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Migrants: Evidence from a Small Open Latin
American Economy

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Labor Market Assimilation of South-South Forced Migrants: Evidence from a Small Open Latin American Economy*

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Abstract

We study the negative wage premium Venezuelan immigrants face in the Peruvian labor market in 2018, by merging two national household surveys. Consistent with an imperfect transfer of skills, we find that Venezuelans face, on average, a 40% discount on their hourly wage compared to Peruvians. Interestingly, there is heterogeneity in wage premiums across education levels and broad groups of fields of study. The higher the education level, the larger the negative wage premium. Venezuelans with low levels of education could earn a higher hourly wage than Peruvian. Further, Immigrants with careers related to *Economics, Administration and Commerce* face the least wage discount. Finally, we find that foreign work experience has negligible value in the host country.

JEL Classification: J15, J24, J31, J70.

Key words: Immigration, Economic Assimilation, Wage Gap.

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1 Introduction

Over the past few years, Latin America has experienced an unprecedented exodus throughout the region. Used to being sending countries, governments in the region faced -for the first time in decades- a sudden and large migration flow from a neighboring country, Venezuela. Four years after the start of its humanitarian crisis, approximately 4.6 million people had left the country by the end of 2019.¹

Within Latin America, Peru has become the second-largest receiving country, after Colombia:² the proportion of Venezuelans in Peru increased sharply, from close to zero to represent more than 2.5% of the population in only two years (see Figure 1). The annual influx is quite significant and comparable to other immigration processes registered in developed countries such as Spain, Canada or Australia.³

The appropriate integration of recent immigrants in the Peruvian labor market should be beneficial, not only for the immigrants (who might suffer a substantial decline in their occupational status and wages, in the short run) but also for the Peruvian economy as a whole. While the efficient allocation of human capital within an economy would improve its overall production, previous studies have suggested that human capital does not transfer perfectly from one country to another, and is a key reason why immigrants tend to earn less than native-born workers.

We employ data from the National Survey of the Venezuelan Population Residing in Peru and the Peruvian Household Survey (ENPOVE and ENAHO, respectively, for their acronyms in Spanish) to measure the wage gap Venezuelan immigrants face in the Peruvian labor market and study its relationship to human capital characteristics (native and foreign education and work experience). Our study differs from the majority of the literature in that we focus on forced migration between two Spanish-speaking Latin American countries (south-to-south migration), with social, economic and historical similarities. We

¹According to the United Nations (UNHCR, 2019), the size of the emigration is comparable to the one the civil war in Syria has caused, which led 4.8 million people to flee that country, also four years since the beginning of the crisis.

²According to the Peruvian Superintendence of Migration, by October 2019 the number of registered migrants living in Peru was over 860,000. By the same date Colombia had about 1.4 million migrants.

³For example, between 2001 and 2006 the share of immigrant population in Spain grew from 6% to 13% (see Gonzalez and Ortega (2013)). Likewise, in Great Britain it grew in from 6.3% to 8.5% between 1981 to 2001 (see Dustmann et al. (2013)). On the other hand historically migrant-welcoming countries, such as Canada and Australia, have an annual intake of around 0.7% of their population.

aim to add to recent studies on the economic assimilation of forced migrants, such as Basilio et al. (2017), Dustmann et al. (2016), Borjas and Monras (2017), and Angelini et al. (2015), which also analyze the overall labor market effects of immigrants.

We find that higher educated migrants experience a bigger wage discount than lower educated ones and that foreign work experience has a negligible return in the host country. These results are interesting, as they compare to the ones generally found for migrants into developed countries. Similarly, we also find heterogeneity in the education premium related to the field of study. Immigrants with higher education in fields related to *Education, Humanities and Social Sciences* suffer a bigger discount on their studies than immigrants with higher education related to *Economics, Administration and Commerce*.

The remainder of the paper proceeds as follows: Section 2 reviews the literature related to immigrants' wage premium. Section 3 explains the background of the Venezuelan migration and Peru's migration policy. Section 4 describes the data and the construction of variables. Section 5 presents the econometric specifications for the immigrant wage premium. Section 6 discusses the results. Section 7 presents the robustness check and section 8 concludes.

2 Related Literature

The literature has widely reported that when arriving in a host country, migrants tend to earn lower wages than their native-born coworkers, with comparable measured characteristics. The seminal work of Chiswick (1977, 1978, 1980), based on cross-section data (1970 U.S. census), found that immigrants earned 17% less than natives at the time of arrival in the US.⁴

After Chiswick, studies have recurrently found a gap in the immigrant-native earnings of subsequently arriving cohorts in the U.S. (see Studies by Borjas (1985, 1995) and Friedberg (1992)), Canada (see Grant (1999), Frenette and Morissette (2005) and Green and Worswick (2012)), and other developed countries (see Blanchflower et al. (2007), Addison and Worswick (2002) and Yamanaka (2000)).⁵

In a landmark paper, Friedberg (2000) uses the 1983 Israeli Census to show how both foreign education and work experience tend to receive a lower return than domestic ones. Work experience, in particular, gets little recognition in the host country labor market.⁶ The result has been confirmed by many other studies regarding the economic integration of migrants to host-country labor markets; see for instance Mattoo et al. (2005), Chiswick and Miller (2008) and Li and Sweetman (2014) for the U.S.; and Aydemir and Skuterud (2005a), Ferrer and Riddell (2008) and Fortin et al. (2016) for Canada.⁷

We follow Friedberg (2000) and examine how the returns to foreign education and work experience influence the economic assimilation of Venezuelan migrants into the Peruvian labor market. While most of the literature examines immigrants' assimilation to developed countries (see Friedberg (2000) for Israel, Fortin et al. (2016) for Canada,

⁴Those studies also reported that the gap reversed within 15 years.

⁵Green and Worswick (2012) find that successive cohorts of immigrants to Canada, between the early 1980s and the 1990s, had experienced increasingly larger declines in entry earnings. Using Census data, Frenette and Morissette (2005) examine which conditions would be necessary for recent immigrants to achieve wage parity with Canadian-born workers in the subsequent years.

⁶The study also points to heterogeneity in the returns to foreign education depending on the source country. Returns to education are higher for European and Western Hemisphere immigrants, compared to those faced by Asian and African immigrants.

⁷Mattoo et al. (2005) use census data in the U.S. and find that immigrants from different origins face different job placements. Their study concludes that immigrants coming from Latin American countries or Eastern Europe are more likely to work in unskilled jobs in the U.S. than immigrants from Asia and industrial countries. Li and Sweetman (2014) report that the immigrant's labor outcomes have a positive relationship with the average school quality in their home country. Evidence also supports the existence of discriminatory barriers when evaluating foreign education qualifications. Using the Canadian Census files (1981-2001), Aydemir and Skuterud (2005a) suggest that about a third of the decline in immigrants entry earnings is caused by the decrease in the return to foreign work experience.

Blanchflower et al. (2007) for UK, and Addison and Worswick (2002) for Australia), our study focuses on the assimilation process of an unprecedented –in recent history– south-to-south migration flow within Latin America: migration of Venezuelans to a relatively similar host country, which has a comparable (or even lower) level of education, and a common history and culture, including the same official language (Spanish). We separate returns to foreign human capital by field of study, to examine the existence of heterogeneity in the wage discount, a result found in developed countries (see Friedberg (2000) and Fortin et al. (2016)).

