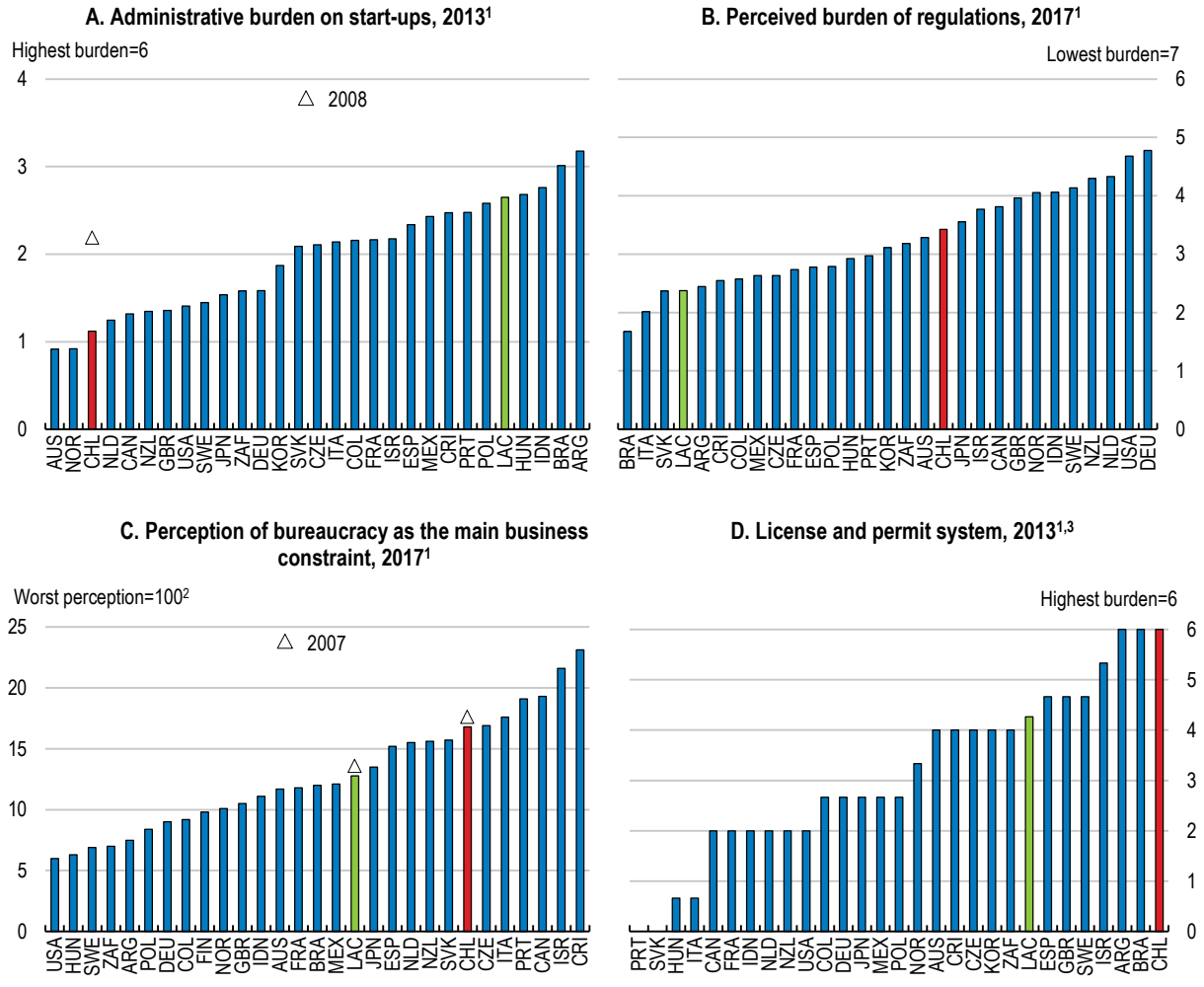
Some recent reforms are going the right direction (Box 1.1. Recent measures to improve productivity and exports). The 2014 structural reform agenda introduced 47 measures to boost competitiveness and productivity. 22 additional measures were introduced in 2016. In particular, since 2015, the productivity commission (CNP) advises the Government in competitiveness and productivity. This consultative independent entity includes members from academia and professionals from different backgrounds. Following its assessment and OECD recommendations (OECD, 2016a), nine ministries of the economic sphere will have to submit a productivity impact assessment for their new legislative proposals. The productivity commission also released a first enquiry on productivity in the mining sector in 2017. However, the productivity commission has a limited duration up to July

2018 (Renda and Dougherty, 2017). It is also subject to uncertainty regarding data access and the collaboration of government agencies (OECD, 2017i). Making the mandate of the CNP permanent would help support public-private dialogue on policy initiatives and strengthen the regulatory framework. It would also help to articulate productivity and innovation policies that remain fragmented. As in the case of Australian Productivity Commission, its role could be expanded to providing ex post analysis of the effectiveness of regulatory policies and programmes and the simplification of existing regulations (Figure 1.14, Panel A; OECD, 2016a).

Moreover, firms and households engagement in the elaboration of regulations and laws could be strengthened (Figure 1.14, Panel B). There are specific requirements to engage with stakeholders on matters related to indigenous people's rights, some environmental issues and international trade, but consultations are not generally required, and they are not systematically used in practice (Querbach and Arndt, 2017). The Open Government portal (*Gobierno Abierto*) is used to solicit comments on draft regulatory proposals, but Chile would benefit from using consultation more systematically, by introducing formal requirements and guidelines to raise the transparency of the regulatory process. Recent laws – such as the law creating the Financial Markets Comission and the Banking Law, introduced mandatory consultation mechanisms for regulatory authorities. However, there is still no standardised practice on how to conduct regulatory consultation, including its length, scope, timing and procedures.

The process of approving or rejecting large projects would benefit from more effective and earlier involvement of local communities. Environmental permitting procedures, including related lawsuits, may be lengthy and uncertain, notably in the mining and water sectors (CNP, 2016 and 2017). Business and infrastructure projects are subject to environmental impact declarations and to a full environmental impact assessment for the largest ones. However, mandatory public participation occurs at an advanced stage of project development. Improving the environmental impact assessment process to ensure it guarantees timely public participation at early stages and includes meaningful consideration of project alternatives, could avoid late rejection and oppositions by local communities. In addition, defining more effective mechanisms for addressing the special rights of indigenous communities would strengthen the approval procedures for large projects, limit socio-environmental tensions, and support local economic development (OECD, 2014a; 2016f; 2016j).

Figure 1.12. Regulatory complexity remains relatively high



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Weighted answers to the World Economic Forum's survey, business executives were asked to select the five most problematic factors for doing business in their country and to rank them between 1 (most problematic) and 5.
3. The assessed burden of the license and permit system is based on the absence of "a silence is consent" rule for administrative procedures and the absence of single contact points for information about and the issuance of licenses in 2013.
Source: OECD (2017), Product Market Regulation Database; and World Economic Forum (2008 and 2017), The Global Competitiveness Reports 2017–2018 and 2007-2008.

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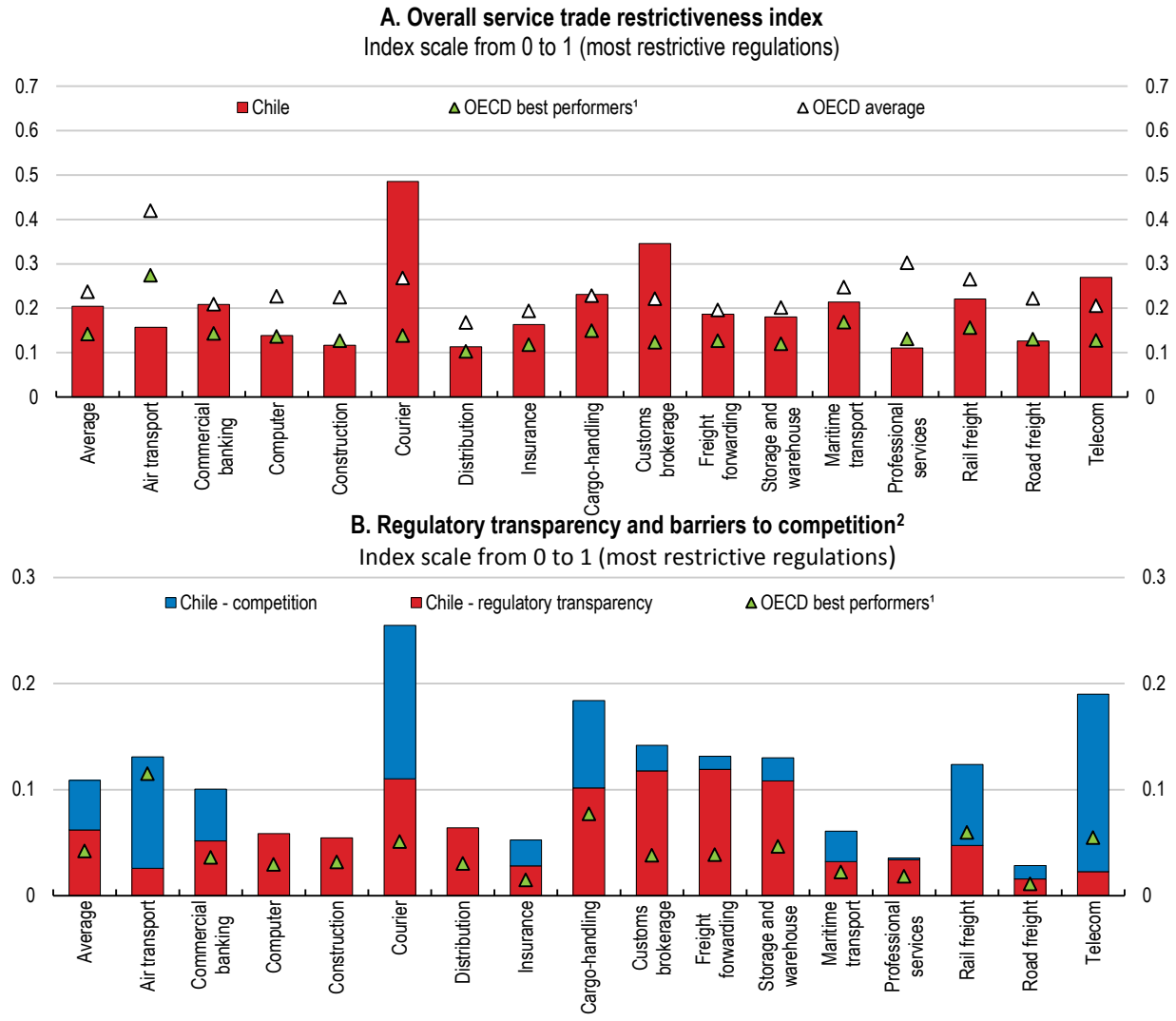
At the national level, building on earlier efforts to coordinate different public agencies (*Plataforma Integrada de Servicios Electrónicos del Estado*, PISEE), Chile has developed since 2015 an integrated platform of public electronic services (*Escritorio Empresa*) for different administrative procedures for firms, that is progressively integrating municipalities. In 2015, 818 business procedures administrated by 89 institutions had been identified (Barraza, 2015). Electronic communication integrates through PISEE the different administrative procedures for firms in a single electronic platform for 55 institutions that offer 87 information services and contribute to carrying

out 379 formalities (OECD, 2016a). This avoids duplicating requests for information from businesses, such as birth certificates. In addition, for the payment of taxes, advances in e-invoicing have been made in the last few years and online pre-filled VAT forms were introduced in 2017 to reduce compliance costs.

Figure 1.13. Service trade barriers remain important in some key sectors, 2017



1. The OECD best performers is the average of the five OECD countries with the regulations the most conducive to trade.
2. Most of the measures recorded as barriers to competition and issues related to regulatory transparency apply equally to domestic and foreign firms.
Source: OECD (2017), Services Trade Restrictiveness Index.

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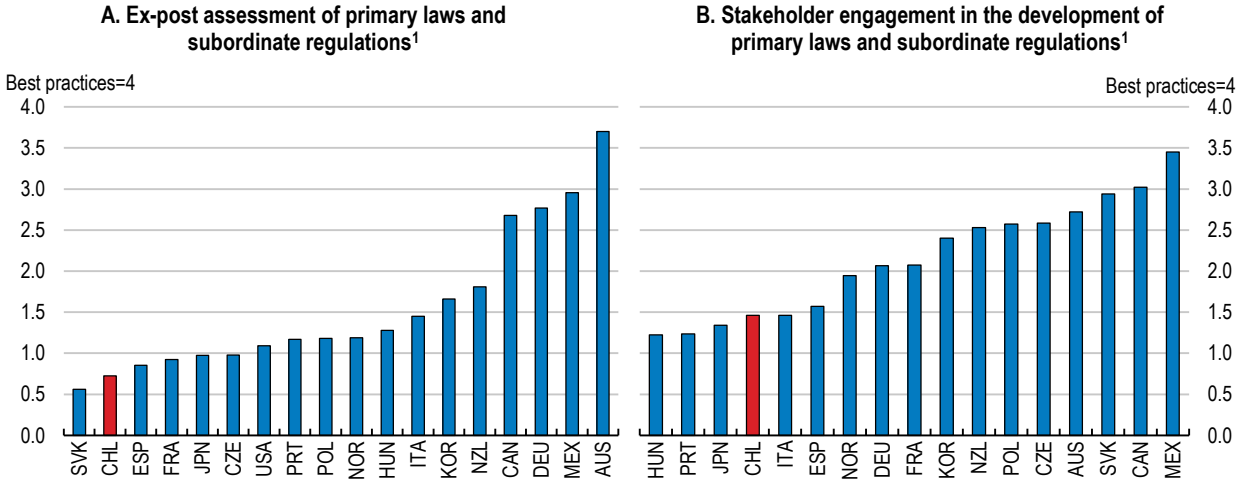
The single-window digital platform for businesses, *Escritorio Empresa*, should be strengthened. As of 2017, *Escritorio Empresa* offers 50 on-line procedures with 18 public agencies and 114 municipalities out of 346, and handles nearly 20 000 procedures per month. Integrating more municipalities may be challenging. In 2011, before the single-

window digital platform, 96% of 345 municipalities had a website, but licensing procedures for retail and manufacturing plants could be completed online in less than 14% of them and only 36% of them had planned to develop the use of digital systems (SINIM, 2011). Building on the 2017 experimentation, a study of municipal best practices could help less advanced municipalities to catch up. Moreover, speeding up bureaucratic procedures would require improving the interoperability of information systems between the state agencies to ease exchange of electronic documents (Microsystem, 2017). In the medium term, the system could also integrate with national sanitary permits to speed up procedures, notably in the food industry (CNP, 2016). These simplified procedures would allow for starting or modifying certain economic activities with a simple declaration through a single electronic point of contact.

Introducing "zero licensing procedures", as was done in Portugal (OECD, 2014b), could delay the administrative burden on start-ups and focus on ex-post control, easing firm entry and formalisation (OECD, 2016a). Indeed, municipal licensing and authorisation still impose significant administrative burden to firms, notably SMEs. Municipalities grant the municipal licenses (*Patentes Municipales*) for commercial activity, according to local rules. In addition, for specific activities subject to health, hygiene and safety rules, additional preliminary permits are required from central entities and intertwined with local authorisations (CNP, 2016). A municipal licence is granted for a period of one year except for independent activities, which are not controlled by municipalities. For micro family businesses, simplified rules have been developed. However, the efficiency of municipal governments and the delays involved in obtaining licenses varies widely across municipalities (OECD, 2017e).

Figure 1.14. Regulatory impact assessment and engagement of stakeholders, 2016



Note: 2016 for Chile and Mexico, 2014 for the other countries.
Source: OECD (2017), Indicators of Regulatory Policy and Governance (iREG) and iREG for Latin America 2016.

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A number of regulations also differentiate across firms depending on the size of the firm and such regulations may hamper the capacity of dynamic firms to scale up and carry out exporting and innovative activities, as in France or Spain (Garicano et al., 2015; Almunia

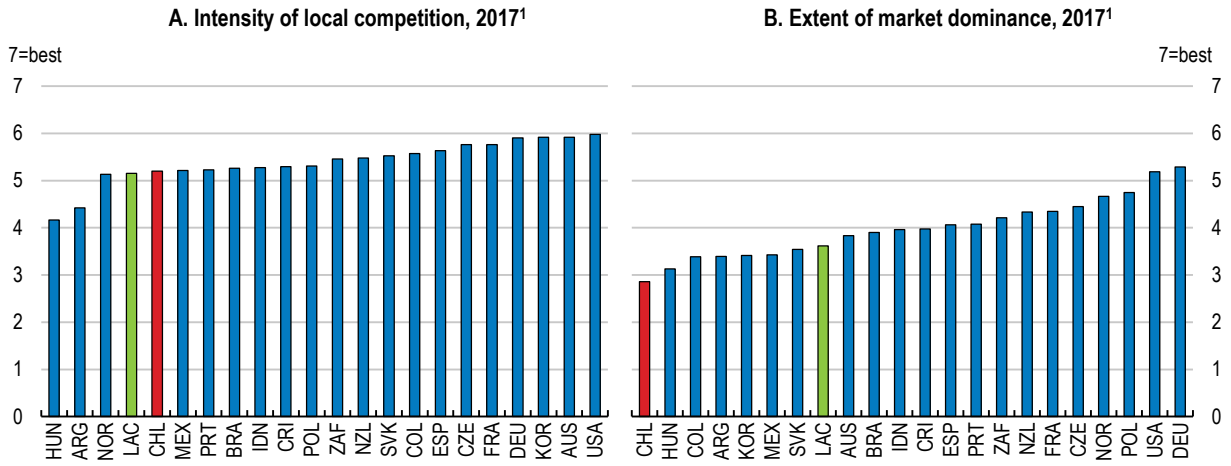
and Lopez-Rodriguez, 2013). The main size-dependent regulations relate to the hiring of foreign workers, the provision of child care and firm-level bargaining. Restriction on foreign workers requires that at least 85% of hired workers are Chilean nationals if the firm employs 25 or more individuals, though specialised technical personnel are not subject to this rule. Moreover, firms have to provide funding for child care services whenever they have 20 or more female workers. Evidence suggests that a relevant fraction of small firms have 19 female employees (Escobar et al., 2017), while foreign workers quotas appear to complicate the adjustment of manufacturing plants when they are hit by a shock, notably for high-productivity firms that rely on highly-skilled personnel for which the labour market is tight (Micco and Repetto, 2014). In addition, different regulations apply to union formation in firms with less than 50 employees and above 250 employees. As a first step, childcare should be financed by general revenues, replacing the current implicit tax on employment for medium sized and large firms, as well as lowering barriers to female employment (Chapter 2). Size-dependent policies should be carefully streamlined to avoid detrimental effects on firms' growth dynamics. In general, the emphasis should be on ensuring that policies support the needs of SMEs, rather than progressively tightening regulatory requirements with size.

Strengthening further the regulatory framework surrounding competition

Exports could benefit from stronger competitive pressures that are perceived as weak according to international investors (Figure 1.15). Stronger competition would spur the adoption of better management practices and re-allocation of resources to the best managed firms (Bloom et al., 2017a), thus increasing productivity growth and lowering input costs for potential exporters. Rising competition from these low levels would also put pressure on firms to upgrade their technologies and innovate (Aghion et al., 2005).

The competition framework has improved in recent years. According to the OECD Competition Law and Policy (CLP) indicators (Alemani et al., 2013), the competition framework lagged best practices in a number of areas until 2015. Chile adopted a new competition law in 2016 which strengthened the competition framework. The law introduced criminal sanctions for hard-core cartels, improved the merger regimes, the leniency programme, and increased fines against anti-competitive behaviours (OECD, 2016b). Under the new law, the competition tribunal (TDLC) can now decide on follow-on action pursuing damages arising from anti-competitive conducts. The law also grants the competition authority (FNE) specific powers to carry out market studies, including provisions for mandatory co-operation from private parties. It establishes a new division within the competition authority responsible for market studies and grants the authority the power to make recommendations to the Chilean government. The authority launched two market studies on the annuity market and notaries in 2016-17. In addition, the functioning of the consumer protection agency (SERNAC) was reformed in 2017. The reform eased follow-on actions for anticompetitive behaviours, raised consumer information to limit the impact of unduly complex or restrictive regulations, and increased fines against violations of consumer law.

Figure 1.15. Perceived competitive pressures are low



1. LAC refers to the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: World Economic Forum (2017), Global Competitiveness Index dataset.

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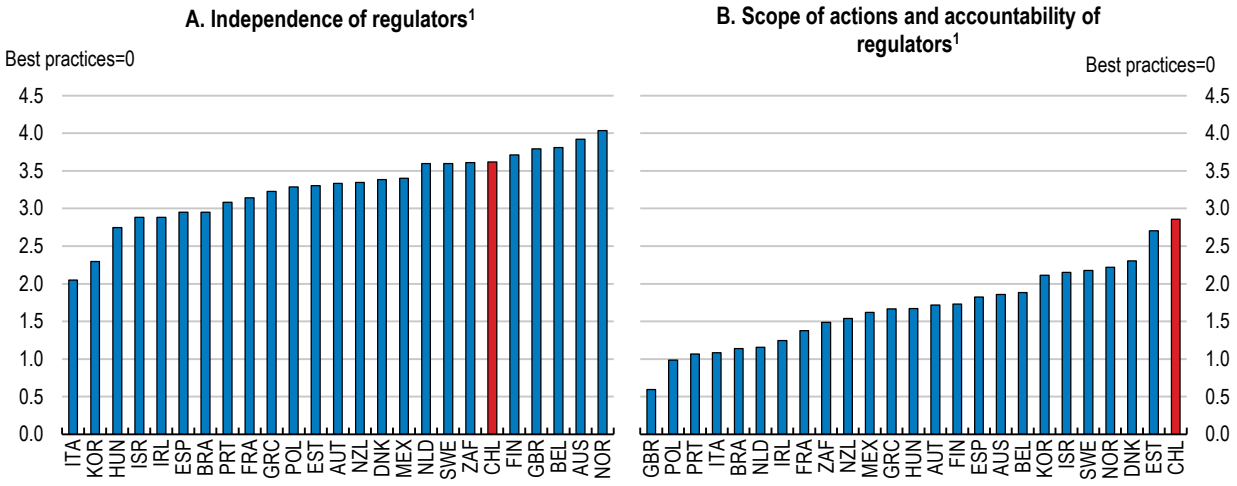
Ongoing market studies hold strong potential to raise competitiveness and exports. In particular, reforms of the notary profession could ease significantly the administrative burden for firms and households. Chilean notaries are involved in more than 200 procedures, such as starting up a firm, getting an electricity contract, 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, 2017). Efforts to raise competitive pressures should continue by targeting other key sectors of the economy, such as telecommunication and maritime services, in line with the guidelines OECD's Competition Assessment Toolkit (OECD, 2016c).

Strengthening the role of the competition authority as an advocate for competition would further improve the competition framework. The government should be required to consult the authority on draft laws and regulations, particularly those that risk engendering anticompetitive effects, for example, those designed to regulate prices or restrict competition. Moreover, the government does not have to reply to the recommendations of the competition authority, unless the authority attempts judicial action. Now that the authority is empowered to provide the government with recommendations stemming from its market studies, the government should give careful consideration to its recommendations. Deviation from the authority's recommendations should require a public explanation to enhance transparency in decision-making, and raise awareness of competition issues amongst both the private sector and general public.

The independence of some regulators and public managers is insufficient and should be further improved. The restrictive regulatory stance in some key sectors such as maritime transport services, state involvement and barriers on entry in the railway and telecommunication services weigh on integration in global value chains and investment (see below). Regulatory management practices are not in line with OECD best practices (Figure 1.16; Koske et al., 2016). In particular, there is scope to reinforce the independence of the main network regulators to lower regulatory uncertainty. The level of transparency required of politicians and magistrates is relatively high and has been strengthened, which is conducive to preventing and detecting illicit conflicts of interest

(OECD, 2010; Djankov et al., 2010). However, expanding as planned the "cooling-off periods" for senior civil servants leaving the public sector would reduce revolving-door opportunities. In addition, all regulators should have fixed-term, non-renewable mandates during which they cannot be dismissed without fault and which prevent revolving-door opportunities.

Figure 1.16. Regulatory management practices could improve, 2013



1. Average over four network sectors: airports, electricity, gas and telecommunications.
Source: OECD (2016), Regulatory Management Practice Database.

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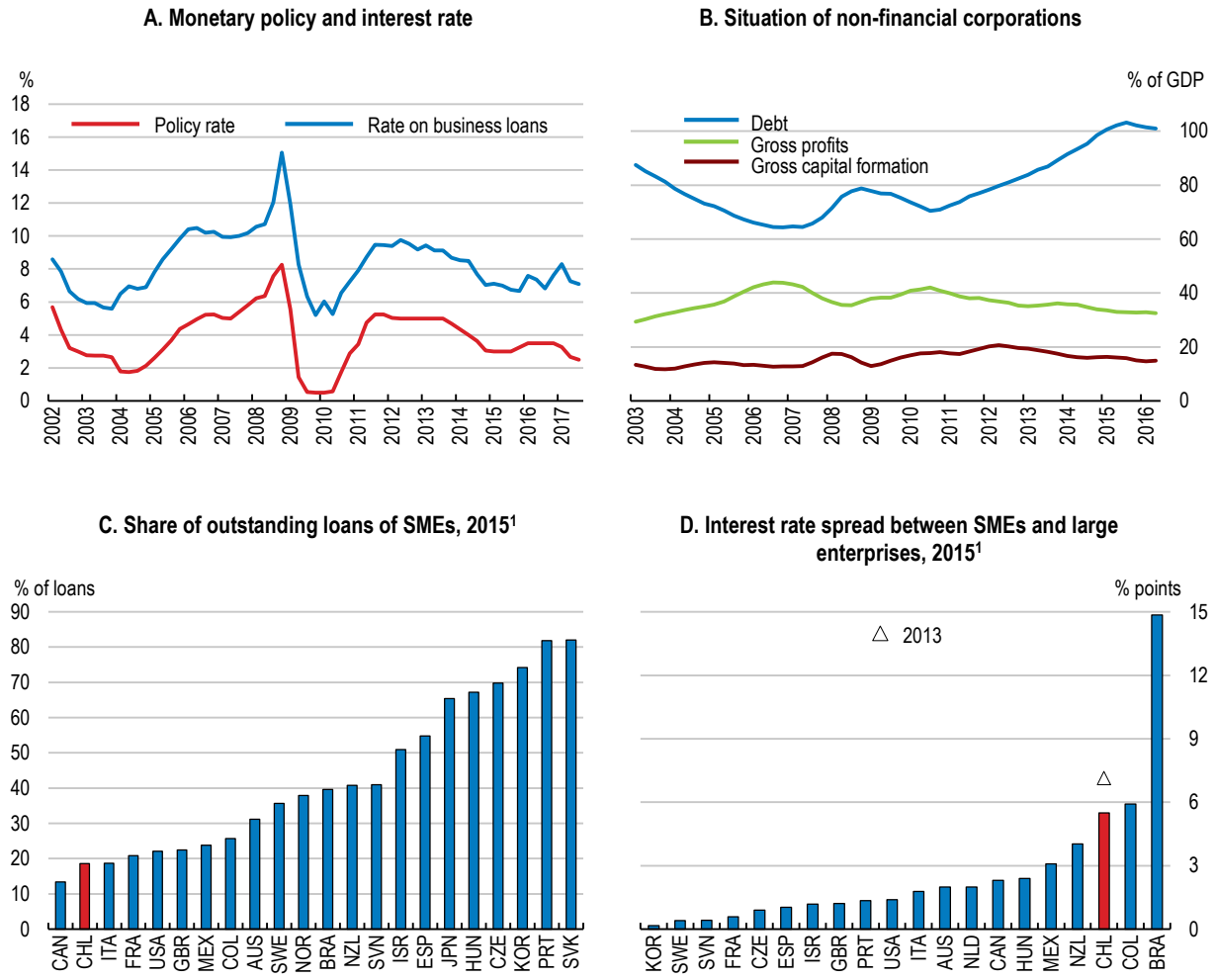
Easing access to finance for potential exporters

Financing conditions are also perceived by firms as a key barrier to their growth and internationalisation (OECD, 2016a and 2017c). The cost of credit has recently declined, mainly thanks to an expansionary monetary policy (Figure 1.17, Panel A). However, credit conditions for large firms and SMEs appear tighter than in 2010-11 according to the executives of financial institutions in charge of credit (Central Bank of Chile, 2017a) and profits have declined, while corporate debt is historically high (Panel B). Micro and small firms, notably informal ones, have constrained access to bank financing, as they lack a payment history, standardised financial statements and collateral (CFPE, 2015; OECD, 2017f; Panels C and D). This may hamper formalisation, firm growth, innovation, export upgrading, and the discovery of new markets (Álvarez and López, 2013; Bas and Ledzema, 2010). Moreover, the welcome introduction Basel III capital requirements over the next ten years could also restrict credit supply (Wehinger, 2012).

