

Southern perspectives. Global debates.

OCCASIONAL PAPER SERIES N°

64

Poor education and precarious jobs in Peru: Understanding who is left behind and why

Lorena Alcázar Micaela Bullard María Balarin occasional PAPER SERIES N° 64

Poor education and precarious jobs in Peru: Understanding who is left behind and why

Lorena Alcázar Micaela Bullard María Balarin

Publisher

Southern Voice Website: www.southernvoice.org E-mail: info@southernvoice.org

> First Published May 2020 © Southern Voice

Disclaimer: The views expressed in this study are those of the authors alone and do not necessarily reflect the views of Southern Voice or any other organisation(s) with which the authors are affiliated.

> ISSN 2307-9827 (Online) ISSN 2307-681X (Print)

Preface

Southern Voice's flagship initiative on the State of the Sustainable Development Goals (SVSS) has generated country-level, evidence-based analysis to enrich the global dialogue on the 2030 Agenda. SVSS is neither a typical data-driven analysis of progress nor a traditional monitoring exercise of Sustainable Development Goals (SDGs). Instead, through this research initiative, we seek to identify the 'second-generation' challenges of the global agenda along with the policy responses to address them.

Our cross-country and regional analyses show that, on the one hand, national governments have made discernible progress in designing policy frameworks aligned with the Agenda. The governments have recognised the importance of not leaving the most vulnerable behind. On the other hand, weak coordination among relevant stakeholders and lack of horizontal coherence remain as challenges in achieving the Goals. Silo approaches continue to undermine national governments' ability to address systemic problems and create the necessary conditions to end poverty for all. Paucity of financial resources, along with no changes in the allocative priorities, are symptomatic of most of the developing countries' drive towards SDGs.

With these challenges in mind, the SVSS report identifies three layers of critical action and analysis. First, we explore who is potentially excluded from deriving the benefits of SDG delivery within the country's contextual realities. Second, we recognise that the Goals are not necessarily additive (even within a holistic agenda), and delve into the links between the Goals and their interconnections, so as to maximise their synergies and protect against the trade-offs. Third, we explore the implications of the current conduct of the global institutions and policies for the national efforts to implement SDGs.

The study aims to identify which interest group is more at risk of being left behind on SDG 4 (quality education) and SDG 8 (decent work) and the factors influencing the resulting impacts in Peru.

We hope that this piece of Southern Voice's research will enlighten the thought process of the policy community and development practitioners in their efforts towards a fuller realisation of the 2030 Agenda.

Debapriya Bhattacharya, PhD Team Leader, SVSS Chair, Southern Voice and Distinguished Fellow, CPD

Acknowledgement

We greatly appreciate the support of Cristina Glave, Katherine Sarmiento, Maria Fernanda Rodriguez and Mauricio Saavedra with the research and qualitative work. We are very thankful to the Southern Voice State of the SDGs team, discussants, and participants in workshops in Colombo, Bangkok, and New York, for valuable comments throughout our research work, particularly Deb Bhattacharya, Andrea Ordóñez, and Estefania Charvet. We are also grateful to the reviewer of the final draft for her thorough comments and suggestions.

Abstract

Given the large inequalities in Peru, fulfilling the 'leave no one behind' UN 2030 Agenda commitment might become the country's largest challenge to SDG implementation. In light of this, understanding who is left behind, and why, gains particular importance. This study uses a mixed methodological approach to provide a baseline of the left behind in Peru and constructs detailed profiles of the excluded. We focus on SDG 4 (quality education) and SDG 8 (decent work) to identify who are most at risk of being left behind and the factors associated with their outcomes. We then conduct synergies and trade-offs analyses to observe the impact of educational underperformance on employment conditions. Our diagnosis finds that the left behind prevalently belong to traditionally marginalised groups, such as the rural poor, women, and indigenous populations. For example, poor, rural, indigenous girls are 91% more likely to be left behind in access to quality education than their wealthier, urban, non-indigenous peers. Our findings also suggest strong synergies between SDG 4 and SDG 8 for vulnerable Peruvians; being left behind in education at the ages of 12 and 15 significantly increases the probability of working precariously and being NEET at age 22. These synergies become particularly apparent when looking at gender: women were three to five times more likely to be working precariously than men with the same educational attainment.

Authors

Lorena Alcázar is a senior researcher at Group for the Analysis of Development (GRADE). Previously, she has been professor at the Pacífico University, economist at the World Bank, visiting researcher at the Brookings Institution and Advisor to the Ministry of Economy in Peru.

María Balarin is a senior researcher at Group for the Analysis of Development (GRADE). Her work focuses on the analysis and qualitative evaluation of educational and social policies, with a special focus on processes of policy implementation.

Micaela Bullard is a junior researcher at Group for the Analysis of Development (GRADE). Previously, she has served as a consultant at the World Bank and the International Finance Corporation.

vi

Content

Preface	iv
Acknowledgements	v
Abstract	vi
List of figures	viii
List of tables	viii
Acronyms and abbreviations	ix
Introduction	10
Research methodology	13
Poor education: Characterising the left behind	16
Vulnerable youth in Peru: Facing precarity and stagnation in the labour market	25
Synergies and trade-offs: The effects of being left behind in education on labour	
outcomes	35
Conclusions and implications	38
References	42
Appendices	46

List of figures

Figure 1. Share of Peruvian youth (15-29) by work-education dimension	27
Figure 2. Share of Peruvian youth by work-education dimension and LB status	28

List of tables

Table 1. Percentage of test takers in the ECE satisfying LB conditions	17
Table 2. Employment indicators for the youth in Peru	26

Acronyms and abbreviations

ECE	Peruvian Student Evaluation Census
ENAHO	Peruvian National Household Survey
ILO	International Labour Organization
INEI	National Institute for Statistics and Computing
LNOB	Leave No One Behind
LB	Left Behind
MDGs	Millennium Development Goals
NEET	Neither in Education, Employment, or Training
PISA	Programme for International Student Assessment
SDGs	Sustainable Development Goals
UN	United Nations
YL	Young Lives

Poor education and precarious jobs in Peru: Understanding who is left behind and why

Lorena Alcázar Micaela Bullard María Balarin

Introduction

The MDG period saw substantial improvements in development indicators globally. This progress, however, resulted from improvement in the well-being of the general population, while the most vulnerable groups remained trapped in situations of high precariousness (Stuart & Woodroffe, 2016). The 2030 Agenda addresses this concern by adopting the principle of 'leaving no one behind' (LNOB). Achieving this commitment requires governments to identify the characteristics of left-behind groups, considering gender, disability, geographic location, ethnicity, and other attributes, and implement policies to overcome the obstacles faced by these groups.

Adequately characterising the 'left behind' (LB) is particularly significant in Peru. This country achieved satisfactory results during the MDG period, reaching many targets before the 2015 deadline (Benavides et al., 2016). Yet concerns remained because improvements in development indicators were not accomplished equitably. For instance, in 2016, only 16% of rural children in Peru achieved satisfactory reading levels, compared to a national average of 46%. Employment inequality is also rampant: while unemployment affects only 4% of adults, 9% of youth are unemployed. Fulfilling the LNOB commitment might thus become Peru's largest challenge to SDG implementation. In light of this, understanding who is left behind, and why, gains particular importance.

The study focuses on SDG 4 (quality education) and SDG 8 (decent work) and on Peruvian youth¹. Youth vulnerability—which can stem from household deficiencies or inadequate education—can lead to unsuccessful insertion into the labour market, leaving youths further open to deprivations in income and stability and therefore susceptible to social exclusion (Furlong et al., 2006). In Peru, this age group faces tremendous challenges in both quality of education (Peru obtained the worst scores of the region in

¹ We will define youth according to the International Labour Organization categorization of those from age 15 to 29. This age range has been previously used in most studies on Peruvian youth unemployment and allows us to observe transitions from school to work.

PISA assessments, PISA 2015) and access to decent work (with four out of five employed young people working in the informal sector, ENAHO 2016).

In addition, 18% of Peru's youth are neither in employment, education, or training (NEET). This vulnerability hinders a successful transition into the labour market (Instituto Nacional de Estadística e Informática [INEI], 2017). Only focusing on the NEET when looking at youth vulnerability, however, overlooks another group that works in highly precarious jobs, earns inadequate incomes, and faces work instability and short job tenures. This study proposes to include the very precariously employed together with the NEET when examining youth labour vulnerability in Peru. Understanding the obstacles these groups face to access decent jobs is necessary to design and implement policies to overcome these challenges.

Attempting to identify the LB in Peru requires defining what being left behind entails. According to the 2030 Agenda, fulfilling the LNOB commitment requires bringing equality to countries and all their population groups, yet every government should uniquely adapt the definition of LNOB to its own national context (United Nations, 2015). Winkler and Satterthwaite (2017) argue that LNOB must move beyond aggregate outcomes and disaggregate data enough to observe the presence, magnitude, and intersection of multiple forms of inequality. Stuart and Woodroffe (2016) argue that the core commitment of LNOB is to tackle non-income-based inequalities (such as gender, ethnicity, or geographic location) and ensure above-average improvement of marginalised population sectors.

Hence, the literature suggests that the LB are individuals who lag far behind national averages in development indicators used to track SDG implementation. This study aims to identify these individuals and determine which factors are associated with their LB conditions. Belonging to commonly marginalised groups—such as indigenous peoples, women, and the poor—is commonly associated with underperformance in development indicators. This is not the only determinant of being LB; factors such as location, family structure, and educational characteristics are also relevant. Hence, this study aims to create detailed profiles of the LB in Peru that considers both conditions of belonging to marginalised groups (women or indigenous populations) and other individual, family, or community factors external to gender, ethnicity, or socio-economic condition.

The first step in identifying the LB is the setting of benchmarks of underperformance under which an individual is excluded from quality education and decent work. Examples of benchmark-setting for LNOB identification are available in the literature. Bhattacharya et al. (2017) use national household survey data to find individuals falling far below national averages in development indicators. They then observe which factors are determinant of their conditions and create a 'vulnerability index' that characterises the state of the LB in Bangladesh. Hence, an initial step in this study is to define under which labour conditions or educational performance a Peruvian is LB in access to decent work or to quality education.

