



SCHOOL OF  
ECONOMICS AND  
MANAGEMENT

Master's Programme in Economic Growth, Population and Development. Economic Demography Track.

# The Effects of Low-Quality University Education on Young Graduated Labour Outcomes:

The Peruvian Experience

by

Adriana Cristina Raygada Mimbela

[ad0780ra-s@student.lu.se](mailto:ad0780ra-s@student.lu.se)

This thesis examines the relationship between university education quality and young graduates' labour outcomes. The thesis employs a micro-level data analysis based on the National Survey of Households (ENAH) and information from the National Board of University Education (SUNEDU). Linear Probability Models and an OLS multivariate regression are used to assess the effects of the quality university in four labour outcomes: not in employment, education or training (NEET), employment, informal occupation, and income. The findings reveal that low-quality universities among young graduates are not associated with a higher likelihood of being NEET or employed. However, there is a significant relationship between the quality of the university and informal occupation and income outcomes.

Keywords: quality of university education; graduated labour outcomes; Peruvian youth;  
National Survey of Households (ENAH)

EKHS01  
Master's Thesis (15 credits ECTS)  
June 2023  
Supervisor: Gabriel Brea-Martinez  
Examiner: Martin Dribe  
Word Count: 11501



# Acknowledgements

*A mi papá, que me permitió volar.*

*A mi mamá, que me enseñó a andar con los pies en la tierra.*

*A mi hermano, por ser mi refugio y mi paz.*



# Table of Contents

|  |           |
|--|-----------|
| <b>Acknowledgements</b> .....  | <b>i</b>  |
| <b>1 Introduction</b> .....  | <b>1</b>  |
| 1.1 Research Problem.....  | 1         |
| 1.2 Aim and Scope .....  | 2         |
| 1.3 Outline of the Thesis .....  | 3         |
| <b>2 Background</b> .....  | <b>4</b>  |
| 2.1 Peruvian University Education System.....  | 4         |
| 2.1.1 The University Education Reform of 2014 .....                                    | 8         |
| 2.2 Peruvian Youth labour market .....   | 10        |
| <b>3 Theoretical Approach</b> .....  | <b>12</b> |
| 3.1 School-to-work transitions .....   | 13        |
| 3.2 Education, quality of education and outcomes.....                                  | 16        |
| 3.3 Sorting mechanism and quality of universities .....                                | 19        |
| <b>4 Data</b> .....  | <b>21</b> |
| 4.1 The ENAHO Panel.....   | 21        |
| 4.2 List of Peruvian Universities.....   | 22        |
| 4.3 Sample selection and variables.....  | 23        |
| 4.3.1 Sample Selection .....   | 23        |
| 4.3.2 Description of the variables.....  | 24        |
| 4.4 Strengths and Limitations of the Data.....   | 26        |
| <b>5 Methodology</b> .....   | <b>28</b> |
| 5.1 The hypotheses .....   | 30        |
| <b>6 Empirical Analysis</b> .....  | <b>31</b> |
| 6.1 Descriptive Statistics .....   | 31        |
| 6.2 Multivariate Analysis of the Effects of quality university on labour outcomes..... | 33        |
| <b>7 Discussion</b> .....  | <b>36</b> |
| 7.1 Future Research.....   | 38        |
| <b>8 Conclusion</b> .....  | <b>41</b> |
| <b>References</b> .....  | <b>43</b> |
| <b>Appendix A</b> .....  | <b>50</b> |
| <b>Appendix B</b> .....  | <b>51</b> |
| <b>Appendix C</b> .....  | <b>53</b> |

# List of Tables

|   |    |
|---|----|
| Table 4.1 Description of the variables.....   | 25 |
| Table 6.1 Descriptive Statistics by quality of university on graduated labour outcomes, year 2017-2021..... | 32 |
| Table 6.2 Effects of quality of university on labour outcomes of graduated, year 2017-2021                  | 33 |

# List of Figures

|  |   |
|--|---|
| Figure 2.1 Number of universities in Peru 1900 – 2022 .....                        | 5 |
| Figure 2.2 Number of universities in Peru 1900 – 2022, by type of university ..... | 6 |





# 1 Introduction

## 1.1 Research Problem

Education is a key driver of social and economic development. It increases innovation, facilitates knowledge transmission, and increases a country's productivity (Hanushek & Woessmann, 2012; Goldin, 2016). At an individual level, it is widely accepted that years of schooling is related to better labour outcomes such as employment and income. In the field of human capital, it is a shared understanding that higher education provides knowledge, skills, and credentials that are valued or serve as filter devices in the labour market (Weiss, 1995; Arrow, 1973). Because of this, acquiring a university degree has increasingly become a widespread and sought-after goal among young people. Graduation is supposed to be the end of an educational process and the start of a lifetime process of providing for oneself (Nilsson, 2019).

However, parallel to the expansion of higher education, youth unemployment, and inactivity have been increasing over the last decades, and nowadays, transitions from school to work are longer and more perilous than for previous generations (Ryan, 2001). School-to-work transitions have been mainly studied in high-income countries, and while there is a growing literature on other regions such as Latin America and Africa (Alvarado et al., 2020; Holte et al., 2019), there is still a gap in our understanding regarding university-to-work transitions in dual market economies (Nilsson, 2019).

It is recognised that middle-and-low-income economies do not constitute a homogenous group with similar educational systems, but they do share some factors that distinguish them from high-income economies: important shares of informal labour, self-employment, agricultural labour, unpaid family work, weak social security, and urban rural fragmentation (Campbell

2013). In Latin American countries, low-quality universities and high shares of informality pose significant challenges to development and productivity. There, youth experience longer transitions, and have higher rates of inactivity, underemployment, informality and low wages (OECD, 2019).

During the 1960s and 1970s, many Latin American countries experienced a process of expansion of universities and proliferation of low-quality universities (De Figueiredo-Cowen, 2002). Peru, like many other Latin American countries, face the challenge of low-quality university education and high levels of underemployment (Yamada et al., 2015; OECD, 2019). However, Peru is an interesting case of study due to its recent and unique university reform. As part of this reform, the Peruvian university system recently underwent an evaluation process resulting in the denial of 48 licenses of operations, which allows us to have a proxy of the quality of a university. To the best of my knowledge, this study is the first to empirically measure the quality of Peruvian universities using the outputs of the University Reform as a proxy. Furthermore, it is one of the few studies that empirically explores the relationship between the of quality of education and labour outcomes in Peru.

## 1.2 Aim and Scope

This thesis uses micro-level data from 2017 to 2021 to examine the effects of quality universities on labour indicators among young graduated aged 20 to 29. This work aims to shed light on the relationship between the quality of universities and labour outcomes, by examining the results of graduates on NEET, employment, informality, and monthly income, in Peru. The thesis compares graduates from low-quality universities and graduates from universities that meet basic quality requirements, and controls this relation by indicators related to individual, professional, family, and social characteristics.

The main question of the thesis is:

Is the quality of a university associated with labour outcomes?

The specific questions are:

- Is university quality associated with the Not in employment, education or training (NEET) status?
- Is the quality of a university associated with employment?
- Is the quality of university associated with occupation in the informal sector?
- Is the quality of a university associated with income?

When interpreting the data, it is essential to consider the specific context of Peruvian graduates, taking into account the prevalence of high informality and the fact that 33.7% of universities are low-quality universities, according to SUNEDU (2023). Additionally, it is important to emphasise that although the theories of signalling and filtering will be mentioned, it is necessary to acknowledge that the limitations of the available data in providing comprehensive insights for drawing definitive conclusions. Therefore, these theories should be considered as guiding principles or reference points for the conducted analysis or future investigations.

### 1.3 Outline of the Thesis

This section presented the research problem, aim and scope, and main questions. Chapter 2 briefly overviews the Peruvian university education system and the labour market. Chapter 3 shows the theoretical framework on school-to-work transitions, and studies done on quality of education and labour outcomes. Chapter 4 describes the data source, sample selection, variables, and its main limitations. Chapter 5 presents the methodology, and hypotheses to be tested in the study. Chapter 6 and 7 presents the results of the empirical analysis and the discussion, including recommendations for future research. Finally, in the last chapter, conclusions are drawn.

## 2 Background

This section provides an overview on the Peruvian university education system and the Peruvian Labour Market. The first subsection highlights the main milestones in the Peruvian legislation that shaped the national system of university regulation in place as of 2021. The second subsection emphasises how the liberalisation process started in the 1990s and explains the main characteristics of Peru as a dual market labour economy.

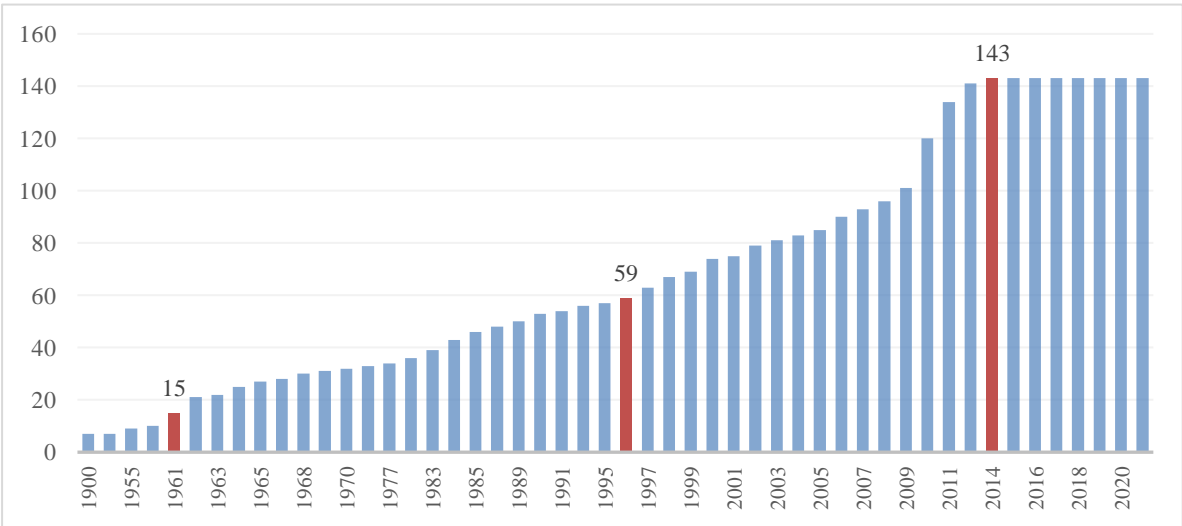
### 2.1 Peruvian University Education System

Since the 1950s, there was a rapid population growth, urbanisation, industrialisation and expansion of the middle class in Latin America, which led to an increased demand for higher education (De Figueiredo-Cowen, 2002). In response to this growing demand, Latin American countries encouraged and favour expansion of higher education, either through the private sector or through decentralisation (De Figueiredo-Cowen, 2002). In the region, the 1960s and 1970s were characterised by the expansion of higher education, mainly led by unregulated privatisation (De Figueiredo-Cowen, 2002).