Figure 1.17. Developments in firm financing have been mixed



1. Or latest available year.

Source: Central Bank of Chile (2017), Statistical Database; OECD (2017), *Financing SMEs and Entrepreneurs 2017: An OECD Scoreboard*, OECD Publishing.

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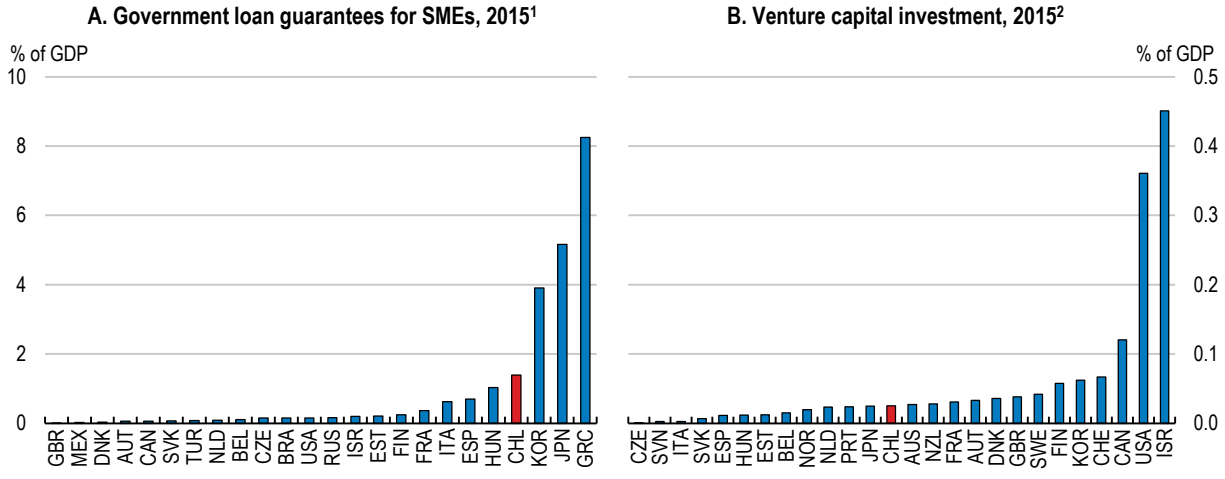
A government-owned bank, *Banco Estado*, and programmes funded by the development agency, CORFO (*Corporación de Fomento de la Producción*; Box 1.2), help financing small and micro enterprises, and innovative firms. Public guarantee for SMEs are relatively high (Figure 1.18, Panel A). Banco Estado is the largest lender to smaller companies in Chile. Through a recapitalisation of USD 450 million (0.1% of GDP) in 2015, it expanded its lending to 25 000 new clients, mostly SMEs and riskier firms. Moreover, Banco Estado manages a credit guarantee scheme (FOGAPE) for SMEs. The FOGAPE scheme provides guarantees to financial intermediaries, responsible for analysing the risk of loans, through an auction process. The guarantees are allocated to the bidding institution demanding the lowest public guarantee rights (coverage ratio) for specific loans. Cowan, Drexler, and Yañez (2015) find that Chile's FOGAPE increased lending to micro and small firms, and that the programme achieved additionality.

Moreover, FOGAPE's returns on investment have so far covered all administrative costs and claims (de la Torre, Gozzi, and Schmukler, 2017).

Figure 1.18. Public support for SME loans and development of alternative financing instruments



1. Or latest available year.
2. 2016 for Chile.
Source: OECD (2017), *Financing SMEs and Entrepreneurs 2017*, OECD publishing. CORFO (2017), *Informe Público de Capital de Riesgo Resultados Acumulados al 31 de diciembre de 2016*, Corporación de Fomento de la Producción.

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CORFO also supports credit guarantee schemes and the development of alternative forms of finance. In 2015, CORFO provided 66 038 credit guarantees worth USD 2 billion or 0.6% of GDP (OECD, 2017f). The main guarantee programme, FOGAIN, concentrates 95% of CORFO's guarantee operations and is addressed to firms that do not qualify for FOGAPE (Agosin et al., 2010). It provides guarantees to financial institutions for SMEs applying for credit, leasing, factoring or lease-back. In addition, CORFO has developed private mutual guarantee societies (SGR) that help SMEs get financing by issuing certificates of guarantee that firms can offer in turn as collateral to secure loan obligations; reducing the potential loss lenders face in case of defaults. In late 2015, loan guarantees for long-term innovative investments (*Cobertura pro-inversión*) are available through selected banking institutions.

According to qualitative interviews, 84% of the beneficiaries of CORFO's guarantees report positive effects on their company (CORFO, 2014). However, it is a source of some concern that CORFO's guarantees programs have only partly been evaluated through experimental and non-experimental evaluation methods (Griffith-Jones et al., 2015). Improving systematic evaluations of support schemes would ensure they are constantly improved based on experience. Defining ex ante the timing of the evaluation would allow efficient adjustment of the schemes and reduce incentives for firms to delay their investments. This could be done by identifying a permanent independent body to monitor innovation policies, such as the productivity commission, and by encouraging the participation of all stakeholders and promoting independent econometric evaluations.

Over the medium-term, such large government interventions run risk of favouring the survival of low–productivity firms and should be reduced by addressing directly market failures in firm financing. In 2016, the authorities announced the creation of a unique registry and new regulations to ease the use of movable assets, such as machinery and inventory, as collateral. This could lower the reliance of banks on real estate collateral and boost SMEs investment and productivity (Calomiris et al., 2016; Love et al., 2016). However, some regulations restrict access to finance. The stamp duty on credit and loan transactions, as well as issuance of fixed-income securities, increases the cost of loans for SMEs, and family-run businesses for which bank lending may be the only source of external financing (OECD, 2007). A gradual reduction in the statutory rates would lower borrowing costs and smooth the impact on fiscal revenues, given that revenues of stamp duties accounted for 0.3% of GDP in 2016 and were set to rise to around 0.4% of GDP with the implementation of the 2014 tax reform (OECD, 2015a). Improved information about SMEs would also be essential to allow banks to develop risk analysis of SMEs and improve access to credit (Diaz et al., 2014; Pacheco and Rojas-Suarez, 2017). Increasing the use of simplified standardised financial statement reports (*FECU Pyme*) could ease SMEs applications to bank loans, as well as the evaluation of firms and their projects. This would require to simplify them (CFPE, 2015) and would complement the possibility for any taxpayer to digitally transfers its official tax and financial records to financial institutions since 2015.

Further measures would help diversify the financing of SMEs and innovative firms at a time when bank financing could be scaled down (OECD, 2015d). Chile displays a high level of financial development according to internal investors (WEF, 2017) and the level of development of venture capital has increased rapidly thanks to CORFO initiatives that developed the start-up scene, such as Start-up Chile (Figure 1.18, Panel B; OECD, 2016d). However, funding through capital markets remains largely closed to SMEs. The cost of issuing domestic debt in Chile is high due, in part, to the stamp tax levied on financial transactions, which limit small debt issuance (Didier and Schmukler, 2013). Private equity is still limited, while non-traditional asset-backed finance, such as factoring and leasing remain marginal for smaller firms (ABIF, 2017). For larger firms, improving the transparency of corporate governance would help develop further capital markets and financing for long-term investment (IMF, 2016). For smaller firms, the Inter-American Development Bank Credit provided CORFO in 2016 with line of credit for USD 120 million (0.04% of GDP) available for non-bank financial institutions such as credit unions, leasing, factoring, and microfinancing companies can help access to finance. The authorities also plan to facilitate the use of paper and electronic invoices as payment titles to develop factoring. These measures are set to significantly increase the supply of finance.

Box 1.2. The development agency, CORFO

CORFO started promoting venture capital funds and incubators in the late 1990s. Between 2012 and 2014, CORFO supported 240 start-up ventures per year through different programmes and channeled USD 12.5 million through incubators, accelerators and pre-seed financing (World Bank, 2017). CORFO also runs a network of incubators, angel investors and coworking spaces, among others. This has generated some success with an estimated 1 200 start-ups incubated through CORFO programmes in high-technology industries such as financial technology, mining technology, bio- and agro-technology and information technology services. In particular, Start-up Chile had a positive impact on raising capital. However, the program did not have a statistically meaningful impact for the projects in term of generating profits, exports, or employment (Verde, 2016).

CORFO has recently determined three areas of intervention: productive diversification, support to innovation and entrepreneurship, and foreign and national investment promotion. In 2014, CORFO launched smart specialisation programmes to stimulate public-private partnerships, identify competitive advantages and raise technological innovation, while building social capital. The resulting Transforma agenda defines eight priority industries: mining, agro-food, construction, health services, tourism, creative industry, fishing and aquaculture, and global services, as well as five horizontal priorities: logistics, solar energy, water supply, smart industries and advanced manufacturing. However, it has a relatively limited budget (around 0.1% of 2015 GDP over 2014-18).

In 2015 CORFO had assets worth around 2.6% of GDP. The total stock of debt granted by CORFO to private companies represented only 0.5% of the total domestic credit to the private sector. This makes CORFO significantly smaller in scale, compared to the size of the Chilean economy, and to total domestic credit to the private sector, than development banks in other countries, such as KfW in Germany and BNDES in Spain (Griffith-Jones et al., 2015).

Source: Griffith-Jones, S., M. Luz Martínez Sola and J. Petersen (2015), The role of CORFO in Chile's Development: Achievements and Challenges, http://policydialogue.org/files/events/Future_of_National_Development_Banks_-_Chile.pdf ; Verde (2016), *Evaluación del Programa Start-Up Chile de CORFO*, http://www.economia.gob.cl/wp-content/uploads/2016/08/Resumen-Ejecutivo-Start-Up-Chile-Abril-2016.pdf ; World Bank (2017), "The Republic of Chile, Systematic country diagnostic (P157088) – Transitioning to a prosperous society", *Document of the World Bank*, No. 107903-CL, The World Bank.

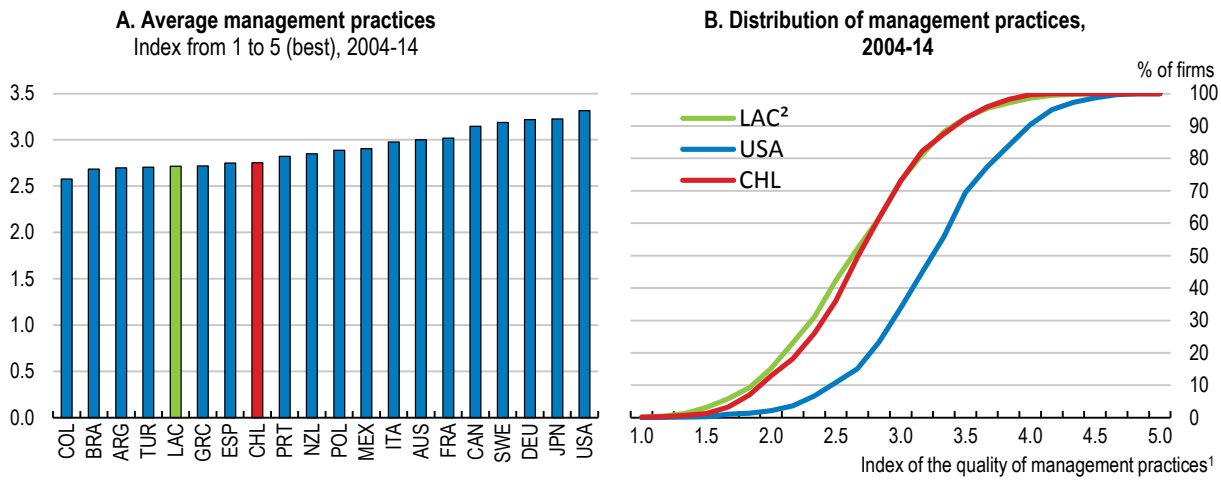
Increasing innovation and skills

Good management is often necessary to adopt new technologies, gain export market shares and manage organisational change (Bloom et al., 2017b). Chile has a larger share of poorly managed firms than the United States, close to other Latin American countries (Figure 1.19). Adopting US management practices could boost firm productivity (MFP) by more than 8% (Syverson, 2014).

CORFO and SERCOTEC coordinate programmes and services to support entrepreneurs. The government's Technical Cooperation Service (SERCOTEC) provides support and training for small and micro businesses and encourages networking, by making special provisions for cooperative ventures in its financing programs. In addition, a network of small business development centres (*Centros de Desarrollo de Negocios*) has gradually

been rolled out across the country to act as support points for SMEs since 2015. This created more than 50 centres offering assistance and networking opportunities with the involvement of business associations, universities and training centres. New programs, such as *Almacenes de Chile*, also seek to strengthen micro enterprises' capabilities through personal advice and mentoring and training courses. *Barrios Comerciales* uses similar approaches to promote cooperation, management skills and revitalisation within urban commercial districts. This is welcome as earlier programmes, such as CORFO's mentoring programme had positive effects on start-up performance. *Yo emprendo semilla* that provided training, support and financing for the business plan of micro-entrepreneurs, had significant positive effects, beyond financing (Gonzalez-Uribe and Leatherbee, 2017; Martínez et al., 2017). Broadening these experiences, by sponsoring international business trips for entrepreneurs and SMEs could further diffuse the adoption of best management practices, help build knowledge networks, and raise awareness of potential of participation in GVCs. At the firm level investments in collaboration capital, in particular hiring foreign consultants, as well as participation in international wine fairs, have been strongly correlated with export growth in the wine industry (Dutz et al., 2014).

Figure 1.19. Management practices are unequal in the manufacturing sector



1. Index from 1 to 5 (best management practices).
2. LAC is the unweighted average of Argentina, Brazil, Colombia and Mexico.
Source: World Management Survey Database and OECD calculations.

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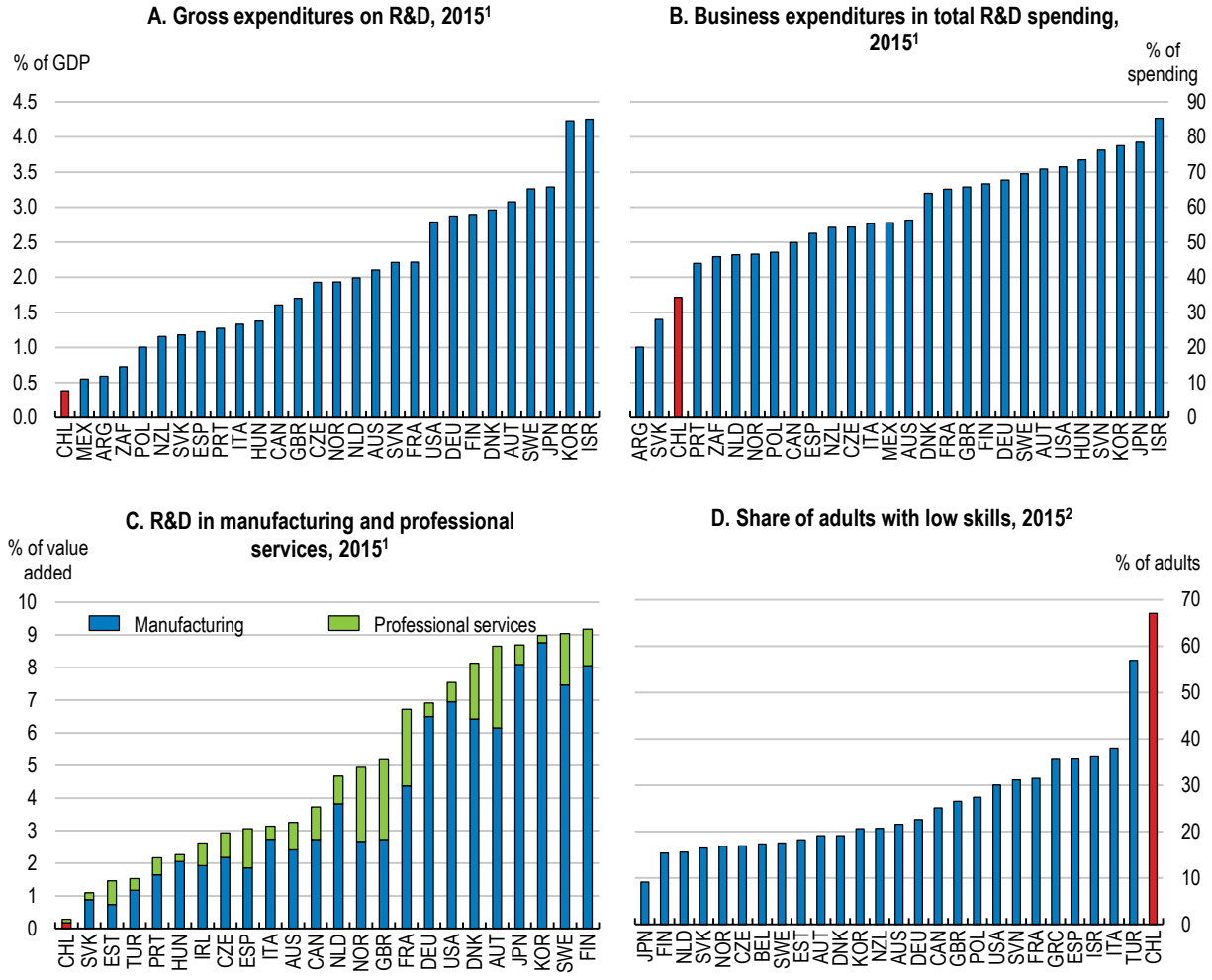
Strengthening innovation policies would raise productivity and expand export prospects. Spending on research and innovation is one of the lowest of the OECD, and the gap is especially pronounced for business R&D (Figure 1.20, Panels A and B). R&D spending is low in manufacturing and professional services (Panel C). According to firm survey data, SMEs introducing innovation in products, processes, organizational or marketing during 2013-14 remain rare (MEFT, 2016a). The quality of scientific publications, science-industry collaborations and per capita patenting activity, though improving, are also well below most OECD countries (Pinto et al., 2017), while cooperation between firms and universities is low (OECD, 2016e). The low level of skills of a large share of the working-age population is a key impediment to R&D and innovation (Panel D) and strengthening the relatively poor skills of the Chilean workforce will be crucial to get

them into good jobs and to boost productivity and exports (Chapter 2). Indeed, Alvarez et al. (2012; 2016) find evidence that the marginal return to R&D may be substantial in Chile in the manufacturing and services sector.

Figure 1.20. R&D spending and skills are low



1. Or latest available year.
2. 2015 for Chile, Greece, Israel, New Zealand, Slovenia and Turkey, 2012 for other countries. Low-performing adults are defined as those who score at or below Level 1 in either literacy or numeracy. The OECD aggregate refers to the unweighted average of the 28 OECD countries that participated in the OECD Programme for the International Assessment of Adult Competencies (PIAAC). Data for Belgium refers to Flanders. Data for the United Kingdom refer to England.
Source: OECD (2017), Research and Development Statistics and National Accounts databases. OECD (2016), Skills Matter: Further Results from the Survey of Adult Skills.

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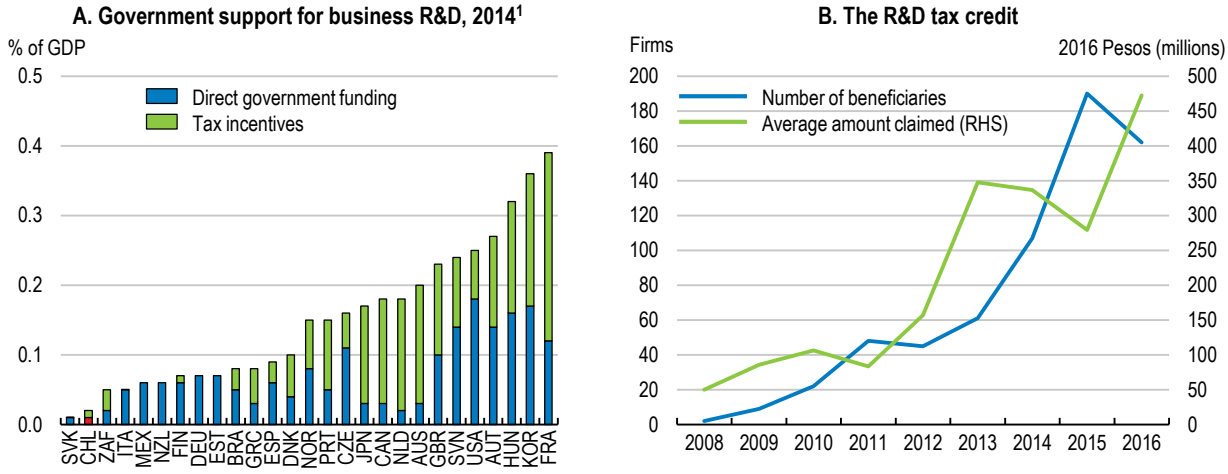
Acknowledging that innovation is a key pillar for the new economic model, the authorities have put forward an ambitious innovation plan in 2014-18 (Box 1.1; MEFT, 2015). New governance structures and funding mechanisms for innovation have been put in place with the creation of a National Innovation Council for Competitiveness and an Inter-ministerial Committee for innovation. The National Innovation Council is entrusted

with the mission of proposing guidelines for a long-term national innovation strategy. Strengthening of the inter-ministerial committee on innovation with an explicit legal framework, and the national council of innovation (CNID), which helps set longer-term strategy, seems warranted. A draft law would also create a new ministry of Science and Technology and could be a positive step to integrate science and innovation policies.

The scale and take up of innovation programmes have remained limited (Figure 1.21, Panel A). The reform of the 2008 R&D tax credit in 2012 broadened the scope of eligible R&D investments to internal expenditures, increased the annual tax ceiling, simplified administrative requirements and eased domestic and international collaborations. This significantly raised the eligibility and the take-up of the programme, notably for large firms (Panel B; Intelis, 2017). The R&D tax credit is generous for smaller firms and it can be carried forward indefinitely (OECD, 2017j). However, further progress is possible, as its take up remain low. Refundability could be beneficial for young, innovative firms. At the same time, adding incremental incentives for larger firms based on their past R&D spending could improve effectiveness (Appelt et al., 2016). Additional training for firms and the compilation of a common list of qualified costs would also reduce uncertainty about eligible costs, as 19% of tax-credit applications were still rejected in 2014-15. Moreover, developing public information about public research centres would encourage collaboration with firms, notably SMEs, and ease applications to the programme (Intelis, 2017).

Figure 1.21. Public support for innovation has increased



1. Or latest available year.
Source: OECD (2017), R&D Tax Incentive Indicators. Intelis (2017), *Informe Final Evaluación Ley I+D*, Universidad de Chile. CORFO (2016), *Informe de Gestión 2016*, Corporación del Fomento de la Producción.

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Higher innovation grants could play a significant role to develop business innovation and raise exports for smaller firms, as they remain limited. CORFO is the main actor in the business sector providing seed capital, accelerator programmes and venture capital (OECD, 2016c), but its budget is relatively small (Box 1.2). In 2014, it introduced innovation vouchers to support public-private research partnerships and the commercialisation of public research that remained weak (MEFT, 2015). The Chilean

government introduced a Smart Specialisation Strategy with the aim of developing public-private collaboration in strategic economic areas. Since 2015, a public fund (*Fondo de Inversiones Estratégicas*, Box 1.1) also finances initiatives aimed at improving productivity and diversifying the economy in six sectors defined by the Government: healthy food, solar energy, smart innovations in industry, as well as sustainability and innovation in construction, mining and aquaculture. Its public resources reached USD 104 342 million over 2015-18 (0.06% of 2016 GDP), leveraged by private funds.

Another challenge is to move from a list of targeted technologies to a learning process allowing diffusion, and to develop exit procedures for activities that do not have the anticipated potential. Beefing up programme evaluation would help. Evaluations of other innovation programmes have not been systematic and with few exceptions they have been qualitative in nature rather than attempting to quantify the economic effects of public support. Improving monitoring mechanisms by collecting outcome indicators and diffusing them to independent researchers as well as building in pre-determined evaluation mechanisms in some programmes to identify good practices would be a prerequisite. Integrating the different support programmes for applied innovation and exports through local one-stop shops and a unique national website would strengthen the coherence of business support measures and ease firm access and monitoring.

Increase coordination across governmental agencies in charge of innovation and business support would raise competitiveness and ease policy evaluation. Current programmes focus in solving a large number of alleged market failures, but assigned very few resources, and are therefore costly to access for firms and to manage. Streamlining the multiplicity of programmes managed by Corfo, Prochile, Sercotec, Conicyt and local governments would help the coordination of the different policy objectives and their evaluation by coordinating institutions such as the innovation council and the inter-ministerial committees for innovation and exports, as the current governance framework tends to consider issues of exports and innovation separately. In a first step, creating a unique repository of all programmes, funds and competitions that exist in multiple public entities would reduce the administrative costs for SMEs that may contribute to unequal access because of different practices of the plethora of agencies and local governments in charge of the support systems (OECD, 2016a). For example, Spain integrated and unified all existing one-stop shop networks into one network for entrepreneurs in 2015 to ease their administrative procedures and other OECD countries, as Germany, promote export activities of SMEs in technology-oriented export initiatives.

Further improving the insolvency framework to ease labour and capital re-allocation

Improving the insolvency framework could help restructure companies that suffer from external-market shifts and international competition but are still viable. Also faster liquidation procedures could reduce loss of capital in companies that may need liquidation. This could prove valuable in the case of a prolonged slowdown, as the average profitability of firms has declined since 2011, while corporate debt has increased rapidly (Central Bank of Chile, 2017b). The 2014 reform of the corporate insolvency regime eased restructuring and liquidation procedures for firms (Figure 1.22). It assigned insolvency cases to special courts rather than civil judges, broadened the regional dimension of insolvency proceedings, eased the rapid discharge of debtors and aimed at limiting the burden of non-litigious cases on judges by introducing non-judicial simplified reorganisation procedures. The main characteristics of Chile's insolvency framework, such as the time to discharge, creditors' ability to initiate restructuring, the presence of

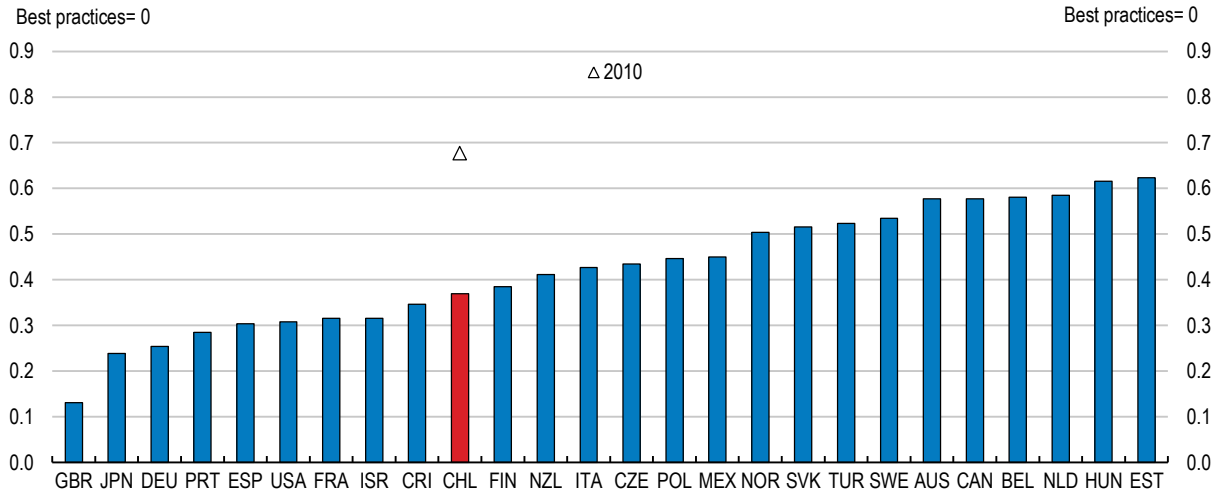
pre-insolvency regimes, the possibility and priority of new financing or the possibility to 'cram-down' on dissenting creditors, are now in the OECD average (Adalet McGowan, et al., 2017).

