

OECD Economics Department Working Papers No. 1290

Chile: Better skills for inclusive growth

Eduardo Olaberría

https://dx.doi.org/10.1787/5jm0xdwm456l-en

OECD

Unclassified **ECO/WKP(2016)14**

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development **04-Apr-2016**

English - Or. English

ECONOMICS DEPARTMENT

ECO/WKP(2016)14
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By Eduardo Olaberria

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ABSTRACT/RÉSUMÉ

Chile: Better skills for inclusive growth

Improving education and skills is the linchpin to reduce income inequality and boost productivity growth. This paper argues that to improve, and make better use of, the skills of the labour force, Chile could gain a lot from a comprehensive and consistent Skills Strategy along three pillars: developing, activating and using skills effectively. Chile has made tremendous progress over the last decades attracting more students to the education system. Yet, educational outcomes remain below OECD standards, and are strongly linked to students' socio-economic status. Improving the quality and equity of education would help achieve stronger productivity growth and make Chile a more inclusive country. Therefore, Chile should set the goal of attaining universal skills by 2030. Reaching this goal requires investing more in early childhood education, making schools more inclusive and reshaping teacher careers. Chile also needs to improve access to quality tertiary education for students from medium and low socio-economic backgrounds. Finally, in terms of activating and using skills effectively, a key goal should be to reduce skill mismatch, which contributes to low productivity growth. This requires more flexible labour markets, investing more in vocational education and training, and promoting the participation of more women in the fields of engineering and computer science.

This working paper relates to the 2015 OECD Economic Survey of Chile (www.oecd.org/eco/surveys/economic-survey-chile.htm).

JEL Classification: I21, I28, J08, J21, J24, J61.
Key Words: Chile, inequality, adult skills, PISA, employment, education.

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Chili : Meilleures compétences pour une croissance inclusive.

Améliorer l'éducation et les compétences est la clé de voûte pour réduire les inégalités de revenus et de stimuler la croissance de la productivité. Ce chapitre fait valoir que, pour améliorer et faire un meilleur usage de, les compétences de la main-d'œuvre, le Chili pourraient gagner beaucoup d'une Stratégie des compétences globales et cohérentes sur trois piliers: le développement, l'activation et l'utilisation efficace des compétences. Le Chili a fait d'énormes progrès au cours des dernières décennies, attirant davantage d'étudiants dans le système d'éducation. Pourtant, les résultats scolaires restent en deçà des normes de l'OCDE, et sont étroitement liées à la situation socio-économique des élèves. Améliorer la qualité et l'équité de l'éducation aiderait à atteindre croissance de la productivité plus forte et faire du Chili un pays plus inclusif. Par conséquent, le Chili devrait fixé l'objectif d'atteindre les compétences universelles d'ici 2030. Atteindre cet objectif nécessite d'investir davantage dans l'éducation de la petite enfance, ce qui rend les écoles plus inclusif et le remodelage des carrières des enseignants. Chili doit aussi améliorer l'accès à l'enseignement supérieur de qualité pour les étudiants issus de milieux socio-économiques moyenne et basse. Enfin, en termes de l'activation et l'utilisation efficace des compétences, un objectif clé devrait être de réduire inadéquation des compétences, ce qui contribue à la faible croissance de la productivité. Cela exige des marchés du travail plus flexibles, d'investir davantage dans l'éducation et la formation professionnelle, et la promotion de la participation de davantage de femmes dans les domaines de l'ingénierie et de l'informatique.

Ce Document de travail se rapporte à l'Étude économique de l'OCDE de Chili 2015 (www.oecd.org/fr/eco/etudes/etude-economique-chili.htm)

JEL Classification: I21, I28, J08, J21, J24, J61.
Mots clés: le Chili, l'inégalité, les compétences des adultes, PISA, l'emploi, l'éducation.

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CHILE: BETTER SKILLS FOR INCLUSIVE GROWTH

By Eduardo Olaberria[1]

1. Education and skills development can play a key role in reducing income inequality and increasing productivity, both of which are constraining growth in Chile. Developing better skills is critical in the structural adjustment of economies, and can help the Chilean economy rebalance and move from a relative dependence on commodities production to high value added manufacturing and service industries. Inability to learn new skills because of inadequate basic education or lack of opportunity will slow the transfer of all factors of production from lower to higher value added activities. Furthermore, education and skills also have a vital role to play in improving equalities of opportunity (Chapter 1 of the 2015 OECD Economic Survey of Chile), which requires that access to quality education be equal, especially during early childhood. Enhancing the quality of education for all will also improve people's lives, as educated individuals live longer, participate more actively in politics and in the community where they live, commit fewer crimes and rely less on social assistance (OECD, 2013a).

2. This paper argues that to improve, and make better use of, the skills of the labour force, Chile needs a comprehensive and consistent Skills Strategy. This requires actions along three pillars: developing, activating and using skills effectively. In terms of developing skills, Chile still has a lot to do to catch up with OECD standards (Brandt, 2010). The performance gap with respect to the OECD average is the equivalent of 1.7 years of secondary schooling, with large differences based on gender and socio-economic status. Therefore, Chile should set the goal of reaching universal basic skills by 2030 – a level that, when fully attained, is assumed to represent the basic skills necessary for participating productively in modern economies. Setting a quantitative goal is crucial, as improvement in education is not possible if policies are not related to clear objectives framed in terms of learning outcomes (OECD, 2015d). To reach this goal, Chile's government has taken important measures to invest more in early childhood education and care, make schools more inclusive and reshape teacher careers. It is also promoting policies to improve access to quality tertiary education for students from medium and low socioeconomic backgrounds.

3. Then, in terms of activating skills, better policies to facilitate the transition from school to work are necessary, as 22% of 15-29 year-olds were neither employed nor in education or training in 2011 (OECD, 2015g). In this regard, more investment in vocational education and training, both at upper-secondary and postsecondary level, can help students better prepare for the labour market. Finally, in terms of using skills effectively, Chile, like many other countries, usually struggles with low productivity levels and skills mismatches among the labour force. Therefore, it would benefit from skills policies being better aligned with overall economic goals. This requires complementing strong education with more flexible labour market institutions, as this is crucial to allocate skills efficiently to boost productivity in an inclusive manner.

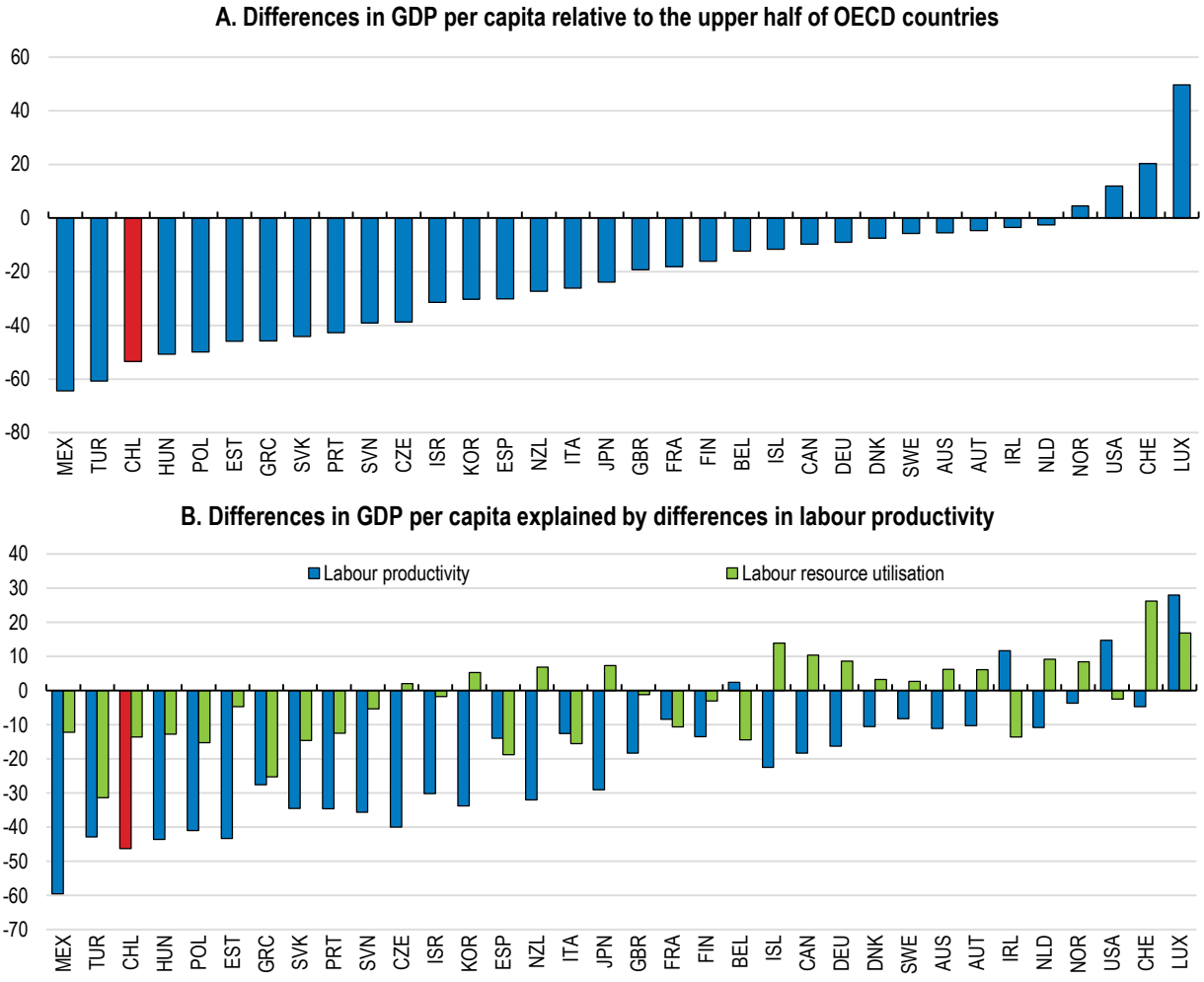
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1. Eduardo Olaberría is economist and Latin America Coordinator in the Country Studies Branch in the Economics Department of the OECD. This paper was originally prepared as chapter 2 for the OECD Economic Survey of Chile published in November 2015 under the authority of the Economic and Development Review Committee. In addition there are numerous colleagues to thank, without implication, for helpful comments and valuable discussions, including Patrick Lenain, Sean Dougherty, Robert Ford, Alvaro Pereira, Diana Toledo Figueroa and Richard Yelland. Constructive comments from the Chilean authorities are also appreciated. The author is also grateful to Martin Fernandez-Sanchez, Ira Postolachi and Damien Azzopardi for excellent research and statistical assistance and to Brigitte Beyeler and Raquel Páramo for valuable secretarial assistance.

