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**Working Paper**

## Climbing the ladder: Determinants of access to and returns from higher education in Chile and Peru

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# UNRISD

United Nations Research Institute for Social Development

Working Paper 2020-2

## **Climbing the Ladder**

*Determinants of Access to and Returns from  
Higher Education in Chile and Peru*

*Anja Gaentzsch  
Gabriela Zapata-Román*

Prepared for the UNRISD project  
Universities and Social Inequalities in the Global South

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## **Introduction to Working Papers on Universities and Social Inequalities in the Global South**

This paper is part of a project which explores what role universities play in overcoming persistent and rising inequalities. Participation in tertiary education has increased significantly across the globe, in parallel with heightened social aspirations and the expectation of better labour market opportunities stemming from a university degree. However, these assumptions rely on certain economic and social conditions being fulfilled, some of which have worsened in the age of jobless growth. The project asks: What potential does higher education have today to increase social mobility, reduce inequality and contribute to the advancement of society through the production of knowledge and skills? Are institutions of higher education contributing to inequality rather than equality, and if so, through what specific actions and mechanisms? How can the transformative potential of such institutions be fully harnessed for overcoming inequality?

### ***Working Papers on Universities and Social Inequalities in the Global South***

*Climbing the Ladder: Determinants of Access to and Returns from Higher Education in Chile and Peru*

Anja Gaentzsch and Gabriela Zapata-Román, April 2020

*“A Public and a Private University in One”: Equity in University Attendance in Kenya Since the Liberalization Reforms of the 1990s*

Rebecca Simson and J. Andrew Harris, March 2020

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## Acronyms

CAE	Credit with a state guarantee (Crédito con aval del estado)
CASEN	Chilean household survey (Caracterización Socioeconómica Nacional)
CFT	Technical training centres
ENAHU	Peruvian household survey (Encuesta Nacional de Hogares)
IOp	Inequality of opportunity
IP	Professional institutes
INEI	Institute of National Statistics and Informatics, Peru (Instituto Nacional de Estadísticas e Informática)
INE	Institute of National Statistics, Chile (Instituto Nacional de Estadísticas)
MINEDU	Ministry of Education, Perú (Ministerio de Educación)
MINEDUC	Ministry of Education, Chile (Ministerio de Educación)
OECD	Organisation for Economic Co-operation and Development
PRONABEC	National Scholarship and Educational Credit Programme
VET	Vocational education and training

## Abstract

In spite of large structural expansions in higher education in Chile and Peru during the 1980s and 1990s, and a favourable growth context, levels of inequality are still very high in both countries and inequities in higher education persist. This paper investigates the role that higher education has played for social mobility in Chile and Peru. In particular, to what extent circumstances determined at birth are associated with educational achievement, and how these circumstances have affected the access and returns to higher education, both vocational and university studies.

Grounded in two conceptual approaches, human capital and equality of opportunity theories, the paper adopts a methodology of analysing secondary data sources from household surveys and administrative statistics in the two countries in order to present the picture of educational attainment in Chile and Peru, distribution of students to different types of tertiary education (public/private; vocational and technical/university) and differentiated by groups (male/female; indigenous/non-indigenous; rural/urban), as well as labour market returns.

The paper finds that (i) circumstances that are beyond the control of individuals including parental education, ethnic background and geography are strong predictors for access to higher education; (ii) for those who do enter higher education, there are differential patterns of entry into public versus private institutions, and different streams of higher education; and (iii) returns to higher education are generally high, but differ strongly between groups and type of institution attended.

## **Keywords**

Access to higher education; returns of higher education; social mobility; equality of opportunity

## **Bios**

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## Introduction

Education is a key channel for social mobility within and between generations. The role of higher education is particularly crucial as labour markets are becoming increasingly technology-intensive and pay high productivity premiums. Unequal access to education reinforces inequalities also in other dimensions of wellbeing such as income and wealth. Providing broad access to university and vocational education is hence important to foster equality of opportunities and economic development.

Latin America is a region that is characterized by very high levels of income inequality and low social mobility (Gasparini et al. 2017; Torche 2014). The intergenerational transmission of educational achievement is a main driver of low mobility and becomes apparent in the form of self-reproducing educational elites and limited chances of upward mobility for children of poorly educated parents (Gaentzsch and Zapata Roman 2018; Neidhöfer et al. 2018). Peru and Chile have both experienced a large structural expansion in education since the 1980s to 1990s, a trend from which higher education has also profited strongly, as evident from the rising number of university graduates. This was one among several factors to contribute to the decline in income inequality and poverty that both countries have experienced since the early 2000s, albeit Peru to a larger extent than Chile. The great reduction in the share of people without any formal education and the decreasing returns to skills were driven by both the expansion of education and the patterns of growth which were fuelled by favourable terms of trade and high commodity prices. This created relatively more growth in demand for low-and medium-skilled labour in export industries and services rather than highly skilled labour. Especially in Peru, this greatly contributed to the reduction in poverty that occurred between the early 2000s and 2014 (World Bank 2016).

Notwithstanding this decline, levels of inequality are still very high in both countries. Unequal access to a stratified education system that is characterized by large differences in quality and prestige between institutions is one of the main drivers behind persisting inequalities.<sup>1</sup> Higher education stands out in particular: while it seems to hold the prospects of wider opportunities and social mobility, this potential is realized only for some. This paper analyses the socio-economic determinants of access to higher education and its stratification along income, ethnic, geographic and gender divides. Comparing Chile and Peru is insightful because both countries have undertaken similar reforms of higher education, although institutional frameworks differ. They experienced similar economic trends in the past decade that featured pro-poor growth in an export-driven economy that relies heavily on commodities, which coincided with the expansion of education. This expansion was pronounced at all levels, with the number of students in higher education more than doubling in Chile and increasing by over 30 percent in Peru between 2000 and 2011 (UNESCO 2015). The role of the private sector in education has

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<sup>1</sup> Brunner 2008; Brunner and Ferrada Hurtado 2011; Yamada and Castro 2007

increased substantially at all levels but is strongest in higher education, with private universities making up more than 60 percent of all higher education institutions in both countries (De Wit et al. 2005). These private universities tend to charge much higher fees than public ones, have far higher admission rates, but enjoy a lower prestige than the old public universities. While these developments were similar in both countries, societal structures differ: Peru is characterized by a very heterogeneous ethnic social structure where poverty is concentrated in rural regions of the highlands and the jungle, which are largely inhabited by indigenous populations. The urban-rural divide and poverty rates are significantly lower in Chile.

Against this background, this paper will investigate the following research questions:

- What role does higher education play for social mobility in Chile and Peru? In particular, to what extent are circumstances determined at birth associated with educational achievement?
- How do these circumstances affect access to higher education that includes both vocational education and training (VET) and university studies?
- How do returns to education differ across education levels and between different sets of circumstances, that is along the lines of gender, parental and ethnic background?

Our analysis finds that higher education is highly unequal in both countries. We identify three factors that can account for this: (i) Circumstances that are beyond the control of individuals, including parental education, ethnic background and geography, are strong predictors for access to higher education; (ii) for those that do enter higher education, there are differential patterns of entry into public versus private institutions and different streams of higher education; (iii) returns to higher education are generally high, but differ strongly between groups and type of institution attended. We cannot determine with certainty the root causes that drive these differential trends that we observe. They may be rooted in much earlier inequalities, such as those produced by stratified basic education systems, high university fees that act as a barrier to certain groups, or discrimination within labour markets. Most likely, they are a combination of factors that reinforce each other but are difficult to observe in isolation. In this sense, this paper describes trends rather than making causal claims about the mechanisms driving them.

The paper is structured as follows. The next section lays out the conceptual framework that motivates our analysis and builds on insights from theories of inequality of opportunity and human capital. The third section describes the legal and institutional framework of higher education in Chile and Peru. A short description of the data sources used follows in section 4 before section 5 sets out on the descriptive analysis and results of this study. The last section discusses the findings and proposes ideas for future avenues of research.

## Conceptual and Theoretical Framework

Education is often viewed as a panacea to foster social mobility, but educational systems also foster inequality. Educational attainment is a main determinant of income (both at the micro and macro-economic level), and income and education are positively correlated with other measures of welfare such as health and well-being.<sup>2</sup> Through this relationship, education drives inequality because of the differential returns that levels of education yield in labour markets. The premium to higher education is particularly strong, and people with tertiary-level skills are at much lower risk of poverty and unemployment. Although there is no generally agreed benchmark for an optimal level of differences in market outcomes between high and low-skilled individuals this type of inequality is a widely accepted and desired economic process: merit and efforts should be rewarded to provide incentives, foster innovation and promote development.

There are two important constraints to this argument. The first one relates to a more technical objection: very high levels of inequality—and those seen in most Latin American countries are among the highest worldwide—have adverse social and economic consequences (Atkinson 2015; OECD 2018). The second one relates to a normative judgement of fairness. Empirical evidence suggests that effort is not rewarded equally across all members of society, or even muted at early levels of education.<sup>3</sup> Education can only be a promise for social mobility as long as everyone enjoys equitable access and opportunities within education systems and labour markets. If social mobility is low, educational inequalities can be transmitted across generations or socio-economic groups so that it becomes disproportionately more difficult for some to climb the ladder than for others.

We draw on two different theoretical frameworks that explain why such a situation can arise, namely the theories of human capital and inequality of opportunity. They are insightful for our country cases not only because they offer explanations for how education contributes to inequality. They also allow to distinguish between these socially fair and unfair drivers of inequality rooted within educational systems. Section three on education reforms in Chile and Peru outlines three factors that are particularly relevant for the link between higher education and inequality in the two countries. First, there has been a steep rise in tertiary educated people over a relatively short time period that seems disproportionate to changes in labour demand for skilled workers. Nonetheless, rewards to tertiary education remain high. Human capital theory offers explanations for why such an imbalance may not be a temporary friction but can rather persist. Second, education reforms have contributed to a high heterogeneity in terms of quality and prestige between different types of universities. The division is pronounced between traditional and new universities in Chile, and between not-for-profit and the less prestigious for-profit institutions in Peru. The theory of inequality of opportunity offers insights on why students from disadvantaged backgrounds are more likely to sort into lower prestige

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<sup>2</sup> Bhagwati 1973; Case et al. 2002; Schultz 1988

<sup>3</sup> Chetty et al. 2014; Corak 2013; Ravallion 2015

institutions and thus reap lower returns in the labour market at a later stage, thus reinforcing existing patterns of inequality. Third, costs of tertiary education are very high and programmes often have a long duration. Both theories outline how this factor works to the disadvantage of lower socioeconomic groups and can thus transmit inequality across generations.

The following sections outline the theoretical framework in more detail while our analysis explores mainly the links between socioeconomic background, access to education and differential returns conditional on individual background and educational achievement.

### ***Human capital theory***

Human capital theory formalized by Becker (1994) sets the relationship between monetary rewards and schooling into a framework of investment: similar to other forms of investment such as physical capital, education requires initial inputs that will yield future streams of returns. It is well established that lifetime earnings rise with years of schooling. The decision of whether to invest in higher education hence becomes a calculation that takes into account private benefits—such as higher earnings—and costs, as well as the certainty and timing of those returns. This calculation gives a rate of return that can be compared to alternative forms of money and time use (Mincer 1974; Schultz 1961). In most countries, rates of return are sizeable, making it a worthwhile investment.

Human capital theory offers two explanations for why inegalitarian systems can arise (Becker and Tomes 1986). First, individual costs of education are often higher for students from disadvantaged backgrounds. Even if schools and universities charge no fees, opportunity costs and foregone earnings may be much higher for children from low-income families. Second, expected benefits are often lower for disadvantaged students. This may be for several reasons, among them that success in the labour market also depends on other factors such as social and other forms of non-financial capital that students from advantaged backgrounds have greater access to. In combination, these two factors—higher individual costs and lower expected benefits—decrease the rate of return to education for students from disadvantaged backgrounds, leading to less investment and early dropout.

Tertiary education stands out in particular because of the high returns it generates. Rewards to higher education can become excessive if they rise disproportional to the gains in productivity of the highly educated, and if there is no shortage of skilled labour in the market. In many Latin American countries, including Chile and Peru, returns to tertiary education are very high (Ferreyra et al. 2017). In a functioning market, one would assume that very high returns indicate a shortage of skilled labour that will attract more investment into education so that over time, demand and supply will balance. The supply of skills is, however, not only governed by the demand for it, and labour markets do not function perfectly. This can lead to a situation in which there is excessive demand for higher education—and hence an oversupply of skilled labour—but returns still do not fall.

Excessive demand arises because education is often—at least partly—financed publicly while benefits are mainly reaped privately and because in the face of an oversupply of skilled labour, employers can select upon qualification. Thus, even though a job may not require high technical qualifications, these may become a formal requirement. If this is taken to extremes, universities may resort to providing education certificates without building substantive skills: formal certification is needed in labour markets although they cannot absorb high quantities of skilled labour. Current debates about low-quality education and wide variety in university standards in Peru lend credit to this argument (Yamada and Castro 2013). Despite such oversupply, returns may not fall because the highly educated have a stronger lobby to maintain dual labour markets or seek high returns through rent-seeking. The oversupply of skilled labour may subsequently be compensated for by compressing wages at lower levels because the highly skilled increasingly take over jobs that they are formally overqualified for, leading to greater wage disparities.

In summary, human capital theory thus sheds light on various channels through which higher education can perpetuate inequality. First, education is an investment that generates returns. Earnings depend on years of schooling so that education has the potential to foster social mobility and reduce inequality. If, however, those from poor backgrounds systematically drop out of school earlier or perform worse than those from richer backgrounds, inequality will perpetuate, also across generations. Second, higher education can reinforce inequality if returns to it are substantially higher than at lower levels of education. If this premium is furthermore disproportional to the productivity premium of higher education, returns become excessive. Since the supply of skills is driven not solely by demand in labour markets, an oversupply of skilled labour and very high returns can coexist.