However, the average recovery rate remains low and the time needed to deal with insolvency cases remains long. Since 2014, formal firm restructuring and liquidation procedures have increased significantly, but only 4% of the cases, mostly large firms, concerned business restructuring over the last nine months (Superir, 2017). Faster and more efficient insolvency and restructuring procedures are likely to contribute to higher private investment and exports. They would facilitate the reallocation of capital and other resources to more productive companies (Andrews and Saia, 2017).

Facilitating the exit of non-viable firms would require developing early warning systems, such as self-assessments, call centres and training courses, and giving the possibility for creditors to initiate restructuring would be a positive step. Creditors are not given the right to request information from the insolvency representative and may file for insolvency of the debtor, but for liquidation only. For example, in Portugal, firms can perform a self-assessment of their economic and financial situation (*Autodiagnóstico financiero*) using a digital platform since 2015. Such measures could reduce bankruptcy procedures for SMEs, as they tend to possess limited financial buffers and face high risks of being exposed to customers' or suppliers' insolvencies. In addition, developing further training programs for failed entrepreneurs could help them to launch more quickly new and improved projects (McKenzie and Woodruff, 2014). For example, a number of European countries, notably Belgium, France and Germany, have developed guidelines and second chance coaching and education, to actively promote business re-entry and support entrepreneurs in their new ventures. This could allow developing a new culture of preventive restructurings and limit the stigma associated with failed entrepreneurs (GEM, 2015).

Figure 1.22. Bankruptcy procedures remain long

OECD indicator of insolvency regime, 2016



Note: Index scale from 0 (most efficient) to 1 (least efficient).
Source: M. Adalet McGowan, D. Andrews and V. Millot (2017), "Insolvency Regimes, Zombie Firms and Capital Reallocation", *OECD Economics Department Working Paper*, No. 1399, OECD Publishing.

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Box 1.3. Depth and characteristics of Chile's preferential trade agreements

The depth index of preferential trade agreements (PTAs) is based on the Design of Trade Agreements (DESTA) database and combines seven dimensions potentially included in PTAs to liberalise trade between the parties (Dür et al., 2014). The first sub-index focuses on tariffs and is equal to 1 if all tariffs (with limited exceptions) are to be reduced to zero. The remaining six sub-indices capture areas other than tariffs that contribute to trade liberalisation between the parties: service trade, investment, standards, intellectual property rights, public procurement and competition. The respective sub-indices take the value of 1 if a substantive provision for the respective dimension is contained in the agreement and 0 otherwise. The depth-index of PTAs is obtained as the sum over these seven dimensions and ranges accordingly from 0 to 7 for each country pair.

According to the DESTA database, Chile has negotiated 35 PTAs, including specific protocols and extensions to additional countries, up to 2016. Most of these agreements include more than three dimensions, notably provisions for a free trade zone, product standards, trade of services and bilateral investments, according to DESTA definitions. As a result, the average depth of PTAs is higher for Chile than for most other developing countries (Figure 1.23).

Source: DELSTA (2017), The Design of Trade Agreements (DESTA), March 2017; Dür, A., Baccini, L. and M. Elsig (2014), "The design of international trade agreements: Introducing a new dataset", *The Review of International Organizations*, Vol. 9, No. 3, pp. 353-375.

At the same time, developing arbitration and limiting courts' involvement in the different stages of both liquidation and restructuring procedures could reduce the courts' burden and speed up procedures. This would also reduce bankruptcy costs for creditors and avoid unduly prolonging the exit of weak firms. Court involvement, directly or through court-appointed practitioners, is important in guaranteeing the rights of different parties involved. However, court involvement can come at a cost – particularly for smaller firms that lack scale to cover the associated fixed costs (Bergthaler et al., 2015) – so it is essential to: i) limit court involvement to only those cases where it is absolutely necessary; ii) improve the expertise of the courts to deal with complex insolvency cases where their intervention is required; and iii) effectively design the compensation schemes for insolvency practitioners (Adalet McGowan, et al., 2016).

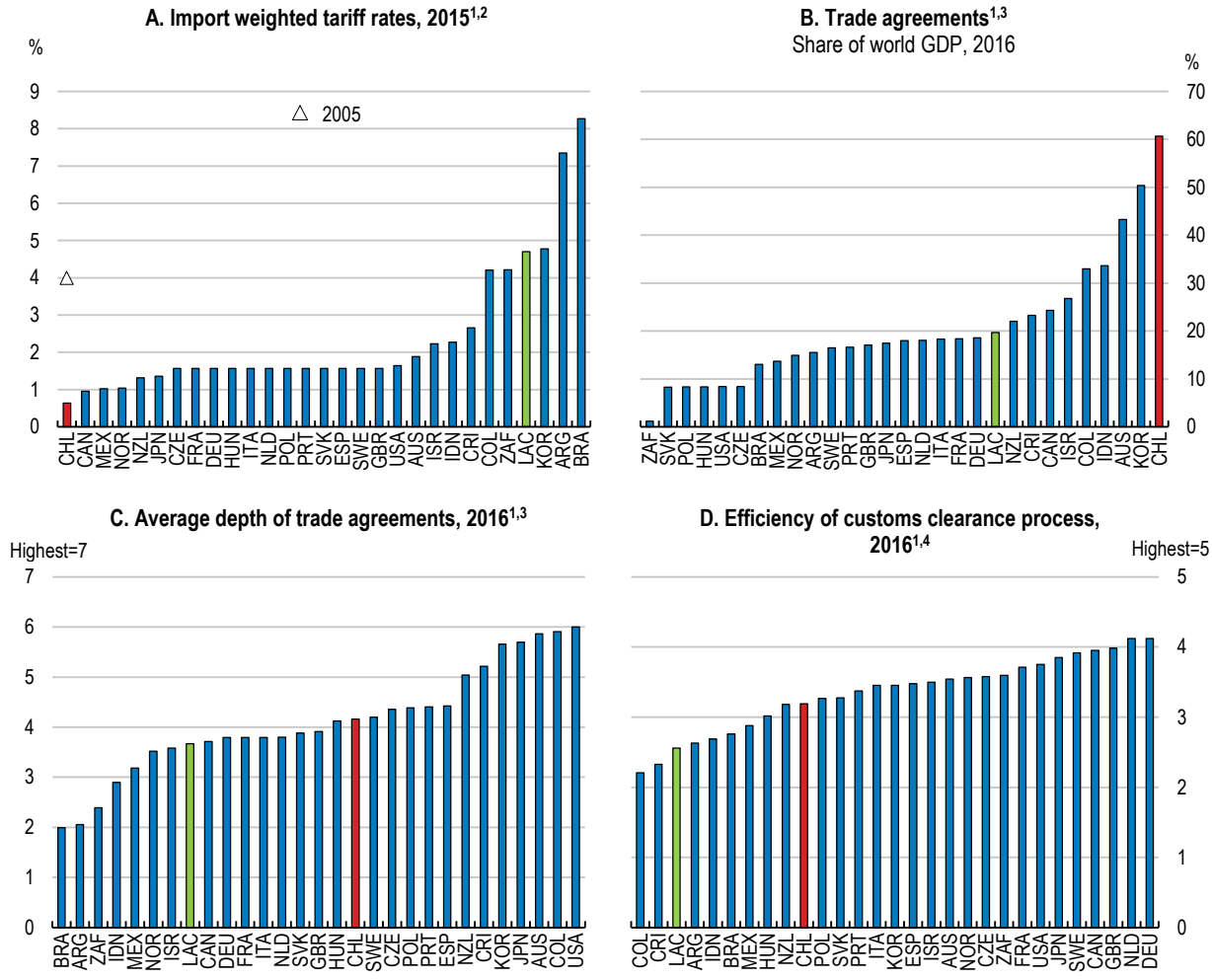
Easing international trade procedures and lowering input costs for exporters

Trade facilitation has improved

Chile's trade policies are supportive of export performance and productivity growth. Import tariffs are generally low (Figure 1.23, Panel A). In addition, Chile has 24 bilateral or regional preferential trade agreements (PTAs) with 63 partners and a high average depth (Panels B and C, Box 1.3). These agreements covered around 94% of Chilean exports in 2015 (OECD, 2015d). This wide-ranging network of preferential trade agreements led to low tariffs and higher trade, GDP per capita and employment (Schmidt-Hebbel, 2017). The Trans-Pacific Partnership could lead to further gains (Petri and Plummer, 2016). Chile signed in 2016 the Trans-Pacific Partnership (TPP) agreement with eleven other countries to promote more inclusive and sustainable economic growth

and lower trade barriers such as tariffs, and establish an investor-state dispute settlement mechanism.

Figure 1.23. Tariffs are low but further improvements are possible



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. Or latest available year. Weighted tariffs are the averages of effectively applied rates weighted by the product import shares corresponding to each partner country.
3. As measured by Dür et al. (2014), see Box 3. Trade agreements are weighted by partner countries' GDP in PPP US dollars. In Panel B, the computations exclude the domestic country GDP.
4. Efficiency of the clearance process of border control agencies, including customs, as perceived by private operators.
Source: World Bank (2017), World development indicators and Logistic Performance Index Survey; OECD calculations based on DELSTA (2017), The Design of Trade Agreements (DESTA), March 2017.

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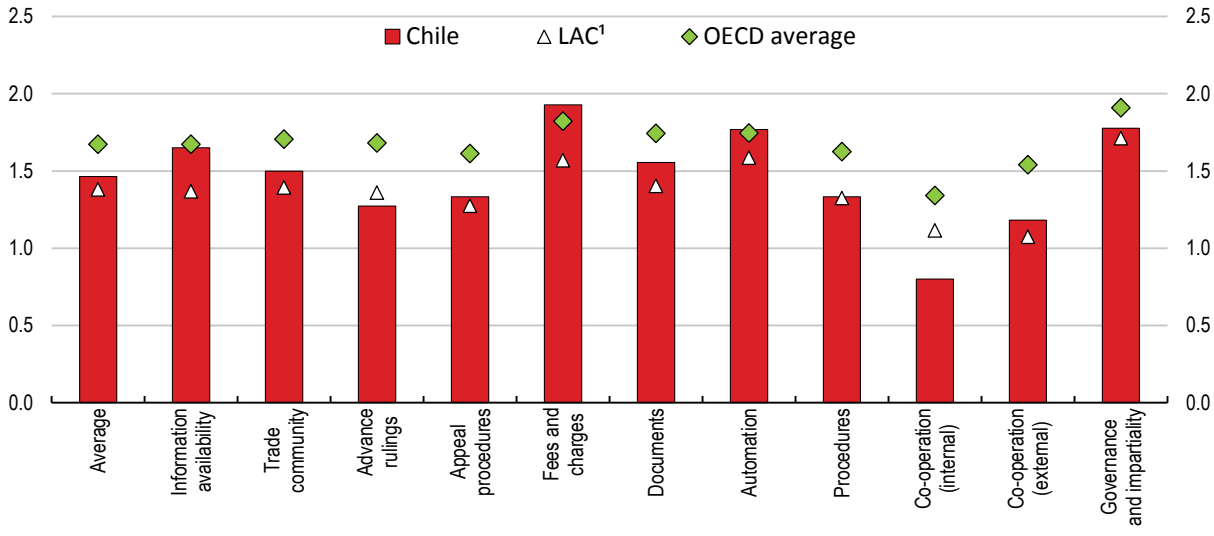
However, border and custom procedures could be improved according to the perceptions of private operators (Figure 1.23, Panel D). Continuing to modernise and simplify customs procedures is fundamental, as OECD cross-country evidence show it improves the capacity to export and import high-quality inputs (Moïse and Sorescu, 2013). Reducing the costs required to import abroad has been associated with an increased number of exporting firms and higher export intensity (Lopez and McQueeney,

2017).Chile performs well in terms of the OECD trade facilitation indicators compared to other Latin American countries (Figure 1.24). However, compared to the OECD average, there is room for improvement in specific areas such as of advance rulings and border agency co-operation. The authorities have developed a voluntary single window operator (SICEX) since 2010 and launched its export and import module in 2012 and 2017, respectively. A 2017 reform also gave new powers to national customs services, improved auditing procedures and strengthened penalties for counterfeit goods, and tax facilities for exporting SMEs. Moreover, the government reformed the tax and customs justice to streamline tax and custom judicial procedures, by creating a conciliation process. In particular, a new welcome authorised economic operator scheme (AEO), will initially be available to customs brokers and exporters. Authorised firms will benefit from simplified customs procedures. This scheme could significantly reduce physical and documentary controls and shorten goods release time, and it should be extended to importers.

Figure 1.24. There is scope to raise trade facilitation in some areas, 2017

Index scale from 0 to 2 (best performance)



Note: LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
Source: OECD (2017), Trade Facilitation Indicators.

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Despite these significant improvements, SICEX covered only 5% of exports transactions and around 32% custom agents for goods and services in May 2017 (SICEX, 2017). The authorities expect its coverage to reach 50% of exports at the end of 2017. The progressive development of interoperability of Single Window schemes within the Pacific Alliance Agreement (Chile, Colombia, Mexico and Peru) and the recent reforms, notably the AEOs, should help. Beyond these measures, completing the various modules and functionalities of SICEX to reduce further the times of the export and import cycle should be a priority, notably its integration with logistics portals. The creation in May 2017 of a foreign trade facilitation unit in the Ministry of Finance could increase the use of SICEX and export of services and its integration with other governmental online procedures. The unit will coordinate public and private initiatives for business and export facilitation.

Additional reforms of border procedures and services would contribute to boost export performance by providing wider market access and facilitate integration into GVCs. Importers are still required to use the services of a Chilean customs agent for inward clearance of goods and foreign ownership ceilings at 49% of equity shares also apply to custom brokerage services (WTO, 2015; OECD, 2016e). This could be liberalised further to foreign providers. In addition, improving infrastructure and logistics would play a key role (see below).

Deepening regional integration

Chile's trade intensity is highly dependent on international trade liberalisation (Haugh et al., 2016). Simplification and regulatory convergence would help reduce non-tariff barriers for Chile and other Latin American countries. Chile and other members of the Pacific Alliance tend to have "deep" trade agreements with the world's largest economies (Figure 1.23). At the international level, within Latin America, this wide-ranging network of trade agreements might give cause for concern: regional trade integration appears lagging (Figure 1.9), while the export structure of certain countries in the region matches the import demand composition of other countries (IMF, 2017).

Preferential trade agreements have added complex rules of origin (Cadestin et al., 2016; Bown et al., 2017). Together with the wide diversity of quality and safety standards and regulations, this can be a major barrier to trade, notably for smaller firms, multi-product and multi-destination exporters, as compliance needs to be coordinated at each stage of production and for each market ultimately supplied (Cadestin et al., 2016). Simplification of and more cooperation on regulations such as rules of origin technical barriers to trade and sanitary measures and public procurement competition across the complex web of regional preferential trade agreements would help. Such measures of regulatory harmonisation have been associated with significant increase in trade and FDI across OECD countries (Nordås, 2016; Fournier, 2015). While further regional integration in the short run is most likely with a selected group of countries, such as in the Pacific Alliance, a region-wide integration in the long run should try to integrate as many partners as possible (Cadestin et al., 2016).

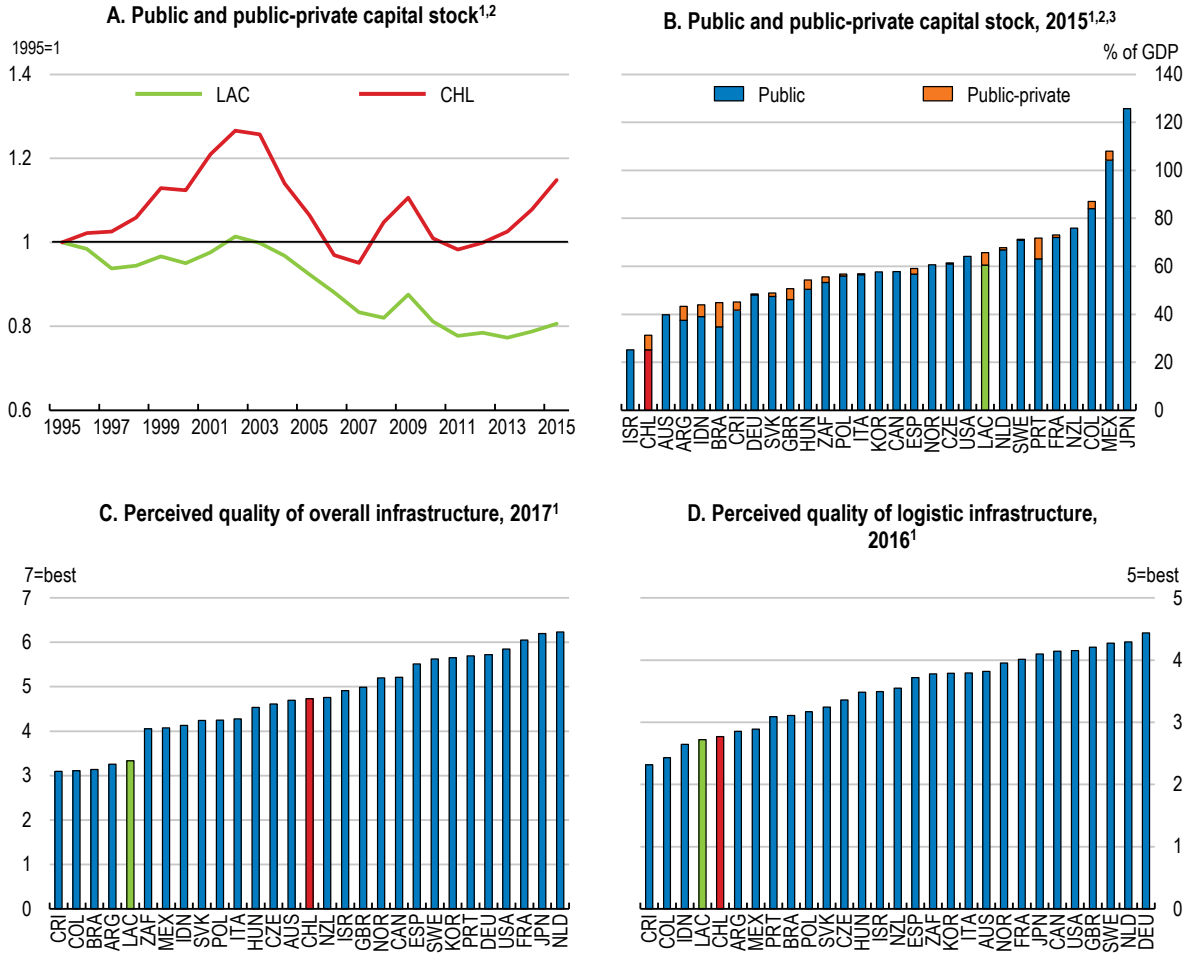
Engaging in further mutual recognition agreements would also facilitate trade. According to OECD's Product Market Indicators, there is room to pursue such agreements in areas such as construction, distribution, banking, insurance or hotels and administration. Such agreements would be particularly useful to foreign professional service providers if they not only recognise foreign qualifications (degrees, certificates, practice) but also if licenses and registrations are covered by these agreements. Indeed, Chile doesn't have an established procedure to recognise foreign qualifications prior to arrival, which increases uncertainty for foreign professional services providers. This would also ease immigrant integration (OECD, 2017k). Likewise, requiring regulators to use internationally harmonised standards and certification procedures would be beneficial. Manufacturing, construction and professional services such as legal, engineering or architecture, are areas where harmonisation is currently lacking. This would also help boost intra-regional FDI investments.

Improving infrastructure and network services

Chile's infrastructure has improved considerably over past decades. Concession-based public-private partnerships have helped attract large private investment in the upgrades of motorways, ports and airports: total road infrastructure spending averaged 1.35% of GDP

over 2008-2013 above the OECD average, and container port capacity doubled between 2004 and 2013 (OECD, 2017d). Public transport in Chilean cities has also improved. The public and public-private capital stock has increased in relation to GDP over the last decade (Figure 1.25, Panels A and B). The fiscal framework monitors annually contingent liabilities stemming from public-private programmes (OECD, 2017d). The quality of infrastructure is perceived as higher than in other Latin American countries (Panel C). However, recent OECD evidence points towards some infrastructure gaps (OECD, 2017d). Some bottlenecks remain in logistic infrastructure, which partly reflects the lack of interoperability of ports with railways, and missing road connections and intermodal terminals for combined transport (Panel D). Chile's geography also impose higher spending: mountainous terrain makes building new infrastructure and maintaining existing ones expensive.

Figure 1.25. Some infrastructure gaps remain



1. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. The measure of the capital stock as a share of GDP (IMF, 2017) depends on assumptions on the rate of depreciation of capital and on the level of disaggregation at which the calculation is made. These estimates can thus differ from national sources.
3. Data on the public-private capital stock are missing for Australia, Canada, Israel, Japan, Korea, New Zealand, Norway and the United States.
Source: IMF (2017), Investment and Capital Stock dataset; World Bank (2017), Logistics Performance Index; World Economic Forum (2017), The Global Competitiveness Report 2017-2018.

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Better transport connections, in line with improved land and urban planning, could increase gains from agglomeration economies and local knowledge flows across more distant neighbours boosting productivity growth and exports. First, this would boost the productivity of private inputs because of complementarities with labour and the private capital stock. For example, developing transport infrastructure could raise business investment and competitiveness in remote regions by reducing the costs to move goods, and encourage workers upskilling. Second, improving infrastructure would facilitate both internal and external trade, and ease labour reallocation. Third, the higher productivity of the private capital stock would continue to boost private investment.

To raise export performance and global value chain integration, new infrastructure developments should take into account connection with neighbours and domestic hinterland linkages (Cadestin et al., 2016). Chile's 90 ports handle approximately 96% of goods exports (CAMPORT, 2017) with domestic supply chains relying heavily on road transport. Internal transport costs constitute an obstacle for exporters of products other than copper (OECD/ITF, 2016a). Some ports in the north of Chile specialise in exports of mining products: a significant proportion of non-mining exports from these regions is first transported to the middle of the country (Mesquita Moreira et al., 2013). Similarly imports destined to northern regions tend to transit in central ports and then be distributed by long truck journeys to the north.

Major investment in rail and road, as well as the development of interconnections with sea freight ports appears needed to avoid road congestion and reduce environmental damages. Many of Chile's ports lack connections to the country's high-quality motorway network (Figure 1.26, Panel A). Truck movements directly affect urban traffic as ports are located in cities, in close proximity to the city centres, where trucks are travelling through narrow urban streets (OECD, 2017d). A new major port on the central coast of Chile will serve growing demand for container traffic in Central Chile. However, it is also important to develop hinterland transport infrastructure. This could involve developing freight rail services, as the new port is likely to generate sufficient traffic to justify investment in a dedicated rail freight connection to logistics centres inland. Co-ordination of land-use and transport planning will be essential to ensure the long-term success of such an investment. The recent Red Logística de Gran Escala joint initiative between the Ministry of Public Works and the Ministry of Transport and Telecommunications with the State Railway Company, will focus on developing logistics centres and the rail link to San Antonio port. However, many other ports lack well-designed railway connections.

The regulations of ports and inland transport should be reviewed. The largest ports are publicly owned, and the public sector's role is to manage and develop ports and terminals, either directly or through concessions to private terminal operators. However, infrastructure investment in areas that currently lie outside port authorities' jurisdiction is needed to promote the integration of port systems in multi-modal transportation networks and to improve market access and the fluidity of trade (OECD/ITF, 2016a). In 2017, in line with OECD recommendations (OECD/ITF, 2016b) the authorities launched a logistics observatory (Observatorio Logístico) with a team at the Undersecretariat of Transport to integrate and synthetise information about logistics and facilitate access to data and public information.

Figure 1.26. Port interconnections and maritime transport are perfectible

1. Container port traffic in twenty-foot equivalent units (TEU) providing a standardised measure of containers of various capacities, and goods transported by rail (tonnes-kilometres).
2. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
3. The Liner shipping connectivity index captures how well countries are connected to global shipping networks. It is computed by the United Nations Conference on Trade and Development (UNCTAD) based on five components of the maritime transport sector: number of ships, their container-carrying capacity, maximum vessel size, number of services, and number of companies that deploy container ships in a country's ports.
Source: World Bank (2017), World Development Indicators; UNCTAD (2017), Liner Shipping Connectivity Index.

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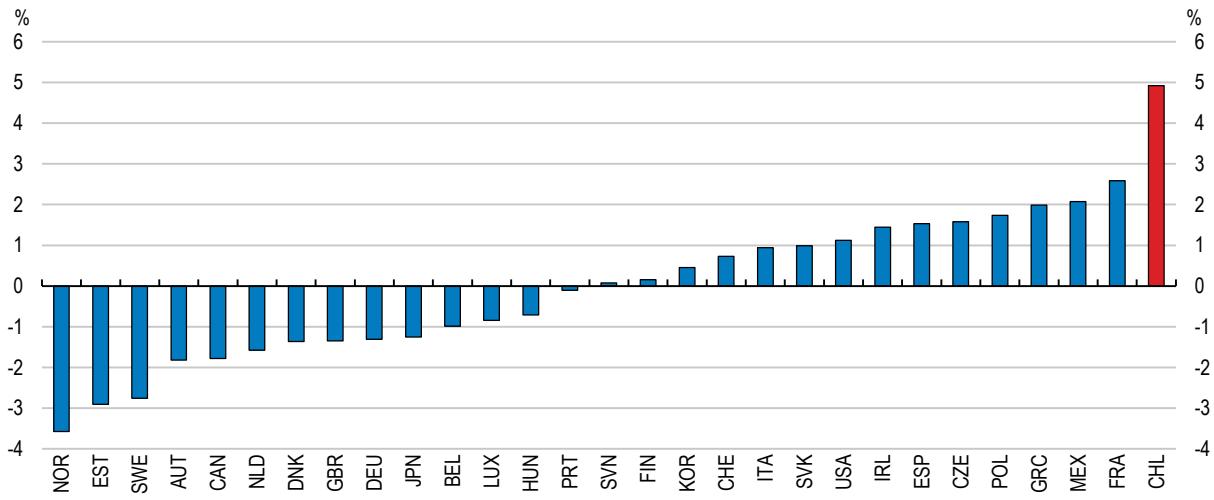
However, a more ambitious reform could review the supervision of the whole transports sector and develop a unified logistic and transport strategy (OECD, 2017d). In France, the 2015 "growth, activity and equal economic opportunity" law established an intermodal regulator that covers both the rail sector and road passenger transport (OECD, 2015e). Such measure could help create a level playing field for all transport modes. Indeed, developing the railway sector would also require removing barriers in access to infrastructure and to create an efficient and independent regulator, as the lack of clear accounting separation and widespread public ownership may hamper investment (Égert, 2009). In addition, as large remaining infrastructure needs remain across different sectors, progressively incorporating a systematic approach towards selecting the appropriate delivery modality for each projects and expanding the public-affordability assessments that have been developed for certain projects such as road concessions would also be good moves (OECD, 2017d).