Skills, productivity and inclusive growth

4. Despite the large improvements of the last three decades, income gaps between Chile and other OECD countries remain large, and about 80% of this gap is explained by differences in labour productivity (Figure 1). To close the income gap Chile needs to boost labour productivity which is necessary to create quality jobs and improve well-being. This requires increasing the quality of human capital by improving the skills of the labour force. There is a large body of evidence showing the importance of skills in determining the productivity of individuals, and the value of education in raising skills (Heckman and Masterov, 2007). Skills are as important in combating poverty and exclusion as they are in maintaining competitiveness and employability (ILO, 2007). Education, training, and lifelong learning foster a virtuous circle of higher productivity and more employment, which improves the quality of life and boosts income growth. Inequalities in educational attainment and skills can have an adverse impact on overall productivity in times of rapid technological change (Goldin and Katz, 2007).

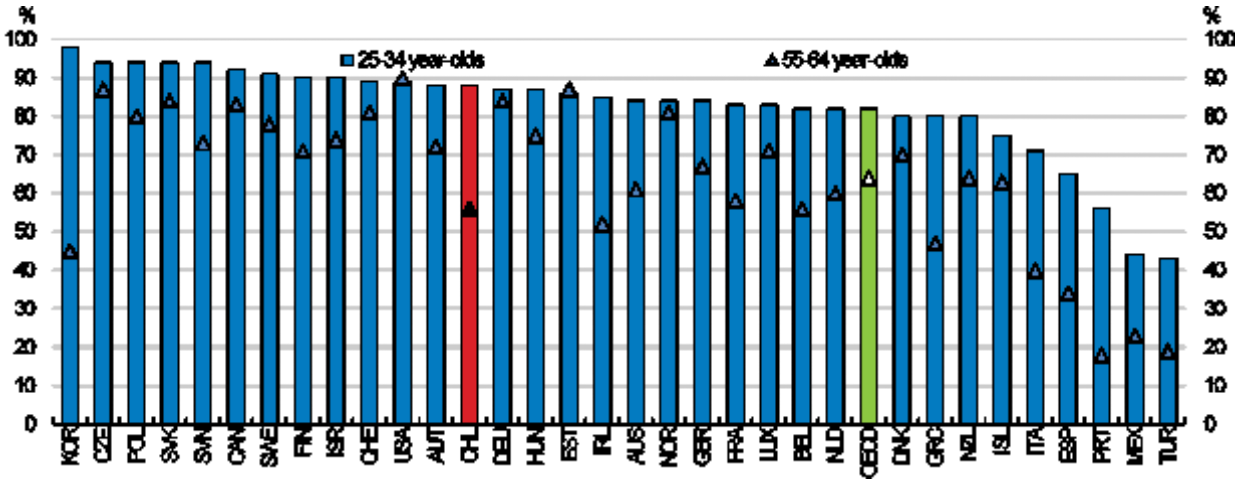
Figure 1. **Chile needs to increase labour productivity to catch up with best performing OECD countries**



Source: OECD (2015b), Going for Growth.

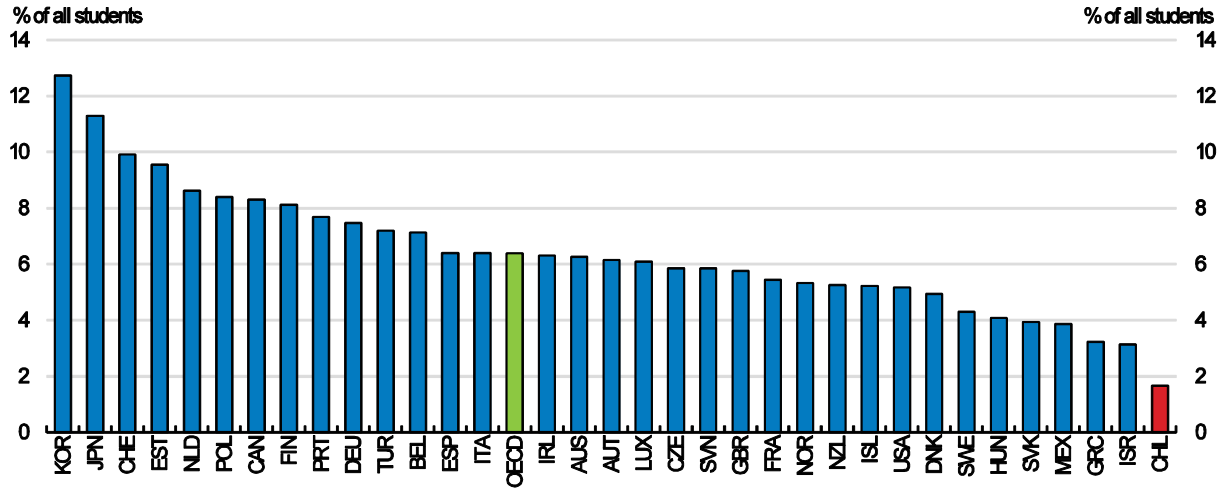
5. The Chilean educational system has grown rapidly and today nearly all children between the ages of 5 and 17 are in school (OECD, 2014). Currently, the share of the population with at least upper secondary education is above the OECD average for younger adults (Figure 2). However, increasing enrolment rates does not necessarily generate significant economic gains (Pritchett, 2006). In Chile, the economic benefits from enrolling all children have been limited because the quality of education remains well below the OECD average, and there are profound inequalities across socioeconomic groups (OECD, 2015e). The average student in Chile has a PISA score of 422 out of 600 in reading, maths and science, much lower than the OECD average of 497. And the average difference in results between the students with the highest socio-economic background and the students with the lowest socio-economic background is 105 points, significantly higher than the OECD average of 96 points. Chile also has the lowest share of students who beat the socio-economic odds against them and exceed expectations (Figure 3).

Figure 2. **Upper secondary education attainment is relatively high among young adults**



Source: OECD (2014), *Education at a Glance*.

Figure 3. **A low share of students beat the socio-economic odds stacked against them**



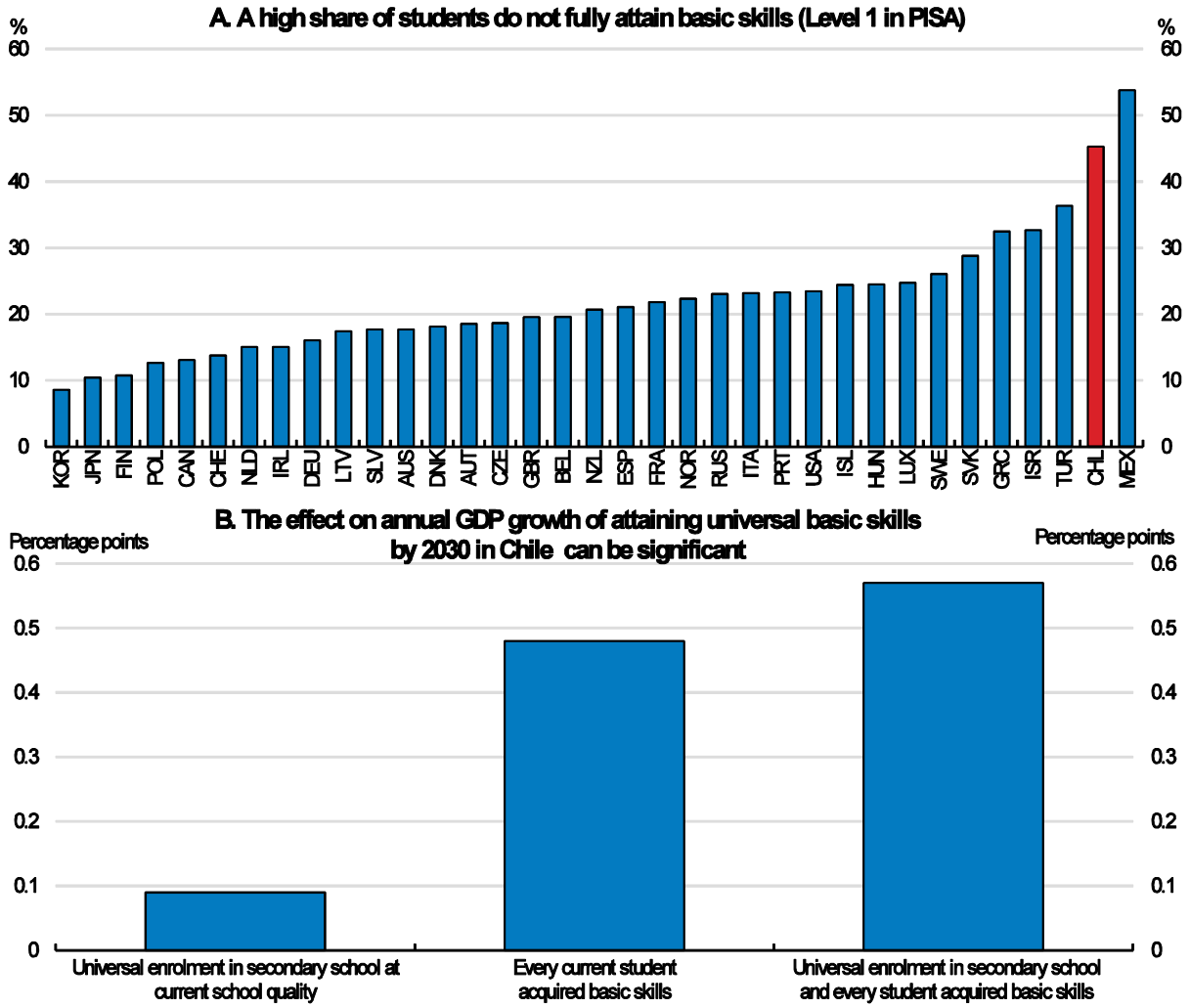
Note: A student is classified as resilient if he or she is in the bottom quarter of the PISA index of economic, social and cultural status (ESCS) in the country of assessment and performs in the top quarter of students among all countries, after accounting for socio-economic status. Countries and economies are ranked in descending order of the percentage of resilient students.

Source: PISA 2012 Database.

Attaining universal skills to boost economic growth

6. The first step to improve the skills of the labour force in the long run is to ensure that all young people leave school with a range of basic and relevant skills. In Chile a significant proportion of young people are unable to demonstrate full attainment of Level 1 of skills in PISA exams (Figure 4, Panel A). This level of skills (420 points on the PISA mathematics scale), when fully attained, is assumed to represent the basic skills necessary for participating productively in modern economies. A level at which students can answer questions involving familiar contexts where all relevant information is present and the questions are clearly defined. Having a large share of the population below this skill level presents a big obstacle for productivity growth in Chile.

Figure 4. **Improving the quality of education can boost GDP growth**



Note: Panel B: the bars refer to increase in annual growth rate (in percentage points) once the whole labour force has reached the specific goal.