Our paper is in line with other recent research on Venezuelan migration in the region. The focus of those studies, however, has been on the effects of immigrants on the economic conditions of natives. For example, Olivieri et al. (2020) use household survey data in Ecuador, to argue that in regions with a high influx of migrants, natives with lower levels of education have experienced an increase in their unemployment rates. For Colombia, Bonilla-Mejía et al. (2020) find that the growth in the migration flow increases the unemployment of migrants currently living in the country, with no variation in unemployment for native Colombians. We add to the literature by analyzing this process in Peru. To our best knowledge we are the first study to do it for Peru and South America. Caruso et al. (2019), estimate the spillovers of the Venezuelan labor supply shock on labor outcomes for Colombia, and find a decrease in the wages in urban areas. Also, Peñaloza Pacheco (2019) specifically studies the effect of the Venezuelan migration on wages in Colombia. They find a decrease in real hourly wages of 6% to 9% on average, with a greater decrease for men as compared to women.

3 Venezuelan Crisis and Peru's Migration Policy

In the last decade, Venezuela has gone through its worse economic crisis in recent history. According to the International Monetary Fund, in 2018 inflation skyrocketed to 929,797% and shortage of food and basic items became a regular event, with 80 percent of Venezuelan households becoming food insecure (Human Rights Watch (2019)). Crime had a significant increase, to the point that in 2019 Venezuela scored as the country with the highest crime rate in the world (World Population Review, 2019). This critical context led to large out-migration flows, with approximately 5,000 people leaving the country daily in 2018 (UNHCR (2019)).

A distinctive feature of the Venezuelan migration process is that it has few of the self-selection issues commonly mentioned in the literature (see Borjas (1987, 1995), Chiquiar and Hanson (2005), McKenzie and Rapoport (2010), and Cortes (2004)). They can be considered to have been forced out of their country by economic conditions and had limited options on where to migrate. As a result, a large share of them settled in Colombia, Peru and Ecuador (see Bonilla-Mejía et al. (2020)).⁸

According to *Plan de Respuesta Regional para Migrantes y Refugiados Venezolanos 2020*,⁹ more than 4.5 millions had fled Venezuela as of October 2019, and 85% settled elsewhere in Latin America. The initial response of the neighboring countries was relatively hospitable. The legal framework put in place was generally open to migration. For instance, Colombia and Peru, the two largest-receiving countries, adapted legal pathways for their regularization, establishing special residence and work permits that allowed them to enter with only their national identity cards.

Among all South American countries, Peru was particularly welcoming and accommodating. Created in 2017, the Temporary Stay Permit (*Permiso Temporal de Permanencia*, or PTP) provided one year of legal residence to Venezuelans who entered Peru lawfully

⁸Even in the case of migration due to extremely economic hardship, the factors analyzed by Borjas (1987), Chiquiar and Hanson (2005), and McKenzie and Rapoport (2010) are still relevant. Moreover, forced displacement implies that migrants tend to be inadequately prepared to travel and not fully aware of the socio-economic environment of the host country. Cortes (2004) studies the wage assimilation that newly arrived refugees and economic migrants face in the United States and finds that refugees are likely to face bigger downward occupation mobility than economic migrants. In the long run, however, the former will experience the steepest climb.

⁹<https://data2.unhcr.org/en/documents/details/74747>.

before April of that year.¹⁰ The PTP allowed Venezuelans to reside, study and work, as well as to access the public health-care system, for one year. However, policies started to change as the issue of the Venezuelan displacement became increasingly politicized. By the end of 2018, Chile, Peru and Ecuador had implemented new entry requirements, joining Panama in requesting passports for Venezuelan immigrants. Months later, these countries started implementing more restrictions via the introduction of humanitarian visas.¹¹

Thus, in a context of an adverse public opinion about the Venezuelan migration, in June 2019, Peru implemented a Humanitarian Visa restriction to enter the country, a visa that had to be requested at any Peruvian Consulate in a foreign country.¹² That restriction, adopted under the claim that Peru wanted a safe and ordered migration process, resulted in a sustained decrease in the official number of Venezuelans entering Peru since July 2019.¹³

As shown in Figure 1, by June 2019 Peru had received over 800,000 Venezuelan immigrants, most of whom entered the country in the previous two years. As such, our analysis focuses on the economic assimilation of the large (and quick) inflow of Venezuelan immigrants that arrived in Peru until the end of 2018.

¹⁰In August of 2017, the Colombian Government started issuing the Special Stay Permit (*Permiso Especial de Permanencia*, or PEP) to Venezuelan immigrants who had entered with passports before July 28 of that year.

¹¹Panama was the first country to require passport to enter the country and asked Venezuelans to have visas starting October 2017.

¹²Throughout the region, with the exception of Colombia, several other countries have implemented Humanitarian Visas restriction as an entry requirement for Venezuelan immigrants.

¹³In June 6th, the Peruvian president, Martin Vizcarra was quoted saying that “(...) As a government, we want to ensure an orderly and safe immigration of Venezuelan nationals(...)” (<https://www.bbc.com/mundo/noticias-48551096>).

4 Data and Construction of Variables

This paper uses two datasets, the 2018 National Survey of the Venezuelan Population Residing in Peru (ENPOVE), and the 2018 Peruvian National Household Survey (ENAHO). Both are conducted by the Peruvian Statistics Bureau (*Instituto Nacional de Estadística e Informática, INEI*) and gather similar socio-economic information. The ENPOVE, in fact, was designed following the structure of the ENAHO, replicating its main modules and questions. These features allow us to merge both surveys and analyze comparable variables for Peruvian and Venezuelan workers.

Conducted between November and December of 2018, ENPOVE collected information on Venezuelan migrants residing in urban areas in 6 regions' capital cities:¹⁴ Lima (the country's capital) and Callao in the central coastal area, Tumbes and Trujillo in the northern coast, and Cusco and Arequipa in the south (see Figure 2). ENPOVE gathers information about demographics of all household members (e.g. age, gender, education), migration status, health and employment (e.g. job held in Venezuela, before migrating, and current employment status), discrimination experiences, gender roles, and social networks.

The survey is representative of the aforementioned regions, with a full sample composed of 3,611 households and 9,487 observations. The main variables used from this dataset include age, education level, field of study, wage received from current employments in Peru, and time of arrival.

The ENAHO, on the other hand, is the most important and reliable source of information available regarding social, demographic, and economic indicators from Peruvian households. The 2018 round is representative at the national level, and of each of the 25 regions of the country. It has a full sample of 37,462 households and 99,646 observations.

¹⁴A region is akin to a US state. In 2019, those 6 regions represented around 52 percent of the population.

Working Sample

We restrict our analysis to only the six cities surveyed in the ENPOVE, to ensure a full overlap, and to individuals with a positive wage income. Similarly, we exclude workers who are paid only with *in-kind* species, as well as household workers.

Our dependent variable is the logarithm of hourly wages. Some differences in the surveys' questions forces adjustments in its construction. For Peruvians, we divide the yearly wage, of the primary and secondary economic activities, by the number of weeks in a year and then by the total number of hours worked per week in 2018. For immigrants, we divide the monthly wage of the primary and secondary economic activities by the number of weeks in a month and then by the total number of hours worked per week.¹⁵

In both surveys the education module records the highest degree or diploma attained (differentiating between complete or incomplete degrees). We construct dummy variables for each education level: primary education, secondary education, technical education, some university, and undergraduate and graduate degree. This approach better captures possible non-linearities in the returns to education than a specification with imputed years of education entered linearly, and is also used by Fortin et al. (2016). We use "primary education" as the base category in all estimations.