Human capital theory hence provides explanations for why inegalitarian education systems reinforce income inequality by disadvantaging students from low-income households. Apart from barriers associated with income, the theory of inequality of opportunity provides a framework for understanding why circumstances other than monetary wealth may create inegalitarian educational systems.

### ***Inequality of opportunity***

Although the negative consequences of high inequality—higher crime, health and mental problems, lower educational achievements, low social cohesion and life expectancy—are well documented (Stiglitz 2013), there is a growing consensus that not all sources of inequality are equally objectionable.<sup>4</sup> Inequalities that come from circumstances beyond individuals' control are deemed unfair while those derived from people's own choices and decisions are seen as individual preferences (Barry 1991; Fleurbaey 1995).

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<sup>4</sup> Arneson 1989; Dworkin 1981; Roemer 1998; 1996

Roemer (1998) called inequality of opportunity (IOp) “unfair” inequalities since they prevent individuals from achieving the advantages they would like to pursue. He states that equality of opportunity policy aims to “level the playing field” to compensate for uneven circumstances over which individuals should not be held accountable. These are exogenous factors, such as parental background, socioeconomic status and income, race or ethnic origin, genetic traits, gender, and place of birth, among others. Measuring IOp is difficult since “opportunities are inherently unobservable, because they are, by definition, a set of hypothetical options, some of which are exercised—and become factual—while others are not exercised, and become counterfactual” (Ferreira and Peragine 2015:8). A second-best approach is, therefore, to measure how opportunities change the outcome of interest, in our case, education and income.

To understand IOp, empirical studies decompose total inequality into an “ethically acceptable” component resulting from the differential effort of individuals, and an “ethically unacceptable” part resulting from unequal opportunities expressed by exogenous circumstances. Because effort is private information, it cannot be measured directly. Instead, proxies of effort are constructed that inherently make assumptions about the scope of individual responsibility (Roemer and Trannoy 2016). One view that links effort to circumstances states that decisions, choices and actions are—at least in part—conditioned by one’s circumstances.<sup>5</sup> Another point of view is that effort is entirely determined by individual choices and that people, in exercising their preferences, should bear responsibility for their actions (Dworkin 1981; Fleurbaey 1995). Roemer’s model takes the former view of effort. He objects to the idea that individuals should be fully responsible for their preferences since people’s circumstances and background largely shape preferences. This view is particularly appropriate when analysing inequalities of educational attainment, which manifest from an early age and are accentuated when children move along the school system (Heckman 2011; 2007).

Ideally, we attempt to measure the differences in outcomes due to different circumstances holding effort constant.<sup>6</sup> In case of perfect equality of opportunity, educational achievements (or any advantage for that matter) should not depend on circumstances such as parental background. In other words, if we divide our population according to levels of parental education, students’ attainments would have no reason to differ according to the level of education of their parents. In this paper, we will use a simplified version of the non-parametric method to measure IOp; we will compare average achievements by different groups defined by circumstances.

By definition, in this model, circumstances are exogenous factors affecting income, earnings or education levels. Some of them are observable, such as gender, place of birth, ethnicity and family background. Others such as a family’s cultural and social capital and genetic traits are unobserved and will directly affect income-earning potential if those

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<sup>5</sup> Arneson 1989; Cohen 1989; Roemer 1996

<sup>6</sup> In the Equality of Opportunity theory, this is called “ex-ante” approach attributed to Van de Gaer (1993).

help individuals to get a better job (Becker and Tomes 1986). Yet others, like place of birth, might do so indirectly by affecting preferences and attitudes toward effort, or through access to quality education. In practice, studies are limited by data constraints, and they usually use all available circumstances in the data set. In our case, these are the level of parental education, urban/rural region of residence (as a proxy of region of birth), ethnic origin and gender.

To sum up, the contribution of (higher) education towards inequality is ambiguous. Human capital theory predicts that those that expect and are motivated by high returns from tertiary education will invest in it and henceforth yield on average higher incomes throughout their later working life than individuals with lower qualifications. This is an important driver of inequalities in income and wealth and is—within reasonable limits—widely accepted as a fair reward of efforts. However, this holds only as long as opportunities are equal and markets well regulated. Cases where markets are not well regulated may include segmented education systems where standards across institutions vary widely and are not transparent to prospective students due to information asymmetries, or where private costs are prohibitively high for some individuals that may additionally not have access to affordable credit. In such settings, educational attainment may no longer be a good signal for skills, and access to (high quality) education may be restricted not to those who invest most effort but those who have better access to information and financial means. The theory of inequality of opportunity further proposes that unequal outcomes between individuals may not be a reflection of fair rewards to efforts because starting positions were different: some groups systematically gain lower levels of welfare due to circumstances that are beyond their control, such as their origin, parental background or gender. The disadvantages associated with these circumstances will likely be aggravated in segmented education systems and unregulated markets. The next section will describe the education systems of the two countries under analysis in more detail.

## **Setting the Scene: Higher Education in Chile and Peru**

### ***Education reforms in Chile***

In 1981, the authoritarian military government that took power in 1973 carried out a drastic educational reform. Before 1981 there were eight universities in Chile, two public and six private ones, all financed with public resources. The Catholic Church managed half of the private universities, but none of them were for-profit or charged tuition fees to students. Post 1981, public universities were divided into 16 smaller units according to their geographical location, and the government allowed the creation of new private universities.<sup>7</sup> Universities created before 1981 were recognized as traditional universities and became members of a special council (Consejo de Rectores), responsible for

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<sup>7</sup> Despite having an autonomous character, all public universities were subject to political influence during the military government. The government appointed the chancellors and the universities were treated as government agencies (Bernasconi et al. 2006).

supervising the new universities. This superior status not only came with higher prestige, but also with access to public resources which was not granted equally to new universities.

However, this public funding was soon reduced, which forced universities to charge tuition fees. Although by law the new private universities were not allowed to earn profits, the fees charged by them were not regulated.

A public loan system was created for students of traditional universities, granted directly by the state at a reduced interest rate (lower than the bank interest rate). Vocational (technical) education was transferred from the Ministry of Education to corporations created by the main business associations. Two types of institutions were created to provide higher technical education, Professional Institutes (IP) and Technical Training Centres (CFT),<sup>8</sup> with four and two year programmes, respectively (Bernasconi et al. 2006).

New private universities and professional institutes needed the approval of the Ministry of Education and the Home Office. Between 1981 and 1987, 5 new private universities and 23 professional institutes were accepted. In 1988, the veto of the Home Office was removed, which increased the creation of higher education institutions. In the last months of the military dictatorship (which ended in March 1990) the creation of new universities sped up in anticipation of changes in the regulatory environment for these institutions (Bernasconi et al. 2006; Brunner 2008). By the end of the transition to democracy, there were 40 new private universities and 80 professional institutes in Chile.

To assure the quality of the new institutions, traditional universities were put in charge of the accreditation of new universities and professional institutes. They had to approve the study programmes and administer degree exams of their students. The large number of new institutions and programmes to monitor made the burden excessive for traditional universities. The system lost credibility; the differences in quality, financing stability and prestige compared to traditional universities were excessive. This led to the application of a new law for higher education, passed on March 10, 1990, the last day of the military government. The law number 18,962 created a new supervision and accreditation mechanism through an autonomous and mainly technical Superior Council, which governs private higher education until today (Bernasconi et al. 2006).

Another difference between traditional and new private universities was availability of scholarships and loans for students. The university loan system was reserved only for students of traditional universities (interest rate of 2 percent per year). Students from new private universities could only opt for private bank loans (with an interest rate of 5-6 percent per year). In this case, banks determined which universities and careers received loans, according to the possibilities of future payment, and availability of collateral, restricting this funding opportunity only to middle and high-income groups. In 2005, to

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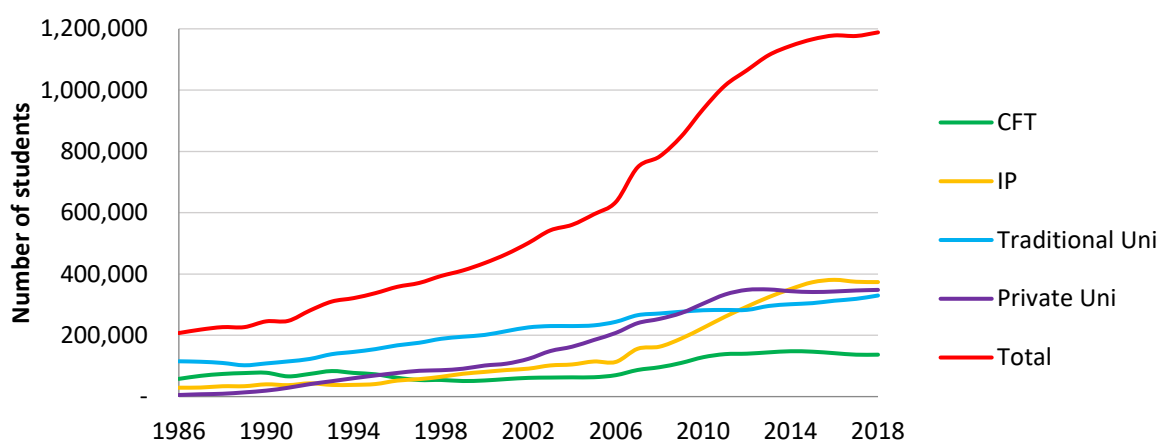
<sup>8</sup> Institutos profesionales (IP) and Centros de Formación Técnica (CFT).



democratize access to higher education, the “Crédito con aval del Estado (CAE)” (credit with a state guarantee) was created. All students could borrow the entire amount of tuition fees without needing private collateral since the state would act as guarantor.

As shown in Figure 1, the growth in student enrolment is associated with both the rise in the number of institutions and the expansion of funding opportunities. From 1992 to 1993, the number of students increased by 25 percent. From 1994, enrolment increased on average 6 percent a year, until 2006-2007 when the enrolment jumped by 18 percent in one year. From 2008 to 2018, the average growth rate was at 4 percent annually.

**Figure 1: Higher Education Enrolment, Chile**



Source: Authors' own elaboration based on data from Servicio de Información de Educación Superior (SIES) (2019).

### **Education reforms in Peru**

In Peru, the expansion of higher education started around 15 years later than in Chile. In November 1996, the Ministry of Education promulgated a law that allowed private investment in education.<sup>9</sup> It also granted tax benefits to private agents and, unlike Chile, allowed for-profit investments in education. The stated objectives of these measures were to increase coverage and quality, the latter through creating greater competition in the market (Balarín et al. 2018).

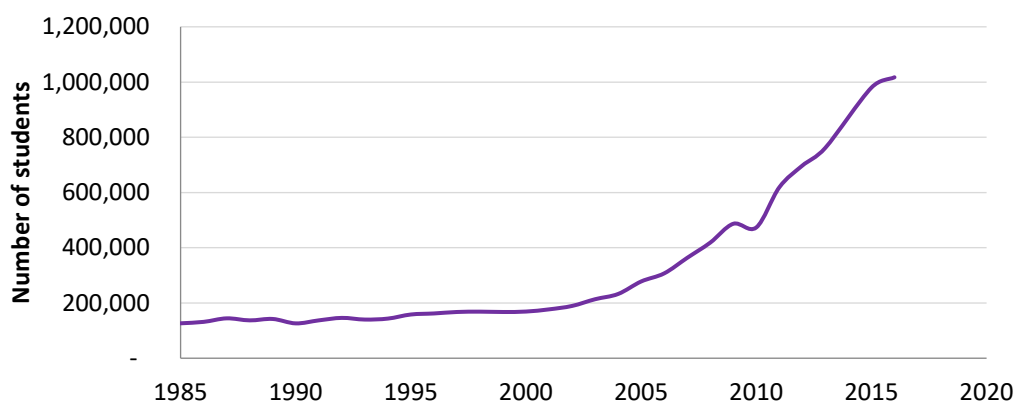
Before the authorization of private for-profit universities, Peru had 58 universities, of which 28 were public and 30 private. To this date, the number of public universities has increased to 51, and that of private universities to 92, 52 of which are for-profit (SUNEDU 2019). To authorize and regulate the creation of new universities, an assembly of chancellors was created (Asamblea Nacional de Rectores) (Benavides et al. 2019). Before the reform in 1995, the total enrolment in higher education was 400,000 students, which increased to 870,000 in 2012. From those, as Figure 2 shows, 80 percent were enrolled in

<sup>9</sup> Decreto Legislativo 882.

private universities. Since the reform, the number of students in private education grew more than six times, reaching 1,017,250 in 2016. In contrast, between 2007 and 2016, the number of graduates from public universities remained almost invariant (INEI 2019).<sup>10</sup>

Unlike in Chile, public higher education in Peru is free but conditional on performance. Underperforming students may lose their benefits according to the specific regulations of each university. Private universities may or may not receive government grants; if they receive them, they must allocate a specified share to scholarships and student loans.<sup>11</sup> In 2012, a National Scholarship and Educational Credit Programme (PRONABEC)<sup>12</sup> was created to widen opportunities to deserving students from disadvantaged backgrounds to enter higher education (public or private). Its main scholarship is “Beca 18” that covers tuition fees, a monthly allowance, insurances, a laptop and materials, among others, for the length of the career. It is aimed at students from low-income families with high academic performance, who study in quality universities (defined by the programme), with emphasis on scientific and technological careers. Until 2015, the scholarship had financed 11,000 students annually (Ministerio de Economía y Finanzas 2018; PRONABEC and MINEDU 2018).

**Figure 2: Enrolment in Private Universities, Peru**



Source: Authors' own elaboration. Data from Instituto Nacional de Estadísticas e Informática (INEI) (2019).

### ***The role of the private sector in higher education in Chile and Peru***

The educational reforms of the mid-80s and 90s in Chile and Peru privileged the private sector as a provider of higher education. However, in 2004, private universities were still less relevant than public institutions in both countries: the share of public institutions in overall enrolment stood at 71 percent in Chile and 82 percent in Peru. This was reverted not long after and by 2015, private universities' admission surpassed the public ones by a factor of 1.12 in Chile and 1.8 in Peru (MINEDU 2017; MINEDUC 2019a).