Several authors have tried to understand the "Latin American Puzzle", characterised by high levels of school attainment or years of education, which do not correspond to expected patterns of development (Lindert, 2010; Hanushek & Woessmann, 2012). Lindert (2010) argues that overinvestment in higher education and inefficiency can partially explain this phenomenon. While there is an open discussion regarding overinvestment in higher education in Latin America, there is agreement regarding the inefficiencies of the university system in the region. According to the QS Ranking 2021, the *Universidad de Buenos Aires* (UBA, ranked 66) and *Universidad Nacional Autónoma de México* (UNAM, ranked 100) were the only two Latin

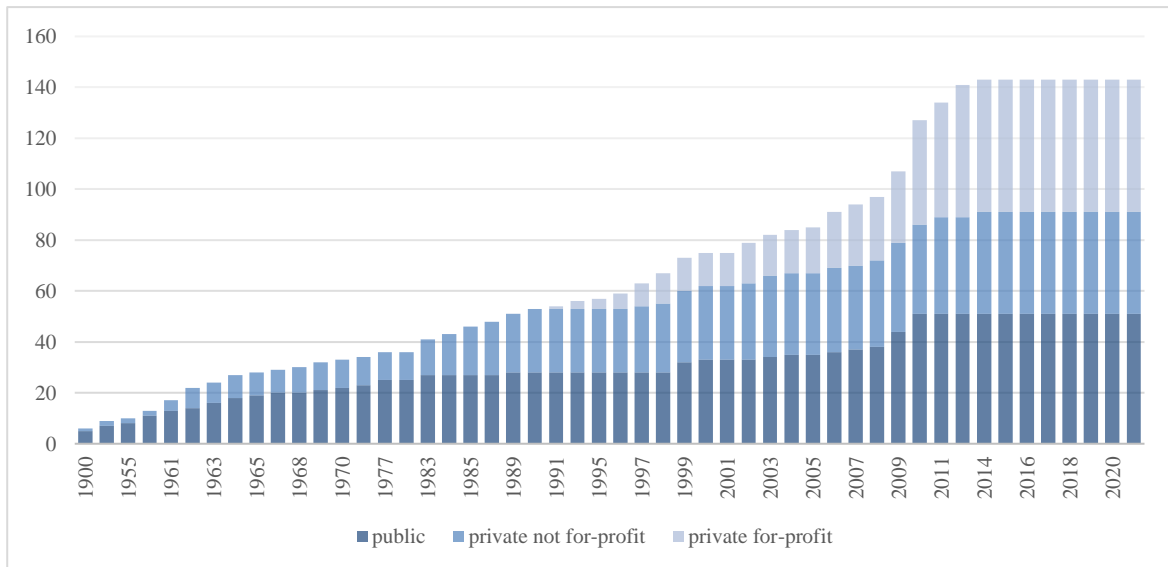
American universities within the Top 100. Among Peruvian Universities, only the *Pontificia Universidad Católica del Perú* (PUCP, ranked 432) appeared in the QS Ranking (QS Ranking 2021).

Parallel to Latin America, Peru also experienced a significant expansion of universities and a surge in higher education enrollments during the 1960s and 1970s. This expansion was driven by both an increase in the number of universities and the expanding population (McLauhlan, 1994). The privatization of the education sector played a crucial role in this expansion, and in the subsequent decades, the sector continued to grow without much regulation (Benavides et al., 2019). Notably, the mid-1990s marked the meergence of for-profit universities in Peru (Figure 2.2).



Sources: Author’s own illustration based on data from SUNEDU (2023). Notes: There are highlighted the years in which relevant laws regarding regulation of university education were enacted. 1961: University Law search decentralisation of universities. 1996: DL 882 allowed the existence of for-profit universities. 2014: Enactment of latest University Law, freeze the creation of new universities.

Figure 2.1 Number of universities in Peru 1900 – 2022



Sources: Author's own illustration based on data from SUNEDU (2023).

Figure 2.2 Number of universities in Peru 1900 – 2022, by type of university

Some milestones shaped the current regulatory system related to higher education: the University Law N° 13738 (1961), the University Act of Peru (Law No. 23733, 1983), the creation of the National Council for the Authorisation of the Operation of Universities (CONAFU, 1995), the enactment of the Legislative Decree No. 882 (1997) and The University Law N° 30220 (2014).

The University Law N° 13738 (1961) aimed to reorganise and modernise the Peruvian University System. It allowed for the creation of new universities, both private and public, the expansion of academic offerings, the diversification of study programs, and the decentralisation of university education. This law played a significant role in universities' expansion from the 1960s onward. In 1960, Peru had only 9 universities, and a mere 2% of the population aged 15 and above attained some tertiary education. However, by the end of three decades, the number of universities had grown to 51, and the percentage of individuals aged 15 and above with tertiary education had increased to 20% (McLauhlan, 1994). In 1960, 8 out of the 9 universities were public, and only 6 out of the 25 regions in Peru had universities, with 4 of them located in Lima, the capital city. By 1990, universities were present in 23 out of 25 Peruvian regions, 47%

of universities were private, and one-third (32%) of them were concentrated in Lima (SUNEDU 2023).

The University Act, issued in 1983, created the National Assembly of Rectors (ANR) under a paradigm of institutionalised self-regulation. The ANR was designed to serve as a coordinating body for universities, with autonomy in its operation, elections, and approval of regulations (Benavides et al., 2019). According to the University Act, the creation or dissolution of universities could only be carried out through legislation, after the evaluation of the Ministry of Education and a committee in Congress.

Those interested in the creation of universities had to demonstrate the need for the creation of the institution, the availability of qualified teachers and to ensure the efficiency of its services resources. However, this changed with the creation of the National Council for the Authorisation of the Operation of Universities (CONAFU) in 1985. The CONAFU was an autonomous agency of the National Assembly of Rectors (ANR) and commissioned to assess and issue legal resolutions authorising or disapproving projects and licenses of operation for new universities nationwide. Thus, the authorisation of new universities depended on the approval of the members of this new council (Yamada et al., 2015).

In 1996, the Law to Promote Investment in Education (LPIE) was issued by Legislative Decree No. 882, in a context of liberalisation of economy. It allowed the existence of educational institutions with lucrative purposes, introducing for-profit universities. The Legislative Decree N° 882, stipulated that *“Every natural or legal person has the right to free private initiative to carry out educational activities. This includes the right to found, promote, conduct and manage Private Educational Institutions, with or without lucrative purposes”* (Art. 2°, LD N° 882, 1996).

In the previous context, surplus at the end of the financial year could only be invested on behalf of the institution or allocated towards scholarships. By contrast, the LPIE allowed for the distribution of surplus funds among investors of a specific university. As a result, shareholders or board members could directly or indirectly benefit from these funds (Yamada et al., 2015).

Since then, private provision of educational services increased considerably. The rapid expansion of new universities, coupled with the absence of a comprehensive regulatory and supervision system, led to fragmentation of the university system (Benavides et al., 2019). It is important to note that university education expansion did not improve labour conditions (Degregori, 2010).

The DL N° 882, issued in 1996, led to a 200% expansion of universities. By 1996, Peru had 59 universities in 1996. Almost thirty years later, the number of universities increased to 143. The number of private universities tripled (from 31 in 1996, to 92 in 2021), while the number of public universities almost doubled (from 28 in 1996 to 51 in 2021). The average enrolment growth was 1.2 from 1985 to 1997, while in the period 1988-2012 amounts to 6.5% (Yamada et al., 2015). The proliferation of for-profit universities brought universities without minimum standards of infrastructure and teaching quality, and with no interest in developing research or the production of knowledge (CNSR 2002, cited in Benavides et al., 2019).

According to Benavides et al. (2019), following Dobbins (2011), since mid-1990s, the Peruvian type of regulation for higher education has been “market-oriented”. This model assumes that universities function better if they operate as business. Under this model, the State is supposed to promote competition and ensure quality and transparency. However, in 2010 the Constitutional Court declared that CONAFU and ANR failed to supervise and guarantee quality of education.

[Appendix A](#) shows a timeline of the milestones regarding the Peruvian educative system.

### 2.1.1 The University Education Reform of 2014

The University Law N° 30220, issued in 2014, created the National Board for University Higher Education (SUNEDU) to ensure compliance with the Law and to authorise the operation of all existing universities as long as they passed the examination of basic quality conditions (BQC). According to the Law, universities had to adapt their process and orient their resources to the fulfilment of the BQC in two-years period, after which would undergo an evaluation



processes. SUNEDU was responsible for denying operation licenses in case of non-compliance with basic quality conditions.

To obtain a license of operation, universities need to meet eight fundamental Basic Quality Conditions (BQC). These conditions included the existence of clear academic objectives, degrees, and study plans (BQC 1) and the compatibility of academic offer with planning instruments and institutional goals (BQC 2). The university was also required to have appropriate infrastructure and equipment to support its educational functions (BQC 3), and a clear research agenda (BQC 4). Additionally, a minimum of 25% full-time qualified teachers was necessary (BQC 5), along with the verification of complementary educational services, (BQC 6), the existence of mediation and job placement mechanisms (BQC 7), and a commitment to transparency (BQC 8). [Appendix B](#) details the 8 Basic Quality Conditions (BQC) and its 33 indicators.

According to Law, if a university failed to meet most of these conditions, their license was denied, leading to the cessation of their operations within a two-year period. While a denied university is prohibited from conducting admission processes, they are allowed to continue offering classes to students who were already enrolled at the time of the denial. Conversely, students from denied universities have the option to either continue their studies at the same university or arrange for a transfer to another university. In the latter cases, the original university (which was denied) is responsible for facilitating the required documents and certificates for the transfer process.

As a result of the University Reform, 48 universities were denied operating licenses. All Technical Licensing Reports are publicly accessible and contain detailed information on each indicator. As a legal document, they justify with evidence the reason why each indicator was denied or approved. However, private interests acting against the development of the University Reform, have frequently jeopardised the advancement towards its key goals (Balarin & Saavedra, 2023).

## 2.2 Peruvian Youth labour market

Latin American economies are characterised by low skill workers, low-quality jobs, short job tenure and a large informal sector (Schneider & Karcher, 2010; OECD 2019). According to (Nilsson, 2019), the youth from these countries face different challenges than those of high-income economies: skilled jobs are concentrated in urban areas, lack of contractual arrangements and social protection may imply that self-employment is as good as a formal employment and informal decision structures such as specific roles assigned to youth may prevent them for pursuing their aspirations.

Like many other Latin American countries, during the 1990s, Peru changed drastically its labour market institutions. The Employment Promotion Law N° 728 (1991), was one of the region's most flexible ones (Cox-Edwards 1997, cited in Chong et al., 2008). It deregulated labour institutions, introducing contract regimes such as subcontracting through employment co-operatives and flexible training contracts for younger workers, simplifying dismissal procedures and allowing firms to downsize if required (Chong et al., 2008).

In the 2000s it was expected that deregulation of the labour market institutions accompanied by a healthy macroeconomic recovery and the simplification of tax rules and administrative procedures would increase both the benefits of formality and the cost of becoming or staying in the informal sector (Heckman et al., 2000). However, macroeconomic reforms aimed to strengthen the private sector through liberalisation of the economy had mixed results. Contrary to expectations, economist and international reports coincide that underemployment and informality started to increase since the liberalisation of economy in the 1990s (Chong et al., 2008; Yamada et al., 2015; Balarin & Saavedra, 2023).

Despite two decades of economic development, the distribution of jobs in Peru remains skewed towards low-skill occupations (MTPE 2021). According to (OECD, 2019), the main challenge in Peru is not the lack of jobs, since unemployment is low, but high levels of informality and the lack of quality jobs. Peru is a Dual Labour Market which consist of distinct segments with different job characteristics, including wages, stability, and benefits. The share of informal

employment in Peru is above the average for the Latin American region and about 28% Peruvians work in jobs that require lower educational levels than they hold (OECD, 2019).