To construct the work experience variable, we follow the standard Mincer approach to calculate potential labor market experience as the difference between age and years of education, assuming children start school at age six and continue uninterrupted. Given that neither the ENPOVE nor the ENAHO directly records the number of years of schooling, this variable is imputed based on the highest degree attained (see Table A.6 for the imputation rules).

Further, both databases contain information on the field of study for the highest degree achieved, which enables us to explore the possible heterogeneity in the portability of human capital, depending on the field studied,¹⁶ a result reported by the literature on

¹⁵The high level of informality in Peru forces us not to limit our analysis to full-time workers.

¹⁶The ENAHO and the ENPOVE have similar questions regarding field of study. For the ENAHO the question is *Code of the higher university or non-university career that you study or have you studied?* "p301a". For the ENPOVE the question is *What is the university or non-university higher career that you study or have studied?* "p502c". Both surveys code the answer using the Peruvian Higher Education and Technical Career classification.

developed countries (see Fortin et al. (2016), Friedberg (2000)). We can only include workers who have achieved at least technical education and have correctly responded to the question in their respective survey. Moreover, we excluded fields for which there are few observations.¹⁷ Our sample size is reduced to 7,730 observations when we incorporate this variable into our model. We grouped fields of study into three broad categories: Education, Humanities and Social Sciences; Economics, Administration and Commerce; and Natural Sciences, Mathematics and Engineering.¹⁸

Lastly, we create dummy variables for the length of stay and for the tenancy of a work permit. We divide the sample by length of stay in three categories: those with less than 6 months in Peru, those with 6 to 12 months, and those with more than 12 months. Since the survey was conducted during the last months of 2018, it is safe to say that the first category includes all those that entered after June 2018, the second category includes all those that arrived in the first 6 months of 2018, and the third category includes all that arrived before 2018.¹⁹ Regarding, the legal work permit, we use a question in the ENPOVE to define a binary variable that identifies if an immigrant has the proper documents to lawfully work in Peru.²⁰

4.1 Descriptive Statistics

Table 1 reports the descriptive statistics, comparing immigrants and native Peruvians. Our sample has 17,468 observations. With a similar share of females (42% versus 43%), the immigrant sample is, on average, younger, has (correspondingly) less work experience, and attained more education than the Peruvian sample. Thus, while 76% of immigrants are between 21 and 40 years old, only 45% of the natives belong to that age cohort. Moreover, while 64% of the immigrants have up to 19 years of (imputed) work experience, such figure is 31% for natives. In terms of education, 59% of Venezuelans have attained technical education or higher, a figure that is 48% for natives. Furthermore, 79%

¹⁷Specifically, we exclude "Agriculture and Veterinary", "Health Sciences", and "Armed and Police Forces".

¹⁸Table A.5 has a detailed description on all the careers each group contains

¹⁹The question is: In which month and year did you enter Peru? "p303a"

²⁰The question is: What is your immigration status in Peru? "p315.5"

of the immigrant sample entered Peru in 2018 and only 20% entered in 2017 or earlier. The recentness of the arrival in Peru of most of the sample will have implications for their occupations and wage premiums. We also observe that only 25% of immigrants possess a PTP.

In terms of place of residence, our working sample shows that both immigrants and natives are heavily concentrated in Lima (47% of both samples reside in that city) and Arequipa (15% and 16%, respectively). The share of immigrants and natives in the other 4 cities differ, with Cusco and Tumbes having the lowest shares in either case. This is consistent with the distribution of Venezuelan immigrants throughout the country, which is mainly concentrated in Lima (and Callao), followed by Trujillo and Arequipa.

We finish this section claiming that Peru and Venezuela are more similar than the usual home and host countries analyzed by the migration literature. Both countries have similar demographic and economic characteristics. As Table A.7 shows, both countries have a similar population size, they both have a majority of Christian population. Furthermore, based on the study by Altinok et al. (2018) we can claim they had comparable educational levels between in 2010.²¹

The foundation for our approach is to index across a given pair of achievement tests with results from countries that participate in both

²¹Altinok et al. (2018) define the share of students achieving advanced learning outcomes as the proportion of students achieving a minimum proficiency benchmark. Achievement outcomes come from standardized, psychometrically-robust international and regional tests. In order to maximize coverage by country, tests have been harmonized and pooled across subjects (math, reading, science) and levels (primary and secondary education).

5 Econometric Specification

5.1 Migrant Wage Premium

We aim to identify the wage premium Venezuelan immigrants face in the Peruvian labor market compared to natives, and to examine how such premium relates to their human capital (education and work experience). To properly compare immigrants' and natives' earnings, we use the hourly wage earned by each worker as the dependent variable. Our base specification follows Friedberg (2000) and the existing literature by decomposing wage premiums by human capital components:

$$w_{ir} = \alpha_p + \alpha_I I_i + \beta X_i + \phi_r + \mu_{ir}, \quad (1)$$

where w_{ir} is the logarithm of the hourly wage of person i residing in the region r ; I_i is a dummy variable for an immigrant; X_i is a vector of covariates, including gender, education, household size, and work experience; and ϕ_r captures region fixed effects. Thus, α_p reflects the base earnings of natives, and α_I denotes the wage premium of immigrants. As mentioned in the literature, the mean wage gap between immigrants and Peruvians ($w_I - w_p$) can be expressed as the sum of the difference in the average value of covariates times the coefficients $\beta(X_I - X_p)$, and an unexplained immigrant premium α_I .

Following Fortin et al. (2016), we further estimate a more detailed specification adding interactions between the immigrant dummy variable, education levels and years of work experience:

$$w_{ir} = \alpha_p + \beta_1 Education_i + \beta_2 Education'_i * I_i + \beta_3 Nat_Exp + \beta_4 Nat_Exp'_i * I_i + \beta_5 Ven_Exp + \beta_6 Ven_Exp'_i * I_i + \phi_r + \mu_{ir}, \quad (2)$$

where β_1 represents the base effect of education and β_2 recovers the immigrant wage premium for each education level. β_3 and β_4 recover the effect of the work experience of the natives, while β_5 and β_6 show the effect of the immigrant's work experience on wages. This specification allows examining the extent to which education and work experience acquired in the home country are valued in the host one.

6 Results

6.1 Base estimations

We present our estimates of the base wage premium model (equation 1) and the returns to foreign human capital (equation 2) in Table 2. Column (1) shows that the base immigrant/native wage gap - controlling for gender, education, and work experience - is large and significant. On average, immigrants are earning 50 log points less than natives for an hour of work. The size of the wage gap is robust to the inclusion of region fixed effects (column (2)).

Column (3) separates the return to education and the premium for immigrants. As is common in the literature, we find a negative premium to foreign education. The higher the level of education, the larger the discount. The discount goes as high as 0.985 for foreign graduate education, almost as high as the base effect (1.018).

Column (4) further separates native and foreign work experience (see equation 2). Overall, the trend for foreign education premiums remains, as highly educated immigrants face a negative and significant wage premium. However, by fully separating the source of human capital, we find that there is virtually no discount for foreign secondary education, and foreign primary education shows a positive and significant wage premium (of about 15 log points).²² This indicates that Venezuelan immigrants with the lowest levels of education earn a higher hourly wage than their Peruvian counterparts.