As is common in the LNOB literature, this study uses 'vulnerable' and 'excluded' to refer interchangeably to the left behind. The LB condition entails a high degree of vulnerability. Although some literature on marginalisation refers to vulnerability as the ex-ante risk of falling into poverty (Pritchett et al., 2000; Chaudhuri, 2003), this study understands vulnerability in its alternative definition as signalling insecurity and helplessness (Chambers, 1989; Tesliuc & Lindert, 2002). Because vulnerability makes individuals easy victims to negative shocks, the vulnerable are highly likely to be left behind (Bhattacharya et al., 2017). In this study, we understand marginalisation as belonging to groups that are commonly experiencing inequalities—such as women and indigenous peoples.

This case study helps understand who is LB and why by creating a profile of the disadvantaged and identifying factors associated with negative outcomes in quality education and decent work. Observing how being marginalised affects the probability of being LB for Peruvian youth is an important part of our analysis. Hence, the study will construct detailed profiles that identify both the main drivers of vulnerability in work and education and how they interact with wider inequalities in Peru. We also look at the synergies and trade-offs between SDGs 4 and 8, focusing on the relationship between access to quality education and youth labour vulnerability. We aim to observe how being LB in education at a young age affected the possibility of being NEET or working precariously in early adulthood and compare that effect with belonging to traditionally marginalised groups.

Our diagnosis of youth exclusion in Peru finds that the LB prevalently belong to marginalised groups, who lag in both access to quality work and quality education. Main markers of social exclusion are rurality, poverty, gender, and ethnicity. For example, poor, rural, indigenous girls are 91% more likely to be LB in quality education than their wealthier, urban, non-indigenous peers. Our findings also suggest the existence of strong synergies between SDG 4 and SDG 8 for vulnerable Peruvians; being LB in education at ages 12 and 15 significantly increases the probability of working precariously and being NEET at age 22. These synergies become particularly apparent when looking at gender: women were three to five times more likely to be working precariously than men with the same educational attainment levels.

Our first section outlines the research methodology of the study, which combines econometric analysis of national databases with qualitative work based on the life stories of 30 vulnerable Peruvian youths. Section 2 presents our findings in relation to SDG 4 and is divided into two subsections. The first characterizes the left behind in education and the second conducts associated factor analysis to construct the profiles of those left behind. The third section provides a similar analysis for those left behind in employment. Section 4 analyses the effects of low-quality education on labour conditions for vulnerable young Peruvians. The final section concludes.

Research methodology

Understanding vulnerability requires multidimensional approaches that are conceptually and methodologically diverse. Our mixed method research uses a combination of quantitative and qualitative instruments. The quantitative analysis relied on secondary national data sources, using disaggregation mainly along the lines of income, gender, age, ethnicity, and geographic location as a tool for identifying inequalities. Econometric analysis of three secondary databases constructs detailed profiles of the LB that are nationally representative and statistically sound, and to identify factors associated with vulnerability. The qualitative aspect of the study included in-depth interviews with vulnerable youth to enrich and complement econometric results with individual life stories.

Quantitative approach

The study's methodology involves three main parts: categorisation of the left behind, analysis of factors associated with their condition of LB to construct profiles, and estimation of synergies and trade-offs between the LB in terms of access to quality education and access to decent work.

The LB in quality of education are identified on the basis of their scores in standardised testing in formal primary and secondary basic education, setting a benchmark of performance far below the national average, under which we can consider individuals to be LB. We use two national databases measuring education performance: the Student Evaluation Census (ECE) and the Young Lives (YL) longitudinal study on Peruvian child poverty. In the ECE, we defined the LB as those at the lowest level of satisfaction determined by the Peruvian Ministry of Education. In Young Lives, we defined the LB in education as those in the lowest 20% of cognitive testing scores. Further reasoning behind these categorisations can be found in section 2.1 of the study. Because both databases contain information on the academic performance of students, characteristics of their schools, and their socio-economic contexts, we were able to observe which factors were associated with left-behind conditions.

The databases are also complementary in their uses. The ECE is useful for building a nationally representative profile of the LB that bases students' evaluations on the Peruvian national curriculum. However, it has very limited data on students' socio-economic level. Alternatively, the YL does not follow the national curriculum in its evaluations, but contains comprehensive data on children's development, family context, socio-economic condition, and community dynamics. It measures the quality of education through evaluations of reading, vocabulary, and mathematics. In addition, the ECE only contains information on enrolled students while YL also allows us to look at children who have dropped out of school, and hence we include them in our LNOB analysis. Furthermore, the YL dataset is longitudinal, tracking students through 15 years, while the ECE is a one-time evaluation.

The study uses ECE results for 2016, the last available at the time of the study. The 2016 ECE contains results for 204,371 second-grade primary students and 502,521 second-year secondary students. The ECE evaluates students at primary (2nd and 4th grades), and secondary (2nd year) levels. All students in both private and public schools (except for institutions that administer to less than five students in the grade evaluated) are assessed. We work with the ECE results for 2nd grade of primary school and 2nd year of secondary school, given that socio-economic indicators are not available in the 4th grade of primary education database.

The second database is YL, an Oxford-led longitudinal study on child poverty in four countries: Peru, Ethiopia, Vietnam, and India. The study followed 2,750 Peruvian children in 20 districts for 15 years. There were two cohorts: an older one born in 1994 and evaluated since age 8, and a younger one born in 2001 and evaluated since age 1. They were visited and surveyed in five rounds, one every three to four years. YL used a pro-poor sampling approach that is nationally representative except for the wealthiest 5% of the population and is representative of Peru's ethnic and geographic diversity (Escobal & Flores, 2008). Given the association between lower socio-economic levels and inadequate education, it is unlikely that a pro-poor sampling approach will introduce significant bias in our results of the LB. Furthermore, because the database is longitudinal, it allows us to quantify the effects of education performance at different points of childhood on subsequent labour market insertion. The YL can therefore observe the effect of being LB in education at ages 12 and 15 on the probability of being LB in work at age 22. This allows us to quantify the synergies between access to decent work and quality education for young Peruvians.

The identification of the LB in access to decent work is based on the information provided by the 2017 Peruvian household survey (ENAHO), which is nationally representative. ENAHO contains information on households' socio-economic characteristics and structure. It also includes an employment module with sufficient information to characterise formal

and informal employment, and an education module with information on educational attainment.

The study observes two LB conditions in decent work. The first is young people who are in neither employment, education or training, commonly referred to as NEET. The second category is a labour condition associated with Peru's most marginalised populations, which we will categorise as precarious employment, and which is further described in section 3.1.

The main objective of the econometric analysis is to construct profiles of the LB based on the characteristics most strongly associated with social exclusion in work and education. Once the left behind in SDGs 4 and 8 are identified, the next step is to conduct regression analysis and, based on the existing literature, observe which factors are commonly associated with the condition of being LB in quality education and decent work. This study employs non-linear logistic regression models to calculate the effects of associated factors on the binary condition of being left behind or not. The logistic regression model used follows the equation outlined below.

$Pr(Left Behind)_i = f(\beta_0 + \beta_1 Individual_i + \beta_2 School_i + \beta_3 Community_i + \mu_i)$

Then we create a profile of individuals most likely to be LB. This process was carried out through analysis of the logistic regression results by first selecting factors that were strongly associated with underperformance and combining them to describe the characteristics of the LB. Once the characteristics were identified, we selected individuals in the ECE and YL databases who fit the profile and calculated their mean scores and compound probability of being LB when compared to an opposite reference group.

The econometric analysis also aims to understand the synergies and trade-offs between being left behind in access to quality education and decent work. In order to carry this out, the study used panel data from YL's older cohort, which followed 608 children from ages 8 to 22. Using the definition of left behind in decent work presented by the study (NEET and precariously employed), we observed the effects of being left behind in quality of education on labour conditions in early adulthood through logistic regression analysis.

A second application of synergies and trade-offs analysis in the study observed how belonging to traditionally marginalised groups (being poor, rural, indigenous, or women) affected the probabilities of being LB in education and decent work. The construction of LB profiles allowed us to look at the effects of socio-economic level, gender, indigeneity, and rurality on the probability of being excluded in the implementation of SDGs 4 and 8.

Qualitative Approach

The qualitative analysis consisted of the construction of life stories based on in-depth interviews of vulnerable youth. The life stories of interviewees were used to detect unobservable variables in the quantitative analysis and overarching factors affecting participants' trajectories and their transition from school to work. This enriches and complements the study's quantitative analysis.

The sample consisted of 39 NEET or precariously employed youths from rural and urban areas. The urban sample of 30 youths was taken from three districts in urban Lima: San Juan de Lurigancho, Chorrillos, and Ventanilla, all with a strong migrant presence and high NEET rates. Within each district, we worked in areas of greater vulnerability in accordance with INEI's 2013 poverty maps. The rural sample of nine youths was composed of three individuals located in the Andean highlands (district of San Buenaventura, department of Lima) and six located in the Amazon rainforest (district of Yurimaguas, department of Loreto). These locations are relatively isolated settlements with very limited access to infrastructure and public services. They are highly dependent on subsistence agriculture, cattle farming, and smallholding commerce, industries where precarious work is common in Peru.

Participants selected for the study had to fulfil the following conditions: be aged 18 to 26, and be neither working nor studying, or working but only in casual jobs. We also sought to include participants with varying characteristics along the lines of gender, educational attainment, and maternity or paternity status.

Poor education: Characterising the left behind

Peru achieved considerable progress in ensuring universal access to education during the MDG period, reaching 91% enrolment for primary-aged children and 84% enrolment for secondary-aged children in 2016 (INEI, 2017). Despite these advances, the Peruvian education system continues to face profound issues of quality. According to the Student Evaluation Census, 73% and 54% of primary education students do not achieve satisfactory levels in mathematics and reading comprehension, respectively. (ECE, 2016). The results are even worse for secondary education, where 90.5% and 86% of students do not achieve satisfactory levels in mathematics and reading, respectively (ECE, 2016).

International standardised testing tells a similar story. Although Peru's PISA results have improved from last in 2012 to 64 of 70 in 2015, Peru still performs poorly.

Even considering that most countries choosing to participate in PISA testing are more developed than Peru, Peru still underperformed when compared with countries of similar income levels (Benavides et al., 2014). Furthermore, national performance gaps are widening: according to PISA testing, the gap between the highest and lowest socio-economic quintiles in Peru grew by 29 percentage points between 2000 and 2009 (Benavides et al., 2014). This high inequality calls for a greater understanding of students who are LB in terms of access to quality education.

Categorising the LB in education

As mentioned in the methodological section, we use two databases—the Student Evaluation Census (ECE) and YL—to carry out our LB analysis. Each database requires a different definition of being LB, depending on how its standardised tests are structured.