Peru is a country of 33.3 million inhabitants. More than a quarter of Peru's working-age population (15-64) is aged 15 to 24 (OECD, 2019). According to OECD (2019), in 2016, 22% of Peruvian youth aged 15 to 29 were NEET and the forgone productivity of this particular group ranges between 1.5 and 2.5% of Peru's GDP. According to OECD (2017), employment outcomes of youth with tertiary education are no better than their peers with lower education. High skilled youth or graduates face higher risk of unemployment (14.6%) in comparison with medium skilled (only secondary education) (8.7%) or unskilled youth (7.3%). This is explained by the increasing of students graduating with tertiary education, leading to an over-supply of university graduates (OECD, 2019). Nonetheless, studies coincide that obtaining a university education in Peru is worth the investment, but results may vary depending on the field of study and the quality of the institution (OECD, 2019).

Finally, recent analysis carried out by the ILO shows that Peru's spending on labour market programmes is one of the lowest in the Latin American region (ILO, 2016). In 2015, spending for the three largest Peruvian programmes amounted to around PEN 300 million (USD 90 million or EUR 80 million), corresponding to 0.05% of GDP. As a benchmark, the OECD countries devote on average 0.4% of their GDP to labour market activation policies. (OECD, 2019).

### 3 Theoretical Approach

In the context of school-to-work transition, limited attention has been given to the transition from university to work. From a human capital perspective, university education equips individuals with valuable skills and knowledge in the labour market. Complementarily, sorting theories consider that a university degree serves as a certification of these skills and knowledges and help employers screen or filter their prospect employees, thereby facilitating the transition to employment.

However, these transitions can be mediated by the characteristics of the labour market and the quality of the university. First, in a dual market labour, individuals with higher education levels are expected to have an easier transition into the formal or primary sector. Second, the quality of the university can mediate the transition, as graduates from low-quality universities may see limited entering into the formal labour market, or may face unfavourable employment conditions.

Even in a context of incomplete information, employers in the formal sector may be hesitant to hire graduates from low-quality universities due to potential associations with lower-skilled applicants and graduates. In a country like Peru, where there are no official and public rankings of all universities, these perceptions may be based on stereotypes and past experiences. In this context, having a university degree can facilitate entry into the labour market, but graduating from a low-quality university may serve as a screening mechanism for employers and limit low-quality universities' graduates access to formal employment or better-quality jobs.

In the upcoming subsections, I will present three fundamental topics that will provide deeper insights into the reasoning presented earlier. Firstly, I will explore the dynamics of transitioning from school to the workforce, highlighting specific characteristics of the university to work process. Secondly, I will delve into studies that examine education, specifically focusing on

educational quality and its associated outcomes. Finally, I will provide a concise overview of sorting mechanisms, to better understand possible explanations in the analysis of the relation of quality university and transitions to the work environment.

### 3.1 School-to-work transitions

The school-to-work transition refers to the period between the end of compulsory schooling and attaining full-time stable employment (OECD 1996, OECD1998, cited in Ryan, 2001). School-to-work transitions should be consider as an umbrella term for a number of process were reversed transitions (going back to school), simultaneous presence of working while studying or holding several jobs are possible (Nilsson, 2019). Because transitions are dynamic processes, they need to be understood conditional on the particular context in which the study is done and the methodological choices done by its authors (Nilsson, 2019).

Research on transitions from education to work initiated in Europe since the late 1990s and early 2000s. This body of studies attempted to understand why these transitions were more hazardous and longer than decades before, and concentrated on school dropouts, disadvantage population and young individuals without post-secondary education (Ryan, 2001). Subsequent studies, have continued to expand our understanding on these transitions, addressing these processes in other regions or macroeconomic factors (Holte et al., 2019; Nilsson, 2019; Holland & DeLuca, 2016). Latin America (Alvarado et al., 2020) and Africa (Holte et al., 2019; Paul et al., 2021) show that transitions from tertiary education to secure a employment are no longer a prerogative or given, and even well-educated people can experience challenges such as graduate unemployment.

From a supply perspective, compulsory education and a well-designed vocational education system can facilitate the school-to-work transition (Hermann & Horn, 2022). From a demand perspective, job availability and industries characteristics plays important roles in these transitions, while the lack of quality jobs, labour market programs, and state programs for the unemployed, can hinder the transitions (Paul et al., 2021). Other factors are involved in these

transitions, such as individual characteristics, family dynamics and support, educational background, labour market conditions, and the presence of programs aimed to facilitate these transitions. Nilsson (2019) propose a comprehensive framework, which broadly categorizes the determinants of transition at the individual and macro level. However, according to him, few models seem to adapt to developing countries' labour markets, and even fewer has been empirically tested.

Age, gender and ethnic discrimination can hinder the transition to the labour market (Nilsson 2019; Delgado Montes et al., 2016). Social and cognitive abilities, as well as aspirations or expectations may also hinder may also be related with labour outcomes (Díaz et al., 2013; Alvarado et al., 2020; Christofides et al., 2012). For example, McCormick (1990, cited in Nilsson, 2019) research on job searching from the lens of high-skilled workers, finding that in periods of unemployment, they may prefer to search as unemployed rather than on a job that they will not be able to signal, preventing them to take up interim works or low-skill jobs.

Family characteristics, such as parental educational background or family support are relevant for the transition too. Alfieri et al. (2015) show that the quality of the relationship in the family and parents' educational level have a protective effect on the risk of becoming a NEET for young Italians. This is because, parents with low educational levels have not enough information to advice their children about educational choices or guide them. The study also finds that, only for males, autonomy and support in their decisions is related with developing resilience and finding resources for not failing into the condition of NEET (Alfieri et al. 2015).

In Uganda, through a qualitative exploration, Paul et al., (2021) state that university graduates who are not supported by their families have more risk of failing in unemployment or in NEET status. Young graduates may engage in precarious and informal work, suffer from emotional stress and search help among friends and other networks. In this context, family support can be financial, emotional or in the form of practical assistance through informal networks. Depending on socio-economic status, financial support can involve anything from money to buy newspapers or access the internet to read about existing job opportunities, to documentation and transport, or capital for small business (self-employment) (Paul et al., 2021).

There is a scarcity of research and limited conclusive evidence regarding transitions in labour markets characterized by a significant presence of informality (Nilsson, 2019). Albrecht et al. (2009) accounts for worker productivity in his model, and suggests that workers with higher productivity will reject informal sector work and wait for formal sector job. Additionally, in terms of job matching, these markets rely heavily on social networks rather than formal institutions (Campbell, 2013).

Welfare characteristics of the country, such as entitlement to state support and the effectiveness of training system, are relevant in facilitating employment transitions (Cuzzocrea, 2014). Ryan (2001), based on the analysis of public policies in seven high-income countries, reveals that policies focused on education, apprenticeship, and labour market programs increase employment prospects of participants. However, some policies have also demonstrated adverse effects on young workers as a whole. For instance, Ryan (2001) mentions that certain programs offering “pseudo employments” to those who qualify for public income support, may contribute to high youth inactivity. Such programs may encourage young individuals to reject entire benefit-work package, favouring inactivity instead.

From a school-to-work perspective, there are two relevant features: the *success* of the transition and the *ease* in which this takes place (O’Higgins 2008, cited in Nilsson, 2019). In this scenario, NEET is often associated with a failed transition, while employment, being crucial for social and economic integration, is associated with a successful transition (Ryan, 2001; Nilsson, 2019). Some people may never complete their transition, or get in and out multiple times from employed status to unemployed (Ryan, 2001). Additionally, it is important to note that the NEET category encompasses a diverse range of individuals, including those who are truly disadvantaged and others who may have actively chosen alternative paths. NEET may be due to unemployment, illness or disability, family responsibilities, discouraged, and due to personal choices, such as leisure, travel, volunteering, investing time for personal entrepreneurship or developing artistic careers (Ryan, 2001).

My thesis explores four labour outcomes: NEET, employment, informality and income. It is worth mentioning that while most literature on NEET and young unemployment, emphasize

school dropouts and social disadvantage (Holte et al., 2019), in this thesis, these statuses might not necessarily be linked with this traditional view. Graduates are already in a relatively advantageous position compared to those who did not have access to tertiary education or were unable to complete their higher-level studies. For this specific group, other factors, such as the incapacity of the labour market to absorb the workforce, may be more relevant than traditional determinants. Finally, within the Dual Labour Market framework, individuals may struggle to complete their transition to a secure job and may remain underemployed or in informal occupations for extended periods. In this scenario, indicators such as informality rates and wage levels become crucial in understanding Peruvian university-to-work transitions.

## 3.2 Education, quality of education and outcomes

Extensive research has established that education enhances individuals' skills, knowledge, productivity and earning potential (Mincer, 1974; Miller et al., 1995; Goldin, 2016). However, at the aggregate levels or macroeconomic level, this view has been challenged by empirical evidence, such as the "Latin American Puzzle", where high levels of enrolments do not necessarily translate into economic growth (Lindert, 2010; Hanushek & Woessmann, 2012). Nonetheless, studies at the micro-level consistently demonstrate better outcomes for individuals with higher levels of education, particularly in terms of income (Psacharopoulos & Patrinos, 2004; Mincer, 1974; Miller et al., 1995).

It is important to note that investments in early schooling, such as elementary and secondary education, have greater impacts compared to tertiary education. In Peru, Calónico & Ñopo (2007) conducted an analysis on the effects of attending private or public schools on earnings. Their analysis covered all education levels and trajectories and revealed higher returns associated with private education along with greater heterogeneity within the private sector. The study further revealed that the greatest private-public differences in returns to schooling are at the primary and secondary level. According to them, this finding can be attributed to two potential factors. First, even small differences in quality at basic levels of education make



differences that cannot be surmounted by tertiary education. Second, the study suggests that, in Peru, the quality of education provided by public universities does not significantly differ from that offered by private universities.

The relationship between university education and income is not straightforward and can be mediated by factors such as field of study, region, gender, and level of income inequality in the country (López-Roldán & Fachelli, 2021). Factors like grades, aspirations, parental expectations, parental educational background, and peer effects also play a role in determining post-secondary outcomes (Christofides et al., 2012).

Traditionally, the quality of education and its impact on labour outcomes have been studied at the elementary and secondary levels. In these levels, the quality of education has been assessed, using proxies such as teacher quality and student achievement measured through test scores (Hanushek & Rivkin, 2012). Particularly, test scores from the Programme for International Student Assessment (PISA) has been studied for comparative analysis among countries (Lindert, 2010; Hanushek & Woessmann, 2012; MINEDU, 2022). However, factors such as family income, parental education school choice, region and classroom characteristics may complicate estimations of quality. To address these complexities, researchers have employed various methods to isolate contributions to teachers, such as student fixed effects, and prior test scores to account for student heterogeneity (Hanushek & Rivkin, 2012).

At a university level, quality is measured by using university rankings, administrative data and usually focus on selectivity of universities (Milla, 2017; Milla, 2018; Pinar et al., 2019). These measures imply challenges too. Pinar et al., (2019) states that these rankings and index scores are sensitive to weight variations. Relative minor changes in weight allocation can imply substantial alterations in rankings, which have serious implications in universities and student choices. For instance, changes on weights on “publications” can move universities to higher positions or the “number of Nobel prizes won by alumni and staff members” may consistently imply some universities stay at the top rankings. Because of this, middle and low ranked universities are especially sensitive to weight allocation.

