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## Article

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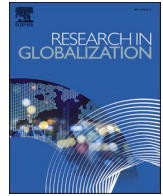
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# Immigration and formal labor market participation in Ecuador: Empirical insights from a developing nation

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## ABSTRACT

This research article reports an investigation of immigration effects on the probability of being part of the formal labor market in Ecuador, a developing South American economy. We use data on the population of Ecuador as collected in the Census of Population and Dwelling 2010. Using a discrete-choice probit model, we find a negative association between immigration and the probability of having a job in the formal labor market. This relationship stands for both international and local immigrants. We also find that long-term migrants (local or international) exhibit an increased likelihood of securing formal employment, while recent migrants face hurdles in accessing the formal labor market. In addition, our results show that international migrants face more difficulties in entering the formal labor market compared to local immigrants.

## Introduction

One of the objectives within the United Nations' Sustainable Development Goals (SDGs) is to improve access to and conditions of employment of the general population (United Nations, n.d.-a). Working is a daily activity and the primary source of economic resources for most human beings and has a profound influence on an individual's and the household's perception of their own well-being. Thus, employment is the best guarantee of harmonious economic growth and development (Comisión Económica para América Latina y el Caribe (CEPAL), 2007; International Labour Organization, n.d.). Indeed, unemployment affects citizens at the individual, family, and societal level. At the individual level, unemployment causes stress and anxiety (Gallie, Kostova, & Kuchar, 2001), increases debt and solvency problems, weakens matrimonial bonds, and even places children's access to public education at risk (Dixon, 1992). At the societal level, unemployment generates various problems such as an increase in the level of poverty (Corcoran & Hill, 1980).

The labor market can be divided into two sectors: the formal and informal labor markets. The benefits a worker can access depend upon the labor market sector in which the worker participates. In 2016, globally, about 61 % of all workers participated in the informal market (United Nations, n.d.-c), which should set off alarm bells since the informal market is characterized by smaller or fewer economic and social benefits (Friberg, 2012; International Labour Office, 2002; Tijdens,

Besamusca, & Van Klaveren, 2015). A lack of job opportunities in the formal sector pushes citizens into the informal sector, which offers easier access to work (Banerjee, 1983). The job search therefore takes place within an environment of competition that fosters inequality between social groups—for example, between local people and newcomers—for those trying to secure a position in the formal sector, which it is associated with a perception of stability and individual well-being. The ways in which immigration, both internal and international, is related to the formal labor market is the focus of this paper.

In 2020, around 272 million people lived in a country other than the one in which they were born (United Nations, n.d.-b). The leading cause of migration is the search for better living conditions, an increase in income, and job stability. However, it takes time for migrants to insert themselves into a local labor market. Migrants show a desire to ensure and protect job opportunities but may not consider the structure of the labor market (Godin & Renaud, 2005). Two theoretical approaches are used to analyze the relationships between migration and the labor market. The first suggests that migrants replace people in the native workforce, while the second indicates that migrants fill workforce positions that native workers do not want (Dustmann, Schonberg, & Stuhler, 2016; Gang & Rivera-Batiz, 1994; LaLonde & Topel, 1991).

In the context of a globalized world, understanding the dynamics of labor market integration for migrants has become increasingly vital. This research aims to contribute to the discourse on migration and labor markets, focusing on Ecuador as a case study. The study is particularly

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relevant within the framework of globalization, shedding light on the nuanced relationships between migration, time of residence, and labor market outcomes.

Ecuador is a developing country that has experienced a conspicuous urbanization process; in 2021, for example, 64 % of the population resided in urban areas (World Bank, 2022). Moreover, between the late 1990 s and 2000 Ecuador absorbed a massive wave of immigrants. In order to classify workers in this country as formal and informal, this paper uses the affiliation status of an individual to the country's social security system (IESS), as this coverage is required for formal employment in the country (IESS, 2022).