<sup>10</sup> Unfortunately, information about the enrolment in public universities is not available <https://www.inei.gov.pe/estadisticas/indice-tematico/university-tuition/>.

<sup>11</sup> Ley Universitaria 23733, Capítulo 12, Artículo 78.

<sup>12</sup> Programa Nacional de Becas y Crédito Educativo.

This sharp increase in the supply of higher education has gone hand in hand with a strong scepticism of the quality of the new institutions. Quality assurance is not well regulated, while market competition combined with profit-orientation does not create (financial) incentives for universities to strive for high quality standards. In Peru, the law explicitly allows universities to make a profit (Yamada and Castro 2013). In Chile, although this is forbidden, many private universities create subsidiary companies that provide services to universities, such as real estate, charged at excessive prices (Brunner and Ferrada Hurtado 2011).

As mentioned before, costs of tertiary education differ strongly between both countries. In Chile, public universities are almost as expensive as private ones, while they are free (or of comparatively low costs) in Peru. This creates greater access barriers for students from low-income families in Chile, who then tend to opt for less expensive universities that are less prestigious and of lower quality.

The rise in coverage allowed by the CAE combined with the weak regulation of tuition fees and the length of university programmes led to a crisis in the student finance system of private universities in Chile.<sup>13</sup> In 2015, 85 percent of the total debt in the Chilean banking system was associated with the CAE student loans (Kremerman and Páez 2016). Student movements that started in 2011 denounced the high indebtedness faced by students at the end of their higher studies, leading to changes in the HE law in 2017. Students from families in the lowest six income deciles will be exempt from tuition fees during the formal length of the studies. The new law also creates a new regulatory and supervisory body for higher education (Superintendencia de Educación Superior) (MINEDUC 2019b). This body will control the financial status of the institutions if corporations control them, and profit will be considered a legal offence (penalized with jail). Although this promises to be a step towards greater equality of opportunities for students who come from more disadvantaged sectors, costs of higher education remain high.

## **Data Sources**

Our study will draw upon the household surveys CASEN from Chile and ENAHO from Peru as well as on administrative statistics provided by the Ministries of Education of the two countries. We use the data of 2017 and 2007 from ENAHO and 2017 and 2006 from CASEN. Both are cross-sectional household surveys and use a multistage stratified sampling design, such that ENAHO is representative at the province level and CASEN at the municipal level. We also use administrative data from the Ministry of Education of Chile and the National Institute of Statistics and Informatics in Peru (INEI) for information on student enrolment and university characteristics.

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<sup>13</sup> In both countries, the average length of university programmes is around 5.2 years, above the OECD average of 3.7 (OECD 2018).

The surveys hold a rich set of information on demographics, income sources of all household members aged 14 and above and education trajectories of all household members aged 3 and above. They also collect retrospective information on the highest level and years of education reached by both parents of the head of household (CASEN since 2006 and ENAHO since 2001). This information will be useful to analyse the educational achievements of all household members and compare individuals that differ in their levels of parental education, our first variable of circumstance.

We categorize parental education into four levels: no formal education, completed primary, completed secondary and completed tertiary education.<sup>14</sup> Tertiary education includes university education and technical or vocational training. The second circumstance is indigenous background, which is defined by self-declaration: both surveys include a question on belonging to an indigenous group. In Peru, respondents are additionally asked whether they learned an indigenous language during childhood, which we count as an additional indicator for being indigenous. In both countries, the share of indigenous persons may be underestimated by the surveys due to social stigma that prompts respondents not to identify as indigenous.

In the analysis of returns to education, the income concept used is labour income from the main and secondary occupation. It includes earnings from dependent and independent work (cash and in-kind), net of direct taxes and social security contributions, also incorporating income from self-production. We do not base our analysis on disposable or household income for two reasons: first because circumstances such as gender or place of birth can only be associated with a person, not a household. Second, because we are interested in market returns to education rather than the effect of any compensation measure, for example in the form of government or private transfers. While the latter are arguably relevant for assessing inequality in living standards, this would blur the focus on the role of higher education in fostering inequality. Although the latter argument also applies to direct taxes and social security, which we do not account for in our measure of net market income, this is mainly due to data limitations. The surveys do not report gross income, and imputing it based on reported net incomes and tax systems would need to rely on strong assumptions given the high degree of labour market informality and the complexity of tax schedules that we cannot model fully with the information at hand.

Our analysis focuses on a subsample of the working-age population of both surveys. We restrict the analysis to individuals aged between 25 and 60 years because we want to observe individuals who have finished education and are not yet of retirement age. We expect individuals aged 25 and above to have acquired their highest formal education degree, while they do not yet qualify for pension payments before the age of 60. We will divide the sample by years of birth to analyse the returns to education of the different cohorts. Since educational attainment is assumed to remain constant over time, life-cycle

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<sup>14</sup> The highest level reached by any of the parents, in order to take advantage of the cases when only the information on one parent was reported.

bias is not a concern when analysing educational attainment across individuals of different ages.

When looking at earnings, we further restrict our sample to the economically active population, including both those who work and those who seek work.<sup>15</sup> While this risks dropping from our sample those who have withdrawn from the labour market precisely because of low opportunities, it allows us to also leave out the well-educated from rich households that can afford not to work. Since we capture not only formal work but also participation in informal labour markets, we argue that dropping the non-active from our sample is the preferred option. Table 1 reports descriptive statistics of our sample.

**Table 1: Descriptive Statistics**

	Chile		Peru	
	2006	2017	2007	2017
Sample Size (age 25-60)	120,956	100,423	37,774	54,454
% population women (age 25-60)	52.42	53.63	51.93	52.59
% population in rural areas (age 25-60)	12.59	12.34	20.29	17.60
% population indigenous (age 25-60)	6.12	8.76	42.04	30.55
Average monthly income ppp \$2017	1,097	1,477	545	662
Median monthly income ppp \$2017	667	969	301	476
Poverty head count ratio (World Bank)	29.1	8.6	42.4	21.7
GINI Index (World Bank)	48.2	46.6	50.0	43.3

*Source: Authors' elaboration based on data from CASEN (2006/2017), ENAHO (2007/2017) and World Bank (2019).*

## Analysis and Results

As described above, average years of education have been rising in both countries over the past decades, and although a significant share of the population still has low levels of education, the expansion at higher levels was pronounced. Figure 3 displays the level of educational attainment in our sample of the adult population aged between 25 and 60 years at the time of observation in 2006/07 and 2017. We differentiate between four completed levels described above, whereby higher education includes both VET and university studies at Bachelor, Master and advanced degrees.

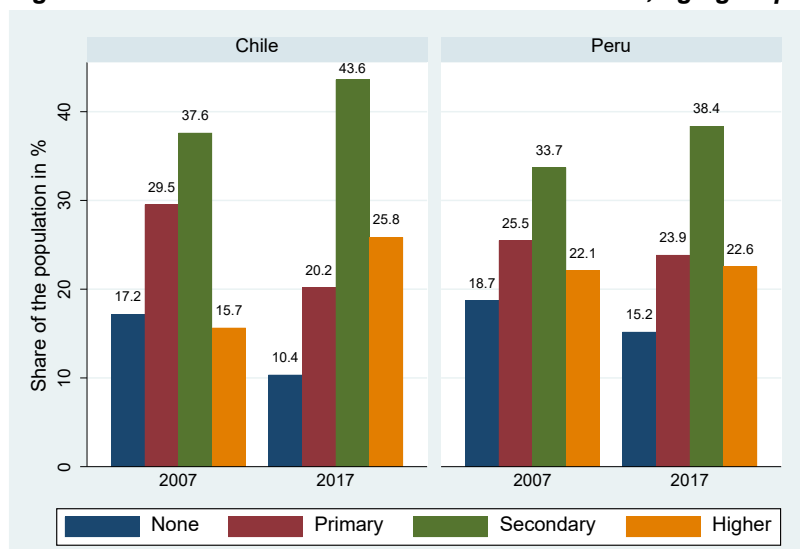
While Peru still has on average lower levels of education, the distributions of attainment show similar patterns: there is a peak of around 44 percent (Chile) and 39 percent (Peru) in graduates from secondary education in 2017, which is nowadays the mandatory schooling level for all (although not strictly enforced). A quarter of the population has attained some form of higher education in Chile with somewhat lower figures in Peru. Although this is high in comparison with the OECD average (which differentiates between academic and vocational training), these figures are in line with regional patterns. There has in fact been a strong increase in the share of the population with

<sup>15</sup> This definition excludes full-time students, retired people and others who for some reason are not participating in the labour market.

secondary and higher education since 2006/07 in Chile but much less so in Peru, where patterns seem somewhat more stable over the past ten years. These estimates, which are based on household surveys, are in line with administrative enrolment statistics: as shown in Figure 3, there was an increase of more than half a million people in higher education since the early 2000s, which explains the large jump of 10 percentage points difference between higher education shares between 2006/07 and 2017 in Chile. This large increase had taken place earlier in Peru, namely after the mid 90's when the private offer in higher education increased. In Chile, the sharp increase coincides with the change in the higher education financing system CAE described in the previous section.

When interpreting these figures, we must keep in mind that we are looking at the stock of educational attainment and even though there has been a flow of relatively higher educated individuals into the working-age population in recent years, older generations, especially in Peru, still have relatively low levels of schooling so that average shares will not be affected that strongly. In this sense, the share of people without any formal education is still high at 10 percent in Chile and 15 percent in Peru (Figure A1 in the annex shows that this proportion is significantly higher among older age groups). Overall, in 2017 around 40 percent of our sample in Peru and 30 percent in Chile have not acquired a secondary schooling degree.

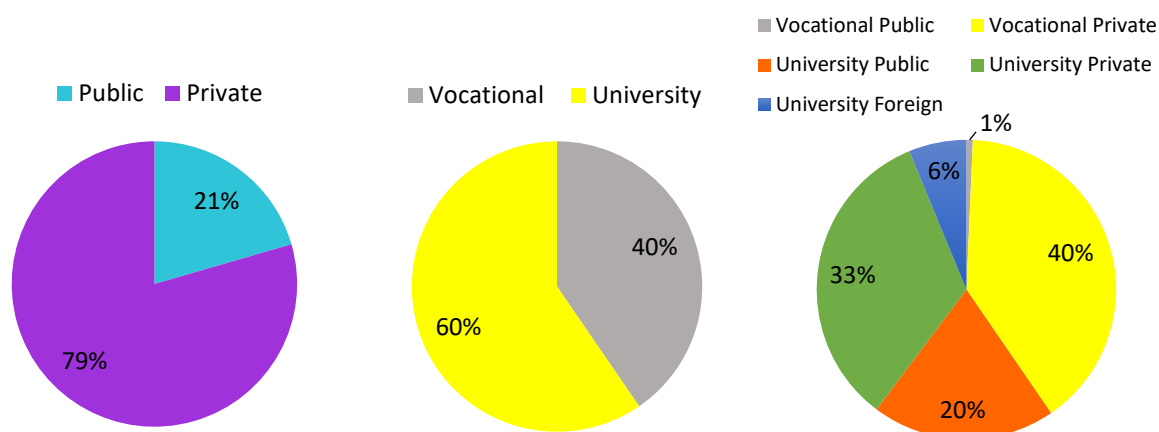
**Figure 3: Educational attainment in Chile and Peru, age group 25-60 years**



Source: Authors' estimations based on CASEN (2006/2017) and ENAHO (2007/2017).

The category of higher education includes a variety of institutional arrangements, which Figure 4 and 5 disaggregate further. They show the distribution of students across the different types of institutions that are grouped under higher education. This time, we do not look at highest level completed, but rather at the highest level entered, hence including all those that are still studying or have not completed this track. This is why the total is higher than the share quoted in Figure 3. Including these latter groups is essential when looking at access, since entering higher education may pose different constraints than actually completing it. When excluding them, we risk confounding these two processes.

**Figure 4: Enrolment in Higher Education in Chile, 2017**

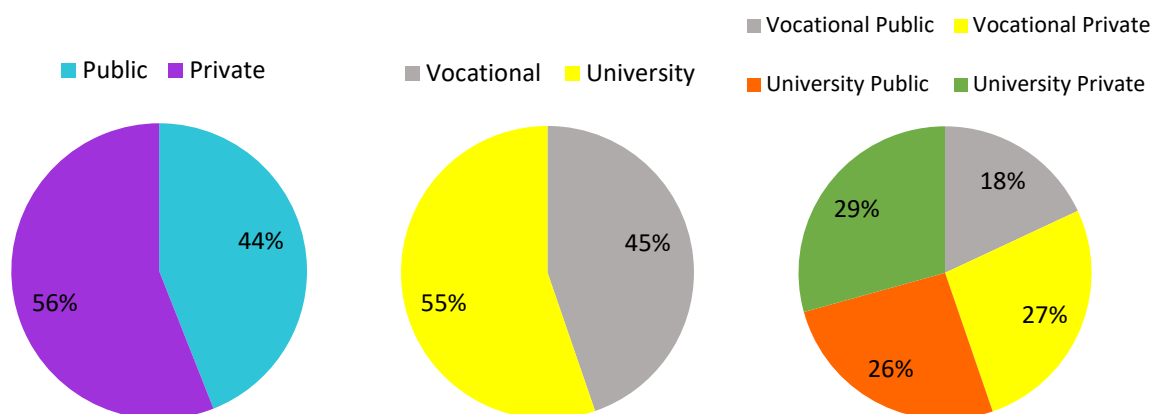


Source: Authors' elaboration based on CASEN (2017).

Note: The graph shows the total share of the population that is enrolled in some form of higher education, and how those enrolled are distributed across different institutions. The first pie chart shows that 21 percent of students attend public institutions compared to 79 percent attending private institutions, the second pie chart shows that 40 percent choose vocational training compared to 60 percent choosing university, and so forth.