Most studies on quality of university and labour outcomes focus on the top-lead universities or high selectivity. Generally, these studies conclude wage premium to university selectivity. In Canada, where the higher education is funded heavily through public funds and the universities are moderately differentiated in terms of selectivity (compared to US), studies also show a wage premium to selectivity. However, this wage premium is lower than in US or countries with a higher education system strongly differentiated (Milla, 2017). Milla (2018) estimate wage returns of institutional prestige and quality in Canada and finds that graduating from a top 25% university ranking, compared to the bottom 25% resulted in a wage premium of 15.2% for women and 29.9% for men (Milla, 2018).

In the Peruvian context, university quality rankings are not easily available. To address this issue, Yamada et al. (2015) constructs a University Quality Index (ICU), considering six indicators available in University Census 2006 and 2010 and administrative data from ANR. Yamada et al. (2015) finds an inverse correlation between quality of higher education and likelihood of being underemployed (Yamada et al., 2015). They use the “deregulation” of universities initiated with the DL Nro. 882 in 1996 as an instrument to identify low-quality universities. According to their analysis, this law led to a rise in the number of lower-quality universities, subsequently resulting in increased low-skill applicants accessing to higher education, which brought professional underemployment in Peru. Using a two-stage analysis, Yamada et al. (2015) find that graduates from “lower quality” universities are 1.30 times more likely to be underemployed compared to 1.2 times pre-deregulation. Additionally, the study shows that higher-quality universities tend to have a higher proportion of students earning higher salaries, while lower-quality institutions have a larger concentration of students in lower salary ranges (Yamada et al., 2015).

Overall, it is considered that low-quality universities fail to equip students with abilities and knowledge to compete in the labour market, resulting in higher unemployment rates and underemployment. Yamada et al. (2015) in Peru and Holland & DeLuca (2016) focused on African American youth in US, concur that there is propensity for disadvantaged individuals to be attracted to for-profit colleges. In Peru, these institutions are characterised by their low

tuition fees, which are designed to appeal to emerging sectors of the population (Yamada et al., 2015).

### 3.3 Sorting mechanism and quality of universities

Higher education provides individuals with specialised knowledge and valuable skills in the job market. Individuals “signal” their abilities by getting educated (Weiss, 1995) and employers use university degrees as a screening mechanism in context of imperfect information (Arrow, 1973). Both serve to “sort” potential workers according to unobserved abilities. Following Weiss (1995), sorting models focus on ways the university serves as a signal or filter. Firms or employers can use education choices, for example whether the individual went to university or which university did the individual go to, to make inferences about unobserved attributes.

From a signalling perspective, having a university degree serves as a credential or proof that the individual has relevant skills and knowledge for the labour market (Weiss, 1995). Someone who has completed university, may signal they have higher abilities and that they are generally healthier and have lower propensities to quit or to be absent. Complementarily, from a screening perspective, diplomas are useful as (imperfect) measures of acquired skills and, thus, they serve as screening or filter devices (Arrow, 1973). University serves as double filters, selecting applicants and passing or failing students.

While individuals may use their university degrees as signals of competency to enter the labour market, employers may use low-quality university degrees to scan (or as “negative signal”) that individuals did not have the necessary skills to be accepted in a better university, or do not have the knowledge required for the job. Thus, graduates from low-quality universities could end up working in positions that require fewer skills than their degrees are supposed to “signal”. Additionally, in a dual market labour, graduates from these universities may be more exposed to informality.

A prevalence of graduates in the informal sector may also be explained by mismatch theories, focused on inefficiencies in the labour market and the lack of high-skill positions available in the labour market (OECD, 2019; Sala Lorda, 2011). However, for the purposes of this thesis, I guide part of my analysis with sorting mechanism theories, as I mainly assume that low-quality universities do not provide valuable skills and knowledge that are useful in the labour market.

## 4 Data

This chapter presents a comprehensive overview of the data sources, the procedure performed for the construction of the dataset, detailed information of the variables and assumptions, and the data limitations. First, I describe the Peruvian National Household Survey (ENAHO), the main source of information. Second, I introduce the SUNEDU list of Peruvian Universities which contains information on whether its licenses of operations were approved or denied. Third, I present the sample selection and variables. Finally, the strengths and limitations of the data are discussed.

### 4.1 The ENAHO Panel

The Peruvian National Household Survey (ENAHO) is the main source used in this thesis. The ENAHO is implemented by the National Institute of Statistics and Information (INEI) since 1995 to analyse indicators of living standards. Since 2010, ENAHO is supervised by the *Advisory Commission for Poverty Estimation and other related indicators*, whose main objective is to ensure the survey's quality, transparency and trustworthiness (RS N° 097-2010-PCM). This data has national representation which has been widely used to study labour market outcomes, education and poverty in Peru (Rodríguez & Higa, 2010; Yamada, 2009). Additionally, ENAHO data can be easily harmonised for comparability in cross-national studies (OECD, 2021; OECD, 2019). The frequency and quality of its data makes ENAHO a valuable source of information for public policymakers and for longitudinal studies through the panel component of the housing sample.

This thesis uses the ENAHO panel dataset from 2017 to 2021, the latest panel data. The Panel component consists in six modules which includes information of characteristics of the house

and the household (module 1), characteristics of the household members (module 2), education (module 3), health (module 4), employment and income (module 5), and calculated indicators of monetary poverty, unsatisfied basic needs, informality, among other topics of national interest (summary module). ENAHO Panel data tracks households throughout five years and each household are followed between 2 to 5 years. Each individual and household has an identification code, *numper* for individuals and *numpanh* for households, which allows their trackability over the years.

## 4.2 List of Peruvian Universities

The list of Peruvian Universities, and their information regarding their licensing of operation status has been created using information from the official website of the National Board for University Higher Education (SUNEDU): List of Peruvian Universities, List of License Universities, and List of Non-License Universities. There are 143 universities, 95 of which meet the quality requirements stated by Law, and 48 did not meet the Basic Quality Conditions. An identifier code was assigned to each of this universities to allow the merge with ENAHO Panel data, based on the *National Classifier of Programmes and Institutes of Higher, University, Pedagogical, Technological and technical-productive Education* (SUNEDU & INEI, 2018).

Combining the ENAHO Panel data 2017-2021 with the created SUNEDU dataset it is possible to identify which individuals were studying or studied at low-quality universities and universities that meet basic quality requirements. After merging, we observe that all 143 universities which licenses are represented in the dataset.

For this thesis, it is assumed that non-license universities are low-quality universities throughout the period 2017-2021, while licensed universities meet the basic quality requirements. The choice to use “denials of license of operation” as a proxy for measuring low-quality universities is based on several reasons. Firstly, the University Law, enacted in 2014, provided universities with two-year period to make the necessary adjustments and fulfil the requirements mandated by the Law. Therefore, by 2016, universities were expected to have

taken the necessary measures to meet basic quality standards listed in [Appendix B](#). Considering that denials of operations occurred between 2018 and 2021, it can be inferred that these universities failed to meet basic quality standards after 4 and 7 years since the enactment of the Law.

Secondly, Technical Licensing Reports (ITL), which serve as supporting documents for the resolutions denying operating licences, are publicly available. These reports, being legal documents, provide detailed evidence of the universities' deficiencies in areas such as management, infrastructure, teachers availability, research, and other relevant aspects.

Thirdly, official rankings of Peruvian universities, both international and national, are limited. Peruvian universities perform low in international rankings or are almost inexistent. Additionally, official information regarding ranking of universities is either unavailable or not easily accessible. For example, the historical ranking published by SUNEDU only covers information of 58 universities, representing 40% of total universities (SUNEDU, 2021).

Alternative approaches could have involved constructing a University Quality Index from the latest National University Census (2010), as Yamada et al. (2019) did. Another option could have been to create a dataset based on SUNEDU's ITL (Technical Licensing Reports) or requesting non-public information from SUNEDU through their transparency website. However, due to time constrains, these alternatives were unfeasible for the present study.

## 4.3 Sample selection and variables

### 4.3.1 Sample Selection

The construction of the data set required to merge 3 modules of the ENAHO Panel data: education (module 3), employment (module 5), and calculated indicators of household such as socio-economic status (from the summary module), The crude data set consist on 463 231 individuals.

ENAHO Panel Data 2017-2021 is in a wide format, meaning a single row represents each individual, and a separate column represents each time period and its associated variables. To facilitate the manipulation and analysis of the data, I reshaped the data to a long format, where each individual is in a different row as an observation. After reshaping the data to a long format, 2 316 155 observations remain.

Since the thesis focused on young university graduates, I apply two filters. First, I select a population between 18 and 29 years old, because regular students finish their compulsory secondary education at 17 years old. The threshold of 29 years focuses on people who have completed their university studies and transitioned to the labour market. After this filter, 99 693 observations remain. Second, I select population with at least completed university level of education. Focusing only on graduates guarantees comparing people in similar situations. After applying this filter, 8 887 observations remain.

Additionally, two other filters are applied, I select population who were not studying at the year of the survey. In this context, people who were not doing a second career or who were not postgraduate students. After applying this filter, 8 324 observations remain. Finally, I drop all individuals whose families' socioeconomic status are classified as "rural" by the ENAHO. In the ENAHO database, the "rural" category of the variable "estrsocial", from which the variable of socioeconomic status is created, stands for native and peasant communities, where a non-monetarised economy or economy of subsistence prevails. After filtering this category, our final dataset is composed of 7 732 observations, which is my final dataset. This corresponds to 6 984 individuals, where 16% (1121) of them have been followed for at least 2 years.

#### 4.3.2 Description of the variables

The variables of interest are NEET, employed, occupied in the informal sector, and income. I expect that these variables have relations with the quality of university, controlled by individual characteristics (sex and age), professional characteristics (area of knowledge studied and type of university), family characteristics (size of the household, member in the household, and



socioeconomic status of the family), and social characteristics (region in which the individual lives and ethnicity).

The database consists in 16 variables. Table 4.1. describe the variables and their values.

*Table 4.1 Description of the variables*

| Type of variable                                      | Variable  | Name in the database | Type  |
|---|-----------|----------------------|---|
| <b>Dependent variables: graduated labour outcomes</b> | $Y_{if}$  | neet                 | Binary: 0 = not NEET, 1 = NEET  |
|   | $Y_{if}$  | employed             | Binary: 0 = not employed, 1 = employed  |
|   | $Y_{if}$  | informality          | Binary: 0 = Occupied in formal sector, 1 = Occupied in informal sector  |
|   | $Y_{if}$  | logincome            | Continuous: Natural logarithm of monthly income of main activity  |
| <b>Independent variable</b>                           | $X_{1if}$ | quality              | Binary: 0 = not licensed (low-quality), 1 = licensed (meet quality requirements established by law)   |
| <b>Control variables: individual characteristics</b>  | $X_{2if}$ | age                  | Discrete  |
|   | $X_{3if}$ | sex                  | Binary: 0 = Woman 1 = Man   |
| <b>Control variables: education characteristics</b>   | $X_{4if}$ | utype                | Binary: 0 = public university, 1 = private university   |
|   | $X_{5if}$ | knowledge            | Categoric: 0 = natural sciences, maths, engineering, 1 = education, social sciences, humanities, 2 = other services (ecotourism, health and others) |
| <b>Control variables: family characteristics</b>      | $X_{6if}$ | sizehousehold        | Discrete  |
|   | $X_{7if}$ | housemember          | Categoric: 0 = son or daughter, 1 = head of household or spouse, 2 = other relative   |

|  |            |           |   |
|--|------------|-----------|---|
|  | $X_{8if}$  | ses       | Categoric: 1 = upper and middle class, 2 = middle lower and lower class                   |
| <b>Control variables:<br/>contextual<br/>characteristics</b> | $X_{9if}$  | limacity  | Binary: 0 = Not living in Lima, 1 = Living in Lima  |
|  | $X_{10if}$ | ethnicity | Binary: 0 = Speaks Spanish as first language, 1 = Speak native language as first language |

It is worth noting some specifications regarding the NEET and informality variables. In my dataset NEET variables refer to people who were not studying and were unemployed or inactive; in other words, graduates non-students who have been searching for job unable to find it or people who are no longer searching for jobs (inactive). Regarding informality, ENAHO considers informal individuals who lack registration and legal protection of jobs, workers who operate or are employed in firms with five or fewer employers, and non-professional self-employed persons.