At the beginning of 2022, the Ecuadorian labor market was distributed as follows: 42.5 % worked in the formal sector and 51.4 % in the informal sector (National Institute of Statistics and the Census (INEC), 2022c). We use data from the 2010 Census on Population and Housing to determine whether there were significant differences in the participation of internal and foreign migrants in the formal workforce in the year 2010, taking into account that workers immigrated at different points in time.

The findings of this research confirm that there are substantive differences in how migrants—both internal migrants and those coming from abroad—insert themselves into the labor market compared to local workers. Specifically, the results suggest more recently arrived migrant have lower chances of finding formal-market jobs. Interestingly, this relationship weakens over time. Our results also indicate that in the case of foreign migrants arriving in Ecuador, even if they have been residing there for a while, the long-term difficulty of obtaining formal employment remains.

This paper is organized in the following manner. Section 2 reviews the relevant literature on the association between migration and the job market. Section 3 offers some background on Ecuador as a case study. Section 4 presents the methodology we applied for the empirical analysis. Section 5 presents the results. Finally, we state our conclusions in Section 6.

## Review of the literature

### *Labor Markets: Formal and Informal*

Throughout history, the behavior of the labor market has been examined from various perspectives. In practical terms, the literature usually divides the labor market into two groups. The first is a traditional, regulated market. Pradhan and van Soest (1995) show that workers in this sector usually work under a contract in which benefits are laid out according to labor law. Banerjee (1983) and Harris and Todaro (1970) point out that this sector offers stable conditions to workers with regard to salaries. Similarly, Friberg (2012) mentions that access to social security is guaranteed for this sector. These factors make formal positions more attractive to workers, even though expectations may not always be met.

On the other hand, the informal labor market is characterized by jobs that lack social security coverage and written labor contracts (International Labour Office, 2002). Tijdens et al. (2015) add that salaries in the informal sector are lower than the minimum defined by law and may involve workweeks greater than 48 h. Moreover, Sheikh and Gaurav (2020) and Friberg (2012) indicate that this sector is not regulated by labor law, resulting in minimal benefits and conditions that are not favorable to workers. The informal market is therefore the “second choice” for workers after the formal market. It is an option chosen in the face of a lack of sources of formal work, but also, as Banerjee (1983) asserts, for the ease with which one can establish oneself in a market niche in this sector and enjoy relative freedom. In this regard, the International Labour Office (2002) emphasizes the importance of informal work to the economy, since in many countries informal work generates wealth, employment, and sufficient income to sustain both oneself and a family.

The relationship between these two labor market segments—formal and informal—has been extensively explored in the literature. For example, Fields (1975) discusses how the informal sector often serves as a bridge to the formal sector. Individuals decide to start work in the informal sector while they develop business connections or look for opportunities in the formal sector. However, Breman (1976) states that no such relationship between the sectors exists, and individuals who work informally continue in these types of positions, not so much because they choose to or due to a lack of education, but rather because the sectors have distinct market structures and barriers to entry.

Dustmann et al. (2016) offer another view on entry into the formal and informal labor sectors, pointing out that entry depends on the economic status of one's family. That is, if an individual is a member of a wealthy family who controls various businesses by inheritance, they can quickly enter the formal sector. In addition, if an individual's parents have attained some higher education, their children will probably receive a good education in which they will network with people who can later help them enter the formal sector. On the other hand, for groups excluded by xenophobia due to race, migratory status, poverty, religion, or other types of discrimination, access to the formal labor market will depend on academic merit or experience, or positions arranged by influential relatives or contacts.

### *Mobility and the Labor Market*

The United Nations (1970), in the framework of the International Organization for Migration (IOM) (n.d.), defines a migrant as a person who changes their usual place of residence for another, whether on a temporary or permanent basis. The United Nations High Commissioner for Refugees (UNHCR) (n.d.) defines the nature of this mobility, differentiating between voluntary and involuntary relocation. That is to say, the UNHCR distinguishes a migrant, a person who freely decides to change residence, from a refugee. The latter is forced to abandon their place of origin due to threats against their life and liberty—their displacement is involuntary.