The ECE measures competency in reading and mathematics. Grade point cut-offs chosen by the Ministry of Education determine a student's achievement across three categories for primary (starting level, in process, and satisfactory) and four categories for secondary (before starting level, starting level, in process, and satisfactory). The Ministry of Education considers the lowest achievement level to be far below the minimal educational attainment expected from students' age group by the national curriculum. Thus, for the purposes of this study students who are LB in education are those whose ECE scores are at the lowest level of satisfaction² and represent the following percentages of the general population of students (see Table 1).

ECE Year	Left behind in reading	Left behind in mathematics
Primary (2nd grade)	5.6%	24.2%
Secondary (2nd year)	20.1%	31.9%

Table 1. Competency levels in mathematics from PASEC, 2014 (%)

Source: ECE (2016). Elaborated by the authors.

² Our results on LB in education were robust to changes in the definition of LB to include both the lowest and second lowest levels of satisfaction on the ECE.

Similarly, to the ECE, YL administers tests in vocabulary, mathematics, and reading comprehension³. These tests predict educational performance and thus are indicators of the quality of education. Unlike the ECE, however, the cognitive evaluations used in the YL study do not have pre-established satisfaction levels based on skill achievement. In response to the challenge of ensuring SDG accountability, some international development institutions have proposed to observe the lowest quintile of the population, tracking their progress in indicators for poverty, education, and health (DEVINIT, 2017). Following this trend, we define the LB in education using YL test results as those children receiving the lowest 20% of scores in every evaluation. Rasch standardised test scores were used for both the YL and ECE regressions.

Factors associated with the LB in education

The global literature on factors associated with vulnerabilities in education is expansive, both in observing enrolment and evaluation results. Factors at the level of the individual which affect schooling outcomes include gender, health status (with an emphasis in the literature on malnutrition and anaemia), disability, ethnicity, and early education attendance (Barnett, 1995; Kalmijn & Kraaykamp, 1996; McLaughlin & Saccuzzo, 1997; Fentiman et al., 2001; Mohsin et al., 1996; Winding et al., 2012). Household characteristics, such as socio-economic level, parental education, rurality, and geographic location, also affect both enrolment rates and the quality of education provided (Eagle, 1989; Cairns et al., 1989; Zhang, 2006; Lutz, 2007). Finally, school characteristics, such as administration type (public versus private), class structure, teacher preparation, and school infrastructure, also impact schooling outcomes (Woessmann, 2006; Glewwe et al., 2013; Chudgar & Quin, 2012).

In Peru, the literature has focused on the persistence of inequalities despite the country's considerable decreases in poverty during the past decade. Escobal et al. (2012), applying the index of human opportunities, found that Peruvian children face an 'unequal floor issue'—their access to quality education varies systematically depending on their place of birth, parental income, gender, and ethnic group. The recent Peruvian literature on schooling outcomes has greatly benefited from the YL. Its data has been used to show the most important factors associated with gaps in education were maternal education levels, household socio-economic status, ethnic background, and residence (Cueto et al., 2018). Given the large number of indigenous peoples in Peru (16% of the population),

³ Tests include the Peabody Picture Vocabulary Test (PPVT), which measures cognitive reasoning and vocabulary attainment, the quantitative sub-test of the Cognitive Development Assessment, which measures mathematical reasoning, and the Early Grade Reading Assessment, which measures reading comprehension.

a segment of the literature has focused on examining the role which ethnicity plays in determining schooling outcomes. Studies find that indigeneity is associated with a higher incidence of grade repetition and school dropouts (Kudó, 2004; Rodriguez Lozano, 2012).

Based on this literature, ECE and YL results for cognitive testing were used to build a profile of LB students using the benchmarks described above. The calculation of the probability of being LB was carried out through a non-linear logistic regression, as described in section 1.1. Appendix 1 presents the predicted probabilities associated with each factor used in the model for the primary and secondary ECE in reading comprehension and mathematics (clustering standard errors at the school level). The secondarylevel ECE collects more socio-economic information than the primary one,

In Peru, the literature has focused on the persistence of inequalities despite the country's considerable decreases in poverty during the past decade.

explaining why effects for parental education, indigeneity, and preschool attendance are only included in the secondary regression.

For YL, we used results from survey rounds 3 (2009) and 5 (2016)⁴, for a total sample size of 1,860 children. We ran a separate regression for each round, and for reading and mathematics evaluations. Predicted probabilities of these regressions are reported in Appendix 2.

The predicted probabilities highlight factors associated with being LB in education for Peruvian students. Although the sample size for YL is much smaller than the ECE and the evaluations also differ, there are many similarities between the regressions modelled on each database. In terms of gender, for instance, the ECE model shows no negative gender gap between the performance of primary-aged boys and girls (in fact, there is a small but highly significant pro-female 1% effect in the reading evaluation). The results for secondary students displayed a similar positive gender gap in reading; however, the effect counters in mathematics, where girls were approximately 43% more likely to be LB than boys. This result illustrates that the gender gap is increasing as students' advance grades. The small gender gap in mathematics in the ECE for secondary education is also present for primary and secondary-aged YL children.

Qualitative data collected for the study sheds light on the mechanisms behind these gender gaps. Many female interviewees remarked how gender roles were imposed on them early in their schooling. Girls were disproportionately expected to contribute to housekeeping activities and sibling care. Some of the women interviewed attributed educational repercussions to these gendered expectations. The case of Rosario, who lives in the rural Amazon region and remarked how her responsibilities working at her grandmother's land plot and looking after her siblings affected her education, is very illustrative.

Interviewer: And why do you think you didn't like mathematics that much?

Rosario: There wasn't much space to practice, and no time either...when I was older, my grandma wouldn't let me practice; she would take me to work at the farm...

Interviewer: And how did you feel about it?

Rosario: Badly...because they didn't let me do my schoolwork, I had no time, they'd make me work too much...

Rosario, rural Amazon, 22 years old

Continuing with the quantitative analysis, the marginal effects of socio-economic level are also highly significant for both databases, especially in the case of the mathematics primary evaluation: a child coming from a low socio-economic status family has 16% more chance of being LB in the ECE than one from the highest wealth level.

Rural schools and single-teacher-classroom schools, commonly associated with deficient pedagogy and infrastructure, also carried a greater probability of students being LB. The effect of rurality was stronger for secondary-aged children, who were 14% more likely to be LB in both reading and mathematics. YL children who lived in rural areas were 11% more likely to be LB than their urban counterparts. Similarly, there are clear gaps in geographical performance. Children in the Amazon region showed the largest probability of being LB for all tests.

The effect of indigeneity on being LB is unobservable in the primary-age ECE, but it had the highest magnitude of all factors associated with underperformance in secondary

education. Indigenous students were 15% and 18% more likely to be LB in reading and mathematics respectively. Indigeneity is observable for primary-aged children in YL and had similar strong effects. The life stories of indigenous individuals can illustrate some of the mechanisms behind these inequalities. They recounted facing bullying from peers, language barriers, and even discrimination from teachers due to their indigenous heritage. Emilia, a young woman from Yurimaguas whose first language is Shawi, remarked how she experienced rejection by her schoolteachers, who paid less attention to her compared to her non-indigenous classmates.

Interviewer: How did you feel that at your school?

Emilia: Sometimes I asked my teachers and they didn't pay me attention...only paid attention to others...I felt bad...as if I weren't a student...I don't know

Interviewer: And why did that happen?

Emilia: I don't know, they saw me different than everyone else.

Emilia, rural Amazon rainforest, 22 years old

Vulnerable educational contexts in a child's family are also associated with being LB in schooling. Parental education has significant and positive effects in both YL and the ECE. Similarly, children that attended early education significantly decreased their chances of underperformance. For the ECE (secondary), attending preschool decreased the likelihood of being LB by approximately 6% for reading and 7% for mathematics.

YL data shows how being underweight increased the probability of being LB at eight years old by approximately 6% in mathematics and 10% in reading. Not reading for fun was also a factor significantly associated with being LB for all examinations.

We then aggregated determinants of the LB in education that were statistically significant to create profiles and calculated the overall probabilities of being LB if fitting that profile, as described in the methodological section. Our profiles for the LB in education can be seen in the infographics below. The probabilities of being LB if belonging to our profile when compared to an opposite reference group were as large as approximately 91% (mathematics in secondary, ECE). We can observe that children belonging to marginalised groups, such as women and indigenous peoples, are common features of the LB profiles, making those children extremely prone to receiving an inadequate education.

Who are the left behind in education in Peru?



Who are the left behind in education in Peru?



Who are the left behind in education in Peru?



evels and parents with higher studies, attending urban orivate schools in Lima

attending urban private schools in Lima

Vulnerable youth in Peru: Facing precarity and stagnation in the labour market

An indicator commonly used to measure youth vulnerability since the 1990s is the NEET rate, which embodies a form of labour vulnerability that exists between recognised unemployment and stable employment (Furlong, 2007). Observing the NEET rate has become common in the literature on youth vulnerability, and is included as the main indicator for SDG Target 8.6. It is, however, commonly criticised, given that it does not differentiate between subgroups of vulnerable youth that do not work or study as a result of heterogeneous contexts (Furlong, 2006). For instance, NEET includes youths looking for employment and those who are not youths who might be engaging in eventual jobs or criminal behaviours, and housewives who remain at home to watch over their children—all of these being largely heterogeneous subgroups with varying attitudes.

The term's validity as an indicator making youth vulnerability more visible is also hindered by excluding the young who are employed but work in conditions of extremely high precarity (Furlong, 2006). According to Reiter et al. (2015), these precariously employed youths are 'NEETs in disguise', who combine periods of unemployment with badly paid, shortterm jobs, facing their own set of labourrelated vulnerabilities. Observing also the precariously employed is particularly important in Peru, where high informality rates can block youth from accessing decent work opportunities. Thus, although



this study considers the NEET, it will also include the precariously employed, a subgroup with very different characteristics, within its definition of the LB condition.

Defining what characterises the precariously employed is difficult because of the general precarious nature of the Peruvian labour market. The ILO definition of decent work, which considers conditions of safety and dignity, respect for worker rights, adequate wages, and social protection, applies only to a very small percentage of the Peruvian labour force. Gamero's decent work index, which is designed for the Peruvian labour market based on the ILO definition, shows that only 12% of adults and 9% of young

Peruvians access decent work (Gamero, 2010). Even a more lenient definition of nondecent work considering informal work would not help identify those LB in the Peruvian context, given that the country currently has an 82% youth informality rate (Table 2).

