

Determinants of the Wage Gap Among Venezuelan Migrants in Peru

Determinantes de la brecha salarial de la población migrante venezolana en Perú

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ABSTRACT

This study analyzes the determinants of wage differentials between Peruvians and Venezuelan migrants in Peru, with a particular focus on the labor conditions of migrant women. Using data from the National Household Survey (ENAH) and the Survey of the Venezuelan Population Residing in Peru (ENPOVE) 2022, a Mincer-type wage equation is estimated, incorporating human capital variables, job characteristics, and sectoral controls. The results indicate that, in contrast to traditional human capital-related determinants, factors such as holding a formal contract and the productive sector of employment are more influential in explaining wage gaps. In sectors such as retail trade, hotels and restaurants, and personal services, education and work experience do not generate statistically significant returns for the Venezuelan population. Overall, the findings provide empirical evidence of labor market segmentation affecting migrants in Peru and highlight important implications for the design of inclusive labor market policies.

Keywords: 1. labor market, 2. labor migration, 3. wage gap, 4. gender equality, 5. Peru.

RESUMEN

La investigación analiza los determinantes de la brecha salarial entre peruanos y migrantes venezolanos en Perú, enfocándose en las condiciones laborales de mujeres migrantes. Utilizando información de la Encuesta Nacional de Hogares (ENAH) y la Encuesta a la Población Venezolana residente en el Perú (ENPOVE) 2022, se estimó una ecuación de salarios de tipo Mincer, incorporando variables de capital humano, características laborales y controles sectoriales. Los resultados muestran que, a diferencia de los determinantes tradicionales asociados al capital humano, la tenencia de contrato formal y el sector productivo resultan factores más relevantes para explicar las brechas salariales. En particular, en los sectores de Comercio al por menor, Hoteles y restaurantes y Servicios personales, la educación y la experiencia no generan retornos significativos para la población venezolana. El estudio aporta evidencia empírica sobre la segmentación laboral de los migrantes en el mercado peruano, con implicancias para la política de empleo inclusivo.

Palabras clave: 1. mercado de trabajo, 2. migración laboral, 3. brecha salarial, 4. igualdad de género, 5. Perú.

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INTRODUCTION

Venezuelan migration has become a major phenomenon in Latin America, with Peru emerging as one of the principal destinations for migrants and refugees from Venezuela. The Venezuelan migrant population in Peru is approximately 1,542,004, representing 23.6% of the total number of migrants from Venezuela globally in 2023. This mass relocation has affected receiving countries through multiple socioeconomic channels, particularly labor market composition, participation, and wages (Ferrant & Tuccio, 2015; Murrugarra et al., 2011).

Previous studies show that migration can widen gender disparities within migrant populations (Antman, 2018). One contributing factor is the concentration of migrant women in low-wage occupations—domestic and care work—which can limit their employment opportunities in higher-paying sectors with better working conditions. This can perpetuate gender inequality in the labor market, as women may thus be seen as less valuable workers when compared to their male counterparts.

As noted, women may face more disadvantages when entering the labor market compared to men. These disadvantages can be primarily due to institutional patterns and gender roles (Angrist & Evans, 1998; Cowan, 2020; Cruces & Galiani, 2007; Farré & Vella, 2013; Givord & Marbot, 2014; Gong & Van Soest, 2002; Morrill & Morrill, 2013). Women tend to predominantly perform domestic work, which results in time constraints on their ability to participate in the labor market (Heckman, 1974). In developing countries, this in turn favors participation in informal markets, which reduce transaction costs in terms of a pre-established work schedule (Gallaway & Bernasek, 2002; Tiefenthaler, 1994) and serve as a survival strategy for women (Benería & Roldan, 1987; Moser, 1984).

Several studies—including Caruso et al. (2021), Olivieri et al. (2022), Pedrazzi and Peñaloza-Pacheco (2023), Mora et al. (2023), and Shamsuddin et al. (2022)—show that Venezuelan migrant status substantially increases barriers to labor market access, particularly among low-skilled workers and women, and can also negatively affect labor market dynamics. As a result, migrant women face greater barriers than local women, driven by discrimination and contractual constraints such as limited or irregular immigration documentation. Consequently, the migrant population is more vulnerable to poverty and labor exploitation, with these risks further exacerbated by gender disparities (Ferrant & Tuccio, 2015; Murrugarra et al., 2011).

This study aims to investigate the causes of low income among Venezuelans in Peru, with a particular focus on gender differences. Accordingly, the study examines wage disparities between Venezuelan and Peruvian workers using a human capital framework in the spirit of Mincer (1974), with explicit attention to gender differences. The hypothesis is that, although human capital contributes to explaining wage gaps, non-human capital factors—such as employment contracts, working conditions, and gender—are also critical determinants.

This paper is divided into six sections. After the introduction, the literature review is presented. The third section describes the database and variables employed for the econometric analysis. The

fourth section addresses the methodology and the equations used to estimate the data. The main results are then presented in the fifth section; finally, our conclusions are provided.

LITERATURE REVIEW

Structural Determinants of the Gender Gap

The literature on wage determinants has traditionally emphasized the role of human capital variables, such as education and experience, as documented by Becker (1962) and Mincer (1974). More recent studies suggest that wage disparities are partially due to pre-existing factors that affect women's work performance: motherhood (Angelov et al., 2016; Becker, 1985; Heckman, 1974; Kleven et al., 2019), childcare responsibilities (Angrist & Evans, 1998; Bailey, 2006; Cowan, 2020; Cruces & Galiani, 2007; Givord & Marbot, 2014), and gender roles (Farré & Vella, 2013; Fernández et al., 2004; Gong & Van Soest, 2002; Morrill & Morrill, 2013). These studies agree that women tend to face time constraints, as they may allocate time to both paid work and household care.