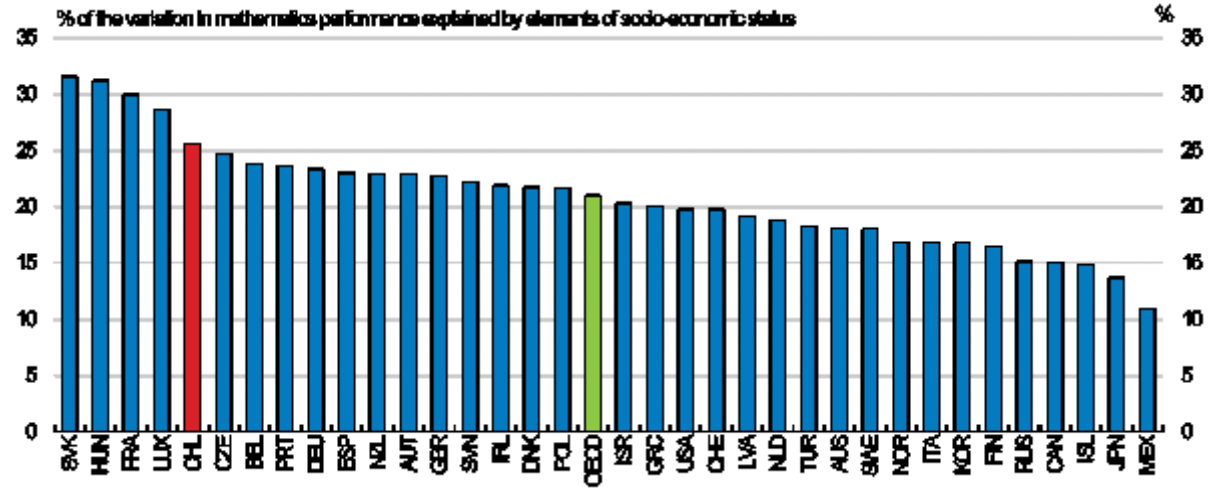
Source: OECD (2015d).

7. The potential gains of attaining universal skills – when all students fully attain Level 1 in PISA exams – can be very large. OECD estimates suggest that ensuring universal access to secondary education by 2030 at the current level of quality can only yield some economic gains increasing Chile's annual economic growth by 0.09 percentage points and real GDP will be 1.3 % higher by 2030 (Figure 4, Panel B). However, improving quality of schools so that each of the current students attains basic skills by 2030 – assuming that all students who score above 420 PISA points remain at their current level – can have a much stronger impact on the economy. In particular, Chile's annual economic growth can increase by 0.48 percentage points per year or an increase of 7 % in real GDP by 2030. Furthermore, if the two previous scenarios are combined and Chile ensures universal access to secondary education and full attainment of basic skills of all students by 2030, the increase in the annual growth rate of GDP would be 0.57 percentage points, which means that real GDP will be 8.5 % higher by 2030. Almost all of the gain comes from improving achievement at the bottom end, since enrolment in Chile is already very high. Therefore, the key for Chile is to focus on improving the quality of pre-primary, primary and secondary education to provide universal basic skills.

Developing universal skills through quality education

8. In Chile students' socioeconomic background strongly influences educational performance, with the impact of socioeconomic status on students' performance in mathematics being one of the largest in the OECD (Figure 5). While many socio-economically disadvantaged students succeed at school, and some achieve high levels on the PISA assessment, socio-economic status is still a strong predictor of performance in Chile, and is associated with large differences in PISA. Furthermore, a large percentage of the between-school variance in performance is explained by the schools' socioeconomic background (OECD, 2015e). Socio-economically advantaged students and schools tend to outscore their disadvantaged peers by larger margins than between any other two groups of students (OECD, 2015e).

Figure 5. **Socioeconomically advantaged students outscored their disadvantaged peers**



Source: PISA participants, based on PISA 2012 micro data.

Invest more in early childhood education

9. More investment in early childhood education can help reduce the gap generated by family environments early in life. Empirical evidence shows that early childhood care support can help reduce high school dropout rates, improve student performance and reduce gaps in learning achievement generated by different social backgrounds (Heckman, 2013; OECD, 2011). Early learning confers value on acquired skills, which leads to self-reinforcing motivation to learn more. Early mastery of a range of cognitive, social, and emotional competencies makes learning at later ages more efficient and therefore easier and more likely to continue.

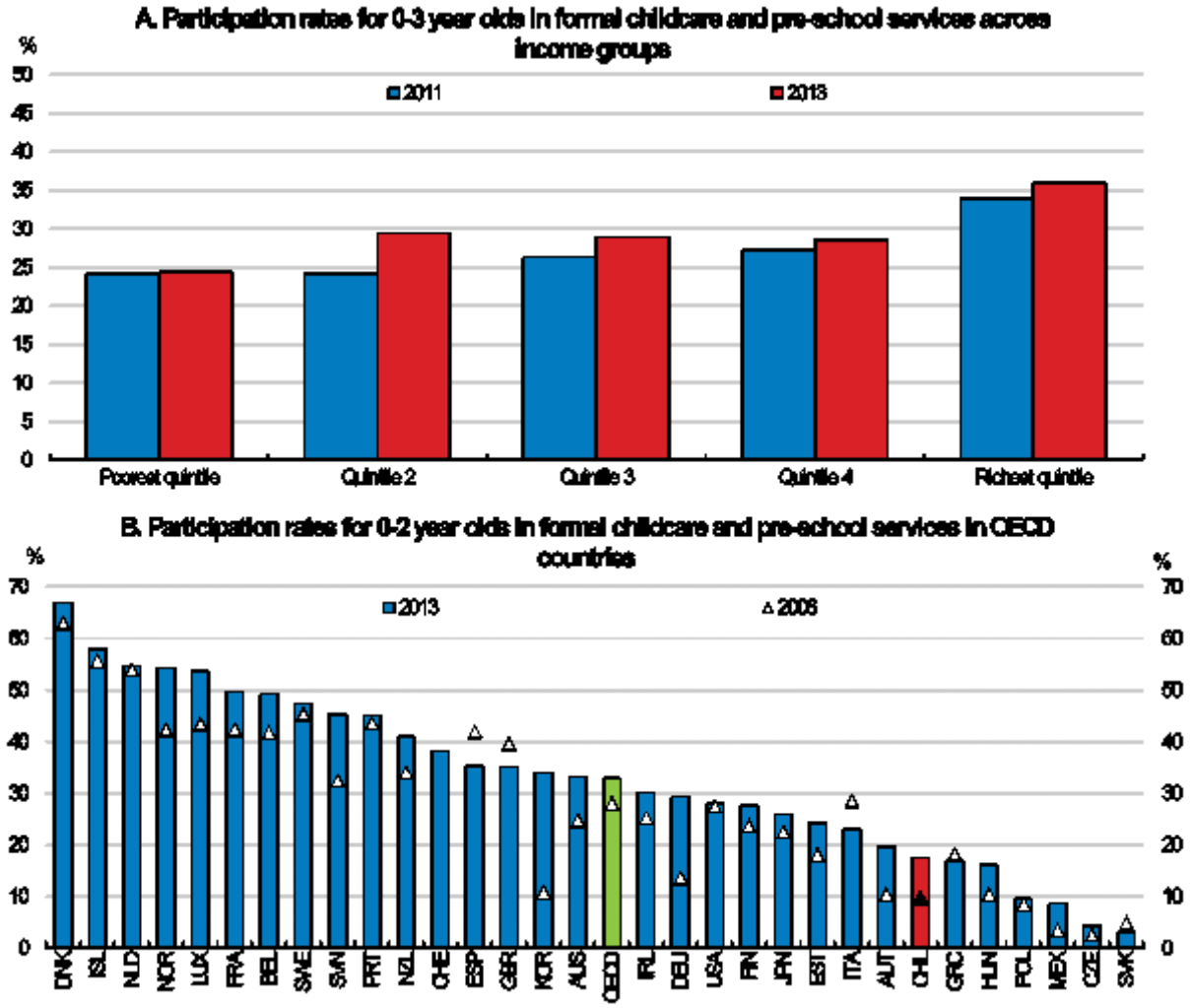
10. Early childhood education is particularly relevant for children from disadvantaged environments who typically do not receive the same degree of early enrichment that children from middle-income and upper-income families receive. Evidence using data from Chile's Early Childhood Longitudinal Survey show that the differences in early childhood development emerge early, and that there is a marked correlation between family income, maternal education, cognitive and non-cognitive development, and the health of children (Contreras et al., 2015). These highlight the need to increase efforts to expand the coverage of childcare and early childhood high quality education services.

11. In Chile, the coverage limitations at this level are due to the inadequate supply of services and the high costs that would be involved if families had to pay for these services in the private sector, particularly families in medium and low-income sectors. Despite recent advances, enrolment in childcare is still low compared with other OECD countries. For children between 0 and 24 months, Chile has one of the lowest coverage (11% compared with 29% in the OECD average). For children aged 25-48 months, the coverage level of 43% is clearly low when compared with the OECD average of 70%. In the group of five year old, fully universal coverage has still not been achieved even though this level has been mandatory since 2013.

12. Annual spending per child in pre-primary education puts Chile in 24th place among the 36 countries of the OECD. Current coverage of early childhood education services also shows differences based on families' socioeconomic levels. Children between the ages of 49 and 72 months and between the ages of 25 and 48 months show coverage gaps between the richest and poorest quintiles of nearly 10% and 15%, respectively. For children aged 0 to 24 months the coverage percentages are similar across income quintiles (Figure 6, Panel A), but with levels that are still very low in comparison with potential demand and the rates observed in other OECD countries (Figure 6, Panel B). This situation is concerning because the most vulnerable households are those that make the least use of childcare and early childhood education services, particularly for children between 0 and 4 years of age, when it is in those households that early childhood education interventions can have the greatest impact.

13. The government has established the goal of expanding early childhood education. A new programme aims to increase the coverage of preschool education throughout Chile, and to improve and monitor quality through the creation the Secretariat for Childhood Education and the Superintendent of Preschool Education (*Subsecretaría de Educación Parvularia y la Intendencia de Educación Parvularia*). The current administration also plans to create 534 new nurseries in a first stage. This will enable more than ten thousand children between zero and two years to have access to early childcare and education. Furthermore, in the next four years it hopes to create new spaces for daycare and new spaces in the middle level of nursery school, which would bring Chile close to average coverage levels in the OECD.