#### 4.4 Strengths and Limitations of the Data

The frequency and quality of ENAHO data and broad coverage of different topics allow a reliable analysis. The dataset created for the analysis contains information at individual level that allows to build connections between university and graduated labour outcomes. This new database can be easily re-created to assess the Peruvian University Reform, and the frequency of its applicability allows to compare ENAHO panel data from previous and future years.

It is possible to acknowledge some limitations of the data. Given that the study relies on survey data, it is important to acknowledge the potential presence of response bias. This type of bias is a common limitation when working with data collected directly from individuals. The use of a pooled individual-level data, may hide the dynamics of individual trajectories. For instance, the variable related to the average duration of the transition is not taking into account in this thesis.

Consequently, although we observe a prevalence of individuals in a specific status such as NEET, employed or informal, we do not consider information about the duration of their stay in these statuses or for how long they will stay there. Additionally, the data reflects information of different cohort, which implies that interpretations would require to assume stationary labour market and education system conditions. Finally, the variable “quality of university” used in the analysis should be considered a proxy of quality. I recognize official rankings universities or other criteria should further complement the present analysis.

## 5 Methodology

Since the study aims to evaluate whether quality of university had an effect on labour market outcomes on Peruvian youth, a quantitative methodology was selected. The thesis uses a Linear Probability Model applied to three binary outcomes (NEET, employment and informality), and a Multivariate OLS regression model for the natural logarithm of monthly income.

As I work with a pooled panel data, both regressions cluster the standard error for individuals and families. This accounts for potential correlation or heteroscedasticity within individuals and families, acknowledging that observations within the same cluster may be more similar to each other (Angrist & Pischke, 2015).

Both regressions control for individual, professional, family, and social characteristics. Multiple regression makes it possible to mitigate or eliminate omitted variable bias by including the omitted variables in the regression (Stock & Watson, 2020). Additionally, the time dimension is controlled by the variable "year".

I chose a Linear Probabilistic Model (LPM) over the more commonly used logistic model because the coefficients of the logistic model cannot be interpreted straightforwardly as effect measures, and LPM is more appropriate for comparing models with different outcome variables (Mood, 2010). Logistic regressions predict the probability that one of two possible outcomes will take place, but its outcome cannot be interpreted straightforwardly as an effect. Additionally, logistic regressions reflect the degree of unobserved heterogeneity in the model. Secondly, it is not possible to compare odds ratios for similar models across groups, samples, or time points, or across models with different independent variables in a sample (Mood, 2010).

Equation (1) shows the Linear Probability Model for the NEET, employment, and informality outcomes:

$$(1) P(Y_{if} = 1) = \beta_0 + \beta_1 X_{1if} + \beta_2 X_{2if} + \beta_3 X_{3if} + \beta_4 X_{4if} + \beta_5 X_{5if} + \beta_6 X_{6if} + \beta_7 X_{7if} + \beta_8 X_{8if} + \beta_9 X_{9if} + \beta_{10} X_{10if} + \beta_{11} T_{if} + \mu_{it}$$

Equation (2) shows the pooled multivariate OLS regression model for the log income outcomes:

$$(2) Y_{if} = \beta_0 + \beta_1 X_{1if} + \beta_2 X_{2if} + \beta_3 X_{3if} + \beta_4 X_{4if} + \beta_5 X_{5if} + \beta_6 X_{6if} + \beta_7 X_{7if} + \beta_8 X_{8if} + \beta_9 X_{9if} + \beta_{10} X_{10if} + \beta_{11} T_{if} + \mu_{it}$$

In Equation (1),  $P(Y_{if} = 1)$  stands for the probability of the individual  $i$  of the family  $f$  to be NEET if studied in a university that meet quality standards, compare to the probability of being NEET of an individual who studied in low-quality university, controlled by individual, professional, family and social factors, assuming a linear regression. The analysis is analogue to employment, and informality.

In Equation (2)  $Y_{if}$  stands for the increase or decrease in the percentage the logged monthly wage of the individual  $i$  of family  $f$ , compared to a graduated from a low-quality university, controlled by individual, professional, family and social factors.

The Linear Probability Model (LPM) is a linear regression used with binary dependent variables, yielding results in terms of probability changes. There are three common problems associated with LPMs:

1. The possibility of predicted probabilities exceeding 1 or falling below 0 is considered out of range.
2. Heteroscedastic and non-normal residuals, leading to inefficiency and invalid standard errors.
3. Misspecified functional form is one of the main critical problems of the LPM when the relationship between variables is not linear (Mood, 2010).

If there are non-linearities present, the results of the LPM can be misleading. Since odds ratios capture non-linear relationships, logistic models were employed for NEET, employed, and informality in [Appendix C](#). Additionally, an individual-time fixed effect was introduced in the log income. The results of these regressions exhibit similar directions and significance.

## 5.1 The hypotheses

Based on our question and the literature review, the hypothesis that will be tested are:

- $H_{NEET}$ : There is a positive relation between quality of university and the probability of being NEET.
- $H_{EMPLOYED}$ : There is a positive relation between quality of university and the probability of being employed.
- $H_{INFORMALITY}$ : There is a negative relation between quality of university and the probability of being employed in the informal sector.
- $H_{INCOME}$ : There is a positive relation between quality of university and the natural logarithm of monthly income.

## 6 Empirical Analysis

This section presents the descriptive statistics when comparing graduates from low-quality universities and graduates from universities that meet basic quality standards. Then, I present the results of the regressions on whether quality of universities influenced graduated labour outcomes, particularly, NEET, employment, informality and income.

### 6.1 Descriptive Statistics

The sample includes graduates between 20 and 29 years old. Among 7732 observations, 27% are NEET, 86% are employed, 48% are in the informal sector, and the average income is 1252.31 PEN, equivalent 319 USD. To have a reference minimum wage in 2021 in Peru was 930 PEN (237 USD), which means that on average graduated earned 34% more than the minimum wage in their main activity.

Comparing graduates from low-quality universities with those from universities that meet basic quality standards, we observe that differences in means are not statistically significant in the NEET and employed variables but in the informal and income variables. Comparing both groups, we observe that people from low-quality universities are slightly less NEET and slightly more employed than the other group. However, these differences are not significant. On the other hand, people from low-quality universities have a higher share of its population in the informal sector and earn less. These differences are small, but significant.

Regarding the control variables, Table 6.1. shows that 43% of our sample studied in a private university, the mean age is 25.9 years old, and 44% of them are men. Additionally, most of them live in houses with 4.3 average people, 19% live in Lima and 2% speak a native language

as a first language. Regarding the family's socioeconomic status, 36% are upper and middle class, 64% are lower middle or lower class.

Table 6.1 Descriptive Statistics by quality of university on graduated labour outcomes, year 2017-2021

|   | Total sample |     |      | Low-quality universities |     |      | Meet Basic Quality requirements |     |      | Diff     |
|---|--------------|-----|------|--------------------------|-----|------|---------------------------------|-----|------|----------|
|   | Mean         | SD  | Obs  | Mean                     | SD  | Obs  | Mean                            | SD  | Obs  |          |
| <b>Dependent variables: Youth labour outcomes (graduated)</b>   |              |     |      |                          |     |      |                                 |     |      |          |
| <b>NEET</b>   | .24          | .01 | 6686 | .23                      | .01 | 1630 | .24                             | .01 | 5056 | -.003    |
| <b>Employed</b>   | .87          | .00 | 5855 | .87                      | .01 | 1427 | .87                             | .01 | 4428 | .003     |
| <b>Informal</b>   | .48          | .01 | 5106 | .54                      | .01 | 1248 | .46                             | .01 | 3858 | .08***   |
| <b>Income (log)</b>   | 7.22         | .01 | 4887 | 7.12                     | .02 | 1194 | 7.26                            | .01 | 3693 | -.134*** |
| <b>Control variables (by type of university, individual, professional, familiar and social variables)</b> |              |     |      |                          |     |      |                                 |     |      |          |
| <b>Age</b>  | 25.85        | .03 | 6698 | 25.90                    | .05 | 1632 | 25.84                           | .03 | 5066 | .062     |
| <b>Men (1)</b>  | .44          | .01 | 6698 | .38                      | .01 | 1632 | .46                             | .01 | 5066 | -.072*** |
| <b>Private (1)</b>  | .43          | .01 | 6698 | .90                      | .01 | 1632 | .47                             | .01 | 5066 | .433***  |
| <b>Knowledge (1-3) ***</b>  | .91          | .01 | 6693 | .97                      | .02 | 1631 | .89                             | .01 | 5062 | .085***  |
| <b>Size of household</b>  | 4.29         | .02 | 6689 | 4.39                     | .04 | 1628 | 4.26                            | .02 | 5061 | .131***  |
| <b>Member in the household (0-2) ***</b>  | 1.38         | .01 | 6698 | 1.43                     | .02 | 1632 | 1.36                            | .01 | 5066 | .072***  |
| <b>SES (1-2) ***</b>  | 1.65         | .01 | 6689 | 1.69                     | .01 | 1628 | 1.64                            | .01 | 5061 | .053***  |
| <b>Lima (1)</b>   | .19          | .00 | 6698 | .10                      | .01 | 1632 | .215                            | .01 | 5066 | -.112*** |
| <b>Ethnicity (1)</b>  | .02          | .00 | 6641 | .02                      | .00 | 1609 | .02                             | .00 | 5032 | .001     |

Notes: Variables *knowledge* and *member in the household* are categorical. They are better explained in the text. The last column (Diff) presents that both groups are statistically different. The level of significance is given by: \*p<0.10, \*\*p<0.05, \*\*\*p.001.



## 6.2 Multivariate Analysis of the Effects of quality university on labour outcomes

Among graduates aged 20 to 29, Table 6.2. shows no associations between coming from a low-quality university and the probability of being NEET (1) or employed (2), assuming it's a linear function. We observe a significant negative association between the quality of the university and changes in the probability of being employed in the informal sector (3). Therefore, graduates from universities that meet quality standards have a 10 percentage point lower probability of being employed in the informal sector compared to graduates from low-quality universities, controlling for individual, professional, family, and social variables. In line with the findings on informality, graduates from universities that meet quality standards experience a 13 percentage points (pp) higher income compared to graduates from low-quality universities (4), with a significance level of 0.001. Furthermore, age and whether the individual is the head of household or a spouse are statistically significant across all four models.