Employment indicator	Adult population	Young population (15-29)
Unemployment rate	4.2%	9%
Informality rate	74%	83%
ILO Decent Work Index (Gamero, 2010)	11.5%	9.2%
NEET rate	N/A	18.3%

Table 2. Employment indicators for youth in Peru

Source: ENAHO (2017). Elaborated by the authors.

Thus, we define precarious work (part of the LB together with the NEET group) as a combination of various conditions attempting to identify the most left behind: it is informal, with no access to benefits, and with incomes that fall far below the minimum wage. Precarious employment also entails short job tenures and limited job security, from which it is difficult to transition to decent work. Carlos, one of the youths interviewed, provided an excellent description of what we consider to be precarious work in Peru:

Mmm, I mean...there's work no? You get it, I mean, they look for me sometimes. There's work in construction, sometimes in farming. Mmm...jobs that are, like, very short, sometimes there's work with motorcycles (in transport). I mean, whatever you get, right? Nothing is planned for the following day.

Carlos, rural Andes, 18 years old.

Categorising the LB in decent work

As mentioned in the introduction, the study defines youth according to the ILO categorisation of those from age 15 to 29. Using ENAHO data, we observe that the majority of Peruvian youth (42%) work exclusively, followed by 26% who only study. 14% do both, while the remaining 18% are NEET. Given that the NEET are a subgroup of interest for our categorisation of the LB, we further divide the NEET into three relevant groups: those who are currently looking for work (13%), those who are not looking for jobs (40%)

and those, mostly women, who are not looking for work and report household chores as their main occupation (47%). This housewife subgroup shows important differences when compared to the rest of the NEET population, which will be discussed later in the study.



Figure 1. Share of Peruvian youth (15-29) by work-education dimension

Source: ENAHO (2017). Elaborated by the authors.

Figure 1 shows that if we only considered the NEET, 18% of the youth in Peru would be LB. This would negate the vulnerability of a second important subgroup: the very precarious workers who are currently included in the works-only section of the chart and have little to no probability of a successful transition into decent employment.

For detection in the ENAHO database, precarious workers must only be working (and not studying). Independent precarious workers must make less than half the minimum wage, which signals extremely low earnings for Peru. They must also fulfil at least one of the following conditions: work informally, work in an improvised or casual setting, or work in a business that has been operating for less than six months. Dependent workers are precarious when an individual either makes below half the minimum wage per hour and is informal, or makes less than the minimum wage per hour and works less than 15 hours a week. We also included unpaid family labourers. We observed that this condition was particularly prevalent in rural settings, as 66% of unpaid family labourers are rural.

Having defined precarious employment, we can observe that 12% of Peru's youth are only working and doing so precariously (see Figure 2). This means that almost a third of the youth who work only, do so in precarious jobs. Aggregating the NEET and precarious workers, we estimate that 30% of Peru's youth is LB in terms of SDG 8 and faces a high risk of an unsuccessful transition into adulthood.



Figure 2. Share of Peruvian youth (15-29) by work-education dimension and LNOB status

Factors associated with the LB in youth labour

The literature on youth vulnerability has associated periods of NEET activity with lower salaries and increased difficulties in finding a job, observing heterogeneous effects of gender and educational level. This increased risk of social exclusion as a result of the NEET condition has been highlighted in developing countries like Mexico, Argentina, and Brazil (Szekely & Karver, 2015; Cruces et al., 2012). Factors associated with the NEET condition include socio-economic background, geographic location, and parental education levels (Alfieri et al., 2015; Bynner & Parsons, 2002). Low or incomplete educational attainment is also associated with being NEET (Bynner & Parsons, 2002; Maguire, 2015; Vasile & Anghel, 2015; De Hoyos et al., 2016). Finally, the NEET are more common in urban settings, being largely a characteristic of urban youth vulnerability in Latin America (De Hoyos et al., 2016). The Peruvian literature on youth vulnerability observes that three-quarters of Peruvian NEET are women. Being married or cohabiting, having children, and having low levels of educational attainment also increase the probability of NEET status (Málaga et al., 2016). In terms of work precariousness, the literature is scarcer. Still, Alcázar et al. (2018) show that being female, failing to complete primary schooling, and living in poverty increase the risk of precarious work in Peru.

We estimated a logistic regression model using Equation 1, which is outlined in the methodological section, and our definitions of work vulnerability as the dependent variables. Together with our already defined LB conditions of NEET and job precarity, we ran the model on a third dependent variable: the NEET excluding housewives, in order to examine some behavioural heterogeneities between the different subgroups of NEET. Appendix 3 shows the predicted probabilities of being LB by the associated factor for the youth population of Peru⁵.

The regression results of Appendix 3 show that being a woman is strongly associated with being LB in decent work. Being a woman increases the likelihood of being NEET by approximately 11% and of working precariously by approximately 12%. The interaction of being female and having a child in the household⁶ was one of the factors most strongly associated with labour vulnerability. It raised the probability of being NEET by approximately 28% and of working precariously by 40%. These findings suggest that the overrepresentation of women in LB conditions can be partly explained by the strong presence of gender roles in Peruvian households. In order to gain an in-depth look at gender effects, regressions separating the sample by gender are also included in Appendix 4.

Suffering a recent health shock in the past month also increased the probability of precarious work by approximately 2%. In the qualitative data, we found clear examples of how health shocks affected the educational trajectories of vulnerable youths. These health shocks were often directly related to unsafe working conditions. Manuel, who lives in the rural highlands of Canta, was kicked in the face by a horse while working at age 13. The accident caused him to drop out of school, as he had to travel to Lima to receive treatment, hence affecting his educational and work trajectories.

Disability had a large and significant effect in both LB conditions: being disabled increased the probability of being NEET by approximately 26% and of working precariously by approximately 13%. The strong effects of disability were also observed in the qualitative data, where handicaps presented severe repercussions. Juan, who lives in the rural Amazon, suffered a motorcycle accident that hindered his movement and his ability to continue working his physically demanding jobs. The accident resulted in a considerable increase in health-related costs, meaning Juan could not fulfil his plan to complete his basic education. It also limited Juan's access to better-paying formal jobs. As a result, Juan became a NEET and now only works helping in the family farm.

⁵ Although we centre on the 15-29 age group, the results presented were robust to changes in definition of youth to the age group 15-24.

⁶ ENAHO data does not allow us to determine with certainty whether the women interviewed have children or not. We use the presence of a child younger than five in the household as a possible signal that the woman either has children of her own or might have to care for children who live with her.

The results also highlighted differences in the nature of the NEET and the precariously employed. In accordance with the NEET literature, this condition is shown to be largely urban, with rurality decreasing the probability of its incidence by approximately 5%. Job precarity, on the other hand, was approximately 15% more likely for rural individuals than urban ones. Similarly, while indigeneity decreased the likelihood of NEET by approximately 3%, it increased the likelihood of precarious work by approximately 3%.

The regressions also showed differences in the effects of age between NEET and the precariously employed: while the probability of being NEET increased with age, the likelihood of working precariously decreased as individuals get older.

The regression model classifies socio-economic levels across four categories. The predicted probabilities must be interpreted in terms of the reference group: the non-poor. The socio-economic level had significant effects on both the NEET and the precariously employed, although the magnitude of the effect was much larger on the latter. For instance, while extreme poverty increased the probability of NEET by approximately 7%, it increased the probability of labour precarity by approximately 28%. These differences might lie in the fact that although the NEET condition is associated with social marginalisation, many youths living in poverty cannot afford to be NEET and are likely to be in precarious employment. There were also differences in the regional probabilities of being LB. Youths were more likely to be NEET if they came from metropolitan Lima than if they came from the Andean highlands or Amazon rainforest. Precarious employment, on the other hand, was more probable in Andean (by approximately 20%) and Amazonian (by approximately 20%) contexts than in Lima.

To focus on the effects of gender on LB conditions, we ran regressions separating our sample of Peruvian youth by gender. Appendix 3 shows the predicted probability results of these regressions. By looking at effects separated by gender, Appendix 3 further confirms how the LB conditions in relation to decent work can be exacerbated by traditional gender roles. The presence of children younger than five significantly increased the chance of a woman being NEET and decreased the probability of a man working precariously by 7%. Having a spouse or cohabiting with a partner had opposite effects between men and women. While cohabiting males had 6% less chance of being NEET, women were approximately 18% more likely to be, as they were likely expected to remain in the house and work on domestic chores once partnered. The difference is repeated for precarious employment. While the probability of being NEET reduced with age for males, the opposite was observed for females, who became more likely to be NEET as they aged and likely bore children. The qualitative data-backed our econometric findings on the role of gender on youth labour vulnerability—several female participants reported on the effects of gender discrimination and stereotypical gender-role structures on their life trajectories (see Box 1).

One of the most concerning findings in Appendix 3 are the effects of educational attainment on labour precarity. Fewer years of schooling were associated with increased probabilities of being LB for both men and women. The magnitude of the effects, however, was considerably greater for precariously employed women. While failing to complete primary school only increases the likelihood that a man works precariously by 4%, for a woman, this likelihood increases by 21%. This difference is repeated for all educational attainment groups, where men's probabilities of being LB are three to four times smaller than those of women. These results suggest that women are punished more harshly than men for having fewer years of education in the Peruvian labour market.

We then aggregated factors associated with labour that were statistically significant to create profiles and calculated the overall probabilities of being LB if fitting that profile, as described in the methodological section. Our profiles for the LB in labour can be seen in the infographics in the following pages. Our characterisation reveals that individuals most likely to be LB as NEETs are women living with children aged five or younger, who are not the heads of households and are married or cohabiting. They did not complete primary school and live in situations of extreme poverty in urban Lima. They are disabled and non-indigenous. The women fitting this profile, illustrated by the case of Luzmila in the infographic, are approximately 91% more likely to be NEETs than the reference group. Those most likely to be LB as precarious workers are women who are living with children younger than five, that are not the head of household, are married or cohabiting, did not complete primary school, and live in extreme poverty in rural areas of the Andean highlands. They are indigenous, disabled, and experienced a health-related shock in the past month. Such women, illustrated by the case of Ruth in the infographic, are approximately to be working precariously than the reference group.