In Chile, more than a third of our sample (around 35 percent) has actually entered the higher education track at some point in their life. Of those, around 60 percent attend university, and the remaining 40 percent opt for VET. The private system is very dominant: around 80 percent of individuals report to have studied in a private vocational or academic institution. In VET, the public sector is practically non-existent (except for the training of armed forces and police). While the public sector is fairly strong in universities, the private sector still dominates: its share of 33 percent of students exceeds the 20 percent share of the public sector by more than half.

**Figure 5: Enrolment in Higher Education in Peru, 2017**



Source: Authors' elaboration based on ENAHO (2017).

Note: The graph shows the total share of the population that is enrolled in some form of higher education, and how those enrolled are distributed across different institutions. The first pie chart shows that 44 percent of students attend public institutions compared to 56 percent attending private institutions; the second pie chart shows that 45 percent choose vocational training compared to 55 percent choosing university, and so forth.

The overall shares that have entered higher education are very similar in Peru (32 percent), although the dominance of the private sector seems less strong than in Chile. The share of students attending public institutions is under 50 percent, the same holds for vocational training, which in comparison seems to be somewhat more relevant than in Chile: 45 percent attend vocational training compared to 55 percent going to universities. While there is practically no public vocational training in Chile, in Peru it has a significant share albeit smaller than private. At the level of universities, the division between private and public is almost balanced, although this masks the strong expansion of private institutions in more recent times. As described above, the number of students has risen strongly in the past decades while they were not that important yet for older cohorts.

Theories of inequality of opportunity suggest that the bars for entry into higher education are set at different heights for individuals depending on their starting position. Figure 6 and 7 hence look at whether circumstances beyond individual control or effort are associated with educational achievement. The figures differentiate between eight levels of education that include the four completed ones analysed above, and the intermediary incomplete levels for our initial sample of adults aged between 25 and 60 years. The first row looks at outcomes in 2017 and compares those to outcomes in 2007 in the second row.

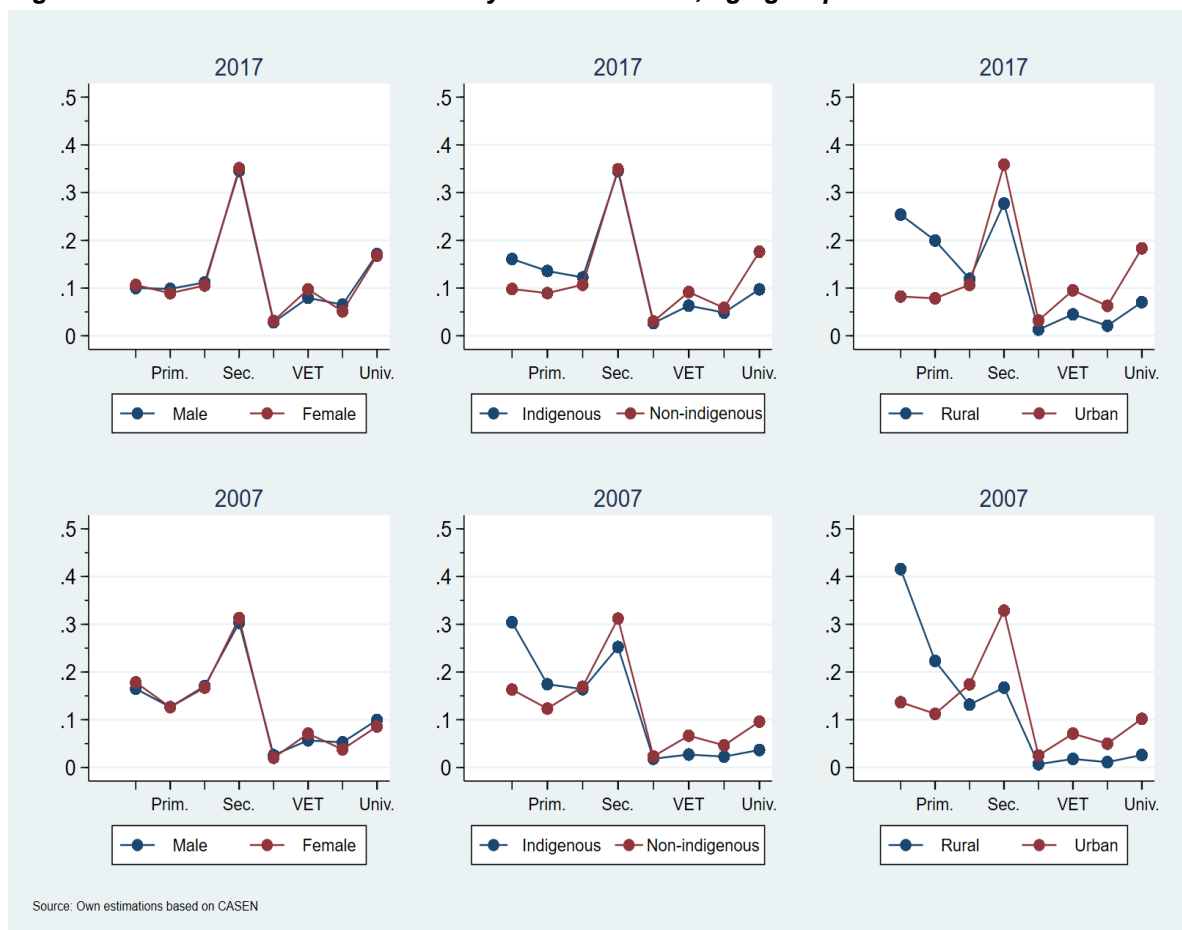
### ***Educational attainment***

Turning to Chile, the first column in Figure 6 shows that gender seems to have no relevance for educational achievement in both periods observed. There are practically no differences between female and male students in attainment at any of the eight levels. This is different when dividing the population between those with an indigenous and non-indigenous background. Here we observe differences mostly when it comes to higher education: the chances of individuals with an indigenous background to complete university are at 13 percent, around 5 percentage points lower in 2017 than those for non-indigenous at 18 percent. This gap has been reduced compared to 2007 where the difference exceeded 7 percentage points. In 2007, those with indigenous background were also twice more likely to have no formal education (share of 30 versus 15 percent), this gap has been completely closed. In the current population of 2017, both groups have a share of about 10 percent with no level of formal education acquired. The latter are mostly to be found in rural areas: here, education levels are significantly lower. The share with no formal education has been reduced greatly in the period of 10 years and dropped from over 40 percent to 25 percent in rural areas and around 14 percent to 9 percent in urban areas. Further, the likelihood of attaining complete VET or university is much higher in urban areas. Figure A2 in the appendix compares the differences between the three groups analysed here and shows that overall the indigenous and rural residents have the lowest probability of entering higher education; significant differences also exist at the low end of the education spectrum, which has, however, reduced over time. When looking at these graphs, it is important to keep in mind that they do not convey how the population is divided among these groups at different levels of education but rather the likelihood of



attending a particular level given that one is female versus male, indigenous versus not, or lives in a rural versus urban area. In other words, the shares along each coloured line sum to one rather than the shares across the lines at each level of education.

**Figure 6: Educational achievements by circumstances, age group 25-60 in Chile**

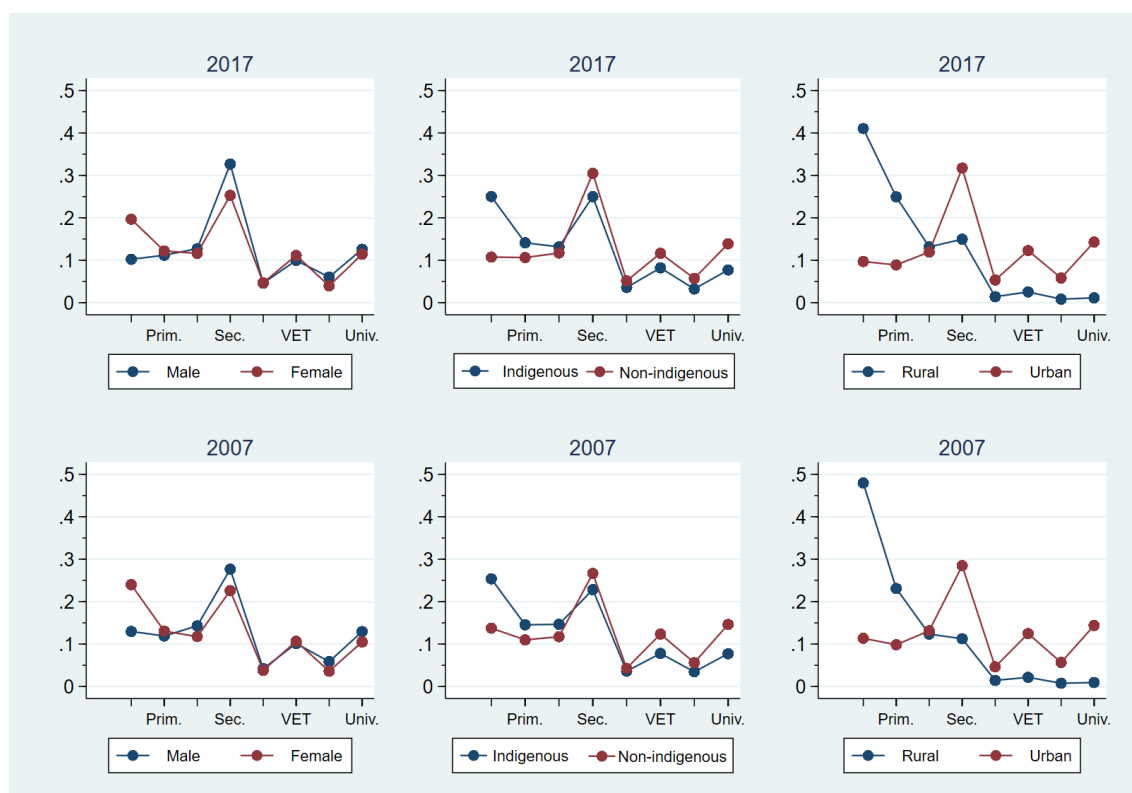


Source: Authors' estimations based on CASEN (2006, 2017).  
 Note: The lines in each graph indicate the highest completed education level achieved by each subgroup. In 2017, around 10 percent of males and of females within the age group 25-60 had acquired no formal schooling, the same share had acquired primary as highest completed level, while about 45 percent of both males and females had secondary schooling. While no differences between genders are observed, differences between ethnic groups and geographic locations are much more pronounced.

In Peru, the differences are more pronounced than in Chile. While women have a much higher probability of having no formal education at all, there is no gender bias in representation at the level of higher education. This suggests that overall, fewer women than men enter the educational system, but those that do are more likely to follow it through. The share of women that drop out after secondary level is lower than among men so that at higher levels, the balance is about equal. Most likely, inequalities intersect: being a woman is a disadvantage for some groups that also face other disadvantages. These could include, for example, ethnic background or geographic location: both factors greatly impact the probability of having no education and the likelihood of entering into higher levels. The gap in educational achievement between indigenous and non-indigenous actually increased both at the level of no formal education and at higher education between 2007 and 2017. This is mostly due to the non-indigenous improving

their situation while that of the indigenous stagnated. In other words, the improvements made in reducing the number of people without formal schooling and increasing enrolment at higher education has disproportionately benefitted the non-indigenous. While rural areas are still home to far more people that do not have access to formal schooling than urban areas, the gaps are starting to close. This is not true for the gap in higher education, where individuals from rural areas are still much fewer in numbers. The latter observation is clearly also linked to the fact that lower rates of schooling in rural areas remain a bottleneck for raising higher education. The expansion of educational infrastructure, the shift to compulsory schooling and conditional cash transfer programmes likely contributed to these developments.

**Figure 7: Educational achievements by circumstances, age group 25-60 in Peru**



Source: Authors' estimations based on ENAHO (2007, 2017).

Note: The lines in each graph indicate the highest completed education level achieved by each subgroup. In 2017, around 10 percent of males compared to 20 percent of females within the age group 25-60 had acquired no formal schooling, while about 10 percent of both genders had acquired primary schooling as the highest level; differences between ethnic groups and geographic locations are also pronounced.

Overall, the two figures show that in both countries—though more pronounced in Peru—educational inequalities are strong at a higher level but equally observed at lower levels of schooling. In order to widen access to higher education, measures must hence address earlier disadvantage since the risk of dropping out of the educational system even before reaching the requirements necessary for entering vocational training or university are much higher among some groups than others. But even if the requirements of secondary education are fulfilled, further constraints such as financing likely come into play. Here, children from richer backgrounds have an evident advantage that becomes all the more relevant the more commercialized an educational system is.

Parental background influences a child's educational (and professional) success in many ways. Among the most obvious ones are abilities that are inherited, financial capital that allows investment in human capital, and parental education that supports the cognitive development of children.<sup>16</sup> Often, these are correlated with each other. Due to data requirements, we restrict our analysis to examining the association between parental and child education. Figure 8 below compares the situation in Chile and Peru in 2017; Figures A4 and A5 in the appendix show how these have developed in the two countries between 2006/07 and 2017. The first observation that becomes apparent is that parental educational achievement is a strong predictor of own educational attainment. Without parental background being an influence, the distribution across educational levels should be equal among the four groups and mirror average educational attainment reported above in figure 6. The reality looks quite different: in both countries, the chance of having no formal education when parents had higher education is practically non-existent (around 2 percent) when parents had acquired secondary schooling. This means that regardless of other factors, children of highly educated parents will have some level of formal schooling and most likely, this will be secondary or above.