The restrictive regulatory stance towards maritime freight transport services should be eased to develop maritime freight and coastal shipping within Chile – cabotage - (Figure 1.26, Panel B). Chile maintains a foreign equity limit of 49%, along with nationality requirement for board members, for establishing a shipping company being able to register vessels under the local flag. Domestic vessels are partly shielded from competition in coastal shipping. For cargo that weights more than 900 tons, foreign participation in the cabotage market is restricted to Chilean-flag vessels and to strict case-by-case authorisations (OECD/ITF, 2016a). Liberalising the cabotage market would allow shifting some freight from trucks to more environmentally sustainable transport.

Policies governing land use could also be improved (Figure 1.27). The current land use planning approach has a number of weaknesses, including the long time it takes to develop or amend a land-use plan and a lack of integration with regional and local development strategies. This has resulted in a potential lack of coherence between spatial plans, long-term development strategies and regional infrastructure plans (OECD, 2013a and 2013b) and urban sprawl. Urban investment at the national level is highly fragmented, putting at stake the metropolitan administration, notably in transport. Chile had no general urban development policy between until 2014 (*Política Nacional de Desarrollo Urbano*). Moreover, current territorial planning instruments cover only 68% of municipalities.

Figure 1.27. Land planning should be strengthened

Increase in urban sprawl, 2001-11



Note: Change in population decentralisation within metropolitan areas (Veneri, 2015).
Source: P. Veneri (2015), "Urban spatial structure in OECD cities: Is urban population decentralising or clustering?", *OECD Regional Development Working Papers*, No. 2015/13.

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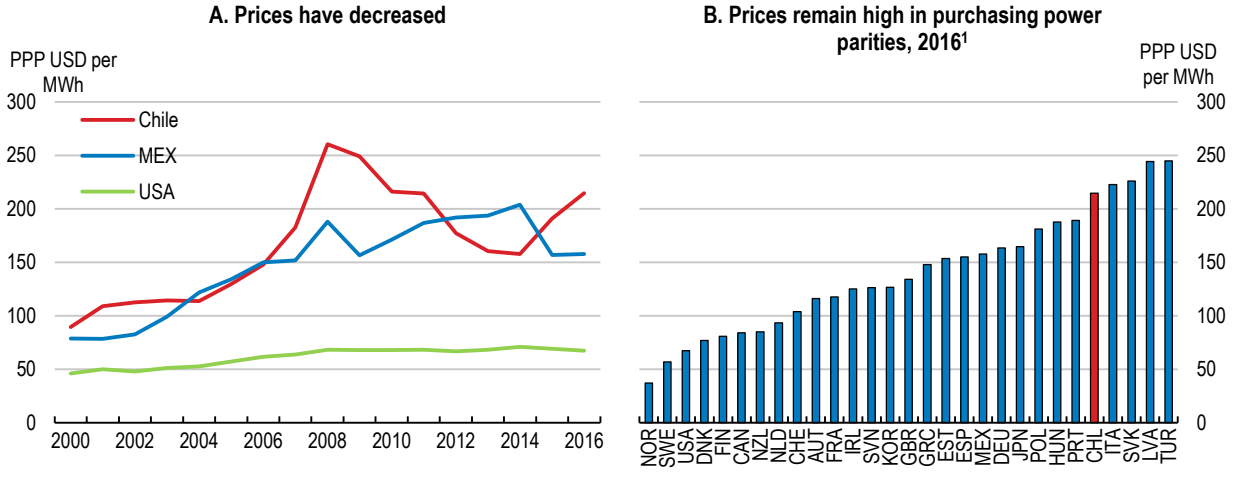
Enhancing the infrastructure governance framework and urban planning would allow efficiency gains. Existing zoning plans are often unable to effectively link different elements such as land use to transport or public works to funding systems. At the same time, municipalities do not have the right incentives to co-operate, even within metropolitan areas (OECD, 2017e). OECD cross-country evidence suggests that increasing such integrated management of metropolitan areas could have sizeable positive long-term effects on labour productivity (Ahrend et al., 2014), notably by improving transport linkages. In particular, Santiago has for decades struggled with its public transport system and could envisage the creation of a transport authority as a means of building capacity for managing the region's transport system at the metropolitan scale. The example of the Auckland Council in New Zealand in charge of developing the Auckland Plan can be useful. With important urban hubs and vast rural areas, governance structures that enhance the linkages between those areas would also help maximising potentials for development (OECD, 2017d).

Ensuring a level playing field between transport modes would require integrating more fully environmental and health damages in road pricing and general taxation (OECD, 2013c; 2016f). Congestion charges, as well as logistic demand management tools, should be developed together with updated local Pollution Prevention and Decontamination Plans (PPDA) at the metropolitan level to reduce excessive traffic and pollution at peak hours in ports and cities, and incentivise the use of railways and public transports.

The energy and water sectors

Chilean firms face challenges from the energy sector, despite significant recent improvements in the electricity and gas sectors. Electricity accounts for around 8% of the operational costs at mining companies (Mining Council, 2017). Despite significant new investment in renewables and increasing gas-fired capacity, fossil fuels still account for nearly 60% of electricity generation. Blackouts also remain relatively frequent (Ministry of Energy, 2016). Electricity prices are volatile, with Chilean firms still facing some of the highest prices of OECD countries (Figure 1.28).

Figure 1.28. Electricity prices for firms remain relatively high



1. Or latest available year. 2016 for Chile.
Source: IEA (2017), Energy Prices and Taxes Database.

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Positives steps have been made in the electricity and gas sectors. New power auctions, the 2016 transmission law, additional network connections and the publication of the 2050 roadmap for the energy sector strengthened investment incentives for renewables – excluding the large hydropower sector. The Energy 2050 Roadmap lays out the plans for the electricity and energy sector and foresees to reach a share of 70% of renewables in the electricity mix in 2050. It fixes ambitious objectives for renewable energy sources, energy efficiency for firms and local governments, international connections (Ministry of Energy, 2016).

The 2016 Transmission Law also introduced effective measures to impact the challenges of high prices of electricity and lack of proper transmission infrastructure to meet demand. The major changes include a merger of the two main transmission lines along with transferring the cost of transmission service to consumers. New long-term power auctions also aim at securing lower and more stable electricity prices and supply for consumers. Investment in cost-competitive wind and solar power already took off and

electricity prices declined by around 12% in real terms for households and firms over the 2011-16 period. At the same time, Chile has invested heavily to develop capacity to import liquefied natural gas (LNG) with the construction of a new terminal in 2014 to secure supply and reduce reliance on more polluting forms of generation, such as coal and diesel.

Water policies should be further strengthened to ensure a greener development, as demand is set to rise with the high degree of specialisation in water-intensive sectors. Reform proposals for water rights go in the right direction and new techniques such as desalination plants have been developed to raise water supply. Discharge sites and energy costs need to be monitored to avoid potential negative impact on ecosystems and energy resources. A long-term water strategy and a reform of water pricing are needed to take into account externalities and incentivise more sustainable infrastructure and business projects as well as efficiency of water supply and irrigation (OECD, 2016f and 2017j). At the same time, systematic assessments of the risks from soil and water contamination from mining and agricultural activities are currently limited, as is the capacity for testing and assessing risks from industrial chemicals.

Boosting the digital network and trade

Reducing information and search costs could also increase exports and productivity growth. Higher use of internet and other information and communication technologies (ICTs) could reduce further international trade barriers like distance, time and reputational costs (Lendle et al., 2016). As firms and consumers learn more about non-local products and services, high quality firms would gain market share and productivity would increase (Jensen and Miller, 2017). New ICT tools can also facilitate cross border e-commerce and participation in global markets for smaller and new firms and be an effective way to go global and become competitors in niche markets. Digital trade, or "e-commerce" has grown rapidly in Chile as in other OECD countries. Chile's digital infrastructure appears well positioned among Latin American countries (OECD, 2016g; BBVA, 2016; Figure 1.29, Panel A). However, fixed broadband subscriptions remain relatively low and the number of firms having their own website is limited (Panel B). Indeed, the price of broadband Internet subscriptions exceeds the OECD average (Panel C).

Chile's 2020 Digital Agenda could improve digital infrastructure and the use of ICTs. The agenda would extend connections to reach 90% of homes and 100% of schools with broadband, push adoption of public Wi-Fi areas in 90% of subnational governments and targets an average Internet access speed of 10Mbps (Gobierno de Chile, 2015). It also promotes e-procedures at the national and subnational levels. The Agenda includes measures to increase business innovation and productivity, especially for SMEs. It aims to push at least one-third of smaller firms to use new technologies, such as buying and selling via internet in 2020. In particular, training programmes (*Chile Exporta Digital*) would focus on developing more efficient use of e-commerce platforms for exports. This is welcome as digital skills remain weak (OECD, 2016h). Since 2016, a committee of Ministers for Digital Development is managing the agenda's progress.

Figure 1.29. Internet development, price and regulations

1. Data refer to December 2016, except for Argentina, Brazil, Costa Rica were data are for 2015. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
2. OECD calculations based on the ELE4. The sample consists of firms in the SII in 2014 and whose Sales exceeded 800.01 UF. For consistency with other countries firm with less than 10 employees are dropped from the sample.
3. Average price over four standard low-quality fixed broadband bundles: 5 GB/month and 0.250 Mb/s and above; 5 GB/month and 1500 Mb/s and above; 10 GB/month and 10.240 Mb/s and above; 15 GB/month. 25.600 Mb/s and above.
4. LAC is the unweighted average of Brazil, Colombia, Costa Rica and Mexico.
Source: OECD (2017), OECD Broadband Statistics; World Bank (2017), World Development database. OECD calculations based on the ELE4.

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Some reforms could ease the implementation of the 2020 Digital Agenda. Foreign ownership of telecommunications operators is not restricted and Chile has recently made significant strides to bolster competition in the market, in particular as regards interconnection regulation and number portability. However, the rules applying to the dominant supplier in fixed line services need to be further strengthened (Figure 1.29, Panel D). Indeed, access to the incumbents' public telecommunications networks is not yet mandated and, although there has been an increase in transparency requirements

imposed on the incumbent operators, local loop unbundling is still not foreseen by the general telecommunications law (OECD, 2016e). In the mobile services market, the setting of access charges and interconnection prices by the regulator rather than market forces is only beneficial to competition to the extent that the general competition framework does not entirely prevent coordinated price-setting by large incumbent operators. Eliminating the current competition restrictions in telecoms to the level of the United States could reduce price-cost margins by around 9 percentage points, yielding tangible gains for downstream firms and households (Nordås and Rouzet, 2015; Rouzet and Spinelli, 2016). In this context, the *Plan Nacional de Infraestructura de Telecomunicaciones* (PNIT), that aims to develop the availability and quality of telecommunication infrastructure – through public private partnerships – and guarantee open and non-discriminatory access to infrastructure, is welcome.

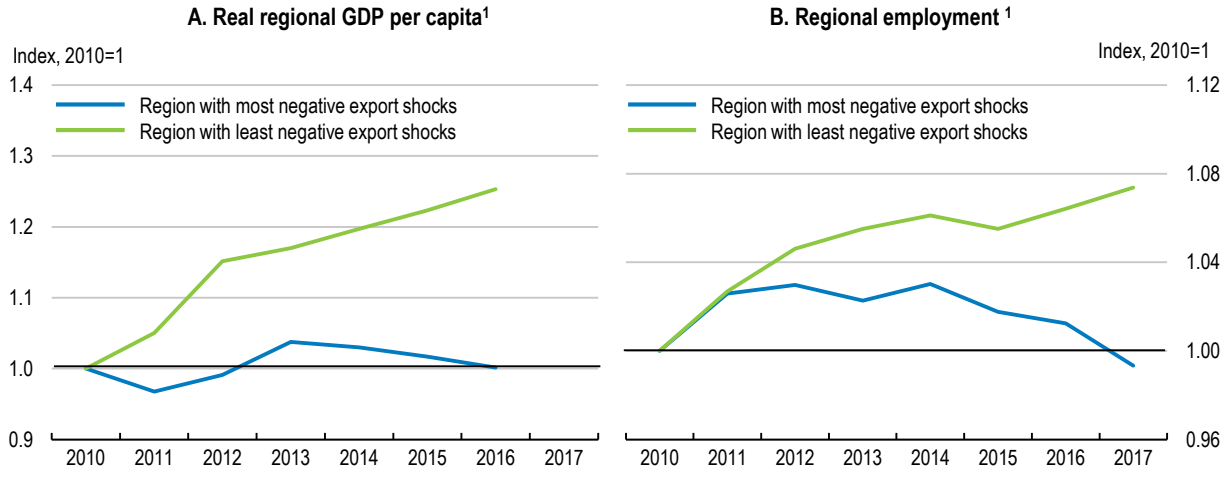
Reforms are also needed in postal and digital payment services to boost firms' and consumers' choices. In courier and postal services, Chile maintains a monopoly on the admission, transport and delivery of letters and postcards, which essentially closes the letter segment to private competitors. The state-owned incumbent operator, *Correos de Chile*, also enjoys preferential treatment on the application of VAT and other exemptions, and no regulation is in place to avoid cross-subsidisation of competitive and uncompetitive activities. In addition, a single acquirer of digital payments (TransBank) is vertically integrated with card issuers (banks). Transbank takes the merchant discount that it charges merchants and passes it on in full to the issuers, who pay Transbank a fee per transaction to cover costs. More competition could reduce merchant discounts, raise e-payment coverage, and boost new forms of payment (OECD, 2017l).

Ensuring a fair sharing of trade gains and adjustment costs

Reducing trade adjustment costs for workers would improve equity. The adjustment to the end of the commodity price boom has been long. Regions more exposed to the negative trade adjustment process experienced stagnant GDP per capita growth and employment (Figure 1.30, Panels A and B). Goujard and Stampi-Bombelli (2017) show that over 2010-16 local labour markets faced large asymmetric shocks and that the most affected provinces had significant employment losses in the tradable sector, associated with higher inactivity rates for low-skilled workers who were unable to adjust to local employment opportunities through migration. Municipal spending that is responsible for some active labour market policies and municipal investment were unresponsive in the most affected provinces.

Beyond raising the effectiveness of retraining programs and reducing the strong labour market segmentation (Chapter 2), strengthening housing market and transportation policies, territorial equity, as well as exit strategies for firms would improve the distribution of adjustment costs and trade gains. This would significantly raise well-being and long-term growth, as skill mismatches are particularly large in Chile and the efficiency of labour allocation has recently declined in the manufacturing sector. Reducing skill mismatches by adopting OECD best practices could boost labour productivity by 14% in the long term (Adalet McGowan and Andrews, 2017).

Figure 1.30. Regional developments at the end of the commodity price boom



1. The figure displays the unweighted average growth rate and unemployment rate of the four regions with the most negative (Atacama, Antofagasta, Coquimbo and Tarapacá) and the least negative (Aysén of General Carlos Ibáñez del Campo, Los Lagos, Maule, Magallanes and Antártica Chilena) export shocks, respectively. The 2017 average in Panel B takes into account data up to June 2017.
Source: OECD calculations based on INE (2014), Actualización de población 2002-2012 y proyecciones 2013-2020; INE (2017), Encuesta Nacional de Empleo; Central Bank of Chile (2017), Statistical Database.

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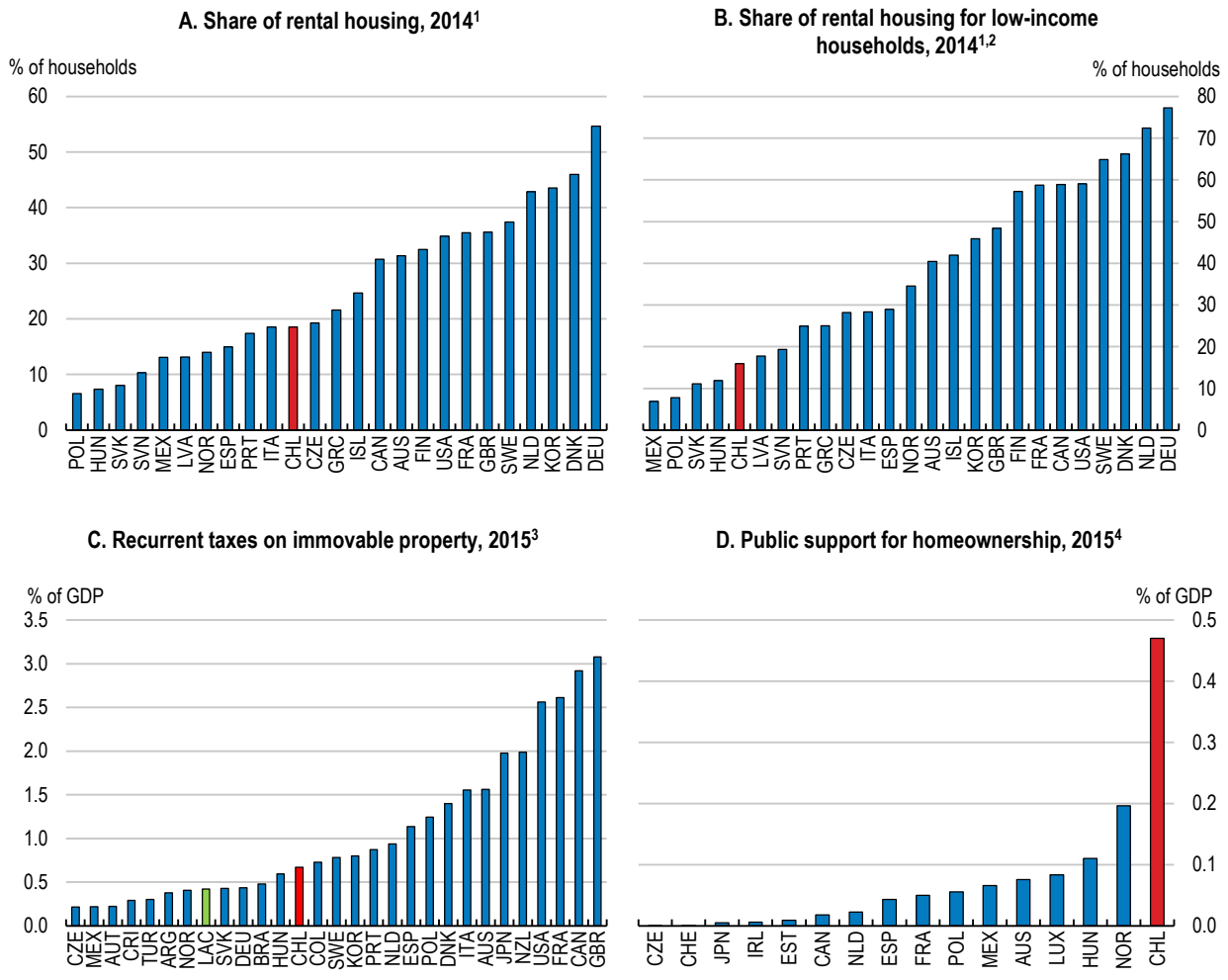
Improving housing policies and territorial equity

Enhancing the responsiveness of housing supply to demand would help ensure there is a good match between housing construction and demand, easing labour market adjustments and avoiding that public support gets capitalised into housing prices. Compared to other OECD countries, Chile is characterised by small rental housing sector, high housing costs, notably for low-income households, and low geographic mobility (Figure 1.31, Panels A and B; Salvi del Piero, 2016).

Chilean housing policies have improved the supply of affordable dwellings and average housing quality and the rate of homeownership, but have led to residential segregation and partly ignored the side-effects on residential mobility. Past social housing programmes have excessively focused on volume, partly neglecting quality, location and co-ordination with public transportation and other urban land use policies (OECD, 2013a). The recent Programa de Integración Social y Territorial includes welcome minimal requirements in terms of access to social services for new social dwellings (MVU, 2016). However, it remains based on homeownership and subsidised long-term social loans that may lock-in lower income groups in areas of declining economic activity. Chile should consider providing support to develop a social rental housing sector to improve access to housing for vulnerable households. For example, as in most OECD countries, non-profit or public organisations could provide social rental housing. Means-tested rental cash allowances coupled with more balanced tenant-landlord regulations would strengthen the rental market, thus enhancing residential mobility and potentially reducing segregation (Caldera Sánchez, 2012).

Figure 1.31. The rental sector is small while taxes on property are low



1. Or latest available year.
2. Low-income households to the bottom quintile of the income distribution.
3. Or latest available year. LAC is the unweighted average of Argentina, Brazil, Colombia, Costa Rica and Mexico.
4. Or latest available year. The estimate for Chile in Panel D is a lower bound. It includes the "Solidarity Fund for Housing Choices" and "Integrated Housing Subsidy System", but spending on the "Extraordinary Programme for Economic Re-launch and Social Integration" is not included.
Source: OECD (2016), Affordable housing database; OECD (2017), Revenue statistics and Affordable housing databases; OECD/ECLAC/CIAT/IDB (2017), Revenue Statistics in Latin America and the Caribbean 2017, OECD Publishing.

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Taxing housing so that owning is not favoured over renting would also reduce distortions, strengthen exports, and make the tax system more favourable to low-income households (Blöchliger, 2015). Recurrent taxes on housing are low, while support for homeownership is particularly high (Figure 1.31, Panels C and D). In the pre-crisis context of favourable external conditions, sustained economic growth and improved financing conditions, this may have helped unleash housing finance together with constraints on housing supply from imperfect urban planning and land administration (Figure 1.27). Household debt has increased by 14 percentage points of GDP and real house prices by 18% since 2008. The

strong profitability in the construction industry, led by rising house prices and reinforced by the investment needs of the mining sector, and may have diverted capital and labour from other export-intensive industries (Égert and Kierzenkowski, 2014).

Shifting public support away from home ownership could make investment in the rental market and firms more attractive and reduce wage pressures on the manufacturing, primary and tertiary sectors. In a welcome move, the 2014 tax reform eliminated the VAT exemption on the customary sale of new or used property in 2017. It also included a tax on the sale of residential property acquired after 2004. Over the lifetime of each taxpayer any capital gain over around USD 310 000 is taxed. This could mitigate the negative impact on the residential mobility of households. Large exemptions of housing tax and inheritance tax for housing and mortgage interest deduction should also be progressively eliminated (Figure 1.31, Panel D) as they tend to be capitalised into real house prices. This would redistribute income from insiders to new entrants in the housing market and lower-income households, and would avoid overly penalising newly indebted households through a sharp decline in housing prices.

Ensuring more equal access to economic opportunities is also important to a fair sharing of trade gains and adjustment costs. In particular, low intergenerational mobility is a potential constraint on Chile's development and a persistent source of inequality (OECD, 2015b). Economic specialisation leaves many areas exposed to sectorial shocks. Reducing regional disparities in education, sanitation and health infrastructure (OECD; 2014a and 2017d; World Bank, 2017b) would help convergence in employment opportunities, disposable income and well-being, and ensure that trade shocks do not become entrenched through long-term employment and inactivity. This would likely require higher fiscal autonomy and fiscal redistribution across municipalities, as potential efficiency gains from the lowest develop municipalities are low (Pacheco et al., 2013).

Recommendations to boost export performance in Chile

Increase entrepreneurship dynamism and competitive pressures

Key recommendations:

- 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.
- 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.
- 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.
- Ensure that all public entities have to comply with the Competition Agency recommendations or to publicly explain their decisions.
- 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.
- Improve further technical assistance and mentoring to small businesses, building on the new local business centres.

Improve export procedures and export prospects.

Key recommendations:

- Continue efforts to fully integrate the single window mechanism with the domestic logistic infrastructure and with regional partners.
- Reduce further non-tariff barriers on intra-regional trade by simplifying regulations of preferential trade agreements, such as rules of origins requirements, building on current efforts within the Pacific Alliance.
- Develop national, regional and metropolitan long-term infrastructure strategies. Integrate the regulation of public and private ports.
- Fully integrate the environmental and health damages of transport modes in taxes and road pricing to ensure fair competition.
- Reduce barriers to entry in maritime services and railways.

Other recommendation:

- Increase public investment in digital infrastructure and impose local loop unbundling on operators, to raise competition in digital services and ease the administrative burden.

Develop innovation and ease financing for entrepreneurs

Key recommendation:

- Strengthen policy evaluation by beefing-up data collection, systematic reviews and independent studies. Expand R&D support programmes that are proven to work, and close down or adjust inefficient one.

Other recommendation:

- Raise the links between researchers in universities and the private sector. Allow refunds of research and development (R&D) tax credits for SMEs.

Improve the efficiency of adjustments to trade developments

Other recommendations:

- Further improve bankruptcy procedures by: developing early warning indicators, notably for smaller firms; allowing creditors to initiate restructuring procedures; and developing second-chance support for entrepreneurs.
- Lower mobility costs by developing the rental market and lowering support for homeownership.

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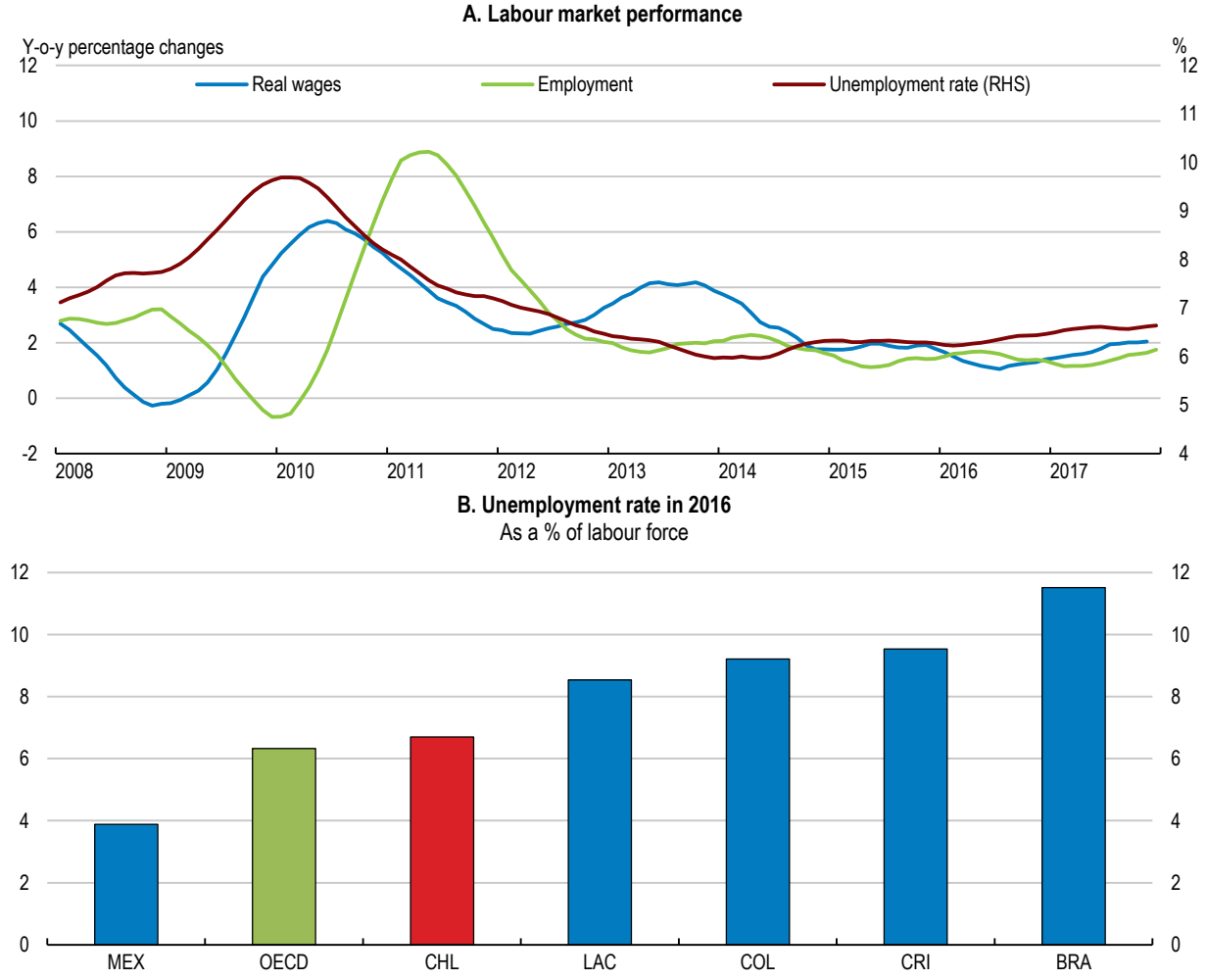
Chapter 2.