Box 1. The women who are left behind: Gender roles and work trajectories in Peru

Gender roles can condition the labour trajectories of women by associating female participation with housekeeping activities such as cooking, cleaning, and care. The process through which these responsibilities are assumed can vary. In many cases, it is normalised as part of the daily routine, imposed or even linked to episodes of violence. Hence, women are conditioned to bear domestic burdens in contexts of high vulnerability within the household.

Since age 8 I've started to cook, wash clothes, clean, be a mother, so to say...When I added too much salt to the food or burned something, I'd get hit. Only hit us, screaming, insults only...I would watch the news and see that a dad has raped, has raped and has gotten her pregnant.

Mónica, urban coast, 22 years old.

Such experiences in childhood can condition work expectations once women enter the labour market. Domestic work responsibilities reduce the time available for women to work outside of the household, especially after having children, thus increasing the probability of NEET outcomes.

I don't work anymore. I want to work, but the problem is the boy...he doesn't have who to stay with, who would he stay with. Carmen, rural Amazon, 20 years old.

Another way in which gender roles affect the labour trajectories of vulnerable women is through limiting the types of work experiences available to them. In general, the supply of jobs for young women with low qualifications is associated with domestic tasks. They are mainly offered positions in cooking, childcare, care of elderly or diseased people, or laundry.

I always dedicated myself to household chores and after that, left that and went to work in restaurants, as a waitress.

Blanca, rural Amazon, 22 years old

Using the results from the associated factor analysis, we then compounded the strongest determinants of being LB to create LB profiles for the NEET and precarious employment, as explained in the methodological section. The resulting profiles are presented in the LNOB infographics below. We can observe from the infographics that fulfilling all the characteristics of our profiles had massive effects on the likelihood of being LB. Individuals in our NEET profile were approximately 91% more likely to be LB than an opposite reference group. For the precariously employed, this probability

Individuals in our NEET profile were approximately 91% more likely to be left behind than an opposite reference group.

was approximately 97%. A large difference between both profiles was that the NEET are likely urban and non-indigenous, while the precariously employed were rural and indigenous, but there were other similarities between the profiles. They both showed that women who are likely to be mothers, cohabitating, not the head of household, living in situations of poverty, and with disabilities are the most likely to be LB in employment in Peru.



ЭЧТ

NE

Ξ

areas.

basic education.



Synergies and trade-offs: The effects of being left behind in education on labour outcomes

It is widely recognised that poor education is at the core of the youth's difficulties in accessing decent work. The aim of this section is to look beyond this documented relationship and explore how it affects the LB in Peru. We are interested in observing and measuring the roles of the quantity and quality of education in determining the probability of Peruvian youth accessing decent jobs. This includes looking at how being LB in education as a child, in comparison to other factors such as belonging to a marginalised population, affects an individual's likelihood of being NEET or precariously employed.

We explore these synergies and trade-offs using YL longitudinal data that observes the school-to-work transitions of the LB. We found these transitions looking at the older YL cohort, comprised of 608 children successfully tracked across the 15 years of study. Older cohort individuals were eight years old in the first round of data collection, and on average 22 years old during the round 5 survey in 2016. Hence, we have data on their educational performance in childhood, adolescence, and their labour condition as they begin to enter the labour market. It is important to consider that YL older cohort data only allows us to look at youth labour as far as age 22. Because the individuals we are observing are on the lower end of the youth age spectrum, they are likely to have comparatively less work experience, increasing the likelihood that they are employed precariously in comparison with the complete youth group aged 15 to 29. It is also important to note that the attrition rate for the older cohort is one of the highest of all survey rounds in the Young Lives Study, at approximately 14% (YL, 2018). This is likely explained by the high geographic mobility experienced by young Peruvians, moving to pursue labour or education opportunities. Despite this, the attrition rate remains modest compared to other longitudinal studies of a similar nature (Escobal, 2015). The literature shows that attrition in YL is a primarily random phenomenon (Outes-Leon & Dercon, 2008; Sanchez & Escobal, 2019). The difference in averages between sampled and attrition households in Peru suggests that, on average, there are no significant differences in the gender, ethnicity, age education of the mother, and wealth index (Escobal, 2015).

The first step in our synergies analysis is to look at the older cohort at age 22 and identify the LB. Applying our definition of precarious work, we see that approximately 13% of the total YL sample was only working and doing so precariously (the precarious work rate in the ENAHO database was approximately 12%). Young Live's NEET rate of 11% was lower than ENAHO's 18% rate, a difference explained by the age factor.

Once we categorised individuals in round 5 based on their labour conditions, we flagged students who had been LB in education in previous rounds using the definition of the LB in education as the lowest 20% of scores in cognitive testing, as developed in section 2. YL did not administer the same evaluations for all survey rounds; we could only use cognitive testing results from rounds 2 and 3, when individuals were 12 and 15 years old, respectively. We then used a logit model to infer how LB labour conditions are affected by performance in school, controlling for gender, indigeneity, socio-economic level, rurality, and region. The predicted probabilities of labour condition given a LB condition in education are presented in Appendix 5. We also ran separate regressions on children who had not completed secondary school to observe the effects of access to education on labour vulnerability.

Unsurprisingly, the overall results point at a strong and significant relationship between being LB in education and being LB in terms of access to decent work when entering the labour market. Children who underperformed in cognitive testing at 15 in mathematics and reading were approximately 7% and 8% more likely to be NEETs once they entered young adulthood, respectively. Similarly, the LB conditions were significantly associated with being LB in all evaluations from age 12 to 15. The results also show that receiving a low quality of education affected the precariously employed more than the NEET. Academic underperformance at age 12, for instance, was only significantly associated with labour precarity, and not with NEET status. The magnitude of predicted probabilities at age 15 was also larger for labour precarity than for NEET. Dropping out, however, had a greater effect on becoming NEET than on being precariously employed, although both effects were significant.

The limited sample size of the older YL cohort hinders our ability to run regressions for marginalised groups—such as women and indigenous people. Despite this, we ran regressions on both LB labour conditions (NEET and precarious workers) to estimate how the effects of quantity and quality of education compared to other associated factors, including belonging to marginalised groups. We ran regressions including years of education and Rasch scores for reading and mathematics at age 15. Results from this set of regressions can be observed in Appendix 6, which also controlled for socio-economic level and region.

Educational attainment had a significant and negative effect on precarious work; each marginal year of education decreased the probability of working precariously by approximately 3%. Nonetheless, years of education ceased to be significant once we added the proxies for educational quality—scores in cognitive tests for mathematics and reading. These results show how education quality seems to be more important than quantity in determining precarious working conditions. This finding gains particular

importance considering the extremely poor educational quality offered to commonly marginalised groups in Peru, as highlighted by the LNOB profiles.

The nationally representative profiles of the LB in education and work constructed in the study allow for an alternative way to observe synergies and trade-offs between work, education, and other traditional marginalising attributes such as gender, ethnicity, poverty, and rurality. We have been able to observe how belonging to four commonly marginalised groups in Peru—women, the poor, the rural, and indigenous peoples—affects the probability of being LB in work and education. By comparing the predicted probabilities of being LB for these groups, we can observe how conditions of poverty and inequality affect education and labour outcomes for Peruvian children and young adults. Appendix 7 collects the predicted probabilities of being LB in our profiles by marginalised group (coefficients were taken from the regressions presented in Appendix 1 and 3).

Our ECE results show a pro-female gender gap in primary-level reading and suggest no significant differences in performance for mathematics between girls and boys. Although girls show lesser or equal probabilities of being LB in basic schooling (except for secondary math), they are much more likely to be LB once they enter the labour market. Women were approximately 11% more likely to be NEET and approximately 13% more likely to work precariously than men. This suggests that despite equal or superior test results in education, women are disproportionately discriminated against in the labour market. As discussed in the previous section, women are three to five times more likely to be working precariously when compared to similarly educated men—for instance, while failing to complete basic education increases the likelihood of a man working precariously by 4%, for a woman this increase will be 21%.

Another evident performance inequality concerns indigenous peoples, who fared worse in all LB outcomes except for the NEET. Indigenous individuals performed particularly worse in education, where they were approximately 15% and 18% in reading and mathematics respectively more likely to be LB than non-indigenous children.

Similarly, belonging to the poorest socio-economic level had some of the largest significant effects on being LB. Poverty had large and significant effects on education. For instance, students at the poorest income level were approximately 16% more likely to underperform in primary mathematics than those at the highest level. The largest effect of poverty, however, was on job precarity, where the extreme poor were approximately 27% more likely to work precariously than the non-poor or those not at risk of falling into poverty. Rurality was also strongly associated with the LB condition for work and education in all but the NEET status. These large cleavages in educational and labour

performance between Peru's LB individuals and the general population call for SDG implementation strategies that reach isolated, poor, and rural communities to improve their work and education outcomes.

Conclusion and implications

Peru might be faring relatively well in implementing the SDGs compared with other developing countries. However, the results of this study suggest it continues to face very large inequalities in access to decent work and quality education. Alleviating these inequalities through a LNOB focus is perhaps Peru's greatest challenge in implementing the SDGs.

Our LNOB analysis provides a framework for characterising those most left behind in the Peruvian education and labour systems and monitoring their situations. The profiles of the LB presented in this study, which identify the nature and relative weights of determinants of underperformance in education quality and decent work, are an important contribution to the existing literature on SDG implementation in Peru. The constructed profiles provide a clear snapshot of vulnerability in Peru that guides decisionmakers when designing policies meant to reduce inequality in the Peruvian education system and labour markets. It is our hope that the profiles can be used as a baseline to prioritise which marginalised groups might require SDG-related interventions.

When looking at the LB in SDG 4 (access to quality education) and SDG 8 (access to decent work) in Peru, we find that differences in access to quality education and decent work are strongly associated with traditional markers of social exclusion: geographic location, rurality, socio-economic level, gender, and ethnicity.

Particularly in the case of the LB in access to quality education, the profiles we constructed illustrate the sheer magnitude of academic gaps between students belonging to multiple socially excluded groups—the individuals described in our profile were from 83% to 91% more likely to be LB compared to opposite, better-off students, depending on age and the evaluation (mathematics or reading). Taking the example of secondary-level math, for instance, rural students are approximately 14% more likely to be LB. Students in the Amazon rainforest region, which reports the worst educational results, are approximately 16% more likely to be LB than their peers in Lima. The poorest students are approximately 11% more likely to be LB than the more affluent ones, and girls are approximately 4% more likely to underperform severely. Indigeneity was the largest and most significant factor associated with the LB condition in education: speaking a

native first language increased the probability of underperforming in secondary-level mathematics by approximately 18%.