Table 6.2 Effects of quality of university on labour outcomes of graduated, year 2017-2021

|  | <b>NEET<br/>(1)</b> | <b>Employed<br/>(2)</b> | <b>Informality<br/>(3)</b> | <b>Income<br/>(log,<br/>month) (4)</b> |
|--|---------------------|-------------------------|----------------------------|--|
| <b>Meet quality standards</b>  | 0.00<br>(0.01)      | 0.01<br>(0.01)          | -0.10***<br>(0.02)         | 0.13***<br>(0.03)                      |
| <b>Age</b>   | -0.02***<br>(0.00)  | 0.01***<br>(0.00)       | -0.04***<br>(0.00)         | 0.08***<br>(0.01)                      |
| <b>Men (1)</b>   | -0.09***<br>(0.01)  | 0.04***<br>(0.01)       | 0.01<br>(0.02)             | 0.15***<br>(0.02)                      |
| <b>Private (1)</b>   | -0.01<br>(0.01)     | 0.02<br>(0.01)          | -0.07***<br>(0.02)         | 0.11***<br>(0.03)                      |
| <b>Knowledge: Education,<br/>Social Sciences and<br/>Humanities</b>                  | -0.07***<br>(0.01)  | 0.04***<br>(0.01)       | -0.03<br>(0.02)            | -0.15***<br>(0.03)                     |
| <b>Knowledge: Other services<br/>(ecotourism, wellbeing, and<br/>other services)</b> | -0.03<br>(0.02)     | 0.05**<br>(0.01)        | 0.03<br>(0.02)             | -0.13**<br>(0.04)                      |
| <b>Size of household</b>   | 0.00                | 0.00                    | -0.01**                    | -0.00                                  |

|  |                    |                   |                    |                    |
|--|--------------------|-------------------|--------------------|--------------------|
|  | (0.00)             | (0.00)            | (0.00)             | (0.01)             |
| <b>Member: head of household or spouse</b> | -0.05***<br>(0.02) | 0.07***<br>(0.01) | -0.09***<br>(0.02) | 0.15***<br>(0.04)  |
| <b>Lower and middle class</b>              | -0.01<br>(0.01)    | -0.01<br>(0.01)   | 0.07***<br>(0.02)  | -0.10***<br>(0.03) |
| <b>Lima (1)</b>                            | -0.03*<br>(0.01)   | 0.01<br>(0.01)    | -0.09***<br>(0.02) | 0.23***<br>(0.03)  |
| <b>Ethnicity (1)</b>                       | 0.00<br>(0.04)     | 0.03<br>(0.03)    | 0.12***<br>(0.04)  | -0.17*<br>(0.08)   |
| <b>Year 2018</b>                           | -0.01<br>(0.02)    | 0.00<br>(0.01)    | -0.01<br>(0.02)    | 0.04<br>(0.03)     |
| <b>Year 2019</b>                           | -0.01<br>(0.02)    | 0.02<br>(0.01)    | -0.02<br>(0.02)    | 0.02<br>(0.03)     |
| <b>Year 2020</b>                           | 0.02<br>(0.02)     | -0.04*<br>(0.02)  | 0.04<br>(0.02)     | -0.13**<br>(0.04)  |
| <b>Year 2021</b>                           | 0.01<br>(0.02)     | -0.01<br>(0.01)   | 0.06***<br>(0.02)  | -0.06<br>(0.04)    |
| <b>Observations</b>                        | 6615               | 5793              | 5051               | 4836               |
| <b>R2</b>                                  | 0.03               | 0.02              | 0.07               | 0.11               |

All labour outcomes refer to graduates, and quality of university is the independent variable. For NEET, employment and informality, equation 1 is used, and for income, equation 2. Standard errors (in parenthesis) clustered at the individual and family level. The specification includes individual, professional, family and social controls. Significance levels are given by: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$

Regarding the NEET status, variables such as age, sex, area of knowledge studied, being head of household, and living in Lima are more relevant than the quality of university or whether the university is private or public. According to this, the probability of being NEET decreases by changes in one unit of years, decreases if the individual is a man, if the individual studied education, social sciences and humanities, if is head of household or spouse and lives in Lima.

Regarding employment (column 2), we observe no relationship between coming from a low-quality university and being employed. Similarly to the NEET status, variables such as age, sex, area of knowledge and being head of household are more relevant. However, unlike the NEET status, living in Lima is not associated with higher probabilities of being employed, and probabilities of being employed decreased in 2020.

Third, there is a negative association between graduating from a university that meets quality standards and the change in the probability of being employed in the informal sector (-0.10), significant at 0.001. In other words, graduates from low-quality universities which licenses of operations were denied by the Peruvian State during the years 2018 and 2021, are 10% more probable to be inserted in the informal sector than graduates from universities which licenses of operations were not denied by the Peruvian State, at a 0.001 significance.

The probability of being employed in the informal sector decreases if the individual comes from a private university, is one year older, is head of household or spouse, and lives in Lima. The probability of being occupied in the informal sector increases when the individual comes from lower and middle class, and native language as a first language. Interestingly, sex or area of knowledge are not related with informality among graduates. Additionally, year 2021 had a significant impact on informality.

The fourth column shows that having a degree from a university that meets quality standards is related with income, being the coefficient of determination (R<sup>2</sup>) 0.11. This model accounts for 11% of the variability in the outcome among graduates. It is important to note that an R<sup>2</sup> value of 0.11, although modest, holds significant explanatory power in the field of social sciences (Stock & Watson, 2020).

Additionally, age, being a man, the type of the university being head of household or spouse and living in Lima have a positive association with the log income variable. On the other hand, having a degree in Education, social sciences and humanities, coming from lower and middle lower class, has negative correlations with the log income. Additionally, year 2020 is correlated with a decrease in income.

[Appendix C](#) shows similar results in the direction of the association and significances, for all 4 outcomes when applying logit models to NEET, employment and informality (to capture non-linearities) and when applying time-individual effects to log income.

## 7 Discussion

This thesis aimed to explore the relationship between the quality of university education and labour outcomes among young graduates in Peru. Results need to be interpreted considering that Peru is a dual labour market economy (OECD, 2019) with a high prevalence of low-quality universities (Benavides et al., 2019; SUNEDU 2023).

On the journey from university to work, the empirical results in Peru show that quality of university does have a statistically significant association with the entrance to the formal sector and better paid jobs, but it is unrelated to unemployment and NEET status. Overall, these findings align with the existing literature, which expects better outcomes among graduates from higher-quality universities compared to those from lower-quality universities.

Studies show that individuals from low-quality universities may experience worse labour conditions than those graduated from higher quality universities, for example, facing lower wages (Milla, 2018). From a screening perspective (Arrow, 1973), employers may also perceive these graduates as individuals with lower skills. Lower-skills, real or perceived, may also impact negatively on their possibilities to find formal employment.

The results are also consistent with previous studies done in Peru. Yamada et al., (2015) show that quality of university education plays a significant role in the employment outcome of graduates, particularly in terms of informality and income. According to them, graduates from low-quality universities have lower skills (Yamada et al., 2015), are more likely to be employed in the informal sector and tend to earn less than those graduated from more universities with higher quality. Additionally, Chong et al. (2008) observes that men and women have equal probabilities to be employed in the informal sector, which is also consistent with non-significance of the variable sex in the model related to informality (column 3, Figure 6.2).

However, my results differ from those found by (Delgado Montes et al., 2016) who find that education can overcome discrimination, enabling educated indigenous individuals better access to formal jobs. While Delgado's analysis considers tertiary education in general, including both non-university and university education, my specific analysis on universities shows that university graduate indigenous in Peru still suffers from discrimination in the formal labour market. Although the variable "ethnicity" is not statistically significant in models 1 and 2, it is significant in the informality and income model (column 3 and 4, Figure 6.2).

Regarding the results on NEET status and employment, some things are important to mention. First, the descriptive statistic shows that 27% of our sample is NEET and 14% is unemployed. These figures are relevant, considering that they are graduate individuals; that is, people who completed their university studies and who, for some reason, their transition to work were truncated when they were interviewed. In this sense, NEET status and unemployment are relevant issues among Peruvian graduated and worth to study, but these topics are not associated with the quality of the university.

One possible explanation is that most literature on NEET and young unemployment is based on high-income countries, and literature is inconclusive among lower-income countries or emerging economies. Because in high-income countries NEET and unemployed are mostly from low socioeconomic backgrounds, studies mainly focus on school drop-out rather than after graduation studies. Additionally, other factors such as social skills, access to networks, family support, as well as personal expectations and decisions may be more relevant to these outcomes. Second, following a signalling perspective, it is possible that in Latin America or in Dual Labour Market, possessing a higher education degree may still provide advantages in the job market, regardless of university quality. Thus, possessing a university degree is valuable in Peru.

The present study faces a significant challenge in addressing potential endogeneities related to predicted low skills and self-selection. On one hand, according to Yamada et al. (2015) lower-quality universities in Peru tend to have a higher proportion of students with comparatively

lower academic skills, who are more likely to be underemployed regardless of the education they receive.

On the other hand, some individuals may choose a university education not primarily to enhance their skills but rather to use the degree as a signal in the labour market, even in the informal sector. In this context, it is possible that people from lower-quality universities do not expect to secure formal employment but rather seek jobs that offer higher earnings than those of their parents or non-graduate peers. Young individuals from low-income backgrounds, lacking sufficient information or having parents without higher education experience, may perceive studying at a private university as inherently superior to attending a public one. They might view the investment as worthwhile and be willing to pay the tuition fees.

Finally, because of the consistency of my results with previous studies in Peru and general theory, I believe that the use of universities whose license of operations were denied under the University Reform of 2014 is a good proxy for quality university education and should be further explored. While this thesis opens up possibilities for further research, it acknowledges that the unique process of denying licenses to 48 universities may hinder the replicability of this type of study in other countries.

## 7.1 Future Research

This thesis opens possibilities for further research in three main domains: Firstly, it calls for in-depth investigations into the impact of the University Reform and the denial of operation licenses of 48 universities. Secondly, it requires continuing the research on the effects of quality university on youth labour outcomes, through incorporating or adjusting variables, complementarity with other datasets, or using more sophisticated models. Lastly, more research regarding labour market dynamics and probable skill mismatch is needed. These areas will provide a deeper understanding of the finding of this thesis.

To evaluate the impacts of the University Reform, the identification process of universities which licenses were denied is an opportunity for future analysis. Given the recent implementation of the University Reform and the progressive characteristic of the denial of university licenses, this type of analysis is recommended with future panels datasets. The University Reform may have impacted the length of the transitions of university-to-work or may have served as a negative screening mechanisms among employers for subsequent applications. Considering that university degree is valued in the labour market, it is worth to study whether individuals affected by the University Reform would have been better off if their universities had not been denied a license. Overall, long-term effects of this reform should be measured when data availability allows these explorations.

Further research on quality university and Peruvian Labour outcomes, should include variables such as personal abilities, parentals' educational backgrounds, employers' perspective, and other macroeconomic indicators. Factors such as university characteristics (e.g., night schedules for working individuals, investments, research, and innovation), regional characteristics (e.g., percentage of economically active people, dependency ratio, education supply), as well as prior elementary or secondary education, access to networks, and personality traits, could be included in future research.