Moreover, an individual's mobility status can be either national or international (World Bank, 2016; Rees, 2020). National, or internal, mobility relates to individuals who change their place of residence within the same country. In contrast, international movement covers those who emigrate to new countries. Banerjee (1983) mentions that, by nature, the process of migrating to and integrating into receiver communities and territories implies economic, social, and cultural reorganization processes, both for the destination and the country of origin.

Authors such as Banerjee (1983), David & Jarreau (2017), and Mintchev et al. (2017) note that if migration is voluntary, the migrant's decision is influenced by the conditions of his/her surroundings, such as the degree of unemployment, the political and economic situation within the country of origin, and others. Subsequently, the migrant does a cost-benefit analysis of relocating, taking into consideration the opinions of other family members. Usually, in the first stage, only one family member migrates, seeking to improve her or his conditions with a higher income and stability. Finally, depending upon the living conditions that the migrant encounters in the destination and the connections that she or he has made, she or he might be joined by the rest of the family or other people familiar to her or him.

After changing residence, a migrant—whether internal or coming from abroad—must decide whether she or he will return to the place of origin or will settle down in the new place. This decision depends upon various factors such as economic stability, their personal ability to adapt (resilience), expectations regarding finding employment, their capacity to save money and to establish a family and social connections, and the discrimination that they face on a daily basis (Friberg, 2012).

In the case of forced displacement, refugees have less time to react and must usually abandon their place of origin rapidly. Thus, the decision of where to migrate is influenced by factors such as the number of fellow nationals who already reside at the destination (Neumayer, 2005)

and ties between the source and destination locations (Havinga & Böcker, 1999).

In relation to migration's effect on the labor market, studies have obtained mixed results. On the one hand, one stream of published research suggests that migrants replace the work done by native workers, while the other faction indicates that migrants occupy job positions that native workers reject (Dustmann et al., 2016; Gang & Rivera-Batiz, 1994; LaLonde & Topel, 1991). The first implies an excessive workforce in the labor market, giving rise to precarity in wages (LaLonde & Topel, 1991). Moreover, Dustmann et al. (2016) note that this condition would create a situation where less well-prepared native workers confront migrants, which could generate unemployment for both groups. On the other hand, the second strand of literature, which proposes that migrants take up positions that native workers have refused, would result in benefits to the labor market: As employers are inclined to contract personnel immediately available for many activities, there would be no barriers to migrant access (Gang & Rivera-Batiz, 1994). In discussing these situations, it is important to note the conditions under which migrants enter the workforce, that is, whether they enter the formal or informal sector.

Borjas (2006) points out that a country's residents tend to migrate when their country starts to accept new arrivals, whether they are internal or foreign migrants, due to the fact that wherever there is international migration, the new settlers come to look for work. For some native workers, the arrival of newcomers may motivate their decision to move to a less competitive environment where they can find the best conditions for entry into the labor market.

Studies such as those by Godin and Renaud (2005) acknowledge a strong relationship between migration and insertion into the labor market. These authors highlight the importance that people perceived as migrants put on assuring and protecting their employment, often without regard for the structure of the labor market or the challenges they must face. In other words, integrating migrants into the labor market is a complex process since, during the job search, migrants encounter more significant obstacles than the rest of the receiving country's population. Often during this process, one can observe a particular segmentation within this integration, given that certain groups are not inclined to accept migrants (Remennick, 2003).

Concerning cross-border migration, immigrant networks (in addition to characteristics shared between the destination country and the country of origin, in terms of cultural and linguistic aspects) provide forms of support for immigrants who would otherwise have labor disadvantages. Immigrants are willing to accept lower wages than non-migrants and compete with each other for jobs (Massey, 1990). Regarding this latter point, we can ask, "Are there marked differences between internal and international migrants in terms of how they insert themselves into the workforce?"