Policies for More and Better Jobs in Chile

Employment growth has been strong in the last decade. However, many jobs are of relatively low quality, affecting well-being and productivity. The segmentation of the labour market, with some benefiting from strong protection and others having precarious jobs without social security benefits or employment protection, has led to significant labour market inequalities. The employment rate is low for vulnerable groups, mainly youth and women. And when in employment, these groups tend to hold precarious jobs. A high share of the population lacks the basic skills and the mismatch between the supply and demand of skills is widespread. Overcoming these challenges will require policies to promote more permanent and formal jobs, such as better targeted training programmes and labour intermediation, and reducing the relatively high severance payments in permanent contracts while increasing coverage of unemployment benefits. The ongoing educational reform will improve skills outcomes, but greater efforts are needed to make the education and training system more responsive to labour market needs by improving relevance. In particular, developing an apprenticeship system linked to formal education and encouraging more work-based learning would improve quality of employment opportunities. Better skills assessment and anticipation information as well as greater efforts to involve employers in the education and training system would also help. Policies to boost female employment, such as expanding opening hours of childcare centres and continue with the efforts towards a universal early education, are also needed to reduce gender gaps. All these policies can create a virtuous cycle between labour productivity and equity, increasing access to higher quality jobs, higher wages, and coverage of pensions, training and unemployment benefits.

The performance of the Chilean labour market has been strong since the financial crisis in 2009 (Figure 2.1). Employment increased by 25% over 2009-16 and the average and minimum wages rose by 22% and 15% in real terms. The labour market was also resilient to the large commodity price shock in 2011, with the unemployment rate decreasing from 7.1% in 2011 to 6.2% in 2015. During 2017 the unemployment rate increased slightly reflecting the large slowdown in economic activity.

Figure 2.1. Progress in employment growth and wages has been impressive



Note: Panel A shows 12 months moving averages. In Panel B data for Chile is 2017; OECD is a simple average of OECD member countries; LAC is a simple average of Brazil, Colombia, Costa Rica and Mexico (Argentina is not included due to data availability).
Source: OECD (2017), Economic Outlook 102 database; Nueva Encuesta Nacional de Empleo (NENE).

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However, the Chilean labour market faces several challenges undermining job quality. A high share of the population has very low skill levels, educational outcomes remain below OECD standards and are strongly linked to students' socio-economic status. The segmentation of the labour market, with some workers benefiting from employment and social protection and others having precarious or less protected jobs, has led to increased inequalities and low labour productivity. Despite progress, labour force participation is

still low, notably among women and youth. The mismatch between the supply and demand of skills is significant and under-skilling is particularly worrisome, highlighting not only a disconnection between the available and needed skills in the job market, but also a low level of available skills.

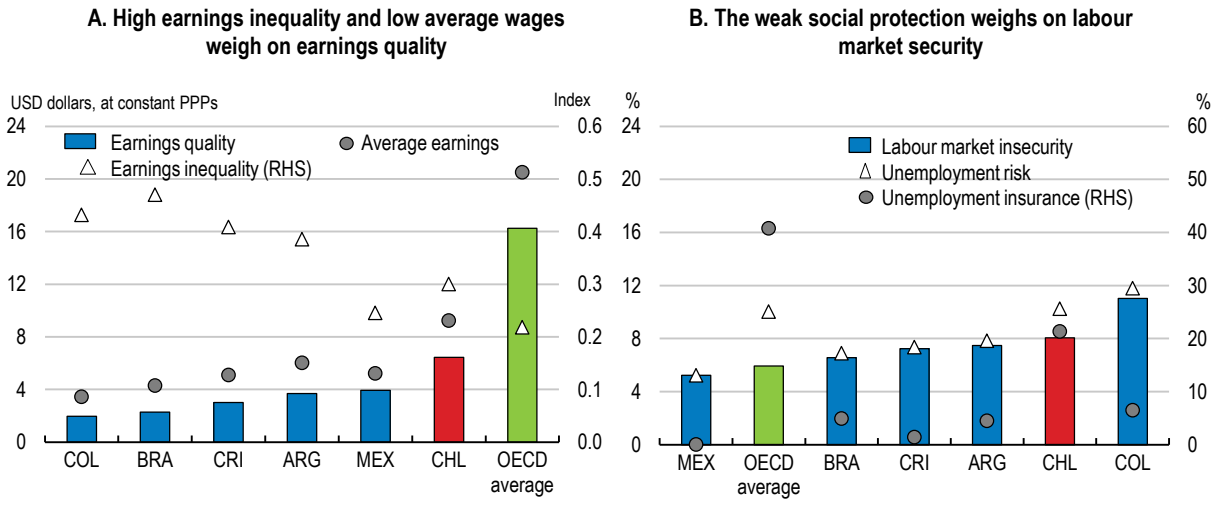
Strengthening job quality can foster productivity growth and increase workers' well-being while reducing inequalities in the labour market (Cazes et al., 2015). Chile performs relatively well in different dimensions of job quality when compared to other emerging economies (OECD, 2015b). However, it performs relatively poor compared to other OECD countries (OECD, 2014b). The quality of earnings (measured by the average earnings and its dispersion) is low compared to the average OECD country (Figure 2). Relatively low average earnings and considerably higher levels of inequality weigh on earnings quality. Despite the dramatic improvement in real earnings, the level of earnings remains low at a third of the OECD average. This reflects, in part, low worker skills as well as a high share of precarious jobs.

The unemployment risk, which measures the probability of getting unemployed and the time spent in it, is similar to other OECD countries (Figure 2.2). However, unemployment insurance, as measured by the product of the coverage and replacement rates of public transfers received by the unemployed, is much lower than OECD average. Given such low levels of social protection, the low unemployment risk is likely to reflect the unaffordability of unemployment, suggesting that many workers may need to accept very low quality jobs when better jobs are not available (OECD, 2015b). This is explained by a high share of workers on precarious jobs with low or no access to social security benefits or employment protection.

The quality of the working environment, which captures non-economic aspects of job quality, has a direct impact on job productivity (Arends et.al, 2017). Chile has a high share of workers suffering from job strain characterised by a combination of high job demands and few job resources to meet those demands (56% compared to an OECD average of 41%).

The chapter discusses a wide range of policy measures to boost job quality and make the labour market more inclusive in line with the flexicurity concept, which emphasises the flexibility of labour markets while ensuring secure transitions for employees from one job to another. This involves policies to increase the coverage of unemployment benefits, improve training programmes and job placement, as well as promoting female employment. Reducing the use of temporary contracts and bringing workers into formal jobs can improve pay and working conditions while helping to boost productivity. Reforms to boost export performance and enhance productivity, such as enhancing competition and increasing investment in innovation, can help to support business growth and employment and lay the foundations for more and better quality jobs (Chapter 1). Lifting job quality and productivity will also require improving the relevance of education, continuing the modernisation of the vocational education and training system and better aligning tertiary education with labour market needs. The business sector has an important role to play in these endeavours through its input into curricula and training design and providing apprenticeship opportunities while improving on-the-job training for its workers.

Figure 2.2. Job quality is low compared to other OECD countries



Note: Data refer to 2010, except for Brazil (2009), Chile (2011 for labour market insecurity and 2013 for earnings quality) and Mexico (2013). The OECD average is unweighted for 2013. OECD calculations are based on household and labour force surveys (EPH: Argentina, PNAD: Brazil, CASEN: Chile, GEIH: Colombia, ENHAO: Costa Rica, ENIGH: Mexico). Earnings quality refers to the extent to which work-related earnings contribute to well-being through their average level and their distribution, and can be interpreted as hourly earnings in USD adjusted for inequality. Labour market insecurity measures unemployment risk (the risk of job loss and the expected unemployment duration) and the degree of public unemployment insurance (coverage of benefits and their generosity), and can interpreted as the expected monetary loss associated with unemployment as a share of previous earnings. For Argentina, Brazil, Colombia and Costa Rica unemployment insurance is measured as the ratio of the average net income of the unemployed relative to the median net earnings among the employed, and the risk of becoming unemployed is approximated by the unemployment rate.
Source: OECD Employment Outlook, 2014 and OECD Job Quality Database.

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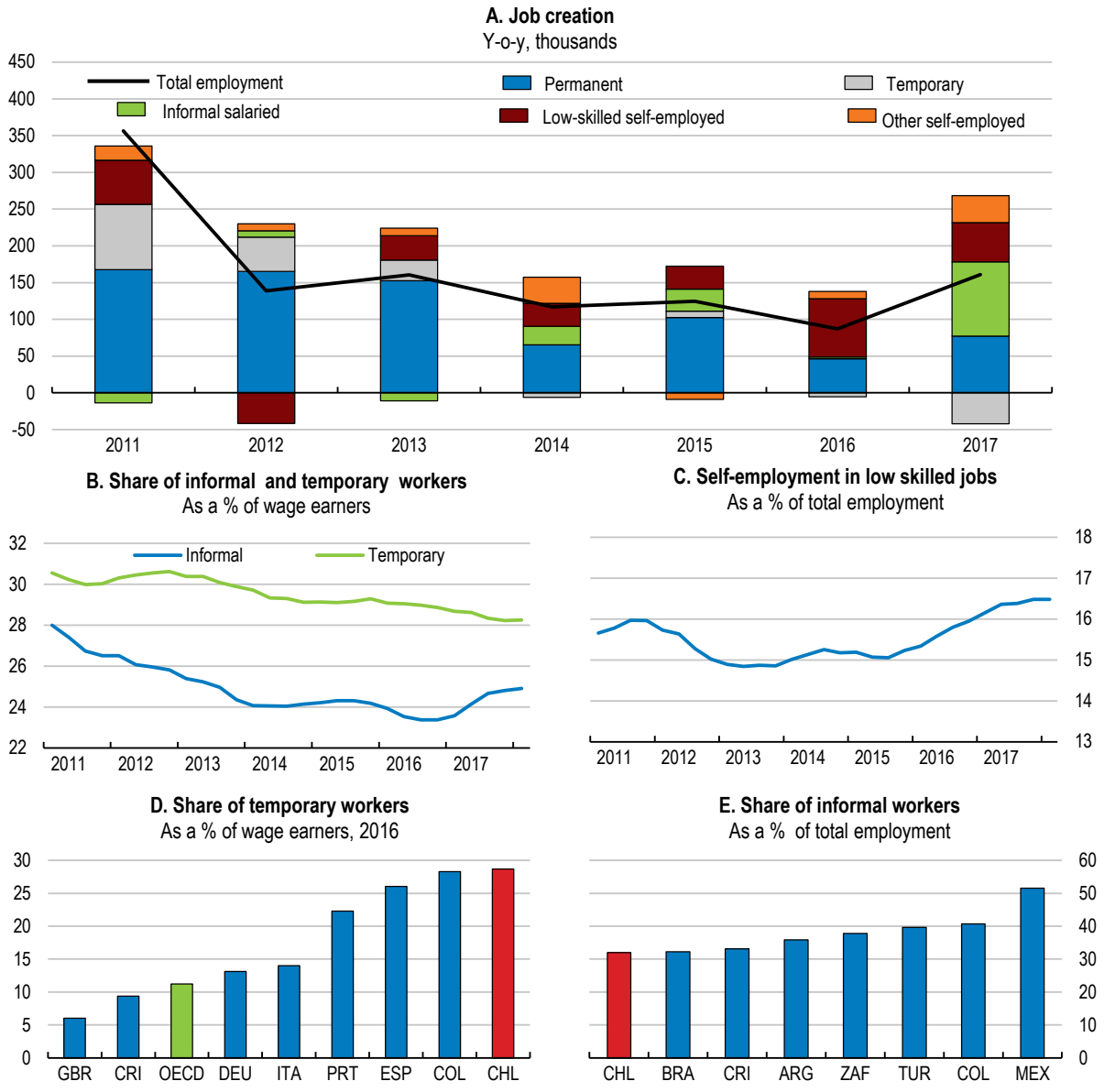
The Chilean labour market faces several challenges

Informal and temporary jobs weigh on well-being and productivity

A high share of jobs is of relatively low quality: informal or temporary (Figure 2.3). The share of temporary contracts, although decreasing since 2012, is the highest among OECD countries. Informality, as measured by the lack of social security, is also important, although among the lowest in the LAC region. The share of informal wage earners at 24% has been decreasing, explained partly by the rise of other non-standard employment arrangements, such as outsourcing or self-employment (Perticara and Celhay, 2010; Ministry Labour, 2017b). Self-employment in low skill occupations, often associated to informality, low access to protection or social benefits and low productivity, is high at 15% of total employment in 2010-16 and accounts for an increasing share of employment. Part of this increase is cyclical given the strong deceleration of economic activity following the large commodity price shock, and will be probably partly reverted in the next years as activity gains momentum.

Figure 2.3. Temporary and informal jobs account for a large share of employment



Note: Figures are 4 quarter-moving-averages. Panels A, B and C are OECD calculations based on Nueva Encuesta Nacional de Empleo (NENE). Informality is defined as those wage earners with no written contract or no health, pension or unemployment benefit contributions. Self-employed in low skilled jobs are defined according to ISCO-08 occupations: service and sales workers; craft and related trades workers; plant and machine operators and assemblers; elementary occupations. Panel E is based on OECD calculations using CASEN for Chile and the 2015 Employment Outlook for the rest of countries. In Chile informality is defined as those not affiliated or not contributing to the pension system. For the rest, informality is defined to include: i) employees who do not pay social contributions, except for Colombia where contract status is used; and ii) self-employed who do not pay social contributions (Brazil, Chile, Turkey) or whose business is not registered (Argentina, Colombia, Costa Rica, Mexico, South Africa). Panel E refers to years 2011-12; except for CHL 2015.

Source: OECD calculations based on Nueva Encuesta Nacional de Empleo (NENE) and CASEN, OECD Labour Force Statistics and OECD (2015), Employment Outlook.

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Youth and women are most affected by precarious work (Table 2.1). Women are less likely to have paid work than men and, when employed, they hold more frequently non-standard jobs: work more often in the informal sector, self-employed or in low-paid jobs. Access to quality jobs is also difficult for young and low-skilled workers who are often trapped in informal, temporary jobs, or joblessness.

Informality and short-term contracts weigh on workers' well-being and productivity. Workers in informal (wage earners or self-employed) and temporary jobs earn less than workers in 'standard' jobs, even if they have similar backgrounds and characteristics (ILO, 2016). OECD calculations show that the hourly wage penalty of temporary workers in Chile is 15 percentage points (attributed to the type of contract all else equal), while for informality is 30% (after controlling for worker and job characteristics). They also have lower access to training penalising human capital accumulation (Carpio et al, 2011). Labour market insecurity for temporary and informal workers is much higher than for permanent workers (OECD, 2014b; OECD, 2015b). This is explained by temporary contracts and informal jobs leading to unstable employment careers with high job rotation (Gonzalez and Hunneus, 2016; Box 2.1).and are often not entitled to severance payments or unemployment insurance, and informal workers do not pay social security contributions, weighing on public finances and their well-being (Binell, 2016; Gasparini et al., 2014; Maurizio, 2013). Firms relying heavily on highly flexible forms of labour contracting are less likely to innovate, offer training to their employees and have problems raising worker's motivation and effort, reducing labour productivity (Battisti and Vallanti, 2013; Perry, et al., 2007). A high share of self-employed in low productivity jobs, being often informal, can also hold back productivity growth. Indirect evidence of weaker productivity of the self-employed workers is their significantly lower earnings relative to employees (20% less than a wage employee with the same skills and experience, Barrero and Fuentes, 2017).

Low skill levels and high skill mismatches hold back job quality

Raising skill levels would help develop more productive and higher quality jobs. The skill level of Chileans lags behind other OECD countries. The share of adults who score at the lowest levels of proficiency in literacy, numeracy and problem solving in technology-rich environments is considerably larger than the OECD average (Figure 2.4; Quintini, *forthcoming*). Conditional on being employed, skills significantly increase the chances of workers obtaining permanent jobs (Panel B). The positive effect of literacy proficiency on earnings is also large in Chile, even after controlling for education attainment (Quintini, *forthcoming*).

Table 2.1. Access to quality jobs is difficult for young, women and the low-skilled

	Chile		OECD	Mexico	Brazil
	2010	2016	2016	2016	2015
Labour force participation	65	67	72	64	71
Female	52	56	64	47	61
Employment rate	59	66	67	61	58
Female	48	52	59	45	54
Below upper secondary	60	62	57	64	65
Upper secondary	70	72	74	70	74
NEET (15-29)	19	18	14	22	22
Self-employment in low-skilled jobs	16	16			
Female	18	19			
Below upper secondary	24	26			
Informal wage earners	27	23		62	23
Female	32	27		58	20
Youth (15-24)	41	35		76	35
Below upper secondary	39	32			
Fixed-term	29	28	11		
Female	27	29	11		
Youth (15-24)	47	45	24		
Below upper secondary	39	36			
Unemployment rate	8	7	6	4	10
Youth (15-24)	18	16	13	8	23
Prime age (25-54)	7	6	6	3	7
Old age (55-64)	4	4	5	2	4

Note: Informality refers to dependant employees with no pension's contributions, no written contract, no unemployment benefits or no health insurance, as % total wage earners. Self-employment in low skilled jobs is defined according to ISCO-08 occupations: service and sales workers; craft and related trades workers; plant and machine operators and assemblers; elementary occupations. For Mexico and Brazil the informality rate comes from SEDLAC and is defined as those with no contributions to the pension system.
Source: OECD Labour Force Statistics, Labour Force Survey for Chile (ENE) and SEDLAC.

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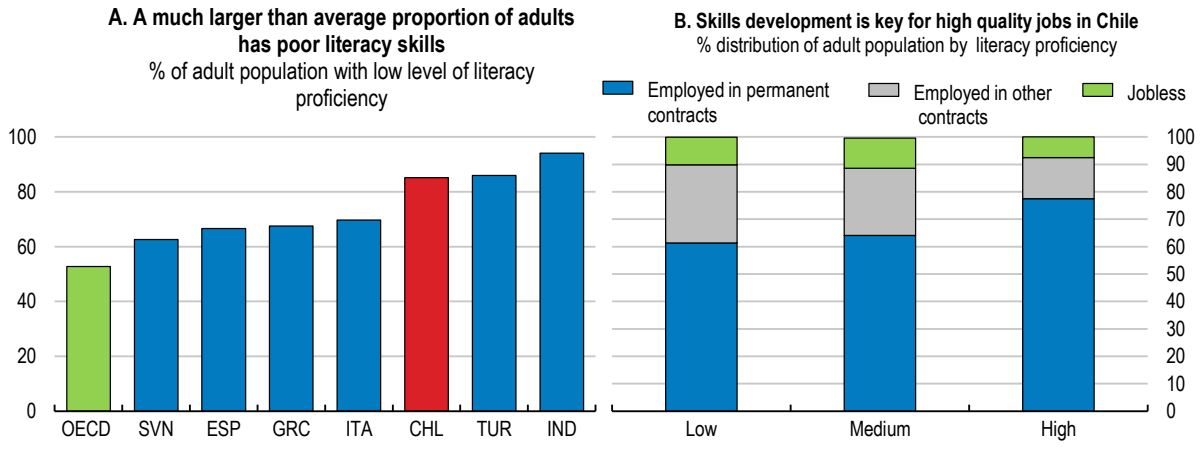
Figure 2.4. Higher skills are needed to enhance job quality



Note: Low proficiency levels are level 0-2 in PIAAC, Medium refers to level 3 and High proficiency are levels 4 and 5. In Panel B, other contracts includes fixed-term, temporary employment agency contract, apprenticeships or no written contract.
Source: OECD (2016), Skills Matter and OECD calculations based on PIAAC (2015).

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Box 2.1. The ins and outs of employment in Chile

Chile's labour market has frequent flows between formal and informal jobs (Table 2.2). Flows out of informal jobs are far more common than those out of formal jobs. A considerable share of informal workers makes the transition into formal jobs every quarter. 45% of these transitions are into formal fixed-term contracts and a high share of informal workers moves into self-employment within a quarter. For the self-employed it is very difficult to move to a permanent job, and they have a high probability of remaining self-employed. Once out-of-work (unemployed or inactive), if able to get an employment, it is an informal or temporary job or self-employment.

Table 2.2. Quarterly labour market transitions in Chile

t t-1	Permanent contract	Temporary contract	Informal	Self-employed	Unemployed	Inactive
Permanent contract	82	6	6	1	2	2
Temporary contract	25	46	12	3	6	8
Informal employee	15	12	43	10	5	14
Self-employed	2	9	9	61	3	14
Unemployed	6	15	15	9	25	28
Inactive	1	2	5	5	4	81

Note: Average 2010-2016, %. Transitions from A to B between t and t-1 are calculated as the ratio of individuals moving from A to B between t and t-1 as a percentage of individuals in state A in t-1.
Source: OECD calculations using New National Employment Survey (NENE-Nueva Encuesta Nacional de Empleo).

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Developing better skills and using them effectively in the labour market can play a major role in revamping stagnant productivity growth in Chile and promote a more inclusive labour market. Skill mismatch emerges when workers are over-skilled for their current jobs as they are not able to fully utilise their skills and abilities in the job; or when they are under-skilled for their current jobs – they lack the skills normally needed for their job. Around 17% of workers are over-skilled and 13% are, under-skilled (Figure 2.5, panel A). Both measures are above OECD averages which are 10% and 4%, respectively. Under-skilling is worrisome in Chile, being one of the highest across the countries participating in the Survey of Adult Skills (PIAAC). Qualification mismatch is also widespread in Chile (panel B). 16% of workers report having higher qualifications than those required for their jobs – i.e. over-qualified – while 17% of workers have jobs where the required qualifications are lower – i.e. under-qualified. While the share of over-qualified workers is below the OECD average, the share of under-qualified workers is higher.

Higher skill mismatch is associated with lower labour productivity through a less efficient allocation of resources. A higher share of under-qualified workers is linked with both lower allocative efficiency and lower within-firm productivity. At the macro-economic level, an inefficient allocation of skills implies lower aggregate productivity. Chile could boost its level of labour productivity by 14% if it were to reduce its level of skill mismatch to that corresponding to OECD best practices (Adalet McGowan and Andrews,

2017). Mismatch also carries economic and social costs for individuals, as mismatched workers tend have lower job satisfaction, earnings and employment prospects (Quintini, 2011; Montt, 2015). In particular, over-qualified workers experience a larger wage penalty in Chile than in other OECD countries, earning 18% less than their well-matched peers with similar qualifications (Quintini, *forthcoming*).

Tackling employment barriers is key to strengthen job quality

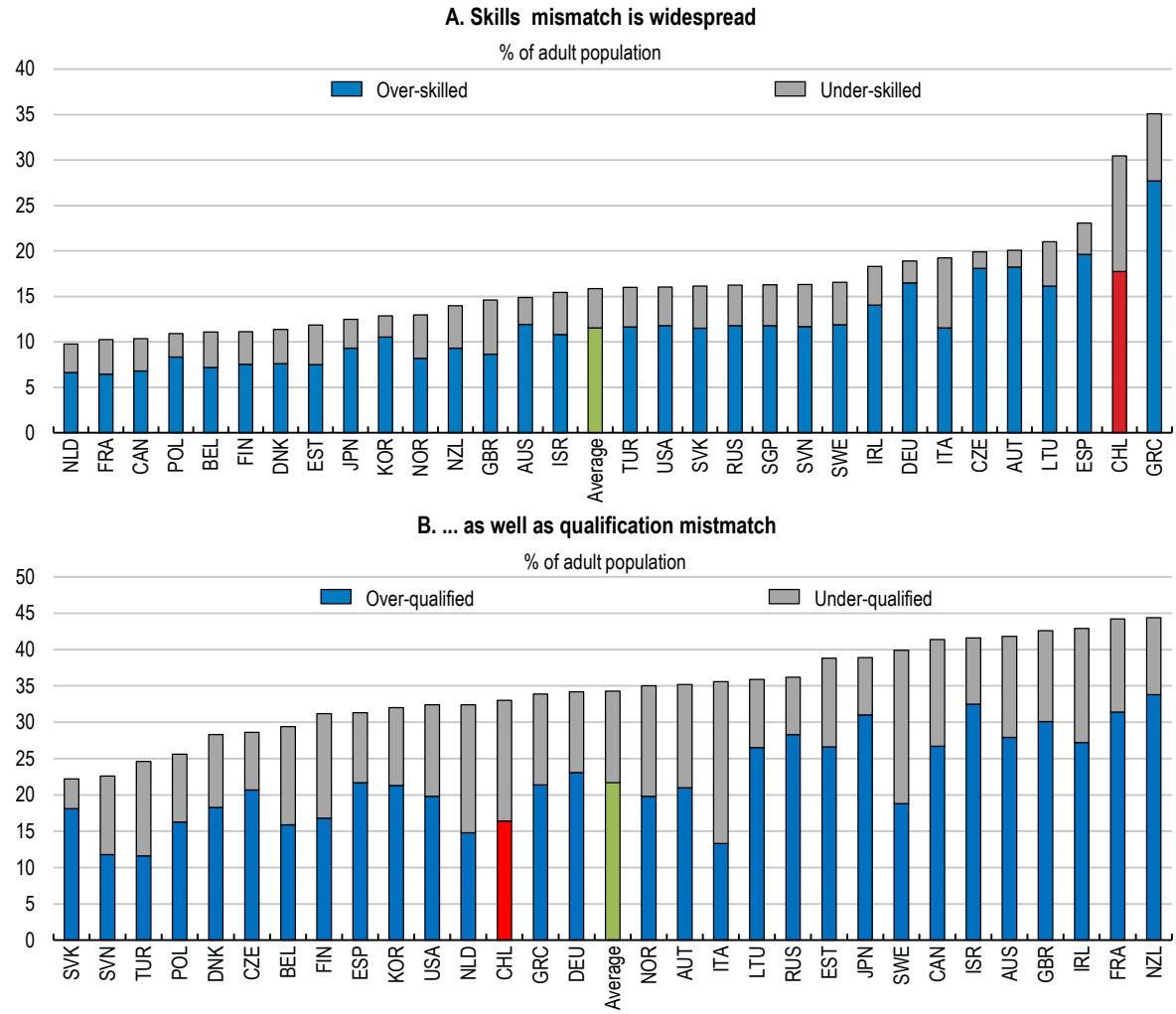
A high share of Chileans faces considerable difficulties in finding good quality jobs or entering the labour market (

Figure 2.6). While the share of the population holding precarious jobs – working informally, holding unstable jobs, earning very little or working restricted hours (Box 2.2) – has been stable since 2009, the share of inactivity has significantly decreased due mainly to increasing female labour force participation.

Understanding the employment barriers of these vulnerable groups is key for the formulation and targeting of effective income and employment support policies (Fernandez et al., 2016). Common employment barriers (Box 2.2) in Chile include: low education, scarce formal job opportunities, lack of adequate child care and high commuting times (Figure 2.7). One salient feature is that all groups face similarly high commuting times, which is a proxy for the distance between the workers and high quality jobs, especially for low-income workers and women (RED, 2017; World Bank, 2017). Better urban transport can improve employment opportunities and hours of work for Chilean workers (Asahi, 2016).

Workers can be grouped according to the employment barriers they face and be targeted with policies aiming at tackling the specific barriers. Around 40% of the workers facing labour market difficulties are older male workers with unstable or informal jobs with very low work capabilities and scarce formal job opportunities. Improving the coverage of unemployment benefits is important for this group of workers which are frequently jobless. In parallel, training and education policies should be targeted to this group, while improving incentives for formalisation and permanent jobs. Another 15% are young inactive mothers with secondary education facing mainly child care problems, high commuting times and scarce job opportunities. 5% are young mothers with very low education, inactive or holding unstable and informal jobs. The authorities have taken measures to increase coverage and quality of childcare (see below). Continue to expand childcare solutions and policies to improve, or subsidise, public transportation are key to fully integrate them into the labour market. The Ministry of Labour, with the help of the IDB, is currently running a pilot to identify employment barriers among registered unemployed by self-reporting. The results should guide further development of policies in this area.