More detailed information from universities can be included, regarding each of the quality conditions. The National Institute of Statistics and Information (INEI) published datasets of the II National University Census in 2010, and the National Survey of graduates and universities in 2014. Additionally, it is possible to request updated information through SUNEDU's Transparency channel on the current situation of universities, or to consolidate the 33 indicators reported in the 143 Technical Licensing Reports (ITL) that supported the approval or denial of the universities' operating licences. Use of these sources was not possible during the thesis due to time constraints.

Finally, more research is needed on the Labour Market and from an employer perspective, to answer questions related to low-skill trap and mismatch skills in the Peruvian labour market. Insights into employers' expectations is recommended. While this thesis offers valuable

hypotheses and insights into the signalling and screening framework, it necessitates additional information from the employers' perspective and an understanding of workers' skills to arrive at conclusive results. The OECD's Skill for Jobs Database (2017), which contains information of Peru, could be useful in this regard. Understanding the interactions between labour market demand and the quality of university education can provide valuable insights for designing effective policies.



## 8 Conclusion

This thesis contributes to the research agenda on quality of university and young graduated labour outcomes in Peru. It contributes to the growing body of knowledge about quality of university education and labour outcomes in a dual market economy, using Peru as a case of study. The thesis controls by individual, professional, family and social indicators. To explore these associations, I use the National Survey of Households 2017 – 2021 and work under the assumption that all universities which licenses of operations were denied between 2018 and 2021 as an outcome of the University Reform were always low-quality university as they failed to fulfil several indicators of Basic Quality Conditions

The thesis employs a Linear Probability Model to measure the association between quality of university education and NEET status, employment, and informal occupation. Additionally, a multivariate OLS regression model is used to measure natural log incomes. Hypotheses 1 (Quality of university is associated with the NEET status) and Hypothesis 2 (Quality of university is associated with employment) were rejected. However, Hypotheses 3 (Quality of university is associated with informality) and Hypothesis 4 (Quality of university is associated with income) were accepted. Therefore, while the quality of university education may not affect inclusion in the labor market, it does have an influence on the quality of jobs and conditions of integration into the labor force. This thesis suggests that the quality of university education shapes labor outcomes, particularly with regard to job quality.

Overall, the findings are consistent with the literature presented in the theoretical approach section. It is observed that the quality of university education has a statistically significant relationship with informal employment and income, but it does not have a statistically significant association with other variables such as NEET and employment. Variables such as sex, age, field of education, and head of household appear to be more relevant in those cases. Additionally, variables not included in the model may be more relevant for those indicators.

The practical implications of this thesis are manifold. First, it is important to promote quality of university and provide more information to potential students and parents regarding the benefits of studying at universities that meet basic quality conditions, such as increased chances of formal sector employment and higher earnings.

These findings can inform policy discussions and the decision-making process related to higher education reforms. We anticipate that this contribution will facilitate a broader discussion of university policies in Peru and other Latin American countries that struggle with lower-quality universities. Moreover, the information provided by this thesis can serve as evidence to policymakers responsible for the University Reform and its licensing process.

Finally, there is an open research agenda to address the possible negative impacts that this reform may have had on individuals who invested years and money studying at those universities. There is currently insufficient evidence to determine whether young students who were enrolled in low-quality universities fared better or worse after the University Reform, as studying in low-quality universities may have already opened possibilities for them that were previously closed.

# References

- Albrecht, J., Navarro, L., & Vroman, S. (2009). The Effects of Labour Market Policies in an Economy with an Informal Sector. *The Economic Journal*, *119*(539), 1105–1129. <https://doi.org/10.1111/j.1468-0297.2009.02268.x>
- Alfieri, S., Sironi, E., Marta, E., Rosina, A., & Marzana, D. (2015). Young Italian NEETs (Not in Employment, Education, or Training) and the Influence of Their Family Background. *Europe's Journal of Psychology*, *11*(2), 311–322. <https://doi.org/10.5964/ejop.v11i2.901>
- Alvarado, A., Conde, B., Novella, R., & Repetto, A. (2020). NEETs in Latin America and the Caribbean: Skills, Aspirations, and Information. *Journal of International Development*, *32*(8), 1273–1307. <https://doi.org/10.1002/jid.3503>
- Arrow, K. J. (1973). Higher education as a filter. *Journal of Public Economics*, *2*(3), 193–216. [https://doi.org/10.1016/0047-2727\(73\)90013-3](https://doi.org/10.1016/0047-2727(73)90013-3)
- Balarin, M., & Saavedra, M. (2023). *Reforming Education in the Context of Weak States: The Political Economy of Education Reforms in Peru 1995-2020*. Research on Improving Systems of Education (RISE). <https://doi.org/10.35489/BSG-RISE-2023/PE04>
- Benavides, M., Arellano, A., & Zárate Vásquez, J. S. (2019). Market- and government-based higher education reforms in Latin America: The cases of Peru and Ecuador, 2008–2016. *Higher Education*, *77*(6), 1015–1030. <https://doi.org/10.1007/s10734-018-0317-3>
- Calónico, S., & Ñopo, H. (2007). *Returns to Private Education in Peru*. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1820873](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1820873)

- Campbell, D. (2013). Ch. 2 The labour market in developing countries. In S. Cazes, S. Verick, & International Labour Office (Eds.), *Perspectives on labour economics for development*. International Labour Office in association with Academic Foundation.
- Chong, A., Galdo, J., & Saavedra, J. (2008). Informality and productivity in the labor market in Peru. *Journal of Economic Policy Reform*, 11(4), 229–245.  
<https://doi.org/10.1080/17487870802543480>
- Christofides, L. N., Hoy, M., Milla, J., & Stengos, T. (2012). *Grades, Aspirations and Post-Secondary Education Outcomes*.
- Cuzzocrea, V. (2014). 9. Projecting the category of NEET into the future. In Europäische Union & Europarat (Eds.), *Perspectives on youth. 1: 2020—What do you see? / Council of Europe*. Council of Europe Publishing.
- De Figueiredo-Cowen, M. (2002). Latin American Universities, Academic Freedom and Autonomy: A long-term myth? *Comparative Education*, 38(4), 471–484.  
<https://doi.org/10.1080/0305006022000030702>
- Degregori, C. I. (2010). *El surgimiento de Sendero Luminoso: Ayacucho 1969-1979* (3. ed). Instituto de Estudios Peruanos.
- Delgado Montes, J., Corrales, J., & Singh, P. (2016). The “Informality Gap”: Can Education Help Minorities Escape Informal Employment? Evidence from Peru. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2879796>
- Díaz, J. J., Arias, O., & Vera T., D. (2013). *Does Persistence Pay as Much as Being Smart?: The Returns to Cognitive and Non-cognitive Skills in urban Peru*. IZA Instituto of Labour Economics.
- García-Peñalvo, F. J., García-Holgado, A., Dominguez, A., & Pascual, J. (Eds.). (2022). *Women in STEM in Higher Education: Good Practices of Attraction, Access and*

- Retainment in Higher Education*. Springer Nature Singapore.  
<https://doi.org/10.1007/978-981-19-1552-9>
- Goldin, C. (2016). Human Capital. In C. Diebolt & M. Hauptert (Eds.), *Handbook of Cliometrics* (pp. 55–86). Springer Berlin Heidelberg. [https://doi.org/10.1007/978-3-642-40406-1\\_23](https://doi.org/10.1007/978-3-642-40406-1_23)
- Hanushek, E. A., & Rivkin, S. G. (2012). The Distribution of Teacher Quality and Implications for Policy. *Annual Review of Economics*, 4(1), 131–157.  
<https://doi.org/10.1146/annurev-economics-080511-111001>
- Hanushek, E. A., & Woessmann, L. (2012). Schooling, educational achievement, and the Latin American growth puzzle. *Journal of Development Economics*, 99(2), 497–512.  
<https://doi.org/10.1016/j.jdeveco.2012.06.004>
- Heckman, J., Pagés-Serra, C., Cox Edwards, A., & Guidotti, P. (2000). The Cost of Job Security Regulation: Evidence from Latin American Labor Markets. *Economía*, 1(1), 109–154.
- Hermann, Z., & Horn, D. (2022). The effect of decreased general training on skills and dropout—Evidence from a vocational school reform in Hungary. *Education Economics*, 1–10. <https://doi.org/10.1080/09645292.2022.2160432>
- Holland, M. M., & DeLuca, S. (2016). “Why Wait Years to Become Something?” Low-income African American Youth and the Costly Career Search in For-profit Trade Schools. *Sociology of Education*, 89(4), 261–278.  
<https://doi.org/10.1177/0038040716666607>
- Holte, B. H., Swart, I., & Hiilamo, H. (2019). The NEET concept in comparative youth research: The Nordic countries and South Africa. *Journal of Youth Studies*, 22(2), 256–272. <https://doi.org/10.1080/13676261.2018.1496406>

- Lindert, P. H. (2010). The unequal lag in Latin American schooling since 1900: Follow the money. *Revista de Historia Económica / Journal of Iberian and Latin American Economic History*, 28(2), 375–405. <https://doi.org/10.1017/S0212610910000066>
- López-Roldán, P., & Fachelli, S. (Eds.). (2021). *Towards a Comparative Analysis of Social Inequalities between Europe and Latin America*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-48442-2>
- McLauhlan, P. (1994). *La situación de las universidades peruanas, Notas para el debate*, 12: 9-38, Oct. GRADE. <https://www.grade.org.pe/publicaciones/44-la-situacion-de-las-universidades-peruanas/>
- Messina, J., & Silva, J. (2021). Twenty Years of Wage Inequality in Latin America. *The World Bank Economic Review*, 35(1), 117–147. <https://doi.org/10.1093/wber/lhz029>
- Milla, J. (2017). The Context-Bound University Selectivity Premium. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3045720>
- Milla, J. (2018). The Canadian University Selectivity Premium. *Review of Economic Analysis*, 10(4), 313–349. <https://doi.org/10.15353/rea.v10i4.1473>
- Miller, P., Mulvey, C., & Martin, N. (1995). *What Do Twins Studies Reveal About the Economic Returns to Education? A Comparison of Australian and U.S. Findings*.
- Mincer, J. (1974). Ch. 4 Age and Experience Profiles of Earnings. In *Schooling, experience, and earnings*. National Bureau of Economic Research; distributed by Columbia University Press.
- MINEDU. (2022). *El Perú en PISA 2018. Informe nacional de resultados* (Serie Evaluaciones y Factores Asociados).
- Nilsson, B. (2019). The School-to-Work Transition in Developing Countries. *The Journal of Development Studies*, 55(5), 745–764. <https://doi.org/10.1080/00220388.2018.1475649>

- OECD. (2019). *Investing in Youth: Peru*. OECD. <https://doi.org/10.1787/9789264305823-en>
- OECD. (2021). *Perú: Informe Final de la Revisión de la OCDE de las Estadísticas Oficiales y del Sistema Estadístico*.  
[https://www.inei.gob.pe/media/MenuRecursivo/publicaciones\\_digitales/Est/Lib1454/libro.pdf](https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1454/libro.pdf)
- Paul, O. T., Kuluthum, N., & Divine, E. N. (2021). Family support and school-to-work transition: Perceptions and experiences of university graduates in Kampala city, Uganda. *Educational Research and Reviews*, 16(12), 428–437.  
<https://doi.org/10.5897/ERR2021.4213>
- Pinar, M., Milla, J., & Stengos, T. (2019). Sensitivity of university rankings: Implications of stochastic dominance efficiency analysis. *Education Economics*, 27(1), 75–92.  
<https://doi.org/10.1080/09645292.2018.1512560>
- Psacharopoulos, G., & Patrinos, H. A. (2004). Returns to investment in education: A further update. *Education Economics*, 12(2), 111–134.  
<https://doi.org/10.1080/0964529042000239140>
- Rodríguez, J., & Higa, M. (2010). *Informalidad, Empleo y Productividad en el Perú*.  
<http://www.pucp.edu.pe/departamento/economia/images/documentos/DDD282.pdf>
- Rosenzweig, M. R. (1995). *Why Are There Returns to Schooling?* 85(2), 13–158.
- Ryan, P. (2001). The School-to-Work Transition: A Cross-National Perspective. *Journal of Economic Literature*, 39(1), 34–92. <https://doi.org/10.1257/jel.39.1.34>
- Sala Lorda, G. (2011). Approaches to Skills Mismatch in the Labour Market: A Literature Review. *Papers. Revista de Sociologia*, 96(4), 1025.  
<https://doi.org/10.5565/rev/papers/v96n4.171>