Another factor influencing female labor force participation is couple dynamics. Several studies have identified that women are less likely to participate in the labor market when in contexts where traditional family structures predominate —characterized by assigning men the role of primary provider and economic decision-maker—. For example, Hill (1984) found that husbands' income is negatively associated with female labor force participation, an effect mediated by gender roles within the household. This pattern contrasts with what is observed in households with historically greater female participation in paid work (Blau & Winkler, 2018).

These findings are consistent with the evidence that, while gender gaps in education have been declining globally (World Bank, 2023), these advances have not translated into comparable wage gains. Bar-Haim et al. (2023) analyzed the evolution of income gaps by gender in 12 European countries and found that education does not explain wage disparities, suggesting that structural mechanisms of inequality still persist (Blau et al., 2008; Blau & Kahn, 2017).

Labor Market Segmentation and Women's Informal Employment

Informality has been widely studied, particularly in developing countries, where it is recognized as a determining factor in wage disparities compared to formal employment. In this context, the informal sector takes shape as a particularly attractive employment alternative for women who, due to domestic responsibilities, have limited time availability. These types of jobs generally do not require high qualifications or adherence to rigid schedules, and often lack formal employment contracts (Behrman & Wolfe, 1984; Gallaway & Bernasek, 2002; Hill, 1984, 1989; Tiefenthaler, 1994).

Although these characteristics allow for some flexibility that makes it possible to combine paid work with household keeping, informal employment is usually linked to lower incomes compared to formal employment, and to a lack of social protection.

Women's participation in the informal sector can be read from two complementary perspectives. First, it responds to the need to balance paid employment with household keeping in contexts where flexibility is better valued than job stability. Second, it constitutes an adaptive strategy in the face of barriers that limit access to the formal employment market, such as specific requirements in hiring processes, and in the face of unemployment (Benería & Roldán, 1987; Moser, 1984). As noted by Paredes (2023), the informal sector has functioned as a pathway into labor market integration for women with low levels of human capital, a role highlighted too by Gallaway and Bernasek (2002) and by Tiefenthaler (1994).

Differentiated Effects of Migration According to Gender and Type of Flow

Furthermore, the available literature has documented the negative interaction of migratory status and gender in terms of labor market outcomes, which helps explain the wage gaps between migrant women and local workers. Overall, studies on migration and gender distinguish two main types of flows: south-north movements, characterized by integration into developed economies, and south-south flows, more frequent among developing countries. This distinction is key to understanding the different opportunities for labor market integration, the levels of informality, and wage gaps encountered by migrant women.

In south-north flows, migrant women tend to integrate into segmented labor markets, especially in service and care activities. Ferrant and Tuccio (2015) evidenced that, in high-income countries, the labor force participation of migrant women is conditioned by social norms and by the institutions that regulate domestic and care work. Kossoudji and Cobb-Clark (2002) estimate an average wage gap of 24% between documented and undocumented immigrants, this reflecting the costs of precarious migration.

Building on this literature, Cortés and Tessada (2011) analyzed how low-skilled immigration to the United States reduced the prices of services that substitute for domestic work, thus allowing highly educated native women, especially those with postgraduate degrees, to increase their labor supply in the intensive margin—that is, working longer hours and more frequently in extended shifts. Likewise, Furtado and Hock (2010) demonstrated that low-skilled immigration contributed to reducing the conflict between employment and motherhood among native women with college education, by lowering childcare costs and facilitating work-life balance.

By contrast, more favorable effects are observed when the migrant population is highly skilled or benefits from established labor networks in the receiving countries, which facilitates their integration into formal and better-paying jobs (Bazillier & Baudasse, 2014; Beine & Salomone, 2013; Davis & Winters, 2001; De Giorgi & Pellizzari, 2009; De Jong, 2000; Docquier et al., 2009; Docquier et al., 2012; Livingston, 2006).

Contrastingly, south-south migration flows, which predominate in Latin America, Africa, and Asia, are characterized by higher informality and weaker labor protections, factors that amplify gender inequalities. Gindling (2009) documents that Nicaraguan migration to Costa Rica has adversely affected the wages of women of lower education levels, while Amuedo-Dorantes and Pozo (2006), Binzel and Assaad (2011), and Mendola and Carletto (2012) demonstrated how male migration can increase the domestic burden on women who stay in their households of origin, thus reducing their participation in paid employment. These results concur in showing that the gendered division of labor tends to be reproduced and even intensified in contexts of migration in the Global South.

However, some studies suggest that south-south migration can also result in positive effects in the mid-term, associated with poverty alleviation and the accumulation of human capital (Greve, 2019; Murrugarra et al., 2011). The magnitude and direction of these impacts will depend on the receiving country and the conditions of the labor markets there.

Consequently, employment outcomes can vary depending on the destination country, particularly if the destination country is a developed one with better job opportunities (De Giorgi & Pellizzari, 2009; De Jong, 2000). These effects also tend to be more favorable when the migrant population is highly skilled (Bazillier & Baudasse, 2014; Docquier et al., 2009; Docquier et al., 2012), or when there are migrant networks already established in the destination countries (Beine & Salomone, 2013; Davis & Winters, 2001; Livingston, 2006).

Recent Evidence on Venezuelan Migration and Labor Gaps in Latin America

In Latin America, the Venezuelan exodus has provided new evidence on these mechanisms within the south-south migration framework. Shamsuddin et al. (2022) analyzed its impact in the border region of Roraima, Brazil, by means of a regression discontinuity methodology. The results indicate that, in the short term, the arrival of Venezuelan migrants increased unemployment and reduced employment in the informal sector, particularly so for local women. Consequently, migrant women were more likely to enter the informal market, thus exposing themselves to low wages and unstable work environments. This is due to the increased labor supply, which intensified competition in the informal sector, forcing particularly Venezuelan women to accept less favorable working conditions.