Figure 3 plots both the premium for foreign education and the overall return for immigrants, and the summation of the base effect plus the premiums. The negative relationship between premiums and foreign level of education is clearly shown. This leads to the flattening of the overall return to education for Venezuelans passing the technical level. From that point on the increases are marginal (1 to 4 log points).

Interestingly, foreign work experience seems to have no return in the Peruvian labor market. This finding is similar to other studies, but those analyzed immigrants from developing countries moving to developed ones. It is curious to find comparable results

²²This finding is consistent with the literature ((Aydemir and Skuterud, 2005b), (Ferrer et al., 2006) and (Green and Worswick, 2012), as the coefficients related to education premiums were picking up some of the effects related to foreign work experience.

from the migration across two South American countries. This could suggest that the discounting of foreign work experience might also relate to a lack of information and confirmation in the native labor market about the actual work experience a person has, and not only about weighting the quality of foreign work experience.

6.2 Heterogeneous Effects

In the following sections we analyze whether the labor market assimilation is homogeneous for all immigrants; or if it varies depending on their field of study or length of stay in the host country.

6.2.1 Disaggregating the Immigrant Wage Gap by Field of Study

Table 3 separates our sample according to workers' field of study to explore if the economic assimilation of Venezuelans is contingent on their studies. As we focus only on workers with technical education or higher, and on only three categories of fields of study, our sample size reduces to 7,730 (3,362 Venezuelans and 4,368 Peruvians). Column (1) estimates the model with the reduced sample to serve as a point of reference. Overall, we find that returns to foreign education vary significantly across foreign education levels and across our three broad categories (columns (2) to (4)). Figure 4 plots the immigrants education coefficients for each broad category.

Studies on *Education, Humanities and Social Sciences* are heavily discounted. For all levels of education, studies in this field receive the highest wage discount. In particular, the negative wage premium to foreign technical education (though statistically insignificant) seems to come mainly from here, with a statistically significant reduction of 34 log points. Remarkably, the negative premium for foreign graduate education is large enough to fully counteract the positive base effect.

Immigrants with careers related to *Economics, Administration and Commerce* (column (3)) face the least wage discount. Careers from those fields do not require a license to practice, and it could be argued that the core concepts are more transferable. Only the foreign graduate education level discount is statistically significant, and is the lowest of the three fields (44 log points).²³ Technical education even has a positive wage premium, though is not significant.

Curiously, studies on *Natural Sciences, Mathematics and Engineering* face a higher dis-

²³A simple of coefficient test, assuming no covariance between errors, shows that the ones from *Education, Humanities and Social Sciences* statistically smaller in almost all cases. It also proves that studies on *Natural Sciences, Mathematics and Engineering* face an statistically significant higher discount . Results of the tests are available upon request.

count than those on Economics and business. Graduate and incomplete university studies show negative and significant wage premiums. This is in contrast to other works (e.g., Fortin et al. (2016)), which find that studies in hard sciences are more transferable from developing to developed countries. This appears not to be the case in the experience of South to South migration under scrutiny.

A possible explanation for this result is the difficulty to adequately work in the specific field of study due to licensing or other costly bureaucratic requirements. As a robustness check, in column (5), we exclude careers from the third field of study that may require a license.²⁴ The overall trend and findings remain. Still, the wage discount is smaller and less significant for immigrants with graduate education in this reduced sample.

²⁴Specifically, we take out the sub categories Systems Engineering and Telecommunications, Industrial Engineering and Production, Construction, Sanitary Engineering and Architecture, Other Engineering

6.2.2 Disaggregating the Immigrant Wage Gap by Entry Time

Table 4 estimates the immigrants wage premium, separating the sample by the arrival date cohort. Column (1) reports our estimation for the full sample, for reference. Column (2) shows the results for migrants who have been in the country for less than 6 months, column (3) analyzes migrants who arrived between 6 months to 1 year, and column (4) focuses on migrants who arrived more than 1 year ago.

We find that as Venezuelans spend more time in Peru, their labor performance improves relative to Peruvians, an indication of wage assimilation. Specifically, figure 5 shows the immigrant negative wage premium decreases, the longer the newcomers stay in Peru, for every educational category. Moreover, the negative wage premium experienced by immigrants with technical and some university level education loses statistical significance, while the positive premium for immigrants with primary education increases from 12 log points to 24 log points.

Our results represent evidence of Venezuelan immigrants relative assimilation into the Peruvian labor market in the span of only two years. The trends are, however, consistent with both a gradual gain of country-specific skills in the new environment, and a slow recognition of core skills.

7 Robustness Check

In this section, we explore the robustness of our main results in Table 2 by introducing two sample restrictions to our main model.

First, a large proportion of Venezuelan migrants (47%) settled in Lima, the capital of Peru. Table A.1 shows that our main results are robust to restricting the sample to the main destination city. The results from our preferred specification, column (3), indicate that immigrants residing in Lima, with primary education level benefit from a positive wage income premium of 19 log points, while those with higher education (some university and graduate), suffer the largest negative wage gap, -32 log points and -73 log points, respectively, compared to their Peruvian counterparts.

Second, Venezuelan migrants are mostly young. Table A.2 shows that our main results are robust to restricting the sample to those aged below 50. The wage premium for immigrants with primary education is 17 log points, and the wage penalty for immigrants with some university and with graduate education are -20 log points and -60 log points, respectively. In sum, results in both scenarios are qualitatively similar to those for the entire sample.

8 Conclusion

In recent years, Latin America has witnessed a significant influx of Venezuelan immigrants to neighboring countries, with Peru becoming the second largest receiving country in the region to the point that the overall share of Venezuelans in the country jumped from close to zero to 2.6% in only two years. We use data from two 2018 household surveys, to evaluate the labor market assimilation of recent immigrants.

We find that, on average, Venezuelans face a 40% discount on their hourly wage compared to natives. However, there is considerable heterogeneity according to education levels. Immigrants with primary education show a positive wage premium (their hourly wage is higher than their Peruvian counterparts), while post-primary foreign education has a negative wage premium, increasing with the level of education. Venezuelans with some university education and graduate degrees suffer a markedly negative wage premiums of 22 and 67 log points, respectively.

Though Peru and Venezuela share a common history and language, foreign work experience seems to be not recognized in the Peruvian labor market. Its effect is almost completely discounted. As Venezuela had a higher level of education than Peru few years ago, we argue that the discount of work experience could be the result of the lack of information (accreditation) in the receiving labor market.

Additionally, we find heterogeneity in the wage discount by field of study. Using only three overly broad categories, we find that immigrants with studies on *Education, Humanities and Social Sciences* endure the largest negative premium, while immigrants with studies on *Economics, Administration and Commerce* face the least discount. They appear to have fewer problems with their skills being less recognized in the new labor market. Still, graduate education on all three fields suffers a statistically significant discount. From 43 to 80 log points. In contrast to previous south-to-north migration analyses, we find that immigrants with studies on *Natural Sciences, Mathematics and Engineering* suffer a marked discount for Graduate and incomplete university level education.

Altogether, our results are in line with previous research. Peru and Venezuela are

much more similar than the common home and host country examined by the migration literature; still, our results seem consistent with an imperfect transfer of skills.