Figure 6. **Coverage of childcare and pre-school services is low across all income quintiles**

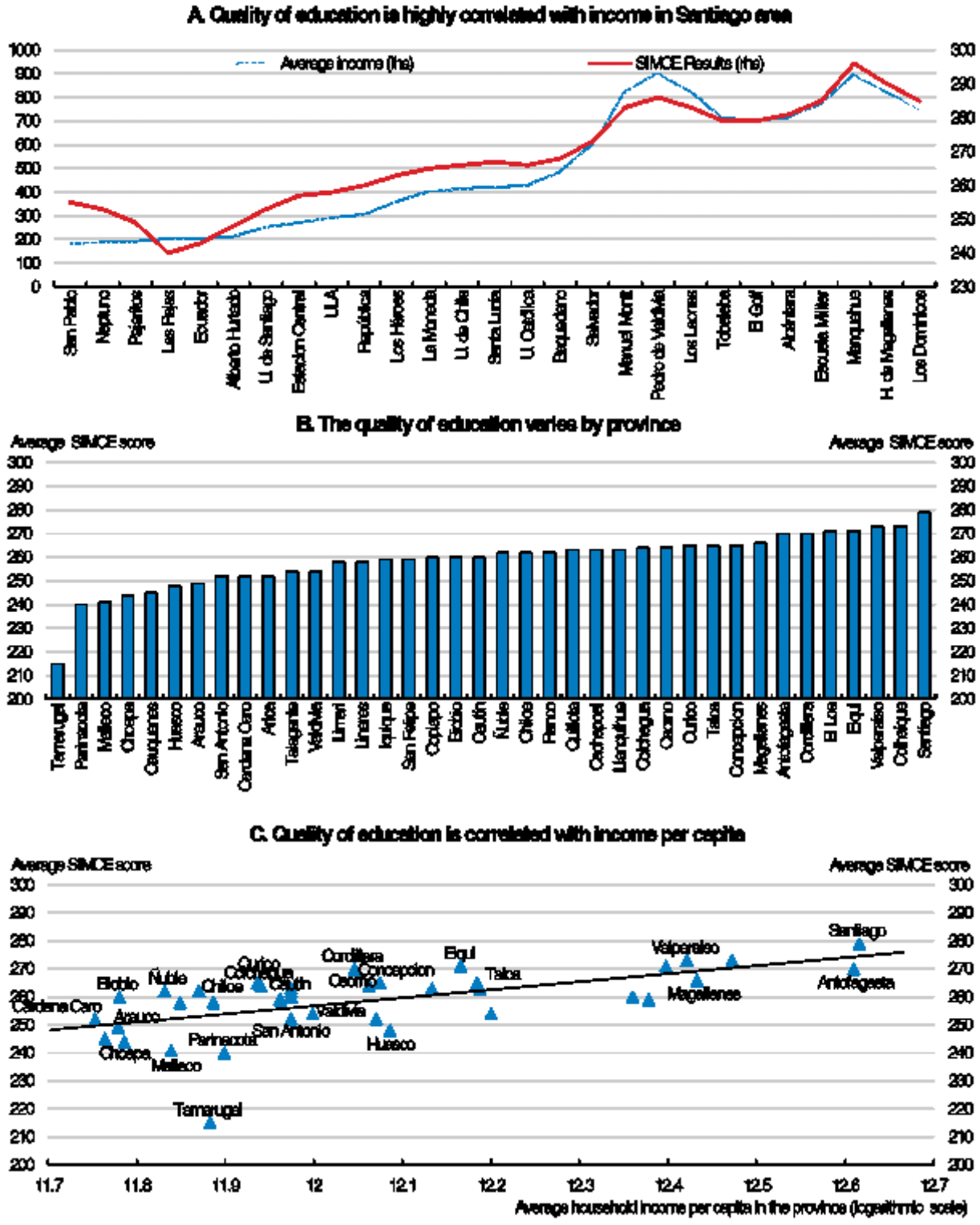


Source: Panels A: CASEN (2011 and 2013). Panel B: OECD Family Database.

Build more inclusive schools

14. Chile introduced in 1981 nationwide school choice by providing vouchers to any student wishing to attend private school. As a result, more than 1 000 private schools entered the market, and the private enrolment rate increased by 20 percentage points, with greater impacts in wealthier communities. Evidence shows that this policy led to increased sorting between students and schools without significant improvements in terms of quality (Hsieh and Urquiola, 2006). The reason is that some of the intended benefits of competition are not necessarily related to student achievement, while there are potential disadvantages in terms of equity and social inclusion. There are large differences across neighbourhoods (Figure 7): those with lower income per capita and higher inequality rates have lower quality of education as measured by the *Sistema de Medición de Calidad de la Educación* (SIMCE) exams results.

Figure 7. **Quality of education varies a lot by municipality and region, and is correlated with income**



Source: CASEN (2013) and SIMCE (2011).

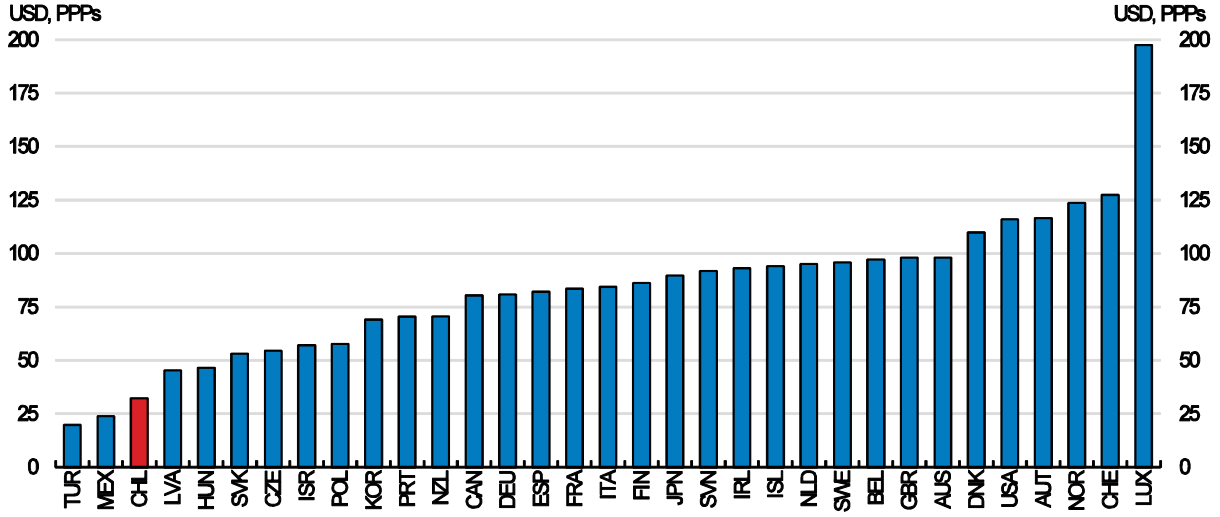
15. Student selection exacerbates differences between students in part because less demanding schools tend to provide less stimulating learning environments, but also because students' outcomes are

affected by peers (Field, Kuczera and Pont, 2007). Students from lower socio-economic background are particularly affected by academic selection because they are disproportionally placed in lower quality schools, widening initial inequities (Spinath and Spinath, 2005). When schools are allowed to select students based on their ability, competition leads to stratification by parental income, increasing transmission of income inequality, and reducing student effort (MacLeod and Urquiola, 2009). On the contrary, when schools cannot select students based upon their ability, strong competition between them is efficient, encouraging entry by high productivity schools and increasing the average skill levels of students (MacLeod and Urquiola, 2009).

16. To eliminate practices that hinder equity and target low-performing disadvantaged schools and students, the current administration has taken important steps. Earlier this year Congress passed the Inclusion and Equity Law, which aims to eliminate school selection, the elimination of for-profit schools, and the elimination of co-payments in all schools receiving public funds. Improving the quality of public schools is necessary to attract more students from high socioeconomic backgrounds. This can help improve the social mix and increase social mobility. Evidence produced for this report shows that educational mobility in Chile is higher in regions with a stronger presence of public schools – where higher shares of students attend public schools (Box 1.1, Chapter 1 of the 2015 OECD Economic Survey of Chile).

17. Over the past decade, Chile has steadily expanded its education spending to 6.9% of GDP in 2011, above the OECD average of 6.1%. However, spending per students remains below the OECD average (OECD, 2014). Although the relationship between the level of education spending and quality is not linear, research shows that below a certain threshold of expenditure (USD 50 000), higher spending is associated with better students' performance (Baket et al., 2002; OECD 2015e). As Chile is well below this threshold (Figure 8), increasing spending in education per student may help improve educational quality. Furthermore, evidence also shows that how resources are allocated across schools is also very important; in particular, how resources are allocated between disadvantaged and advantaged schools. A more equal distribution of resources (in terms of quality of physical infrastructure and schools' educational resources) is associated with better test results (OECD, 2015e).

Figure 8. **Average spending per student between the ages of 6 and 15 is low**



Note: Spending is measured in USD PPPs in the year 2012.

Source: OECD, PISA 2012 Database.

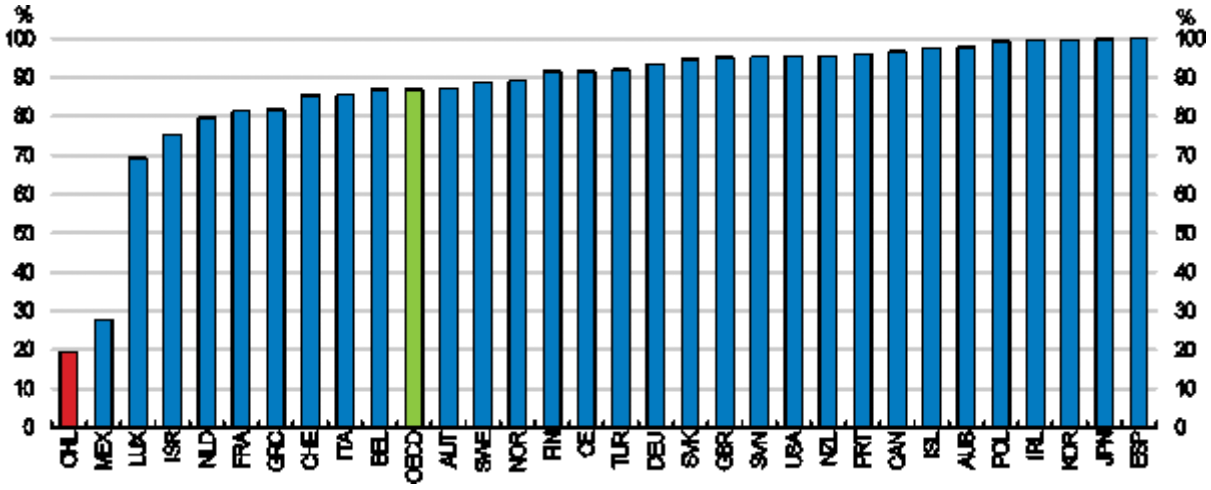
18. Chile needs to develop a better methodology for funding schools so that it focuses on those that have the greatest needs. For this to happen, monitoring should be improved for both effectiveness and

efficiency. In this regard, the implementation of the education superintendence (*Superintendencia de Educación*) has been a positive development. This institution is responsible for auditing and supervising compliance of school providers with relevant laws standards and regulation.