In Ecuador, Olivieri et al. (2022) found that young, low-education native workers in regions with high migration flows have been negatively affected in terms of job quality and income. Specifically, they identified that these workers have experienced lesser job quality, a 5% increase in the informality rate, and a 13% reduction in income, compared to workers with similar characteristics living in areas with very low or no influx of Venezuelan migrants. Also, Pedrazzi and Peñaloza-Pacheco (2023) found that the negative effect was concentrated on less-skilled local females.

Mora et al. (2023) found that, in Colombia, the Venezuelan exodus led to a reduction in hours worked by the local population, with no substantial changes in wages. This result is explained by wage rigidity within the country, implying that the changes occurred primarily in terms of labor supply. Similarly, Peñaloza-Pacheco (2022) found a comparable result in terms of changes in hours worked, but this negative change was concentrated among men and less-skilled workers. Yet, Caruso et al. (2021) found negative effects on wages; specifically, a 1% increase in immigration from Venezuela reduced informal sector wages by 10% in urban areas.

Several studies have addressed wage disparities in the Peruvian context, although they have predominantly focused on the local population (Castellares & Huarancca, 2021; Cueva et al., 2021; Higa et al., 2022; Paredes, 2023, 2025; Vaccaro & Paredes, 2022; Vaccaro et al., 2022). Conversely, research related to Venezuelan migration has focused on comparing wage gaps between the local and the migrant populations in general, not from a gender perspective specifically (Asencios & Castellares, 2020; Groeger et al., 2024; Vera & Jiménez, 2020). Thus, there is a clear lack of wage disparity analysis from a gender perspective among the Venezuelan migrant population.

From the reviewed literature and a gender perspective, a gap becomes evident in the analysis of employment determinants for the Peruvian and Venezuelan populations, which would allow for an understanding of the disparities that may have arisen in the mid-term, taking into account that Venezuelan migration began in mid-2017 (Salmón, 2021). As such, the present study contributes from three perspectives: 1) by analyzing the determinants of wages for the Peruvian and Venezuelan populations, 2) by identifying whether human capital variables can explain wage disparities, and 3) by adding to the literature on gender analysis of the Venezuelan-Peruvian population with updated information from the latest available survey.

DATABASES AND VARIABLES

The data for this study comes from the 2022 National Household Survey (ENAHO, acronym in Spanish for *Encuesta Nacional de Hogares*) conducted by the National Institute of Statistics and Informatics of Peru (INEI, acronym in Spanish for *Instituto Nacional de Estadística e Informática*). ENAHO is a nationally and regionally representative annual survey. It collects detailed individual information on housing, education, employment, income, and expenditures. This database provided the information used in this study for the Peruvian population.

On the other hand, the data for this study concerning the Venezuelan population comes from the 2022 Survey of the Venezuelan Population Residing in Peru (ENPOVE, acronym in Spanish for *Encuesta a la Población Venezolana residente en el Perú*) conducted by INEI. ENPOVE is a recently-implemented annual survey, which, as of 2023, has been carried out twice; it collects detailed individual information on housing, education, employment, and immigration status. The ENPOVE survey has focused on eight cities in Peru (Metropolitan Lima, Arequipa, Trujillo, Chiclayo, Piura, Cusco, Tumbes, and Tacna), given that these cities concentrate the largest migrant population within the country.

Since the ENPOVE collects information exclusively in urban areas and focuses its coverage on eight cities that concentrate the largest Venezuelan migrant population in the country, this study restricts the ENAHO sample to individuals residing in those same cities and belonging to the urban population. This methodological decision aims at guaranteeing comparability between both sources, minimizing biases arising from geographic coverage, the degree of urbanization, and differences in occupational structure. Furthermore, the sample is limited to people aged 14 to 65, the range corresponding to the working-age population according to the INEI's conceptual framework. This way, both databases are harmonized in terms of territorial scope, age structure, and occupational definitions, allowing the differences observed between the Peruvian and Venezuelan populations to reflect real labor market factors—such as education, experience, and formal employment—and not methodological divergences between surveys.

Table 1 shows the description of the variables used in this study, which were compiled from the aforementioned databases. It should be noted that the variables accounted for in this analysis were extracted from the ENAHO for the Peruvian population and from the ENPOVE for the migrant population.

Table 1. Variable Descriptions

Variables	Description
Hourly Wages	Hourly wage expressed in logarithms
Education	Years of education
Experience	Years of experience
Under Contract	Dummy with a value of 1 if the person has a contract, 0 otherwise
Self-employment	Dummy with a value of 1 if the person is self-employed, 0 otherwise
Number of Children	Number of children in the household
Marital Status	Dummy with a value of 1 if the person is married, 0 otherwise
Sex	Dummy with a value of 1 if the person is female, 0 otherwise
Migrant	Dummy with a value of 1 if the person is a Venezuelan migrant, 0 otherwise
Categorical Variables	
City	8 categories
Industry	10 categories. We used a grouping derived from the International Standard Industrial Classification (ISIC), Rev. 4 (2010), provided by the United Nations (UN).

Note: Regarding the sector classification, while ISIC (2010) was considered, three subclassifications of the Trade and Services industries were also included.

Source: ENAHO 2022 and ENPOVE 2022 (INEI, 2022a, 2022b).

Tables 2 and 3 present descriptive statistics for the study variables. The sample is comprised of 68% Peruvians and 32% Venezuelans; 53.8% of the observations correspond to men and 46.2% to women. The proportion of Peruvians is higher than that of the Venezuelan population because

the information was extracted from the ENAHO, which has a larger number of observations, unlike the ENPOVE, which focuses only on the Venezuelan migrant population in Peru.

It can be seen that the Venezuelan population in the sample has completed the equivalent of basic education. The Peruvian population has, on average, some level of higher education completed. This is because, to make the samples comparable, only ENAHO observations of employed people residing in the cities surveyed by ENPOVE were used.