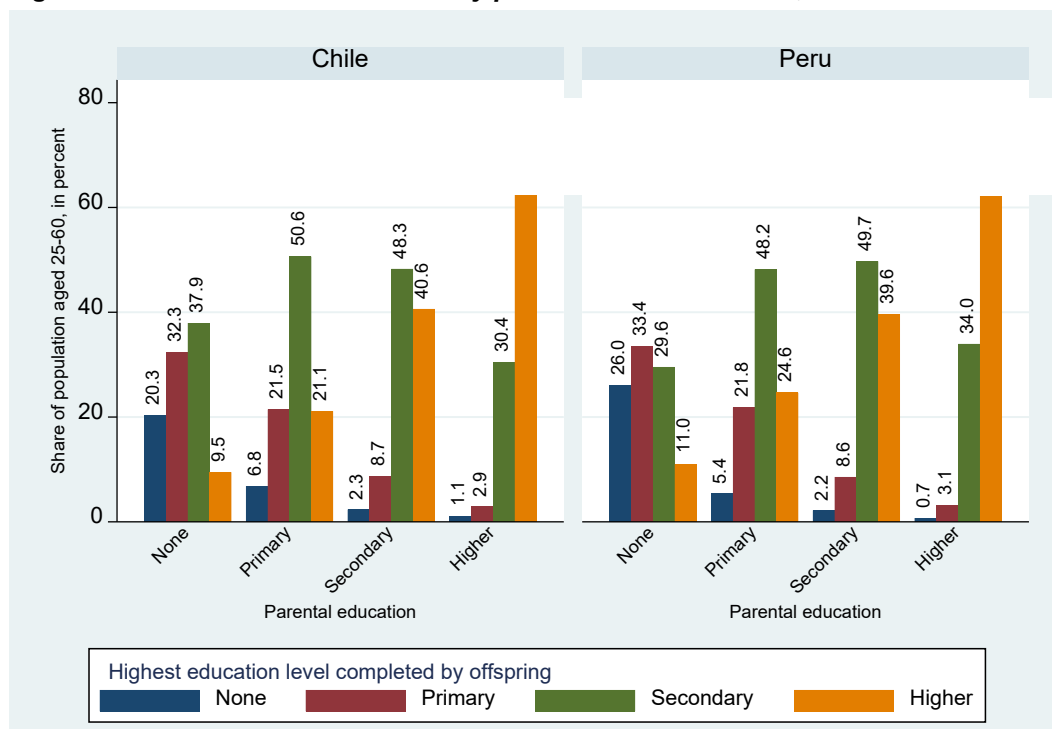
The positive news on the other end of the parental education spectrum is that there is some upward mobility in absolute terms: the chances for children of parents with no formal education to complete higher education is around 10 percent in both countries and above 20 percent when parents had only primary education. Looking beyond only higher education, children of parents with little to no educational background face good chances of doing better than their parents: In both countries, around 40 percent of children from parents without any education reach the secondary level or above, and the chances are much higher if parents had at least primary education. While this partly reflects the increase in average education across generations, absolute mobility—comparing children with their parents—is still important because parents care about the welfare of their offspring. It also indicates educational progress in countries that still exclude significant parts of the population. It does not, however, indicate how well individuals do compared to their peers. In other words, we can see that children run further than their parents did, but do they keep up the pace of others running with them? The upward mobility that large shares of children from a low educational background have experienced coexists with a very high probability of between 62 (Peru) and 66 (Chile) percent of attaining higher education when parents also completed that level. While surely no one advocates downward mobility in the sense that offspring of highly educated parents should acquire less schooling, comparing the relative odds between peers from different backgrounds shows that chances are not equal. Hence, Figure 8 conveys the overall picture of a coexistence between absolute mobility and group-based differences that persist over time. Relative persistence in educational attainment refers to a situation where individuals of a group may achieve higher absolute years of schooling than individuals of the same group did in previous periods, but they still retain the same position on the education ladder

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<sup>16</sup> Becker et al. 2015; Björklund and Jäntti 2011

compared to individuals of other groups. Relative persistence in Chile and Peru is particularly strong at the top, where parental education seems to matter a great deal. There is also persistence at the bottom at similar magnitudes in both countries, but it is not nearly as strong as at higher levels, to which we turn next.

**Figure 8: Educational achievement by parental education 2017, Chile and Peru**



Source: Authors’ estimations based on CASEN (2017) and ENAHO (2017).

Note: The horizontal axis groups individuals by parental education (highest level achieved), while the bars show the highest level achieved by individuals themselves conditional on parental education. For example, in Chile, of those whose parents have no formal education, 20 percent also acquire no formal schooling, while 32 percent drop out after finishing primary school, 38 percent finish secondary school and 10 percent higher education.

### Access to higher education

While we have looked at the whole population of adults aged between 25 and 60 to see how various circumstances correlate with educational achievement, we will now turn our focus to only those that have accessed higher education at some point. The previous analysis has shown that circumstances do matter for educational attainment and that differences are most pronounced at post-secondary levels. In the following analysis, we will further differentiate higher education between the track chosen—VET or university—and the institutional division between public and private. The empirical literature on educational mobility in Latin America often does not differentiate between types of institutions (Rodriguez Castelan et al. 2016; Sapelli 2011). This is, however, interesting because of the large heterogeneity within the group of higher education institutions with respect to quality of education and costs of financing described in section 3.

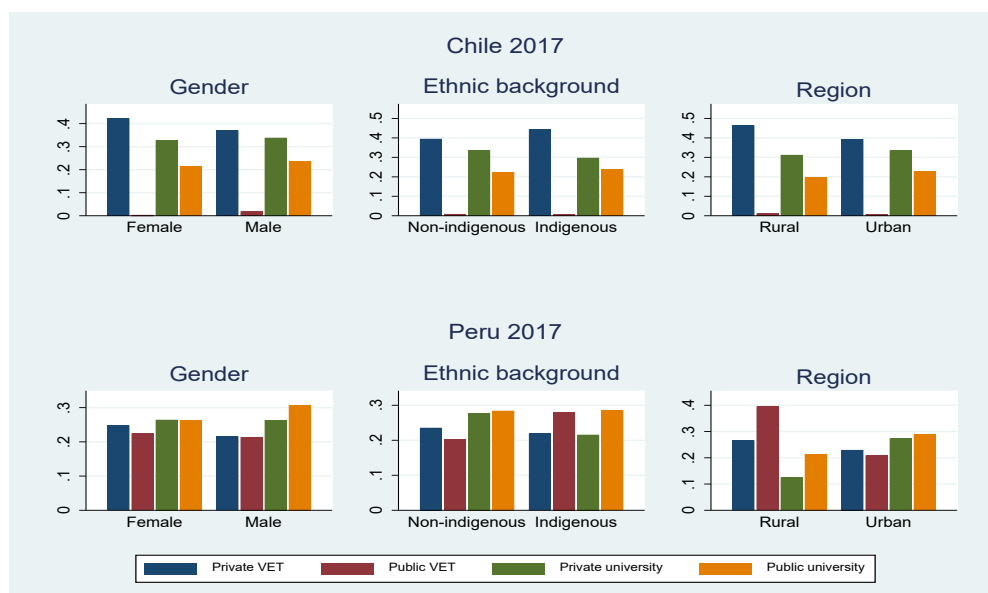
Figure 9 shows enrolment rates in public and private institutions of higher education conditional on the circumstances scrutinized above, namely gender, ethnic background

and region of residence. In other words, it answers the question of how likely it is that one enters a particular educational route rather than another given that one is female (compared to male), indigenous (compared to not) or comes from a rural (compared to urban) area, and that one enters the higher education system in the first place.

In both countries, women, indigenous and rural individuals are more likely to enter the vocational track than university compared to their counterparts. For those that go to university in Chile, there is no significant gender bias between public and private institutions, but the indigenous are more likely to attend a private university rather than a public one, while for non-indigenous, this trend is reversed. In rural areas in Chile, the share attending vocational training is around 47 percent and thus 7 percentage points higher than in urban areas, while the role of private universities is larger than public ones in both regions. In Peru, the picture looks different: males are more likely to attend public universities than private ones, while there is no difference for females. The indigenous are more likely to attend public institutions, and they enter vocational and university tracks at about equal shares as opposed to the non-indigenous who are more likely to attend university. In rural regions, vocational training is more prominent than university, and for both tracks public institutions are more relevant. In urban areas, universities are stronger than vocational training while the differences between public and private are not so pronounced.

To summarize the main observations from this figure, we observe that gender biases in access are not very strong in either of the two countries, although there is a tendency for women to be more represented at vocational training institutions than at universities. Differences based on ethnic background are stronger than gender biases: in both countries, a greater share of indigenous people in higher education chooses the vocational track in comparison with the non-indigenous. The choice between public and private institutions also follows different patterns between indigenous and non-indigenous although this is more pronounced in Chile. Indigenous students opt more for private institutions than public ones, in Peru this is the other way around. Private education plays overall a greater role in Chile than Peru. Whereas in Peru vocational training is overall more prominent than university in rural areas, this is not the case in Chile.

**Figure 9: Enrolment rates in public and private higher education conditional on gender, ethnic background and region.**

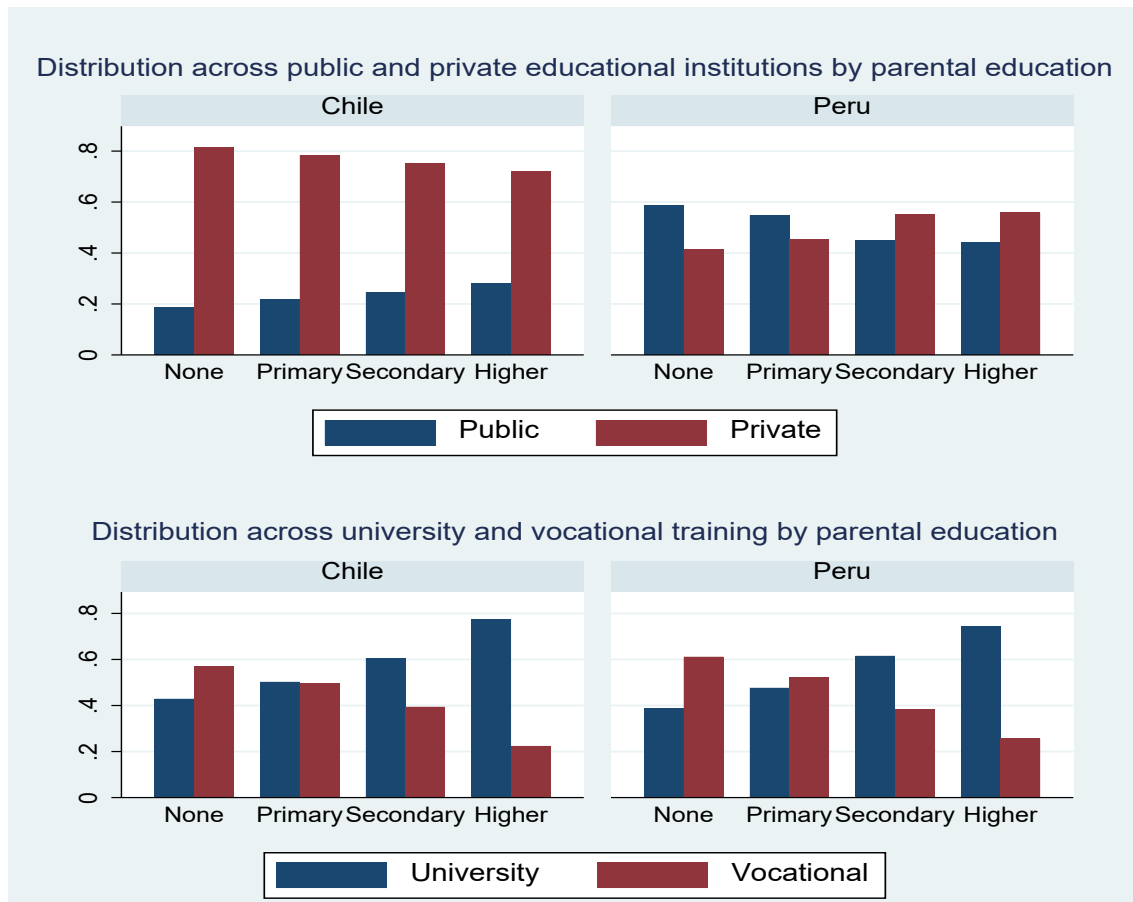


Source: Authors' estimations based on CASEN (2017) and ENAHO (2017).

Note: The sample examined is the population that enrolls in higher education. The bars show how the population within each subgroup is distributed across different types of institutions. In Chile, over 40 percent of females that enrol in higher education choose a private VET programme while just over 30 percent choose private university and 20 percent public university.

Turning again to parental background, Figure 10 shows that the level of parental education remains a strong predictor for whether children enter the vocational or university system in both countries. The same is true for the division between public and private institutions, although to a lesser extent. In Chile, the more educated the parents, the more likely their child enters a public institution. This conforms to the generally higher prestige that public universities benefit from. In Peru, this gradient follows the opposite trend: highly educated parents are more likely to send their children to private universities. This does not mean that overall there are fewer students from highly educated parents at public institutions: their overall share in university is much higher. But this is also true for private institutions and is indicative of the fact that children from highly educated parents have more options. Entry into public institutions is very competitive in both countries and likely a first choice over alternative options that range from private institutions to VET or entering the labour market. Children from highly educated parents are more likely to have the financial means for costly private education, while entering VET or the labour market are preferred options for those that lack financial means. Taking into account the fact that overall, much fewer children from poorly educated parents are able to make the choice between different university tracks or VET because their chances to finish secondary education are much lower magnifies the phenomenon of top persistence further.

**Figure 10: Access to higher education by parental background in Chile and Peru 2017**



Source: Authors' estimations based on CASEN (2017) and ENAHO (2017).

Note: The sample examined is the population that enrolls in higher education. The horizontal axis sorts by parental education (highest level achieved), while the bars show how the population is distributed across public vs. private institutions (upper panel) and across university vs. vocational training. In Peru, just under 60 percent of those whose parents had no formal education enrol in public higher education, while only 40 percent enrol in private institutions. For those whose parents have completed higher education, just over 40 percent enrol in public and just under 60 percent in private institutions.