Reshape teacher careers

19. Chile has a shortage of qualified teachers (Figure 9), and thus needs to select and recruit the most effective trainee teachers, with training programmes that are selective and rigorous (OECD, 2010). Bringing the best into teaching requires recruiting from the top-third of each graduating cohort (Barber and Mourshed, 2007). Candidates should qualify for an all-graduate profession through a university-based programme that rigorously connects research with practical training (Schleicher, 2011). Currently, Chile does not use specific selective requirements other than diploma and grade-point average in secondary education to select candidates into teacher training and thus candidates have been found to obtain low scores on the university selection test *Prueba de Selección Universitaria* (PSU) (Santiago et al., 2013). After graduation, teachers need not meet either additional requirements to start teaching (such as passing competitive examinations or a standardised test), and have no registration or probation process once in practice. However, in the public sector (municipal schools) teachers have to pass a mandatory Teacher Evaluation (Evaluación Docente) every four years.

Figure 9. **The percentage of certified teachers reported by school principals in PISA is very low**



Source: OECD, PISA 2012 Database.

20. Universities can decide whether or not to provide teaching experience during initial teacher education. And graduating teachers thus tend to lack pedagogical knowledge (Santiago et al., 2013). Diversifying career growth possibilities is also important. Chile could define career steps in teacher development (e.g. beginning, classroom teacher, experienced teacher) to permit a better match between teacher competence and skills and the tasks performed at schools. Teaching conditions, such as salaries, workload and support received at schools also matter to motivate and help teachers improve. Chile should direct new resources into teaching in strategic ways. Compared to the OECD average, teachers in Chile have one of the highest numbers of teaching hours per year, lower salaries compared to those of other tertiary educated professions in the country, and work in schools with some of the largest disparities in the allocation of resources.

21. Chile has made important progress in standards of practice as well as in teacher appraisal, but challenges remain. Currently, a bill to reform teachers' career is in Congress (*Plan Nacional Docente*). The bill makes the teacher career more selective, raising the requirements to enter them. It increases demands on educational institutions, so as to ensure that graduates have the knowledge and skills that are required. It

also increases significantly the compensation at the beginning of the profession, even above the average of the salaries of other university graduates. It creates a staged career that recognizes merit and experience more attractive to those who are at higher levels wage profiles, and improves the teacher evaluation system. Finally, it increases the proportion of non-lecturing hours, allowing teachers more time for lesson preparation, design and correction of assessments, care of students, collaborative work, etc.

Ensuring all adults can access quality higher education and get the right skills

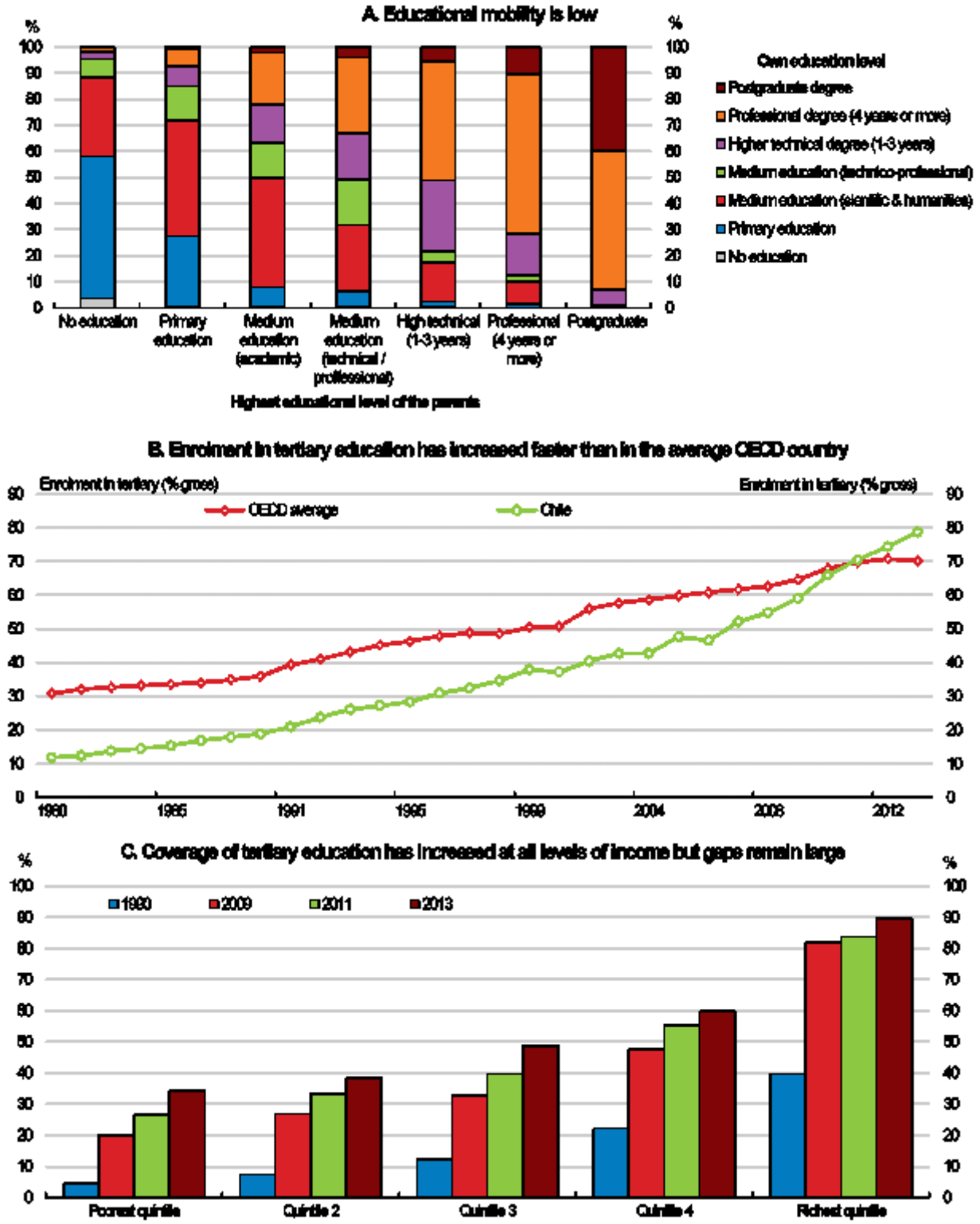
22. To promote equity and increase productivity Chile must also ensure that high quality tertiary education system is accessible to students from the traditionally excluded groups and that bright children from poor families are no longer less likely to graduate from university than much less able children from affluent families (Figure 10, Panel A). In recent decades Chile has made significant progress to reduce vertical inequality by expanding access to tertiary education to students from all income groups (Figure 10, Panels B and C). This high growth of enrolment rates has been driven mainly by the rapid expansion of the private sector, which accounts for about 75% of overall enrolment (Espinoza and Urzua, 2014). However, since the gap between enrolment among the top and bottom income quintiles remain large, efforts need to be enhanced to ensure that students from low socioeconomic background can access high tertiary education institutions.

Reduce financial constraints to low income students

23. In Chile, the government works in partnership with private banks to provide student loans by offering an interest rate subsidy, and a guarantee in case of default. This has, however, resulted in high levels of student debt, while the quality of education received did not generate rates of return sufficient to service sustainably these debts, particularly for those from vulnerable families. To reduce financial constraints faced by these students, the government is considering providing free higher education in 2016 to all students from families that are below the 5th decile of the income distribution that enrol in higher education institutions that fulfil some quality and governance requirements. The government will present to Congress a bill to finance and regulate higher education. This policy will certainly help reduce financial constraints to access tertiary education for many students from lower income families, but may not necessarily be the best solution.

24. If enacted, the bill will imply a significant cost for the fiscal accounts. To solve this problem, a less costly solution could be to offer income-contingent loans to finance tuition fees rather than free education (Dearden, Fitzsimons and Wyness, 2011). Income-contingent loans are also more equitable and satisfy more fully the ability-to-pay principle, because graduates' payments are in direct proportion to their income. Such systems can achieve a better balance between effective cost recovery on the government side and risk to the borrower. Furthermore, under these schemes administration is generally simpler and cheaper because loan recovery can be handled through existing collection mechanism, such as the income tax administration or the social security system. In any case, Chile should develop a funding system for tertiary education that, like in other OECD countries, ensures equal access and strong labour market outcomes for all (Box 2.1). A funding system that better links education to current and future labour market needs, and provides incentives to enhance quality.

Figure 10. **Access to tertiary education has improved but remains unequal**



Note: "Gross enrolment" in panel B is the ratio of students of all ages that attend tertiary education and students within the official age group. Thus, if there is late enrollment, early enrollment, or repetition, the total enrollment can exceed the population of the age group that officially corresponds to the level of education – leading to ratios greater than 100 percent.

Source: Panels A and C: OECD elaboration based on CASEN (1990, 2009, 2011 and 2013); Panel B: World Development Indicators.

Box 2.1. **Funding systems for universities: three OECD examples**

Providing sufficient and stable resources to tertiary education and ensuring equal access and strong outcomes are central policy objectives in most countries. However, the approach followed to reach these goals varies considerably. This box presents three very different examples.

In the United States, states have a large experience with public performance-based funding. Historically, grants were mainly allocated according to indicators of final outcomes with labour market outcomes playing a large role. But the role of labour market outcomes in funding has recently been downplayed due to the impact of the economic downturn. Now in some states (e.g., Ohio), public funding is only allocated according to the number of courses and degrees completed by students. The allocation of grants also attempts to ease access of students from disadvantaged backgrounds. In Tennessee for instance, institutions are eligible to a 40% bonus for completion of low-income and adult students. Around half of university funding comes from tuition fees, which have been increasing since 1990. Overall public and private expenditure per student in tertiary education was in 2012 the highest in the OECD, contributing to the high quality of some US universities. Government sponsored student loans enable students from disadvantaged backgrounds to finance tertiary education. However, this funding system has led to increasing student debt as well as to loan defaults with the economic downturn. These trends have had consequences for public finances as the government provides guarantees and in some cases pays interest for less advantaged students.

In France, two Grandes Écoles, Sciences-Po Paris and Université Paris Dauphine, have introduced tuition fees tied to the student's parental income or the student's own income, if he/she is independent from his/her parents (Mangeol, 2014). The purpose of the approach is to increase resources and ensure social equity. For example, in Sciences-Po the fees for an undergraduate degree range from zero for students from lower socioeconomic backgrounds to EUR 9 940 for those from upper socio-economic families, with 11 different brackets. This approach remains highly contentious in France. It could lead to the polarisation of universities between affluent and constrained institutions, since the resources generated highly depend on the socio-economic composition of the student body.