In terms of the Experience, Self-employment, and Number of Children variables, both populations are homogeneous. It is worth noting that, within the sample, both groups have an average of one child, which is also explained by the urban selection of the sample. As for the distribution between men and women, both populations are homogeneous.

Finally, the number of workers with a formal employment contract is considerably higher among Peruvians (36%) than Venezuelans (10%). Investigating the determinants of this difference is beyond the scope of this research.

Table 2 presents the descriptive statistics of the dataset used in the study. Meanwhile, Table 3 shows the distribution of the Peruvian and Venezuelan sample in 2022.

Table 2. Descriptive Statistics

Variables	Peru		Venezuela	
	Mean	S.D.	Mean	S.D.
Wage (<i>soles</i> per hour)	9.3	17.8	7.1	18.7
Education (years)	15.1	4.4	10.7	4.0
Experience (years)	25.1	13.9	22.3	10.7
Under Contract (= 1)	0.37	0.48	0.10	0.31
Self-employed (= 1)	0.36	0.48	0.33	0.47
Number of Children	1.0	1.2	0.8	1.0
Marital Status (Married = 1)	0.23	0.42	0.48	0.50
Sex (Female = 1)	0.47	0.50	0.44	0.50

Note: Comparability between the ENAHO and ENPOVE surveys is guaranteed by restricting the analysis to the same urban areas and the 14-65 age range, in accordance with the INEI definitions. Descriptive statistics for the Migrant variable are not included because they represent the differences between Peruvians and Venezuelans. In aggregate, the mean is 0.31 and the standard deviation (SD) is 0.47.
Source: Own elaboration based on data from the ENAHO 2022 and ENPOVE 2022 (INEI, 2022a, 2022b).

Table 3. Distribution of the Peruvian and Venezuelan Sample in 2022

	Frequency			Percentage (%)		
	Male	Female	Total	Male	Female	Total
Peruvian	6 741	6 068	12 809	35.8	32.2	68
Venezuelan	3 395	2 632	6 027	18	14	32
Total	10 136	8 700	18 836	53.8	46.2	100

Note: The distribution of information corresponds to the observations used in the study.
Fuente: Own elaboration based on data from the ENAHO 2022 and ENPOVE 2022 (INEI, 2022a, 2022b).

Table 4 shows a breakdown of the Venezuelan population according to the industries in which they have been employed.

Table 4. Distribution of the Venezuelan Sample Among Productive Sectors

Sector	Sample	(%)
Mining and Hydrocarbons	124	1.0
M1: Edibles	455	3.6
M2: Clothing	393	3.1
M3: Wood, Cardboard, and Printing	90	0.7
M4: Oil, Chemicals, and Synthetic Fibers	60	0.5
M5: Metals, Machinery, and Other High Value-Added Products	512	4.0
Water and Construction	1 250	9.8
Wholesale Trade	794	6.2
Retail Trade	2 198	17.2
Transportation	1 267	9.9
Hotels and Restaurants	1 110	8.7
Other Services	3 793	29.6
Personal Services	763	6.0
Total	12 809	100

Source: Own elaboration based on data from the ENPOVE 2022 (INEI, 2022b).

The ISIC Revision 4 codes were used to define these sectors. The Mining and Hydrocarbons sector comprises section B. The Processed Food and Beverage Manufacturing sector (M1: Edibles) comprises divisions 10, 11, and 12 of section C. The Clothing Manufacturing sector (M2) comprises divisions 13, 14, and 15 of section C. The Wood, Cardboard, and Printing sector (M3) comprises divisions 16, 17, and 18 of section C. The Oil, Chemicals, and Synthetic Fibers sector (M4) comprises divisions 19, 20, and 21 of section C. The M5 sector comprises the remaining divisions of section C. The Water and Construction sector comprises sections D, E, and F. The Wholesale and Retail Trade sectors comprise divisions 46 and 47 of section G, respectively. The Transportation sector comprises section H. The Hotels and Restaurants sector comprises section I. The Personal Services sector comprises divisions 96 and 97 of section S. Finally, Other Services comprises the remaining activities.

Employees in the agricultural sector have been omitted due to their limited similarity to the rest of the sample. Table 4 shows that the Venezuelan population is concentrated in the Other Services, Retail Trade, Hotels and Restaurants, and Personal Services sectors, which together account for over 60% of all migrant workers. These sectors are characterized by requiring lesser formal qualifications and offering greater labor flexibility, conditions that make them predominant employment opportunities for migrants (Caruso et al., 2021; Mora et al., 2023; Olivieri et al., 2022; Pedrazzi & Peñaloza-Pacheco, 2023).

Particularly the Personal Services sector, although representing a smaller proportion, is of analytical interest due to its high feminization and its connection to informal employment and low

wages (Benería & Roldán, 1987; Moser, 1984; Paredes, 2025; Vaccaro & Paredes, 2022). In this context, the working conditions and demand in these activities are crucial for understanding the occupational structure and employment opportunities for Venezuelans in Peru.

In terms of sample design, the estimates were made without the expansion factors from the ENAHO or ENPOVE. These weighting factors are constructed to obtain descriptive estimates representative at the population level, but they are not suitable for multistage econometric or selection correction models, such as those employed in this study. The methodological decision follows the practice adopted in previous research on the Peruvian labor market that make use of these same surveys (Asencios & Castellares, 2020; Cueva et al., 2021; Paredes, 2023, 2025; Vaccaro et al., 2022). Consequently, the results should be interpreted as valid for the analyzed sample, not compromising the internal validity or consistency of the estimates.

METHODOLOGY

To answer the research questions posed in this study, we estimate a Mincer (1974) equation. This specification allows us to analyze individuals' decisions, while accounting for constraints imposed by external factors such as market structure or social norms.

The estimated parameters reflect the extent to which individuals in the sample can access better-paying jobs when they invest in their education or accumulate work experience. Consistent with the literature, returns to education and experience are expected to be lower for Venezuelan migrant women, reflecting their limited access to jobs with wages exceeding twice the minimum living wage.