Figure 2.5. There is a large scope to make the skill allocation more efficient



Note: Data for the United Kingdom corresponds to England and Northern Ireland. Data for Belgium corresponds to the Flemish Community. Skills mismatch evaluated over literacy skills. Over-skilled workers are those whose profi-ciency score is higher than that corresponding to the defined maximum threshold of self-reported well-matched workers – i.e. workers who neither feel they have the skills to perform a more demanding job nor feel the need of further training in order to be able to perform their current jobs satisfactorily – in their occupation. Under-skilled workers are those whose proficiency score is lower than that corresponding to the defined minimum threshold of self-reported well-matched workers in their occupation. Ten different thresholds are used to define the maximum and minimum thresholds. The maximum thresholds are defined from the 90th to the 99th percentiles and, the minimum thresholds are defined from the 1st to the 10th percentiles. The share of mismatched workers is the average of the share of mismatch workers using the 10 different thresholds. Countries are ranked in ascending order of the percentage of workers mismatched. Over- (under-) qualified workers are defined as those whose highest qualification is higher (lower) than the qualification they deem necessary to get their job today.
Source: OECD calculations using Survey of Adults Skills (PIAAC) 2012, 2015.

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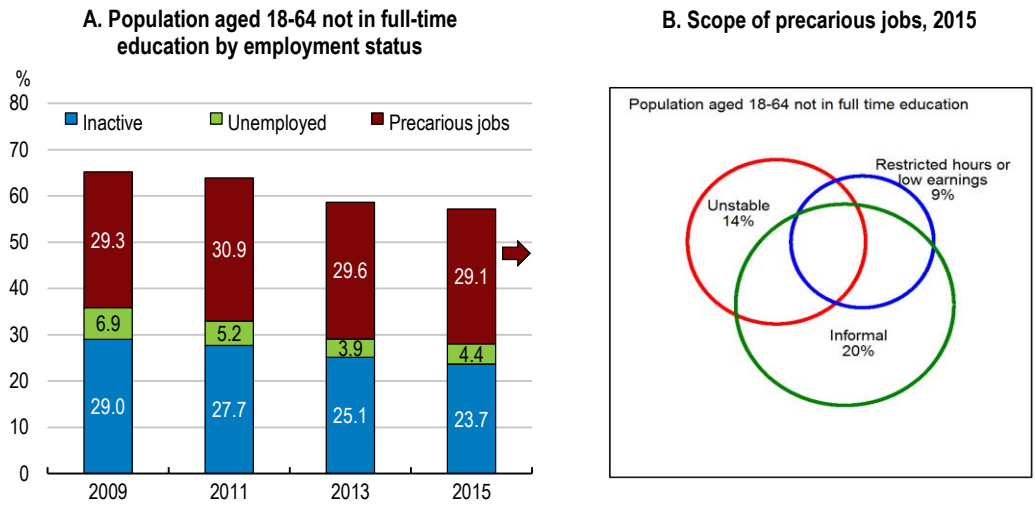
Figure 2.6. A high share of the population faces labour market difficulties



Note: Precarious jobs are defined as unstable jobs (all those jobs being not permanent) or informal jobs (not affiliated or contributing to the pension system), having low earnings (monthly labour income is lower than the first decile) or jobs with restricted hours (working less than 20 hours a week).
Source: Garda and Undurraga, "Employment barriers of the vulnerable in Chile", *forthcoming*.

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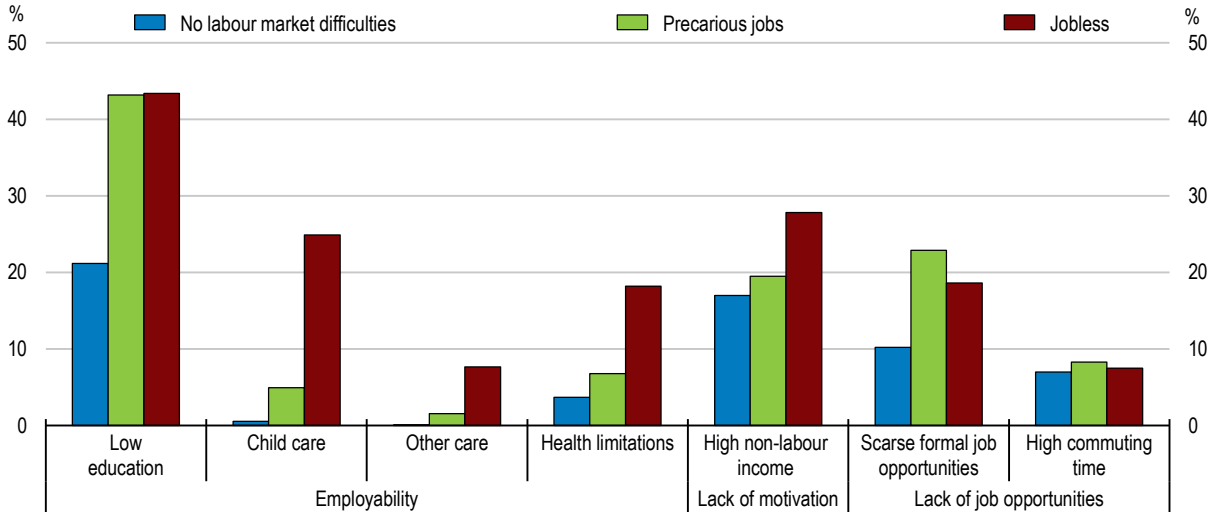
Figure 2.7. Employment barriers in Chile



Note: Notes: See Box 2 for definitions.
Source: Garda and Undurraga, "Employment barriers of the vulnerable in Chile", forthcoming.

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Box 2.2. Groups experiencing labour market difficulties and employment barriers

Using data from the National Socioeconomic Characterization Survey (CASEN), and considering only individuals aged 25-65 or 18-24 not in full-time studies, the population potentially experiencing labour market difficulties was defined as that either out-of-work or holding a precarious job defined as unstable jobs (all those jobs being not permanent) or informal jobs (not affiliated or contributing to the pension system) or having very low earnings (monthly labour income is lower than the first decile) or jobs with restricted hours (working less than 20 hours a week).

Following Fernandez et al. (2016) a set of empirical indicators was constructed to identify the employment barriers faced by the population experiencing labour market difficulties.

1. **Employability**. *Low education*: individuals facing this barrier have achieved less than upper secondary education as the highest educational level. *Care responsibilities*: individuals face care responsibilities when they have a family member who requires care (child aged 13 or less in part-time childcare/education or adult suffering disability or a disease) and are either the only potential care giver in the household, or the only person in the household who is economically inactive or working part-time because of care responsibilities. *Health limitations*: individuals face health limitations if either they declare that the main reason why they don't work is for health reasons or if they declare they have a long term disease.
2. **Motivation**. *High non-labour income*: individuals face this barrier if the equivalised household income subtracted the individual's labour income (e.g. other income sources not depending on the her/his own work, such as labour income from other household members, benefits, inheritances or rents) is higher than 1.6 times the median of the variable.
3. **Opportunities**. *Scarce formal job opportunities*: individuals face lack of formal opportunities when their probability of being informal is 1.6 times the median probability given the individual's gender, age, educational attainment and region of residence and household characteristics (number of children, working spouse). *High commuting time*: individuals face high commuting times if the estimated time (using Heckprobit estimation) from work to job is higher 1.6 times the estimated time according to the place of residence and age, gender.

Source: Garda and Undurraga, "Employment barriers of the vulnerable in Chile", *forthcoming*

Labour market policies to enhance job quality

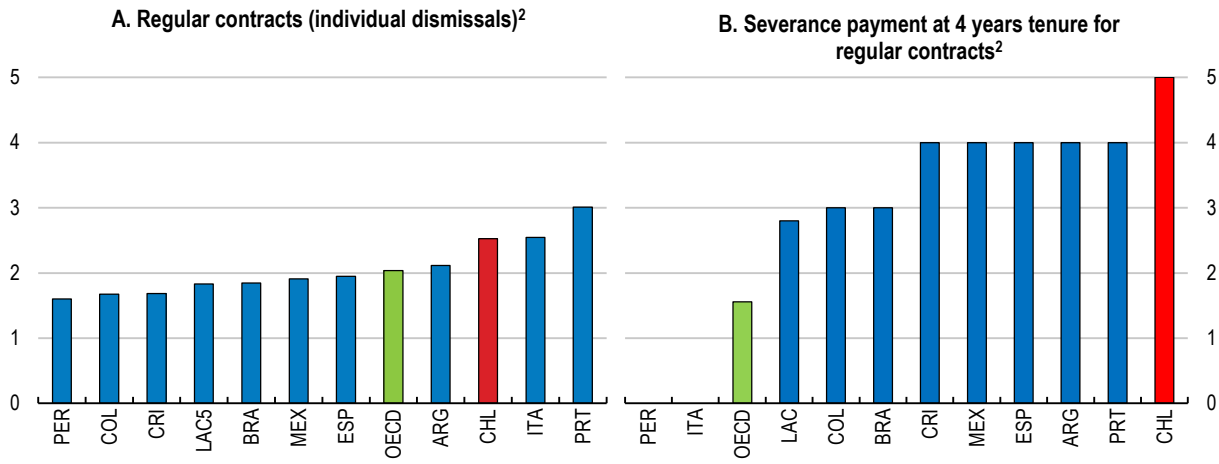
Rebalancing employment protection

Decreasing labour market rigidities would generate more permanent and formal jobs (Di Porto et al., 2017; IDB, 2015; OECD, 2008). An efficient employment protection provision should provide sufficient flexibility to allow for the efficient reallocation of workers while reducing an excessive reliance on temporary workers or other atypical relationships, such as informality. Employment protection legislation on open-ended

contracts is relatively restrictive in Chile (Figure 2.8). Reducing the costs of dismissing a permanent worker, notably the high severance payments, would increase the chance of workers obtaining permanent contracts and, hence training, increasing productivity and wages. It would also facilitate better job matches and mobility of high-ability workers towards innovative firms (Adalet McGowan and Andrews, 2017). An alternative would be to introduce a contract with employment protection increasing with tenure, as done in Italy and Spain (OECD, 2017c; OECD, 2017d). This would reduce income disparities, given that temporary and informal workers have both the lowest salaries and the lowest levels of protection.

Figure 2.8. Employment protection of regular contracts is restrictive

Index scale of 0 to 6, from least to most restrictive, 2013[1]



1. Or most recent available year.
2. LAC refers to the simple average of Argentina, Brazil, Colombia, Mexico and Peru. OECD refers to the simple average of OECD countries.
Source: OECD (2017), Employment Protection Legislation Indicators Database.

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Reforms to the employment protection legislation should be accompanied by a more effective social safety net for the unemployed and more efficient on-the-job training, placing and re-skilling policies. The unemployment benefit system, which is based on individual accounts with complements from an insurance fund (Solidarity Fund), assures that the worker saves to protect himself from losing a job and avoid work disincentives when employed under formal contracts (Reyes et al., 2010; Hartley et al., 2011). The system was improved in 2015, when the replacement rate was raised from 50% to 70% in the first month of unemployment, decreasing to 30% up to the 7th month (from 20%). Measures also eased access to the Solidarity Fund, by simplifying inscription to the system, slightly increasing the take-up rate.

However, the coverage and benefits of the unemployment system remain limited (Sehnbruch et al., 2017). In 2016, 6% of the unemployed used the Solidarity fund, and 25% accessed unemployment benefits. The reasons are the short duration of the employment contracts and high job rotation in Chile (Gonzalez and Huneeus, 2016; CB, 2016; Sehnbruch et al., 2017), and the fact that self-employed, employers and workers without written contract are not covered by the unemployment insurance system.

Workers, who have not contributed to the insurance for at least 12 months in the case of open-ended contracts and six months in the case of atypical contracts, do not have the right to obtain payments from the system. To access the Solidary Fund, workers need to make 12 contributions over a 24 month period, with the last 3 contributions being continuous and from the same employer. The low take-up of the Solidary Fund is partly explained by a larger delay between the application and the payment with respect to the individual accounts (13 days difference on average) and the still restrictive conditions of access (Comisión Usuarios, 2017). Data reveals that only 50% of employees that terminate a contract in a year have enough contributions in their accounts to access benefits and half 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 et al., 2017).

Coverage should be increased to vulnerable jobseekers by reducing the required minimum contribution periods. This will probably lead to greater reliance on the Solidarity Fund, which could carry some moral hazard problems as workers might reduce job search efforts (Huneeus et al., 2012). However, a higher coverage of unemployment insurance can partially or totally replace other means of protecting workers, such as severance payments, while still having positive impacts on labour formality (Bosch, 2016), as previously not covered workers have higher incentives to look for formal jobs. Linking the unemployment benefit system to regional unemployment (instead of national as is today) is advisable given the large regional differences in terms of jobs and income (Garda and Undurraga, *forthcoming*). This should be implemented in parallel with a strengthening of on-the job training and active labour market policies, covering better the most vulnerable workers in the labour market (discussed below).

Curbing informality

Reducing informality is paramount to increase inclusiveness in the labour market, since vulnerable workers tend to more frequently be informal(Box 2.3 and Table 2.3). Tackling informality requires a comprehensive strategy, including policies to raise productivity, better incentives to formality, and training and education policies. Informality is partly explained by the voluntary affiliation to the pension system for the self-employed, with low and irregular income and myopia (OECD/IDB/WB, 2014). Informality is also a consequence of the high cost of hiring formal workers, wage and non-wage costs, relative to that worker's labour productivity given their skills and employability (IDB, 2015). This is aggravated by weak active labour market policies, which match poorly workers with employers, and complex and restrictive regulations for firms leading them to remain informal.

A number of programmes promote formalisation. For example, the Pension Subsidy for Young Workers gives a subsidy for pension payments for young workers; and a hiring subsidy for firms hiring youth. Young workers can also complement this subsidy with the youth employment subsidy (*Subsidio al Empleo Joven*, see Table 2.4) targeted at workers aged 18-24 years-old from the 40% most vulnerable households, covering also self-employed workers who are up-to-date with pension contributions, and giving also a subsidy to firms hiring these young workers. These programmes are important to promote formality for youth (Centro de Microdatos, 2012) since the first job and its working conditions largely determine the employment and career paths of young people. Indeed, a formal first job improves the probability of being in subsequent formal jobs by at least 50% (ILO, 2015b; OECD, 2015b; IDB, 2015). In Chile, the introduction of the youth

employment led to an increase in youth participation rates and a 6% increase in formal employment rates, with no substitution effect of older workers (Bravo and Rau, 2013).

Table 2.3. Faces of informality in Chile, year 2015

As a % of employment within categories		As a % of employment in the sector	
Total	**30**	Sector	
Female	32	Agriculture, hunting and forestry	44
Age		Fishing	41
Youth (15-24)	32	Mining and quarrying	7
Prime age (25-54)	25	Manufacturing	31
Old age (55-64)	38	Electricity, gas and water supply	10
Education		Construction	32
Below upper secondary	43	Wholesale and retail trade	42
Upper secondary	25	Hotels and restaurants	37
Tertiary education	15	Transport, storage and communications	29
Self-employed	85	Financial intermediation	8
		Real estate, renting and business activities	22
		Public administration and defence	14
		Education	12
		Health and social work	16
		Other community, social and personal service activities	46
		Private households with employed persons	51
		Extra-territorial organizations and bodies	26

Note: Informal jobs are those with no affiliation or contribution to the pension system.
Source: OECD calculations based on CASEN 2015.

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Around 30% of the target population received the youth employment subsidy (Table 2.4), a higher coverage than the pension subsidy given the payment is higher. The take-up of employers has been usually lower than for employees, probably due to lack of information or administrative burden. To increase the take-up better information about the benefits of formalisation among employers and workers is needed, while merging both subsidies into one to simplify procedures would be advisable. Also, the subsidy amount should be higher to compensate for the costs of formalisation while linking it also to the health insurance contribution.

A stronger and more reliable link between contributions and benefits in social protection schemes would increase workers' motivation to join formal employment. The private accounts for unemployment benefits and pensions in Chile go in this direction. However, only around 30% of the Chileans trust private pension's institutions (AFP) (Vergara, 2017 and Bravo Commission, 2015). A good communication strategy to advertise which are the increased benefits and reduced costs for formalisation should be an important component of policy reforms oriented towards reducing informality. In a welcome step, the pension law in congress allows to centralize the job of following firms that do not pay pensions contributions, contributing to reduce informality. There is also a plan to make mandatory the payment of pension contribution for all those self-employed workers making invoices (*boletas de honorario*). All these policies should be accompanied by education and training policies to increase worker's productivity.

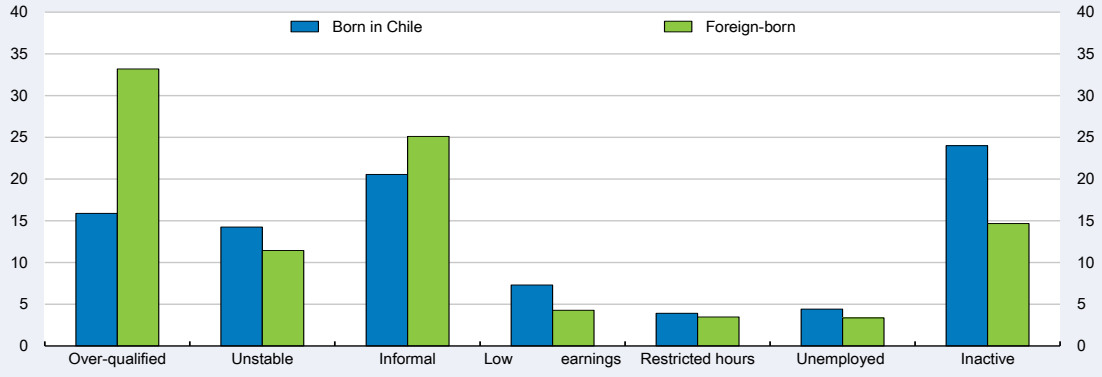
Box 2.3. Enhancing immigrants job quality

Immigration to Chile has tripled in the last decade, going from 1% of the population in 2006 to 2.7% in 2015, and is forecasted to continue increasing. This flow of workers enlarges the working age population, helping to sustain potential growth (Central Bank, 2017). Although being more educated on average than Chileans (Casen, 2015), a higher share of the immigrant population works informally. They also hold more frequently jobs for which they are over-qualified which often translates into wage penalties (Figure 2.9).

Chile has made major policy changes to facilitate the integration of the migrant population and to secure the rights of the most vulnerable of this group. Among those measures are a new work visa created in 2015, and three different Migration Policy Councils. Integration of migrants was helped by several initiatives to encourage children born of undocumented parents and registered at birth as children of transient foreigners to claim Chilean citizenship. Also, the programme *Escuela Somos Todos* favours the grant of student visas to children enrolled in schools who have not yet claimed citizenship. To support the integration of migrants in the Chilean labour market, the national commission responsible for technical certification extended the recognition of skills to resident migrants. Still, regulation in Chile is not prepared to receive massive migration. Easier registration procedures and streamlining the integration process are needed. Other regulations need to be revised, such as the current quotas on foreign workers requiring that at least 85% of hired workers are Chilean nationals if the firm employs 25 or more individuals.

Figure 2.9. Foreign-born have higher chances of being informal and overqualified workers

As a % of population



Note: Unstable jobs are defined as those jobs being not permanent, informal jobs are those with no affiliation or contribution to the pension system, low earnings are those with labour income lower than the first decile, and jobs with restricted hours are those working less than 20 hours a week. Over-qualified workers are defined are defined as those whose highest qualification is higher than the qualification they deem necessary to get their job.
Source: Garda and Undurraga, "Employment barriers of the vulnerable in Chile", *forthcoming* and OECD calculations using PIAAC.

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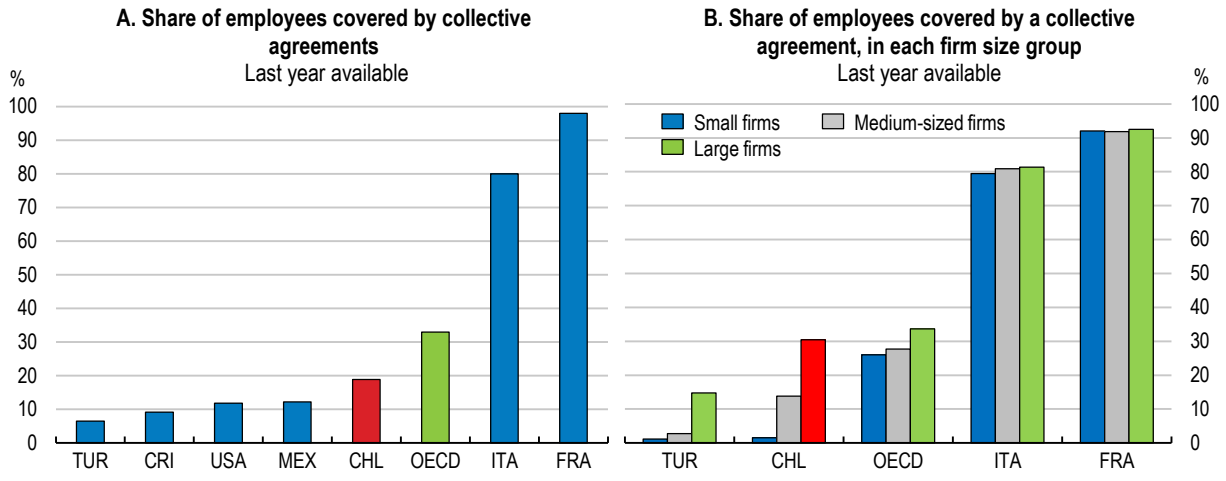
Collective negotiations

Strengthening collective bargaining could help reduce labour market inequalities. Coverage is relatively low (Figure 2.10), and negotiations are decentralised at the firm-level without coordination. However, the fraction of workers belonging to unions has been going up, from 12,8% to 16,5% between 2006 and 2016. Collective bargaining should help attain the right balance between flexibility and inclusiveness in the labour market (OECD, 20017e). In this sense, collective bargaining can help decrease income inequality provided that it does not increase labour market segmentation.

In 2016, the Chilean Government passed a reform to improve collective bargaining. It extends collective bargaining rights, incentivises union membership, and eliminates the replacement of workers on strike. In the first six months of implementation the reform did not have an impact on litigation or lengthier strikes (Ministry of Labour, 2017a). Continued monitoring is needed, and if necessary a clarification of the range of minimum services that are guaranteed in the case of strikes should be made. While increasing worker's negotiating power is important, particularly in a country characterized by vast inequalities, a more ambitious reform to address the high degree of labour market segmentation is needed.

Figure 2.10. The coverage of collective bargaining in Chile is well below the OECD average



Note: In Chile firm of less than 5 employees are excluded from the sample.
Source: OECD (2017), Employment Outlook.

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A comprehensive activation strategy is needed to strengthen employability

Job search and training policies should allow vulnerable workers to acquire and maintain relevant skills. By doing so, these policies can improve the quality of jobs 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 important in the context of population ageing, where the majority of the 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.

Training programmes

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, several assessments have concluded that Chile's publicly funded training programmes are ineffective and poorly targeted at those who need it most (Larrañaga et al., 2011; Huneeus et al., 2013). Vulnerable, low-skilled workers and those facing labour market difficulties receive less training (Figure 2.11).

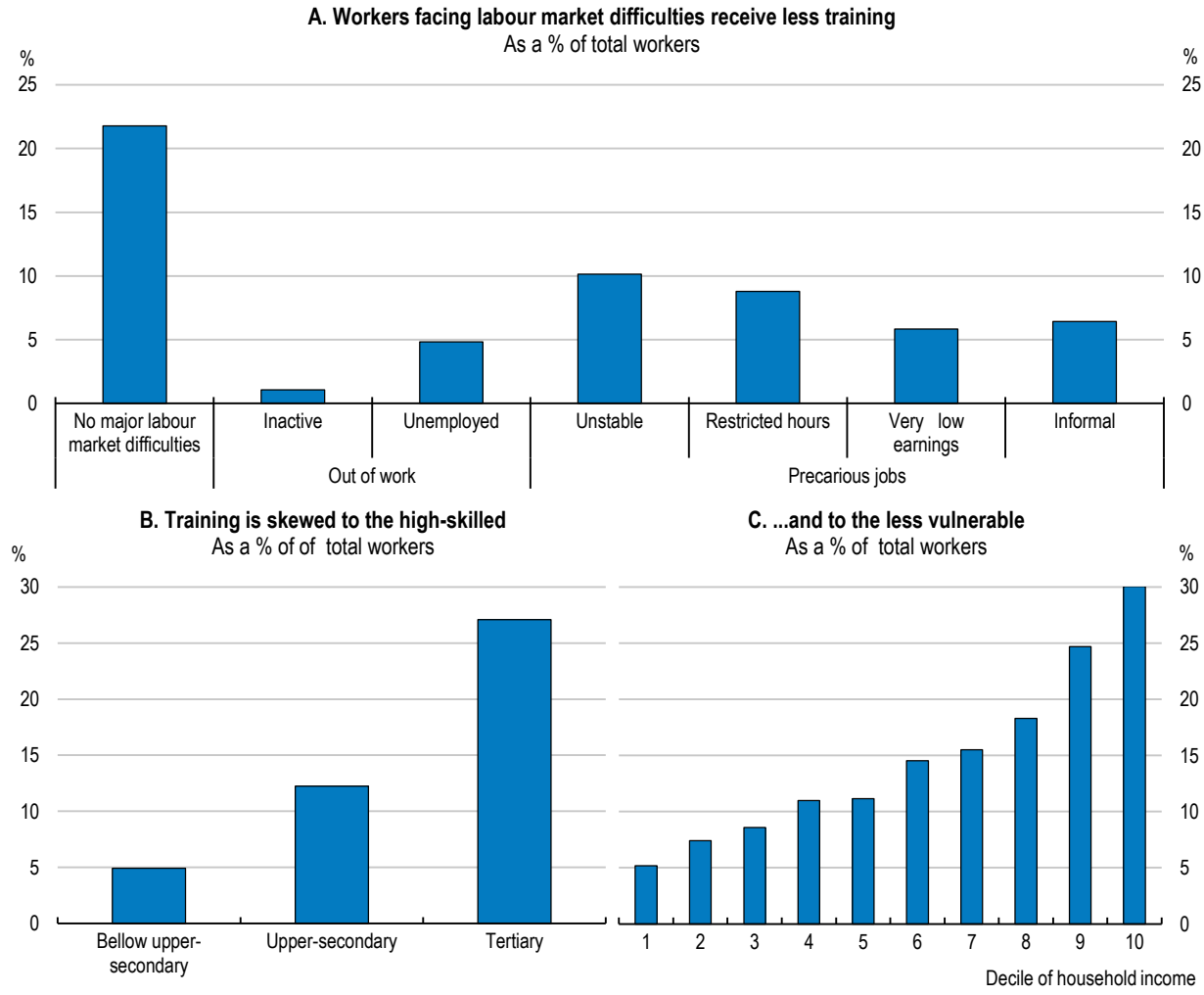
Chile lacks a lifelong learning system with a clear national regulatory framework and a clear national plan. Most expenditure on active labour market programmes (ALMPs) are channelled into job training and executed by SENCE (the national training and employment service institution). The system is formed by: tax credits for on-the-job training (*Impulsa Personas*), training programs targeted primarily at vulnerable groups (e.g. *Más Capaz*) and employment subsidies.

Impulsa Personas (ex-Franquicia Tributaria) is one of the main training programmes. In 2016, it reached circa 8% of the labour force. Tax credits to firms who send their workers on training with certified institutions are equivalent to around 30% of public spending on training in 2016 (Table 2.4). This programme benefits mostly large firms, which tend to already have less vulnerable, highly educated workers (Larrañaga et al., 2014; Rodriguez and Urzúa, 2011) and does not reach the self-employed, which have accounted for a large share of job creation in the latest years.