Summing up on the relevance of gender, ethnicity, location and parental education permits to draw a few preliminary conclusions. The circumstances examined here are relevant predictors both for overall educational attainment in the population, and for differential access into the specific types of post-secondary education institutions. But the degree of correlation between different circumstances and education varies. The strongest predictor in both countries seems to be parental education. Offspring from highly educated parents achieves on average much higher education levels, and this is particularly pronounced at post-secondary education levels. Focusing only on the sample of people who enter post-secondary education at some point, offspring of highly educated parents are more likely to choose a university than a vocational education track. Children from highly educated parents tend to opt for public rather than private institutions in Chile and vice versa in Peru. Having an indigenous background has a strongly negative association with educational achievement in Peru while it has almost levelled out in Chile. Indigenous groups in Peru are much less likely to enter higher education than the non-indigenous, and if they do, they are more likely to be found in vocational training and at

public institutions. Educational achievement is lower in rural than in urban areas in both countries. A smaller share enters post-secondary education in rural areas, and those that do more likely enrol in vocational training in Peru, but not so in Chile. The differences between educational track and public-private ownership are smaller within urban than rural areas. This being said, the urban-rural divide is not a circumstance in its strict sense since we ignore the fact that one can move from a rural to an urban area for example to pursue higher education. We merely consider region of residence (rather than region of birth or childhood). We must further note that these circumstances are likely to correlate to some degree. For example, rural regions have a higher density of indigenous people that are moreover less likely to come from rich or highly educated households. In this sense, the analysis merely looks at patterns of correlation and does not aim to identify causal channels.

### **Returns to education**

Education has an intrinsic value and pursuing it is rewarding in its own right. It brings an improvement in wellbeing that manifests in a range of dimensions such as better health. Ensuring equal opportunities for access should hence also be an objective in itself that helps to improve social welfare and an inclusive society. Apart from this, education also yields pecuniary rewards, and differential access to higher education hence shapes income inequality in many ways. In particular, if circumstances play a role in determining access, this will be mirrored in the distribution of labour income. More likely than not, it will also affect how fair or unfair a society perceives existing patterns of income inequality.

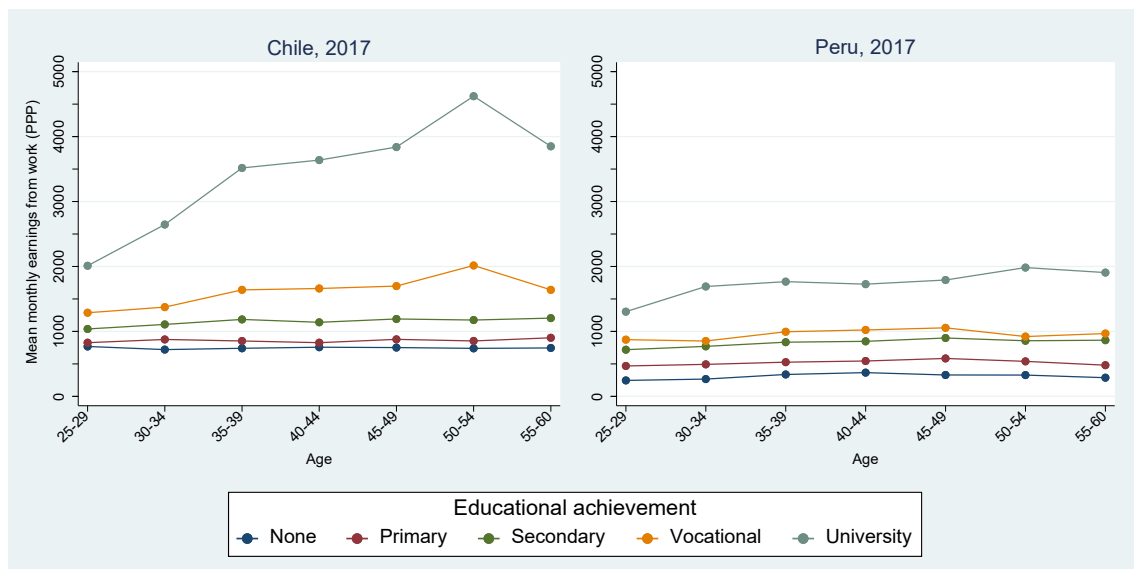
We therefore now turn to comparing the labour market returns that different levels of educational attainment yield. Figure 11 displays average monthly earnings from work (including primary and secondary occupations) across different skill levels and along the working age of 25 to 60 years. Since we do not have access to long panel series following individuals over time, this is a cross-section of the population at one point in time rather than an analysis of individual lifetime earnings: it tells us how much workers of different ages earn according to the level of education they have attained. We restrict the analysis to the economically active population. This means we consider individuals that currently work or are seeking employment while leaving out those that have withdrawn from or never entered the labour market. We observe real earnings at the prices of 2017 in purchasing power parities (PPP) to ensure comparability over time and across countries.

Figure 11 reports labour market returns in 2017 in Chile and Peru. The first apparent observation is that earnings of university graduates by far exceed those of all other levels, including VET. Returns to tertiary education in Chile are very high. Depending on age, the earnings ratio between people holding a university degree and those having no or only primary education ranges between 2.9 at young ages and 5.6 at older ages. It is smaller though still very large when comparing university graduates to secondary school graduates, and even having formal vocational qualification means that earnings will still differ by a factor of 1.5 at young ages and 2.6 among older cohorts.



The second apparent observation in Chile is that the divergence is strong already at young ages and before university graduates experience high increases in earnings. Average earnings of university graduates are around twice as high as those of secondary school graduates in the age range 25-29 years; this factor rises to 3.6 at later ages. The curves for all other levels except higher education stay fairly flat along the age distribution. And while VET does experience increasing earnings at higher ages, this development is weak in comparison with university graduates. The earnings of the former increase by about 15 percent over the age span while those of the latter almost double.

**Figure 11: Labour market returns to education in Chile and Peru, age group 25-60 years**



Source: Authors' estimations based on CASEN (2017) and ENAHO (2017).

Note: The lines track mean earnings by age across different levels of educational achievement. In 2017, labour market entrants at the age of 25-29 years earned an average earning of 2000 USD PPP with University education compared to around 1300 USPPP with VET, 1000 USPPP with secondary schooling and around 800 USD PPP with less than secondary schooling.

As in Chile, differences between university graduates and all other labour market participants are also very stark in Peru. Differences between those that have secondary schooling as opposed to only primary or no schooling are, however, smaller in Chile than in Peru (Figure 11). In terms of levels, earnings are overall much lower in Peru than in Chile. While university graduates in 2017 reached monthly earnings of up to USD PPP 2000 towards the end of their active working life, this is the level where the same group starts off at labour market entry in Chile. Similarly, low-skilled workers earn much less in Peru than in neighbouring Chile. As in Chile, average earnings of those with little or no schooling stay rather flat along the age distribution: more experience does not translate into higher productivity or earnings. This is different for secondary school and VET graduates, albeit weakly, and strongly for graduates from tertiary education. Their average earnings rise by about 50 percent when comparing those aged 25-29 to those aged 55-60. The ratio between earnings of university graduates and those without formal education rises from 1.7 to a staggering 6.5 across the same age groups. The ratio between earnings of those with secondary schooling and those without formal education has a

lower range of between 1.7 and 2.3, depending on age, while that between VET graduates and those without schooling lies between 1.4 and just under 2.

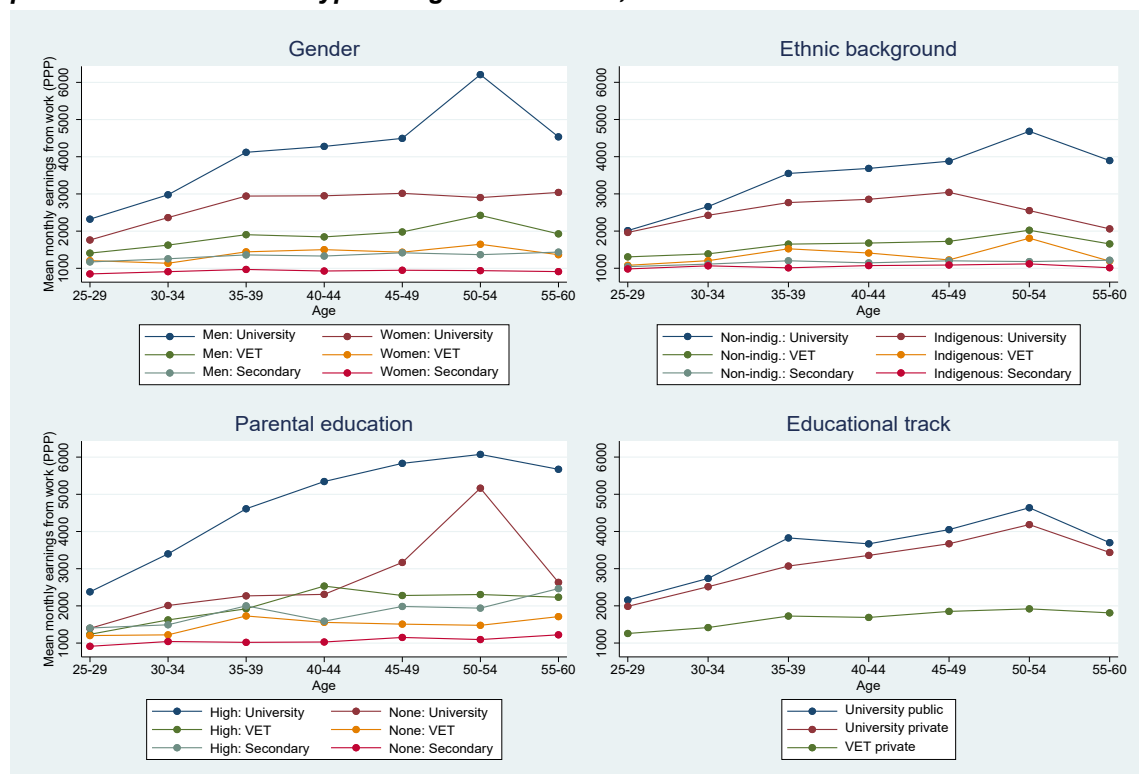
What is notable in Peru and different from Chile is that the earnings trajectories of secondary school and VET graduates hardly differ. The skills transferred during VET seem not to be rewarded strongly in Peruvian labour markets. Secondary schooling and VET translate, however, into great advantage over lower qualifications. Further, the differences between university graduates and others are strong in both countries but much stronger in Chile. The exceptions are those without any formal qualifications in Peru, who earn very low wages and see no improvements over time. These high returns to university education and the large dispersion in earnings across skill levels are reflected in the high levels of income inequality that both countries display. While Chile has both higher wage dispersions and higher income inequality, Peru has higher rates of poverty of around 22 percent, compared to less than 9 percent in Chile. High rates of poverty especially in rural areas are a reflection of the low earnings of the unskilled workforce in Peru. The above analysis has shown that patterns of access to higher education differ along a number of circumstances, most notably parental education and geographic location. While it is hence straightforward to assume that average income levels should also differ along the same circumstances, this must not be true when we analyse labour market returns conditional on educational attainment. In other words, while it may be harder for someone with low-educated parents to enter higher education, once they graduate from tertiary education they may earn the same as their peers with university degrees.

Figure 12 illustrates labour market returns by circumstances in Chile in 2017. Some clear patterns are evident: returns to university education remain large and rise with age, which is much less true for other education levels. However, not everyone is awarded the same returns for university education. Overall, the steepest curve and highest premiums are awarded to university graduates who come from a background of highly educated parents. In fact, this subgroup seems to be driving the large skills premium we observe overall. We compare this group to children from parents who have acquired no formal schooling. It is remarkable that the latter hardly earn higher returns in the labour market than individuals who completed VET and had highly educated parents, while the wages going to secondary school graduates with highly educated parents exceed those of workers with a technical degree but low-educated parents. This lends credit to the argument that in order to secure a highly paid job, own education is important but other factors may be equally or more important. As discussed in the theory of inequality of opportunity, parental education often intersects with other forms of advantages such as financial and social capital.

With respect to gender, although women enjoy on average the same opportunities to access higher education, their wages are substantially lower than that of men at all skill levels. The premium that female university graduates earn over other education levels is sizeable but dwarfed in size by that of men. Females with VET gain no premium over male secondary school leavers although their premium over female secondary school

leavers is sizeable. Inferring about the reasons is beyond the scope of this paper. However, in Chile, we find evidence that career choices are largely determined by gender. As shown in Figure A6 and A7 in the annex, women choose careers predominantly in health, education, administration and commerce. Men, on the other hand, are four times more likely to choose careers in technology, the latter being better paid in the job market. Undoubtedly there are gender-differentiated perceptions when making career decisions that will translate into future inequalities in the labour market (Buser et al. 2014; Correll 2001). Differences by ethnic background show similar patterns although not quite as pronounced as the gender divide. The differences between public and private universities are rather small. Figure A8 in the annex reports results for 2006.

**Figure 12: Labour market returns to education by circumstances: Gender, ethnicity, parental education and type of higher education, Chile 2017**



Source: Authors' estimations based on CASEN (2017).