The equation for estimation is the following:

$$\ln W_i = (\beta_0 + \beta_{s,0}S_i + \beta_{v,0}V_i + \beta_{sv,0}S_iV_i) + (\beta_{01} + \beta_{s,1}S_i + \beta_{v,1}V_i + \beta_{sv,1}S_iV_i)E_i + (\beta_2 + \beta_{s,2}S_i + \beta_{v,2}V_i + \beta_{sv,2}S_iV_i)X_i + Z_i\delta + v_i \quad (1)$$

Where $\ln W_i$ corresponds to the wage per hour logarithm, E_i to years of education, X_i to years of experience, S_i is a dichotomous variable with a value equal to one if the individual is female, V_i is a dichotomous variable with a value equal to one if the individual is Venezuelan, and Z_i is a vector with control variables that include having a contract formalizing employment status, self-employment status, number of children, marital status, and a series of dichotomous variables to control for the city and industry wherein the individual is employed.

The selection of control variables follows the empirical structure proposed by Vaccaro et al. (2022), and incorporates work and family characteristics that influence wage determination. As per Heckman's model (1979), some of these variables—Number of Children, Marital Status, and Age—are also accounted for in the participation equation, so as to capture factors that affect the decision to seek employment. Their function, however, differs between stages: in the first stage, they are used as determinants of the probability of participation, while in the wage equation, they operate as demographic controls that allow the isolation of the effects of education and experience.

As such, the model maintains the exclusion condition necessary for their identification, further supported by the nonlinearity of the selection term derived from the probit model.

As noted by Heckman (1979), wage analysis is usually subject to the potential problem of individual selection bias. To address this issue, an alternative specification is estimated by modifying equation (1) to include a correction term for the selection bias ($\sigma\rho\lambda_i$). This term accounts for the potential correlation between the error terms in the wage equation (Mincer equation) and the selection equation, thereby eliminating the bias arising from omitted variables related to self-selection.

The methodology for correcting participation bias involves, in a first stage, estimating a labor market participation equation using a probit model, and then incorporating the resulting estimates into the wage equation.

Therefore, once the bias correction is taken into account, the equations to be estimated are the participation equation and the wage equation, respectively:

$$P_i = F(W_i'\alpha)$$

$$\ln W_i = (\beta_0 + \beta_{s,0}S_i + \beta_{v,0}V_i + \beta_{sv,0}S_iV_i) + (\beta_{01} + \beta_{s,1}S_i + \beta_{v,1}V_i + \beta_{sv,1}S_iV_i)E_i + (\beta_2 + \beta_{s,2}S_i + \beta_{v,2}V_i + \beta_{sv,2}S_iV_i)E_i + \sigma\rho\lambda_i + Z_i\delta + v_i \quad (2)$$

Where P_i indicates the probability of being employed conditionally according to the covariates included W_i . The covariates accounted for (Sex, Nationality, Age, Number of Children, and Marital Status) were selected based on the reviewed literature and their role within the identification model. These variables reflect structural determinants of labor force participation, where Age and Number of Children capture time constraints and domestic burden; Sex and Marital Status represent social norms and intra-household decisions that impact on the probability of participation; and Nationality reflecting institutional and integration differences between migrants and locals (Becker, 1962; Farré & Vella, 2013; Ferrant & Tuccio, 2015; Hill, 1984; Mincer, 1974).

The model distinguishes three groups of variables. First, Sex and Nationality are included in both equations, allowing for the analysis of gender and immigration status differences in both participation and wage determination (Blau & Kahn, 2017; Kossoudji & Cobb-Clark, 2002). Second, Age is used only in the participation equation, fulfilling the exclusion condition necessary for identifying Heckman's model (1979). Finally, Marital Status and Number of Children appear in both equations with distinct functions: they may determine the probability of employment and, in turn, also act as demographic controls that allow for isolating the returns to education and experience (Farré & Vella, 2013; Hill, 1984).

Finally, variables associated with the job position itself—such as having a formal contract, self-employment status, or industry of employment—are excluded from the participation equation, as

they are only observed once the individual is employed, following Vaccaro et al. (2022) and Paredes (2023, 2025).

RESULTS

Table 5 shows the results of the overall regression, along with the regressions differentiated by nationality or sex. First, it is found that returns per additional year of education for Peruvian men ranges between 4.74% and 5.02%, while for Peruvian women the range is between 5.28% and 5.86%, implying the possibility that the accumulation of years of education can help close the wage gap among the local urban population. However, in the Venezuelan population, the return to education for men is between 0.56% and 0.93%, while for Venezuelan women this coefficient is between 0.62% and 1.39%.

Table 5. Regressions by Nationality and Gender

	(1) General	(2) Venezuelan	(3) Peruvian	(4) Males	(5) Females
Education (Years)	0.0502*** (0.00247)	0.00925*** (0.00284)	0.0473*** (0.00268)	0.0540*** (0.00279)	0.0528*** (0.00223)
Int(Female)	0.00839** (0.00328)	0.000309 (0.00415)	0.00865** (0.00356)		
Int(Venezuelan)	-0.0446*** (0.00421)			-0.0479*** (0.00518)	-0.0466*** (0.00374)
Int(Female and Venezuelan)	-0.00738 (0.00605)				
Experience (Years)	0.00591*** (0.000731)	-0.000367 (0.00105)	0.00496*** (0.000810)	0.00497*** (0.000897)	0.00487*** (0.000665)
Int(Female)	-0.00177* (0.00103)	-0.00149 (0.00153)	-0.00149 (0.00111)		
Int(Venezuelan)	-0.00672*** (0.00146)			-0.00687*** (0.00182)	-0.00625*** (0.00129)
Int(Female and Venezuelan)	0.000547 (0.00214)				
Under Contract	0.184*** (0.0179)	0.134*** (0.0272)	0.175*** (0.0213)	0.252*** (0.0314)	0.148*** (0.0207)
Int(Venezuelan)	-0.0687* (0.0353)			-0.175*** (0.0611)	0.0162 (0.0406)
Self-employed (Yes = 1)	-0.145*** (0.0142)	-0.208*** (0.0180)	-0.107*** (0.0200)	-0.225*** (0.0230)	-0.0406** (0.0174)
Children (Number)	0.0178*** (0.00502)	0.0316*** (0.00785)	0.0121* (0.00631)	0.0171** (0.00809)	0.0188*** (0.00615)