The programme should be re-designed to boost the skills of the most in need. At the end of 2016, the Government changed the programme's name and included the possibility of using the tax credit on evaluation and certification of competencies, using it for levelling programs for basic and adult education or for conducting a study on training needs within the sector. The aim is to link better training and worker needs to labour market demands. These efforts should continue, and there should be a requirement for the training providers of alignment with industrial needs. This can be achieved with more coordination among the actors providing and receiving training. Another desirable change is to limit the universe of eligible workers to those with medium and low salaries, so as to allocate public resources to those who are less able to pay and have greater deficiencies in labour competencies.

Another 30% of public spending allocated to SENCE in 2016 is targeted to the most vulnerable, including women, youth and low-skilled workers (Table 2.4). *Más Capaz* (More Able) is the flagship programme for skills and employability development introduced in 2014. The programme is targeted for women, youth and disabled, proving short-term training, labour intermediation services, and certification of competencies. In 2016, the programme reached around 5% of the target population. These types of short-term training programmes have proven to be modestly (but persistently) effective in terms of the quality of the jobs found in the region (IDB, 2015). Evidence for Chile indicates the programme works better for the unemployed than for the inactive (Brown et al., 2016). To raise impact of *Más Capaz*, work-based training should 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 (Kaplan, et al., 2015).

Figure 2.11. Training programs are badly targeted



Note: Data refer to 2015. Training is defined as participating in training of at least 8 hours in the last 12 months. Panel A is based on people aged between 18 and 64 not in full-time education. People facing labour market difficulties are out-of-work (unemployed or inactive). Workers holding precarious jobs are defined as unstable jobs (all those jobs being not permanent) or informal jobs (not affiliated or not contributing to the pension system) or having low earnings (monthly labour income is lower than the he first percentile) or jobs with restricted hours (working less than 20 hours a week). See Box 2 for definitions. Panel B is people aged 25-64.
Source: OECD calculations based on CASEN (2015).

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Lately, efforts have been made to increase SENCE's technical capability and the relevance of the courses. A Qualification Framework (*ChileValora*) has been developed and there are more courses linked to these profiles. Also, the training providers (*Organismos Técnicos Capacitadores*, OTECs) are required to provide courses in line with industrial needs. However, there is no formal mechanism to evaluate and it is difficult for training users to check quality of the courses. Also, some profiles raised by *ChileValora* are sometimes too specific or too related to a certain group of companies (Ruiz-Tagle and Ruiz de Viñaspre, 2017). Efforts to better link training to the labour

market need to be strengthened in coordination with employers. 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.

A systematic assessment of the labour market impact of activation programmes is needed. 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 design of programmes should be done considering the collection of appropriate data to monitor and do effective impact evaluations. The emphasis should be on ensuring that resources are channelled towards programmes that proved to be effective in helping people gain employment in quality jobs that match their skills.

Search and matching assistance

Public employment services can play an important role in matching labour demand and supply through the provision of information, placement and active support services for the unemployed and getting inactive workers into employment. The provision of public employment services in Chile is a shared responsibility between central and municipal governments. The main channels for service delivery are the municipal employment offices (*Oficinas Municipales de Información Laboral*, OMILs) and the online national jobs portal (*Bolsa Nacional de Empleo*, BNE) which exists since 2007 and re-launched at the beginning of 2017.

The integrated information and management system to improve the links between job training, job placement and labour market information is being strengthened. It is based on online platform *Bolsa Nacional de Empleo*, which provides automated matching services between jobseekers and employers. The registration is mandatory for those unemployed and receiving the solidary fund of unemployment benefits. This system is a welcome step since it allows better coordination between agencies, such as pension funds, internal revenue service and civil registry, and it will enable the allocation of resources and delivery of services in accordance with specific local conditions. However, OMILs use the system mainly to register workers and do very little job intermediation through it. To increase efficiency, all OMILs should be obliged to share information on vacancies, allowing for more coordination among them (IDB, *forthcoming*). Furthermore, the system could be used to provide training opportunities or other type of services, such as workshops to give beneficiaries a full set of relevant opportunities.

OMILs should become a gateway for socially disadvantaged members of the population into training and job-search policies. The online-information system needs to be accompanied by specialised counselling providing tailored assistance and guidance in job search and training opportunities (OECD, 2015b). Since 2009, the OMIL's strengthening programme (*Programa de Fortalecimiento OMIL*, FOMIL) has facilitated both the expansion of employment offices and their improved performance. Joint efforts by central and local government have resulted in a rapid increase in the number of employment offices from 167 in 2009 to 326 OMILs covering 94% of the country in 2015 (ILO, 2015a).

Table 2.4. Main training programmes coordinated by SENCE

Programme	Type	Description	Eligibility	Target population	Beneficiaries	Evaluation
Más Capaz	Integral training	In place since 2014. Includes training, labour intermediation, levelling of studies, tertiary education, certification of skills and technical assistance for entrepreneurs.	Young people aged 18-29 and women aged 30-64 belonging to the most vulnerable 60% of the population and with low or none labour force participation.	2,032,709	96,925	Low participation of inactive women. During 2015, 80% of the budget was used for professional training, leaving aside the other components of the integral training (Dipres, 2015). While 35% of the unemployed find a job, only 7% of inactive did it (Brown, et al., 2016)
Becas Fondo Cesantía Solidario	Training	In place since 2007. Financing of a training programme chosen by the beneficiary.	Unemployed people who are active beneficiaries of the solidarity pillar of the unemployment benefits.	111,818	2,956	--
Bono Empresa y Negocio	Training	In place since 2011. Financing of a training programme chosen by the beneficiary.	Owners, partners or legal representatives of registered small and micro-enterprises and self-employed.	854,169	6,803	Most beneficiaries were self-employed workers with low participation of micro-entrepreneurs. Positive impact on income or the enterprise's growth for micro-entrepreneurs and on self-assessment and network building for the self-employed (Cliodinámica, 2013).
Aprendices	Training	In place since 2002. Apprenticeship programme combining on the work-training with classroom-based training.	Young workers aged 15-24.	151,444	1,283	No effect in the mean salary of the participants but positive effect on the probability of being employed and in the duration of the employment after participation in the programme (Statcom, 2006)
Subsidio al Empleo Joven	In-work benefit	In place since 2009. The benefit depends on the monthly income, and includes a subsidy for the employer.	Young workers aged 18-24 belonging to the poorest 40% of the population.	773,601	320,523	Positive impact in the employment rate and labour participation in the eligible population. The impact is lower for young people aged 18-19 than for people aged 20-24 (Bravo, D., T. Rau., 2013)
Bono al Trabajo de la Mujer	In-work benefit	In place since 2012. The benefit depends on the monthly income (which could reach 20% of the monthly salary), and it includes a subsidy for the employer.	Female workers, dependant workers or self-employed, aged 25-59, belonging to the most vulnerable 40% of the population, and are up to date with the payments to social security.	1,553,586	337,589	Positive effect of 0,85% in the employment rate for women in the target population, but the effect is very different according to the level of vulnerability of the beneficiaries, becoming insignificant above the 20% vulnerable women (Larrain and Henoch, 2016).
Impulsa Personas (ex-Franquicia Tributaria)	Training	Tax credit for firms				The evidence of the impact on wages is mixed, some studies found a small effect (less than 5%) and some of them found no effect, and none of the studies found an impact on the probability of being employed. At the firm level, no impact on sales was found, but an increase in the sales per worker and in the hiring of qualified workers was found (Mardones and Sepulveda, 2017; Rodrigues and Urzua, 2011).

Efforts to train counsellors to deliver specialized support for vulnerable groups should be strengthened. SENCE provides financial incentives to reward OMILs that better serve groups with low employability (e.g. female heads of household, people with disabilities or first-time jobseekers aged 18-25), especially those in the bottom two income quintiles. However, only 2% of SENCE budget is allocated for labour intermediation and individual guidance (IDB, *forthcoming*). Still a high share of OMILs provides low intermediate level services (ILO, 2015a). A new online training programme for OMILs to ensure that all employment offices run similar service protocols to connect target populations with employability development programmes has been launched in 2016, but it is not yet applied in practice (IDB, *forthcoming*). The delivery of the services can be enhanced through the development of profiling tools helping the OMILs to case workers to streamline their activities and provide more tailored and effective support (OECD, 2015b). The Ministry of Labour is starting to identify new tools for the delivery of public employment services but these measures will need time to be fully operational and should be carefully monitored to ensure they achieve the desired objectives. These methods should be used with all unemployed or registered within BNE and OMILs and those applying to SENCE programmes.

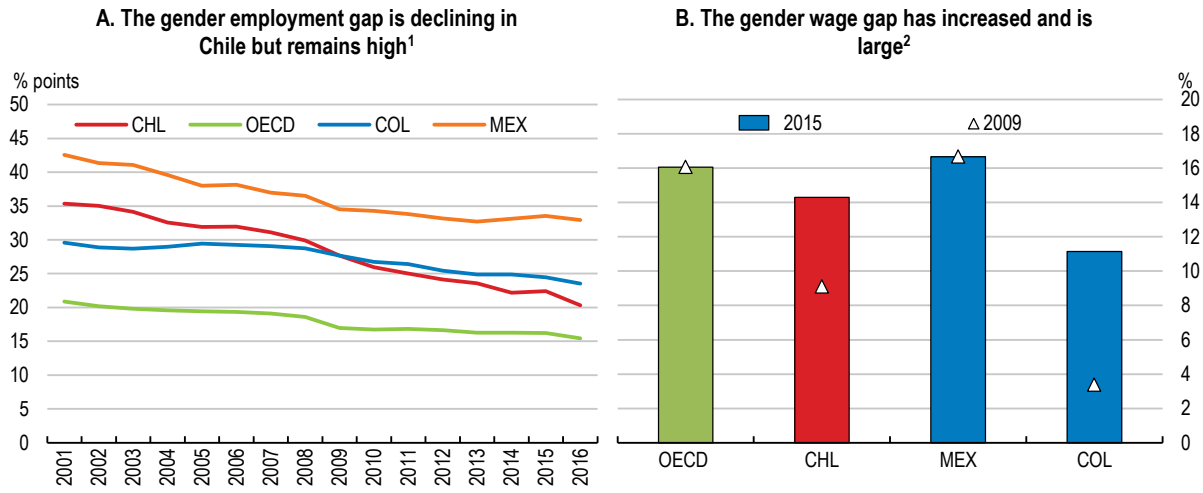
An ambitious reform of ALMPs could provide tailored services to vulnerable groups through training vouchers provided through online learning accounts (based on BNE) and based on the worker's employability. The vouchers could be spent in different employment services but also childcare and transportation, depending on the identified employment barriers. Profiling tools should be used to identify employability and barriers. The beneficiaries should be referred to specialised service providers to help them select from remedial and vocational education, on-the-job training, workshops, or microenterprise programs. These types of targeted financial incentives, such as in Germany, have proved to promote learning and can improve equity in access to learning, particularly for women and the low-skilled (WEF, 2014; Cedefop, 2016).

Promoting gender equality

Equal participation of both genders in the economy is crucial for growth and well-being of the population. Halving the labour force participation gender gap by 2025 could bring an increase in the annual GDP per capita growth of 2.85% in Chile (OECD, 2017f). Moreover, increased employment opportunities for women can contribute to a more equal distribution of household earnings (Causa et al., 2015).

Political, social and economic empowerment of women has seen remarkable progress over the past few decades (OECD, 2016a). However, gender gaps still remain. The employment rates of women has increased substantially in the past decade but the difference with the male employment rate is still high (Figure 1.12, panel A). The wage gender gap has increased in recent years and is well above OECD average (Panel B). OECD calculations indicate that on average a large unexplained gender wage gap remains after controlling for education, age, industry and occupation. This unexplained gap has been stable since 2009 and accounts for other factors such as discrimination or the long-working hours culture which prevent mothers from participating in highly paid jobs (OECD, 2016e). The increase in the gender wage gap between 2009 and 2015, instead, appears to be mainly driven by a relative increase of female employment in lower paid industries. Women are more likely to work in informal jobs or other non-standard employment arrangements, where earnings are often lower, labour market insecurity higher and social protection weaker.

Figure 2.12. Gender gaps remain sizable



1. Gender gaps in employment are measured as male minus female employment to population ratios.
2. Difference between median earnings of men and women relative to median earnings of men. Data are unadjusted and refer to full-time workers (working at least 30 hours a week) excluding domestic services.
Source: OECD, Labour Force Statistics.

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The participation of women in the labour market or in good quality jobs is, at least in part, held down by economic barriers related to childcare (Garda and Undurraga, *forthcoming*). Motherhood typically implies negative effects on workforce participation, pay and career advancement, reflecting women's disproportionate responsibility for unpaid caregiving (OECD, 2017f). Efforts towards universal early education have raised coverage to 86% and 93% for 4 and 5 year olds in 2015, close to the OECD averages of 88% and 94%, respectively. For children aged 3 the coverage is 56% far from the OECD average of 78% (OECD, 2017a). The government has recently introduced reforms to extend quality Early Childhood Education and Care (ECEC), as part of a bigger educational reform in 2014. Public child care centres and kindergartens are being built and expanded to provide care and pre-school education to over 70 thousand additional children (32.500 of which are under 3 years of age). The reform also strengthens the ECEC system by creating new institutions in charge of monitoring, updating curricula and setting quality standards. Quality is also enhanced by making the ECEC teachers part of the general teaching body, which gives them greater opportunities for professional development and support, higher salaries and a new framework for good teaching.

Continuing to expand access to high-quality public early childcare and enlarging opening hours are needed to facilitate quality employment for mothers, notably for the poorest children and in rural areas. Evidence on the relationship between the supply and demand of educational services indicates that lower-income households tend to base their choices on non-academic factors such as distance and opening hours or availability of extracurricular activities (Alves, et al. 2015). Cultural and social factors play also a significant role explaining the low female labour force participation (Contreras and Plaza, 2010) and could also explain the low demand for childcare centres. Parents need to understand the importance of sending the children to early education, and centres need to

be near the house or work with available transport and compatible opening hours to increase female participation in high-quality jobs.

The Government has tried several times to amend a law by which companies employing 20 or more women have to cover childcare costs for the female employees' children during the child's first two years. This regulation can encourage greater female labour supply; but it also increases the costs of hiring women relative to men reducing the hiring rates for female workers. Evidence shows that firms translate the childcare costs to the workers through lower wages (Rojas et al., 2016). Indeed, the marginal women hired beyond the 20 workers threshold earn between 9 and 20% below female workers hired by the same firm when no requirement of providing child care was imposed (Prada, et al., 2015), amplifying gender gaps. Providing universal childcare and financing it through general revenues would raise female employment and wages in medium sized and large firms.

The over-representation of women in informal and other precarious jobs is, at least in part, a consequence of the unequal gender distribution of unpaid work. Chilean women carry out at least two times more unpaid household and care work than men (UN, 2015). This inequality affects women's ability to obtain and remain in jobs – given the hours and availability that some jobs require. The efforts of the newly-created Ministry of Women and Gender Equity to raise awareness are welcome and should continue. Policies to promote flexible work arrangements, shared mother and father parental leaves together with incentives to allow fathers to take parental leave and breaking stereotypes are needed.

To encourage women from vulnerable backgrounds to engage in formal work, the government introduced an in-work benefit: Women's Worker Bonus (*Bono al Trabajo de la Mujer*) in 2012, similar in design to the youth employment subsidy, increasing the coverage in 2014 and 2016. The benefit targets women among the 40% poorest households aged 25-59 that are employed or self-employed and are up to date with the payments to social security and can be used for a maximum of 4 years. It also includes a subsidy for the employer to encourage labour demand and formalisation for a maximum of two years. Recent evidence shows that the Women's Worker Bonus has a small average positive impact on the employment rate of 0.85% for the 40% most vulnerable women (Larrain and Henoch, 2016). Women in the poorest 5% households have the maximum impact of around 3% in the employment rate, an effect that decreases and becomes insignificant beyond the poorest 20% households. Furthermore, just 20% of the eligible women are beneficiaries (Sence, 2017). This suggests, at least in part,, that the benefit is not high enough to be an incentive for formalisation and be up to date with payments to social security (Dipres, 2016). Further impact evaluations of this benefit are needed and in case of need make changes to enhance formalisation.

Skills are also an important employment barrier faced by women. Women tend to underperform men in literacy proficiency, being on of the largest gaps in the OECD (Quiniti, *forthcoming*).The government introduced in 2014 training programmes (*Más Capaz Mujer* and *Más Capaz Mujer Emprendedora*) for women between 18 and 64 years old, belonging to the 60% poorest households, having low or weak formal labour force participation (less than 6 months of paid social security in the last 12 months). One of the programmes is especially designed for female self-employed. The programmes provide between 100 and 300 hour-courses, plus transport and childcare subsidies. The share of inactive women participating in these programmes is low (Dipres, 2015), driven by the fact that the subsidy is not high enough to cover the costs for self-employed female

workers to participate. Since women vary in terms of employability and difficulty in participating in quality education/training, a voucher or training account with amounts depending on the female profile would be advisable. The amounts of the voucher, which could also be spent on childcare and transportation services, would depend on the female worker situation (age and one or more children and rural or urban locations). Finally, female workers tend to experience a wage gap after participation in the programme driven mainly by the difference in the type of courses women participate (Brown, et al., 2016). Encouraging women's access to academic fields that "pay off" should be priority, by for example increasing information on field's labour market outcomes.

Improving relevance of education is key to raise the supply of quality workers

Education is the key to equality of opportunity and social progress. Education policies should ensure that workers are equipped with the right skills to thrive in the labour market and get high-quality jobs. A skilled workforce also makes it easier to transform to a knowledge-based and innovative economy, boosting productivity and growth. Having a skilled workforce requires a high-quality education system that gives individuals the best possible start in the labour market. It also requires that the skills acquired through the education and training system correspond to labour market needs avoiding skill mismatches.

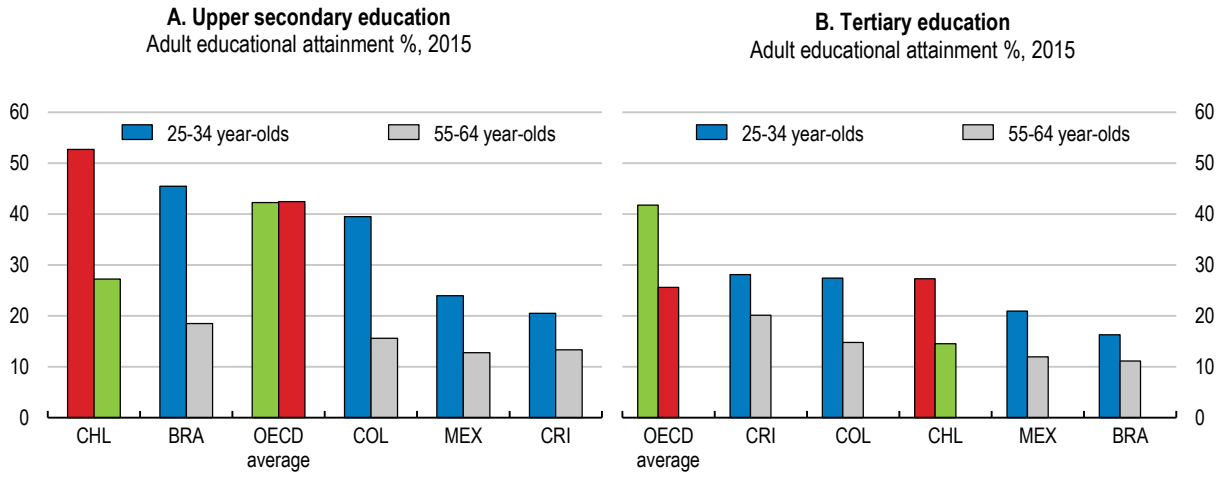
Progress in education attainment across Chilean generations has been notable. There has been a clear increase in attainment rates between the younger and older generations (Figure 2.13) and consistent signs of improvement in the quality of education in the latest years. However, average levels of proficiency in science are still low compared to other OECD countries and significant inequalities persist in school outcomes (Figure 2.14). Chile is one of the countries where the socio-economic background of students influences performance the most. Furthermore, students also have larger performance gaps related to gender than in other OECD countries, with boys outperforming girls in science and mathematics (OECD, 2017a).

A wide-ranging educational reform to improve the quality and equity of the education system has been initiated in 2014. The reforms spans early childhood education and care (ECEC), student selection and admission processes in schools, public school governance and funding, teacher career pathways, vocational education and training (VET) and tertiary education.

Initial education and schools

Access to quality education opportunities is highly stratified. Students from vulnerable backgrounds and low socioeconomic status choose, on average, different academic alternatives than students who do not live in vulnerable conditions. Comparatively few 15-year-old students attend public municipal schools, organised by public authorities: 38% against an OECD average of 82%. The remaining students can be divided between those attending private-subsidized schools (51%), which receive the majority of their funding from public sources (48%, compared with the OECD average of 14%), and those attending government-independent private schools (10%) (OECD, 2014a). Urban areas have a larger share of private subsidized schools and a majority of public-municipal schools are located in rural areas. As in other OECD countries; private schools tend to perform better. But this difference can be almost entirely attributed to students' and schools' social background. After accounting for social background of students and schools, this advantage disappears (OECD, 2014a).

Figure 2.13. Education has progressed over the recent years



Source: OECD, Education at a Glance (2016).

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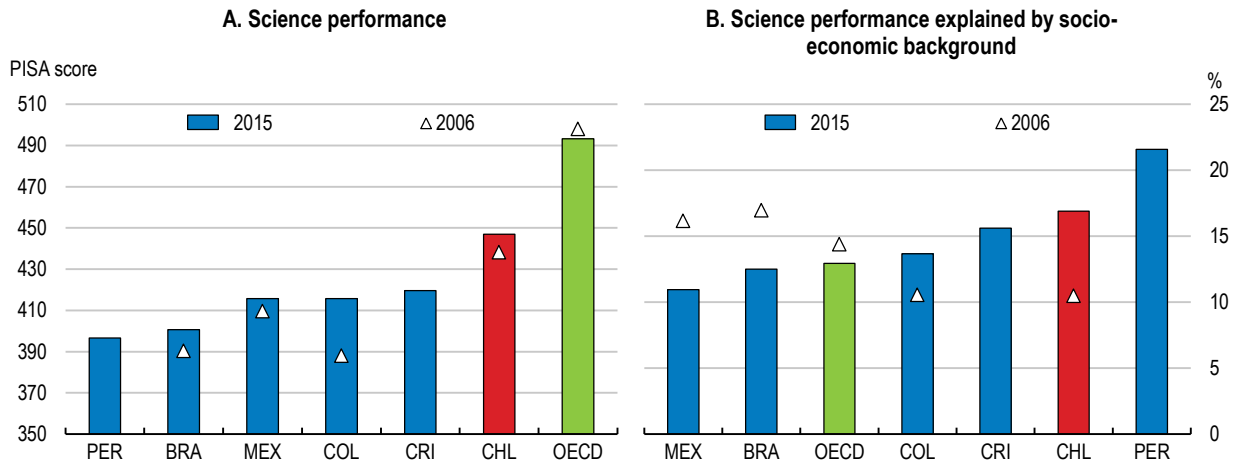
The Inclusion and Equity Law of 2015 aims at reducing these inequities in school. The reform aims to reduce segregation, mainly by terminating co-payments mechanisms (payment by the government and shared financing paid by parents), gradually ending student selection in schools receiving public funding, ending the possibility of schools receiving public allocations to make profits, eliminating student selection, and providing increasing public resources to the Preferential School Subsidy (*Subvención Escolar Preferencial*) discriminating positively in favour of schools with larger proportions of vulnerable students. In 2016, 600 thousand students that were paying for their education have now access to free education. The reform also seeks to improve quality of education by increasing teacher career prospects. A New System of Teacher Professional Development was adopted in 2016, raising requirements for accreditation of universities providing initial teacher preparation, introduced teacher career pathways and pay structures, increased non-teaching time for class preparation, and salary increases for the whole profession plus additional bonuses provided to teachers working in socio-economic disadvantaged schools. This new system includes VET and early childhood education teachers.

If well-implemented, the school reform can reduce segregation, assure quality curricula and increase teacher performance. This can help improve social mobility and skills outcomes for all. The country should continue to monitor and discourage school level practices that hinder equality of educational opportunity based on socio-economic status, gender, ethnicity, or immigration status (OECD, 2017b). In particular, inclusiveness will depend on encouraging girls' entry into fields of study traditionally dominated by men, such as mathematics and science. Also, maintaining and strengthening the Preferential School Subsidy, ensuring that the resources reach schools, monitoring their impact, and creating incentives to invest the majority of the funds in capacity building for continuous instructional improvement would benefit the most vulnerable students, notably indigenous and immigrant children (OECD, 2017b). Furthermore, more efforts are needed to develop a broader and high-quality early childhood education strategy, focusing especially on children in the lowest quintiles or in rural areas (OECD, 2017b). A National Plan for Early Childhood Education and Well-being building on the existing

achievements, as the one implemented in Australia in 2009 or Canada in 2014, would ensure clarity in goals and national recognition on the importance of ECEC and support development of policies and initiatives to enhance quality and continuity of the learning experience.

Figure 2.14. School results have improved, not equity



Note: Panel B displays the percentage of variation in science performance explained by the PISA index of economic, social and cultural.
Source: OECD, PISA 2006 and 2015.

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Vocational Education and Training

Improving Vocational Education and Training (VET) can substantially enhance skills, inclusiveness and avoid skill mismatches for a large share of the population. VET is well-developed but quality and equity remain key issues (OECD, 2017b). It is expected that 84% of Chileans will complete upper-secondary education over their lifetime, which is equal to the average across OECD countries (OECD, 2014a). The majority of those will graduate from a general programme (55%), yet VET is important for upper-secondary education, chosen by almost 40% of these graduates.

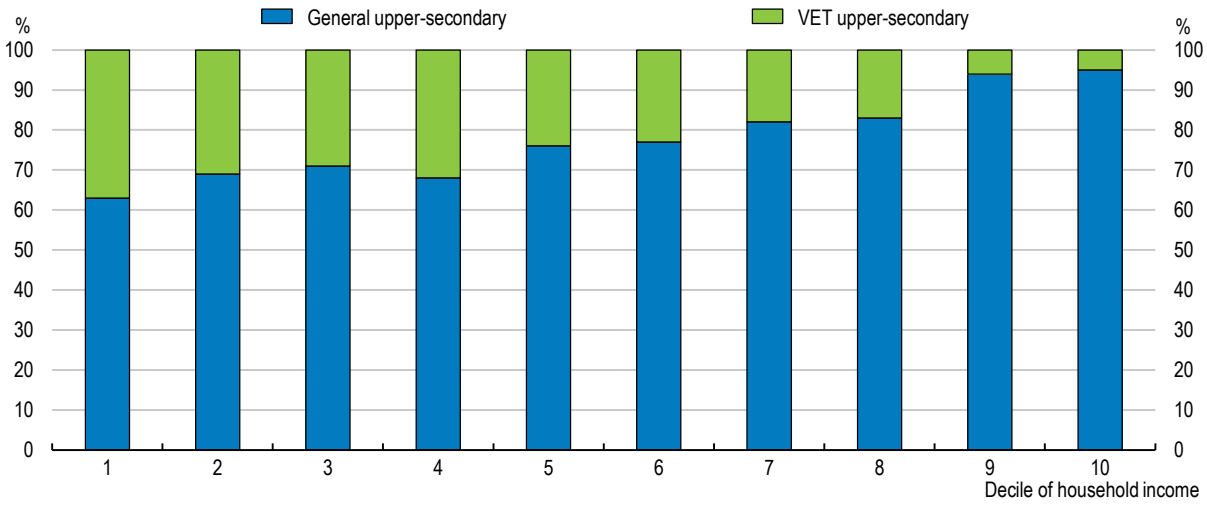
Students in VET tend to come from a more disadvantaged background. Only 3% of the richest students enrol in upper-secondary VET, while more than one third of the poorest ones choose vocational paths (Figure 2.15). Improving the quality of VET is paramount to help the most disadvantaged groups of the labour market get quality jobs providing them with the right balance of technical and broader skills.