Importantly, individual and family characteristics have the strongest effects on the probability of being LB. Although school characteristics also displayed significant effects on performance, the relative magnitude of individual determinants highlights how inequalities often begin outside the classroom in students' households and communities. Hence, Peru's attempts to achieve quality education must be accompanied with continued efforts to tackle household and community-level deprivations during childhood, through public health and parental accompaniment programmes.

This study shows that the LB face similar inequalities in their access to decent work. If we observe the probability of being LB in terms of work, rural youths were 14% more likely to be working precariously than their urban counterparts. Individuals living in the Andean highlands are approximately 21% more likely to work precariously than inhabitants of Lima. Youths living in extreme poverty had approximately 28% more chance to work precariously than those living outside of the risk of poverty, and women were 12% more likely to be LB in decent work. Indigeneity was associated with an approximately 3% increase in the probability of working precariously. When all these forms of exclusion are faced by a single individual, she faces almost certain vulnerability, being 97% more likely to be LB than individuals with an opposite profile. Thus, tackling the multidimensional vulnerabilities faced by the LB in employment requires more complex programming than simple vocational training, skilling, and labour market insertion projects. Instead, policies meant to improve the labour conditions of the LB must be designed to address complex vulnerabilities that have often developed since childhood specifically.

Our analysis of the intersection between education and work using YL describes a clear narrative encountered by vulnerable Peruvian children in their school-to-work transitions. Children who are LB in access to quality education are not adequately prepared to enter the Peruvian labour market and find decent jobs. Instead, they work under conditions of precarity, or become NEET, hindering their chances to transition into adulthood successfully. Our analysis has quantified this effect: we find that children who are LB in quality of education at 15 years of age are up to approximately 8% more likely to be NEET, and 14% more likely to work precariously in their early twenties than the students who outperformed them. Such findings highlight the cyclical nature of vulnerability in marginalised populations in Peru: initial conditions related to their identity, household context, and community characteristics can severely hinder their performance in basic education, which in turn stunts their possibilities of a positive transition into decent work and adulthood, more generally. Quality of education was a larger determinant of labour condition for precarious workers than quantity, with the magnitude and significance of synergistic effects larger across all ages and tests. While years of education have a negative and significant effect on the probability of working precariously as a youth, the effect faded out once education performance is also analysed. Hence, the quality of education matters more than its quantity for the LB in Peru—an important finding considering that educational attainment in the country has risen sharply in the past decade, while issues of quality education still persist.

The analysis also showed how the effects of vulnerable marginalised groups are significant even when controlling for the quality and quantity of education received—hence, identity markers such as indigeneity and gender have a larger effect on labour market outcomes than the quality of education, even while both are significant. For instance, being a woman or indigenous increases the risk of being LB in work by 19%, compared to an effect of 14% for being LB in secondary education.

Findings on gender that connect SDG 5 (gender equality) with synergies with SDGs 4 and 8 were also apparent throughout the study. Although girls show lesser or equal probabilities of being LB in basic schooling (except for secondary math), they are much more likely to be LB once they enter the labour market. Women were approximately 11% more likely to be NEET and approximately 13% more likely to work precariously than men, suggesting that in spite of equal or superior test results in education, women are disproportionately discriminated against in the labour

Strengthening rural and indigenous education is a vital requirement if SDG 4 is to be attained for all Peruvians.

market. Furthermore, our results show that fewer years of schooling were associated with increased probabilities of being LB for both men and women. The magnitude of the effects, however, was considerably greater for precariously employed women. These results suggest that women are punished more harshly than men in the Peruvian labour market for comparably lower levels of education.

Strengthening rural and indigenous education is a vital requirement if SDG 4 is to be attained for all Peruvians. The passing of a new plan for rural education in 2018, which proposes interventions to address access to, and quality of, education that are characteristic of rural settings, including improvements in access to ICT tools, shows potential in that regard. It is important to point out that assigning more resources to rural and poor settings is also required, ensuring more dollars, or at least equal dollars per student, are spent in rural and urban schools. Increased funding and pedagogical support should also be provided for Peru's Bilingual Education Program, which caters to children with native first languages.

We also recommend the inclusion of gender-specific programming in Peruvian schools. Programmes that address gender in the curriculum and promote gender equality are currently being implemented. Policies meant to combat teen pregnancy, such as improved sexual education programmes, or help teenage mothers continue with their education through scholarships and guidance, should also be pursued.

The results of the study also tell us that ensuring decent work for all in Peru requires placing informality high on the government agenda and turning away from basic vocational training and skilling programmes. Instead, policies tackling youth vulnerability should be designed to address complex and long-lasting deprivations. This should start with a stronger inclusion of the LNOB commitment in government discourse and social programming. Strong gender disparities in the incidence of NEET and precarious work point towards the need to implement vocational programmes with a gender focus. Childcare was cited as a common constraint to employment by women in our qualitative data. Policies providing childcare for vocational training and during working hours are still absent in Peru.

A final important contribution stems from the study's inclusion of precarious work within its categorisation of youth labour vulnerability. Our findings suggest that the use of the NEET rate as an indicator for youth vulnerability falls short in describing work marginalisation in Peru. Only focusing on the NEET rate to define the left behind would have obviated the 12% of Peruvian youth who work but do so in extreme precarity. Peru's framework for SDG monitoring only uses the NEET rate as a measure of youth vulnerability. The inclusion of an aggregate indicator for youth labour precarity in this framework would aid efforts to adequately monitor whether the most vulnerable Peruvian youths are increasing their access to decent work.

References

- Alcázar, L., Balarin, M., Glave, C., & Rodríguez, M. (2018). *Más allá de los NINI: Los jóvenes urbano-vulnerables en el Perú.* Lima: Grupo de Análisis para el Desarrollo (GRADE).
- Alfieri, S., Sironib, E., Martaa, E., Rosinab, 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.
- Barnett, S. (1995). Long-Term Effects of Early Childhood Programs on Cognitive and School Outcomes. *The Future of Children*, 5(3), 25-50.
- Benavides, M., Leon, J., Etesse, M. (2014). Desigualdades educativas en Perú: Comparando las pruebas PISA 2000 y 2009. Grupo de Análisis para el Desarrollo (GRADE).
- Benavides, M., Campana, S., Cueva, S., Leon, J. & Wagenman, A. (2016). Measuring the Sustainable Development Agenda in Peru. Post-2015 Data Test Peru Country Report. NPSIA and Southern Voice. Retrieved from: https://www.grade.org.pe/en/ publicaciones/measuring-the-sustainable-development-agenda-in-peru/
- Bhattacharya, D., Khan, T. I., Khan, S. S., Sinha, M. M., Fuad, S. M., Biswas, S., & Muzib,A. (2017). Quest for Inclusive Transformation of Bangladesh: Who Not to Be LeftBehind. Dhaka: Centre for Policy Dialogue (CPD) and Citizen's Platform for SDGs.
- Bynner, J., & Parsons, S. (2002). Social exclusion and the transition from school to work: The case of young people not in education, employment, or training (NEET). *Journal* of Vocational Behavior, 60(2), 289-309.
- Cairns, R.B., Cairns, B.D., & Neckerman, H.J. (1989). Early School Dropout: Configurations and Determinants. *Child Development*, 60(6), 1437-1452.
- Chambers, R. (1989). Vulnerability, coping and policy. IDS Bulletin, 20(2), 1-7.
- Chaudhuri, S. (2003). Assessing vulnerability to poverty: Concepts, empirical methods and illustrative examples (Working Paper). Columbia University.
- Chudgar, A., & Quin, E. (2012). Relationship between private schooling and achievement: Results from rural and urban India. *Economics of Education Review*, 31(4), 376-390.
- Cruces, G., Ham, A., & Viollaz, M. (2012). Scarring effects of youth unemployment and informality: Evidence from Brazil (Working Paper). La Plata: CEDLAS.
- Cueto, S., Miranda, A., & Vásquez, M. (2016). Inequidades en la educación. In Investigación para el desarrollo en el Perú: once balances. Lima: Grupo de Análisis para el Desarrollo (GRADE).
- Cueto, S., Escobal, J., Felipe, C., Pazos, N., Penny, M., Rojas, V., & Sánchez, A. (2018). ¿Qué hemos aprendido del estudio longitudinal Niños del Milenio en el Perú? Síntesis de hallazgos. Lima: Grupo de Análisis para el Desarrollo (GRADE).
- De Hoyos, R., Rogers, H., & Székely, M. (2016). Ninis en América Latina: 20 millones de jóvenes en busca de oportunidades. Washington, DC: Banco Mundial.

- Development Initiatives (DEVINIT). (2017). Closing the Gap: Priorities for the High-Level Political Forum 2019. Retrieved from: https://devinit.org/resources/closing-gappriorities-high-level-political-forum-2019/#downloads
- Eagle, E. (1989). Socio-economic Status, Family Structure, and Parental Involvement: The Correlates of Achievement. Washington, D.C.: ERIC Clearinghouse. Retrieved from: https://eric.ed.gov/?id=ED307332
- ECE. (several years). Student Census Evaluation (Evaluacion Censal de Estudiantes). Ministry of Education of Peru. Retrieved from: http://umc.minedu.gob.pe/ece2019/
- ENAHO. (several years). Household National Survey (Encuesta Nacional de Hogares). National Institute of Statistics, Peru. Retrieved from: http://iinei.inei.gob.pe/ microdatos/
- Escobal, J., Saavedra, J., & Vakis, R. (2012). ¿Está el piso parejo para los niños en el Perú? Medición y comprensión de la evolución de las oportunidades. World Bank. Lima: Grupo de Análisis para el Desarrollo (GRADE).
- Escobal, J. (2015). Errores en las encuestas longitudinales: seguimiento y pérdida— El caso de Niños del Milenio. Taller ELPS (Encuesta Longitudinal de Protección Social. Bogota: Banco Interamericano de Desarrollo.
- Fentiman, A., Hall, A., % Bundy, D. (2001). Health and cultural factors associated enrolment in basic education: a study in rural Ghana. Social Science and Medicine, 52(3), 429-439.
- Furlong, A. (2006). Not a very NEET solution: representing problematic labour market transitions among early school-leavers. *Work, Employment and Society, 20*(3), 553-569.
- Furlong, A. (2007). The zone of precarity and discourses of vulnerability: NEET in the UK (Comparative Studies on NEET, Freeter, and Unemployed Youth in Japan and the UK).
- Furlong, A., Cartmel, F., & Biggart, A. (2006). Choice biographies and transitional linearity: re-conceptualising modern youth transitions. *Revista de Sociología*, 79, 225-239.
- Gamero, J. (2010). Informe: el trabajo decente en el Perú, una mirada al 2012. Lima: Programa Laboral de Desarrollo (PLADES).
- Glewwe, P., Hanushek, E.A., Humpage, S.D., & Ravina, R. (2013). School resources and educational outcomes in developing countries: A review of the literature from 1990 to 2010. In Paul Glewwe, Education Policy in Developing Countries, 13-64. Chicago: University of Chicago Press.
- Instituto Nacional de Estadística e Informática. (2017). *Panorama de la Economía Peruana* 1950-2016. Lima.
- Kalmijn, M., & Kraaykamp, G. (1996). Race, Cultural Capital, and Schooling: An Analysis of Trends in the United States. *Sociology of Education*, 69(1), 22-34.
- Kudó, In. (2004). La Educación Indígena en el Perú. Cuando la Oportunidad Habla Una Sola Lengua. In Donald R. Winkler and Santiago Cueto (Eds.), *Etnicidad, Raza, Género y Educación en América Latina*. Santiago: PREAL