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	(1) General	(2) Venezuelan	(3) Peruvian	(4) Males	(5) Females
<i>(continuation)</i>					
Married (Yes = 1)	0.0524*** (0.0131)	-0.0306* (0.0162)	0.112*** (0.0186)	0.0220 (0.0215)	0.0828*** (0.0156)
Female (Yes = 1)	-0.303*** (0.0661)	-0.0245 (0.0671)	-0.305*** (0.0719)		
Venezuelan (Yes = 1)	0.684*** (0.0702)			0.943*** (0.0908)	0.683*** (0.0623)
Female and Venezuelan (Yes = 1)	0.279*** (0.104)				
Dichotomous by Industry					
Manufacturing 1	-0.267*** (0.0702)	-0.392** (0.184)	-0.247*** (0.0818)	-0.193 (0.183)	-0.253*** (0.0712)
Manufacturing 2	-0.478*** (0.0728)	-0.585*** (0.188)	-0.481*** (0.0838)	-0.472** (0.185)	-0.389*** (0.0758)
Manufacturing 3	-0.308*** (0.0942)	-0.309 (0.213)	-0.344*** (0.111)	-0.378 (0.237)	-0.290*** (0.0925)
Manufacturing 4	-0.131 (0.107)	-0.454* (0.234)	-0.0737 (0.126)	-0.0194 (0.234)	-0.183 (0.114)
Manufacturing 5	-0.204*** (0.0699)	-0.287 (0.184)	-0.220*** (0.0807)	-0.226 (0.193)	-0.204*** (0.0671)
Water and Construction	-0.0736 (0.0672)	-0.169 (0.183)	-0.0745 (0.0765)	-0.207 (0.191)	-0.0846 (0.0645)
Wholesale Trade	-0.245*** (0.0680)	-0.434** (0.183)	-0.197** (0.0779)	-0.102 (0.183)	-0.294*** (0.0658)
Retail Trade	-0.563*** (0.0668)	-0.545*** (0.182)	-0.628*** (0.0758)	-0.507*** (0.179)	-0.489*** (0.0657)
Transportation	-0.315*** (0.0673)	-0.390** (0.183)	-0.324*** (0.0768)	-0.0645 (0.192)	-0.406*** (0.0647)
Hotels and Restaurants	-0.282*** (0.0674)	-0.400** (0.182)	-0.283*** (0.0777)	-0.170 (0.180)	-0.342*** (0.0677)
Services	-0.0522 (0.0654)	-0.269 (0.182)	-0.0185 (0.0736)	0.0518 (0.178)	-0.113* (0.0631)
Personal Services	-0.255*** (0.0691)	-0.379** (0.183)	-0.244*** (0.0803)	-0.148 (0.180)	-0.460*** (0.0791)
Observations	18 836	6 027	12 809	8 700	10 136
R-Square	0.223	0.091	0.252	0.229	0.200

Note: Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01.

Source: Own elaboration based on data from the ENAHO 2022 and ENPOVE 2022 (INEI, 2022a, 2022b).

The migrant population earns only about one-fifth of the returns to an additional year of education relative to the local population. This implies that a Peruvian who completes basic education (11 years) earns up to 87% more than an individual with no formal schooling, whereas a Venezuelan employed in Peru earns only a 16.3% higher wage. This suggests that the Peruvian productive structure does not adequately absorb migrants' human capital, as they are placed in jobs that do not fully utilize their education.

In terms of accumulated experience, the return for Peruvian men ranges from 0.49% to 0.59%. For women, returns range from 0.41% to 0.49%, 20% lower than that of men. This suggests women face difficulties in translating their experience and skills into better positions and higher wages. For the Venezuelan population, returns to experience are not statistically different from zero for either men or women. Therefore, Venezuelans appear to be employed in activities that do not allow them to advance or signal skills that differentiate them from inexperienced workers.

Having formal contracts increases the hourly wage by 17.5% for the local population, compared to a coefficient of 13.4% for migrants. This difference suggests unequal treatment between Peruvians and Venezuelans when they access formal employment. A gender difference is also evident, as men receive up to 25.2% when under a formal contract, while women receive only 14.8%. The additional return for formalization is also not statistically different between Peruvian and Venezuelan women.

On the other hand, the overall regression shows a 30.3% penalty in hourly wages for women regardless of their nationality, while the specific regression for the local population (3) evidences a 30.5% penalty. Notably, the specific regression for migrants does not show a penalty for Venezuelan women compared to men. One possible explanation is that the sample includes migrants observed at least five years after the onset of the Venezuelan exodus, by which time migrant networks may have enabled more equitable job placement between men and women.

Consistent with this interpretation, the absence of statistically significant two-way interaction effects indicates that there is no additional penalty associated with being both female and Venezuelan.

All the estimates show a strong penalty for employees in the Retail Trade, Hotels and Restaurants, and Personal Services sectors; which together account for 31.8% of the migrant population in the sample. This observation supports the view that one of the main obstacles to increasing Venezuelan wages is the type of jobs in which they are employed.

In order to assess the sensitivity of the results, the Mincer equation was also estimated by means of Heckman's selection model (1979), with the aim of analyzing whether labor force participation results in a wage coefficient bias. Table 6 shows the results obtained. First, the likelihood ratio test—which compares this model with another in which self-selection does not affect the wage equation—reveals self-selection bias only in the samples of men and Peruvians. In these regressions, both the sign and significance of the coefficients are similar to those obtained using ordinary least squares (OLS).