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Table 1 – Summary Statistics: Working Sample

	Mean	
	Venezuelans	Peruvians
Independent Variables		
Female	0.418	0.434
Age (years)	31	42
15-20 years old	0.092	0.045
21-30 years old	0.486	0.220
31-40 years old	0.276	0.227
40-50 years old	0.108	0.214
Over 50 years old	0.037	0.293
Work Experience		
9 years or less work experience	0.184	0.09
10-19 years of work experience	0.464	0.217
20-29 years of work experience	0.225	0.208
30-39 years of work experience	0.093	0.209
Over 40 years of work experience	0.035	0.276
Education Level		
Primary Education	0.097	0.107
Secondary Education	0.313	0.417
Technical Education	0.193	0.196
Some University	0.135	0.080
Graduate and Posgraduate Education	0.262	0.199
Date of Entry in Peru		
Arrived less than 6 months	0.374	
Arrived 6 months to 1 year	0.413	
Arrived more than 1 year ago	0.200	
Region		
Lima	0.47	0.474
Callao	0.116	0.152
Arequipa	0.15	0.162
Cusco	0.073	0.036
Trujillo	0.142	0.107
Tumbes	0.047	0.069
Migration Status		
PTP	0.25	
Observations	6539	10929

Table 2 – Regression Results on Log Hourly Earnings

	(1)	(2)	(3)	(4)
Immigrant	-0.501*** (0.0343)	-0.502*** (0.0332)		
Secondary Education	0.118*** (0.0217)	0.110*** (0.0209)	0.178*** (0.0229)	0.174*** (0.0243)
Technical Education	0.299*** (0.0291)	0.288*** (0.0251)	0.389*** (0.0344)	0.392*** (0.0349)
Some University	0.397*** (0.0232)	0.383*** (0.0201)	0.492*** (0.0672)	0.513*** (0.0700)
Graduate	0.702*** (0.0333)	0.683*** (0.0313)	1.027*** (0.0673)	1.027*** (0.0686)
Primary Education - VEN			-0.191*** (0.0391)	0.154** (0.0538)
Secondary Education - VEN			-0.302*** (0.0199)	0.0215 (0.0404)
Technical Education - VEN			-0.421*** (0.0160)	-0.117* (0.0489)
Some University - VEN			-0.464*** (0.0647)	-0.227** (0.0652)
Graduate - VEN			-0.985*** (0.0601)	-0.676*** (0.0664)
Work Exp.	0.0211*** (0.00279)	0.0209*** (0.00285)	0.0180*** (0.00252)	
Work Exp. Square (/100)	-0.000300*** (0.0000464)	-0.000298*** (0.0000468)	-0.000239*** (0.0000418)	
Work Exp. - Native				0.0248*** (0.00307)
Work Exp. Square (/100) - Native				-0.0328*** (0.00466)
Work Exp. - VEN				0.000448 (0.00333)
Work Exp. Square (/100) - VEN				0.00300 (0.00675)
Constant	1.447*** (0.0431)	1.520*** (0.0241)	1.407*** (0.0363)	1.301*** (0.0476)
Region FEs	No	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N	17468	17468	17468	17468
R ²	0.247	0.255	0.292	0.295

Note: Clustered standard errors by regions are in parenthesis. *, ** and *** denote significance at 10%, 5% and 1% levels respectively. The omitted category for the education dummies is "Primary education". Controls includes the variables: female and household size. The variables "work experience square" are divided by 100.

Table 3 – Regression Results on Log Hourly Earnings by Field of Study (only workers with at least technical education)

	(1) All	(2) Edu-Human	(3) Econ	(4) Nat-Eng	(5) l_ingreso
Some University	0.118* (0.0503)	-0.0961 (0.0831)	0.172*** (0.0409)	0.212** (0.0717)	0.134* (0.0639)
Graduate	0.592*** (0.0573)	0.464*** (0.0820)	0.592*** (0.0408)	0.713*** (0.0959)	0.466*** (0.0821)
Technical Education - VEN	-0.0907 (0.0657)	-0.340** (0.103)	0.0837 (0.124)	-0.0609 (0.0365)	-0.0829 (0.136)
Some University - VEN	-0.188* (0.0889)	-0.282* (0.113)	-0.0458 (0.138)	-0.245** (0.0692)	-0.259 (0.177)
Graduate - VEN	-0.608*** (0.102)	-0.805*** (0.0921)	-0.435** (0.157)	-0.659*** (0.0923)	-0.438** (0.168)
Work Exp. - Native	0.0348*** (0.00188)	0.0225*** (0.00342)	0.0424*** (0.00535)	0.0387*** (0.00561)	0.0168* (0.00801)
Work Exp. Square (/100) - Native	-0.0503*** (0.00314)	-0.0310*** (0.00552)	-0.0619*** (0.00987)	-0.0563*** (0.0105)	-0.0186 (0.0151)
Work Exp. - VEN	0.00629 (0.00338)	0.0151* (0.00602)	-0.00183 (0.00568)	0.00907 (0.00651)	-0.00538 (0.00849)
Work Exp. Square (/100) - VEN	-0.00922 (0.00748)	-0.0296* (0.0142)	0.00660 (0.0139)	-0.0114 (0.0172)	0.0165 (0.0263)
Constant	1.612*** (0.0351)	1.876*** (0.0305)	1.466*** (0.0621)	1.539*** (0.0723)	1.713*** (0.0816)
Region FEs	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
N	7730	2373	2750	2607	581
R ²	0.360	0.365	0.365	0.370	0.220

Note: Clustered standard errors by regions are in parenthesis. *, ** and *** denote significance at 10%, 5% and 1% levels respectively. These estimations only to individuals with technical education or higher. Categories Primary and Secondary are excluded. The omitted category for the education dummies is “Technical education”. The fields of study are Edu-Human = Initial and Primary Education, Social Sciences, Secondary Education, Physical Education, Special Education, Artistic Education, Technology Education, Other Careers in Education, Humanities, Arts, Social and Behavioral Sciences, Communication Sciences, Law, Political and Legal Sciences; Econ = Administrative and Commercial Sciences, Economic and Accounting Sciences; Nat-Eng = Life Sciences, Engineering Physical and Chemical Sciences, Mathematics and Statistics, Information Engineering, Systems Engineering and Telecommunications, Industrial and Production Engineering, Construction, Sanitary and Architectural Engineering, and Other Engineering. Controls includes the variables: gender, household size. The variables “work experience square” are divided by 100. Test: $H_0 : \beta_{Graduate-VEN} = \beta_{Graduate-VEN}$.