In Denmark, higher education is mostly publically funded through grants determined by the so-called "taximeter" system and without tuition fees. In addition, students receive student grants to cover their living costs. Taximeter "rates" are set by the government to the activity of institutions – measured by the number of students who have completed the programme – according to various criteria, including the field of education, political priorities, teachers' salaries and building and administrative costs. Ex post however, institutions are free to allocate the grant as they wish and can move funds from one area to another. The system gives institutions incentives to adjust their capacity to demand and to raise efficiency, and it ensures that resources are automatically transferred from programmes with declining activity to those with rising activity. However, the system does not provide incentives to students to choose an education programme or a field of study according to its labour market outcomes. To strengthen the quality of higher education, in 2014, the government decided to try to limit the intake of education programmes that have led to relatively bad labour market outcomes. If, over the last 10 years, a group of related education programmes has had an unemployment rate for graduates (after two years) that is more than 2 percentage points above the average unemployment rate for graduates in at least seven of the years, the student intake of programmes in the group will be adjusted. The number of places in this group of programmes will be lowered by 10 to 30% depending on the size of the unemployment gap for graduates.

Source: OECD Skills Outlook 2015.

25. Furthermore, free education does not guarantee students from lower income families will have access to, and will be able to graduate from, tertiary education. Some countries at similar level of development as Chile provide free tertiary education for all, but have lower levels of enrolment of students from low income families than Chile. For example, while in Chile a student from the wealthiest quintile of the income distribution is four times more likely to be enrolled in tertiary education than a student from the lowest quintile, in Argentina is five times despite the fact that it provides free education for all (UNESCO-IESALC, 2008). This is because the most important constraints to access tertiary education for students from low socioeconomic backgrounds are non-financial. Evidence from other countries shows that low high school quality, as well as insufficient parental involvement, pose greater obstacles to access (and graduate from) university than financial constraints (Frenette, 2007).

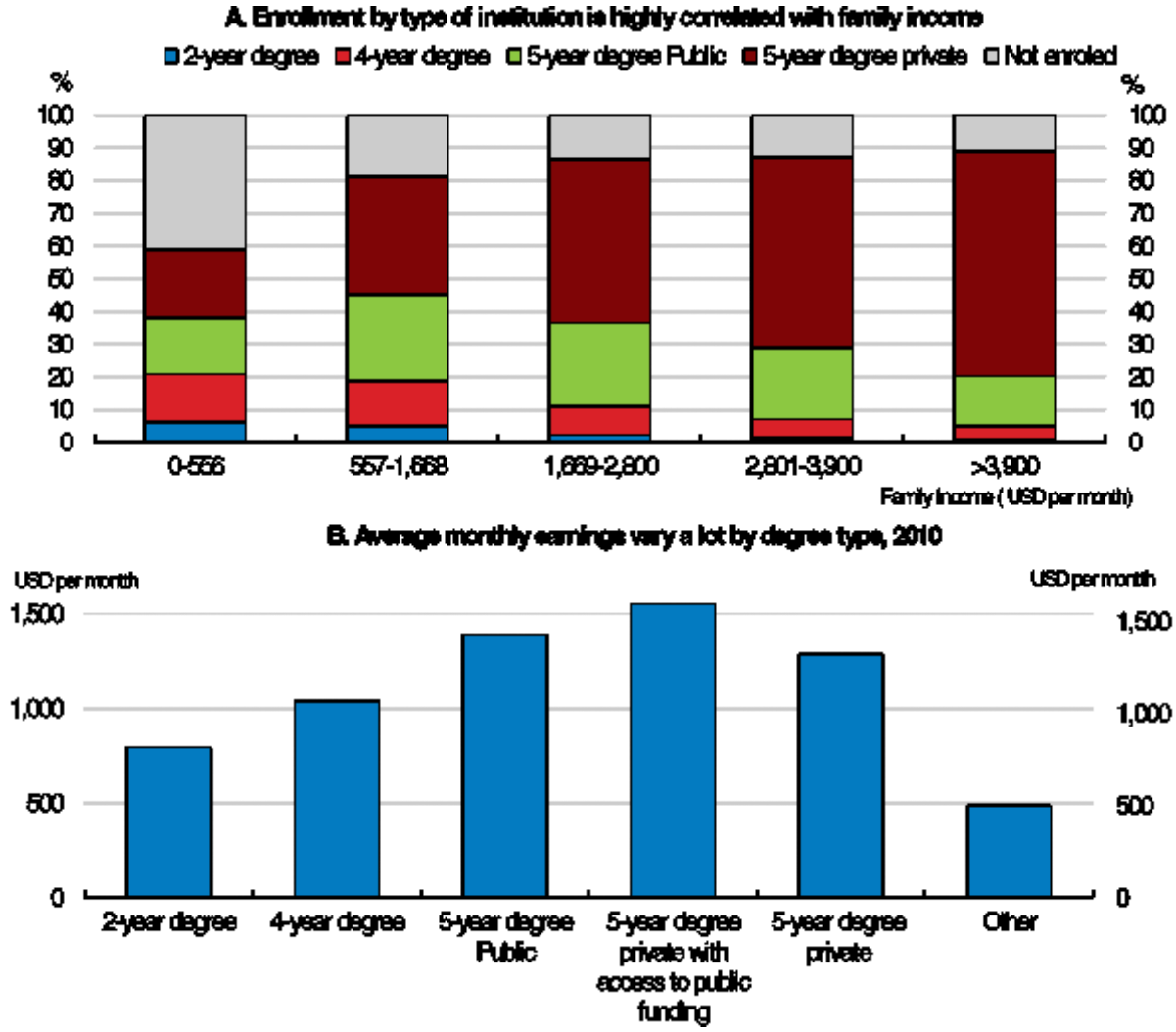
Tackle horizontal inequality

26. Resolving financial barrier constraints will not alone solve inequality challenges. In addition to "vertical inequality", the Chilean higher education system is also characterized by "horizontal inequality", which relates to the kind of institutions and programmes students attend and determine subsequent labour market opportunities (Salmi and Basset, 2012). Some groups of the population are systematically tracked into categories of institutions and programmes that are less resourced or recognized in terms of labour market rewards (Figure 11). This is because the strong inequalities remaining in the school system translate to inequalities in the access to high-quality tertiary education. Chances to enter high-quality universities and access to financial aid for them are very much dependent on results at a university PSU entry exam. And not surprisingly given PISA and SIMCE results, PSU exam results are strongly dependent on family income and the school type that pupils attended, with the highest failure rates among low-income pupils.

27. Therefore, as discussed before, the key for Chile is first to improve the quality and equity of pre-primary, primary and secondary education to achieve universal skills; but this will take time. The government needs to take steps to hold schools accountable for the results of their pupils in the university entry exam, and to improve the preparation of low-income students. The government will need to intervene in those schools where it identifies shortcomings. More immediately, the government will have to find means to better help young people with university aspirations at disadvantaged schools to prepare for the university entry test. A good starting point would be to expand the offering of free online open courses to prepare for the exam. But over time the government should consider replacing the university entry exam with a national school leaving exam as the prime criterion for entry into tertiary education institutions. This could establish a closer link between test results and the school that is responsible for them, making it easier to reach the goal that has been pursued with the introduction of the PSU.

28. Finally, many students in Chile express ex post regret over excessive student loan debt relative to their earnings potential. One possible explanation is that some students base educational choices on limited or inaccurate information on the costs and benefits of studying different subjects. This suggests a role for government in aggregating and disseminating information and indicates that informational interventions alone may not ensure that students make efficient choices about educational investments. The high level of university drop-outs reflects failures in the guidance process as well as poor programme quality and high cost of education (Rau et al., 2013; OECD, 2008). Career guidance should provide a full picture of the various pathways in the education system. Guidance in vocational education and training has an important role to play in supporting individuals to identify how they can best use the skills they have developed through their course of education and training in order to build fulfilling careers. More efforts can be dedicated to providing individuals and families with timely, relevant information on the market returns of various career paths, and on appropriate education and training programmes that have been monitored to ensure quality.

Figure 11. **There are large horizontal inequalities in higher education**



Source: Reyes and Urzua (2013).

Activating skills and using them effectively

29. For skills to translate into growth, they have to be efficiently allocated and used in the economy. However, the degree of qualification mismatch is higher in Chile than in many OECD countries (Randstad Workmonitor, 2012). Recent research shows that skill mismatch can explain an important share of cross-country labour productivity gaps (Adalet McGowan and Andrews, 2015). Skills mismatch is a complex challenge that requires a whole-of-government approach to ensure that product and labour markets are sufficiently flexible to enable skills to be used effectively across the economy. In Chile, one factor contributing to the high level of skill mismatch may be that young people do not leave the education system with the skills that employers want and need to enhance productivity. This could be the result of low-quality tertiary programmes and/or a lack of links with the labour market. But it can also be because universities are reluctant to teach skills aimed specifically at employability, as that may lower their academic standards and objectives (Lowden et al., 2011).

30. Preparing people for the labour markets requires education systems that are flexible and responsive to the needs of the labour market, and young people having access to high-quality career

guidance and further education that can help them to match their skills to prospective jobs. But employers also need to become actively engaged in both designing and providing education programmes, and that institutional obstacles to entering the labour market, even for those with the right skills, are removed. Creating these conditions requires a concerted effort by education providers, the labour market, social institutions, and employer and employee organisations. To improve in this regard, Chile should develop a national qualification framework to ensure that it reflects labour-market relevant skills, to make it easier for young people to clearly signal what skills they possess to employers and to facilitate recruitment processes.

Strengthen vocational education and training to better respond to labour market needs

31. University is not the only route to pursue further education. An alternative way to prepare students for the labour market is through vocational education and training (VET), both at upper-secondary and postsecondary level. Across the OECD, there are many examples of vocational education and training systems that work very well (Box 2.2). Strong VET systems, such as in Austria, Germany and Switzerland, provide young people with the vocational skills needed for a smooth school-to-work transition, can help engage those who have become disaffected with academic education, and offer higher level-job specific training to adults at postsecondary level (Quintini and Manfredi, 2009). The Chilean VET system provides learning opportunities in remote regions, support for students at risk, labour market integration programmes, and up-skilling for older workers. However, compared to other OECD countries, Chile's VET system remains relatively small. About one third of all upper-secondary students enrol in vocational programmes while two thirds enter general programmes (Kis and Field, 2009). Contrary to most other OECD countries, Chile allocates fewer resources per upper secondary student to vocational programmes than to the general education track (OECD, 2008). In Chile's VET system, quality standards, teacher training, the link between curricula and industry needs, students' literacy and numeracy skills, and workbased learning need to be improved (Caldera Sánchez, 2014; Kis and Field, 2009).