- Lutz, A. (2007). Barriers to High-School Completion among Immigrant and Later-Generation Latinos in the USA: Language, Ethnicity and Socioeconomic Status. *Ethnicities*, 7(3), 323–342. doi:10.1177/1468796807080232.
- Maguire, S. (2015). NEET, unemployed, inactive or unknown-why does it matter? *Educational Research*, 57(2), 121-132.
- Málaga, R., Oré T., & Tavera, J. (2016). Jóvenes que no trabajan ni estudian: evolución y perspectivas (Working Paper 431). Lima: Departamento de Economía, Pontificia Universidad Católica del Perú.
- McLaughlin, S. C., & Saccuzzo, D.P. (1997). Ethnic and Gender Differences in Locus of Control in Children Referred for Gifted Programs: The Effects of Vulnerability Factors. Journal for the Education of the Gifted, 20(3), 268–283.
- Mohsin, M., et al. (1996). Influence of Socio-economic Factors on Basic Competencies of Children in Bangladesh. *Journal of Biosocial Science*, 28(1), 15–24.
- Niños del Milenio. (2018). Diseño y métodos del studio Niños del Milenio—Perú. Lima: Group for the Analysis of Development (GRADE).
- Outes-Leon, I., Dercon, S (2008). Survey Attrition and Attrition Bias in Young Lives. Young Lives.
- Pritchett, L., Sumarto, S., & Suryahadi, A. (2000). *Quantifying Vulnerability to Poverty: A Proposed Measure, Applied to Indonesia* (Policy Research Working Papers). World Bank.
- Reiter, Herwig y Tabea Schlimbach (2015). NEET in disguise? Rival narratives in troubled youth transitions. *Educational Research*, 57(2), 133-150.
- Rodríguez Lozano, E. (2012). ¿Barreras Lingüísticas en la Educación? La Influencia de la Lengua Materna en la Deserción Escolar. *Economia*, 35(69), 83–151.
- Sánchez, A., & Escobal, J. (2019). Survey attrition after 15 years of tracking children in four developing countries: the Young Lives study. Unpublished manuscript.
- Stuart, E., & Woodroffe, J. (2016). Leaving no-one behind: can the Sustainable Development Goals succeed where the Millennium Development Goals lacked? *Gender & Development*, 24(1), 69–81.
- Szekely, M., & Karver, J, (2015). Youth out of school and out of work in Latin America (Policy Research Working Paper 7421). Washington, DC: World Bank.
- Tesliuc, E., & Lindert, K. (2002). Vulnerability: A quantitative and qualitative assessment. Guatemala Poverty Assessment Program. Washington, DC: World Bank.
- United Nations Development Programme. (2013). Perú: Tercer informe nacional de cumplimiento de los Objetivos de Desarrollo del Milenio. Lima: Sistema de Naciones Unidas del Perú.
- Vasile, V., & Anghel, I. (2015). The educational level as a risk factor for youth exclusion from the labour market. *Procedia Economics and Finance*, 22, 64-71.
- Winding, T. N., et al. (2012). Personal Predictors of Educational Attainment after Compulsory School: Influence of Measures of Vulnerability, Health, and School Performance. *Scandinavian Journal of Public Health*, 41(1), 92–101, doi:10.1177/1403494812467713.

- Winkler, I., & Satterthwaite, M. (2017). Leaving no one behind? Persistent inequalities in the SDGs. The International Journal of Human Rights, 21(8), 1073-1097.
- Woessmann, L. (2006). Public-private partnership and schooling outcomes across Countries (CESifo Working Paper Series No. 1662). Retrieved from: https://ssrn.com/ abstract=889519
- Young Lives. (several years). Young Lives Peru. Retrieved from: https://www.younglives. org.uk/content/peru
- Zhang, Y. (2006). Urban-rural literacy gaps in Sub-Saharan Africa: The roles of socioeconomic status and school quality. *Comparative Education Review*, 50(4), 581-602.

Appendices

Appendix 1. Marginal effects of associated factors on the LB condition in the 2016 ECE

Variables	LB in primary- level reading	LB in primary- level mathematics	LB in secondary- level reading	LB in secondary- level mathematics
	0.00982***	0.00179	0.0131***	0.0382***
woman	(0.00115)	(0.00250)	(0.00144)	(0.00194)
Socio-economic level:				
Middle	0.0120***	0.0382***	0.00479*	0.0170***
Middle	(0.00164)	(0.00505)	(0.00258)	(0.00297)
Low	0.0226***	0.0810***	0.0330***	0.0440***
LOW	(0.00180)	(0.00580)	(0.00298)	(0.00348)
Vorulow	0.0501***	0.161***	0.102***	0.112***
very low	(0.00235)	(0.00705)	(0.00364)	(0.00433)
Single teacher/ multi-grade	0.0428***	0.112***		
school	(0.00515)	(0.0114)	-	-
Driverte este el	-0.00472	0.143***	-0.0473***	-0.0574***
i iivate school	(0.00415)	(0.0122)	(0.00319)	(0.00410)
Pural	0.0410***	0.118***	0.140***	0.143***
Nurui	(0.00508)	(0.0118)	(0.00427)	(0.00539)
Region:			-	
Coast	0.0126***	0.0169	0.0265***	0.00898**
Coast	(0.00345)	(0.0105)	(0.00299)	(0.00425)
Andogn Highlands	0.00320	-0.0236**	0.0715***	0.0225***
Andeun Aighianas	(0.00323)	(0.0101)	(0.00370)	(0.00520)
Amazon Deinforact	0.0371***	0.104***	0.109***	0.156***
Amazon Kainforest	(0.00464)	(0.0143)	(0.00540)	(0.00811)

In dia an ana			0.151***	0.181***
Indigenous			(0.00432)	(0.00496)
			0.0629***	0.0723***
Dia not attena pre-school			(0.00218)	(0.00272)
Mother's education:				
Incomplete primary			0.0364***	0.0456***
incomplete primary			(0.00247)	(0.00297)
Complete primary			0.0345***	0.0533***
Complete prindry			(0.00244)	(0.00293)
Incomplete secondary			0.0194***	0.0402***
incomplete secondary			(0.00230)	(0.00259)
Complete secondary			0.0314***	0.0516***
complete secondary			(0.00194)	(0.00218)
Father's education:				
			0.0619***	0.0695***
incomplete primary			(0.00258)	(0.00322)
Complete arimany			0.0565***	0.0605***
complete primary			(0.00248)	(0.00305)
Incomplete secondary			0.0302***	0.0361***
incomplete secondary			(0.00209)	(0.00257)
Complete secondary			0.0267***	0.0340***
complete secondary			(0.00167)	(0.00198)
Observations	141,854	141,854	491,403	491,403

Note. Robust standard errors, clustered at the school level, in parentheses *** p<0.01, ** p<0.05, * p<0.1 Elaborated by the authors.

Variables	LB in reading, age 8	LB in mathematics, age 8	LB in reading, age 15	LB in mathematics, age 15
	0.0229	0.0486***	0.00118	0.0338*
woman	(0.019)	(0.0161)	(0.0195)	(0.0182)
Indiana	0.0833**	0.0129	0.105***	0.0622*
indigenous	(0.0343)	(0.0458)	(0.0370)	(0.0349)
Vegrs of gap	-0.0725***	-0.101***	-0.0493	-0.00248
fears of age	(0.0147)	(0.0167)	(0.0317)	(0.0300)
Underweight	0.0564*	0.104***	0.00279	-0.0203
Underweight	(0.0335)	(0.0383)	(0.0431)	(0.0395)
Polow average begith	0.0875	0.0545	0.0190	0.116
Below average hearth	(0.0805)	(0.0617)	(0.112)	(0.109)
Does not read for fun	0.152***	0.109***	0.0583***	0.0722***
	(0.0209)	(0.0184)	(0.0196)	(0.0178)
Did not attend pro school	0.0843***	0.0313*	-0.00893	-0.00422
Did not attend pre school	(0.0267)	(0.0176)	(0.0312)	(0.0297)
Has moved in the last 4	-0.0131	-0.0156	0.0338	0.0186
years	(0.0234)	(0.0195)	(0.0251)	(0.0237)
Socio-economic level:				
Loss poor	0.0720***	0.0446*	-0.0181	0.0258
Less poor	(0.0150)	(0.0234)	0.0277)	(0.0238)
Very poor	0.123***	0.109***	0.0275	0.0555*
very poor	(0.0332)	(0.0295)	(0.0373)	(0.0331)
Poorest	0.215***	0.195***	0.104**	0.0819*
TOOTEST	(0.0452)	(0.0444)	(0.0517)	(0.0453)
Mother's education:				
Incomplete primary	0.134***	0.0731**	0.165***	0.0301

Appendix 2. Marginal effects of associated factors on the LB condition in the 2016 ECE

	(0.0343)	(0.0331)	(0.0415)	(0.0411)
	0.180***	0.0919***	0.0554	0.00200
Complete primary	(0.0587)	(0.0327)	(0.0499)	(0.0519)
	0.0478	0.0198	0.112***	0.0338
incomplete secondary	(0.0324)	(0.0264)	(0.0343)	(0.0360)
Complete cocondany	0.0366	-0.000923	0.0770**	0.00306
Complete secondary	(0.0285)	(0.0289)	(0.0351)	(0.0356
Father's education:				
la complete primery	0.0802***	0.0581**	0.185***	0.164***
incomplete primary	(0.0242)	(0.0288)	(0.0457)	(0.0460)
Complete arimany	0.0231	0.0763*	0.232***	0.0699
Complete primary	(0.0482)	(0.0460)	(0.0638)	(0.0516)
Incomplete secondary	0.0158	0.0104	0.107***	0.0664**
incomplete secondary	(0.0260)	(0.0173)	(0.0334)	(0.0319)
Complete cocondany	-0.0216	-0.0264	0.0562*	0.0142
Complete secondary	(0.0302)	(0.0224)	(0.0312)	(0.0279)
Dublic school	0.0846***	0.119***	0.00347	0.0260
Fublic school	(0.0200)	(0.0207)	(0.0317	(0.0285)
Pural	0.112***	0.0956***	0.0910***	0.0643**
Kurdi	(0.0324)	(0.0353)	(0.0313)	(0.0299)
Region:				
Andoan biablands	0.0176	0.0399	0.0460*	0.0653***
Andean highlands	(0.0312)	(0.0332)	(0.0251)	(0.0227)
Amazon rainforact	-0.00921	-0.00772	-0.00327	-0.0244
Amazon rainiorest	(0.0336)	(0.0365)	(0.0305)	(0.0293)
Observations	1, 674	1, 682	1,649	1,668

Note. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Elaborated by the authors.