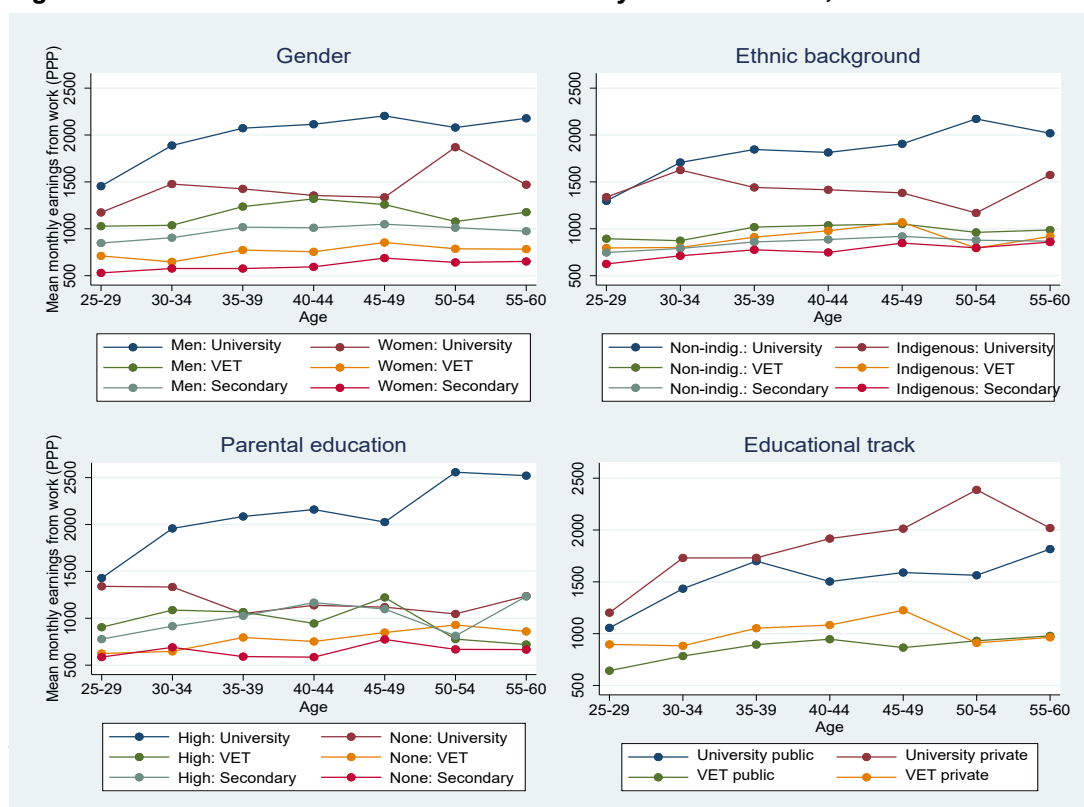
Note: The lines track mean earnings by age across different levels of educational achievement and for subgroups defined by gender, ethnic background, parental education and across educational tracks. In 2017, female labour market entrants at the age of 25-29 years earned an average earning of around 1900 USD PPP with university education compared to around 2200 USD PPP for male university graduates.

Parental education also shows the largest polarization in Peru. Figure 13 compares individuals whose parents had higher education with individuals whose parents had no formal schooling. While the former earn high premiums that rise with age, the latter earn virtually no premium over individuals with VET that come from highly educated backgrounds. Individuals with highly educated parents seem to have a clear advantage over those from low-educated parents regardless of education level. Having an indigenous background seems a clear disadvantage for those who compete for highly-paid jobs but makes less of a difference at lower skills levels. Degrees from private institutions yield higher returns than those from public institutions, although this division likely masks

further differences among universities along the lines of prestige and quality. Figure A9 reports results from the 2007 sample.

Overall, as theories of inequality of opportunity and human capital suggest, returns to skills and success in labour markets depend on circumstances that in themselves should not be related to skills, abilities or efforts. Individuals that have acquired the same level of education gain vastly different wages depending on their parental or ethnic background and gender. Unsurprisingly, given the institutional landscapes of higher education in Chile and Peru, divisions between different types of institutions also play role. Here, an analysis of further subgroups is needed to learn more about the drivers behind this trend. Among the circumstances analysed, parental education has the largest predictive power. The large differences we observe between returns to university education that individuals with differing family background experience may support the argument offered by human capital theory that an oversupply of skilled labour coexists with high returns in formal sector employment. If other factors that are associated with parental education—such as networks, wealth and access to information—provide an advantage in accessing highly paid jobs, the remaining excess supply of highly skilled workers will resort to lower-paid jobs that may not need high skills. Differences in returns to skills by gender and ethnic background may be indicative of unequal opportunities.

**Figure 13: Labour market returns to education by circumstances, Peru 2017**



Source: Authors' estimations based on ENAHO (2017).

Note: The lines track mean earnings by age across different levels of educational achievement and for subgroups defined by gender, ethnic background, parental education and across educational tracks. In 2017, female labour market entrants at the age of 25-29 years earned an average earning of around 1200 USD PPP with university education compared to around 1500 USD PPP for male university graduates.

## Conclusions

This paper analysed the socio-economic determinants of access to and returns from higher education and its stratification along income, ethnic, geographic and gender divides. Higher education plays a key role for social mobility and inequality. We investigate to what extent circumstances determined at birth are associated with educational achievement and returns to schooling in labour markets in Chile and Peru. The analysis offers three key findings. Firstly, access to institutions of higher education is strongly associated with the circumstances analysed, and the most important factor of these is parental education. High educational achievement transmits across generations. There is nonetheless upward mobility in absolute terms: children of parents with low educational background face good chances of doing better than their parents. This partly reflects the increase in average education across generations. However, absolute mobility and relative persistence coexist. Relative persistence is particularly strong at the top, where parental education seems to matter a great deal. There is also persistence at the bottom at similar magnitudes in both countries, but not nearly as strong as at higher levels. Further, we find that in both countries—though more pronounced in Peru—indigenous background and living in rural areas play an important role in educational attainment. Educational inequalities are strong at a higher level (VET and university education) but start much earlier. In order to widen access to higher education, measures must hence address earlier disadvantage: the risk of dropping out of the educational system even before reaching the necessary requirements for entering vocational training or university are much higher among some groups than others. Gender is not a factor that determines educational achievement in Chile, while in Peru a greater share of women than men has no formal education. Although fewer women enter the educational system, those that do are less likely to drop out, meaning that the shares are balanced at higher levels.

Secondly, circumstances not only affect access in general, but also determine the type of educational institution one enters. This is interesting because of the large heterogeneity within the group of higher education institutions with respect to quality of education and costs of financing in both countries. We find that gender biases in access are not very strong in either of the two countries although there is a tendency for women to be more strongly represented at vocational training institutions than at universities. Differences based on ethnic background are stronger than gender biases: in both countries, a greater share of indigenous people in higher education chooses the vocational track in comparison to the non-indigenous. The choice between public and private institutions also follows different patterns between indigenous and non-indigenous, although this is more pronounced in Chile. Indigenous students rather opt for private institutions than public ones, in Peru this is the other way around. Private education plays overall a greater role in Chile than Peru. Whereas in Peru vocational training is overall more prominent than university in rural areas, this is not the case in Chile.

Thirdly, university education yields very high returns in labour markets, but these vary according to parental education, gender and ethnic background. Theories of inequality of

opportunity and human capital offer explanations for why labour market returns to education may differ by circumstances such as parental background or gender that in themselves should not be related to skills, abilities or efforts. We find descriptive evidence to support the argument that a high level of supply of educated workers can coexist with high returns to skills, and that labour markets do not offer equal opportunities. These are important channels through which higher education institutions can widen inequality because not only is access inequalitarian, wages also show a great dispersion and returns to skills are not distributed equally. Divisions between different types of institutions likely also play a role. Future research is needed to shed light on the institutional dynamics, including the role that quality, prestige and financing of universities have in Chile and Peru. Analysing how returns differ with these factors and along further subgroups can provide insights about the drivers behind dynamics of access and labour market performance. Among the circumstances analysed, parental education has the largest predictive power. This is likely indicative of more complex dynamics whereby households that belong to the educational elite enjoy a number of further advantages—the most obvious ones being financial and social capital—that are linked to high returns in the labour market. Descriptive analysis as provided in this study can diagnose these relationships. In order to understand them better, further research is needed into the causal mechanisms that lie beneath them.

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## Appendix

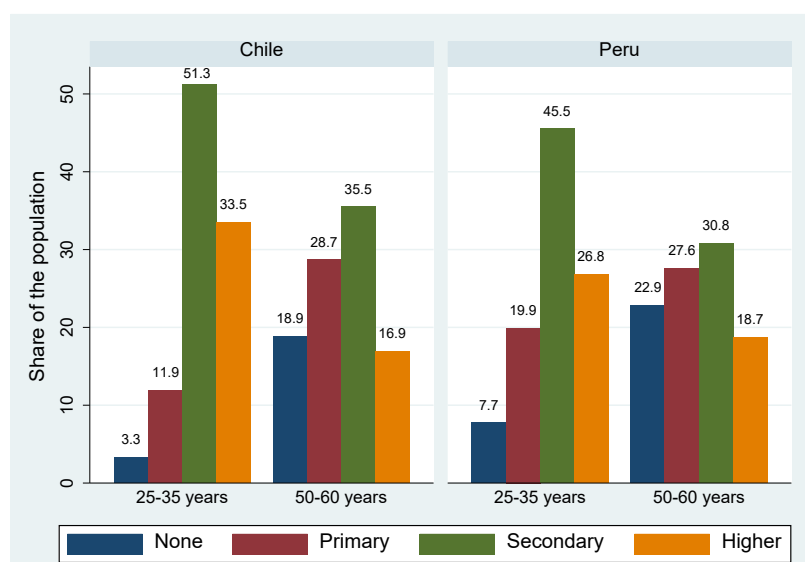
**Appendix Table 1: Average years of education adults aged 18-65**

Country average and by quintiles of income (1st and 5th)

Year	1998	2000	2003	2006	2009	2011	2013	2015
Chile	9.60	9.91	10.17	10.22	10.56	10.70	11.04	11.35
Peru	8.07	8.19	8.39	8.84	9.26	9.33	9.48	9.55
Chile 1st q	7.17	7.65	8.16	8.13	9.03	9.15	9.45	9.81
Peru 1st q	3.86	4.00	4.16	4.50	5.24	5.35	5.53	5.78
Chile 5st q	13.18	13.46	13.53	13.34	13.66	13.80	13.93	14.20
Peru 5st q	12.05	11.84	12.33	12.46	12.60	12.44	12.60	12.65

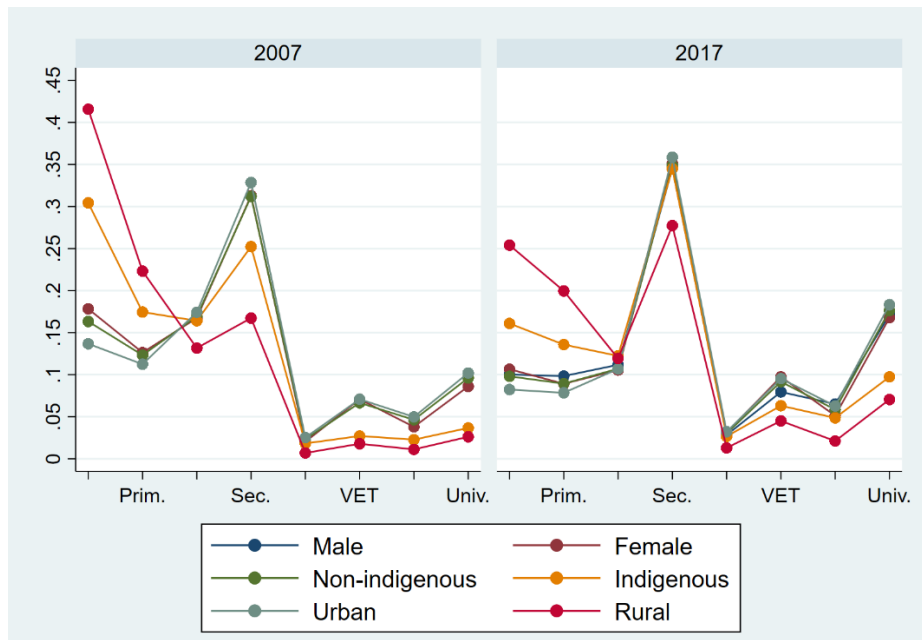
Source: Authors' elaboration based on CEDLAS (2019).

**Appendix Figure 1: Educational Attainment by age groups, 2017**



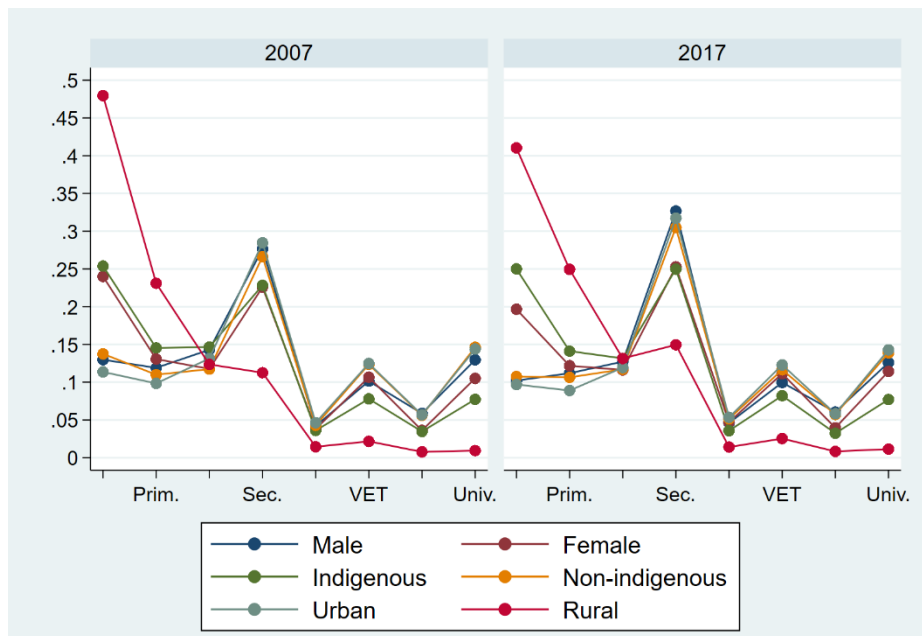
Source: Authors' estimations based on CASEN (2017) and ENAHO (2017).