Table 4 – Regression Results on Log Hourly Earnings: Entry time

	(1)	(2)	(3)	(4)
	All	2018-2	2018-1	2017
Secondary Education	0.174*** (0.0243)	0.167*** (0.0247)	0.165*** (0.0247)	0.162*** (0.0246)
Technical Education	0.392*** (0.0349)	0.387*** (0.0360)	0.386*** (0.0355)	0.383*** (0.0354)
Some University	0.513*** (0.0700)	0.505*** (0.0693)	0.504*** (0.0689)	0.500*** (0.0701)
Graduate	1.027*** (0.0686)	1.020*** (0.0685)	1.019*** (0.0677)	1.016*** (0.0685)
Primary Education - VEN	0.154** (0.0538)	0.117* (0.0553)	0.195** (0.0702)	0.243** (0.0867)
Secondary Education - VEN	0.0215 (0.0404)	-0.0158 (0.0420)	0.0744 (0.0718)	0.0739 (0.0719)
Technical Education - VEN	-0.117* (0.0489)	-0.182** (0.0650)	-0.0761 (0.0818)	-0.0411 (0.0496)
Some University - VEN	-0.227** (0.0652)	-0.279** (0.0769)	-0.180** (0.0701)	-0.148 (0.0813)
Graduate - VEN	-0.676*** (0.0664)	-0.728*** (0.0810)	-0.651*** (0.0947)	-0.542*** (0.0588)
Work Exp. - Native	0.0248*** (0.00307)	0.0249*** (0.00302)	0.0249*** (0.00301)	0.0249*** (0.00303)
Work Exp. Square (/100) - Native	-0.0328*** (0.00466)	-0.0330*** (0.00463)	-0.0330*** (0.00462)	-0.0330*** (0.00460)
Work Exp. - VEN	0.000448 (0.00333)	-0.000472 (0.00470)	-0.00453 (0.00586)	0.00234 (0.00474)
Work Exp. Square (/100) - VEN	0.00300 (0.00675)	0.00508 (0.0102)	0.0142 (0.0119)	-0.00431 (0.00827)
Constant	1.301*** (0.0476)	1.331*** (0.0473)	1.342*** (0.0394)	1.342*** (0.0522)
Venezuelans		2357	2897	1361
Peruvians		10929	10929	10929
Region FEs	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N	17468	13286	13826	12290
R ²	0.295	0.299	0.291	0.264

Note: Clustered standard errors by regions are in parenthesis. *, ** and *** denote significance at 10%, 5% and 1% levels respectively. The omitted category for the education dummies is "Primary education". Controls includes the variables: female and household size. Coefficients of total work experience square are divided by 100. The variables "work experience square" are divided by 100.

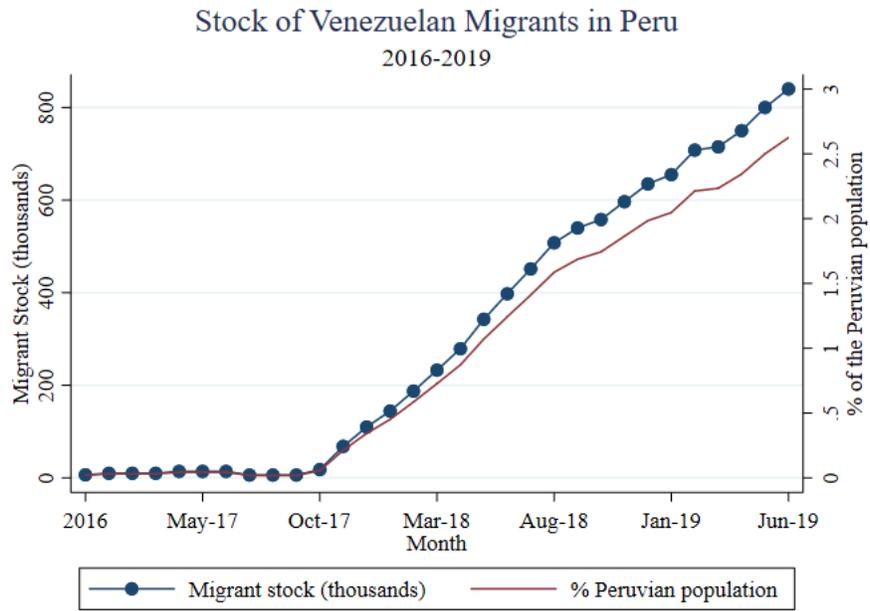


Figure 1 – Stock of Migrants in Peru since 2016

Figure 2 – Regions



Figure 3 – Coefficients of the interaction between the immigrant variable and the education levels (with 95% CIs), from Table 2.