The educational reform aims to develop a VET system better linked to labour and economic needs by achieving higher coordination between firms and training institutions. Four key elements define the new policy: 1) increasing VET quality, by developing more transversal skills in VET, incorporating VET teachers in the New System of Teacher Professional Development; 2) fostering competitiveness, entrepreneurship and innovation by ensuring a relevant offer of VET programmes, for example, through the creation of a VET qualifications framework; 3) successful education and labour pathways requiring better connecting training institutions and the labour market and achieving higher articulation with training programmes (such as *Más Capaz*); 4) a new governance of the

VET system by creating a new council for VET (*Consejo asesor de la formación técnico profesional*). In a welcome step, the Advisory Council for Professional Technical Training, (an entity headed by the Ministry of Education in collaboration with other ministries, agencies and experts) is developing the Professional Technical Training Strategy 2018-2030, which seeks to establish a road map to improve vocational training.

Figure 2.15. Students in VET tend to come from a more disadvantaged background

Distribution of students in upper-secondary education, by access program, 2015



Note: Vocational education and training (VET) upper-secondary refers to Technical-Professional Mid-level Education (Técnico-Profesional) and general upper-secondary to Humanistic-Scientific Mid-level Education, (Enseñanza Media Científico-Humanista).
Source: OECD (2017), Education in Chile, Reviews of National Policies for Education, OECD Publishing.

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The reform goes in the right direction, but more is needed. For example, VET programmes have a low content of work-based learning. A small share (less than 10%) of upper-secondary VET students follow a dual track, which consists of alternating periods of school-based and work-based training. As noted in previous surveys (OECD, 2013 and 2015a) and the OECD review of Chile's VET system (Kis and Field, 2009) workplace training, as part of VET programmes, is poorly developed and the mechanisms to assure its quality are weak.

Chile's upper secondary and tertiary VET programmes are not well connected. The VET system also offers tertiary VET programmes, including technical training centres (*Centros de Formación Técnica*, CFT) and professional institutes (*Institutos Profesionales*, IP), which are all private institutions, with the exemption of the new 15 CFT centres as part of the ongoing reform of higher education. CFT and IP enrol 43% of students in tertiary programmes. Universities can also offer vocational programmes, but less than half do. Students can pass from one programme to another, but they often have to re-take coursework. A national qualifications framework, under development, that differentiates and classifies distinct qualifications issued by different types of providers can help promote greater coherence, transparency and student mobility across levels. This will help build strong connections between VET and academic programmes and the labour market.

The relationship between qualifications and skills in Chile needs to be reinforced to improve the skill-matching process and the selection of skilled workers by employers. This should be done by strengthening the links between education providers and employers. Strengthening the work-based learning component of formal education is also essential for qualifications to become true signals of skills and to enhance skill matching. Also, more and better incentives could be provided for employers to hire and train youth by facilitating and expanding the take-up of youth employment subsidies (such as, *Yo trabajo* or *Subsidio Empleo Joven*, see Table 2.4) and linking them to work-based learning.

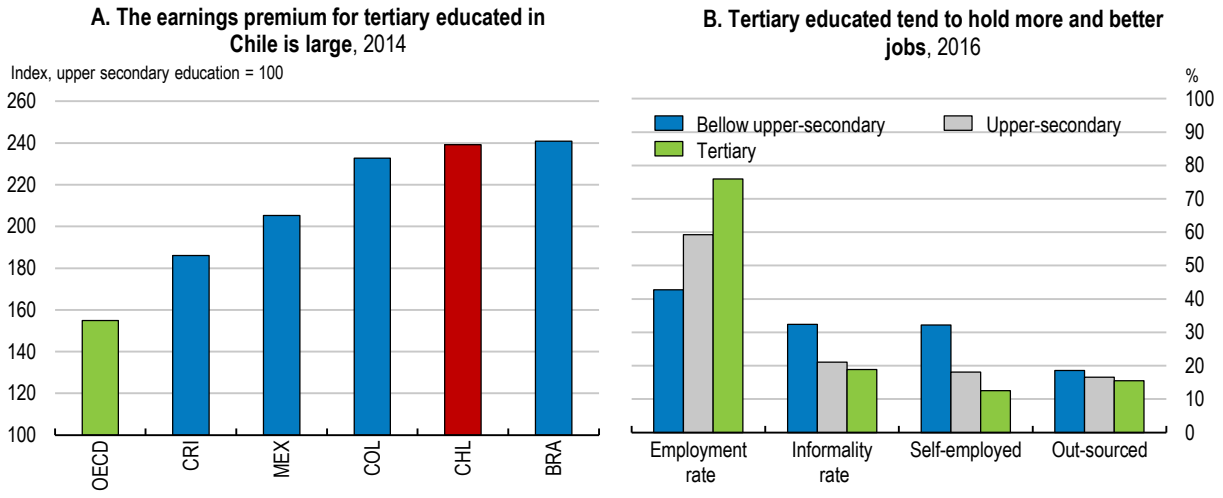
Strengthen quality and relevance of higher education

The benefits from higher education are significant in Chile, both in employment and earnings. The employment prospects and earning premiums of tertiary-educated individuals in Chile are above average for OECD countries (Figure 2.16). However, only 22% of the population have completed tertiary education, compared to the OECD average of 37% (OECD, 2017a).

Enrolment in higher education institutions almost doubled, but higher education programmes proliferated without strategic coordination. Skills of tertiary educated lag behind other OECD countries and there is large gap between VET and bachelor tertiary education (Figure 2.17). 84% of Chilean students are enrolled at private institutions (technical-professional or universities). While all public or non-for profit private universities (known as CRUCH in Chile) were accredited institutions in 2016 (OECD, 2017b), 57% of Chile's private universities and less than half of the VET high education institutions were accredited (IPs: 40% and CFTs: 33%). Furthermore, the net returns to higher education have a large dispersion, being negative for a significant share of students at the university (22%) and technical levels (55%), meaning that these students net earnings (after paying for their studies) might have been higher if they had not earned a higher education degree (González-Velosa, et al., 2015). This is at least partly explained by poor quality education and a disconnection with labour market needs.

In January 2018, the government passed a wide-ranging higher education reform, to address access and quality issues. The reform creates a new Sub-Secretariat for Higher Education covering universities and VET at tertiary level bringing higher education institutions together in a unified system; and a new Higher Education Superintendency. It introduces measures to strengthen quality assurance processes, through the reinforcement of a national quality assurance system for higher education and the creation of a new VET Advisory Committee (*Consejo Asesor de Formación Técnico Profesional*) composed by the higher education Sub-secretary, the Superintendency and the National Council of Education. Furthermore, efforts to increase the involvement of the government in higher education have been made by creating two public universities and 15 public VET centres.

Figure 2.16. Employment and earnings prospects for tertiary educated are large in Chile



Note: Informality rate is defined as the percentage of wage earners with no written contract or no health, pension or unemployment benefit contributions. Fixed term contracts are defined as a percentage of wage earners. Self-employment rate is the percentage of self-employment in total employment.
Source: OECD Education at a Glance, 2016 and OECD calculations using Labour Force Survey (NENE) for Chile.

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A high share of tertiary education spending comes from private households. At tertiary level, private spending constitutes 64% of all expenditure, more than double the OECD average of 30% (OECD, 2017a). Furthermore, Chile charges the second highest tuition fees at public institutions in the OECD after the United States. Typically, students from rich families get state-subsidised university places, while lower-income tend to attend lower quality private institutions and accumulate debt (OECD, 2017b).

Chile's student financial aid system is complex, consisting of scholarships and loans. Since 2016, grants for the bottom six deciles of family income through the "free education" (*gratuidad*) programme. The financial aid system could be simplified and merged into one to better target low income students, as the existing scholarships and loans favour universities that attract the less vulnerable (OECD, 207b).

The higher-education funding system should balance access and quality, and provide more incentives to enhance quality. As previous surveys noted (OECD, 2015a; OECD, 2013), Chile should develop a funding system for tertiary education that, balances strong labour market outcomes for all, while enhancing quality. Achieving equity in access to high-quality higher education will require further efforts to address financial barriers and academic and social challenges that disadvantaged students face in early childhood and compulsory education, when they transition into higher education and complete their degrees (OECD, 2017b).

Chile needs to take steps to develop an effective and mandatory accreditation system for all tertiary VET programmes and institutions. The higher-education reform envisages mandatory accreditation for all institutions and should be implemented. Existing processes are voluntary and designed for academic university programmes, and sometimes have little relevance for VET programmes. There is wide variability in the

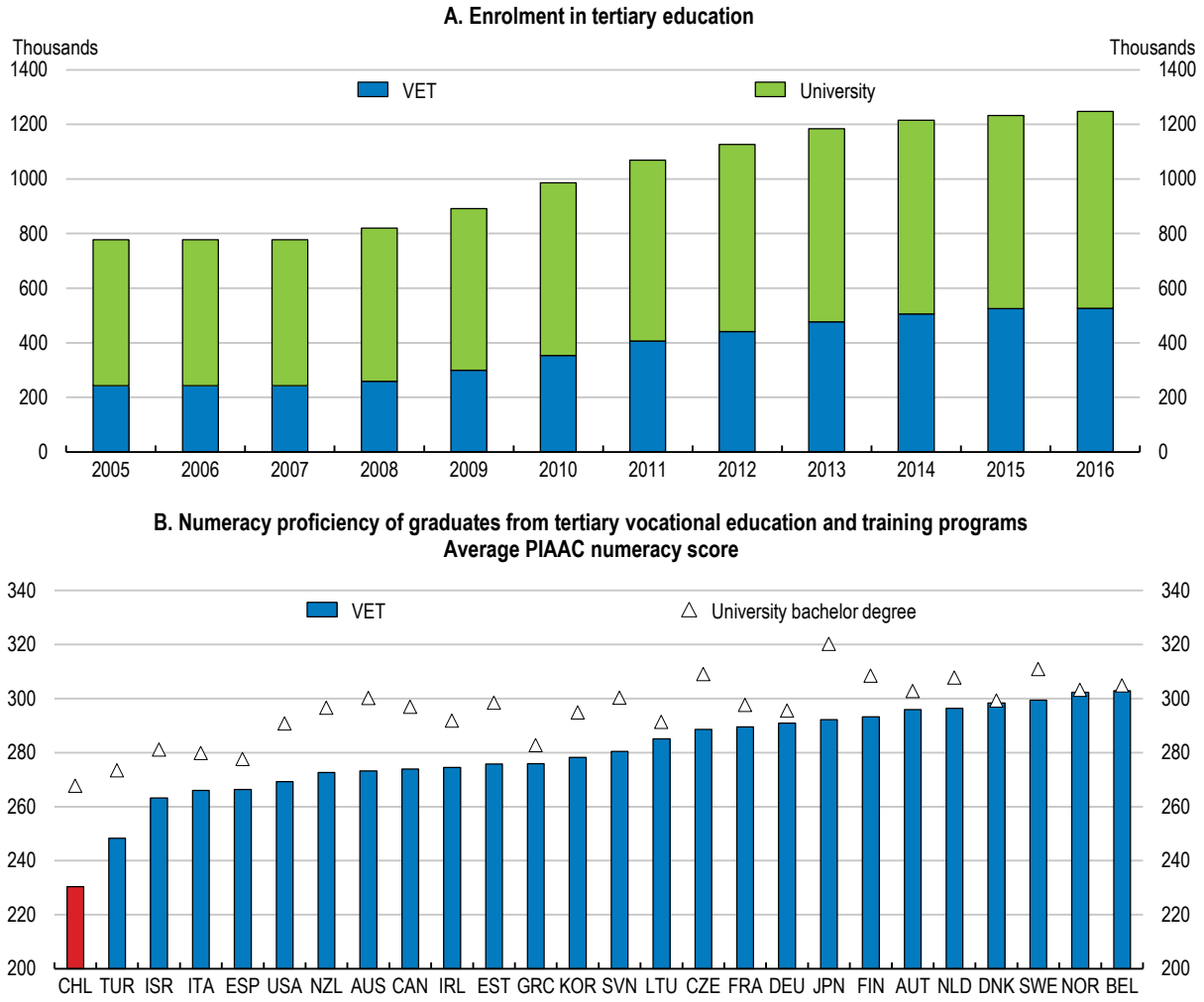
quality of VET programmes, hurting both students and employers which lack information on the programmes' quality. Ensuring that all tertiary VET programmes and institutions do not fall under a certain quality level is needed to increase quality and equity in the system.

Higher education institutions are weakly linked to the world of work. Institutions lack linkages with research and development. Employers are minimally engaged in identifying programme needs and planning curricula and frequently complain about the gap between what students learn at university and the needs of the labour market. Chile has one of the smallest proportions of firms collaborating on innovation with higher education or research institutions in OECD (OECD, 2016c). The development of the National Qualification Framework will help, but details of implementation will be key for the success. Once the National Qualification Framework is developed it should be used as conditionality for receiving public funding (OECD, 2017b). Also, adequate student counselling and mentoring to support students in their decisions would help to increase relevance in their decisions.

Improving labour market information on skill needs and ensuring that this information is used effectively to develop the right skills across all formal education and training policies is paramount to increase relevance of the educational offer and reduce skills mismatches and shortages. This can be done by promoting skills assessment and anticipation (SAA) exercises. Typically, the results of SAA produce information on where (i.e. in what economic sectors, occupations, or geographic areas) and when (i.e. now, in the future, or both) the demand and supply of skills are (mis)aligned. It is useful for policy makers to steer policy action (e.g. in education, employment, and migration policy areas), and by individuals (e.g. students; jobseekers) to support their employment or education choices. In particular, it could be used to link formal education (VET and universities) and training to the needs of the labour market.

The Productivity Commission has started to analyse skills gaps and should develop a national action plan with specific short- and long-term recommendations to strengthen vocational education and the training system. At the moment, there are no national level exercises and the most developed exercise is the annual mining-specific forecast carried out by the mining council (*Consejo Minero de Chile*). Chilean regional exercises rely mostly on the analysis of labour market statistics and the regional foresight exercise is still in development. Up to now, all skills assessment and anticipation exercises were sectoral and carried out on an ad-hoc basis by sector organisations based on secondary data (OECD, 2016b). Chile should develop a national and better integrated SAA exercises and use them to inform education, employment, and migration policy as well as students and jobseekers. These strategies will help make it possible for education, particularly training systems and technical education, to become more attuned to employers' skill needs.

Figure 2.17. Quality challenges arised from the rapid increase in tertiary education enrolment



Note: Vocational education and training (VET) institutions include Professional Institutes (Institutos Profesionales- IP) and Technical Training Centres (Centros de Formación Técnica, CFT).
Source: OECD calculations based on PIAAC (2012 and 2015) and; Servicios de Educación Superior, Ministerio de Educación, Chile.

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Chilean universities perform very well in international rankings by regional standards. Researchers show also relatively high levels of international mobility. However, attracting international faculty and alumni studying abroad is relatively limited. Enhancing internationalisation of faculty could be done through the National Scientific and Technological Research Commission using international linkages as decisive criteria in assessing proposals for supporting research centres, or further efforts to send researchers abroad for at least part of their PhD training (OECD, 2017b). Building higher participation in international exchanges should be a priority for the higher education system, with support from the Government potentially in the form of faculty grants, student scholarships or financial incentives for institutions. Developing agreements with higher education institutions abroad ensuring adequate and efficient recognition of credits during academic exchanges would help enhance internationalisation.

Developing an apprenticeship system

Developing an apprenticeship system would improve youth's opportunities to get better quality jobs (Kuczera, 2017), avoid skill mismatches and enhance productivity (Fazio et al., 2016). Apprenticeships can help young people to maintain the link with the labour market, gain useful work-relevant skills, reduce school drop-out rates, improve employment opportunities and have a first formal job (OECD, 2015b; ILO, 2015b). In Brazil, for example, 80% of those who complete apprenticeship programmes find a formal job within two years. Yet, their effectiveness depends on ensuring access to high quality programmes, making apprenticeships valuable to youth and attractive to employers.

Chile has an incipient system of apprenticeship but participation is low (Figure 2.18, Panel A). The main apprenticeship programme (*Aprendices*) is for out-of-school workers aged 15-24 (Table 2.4). It combines on the work-training with classroom-based training, where the apprentice receives at least the minimum wage (maximum two minimum wages). The company receives a training voucher of half the minimum wage as to encourage additional training on the side of the employer for one year. The classroom-based training is provided by the OTECs, which are administers of the apprenticeships nationally.

The apprenticeship contract remains underutilized. In 2016, 1 286 workers participated in this programme (0.9% of the target population). An evaluation of 2006 shows that the programme has positive effect on employment prospects for the beneficiaries (Dipres, 2006). For those that finished in 2008, 40% stayed working within the same firm and 20% find a job related to the obtained training (ILO, 2010). However, no proper evaluation is available since there is no reliable data and evidence shows that youth participating in apprenticeship contracts have low proficiency levels (Figure 2.16). A system of follow-up information on the beneficiaries' job performance and the acquisition of human capital to create feedback mechanisms based on accurate information is advisable, so as to evaluate the medium and long term impacts of the program.

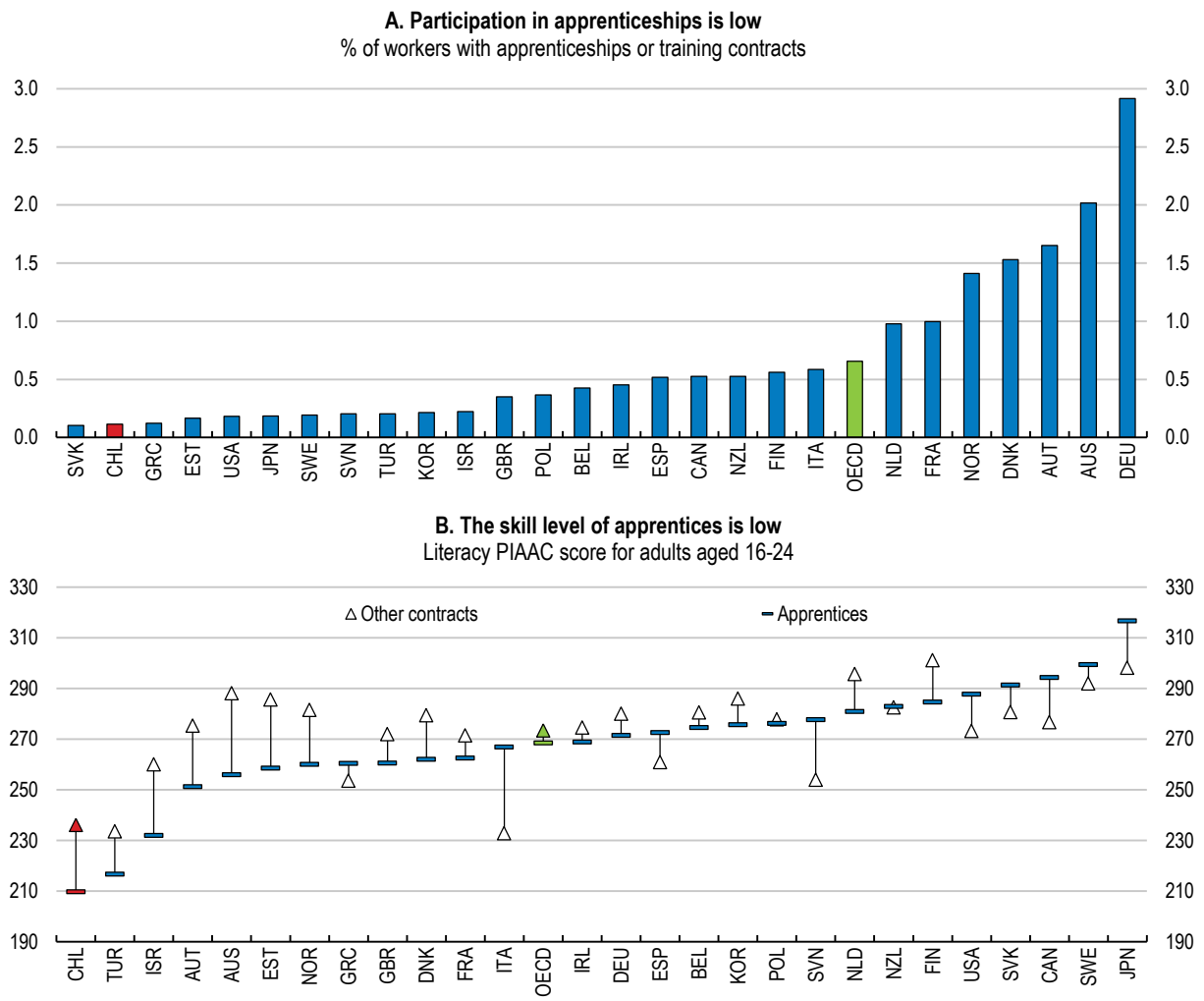
There are no mechanisms to ensure the quality of training and regulate it in terms of content and learning objectives. In particular, there is no coordination with VET and *ChileValora* (Chilean certification organisation). A national system of control and monitoring of the training provided by firms, the crucial element of the apprenticeship contract, needs to be set up. Also, offering the possibility to link it to formal education creating a dual-VET system (at upper-secondary and tertiary education) can increase work-based learning in formal education while making it more relevant for youth and employers. Finally, specific quality criteria need to be set for firms offering apprenticeships as done in other countries.

Financing the apprenticeship system may require a co-funding system by public resources and employers. The governance arrangements in the system are mirrored in the financing. If based on a co-financing model between the firm and the government, the firm may want to be part of the development of the system. Typically, the government covers off-the-job training, the employer covers on-the job training and apprentice wages, and the apprentice agrees to receive a lower wage within the context of a win-win-win scenario that will allow all parties to reap the benefits of their investment. To finance the on-the-job training, an apprenticeship levy depending on the firm size, such as in France, or a levy payed only by the largest firms, such as in the United Kingdom would encourage the involvement of the private sector by controlling a common training fund, especially small and medium firms (Box 2.4). This could be accompanied by targeted subsidies to

encourage participation of the most vulnerable. Lessons from the Chilean on-the-job training tax credit should be considered in designing the levy.

Engaging small and medium-sized firms could be particularly challenging. SMEs can be sensitive to the risks of engaging in this form of training, especially if they are unsure of what will be expected of them in the course of training an apprentice, or whether they will be able to retain the apprentice post-training. SMEs need not only financial incentives, but a supportive business environment offering practical assistance. To create such an environment, a coordinated strategy involving all stakeholders in a sector or a community is paramount. One good example is the Australia's group training organizations (GTOs). GTOs recruit apprentices and sign the apprenticeship contract and place apprentices into host employers. It is attractive to SMEs as the administrative costs are reduced. GTOs also provide additional services such as broking vacancies for apprenticeship and candidates and reviewing the quality of training (OECD, 2016d).

Figure 2.18. Participation and outcomes of the apprenticeship system in Chile are low



Source: OECD calculations using PIAAC (2012, 2015).

StatLink http://dx.doi.org/10.1787/888933672610

Box 2.4. Financing the apprenticeship system using levies

The aim of levy schemes is to reward employers that create apprenticeships and to make indirect beneficiaries, such as other companies, contribute to the cost of training. Also, levy schemes that require employers to be directly involved in managing the training fund, and identifying training priorities, are intended to give employers a sense of ownership of, and involvement in, training.

Some countries have levy systems specifically designed to support apprenticeships:

Denmark maintains a dual apprenticeship system supported by an employer levy system. All employers, public and private, contribute to the Employers' Reimbursement Fund by a fixed amount for each employee (in 2016, around EUR 370 per year). Levy funds are used primarily to pay apprentice salaries while they are pursuing off-the-job training. Apprentice wages are set at the sector level through collective agreements, and typically reach 40 to 50% of the minimum wage.

A new funding arrangement, based on an employer levy, has been introduced in the **United Kingdom (England)** in 2017. The levy is collected at the rate of 0.5% of payroll over GBP three million, smaller employers will be exempted. Levy-paying employers will be given a digital training account where they can see "their" levy contributions accumulating in a fund that is topped up by a 10% contribution from the government. They can use this account to pay registered providers to provide training (and other bodies to provide assessment) for apprentices in their workforce. Employers who cannot call on these funds (either because they are small employers who pay nothing or little into the levy, or because they have exhausted the training account) must pay 10% of the training and assessment costs of their apprentices, with the levy funding the remaining 90%.

France maintains a complex mix of incentives to encourage employers to offer apprenticeships. A training levy in the form of an apprenticeship tax is set at 0.5% of the wage bill, plus an additional 0.18% tax contribution to a separate "apprenticeship development" fund. Large employers with 250+ employees provide a further contribution that varies with the percentage of their employees in work-based vocational training (apprenticeships and some other schemes). Most funds from these taxes are channelled through intermediary bodies and the regions to offer employers a tax credit of EUR 1 600 per apprentice, and an allowance of at least EUR 1 000 per apprentice. Employers are largely exempt from social security contributions on their apprentices (a substantial benefit in France). Employers may also opt for some of their contributions to the apprentice tax to go directly to the local training institutions that they designate, including higher education institutions.

Source: Kuczera, M. (2017), "Striking the right balance: Costs and benefits of apprenticeship", OECD Education Working Papers, No. 153, OECD Publishing, Paris.

Recommendations for more and better jobs in Chile

Policies to reduce labour market segmentation

Key recommendations

- Reduce severance payments for permanent contracts and increase coverage of unemployment benefits by reducing the minimum contribution periods.
- Expand the existing wage subsidies in formal jobs for young and vulnerable workers

Active labour market policies

Key recommendations

- Better target training programmes to the most vulnerable workers.
- Strengthen participation of employers in the development of training courses and programmes by using information from skill assessment and anticipation and integrating employers in the development of curricula.
- Implement systematic assessments of the labour market impact of activation programmes to focus funding on those that are performing well or to improve those existing.

Other recommendations

- Further strengthen the qualification framework (ChileValora) and ensure the training providers are required to provide courses in line with industrial needs.
- Continue to improve job search assistance by further strengthening local employment offices and training counsellors to deliver specialised support for vulnerable workers and develop profiling tools to help case workers.
- Ensure that the online-information system (Bolsa Nacional de Empleo) is used in all employment offices to increase coordination among them and ensure a nation- wide database.

Promoting gender balance

Key recommendations

- Further increase affordable, good-quality child care, and expand opening hours for childcare institutions.
- Eliminate the requirement for firms to finance childcare once they employ 20 female workers or more.

Other recommendations

- Foster women's and girls' equal access to academic fields that "pay off" and usually dominated by men, by providing information on labour market outcomes and campaigning and raising awareness among young men and women, parents, teachers and employers about gender-stereotypical attitudes towards academic performances.

Improving the relevance of the education system

Key recommendations

- Develop a National Plan for Early Childhood Education and Well-being.
- Develop work-based learning programs based on apprenticeships across all levels of education and training.

Other recommendations

- Strengthen engagement with employers, trade unions and civil society in the design of programs, curricula, certification, and quality assurance in VET and tertiary education.
- Ensure SMEs have incentives to participate on apprenticeships and introduce a system to control and monitor quality of training provided by firms.
- Develop a national skill assessment and anticipation exercise to feed educational policy and students decisions.

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CHILE

The quality of life of Chileans improved significantly over the last decades, supported by a stable macroeconomic framework, bold structural reforms, such as trade and investment liberalisation, and buoyant natural-resource sectors. A solid macroeconomic policy framework has also smoothed adjustment to the end of the commodity boom, contributing to low unemployment, resilient household consumption and a stable financial sector. Still, progress has recently slowed and Chile's catch-up in living standards is challenged by low and stagnant productivity and a still high level of inequality. Raising incomes and well-being further will depend on strengthening skills and greater inclusion of women and low-skilled workers in the labour force. Increasing the quality of education, reforms to ensure the training system benefits the unemployed and inactive and measures to reduce the segmentation of the labour market would enhance productivity and inclusiveness. Promising firms also still lack opportunities to grow, export and innovate, despite recent reforms to ease business entry costs and export procedures. Further simplification of trade and regulatory procedures, and reforms in the transport sector, would strengthen productivity and investment.

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