Table 6. Regressions by Sex and Nationality Using the Heckman Model

	(1) General	(2) Venezuelan	(3) Peruvian	(4) Males	(5) Females
Education (Years)	0.0494*** (0.00247)	0.00925*** (0.00283)	0.0449*** (0.00267)	0.0511*** (0.00277)	0.0526*** (0.00224)
Int(Female)	0.00810** (0.00328)	0.000309 (0.00414)	0.00761** (0.00352)		
Int(Venezuelan)	-0.0442*** (0.00422)			-0.0467*** (0.00520)	-0.0465*** (0.00374)
Int(Female and Venezuelan)	-0.00717 (0.00606)				
Experience (Years)	0.00511*** (0.000754)	-0.000367 (0.00105)	0.00266*** (0.000832)	0.00241*** (0.000928)	0.00472*** (0.000690)
Int(Female)	-0.00197* (0.00103)	-0.00149 (0.00153)	-0.00187* (0.00111)		
Int(Venezuelan)	-0.00626*** (0.00147)			-0.00567*** (0.00184)	-0.00614*** (0.00129)
Int(Female and Venezuelan)	0.000650 (0.00215)				
Under Contract	0.183*** (0.0179)	0.134*** (0.0271)	0.169*** (0.0212)	0.238*** (0.0312)	0.148*** (0.0207)
Int(Venezuelan)	-0.0673* (0.0354)			-0.159** (0.0617)	0.0163 (0.0405)
Self-employed (Yes = 1)	-0.143*** (0.0142)	-0.208*** (0.0180)	-0.0784*** (0.0202)	-0.202*** (0.0233)	-0.0405** (0.0173)
Children (Number)	0.0155*** (0.00508)	0.0316*** (0.00783)	0.00450 (0.00654)	0.0128 (0.00831)	0.0181*** (0.00620)
Married (Yes = 1)	0.0499*** (0.0132)	-0.0306* (0.0162)	0.112*** (0.0192)	0.0185 (0.0222)	0.0821*** (0.0156)
Female (Yes = 1)	-0.285*** (0.0660)	-0.0245 (0.0670)	-0.266*** (0.0714)		
Venezuelan (Yes = 1)	0.646*** (0.0707)			0.841*** (0.0916)	0.674*** (0.0632)
Female and Venezuelan (Yes = 1)	0.268***				

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	(1) General (0.104)	(2) Venezuelan	(3) Peruvian	(4) Males	(5) Females
LR-Test (p-value)	0.054	0.994	0.000	0.000	0.458
Observations	19 844	6 144	13 700	9 257	10 587

Notes: Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01.

Source: Own elaboration based on data from the ENAHO 2022 and ENPOVE 2022 (INEI, 2022a, 2022b).

Table 7 shows the results of the overall regression along with the specific regressions for some of the main economic sectors and sectors of analytical interest in which the employment of Venezuelans is concentrated or prominent, particularly Retail Trade, Hotels and Restaurants, Other Services, and Personal Services. These sectors were selected for their relative share in the sample and for their relevance in examining differences in wage determinants according to the type of employment, in accordance with the reviewed literature.

Table 7. Regressions by Selected Industries

	(1) General	(2) Retail Trade	(3) Hotels and Restaurants	(4) Services (Other)	(5) Personal Services
Education (Years)	0.0502*** (0.00247)	0.0455*** (0.00995)	0.0233 (0.0144)	0.0909*** (0.00440)	-0.0115 (0.0276)
Int(Female)	0.00839** (0.00328)	-0.0200* (0.0115)	-0.00159 (0.0157)	0.00543 (0.00617)	0.0341 (0.0286)
Int(Venezuelan)	-0.0446*** (0.00421)	-0.0455*** (0.0159)	-0.0117 (0.0185)	-0.0740*** (0.0107)	0.0102 (0.0353)
Int(Female and Venezuelan)	-0.00738 (0.00605)	0.0166 (0.0199)	-0.00643 (0.0207)	0.00714 (0.0150)	-0.0288 (0.0373)
Experience (Years)	0.00591*** (0.000731)	0.00686** (0.00277)	0.00501 (0.00352)	0.00496*** (0.00133)	0.00548 (0.00597)
Int(Female)	-0.00177* (0.00103)	-0.00914*** (0.00328)	-0.00218 (0.00402)	0.00414** (0.00178)	-0.00455 (0.00638)
Int(Venezuelan)	-0.00672*** (0.00146)	-0.00779 (0.00541)	-0.00727 (0.00554)	-0.0123*** (0.00326)	0.00357 (0.0117)
Int(Female and Venezuelan)	0.000547 (0.00214)	0.00605 (0.00708)	0.00154 (0.00647)	0.00281 (0.00505)	-0.00553 (0.0123)
Under Contract	0.184*** (0.0179)	0.318*** (0.0682)	0.164** (0.0697)	0.135*** (0.0353)	0.0479 (0.130)
Int(Venezuelan)	-0.0687* (0.0344)	-0.237* (0.118)	-0.0362 (0.161)	-0.0123 (0.084)	0.0618 (0.242)