- Schneider, B. R., & Karcher, S. (2010). Complementarities and continuities in the political economy of labour markets in Latin America. *Socio-Economic Review*, 8(4), 623–651. <https://doi.org/10.1093/ser/mwq022>
- Stock, J. H., & Watson, M. W. (2020). *Introduction to econometrics* (Fourth edition, global edition). Pearson.
- SUNEDU. (2021). *III Informe bienal sobre a realidad universitaria en el Perú*. <https://cdn.www.gob.pe/uploads/document/file/3018068/III%20Informe%20Bienal.pdf>
- SUNEDU, & INEI. (2018). *Clasificador Nacional de Programas e Instituciones de Educación Superior Universitaria, Pedagógica, Tecnológica y Técnico Productiva, 2018*. [https://www.inei.gob.pe/media/Clasificador\\_Nacional\\_de\\_Ocupaciones\\_2015-I.pdf](https://www.inei.gob.pe/media/Clasificador_Nacional_de_Ocupaciones_2015-I.pdf)
- Weiss, A. (1995). Human Capital vs. Signalling Explanations of Wages. *Journal of Economic Perspectives*, 9(4), 133–154. <https://doi.org/10.1257/jep.9.4.133>
- Yamada, G. (2009). Rendimientos de la educación superior en el mercado laboral. El caso de Perú. *El trimestre económico*, LXXXVI(2), 485–511.
- Yamada, G., Lavado, P., & Martinez, J. J. (2015). An Unfulfilled Promise? Higher Education Quality and Professional Underemployment in Peru. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2713011>

### **Database related references**

- INEI (2023). Condiciones de vida y pobreza – ENAHO PANEL (2017-2021). Retrieved the 15th of May 2023. Available in: <https://proyectos.inei.gob.pe/microdatos/>
- SUNEDU (2023). Lista de universidades públicas y privadas. Retrieved the 15th of May 2023. Available in: <https://www.sunedu.gob.pe/lista-universidades/>



SUNEDU (2023). Lista complete de universidades con licencia denegada. Retrieved the 15th of May 2023. Available in: <https://www.sunedu.gob.pe/lista-de-universidades-denegadas/>

SUNEDU (2023). Lista complete de universidades licenciadas. Retrieved the 15th of May 2023. Available in: <https://www.sunedu.gob.pe/lista-de-universidades-licenciadas/>

QS Ranking (2021). QS World University Rankings 2021. Retrieved the 15<sup>th</sup> of May 2023. Available in: <https://www.topuniversities.com/university-rankings/world-university-rankings/2021>

# Appendix A

*Table 1 Timeline of milestones of Peruvian university System (1950 – 2022)*

|           |   |
|-----------|---|
| 1960      | Law N° 13417<br>Co-government and autonomy of universities, demands creation of university cities and founds the Inter-University Council.  |
| 1961      | University Law N° 13738<br>Aimed to modernize and decentralize university education   |
| 1969      | Organic Law of the Peruvian University N° 17437<br>Proclaims the strictly national and scientific character of the universities in the face of the problems of the country.<br>Creates the National Council of the Peruvian University (CONUP). |
| 1983      | University Act of Peru, Law No. 23733<br>Creates the National Assembly of Rectors (ANR) for the purpose of study, coordination and general orientation of university activities in the country.   |
| 1995      | Ley N° 26439<br>Creation of the National Council for the Authorisation of the Operation of Universities (CONAFU)  |
| 1996      | Enactment of Legislative Decree No. 882<br>Law for the Promotion of Investment in Education<br>Starts the proliferation of private universities   |
| 2010      | Pronouncement N° 00017-2008-PI/TC of the Constitutional Court<br>The State does not fulfil its task of guaranteeing university quality.   |
| 2014      | University Law N° 30220<br>Creates the National Superintendence of University Education (SUNEDU) and reforms the accreditation system (SINEACE).  |
| 2015      | Constitutional Court declares unconstitutionality lawsuits filed against the University Law 2014 to be unfounded  |
| 2018-2021 | Denial of Licenses of Operation of 48 Universities.   |

# Appendix B

*Table 2 Basic Quality Conditions (BQC) Peruvian universities must meet to obtain license of operation, under the University Reform of 2014*

|  |  |
|--|--|
| Condition I: Existence of academic objectives, degrees and diplomas to be granted, and corresponding study plans                             | I.1. Institutional goals                                       |
|  | I.2. Academic objectives and study plans                       |
|  | I.3. Degrees and diplomas                                      |
|  | I.4. Information systems                                       |
|  | I.5. Admission processes                                       |
|  | I.6. Institutional Quality Management Plan                     |
| Condition II. Educational offer to created is compatible with institutional goals and planning instruments                                   | II.1. Creation of new universities                             |
|  | II.2. Creation of new curricula in existing universities       |
| Condition III. Infrastructure and equipment adequate for the fulfilment of its functions (classrooms, libraries, laboratories, among others) | III.1. Location of locals                                      |
|  | III.2. Ownership of locals                                     |
|  | III.3. Structural security and safety in case of disasters     |
|  | III.4. Safety in the use of laboratories and workshops         |
|  | III.5. Availability of public services                         |
|  | III.6. Existence of sanitary services                          |
|  | III.7. Workshops and laboratories for teaching                 |
|  | III.8. Environment for teachers                                |
|  | III.9. Maintenance of infrastructure and equipment             |
| Condition IV. Research lines to be develop   | IV.1. Research lines   |
|  | IV.2. Teachers conducting research                             |
|  | IV.3. Registration of research documents and research projects |
| Condition V. Verification of the availability of qualified teachers with no less than 25% of full-time teachers                              | V.1. Existence of at least 25% of full-time teachers           |
|  | V.2. Requirements for the exercise of teaching                 |
|  | V.3. Teacher selection, evaluation and training                |
|  | VI.1. Health service   |

|   |  |
|---|--|
| Condition VI. Verification of complementary educational services (medical, social, psycho-pedagogical, sports services, among others) | VI.2. Social service   |
|   | VI.3. Psych pedagogical service  |
|   | VI.4. Sports services  |
|   | VI.5. Cultural services  |
|   | VI.6. Security and surveillance services   |
|   | VI.7. Adequacy to the environment and environmental protection                               |
|   | VI.8 Bibliographic collection  |
|   |  |
| VII. Existence of mediation and job placement mechanisms (job placement mechanism, and others)  | VII.1. Mediation and job placement mechanisms for students and graduates                     |
|   | VII.2. Coordination mechanisms and strategic alliances with the public and/or private sector |
| VIII. CBC Complementary: Transparency of universities   | VIII.1. Transparency   |

Source: RSI 054-2017-SUNEDU.

# Appendix C

Table 2 Effects of quality of university on labour outcomes of graduated, year 2017-2021, using logit regression (odds ratio, columns 1 to 3) and time-individual fixed effect regression (column 4)

|  | <b>NEET<br/>(1)</b> | <b>Employed<br/>(2)</b> | <b>Informality<br/>(3)</b> | <b>Income<br/>(log,<br/>month) (4)</b> |
|--|---------------------|-------------------------|----------------------------|--|
| <b>Meet quality standards</b>  | 0.02<br>(0.08)      | 0.06<br>(0.11)          | -0.41***<br>(0.08)         | 0.14***<br>(0.03)                      |
| <b>Age</b>   | -0.13***<br>(0.01)  | 0.12***<br>(0.02)       | -0.17***<br>(0.01)         | 0.09***<br>(0.01)                      |
| <b>Men (1)</b>   | -0.52***<br>(0.07)  | 0.33***<br>(0.09)       | 0.04<br>(0.07)             | 0.16***<br>(0.02)                      |
| <b>Private (1)</b>   | -0.04<br>(0.07)     | 0.18*<br>(0.09)         | -0.29***<br>(0.07)         | 0.12***<br>(0.03)                      |
| <b>Knowledge: Education,<br/>Social Sciences and<br/>Humanities</b>                  | -0.38***<br>(0.07)  | 0.37***<br>(0.10)       | -0.14<br>(0.07)            | -0.14***<br>(0.03)                     |
| <b>Knowledge: Other services<br/>(ecotourism, wellbeing, and<br/>other services)</b> | -0.17<br>(0.09)     | 0.42**<br>(0.13)        | 0.14<br>(0.10)             | -0.11**<br>(0.04)                      |
| <b>Size of household</b>   | 0.02<br>(0.02)      | 0.02<br>(0.03)          | -0.05*<br>(0.02)           | -0.00<br>(0.01)                        |
| <b>Member: head of household<br/>or spouse</b>                                       | -0.32**<br>(0.11)   | 0.79***<br>(0.16)       | -0.39***<br>(0.10)         | 0.15***<br>(0.04)                      |
| <b>Lower and middle class</b>  | -0.08<br>(0.07)     | -0.10<br>(0.09)         | 0.30***<br>(0.07)          | -0.10***<br>(0.03)                     |
| <b>Lima (1)</b>  | -0.21*<br>(0.01)    | 0.09<br>(0.11)          | -0.40***<br>(0.09)         | 0.24***<br>(0.03)                      |
| <b>Ethnicity (1)</b>   | 0.00<br>(0.21)      | 0.36<br>(0.31)          | 0.52**<br>(0.19)           | -0.17*<br>(0.07)                       |
| <b>Year 2018</b>   | -0.04<br>(0.09)     | 0.04<br>(0.12)          | -0.05<br>(0.08)            | 0.04<br>(0.03)                         |
| <b>Year 2019</b>   | -0.06<br>(0.09)     | 0.16<br>(0.12)          | -0.08<br>(0.09)            | 0.03<br>(0.03)                         |

|                     |                |                   |                  |                   |
|---------------------|----------------|-------------------|------------------|-------------------|
| <b>Year 2020</b>    | 0.13<br>(0.10) | -0.30**<br>(0.13) | 0.17<br>(0.11)   | -0.12**<br>(0.04) |
| <b>Year 2021</b>    | 0.04<br>(0.09) | -0.12<br>(0.12)   | 0.27**<br>(0.09) | -0.05<br>(0.04)   |
| <b>Observations</b> | 6615           | 5793              | 5051             | 4836              |
| <b>R2</b>           | 0.03           | 0.03              | 0.05             |                   |

All labour outcomes refer to graduates, and quality of university is the independent variable. For NEET, employment and informality, equation 1 is used, and for income, equation 2. Standard errors (in parenthesis) clustered at the individual and family level. The specification include individual, professional, family and social controls. Significance levels are given by:  
 \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$