**Appendix Figure 2: Educational achievements by circumstances, Chile**



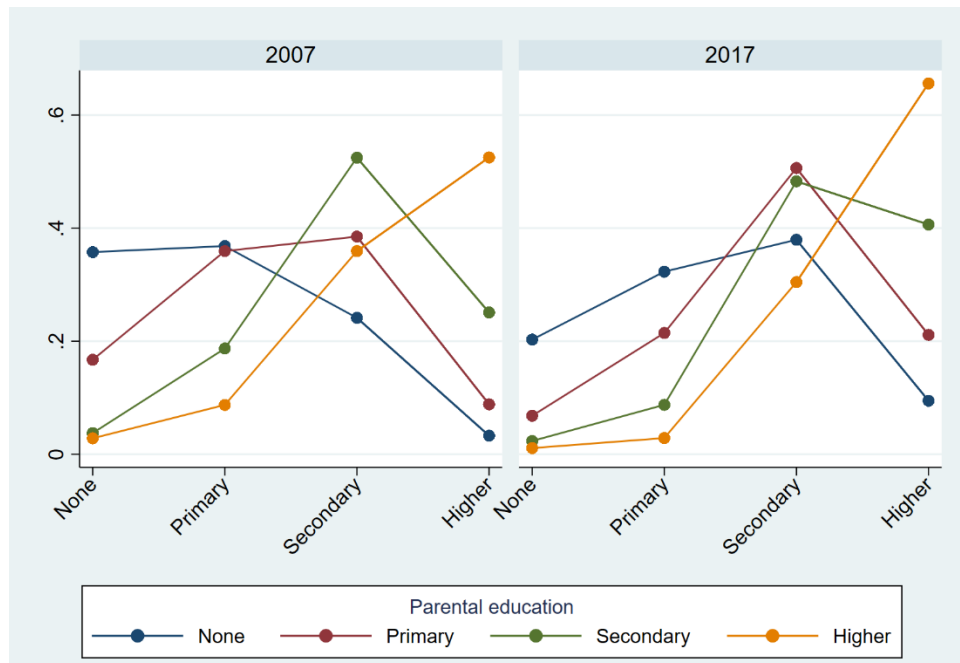
Source: Authors' estimations based on CASEN (2006, 2017).

**Appendix Figure 3: Educational achievements by circumstances, Peru**



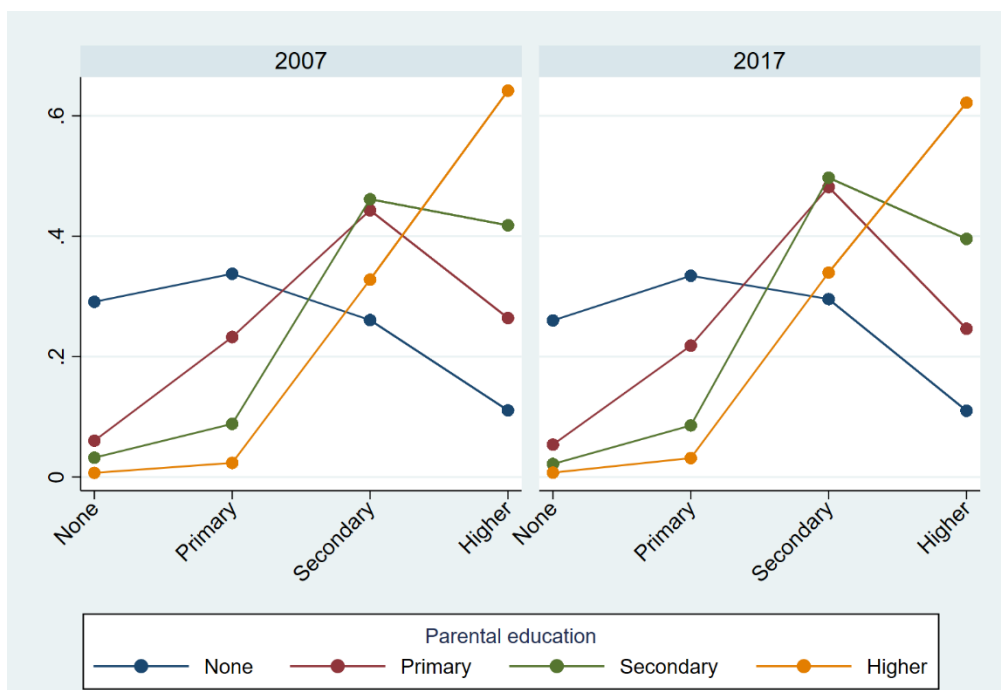
Source: Authors' estimations based on ENAHO (2007, 2017).

**Appendix Figure 4: Educational achievements by parental education, Chile**



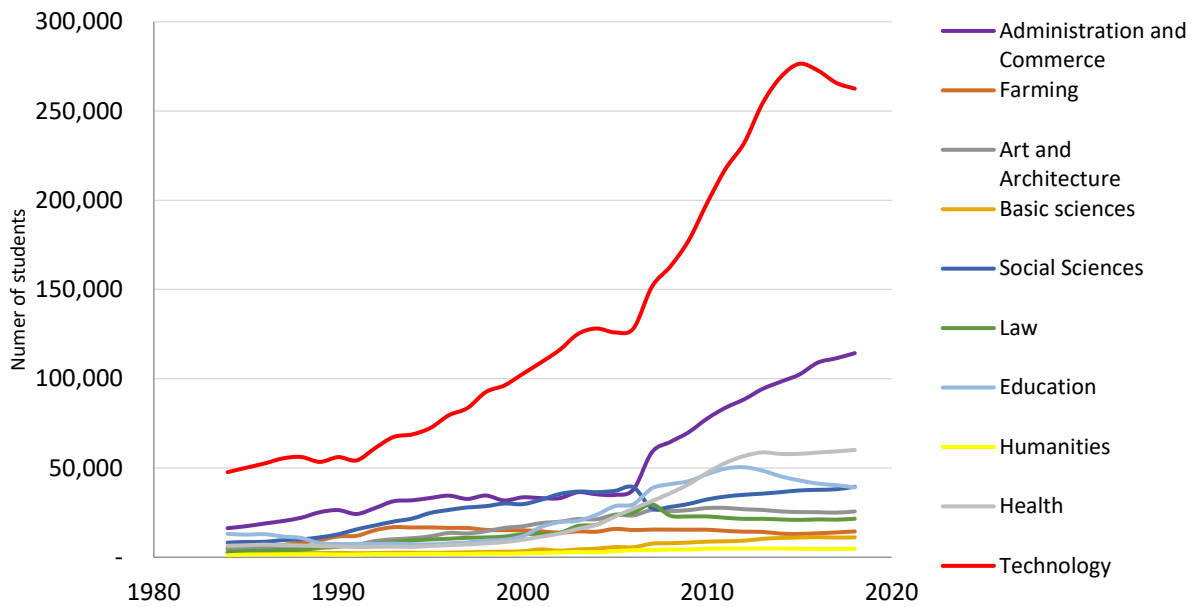
Source: Authors' estimations based on CASEN (2006, 2017).

**Appendix Figure 5: Educational achievements by parental education, Peru**



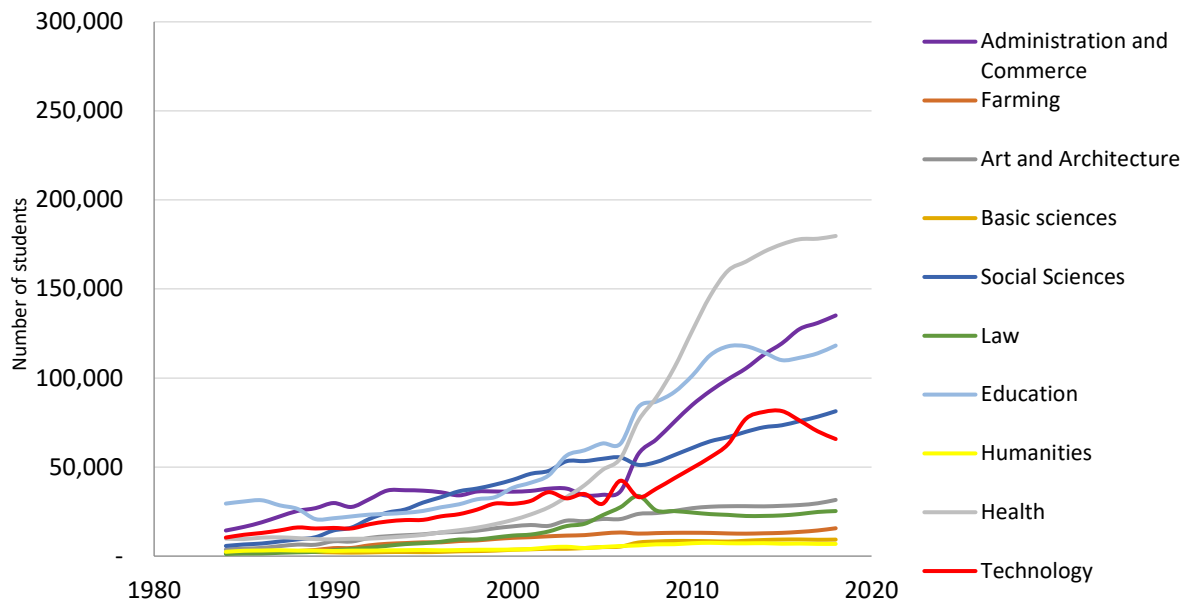
Source: Authors' estimations based on ENAHO (2007, 2017).

**Appendix Figure 6: Men's undergraduate enrolment by career, Chile**



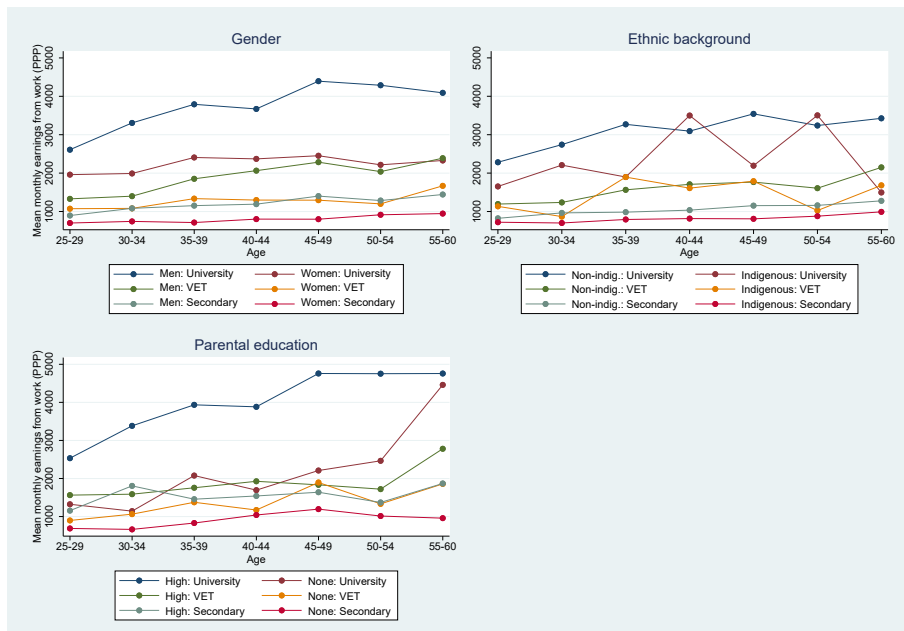
Source: Authors' elaboration based on data from Servicio de Información de Educación Superior (SIES) (2019).

**Appendix Figure 7: Women's undergraduate enrolment by career, Chile**



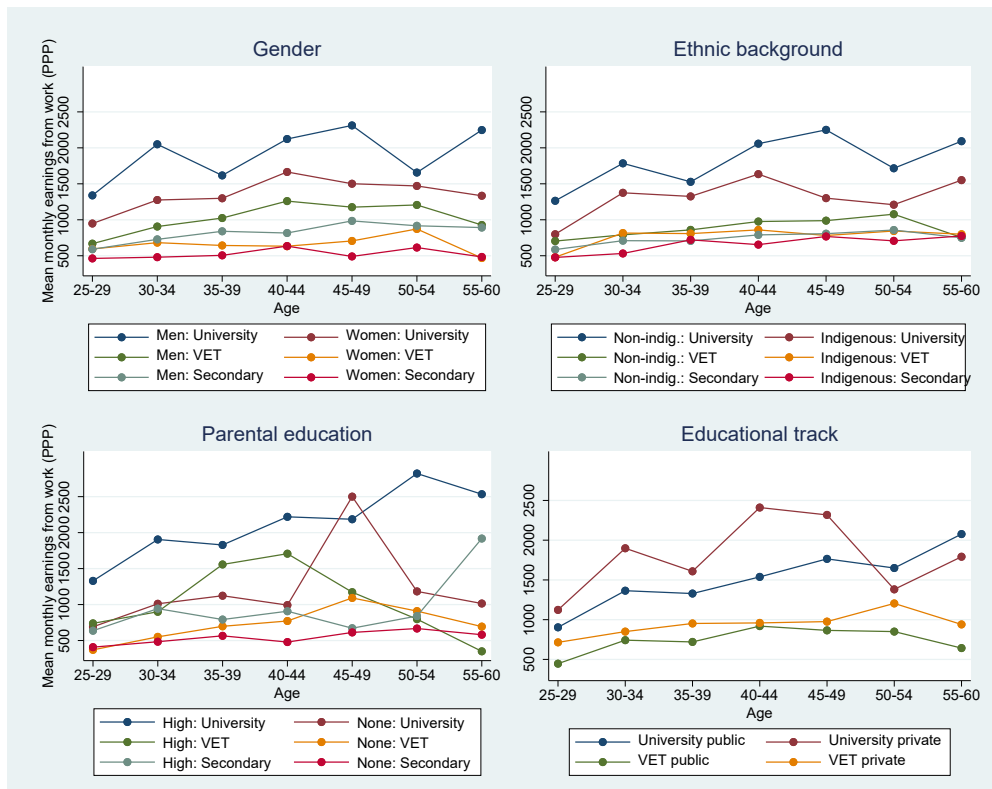
Source: Authors' elaboration based on data from Servicio de Información de Educación Superior (SIES) (2019).

**Appendix Figure 8: Labour market returns to education by circumstances, Chile 2006**



Source: Authors' estimations based on CASEN (2006).

**Appendix Figure 9: Labour market returns to education by circumstances, Peru 2007**



Source: Authors' estimations based on ENAHO (2007).