Variables	NEET	NEET without housewives	Precarious employment
Manan	0.107***	0.0406***	0.124***
woman	(0.00454)	(0.00347)	(0.00711)
Presence of child age 5 or younger in the	0.0141***	0.00984**	0.0500***
household	(0.00528)	(0.00405)	(0.00772)
Woman and presence of child age 5 or	0.27655***	0.0644***	0.40439***
younger in the household	(0.00586)	(0.00352)	(0.00805)
Head of household	-0.102***	0.0522***	0.128***
nedu of household	(0.00715)	(0.00592)	(0.0102)
Has shouse or is collabiliting	0.0956***	0.0553***	0.0453***
hus spouse of is conabiling	(0.00776)	(0.00437)	(0.00905)
	0.000364***	0.00330***	0.0189***
Age in years	0.000696)	(0.000638)	(0.000987)
	-0.0322***	-0.00566	0.0273***
inalgenous (mother tongue inalgenous)	(0.00736)	(0.00621)	(0.0102)
l la clista de cala in a cast au cuitte	0.000396	0.0153***	0.0220***
Health shock in past month	(0.00531)	(0.00417)	(0.00817)
Dischlad	0.258***	0.183***	0.129***
Disablea	(0.0207)	(0.0186)	(0.0298)
Educational attainment:			
Incomplete primary	0.145***	0.0966***	0.127***
incomplete primary	(0.0141)	(0.0133)	(0.0188)
Complete primery	0.0807***	0.0171*	0.104***
Complete primary	(0.0113)	(0.00975)	(0.0156)

Appendix 3. Predicted probability effects of associated factors on the LB decent work

	-0.0300***	-0.0485***	0.0656***
Incomplete secondary	(0.00645)	(0.00432)	(0.0118)
Complete secondary	0.176***	0.122***	0.0405***
complete secondary	(0.00634)	(0.00511)	(0.00910)
Poverty level:			
Extreme poor	0.0728***	0.0304**	0.275***
Extreme poor	(0.0151)	(0.0132)	(0.0230)
Poor	0.0528***	0.00842	0.158***
	(0.00764)	(0.00604)	(0.0119)
Non-poor at risk of falling into poverty	0.0198***	-0.00113	0.0448***
	(0.00562)	(0.00433)	(0.00880)
Rural	-0.0509***	0.0343***	0.148***
Narai	(0.00597)	(0.00454)	(0.00996)
Region:			
Coast	0.00709	0.0116**	0.106***
Coust	(0.00746)	(0.00550)	(0.0122)
Andean biablands	-0.0149*	-0.00438	0.204***
Andean highlands	(0.00816)	(0.00620)	(0.0132)
Amazon rainforact	-0.0157*	0.0303***	0.198***
Aniazon ruiniorest	(0.00832)	(0.00620)	(0.0134)
Observations	27,794	27,794	15,308

Note. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Elaborated by the authors. Appendix 4. Predicted probability effects of associated factors on LB labour conditions, by gender

Variables	Male NEET	Female NEET	Precariously employed man	Precariously employed woman	
Presence of child 5 or	-0.00745	0.0407***	0.0733***	-0.0149	
younger in the household	(0.00637)	(0.00805)	(0.00996)	(0.0118)	
	0.0663***	-0.0415**	0.0790***	-0.127***	
Head of nousenola	(0.00927)	(0.0165)	(0.0133)	(0.0208)	
Has spouse or is	0.0617***	0.184***	-0.0311**	0.101***	
cohabiting	(0.00826)	(0.0116)	(0.0132)	(0.0138)	
A	0.00444***	0.00199*	0.0199***	0.0186***	
Age in years	(0.000991)	(0.00102)	(0.00131)	(0.00150)	
Indigenous (mother tongue indigenous)	-0.0110	0.0533***	0.0287**	0.0168	
	(0.00935)	(0.0108)	(0.0127)	(0.0153)	
Health shock in past	0.0135**	-0.0146*	0.0332***	0.0148	
month	(0.00665)	(0.00804)	(0.0117)	(0.0115)	
	0.211***	0.290***	0.122***	0.150***	
Person with disability	(0.0265)	(0.0317)	(0.0378)	(0.0494)	
Educational attainment:					
Incomplete primary	0.102***	0.155***	0.0444*	0.211***	
incomplete printary	(0.0202)	(0.0201)	(0.0243)	(0.0298)	
Complete primary	0.0290*	0.0938***	0.0512***	0.151***	
	(0.0153)	(0.0171)	(0.0195)	(0.0260)	
Incomplete secondary	0.0567***	-0.00881	0.0305**	0.0987***	
incomplete secondary	(0.00695)	(0.0106)	(0.0140)	(0.0201)	

	0.146***	0.205***	0.0209*	0.0527***		
Complete secondary	(0.00763)	(0.0101)	(0.0115)	(0.0145)		
	0.180***	0.0919***	0.0554	0.00200		
Complete primary	(0.0587)	(0.0327)	(0.0499)	(0.0519)		
Poverty level:						
	0.0688***	0.102***	0.280***	0.279***		
Extreme poor	(0.0212)	(0.0215)	(0.0308)	(0.0380)		
Page	0.0235**	0.0939***	0.155***	0.168***		
Poor	(0.00943)	(0.0116)	(0.0154)	(0.0194)		
Non-poor at risk of falling into poverty	0.00534	0.0421***	0.0332***	0.0636***		
	(0.00686)	(0.00869)	(0.0111)	(0.0139)		
Rural	0.0469***	0.0568***	0.122***	0.174***		
	(0.00673)	(0.00936)	(0.0122)	(0.0159)		
Region:						
Coast	-0.00135	0.0168	0.114***	0.1000***		
	(0.00880)	(0.0115)	(0.0152)	(0.0191)		
Andogn highlands	-0.00416	0.0276**	0.203***	0.207***		
Anaean nighianas	(0.00955)	(0.0123)	(0.0160)	(0.0206)		
Amazon reinforest	0.0346***	0.00140	0.231***	0.157***		
Amazon famorest	(0.00957)	(0.0128)	(0.0166)	(0.0206)		
Observations	14,009	13,785	8,627	6,679		

Note. Standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1 Elaborated by the authors. Appendix 5. Predicted probabilities for effects of education quality on labour conditions, YL

Dependent variable	LB in cognitiv (age	re evaluation 12)	LB in cognit	ive evaluation (age 15)		Dropped out of school
	Mathematics	Vocabulary	Mathematics	Reading	Vocabulary	
NEET	0.0531	0.0217	0.0714**	0.0844*	0.0183	0.0849**
	(0.0347)	(0.0324)	(0.0363)	(0.0437)	(0.0349	(0.0380)
Works Precariously	0.0888**	0.0950**	0.0910**	0.134***	0.140***	0.0712*
	0.0433	0.0412	0.0391	0.0479	0.0454	(0.0421)

Note. Robust standard errors in parentheses. Covariates included: gender, indigeneity,

socio-economic level, preschool attendance, rurality, region.

Number of observations: 600. Significance: *** p<0.01, ** p<0.05, * p<0.1.

Elaborated by the authors.

Appendix 6. Predicted probability effects of associated factors on LB labour

Variables	NEET	Precarious work	NEET	Precarious work
Years of education	-0.0159	-0.0327*	-0.00312	-0.0144
	-0.0139	-0.0181	-0.0142	-0.0177
Mathematics at 15			-0.00174	-0.00200*
			-0.0011	-0.00104
Reading at 15			0.00231**	-0.00182*
			-0.0011	-0.00108
Woman	0.196***	0.00337	0.194***	0.0153
	-0.0248	-0.0265	-0.0249	-0.0264

Indigenous	-0.038	0.0875**	-0.0592**	0.0663*
	-0.0278	-0.0372	-0.0258	-0.036
Rural	-0.101**	0.0641	0.0633	0.0222
	-0.0484	-0.0524	-0.0476	-0.047
Observations	596	596	571	571

Note. Robust Standard errors in parentheses. Covariates: socio-economic level, region

*** p<0.01, ** p<0.05, * p<0.1

Elaborated by the authors.

Appendix 7. Predicted probabilities of being LB in quality education and decent work by marginalised group (from ECE & ENAHO LB profiles)

Disadvantaged group	LB in primary reading (ECE)	LB in primary mathematics (ECE)	LB in secondary reading (ECE)	LB in secondary mathematics (ECE)	LB in work: NEET (ENAHO)	LB in work: Precarious work (ENAHO)
Woman	-0.90%***	0.10%	-1.30%***	3.82%***	10.70%***	12.50%***
Lowest socio- economic level	5.00%***	16.10%***	10.20%***	10.20%***	7.30%***	27.40%***
Indigenous	N/A	N/A	15.10%***	18.10%***	-3.20%***	2.70%***
Rural	4.10%***	11.80%***	14.00%***	14.30%***	-5.00%***	14.70%***

Note. Significance: *** p<0.01, ** p<0.05, * p<0.1. Source: ENAHO (2017) & ECE (2016). Elaborated by the authors.