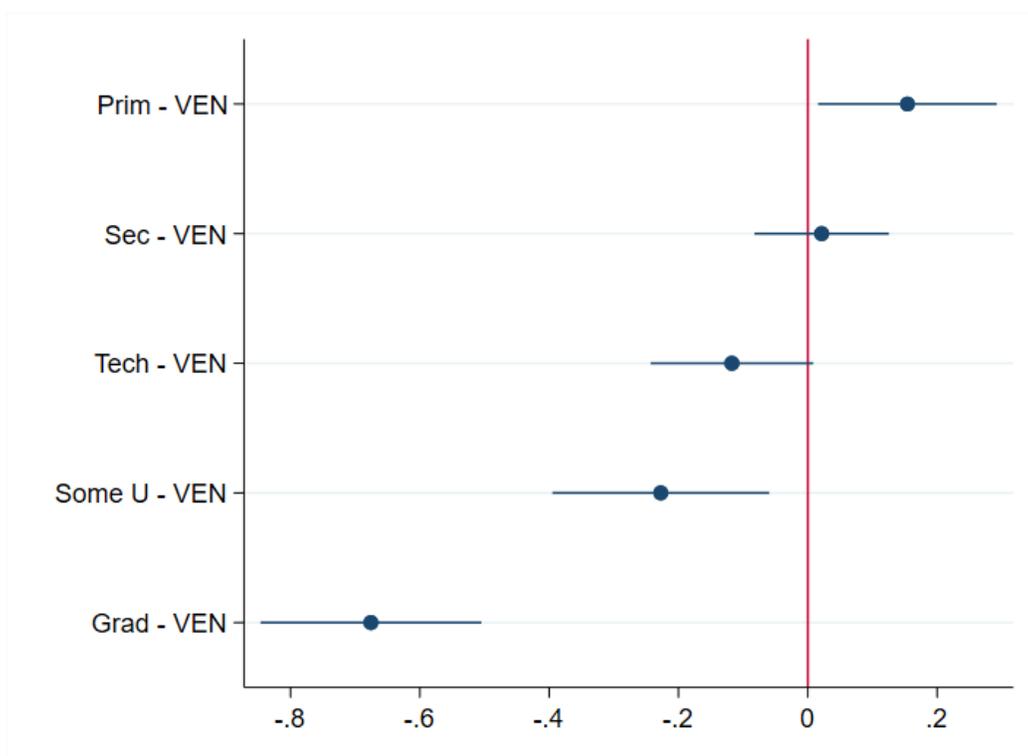
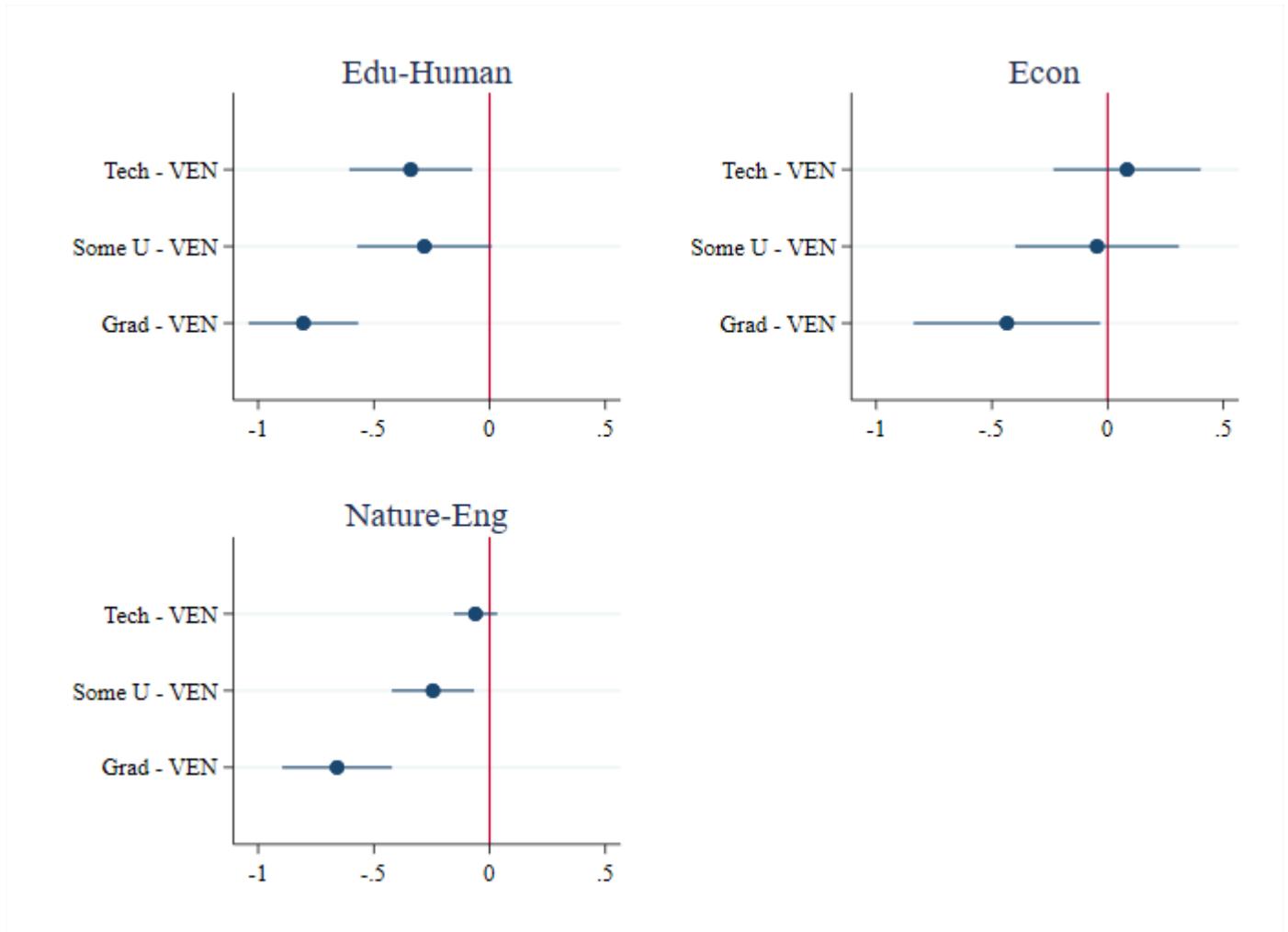
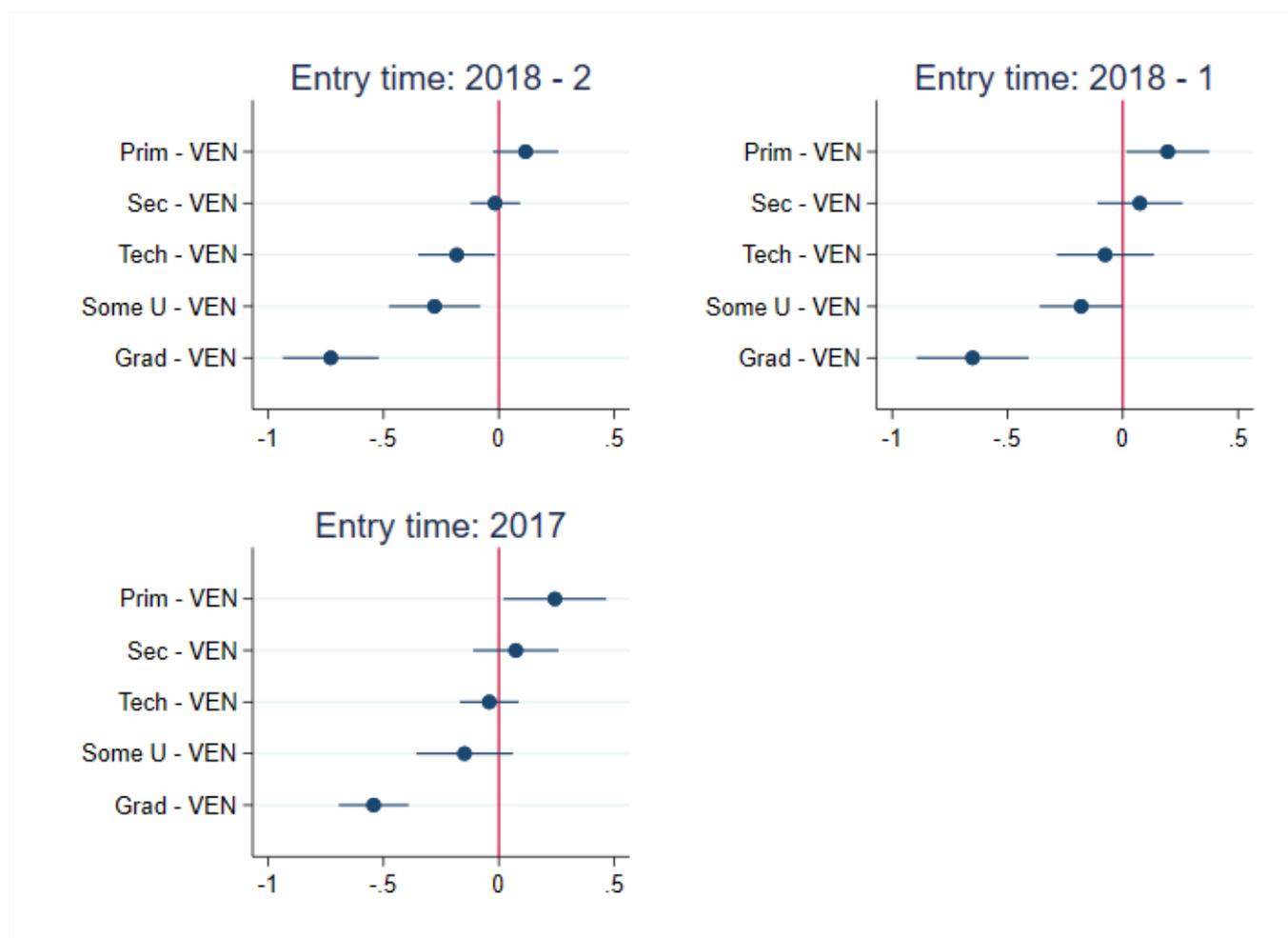


Figure 4 – Coefficients of the interaction between the immigrant variable and the education levels by Field of Study (with 95% CI), from Table 3.



The fields of study are Edu-Human = Education, humanities and art; Social-Law = Social Science, Commercial and Law; Nature-Comp-Industry = Natural and computer sciences, Engineering, Industry and Construction.