32. The fact that the result of Chile's fifteen year-olds in reading, mathematics and science remain among the lowest in OECD countries is likely to be a particular problem among VET students, because those with weak numeracy and literacy skills are often directed to the vocational track. According to the OECD review of Chile's VET system (Kis and Field, 2009), upper-secondary VET provides inadequate basic skills preparation for postsecondary programmes that many students aspire to enter (VET Commission, 2009). While compulsory school is meant to teach basic skills, both upper- and postsecondary VET programmes need to offer remedial measures to address students' weak literacy and numeracy skills. There is a strong argument for systematically screening the students' basic skills at the point of entry to VET in order to identify the students in need of literacy and numeracy support. In the United States, for instance, new entrants to post-secondary community colleges are tested and can be referred to developmental education (Kuczera and Field, 2013). International experience shows that support in basic literacy and numeracy skills can help reduce drop-out and improve retention and completion rates in VET (OECD, 2014). A promising approach to basic skills teaching within VET programmes is to integrate basic skills with vocational content, as illustrated by the postsecondary Integrated Basic Education and Skills Training (I-BEST) programme in Washington State, United States. The I-BEST programme combines basic skills teaching with professional training in occupations in high demand and yields college credits in order to improve the labour market outcomes of adults with low basic skills. Evaluation shows that I-BEST students earn more credits and are more likely to complete a programme than other comparable, but non-participating students (Jenkins et al., 2010).

33. It is necessary, but difficult to make VET fit the needs of the labour market. One of the best ways of doing so is to bring learning into the workplace. Work-based learning encompasses a diversity of arrangements including apprenticeships and work placements that form part of formal vocational qualifications (OECD 2014; OECD, 2010a). When managed effectively, work-based learning delivers

benefits for all participants and contributes to better labour market and economic outcomes: it offers a strong learning environment for participants; an assured linkage between the work-based learning offer and labour market skills demands; an effective employment and recruitment tool; a productive benefit for employers; and value for money for public authorities. However, despite its compelling advantages, workplace training is too often neglected in VET programmes. As noted in 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. An assessment by the Chilean Ministry of Education (MINEDUC, 2010) suggested that as many as 40% of upper secondary VET students do not do the mandatory traineeship to receive their degree. In postsecondary education, only some institutions include practical workplace training. The OECD VET review (Kis and Field, 2009) recommended encouraging workplace training in all parts of the VET system and linking it to effective quality standards, so as to ensure that work-based learning components are connected to defined learning outcomes and assessment. Closer co-operation between education institutions and social partners, both at national level within the VET Commission and the National Council for VET and at local level, would help to familiarise employers, the chambers and trade unions with education programmes, ensure better curriculum alignment to labour market requirements and provision of work-based placements of sufficient quantity and quality, and help provide labour market relevant training to vocational teachers.

34. Postsecondary VET can cater to the needs of young upper secondary graduates providing them with higher level vocational skills, as well as providing adults with learning opportunities later in their careers. Rapid economic and technological changes mean that some workers need to upskill to remain abreast of changing requirements, while others have to reskill entirely (OECD, 2014). Postsecondary vocational programmes can help adults deepen their technical, trade, professional and management skills, make a sideways career move, or return to work after a period of concentrating on domestic responsibilities. Reaping the full potential benefits of VET requires high quality provision. Achieving this is a challenge in many VET systems, including Chile. In the Chilean VET system quality assurance mechanisms are weak and particularly so in the postsecondary sector (MINEDUC, 2010). Recent OECD work on postsecondary VET (OECD. 2014) highlights three key elements that underpin high quality: systematic, quality assured and credit-bearing work-based learning; teachers with strong pedagogical skills and up-to-date industry knowledge and experience; and a programme that ensures sound literacy and numeracy skills alongside occupation-specific skills. In Chile's VET sector, data collection and analysis of education outcomes and skills anticipation exercises could support policy design and programme provision and help make career guidance more effective.

Box 2.2. **Examples of vocational education and training systems in the OECD**

Vocational education and training (VET) programmes vary across OECD countries in how they are linked to workplace training and how they establish bridges with other pathways within the educational system. This Box provides a few examples.

In the Netherlands, the schooling system is characterised by a high degree of early streaming. However, the different learning routes – including vocational programmes – are structured in such a way that young people have the possibility to go up a step within the track they have chosen, and reach the equivalent of tertiary level education (ISCED 5 level). Possibilities for upstream transfers also exist between vocational and university education.

In Germany access to university for VET graduates was formally enhanced in 2009 and is strongly supported by government campaigns. The new regulations permit those with an advanced vocational qualification general access to academic higher education and holders of other vocational qualifications a subject-specific access to higher education. To support those pursuing this pathway a range of measures have been piloted or rolled out nationally and initiated locally such as advancement scholarships or bilateral credit transfer systems between individual vocational colleges and universities of applied science. Yet, implementation remains a challenge, as it crucially hinges upon the collaboration between individual institutions. In Germany, social partners are closely engaged in the development and updating of training plans for each qualification, which are formally issued by the thematically involved federal ministry (e.g. economy, health) in accordance with the Ministry of Education. Such training plans regulate the duration of the workplace training, describe the profile of the profession, and set out final exam requirements. Apprenticeship salaries are determined through collective wage negotiations. The chambers of commerce advise participating companies, register apprenticeship contracts, examine the suitability of training firms and trainers, and set up and grade final exams.

In Switzerland, the involvement of professional organisations (trade and employer organisations and trade unions) in VET policy making is required by law. Professional organisations draft the core curricula and have the leading role in the examination process of both secondary and post-secondary programmes. The role of Swiss authorities (at Confederation level) is to approve the curricula and examination rules, supervise examinations and issue federal diplomas. When new federal diploma qualifications are approved, they are industry-led, but the federal authorities check that the proposed qualification has the support of the whole industry sector, not just some enterprises. This ensures that the whole industry sector can be engaged in the updating of the qualification in response to changes in technology or industry organisation.

Source: OECD Skills Outlook 2015.

Better labour market institutions can help allocate skills more effectively

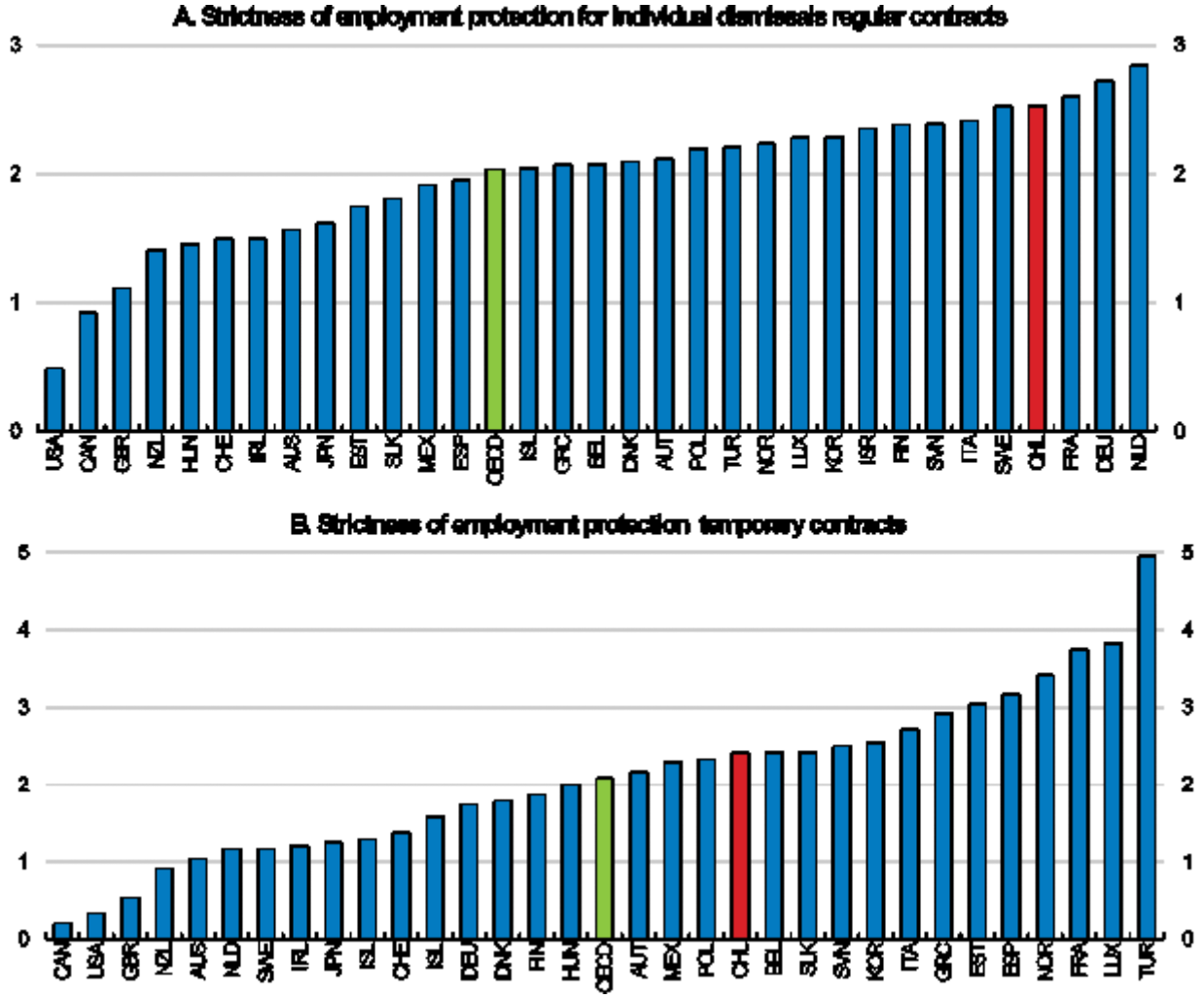
35. Updating and improving labour market institutions in Chile can help smooth the transition from school to work and reduce the degree of skill mismatch. Evidence shows that differences in skill mismatch across countries are associated with differences in the policy environment; in particular, a main factor behind high skills mismatches is the stringency of employment protection legislation (EPL) (Adalet McGowan and Andrews, 2015). A more stringent EPL is associated with higher mismatch amongst youth, since it provides scope to reduce the quality of job-worker matching, which is naturally lower amongst young people due to their lack of experience (Adalet McGowan and Andrews, 2015). On the contrary, a more flexible EPL helps firms adjust their labour force and adapt to rapid technological change (Bassanini et al., 2009).

36. Empirical research based on longitudinal establishment data shows that in Chile, like in many other OECD countries, there are large and persistent productivity differences among plants or firms producing in the same industries (Bergoeing et al., 2010). A healthy and flexible labour market would allow a process of factor reallocation to take advantage of these productivity differences, significantly contributing to aggregate productivity growth. However, in Chile, because of high severance payments, it is harder to reallocate skills and workers towards the most productive sectors. Indeed, estimates show that the aggregate effects of labour misallocation in Chile are significant: If half of the employees in the first quintile of plants' labour productivity distribution were reallocated to the top quintile plants, manufacturing productivity would increase by about 17% (Micco and Repetto, 2012).