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	(1)	(2)	(3)	(4)	(5)
	General	Retail Trade	Hotels and Restaurants	Services (Other)	Personal Services
	(0.0353)	(0.136)	(0.111)	(0.0613)	(0.240)
Self-employed (Yes = 1)	-0.145***	-0.275***	-0.158***	0.113***	-0.153***
	(0.0142)	(0.0408)	(0.0369)	(0.0366)	(0.0494)
Children (Number)	0.0178***	0.0367**	0.0342**	0.00716	0.0572***
	(0.00502)	(0.0144)	(0.0150)	(0.0105)	(0.0203)
Married (Yes = 1)	0.0524***	0.0272	-0.0320	0.108***	-0.0666
	(0.0131)	(0.0392)	(0.0377)	(0.0250)	(0.0523)
Female (Yes = 1)	-0.303***	0.111	-0.185	-0.290**	-0.367
	(0.0661)	(0.217)	(0.277)	(0.125)	(0.447)
Venezuelan (Yes = 1)	0.684***	0.774***	0.266	1.252***	-0.128
	(0.0702)	(0.258)	(0.307)	(0.181)	(0.539)
Female and Venezuelan (Yes = 1)	0.279***	-0.0940	0.269	-0.0939	0.519
	(0.104)	(0.328)	(0.348)	(0.264)	(0.579)
Observations	18 836	3 179	2 238	4 617	1 309
R-Square	0.223	0.122	0.065	0.232	0.042

Notes: Standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Fuente: Own elaboration based on data from the ENAHO 2022 and ENPOVE 2022 (INEI, 2022a, 2022b).

The results allow us to analyze whether human capital, particularly educational level and work experience, translates into higher incomes across employment sector. While the Retail Trade sector shows a 4.55% coefficient, slightly lower than that of the overall regression, the other sectors show much lower returns, even for the local population. Evidence indicates that in the Hotels and Restaurants and Personal Services sectors, higher education does not lead to greater returns for either Peruvians or Venezuelans.

Conversely, experience proves to be a means of increasing wages for both the local and Venezuelan populations, when measured as a determining factor. Venezuelan men employed in Retail Trade earn up to 0.69% more per hourly wage per year of experience. However, this coefficient is practically zero for women. Comparably, while Peruvians in the Other Services sector can generate up to 0.91% additional returns for women, the return for Venezuelans is zero regardless of gender. Finally, it can be noted that the Hotels and Restaurants and Personal Services sectors do not provide a return per year of experience, this implying that employees in these sectors do not acquire any skills that distinguish them from inexperienced employees.

The results show an unequal valuation of human capital between the Venezuelan migrant population and the locals in Peru, conditioned by economic sector, gender, and immigration status. Considerably lower returns per year of education and work experience are observed in sectors such

as Retail Trade, Hotels and Restaurants, and Personal Services—which concentrate a significant proportion of the migrant labor force—. This pattern is especially pronounced among migrant women, who face additional structural barriers that hinder the accumulation of differentiating skills and limit their opportunities for occupational mobility.

This evidence is consistent with Ferrant and Tuccio (2015), who argue that south-south migration flows, combined with gender inequalities, restrict women’s labor market integration in economies with rigid institutional structures. The available literature has documented how the depreciation of human capital in receiving contexts—as illustrated by Kossoudji and Cobb-Clark (2002) and Docquier et al. (2009)—relates to the allocation of migrants to informal or low-productivity sectors. Evidence from Brazil (Shamsuddin et al., 2022) and Peru (Caruso et al., 2021) clearly illustrates this pattern, with migrants disproportionately employed in sectors with low economic returns.

Regarding the absence of returns to work experience among migrant women, the results suggest the presence of structural barriers that limit their ability to capitalize on their occupational trajectory. This trend is consistent with the findings of Pedrazzi and Peñaloza-Pacheco (2023) in Ecuador, where less-skilled local workers are also negatively affected by migration. Although no direct wage penalty for being a migrant woman was identified, the data reveals that job precarity manifests itself through less visible mechanisms, such as the lack of recognition of human capital and segregation in sectors with low mobility.

CONCLUSIONS

This study analyzed the underlying causes of the low incomes earned by the Venezuelan migrant population in Peru, with particular emphasis on gender differences. The findings indicate that neither education nor work experience result in significant improvements in the wages of migrant employees, whereas formal employment does provide a wage increase, albeit more limited than for the local population. Furthermore, a gender wage gap was not identified among migrants, unlike what was observed in the Peruvian population. Finally, the concentration of the migrant labor force in low-technology sectors—including hotels, restaurants, and retail trade—constitutes the main obstacle to achieving higher incomes.

These results reveal that the labor market integration of the migrant population is deeply conditioned by sectoral, institutional, and gender dynamics. The apparent absence of wage penalties for migrant women could reflect a degree of equity in relative access, possibly enabled by professional social networks, although not necessarily indicating equality of opportunity. In fact, the data shows that women, regardless of their nationality, face persistent limitations in translating their experience into wage increases, indicating a subtler form of economic exclusion.

In this context, the need to implement targeted public policies that address the structural barriers affecting migrants, particularly migrant women, becomes evident. Such policies should be geared toward facilitating the recognition of professional credentials and skills, promoting access to formal employment, and fostering integration into higher-productivity sectors. Without

interventions in this regard, migrant women with high levels of human capital are likely to remain trapped in precarious labor niches, which would continue limiting not only their individual development but also the potential contribution of migration to the economic growth of destination countries.

In line with the Sustainable Development Goals (SDGs), the results of this study contribute to understanding gender and labor inequalities in the context of Venezuelan migration in Peru. In particular, these findings are directly linked to SDG 5 (Gender Equality) by highlighting the wage gaps and participation restrictions faced by migrant women, as well as to SDG 8 (Decent Work and Economic Growth) by underscoring the importance of promoting formal and inclusive working conditions that allow for equitable integration into the labor market. Thus, the results provide relevant empirical evidence able to guide public policies towards strengthening equal opportunities and the labor market integration of migrants.

In closing, some limitations of this study are acknowledged, including its cross-sectional nature, which prevents capturing temporal trends in income and labor market integration; also the lack of information on immigration status and perceived discrimination, factors that could influence wage determination. Future lines of research could address these aspects by means of longitudinal panels or specialized surveys, and could as well explore the interactions between gender, migration, and formal employment over time. This would allow for a deeper understanding of the mechanisms that perpetuate the observed gaps and the design of more effective policies able to promote equity and inclusion.

Translation: Fernando Llanas.

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