Figure 5 – Coefficients of the interaction between the immigrant variable and the education level by entry time (with 95% CI),



A Appendix: Robustness of Basic Estimations

Table A.1 – Regression Results on Log Hourly Earnings: Only for Lima

	(1)	(2)	(3)
Immigrant	-0.560*** (0.0154)		
Secondary Education	0.0704*** (0.0263)	0.194*** (0.0349)	0.189*** (0.0349)
Technical Education	0.246*** (0.0289)	0.387*** (0.0385)	0.391*** (0.0386)
Some University	0.394*** (0.0332)	0.585*** (0.0445)	0.610*** (0.0447)
Graduate	0.707*** (0.0279)	1.105*** (0.0375)	1.104*** (0.0376)
Primary Education - VEN		-0.189*** (0.0471)	0.194*** (0.0738)
Secondary Education - VEN		-0.338*** (0.0241)	0.0106 (0.0596)
Technical Education - VEN		-0.432*** (0.0309)	-0.107* (0.0604)
Some University - VEN		-0.569*** (0.0418)	-0.317*** (0.0589)
Graduate - VEN		-1.067*** (0.0278)	-0.735*** (0.0602)
Work Exp.	0.0253*** (0.00179)	0.0214*** (0.00179)	
Work Exp. Square (/100)	-0.000365*** (0.0000278)	-0.000288*** (0.0000281)	
Work Exp. - Native			0.0294*** (0.00213)
Work Exp. Square (/100) - Native			-0.0392*** (0.00320)
Work Exp. - VEN			0.00435 (0.00424)
Work Exp. Square (/100) - VEN			-0.00545 (0.00865)
Constant	1.522*** (0.0408)	1.357*** (0.0440)	1.230*** (0.0478)
Region FEs	Yes	Yes	Yes
Controls	Yes	Yes	Yes
N	8274	8274	8274
R ²	0.288	0.330	0.334

Note: Clustered standard errors by regions are in parenthesis. *, ** and *** denote significance at 10%, 5% and 1% levels respectively. The omitted category for the education dummies is "Primary education". Controls includes the variables: female and household size. The variables "work experience square" are divided by 100.

Table A.2 – Regression Results on Log Hourly Earnings: Age below 50

	(1)	(2)	(3)
Immigrant	-0.503*** (0.0300)		
Secondary Education	0.0436 (0.0258)	0.130** (0.0453)	0.134** (0.0479)
Technical Education	0.206*** (0.0244)	0.338*** (0.0513)	0.352*** (0.0523)
Some University	0.299*** (0.0201)	0.443*** (0.0883)	0.493*** (0.0885)
Graduate	0.532*** (0.0326)	0.935*** (0.0930)	0.949*** (0.0959)
Primary Education - VEN		-0.242*** (0.0578)	0.166** (0.0477)
Secondary Education - VEN		-0.307*** (0.0141)	0.0632 (0.0469)
Technical Education - VEN		-0.425*** (0.0212)	-0.0790 (0.0626)
Some University - VEN		-0.471*** (0.0689)	-0.203* (0.0877)
Graduate - VEN		-0.954*** (0.0606)	-0.604*** (0.0878)
Work Exp.	0.0239*** (0.00234)	0.0183*** (0.00240)	
Work Exp. Square (/100)	-0.000416*** (0.0000512)	-0.000265*** (0.0000568)	
Work Exp. - Native			0.0329*** (0.00258)
Work Exp. Square (/100) - Native			-0.0510*** (0.00648)
Work Exp. - VEN			0.00398 (0.00288)
Work Exp. Square (/100) - VEN			-0.00697 (0.00571)
Constant	1.598*** (0.0412)	1.468*** (0.0443)	1.273*** (0.0290)
Region FEs	Yes	Yes	Yes
Controls	Yes	Yes	Yes
N	14028	14028	14028
R ²	0.241	0.278	0.283

Note: Clustered standard errors by regions are in parenthesis. *, ** and *** denote significance at 10%, 5% and 1% levels respectively. The omitted category for the education dummies is "Primary education". Controls includes the variables: female and household size. The variables "work experience square" are divided by 100.

Table A.3 – Dictionary of Variables

Dependent Variables	
Occupational Gap	Quality of the current occupation held in Peru minus the quality of the occupation held in the home country
Independent Variables	
Demographics	
Female	1 if the immigrant is female
Age	Age in years
Household	Number of people living in the same household with immigrant
Education	
Primary Education	A person with a Primary Education Diploma or a lower education level
Secondary Education	A person with a High School Diploma or a High School drop-out
Technical Education	A person who is studying or has completed technical education
Some University	A person who is pursuing an undergraduate degree
Undergraduate and Graduate Education	A person who has completed an undergraduate or graduate degree
Geographic Distribution	
Lima	1 if the immigrant lives in Lima
Arequipa	1 if the immigrant lives in Arequipa
Cusco	1 if the immigrant lives in Cusco
Trujillo	1 if the immigrant lives in Trujillo
Tumbes	1 if the immigrant lives in Tumbes
Time of Stay	
Arrived over a year and a half	1 if the immigrant arrived in Peru more than a year and a half ago
Arrived 1 year to 1 year and a half	1 if the immigrant arrived in Peru between a year and a year and a half ago
Arrived 6 months to 1 year	1 if the immigrant arrived in Peru between six months and a year ago
Arrived less than 6 months	1 if the immigrant arrived in Peru less than six months ago

Table A.4 – Similarities ENAHO - ENPOVE

Characteristics and variables	ENPOVE	ENAHO
Conducted by:	INEI	INEI
Type	Household survey	Household survey
Year	2018	2018
Location	Lima, Callao, Trujillo, Cusco, Arequipa, Tumbes	Peru
Area	Urban and Rural	Urban
Observations	9,847	93,185
<i>Main Modules</i>		
Household Characteristics	x	x
Health	x	x
Education	x	x
Labour	x	x
<i>Important Variables</i>		
Age	x	x
Education level	x	x
Professional Area	x	x
Occupation in Peru	x	x
Wage in Peru	x	x
Occupation in Venezuela	x	

Table A.5 – Fields of Study

Education, Humanities and Social Sciences	Initial and Primary Education Secondary Education Physical Education Special Education Artistic Education Technology Education Other Careers in Education Humanities Arts Social and Behavioral Sciences Communication Sciences Law, Political and Legal Sciences
Economics, Administration and Commerce	Administrative and Commercial Sciences Economic and Accounting Sciences
Natural Sciences, Mathematics and Engineering	Life Sciences, Physical and Chemical Sciences Mathematics and Statistics Informatics Systems Engineering and Telecommunications Industrial and Production Engineering Construction, Sanitary and Architectural Engineering Other Engineering

Table A.6 – Imputed Years of Education by Education Level Attained

Last level attained	Years of education
No education	0
Basic education	0
Incomplete primary	3
Complete primary	6
Incomplete secondary	9
Complete secondary	11
Incomplete technical	13
Complete technical	14
Incomplete university	15
Complete university	16
Post-graduate	17

Table A.7 – Similarities between Venezuela and Peru

Indicators	Venezuela	Peru
PBI 2014 (US\$)	482,359mm	200,789mm
Population 2018	28.8m	31.9m
Life expectancy 2000	72	76
Anemia (Age < 5) 2000	30.2%	50.3%
Anemia (Age < 5) 2016	30%	31%
Surface	912.050 km2	1.285.220 km2
Religion 2016	Mostly Christian	Mostly Christian
Education		
Share of students achieving advanced learning outcomes 2010	3.06%	2.08%
Ave. Learning Outcome 2010	422	397

Source: World Bank, Altinok et al. (2018).