37. As discussed in Chapter 1 of the 2015 OECD Economic Survey of Chile, current labour market institutions influence outcomes by protecting insiders, while structurally weakening labour demand for women and youth. The asymmetry between job-protection provisions that make it costly to firms to convert fixed-term contracts into permanent contracts should be eliminated or reduced (Figure 12). As many youth enter the labour market on temporary contracts, an important issue is to ensure that these temporary jobs act as "stepping stones" into more stable employment and do not trap them in precarious situations with higher risks of becoming unemployed. Empirical evidence suggests that facilitating labour market access through temporary contracts does not help youth's labour market prospects (Garcia-Perez, Marinescu and Vall-Castello, 2014; OECD, 2014d).

38. Various policy options have been recently explored in OECD countries to reduce the asymmetry in EPL between temporary contracts and permanent ones. Several countries with a tradition of relatively high levels of protection have taken steps to make termination costs and obligations for different contracts, converging towards a uniform rate or procedure. Italy, for example, has introduced a new open-ended single contract in March 2015, as part of the Jobs Act, a package of labour market reforms introduced by the Renzi administration. This new contract increases employment protection with the job tenure, aiming at simplifying and streamlining dismissal rules while reducing labour market dualism. This new contract is applied only to new employment contracts, grandfathering existing rights. The temporary contracts will be transformed into open-ended ones by 2016, unless collective agreements set flexibility criteria for the use of temporary contracts. Chile could follow this example which will not only contribute to reducing income inequality (Chapter 1 of the 2015 OECD Economic Survey of Chile), but also help reduce skill mismatch and boost productivity growth.

Figure 12. **Employment protection legislation is relatively more restrictive for permanent workers**



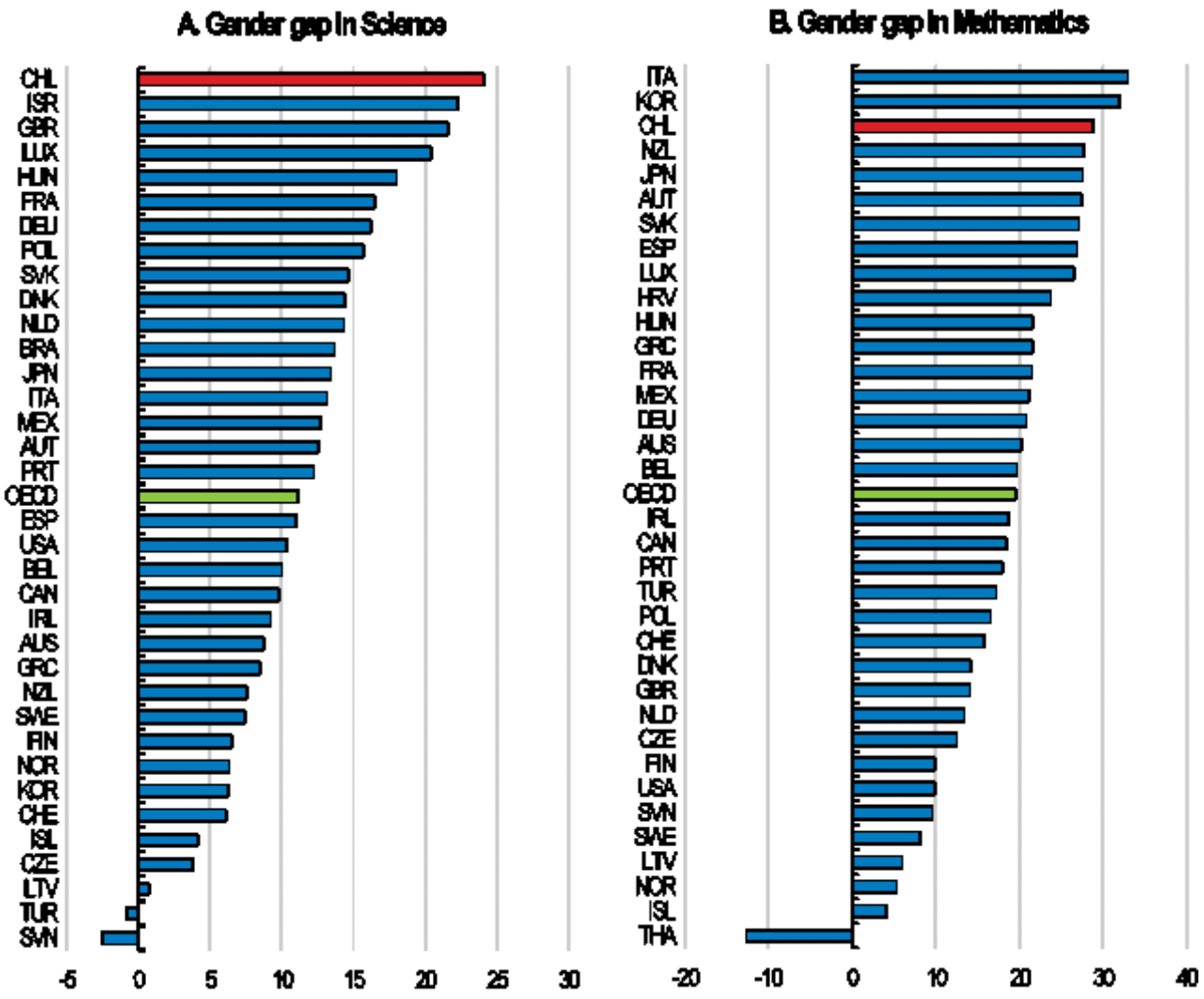
Source: OECD, Family Database and Labour Force Statistics Database.

Promote more participation of women in the fields of engineering and computer sciences

39. Lack of advanced human capital, in particular in key science, technology and engineering management (STEM) fields, is a main obstacle to productivity improvements for Chilean firms (OECD, 2013b; OECD, 2013c). One way to start solving this problem is to promote more women participation in these fields. In Chile, like in other OECD countries, women are awarded only a small proportion of university degrees in the fields of engineering, manufacturing and construction and computing, although graduates of these fields are in high demand in the labour market and correspondingly are highly paid (OECD, 2015f).

40. The main determinant of the under-representation of women is the gap in mathematics and science performance (Summers, 2005; National Academy of Sciences, 2006). Girls tend to underachieve compared to boys when they are asked to formulate situations mathematically, translating a word problem into a mathematical expression (Figure 13). Boys' strength in science lies in their greater capacity, on average, to apply their knowledge of science to a given situation, to describe or interpret phenomena scientifically and predict changes. On average across OECD countries, boys outperform girls in this specific skill by 15 score points, but the gender gap is particularly large in Chile (34 score points).

Figure 13. **Gender gaps in performance in science and mathematics are high**

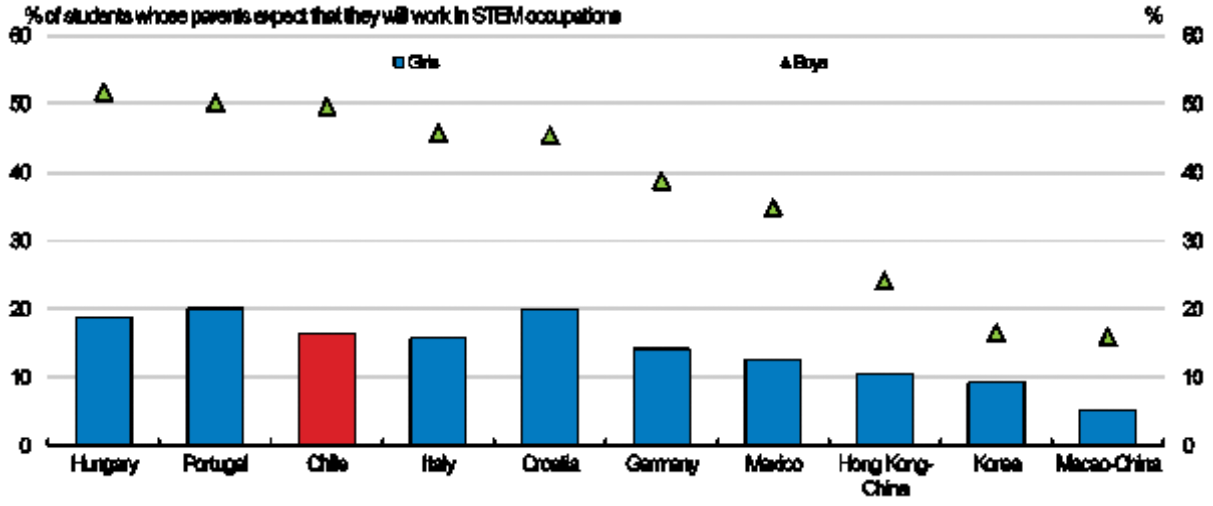


Source: Panel A: OECD, PISA 2006 Database; Panel B: OECD, PISA 2012 Database.

41. The fact that fewer women than men enter into careers in science, technology, engineering or mathematics can be related to gender biased stereotypes generated early in life (OECD, 2015f). Evidence shows that parents are more likely to expect their sons, rather than their daughters, to work in science, technology, engineering or mathematics field occupations (Figure 14). For example, in Chile, while 50% of 15-year-old boys' parents expected that they would work in science, technology, engineering or mathematics field occupations; only 16% of girls' parents reported so. The gender gap in the percentage of 15-year-old boys and girls whose parents expected them to work in science, technology, engineering or mathematics field occupations is larger than 30 percentage points in Chile.

42. When young people choose to pursue a field of study based on someone else's idea of what is appropriate, rather than on their own preference, it is both a waste of individual potential and a loss for society. To reduce gender bias in education Chile should train teachers to be aware of their own gender biases. Teachers may harbour conscious or unconscious stereotyped notions about girls' and boys' strengths and weaknesses in school subjects, and, through the marks they give, reinforce those notions among their students and their students' families. Training teachers to recognise and address any biases they may hold about different groups of students – boys and girls, socio-economically advantaged or disadvantaged students, students from different ethnic or cultural traditions – will help them to become more effective teachers and ensure that all students make the most of their potential.

Figure 14. Parents' expectations for their children careers are gender biased



Source: OECD, PISA 2012 Database.

Box 2.3. **Recommendations to improve skills**

Developing universal basic skills with better quality of education

- Improve the quality and access to pre-primary education.
- Implement legislation to end school selection.
- Increase support to and retention of high quality teachers.
- Make funding responsive to students' and school needs.

Reducing inequalities in access to quality higher education

- 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, relevant information on the market returns of various career paths, and on appropriate education and training programmes that have been monitored to ensure quality.

Activating skills and using them effectively

- Develop 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 within a framework that combines 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.
- Strengthen the co-operation between education and training providers (including universities) and employers.
- Promote women participation in the fields of engineering and computer sciences.

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