White and Liang (1998) suggest that internal migrants have better chances of finding good jobs when moving to a new area compared to their chances back home. However, there is significant individual variation across internal migrants in terms of labor market outcomes. Generally, individuals with lower levels of education and job experience tend to migrate to places where there are fewer migrants, to avoid competition for employment. More qualified migrants will conduct job searches in higher-wage sectors, entering into competition with other international migrants and local residents.

Does integration become easier over the years? It seems that the ability of individuals to adapt may lead to stability over the long term. However, according to Godin and Renaud (2005) and the results of their study on work and migration, migrants still face problems inserting themselves into the workforce after ten years of arrival, due to discrimination against persons with a migratory status. These authors also argue that a migrant's nationality influences their integration into the labor market.

De Brauw et al. (2014) note that internal migration is key to a country's economic development. However, when migration flows are

small and the population continues to grow, there are usually economic growth problems. In comparison, significant migration flows are expected to provide a country with favorable monetary returns that help reduce overall poverty.

Given this background in the literature, the current study aims to investigate the effects of internal and international migration on the probability to be part of the formal labor sector in Ecuador. First, we look at long-term prospects, in which it is hoped that both migrant groups will have better opportunities to access formal labor. We then focus on short-term prospects, taking as our reference point data from the last five years of the 2010 Population and Housing Census in Ecuador. In the short term, we expect migrant workers to experience more significant challenges accessing positions in the formal sector compared to the informal sector.

## Ecuador as a case study

Ecuador is a small country with a total surface area of 283,561 km<sup>2</sup> located in the northeast quadrant of South America. It is bordered at the north by Colombia, the south by Peru, and the west by the Pacific Ocean. Geographically, the country is divided into four regions: The Coast, the Sierra Highlands, the Amazon region, and the Galapagos Islands. The country is divided into 24 provinces, 23 of which are located on the main landmass, while Galapagos lies 1,000 km off the Pacific coast. The provinces are divided into cantons (224 in total), each of which is divided into parishes (1,024 in total). According to data from the World Bank (2019), Ecuadorian population is around 17,888,474 inhabitants and the population density is 74 inhabitants/km<sup>2</sup>.

Ecuador as a country relies on primary exports (commodities) and has an economy that is very sensitive to external shocks (Acosta, 1995; Central Bank of Ecuador (BCE), 2020). Sixty-one percent of businesses are located in two provinces: Pichincha and Guayas (INEC, 2011). More specifically, the cities of Quito and Guayaquil dominate these provinces, respectively, and according to Obaco and Díaz-Sánchez (2018), these are the cities with the largest populations. The country's main economic activities are services; construction; trade; manufacturing; petroleum, gas, and mineral extraction; and agriculture (National Office of Macroeconomic Synthesis, 2017).

## The Ecuadorian Labor Market

To understand the labor market in Ecuador and its relationship to internal migration, it is necessary to understand the structure of that market. Fig. 1 shows the structure according to data from INEC (2021).

The Ecuadorian statistical agency subdivides employment into three categories: adequate, inadequate, and undefined. Adequate employment refers to people who work 40 or more hours per week and who, during the previous month, had an income equal to or greater than the minimum wage, regardless of whether they worked additional hours or their availability to do so. This category also includes people who work less than 40 h per week but who, during the previous month, earned monthly wages equal to or higher than the minimum wage but did not work additional hours (INEC, 2021). In contrast, inadequate employment does not satisfy the minimal conditions for hours or wages. Workers with inadequate employment constitute the bulk of people classified as being underemployed, having other inadequate types of employment, and having non-remunerated employment (INEC, 2021). Undefined employment refers to the remaining workers (INEC, 2021). The definitions that INEC offers regarding employment do not take into account the distinction between formal and informal work and only consider factors such as the number of hours worked weekly or the minimal salary. They do not consider factors such as labor stability, social security, and others. Another category that takes into account all these factors is known as decent employment or good work (INEC, 2015b).

In terms of the benefits that the formal sector offers employees, we note that in Ecuador, participation in the social security program is

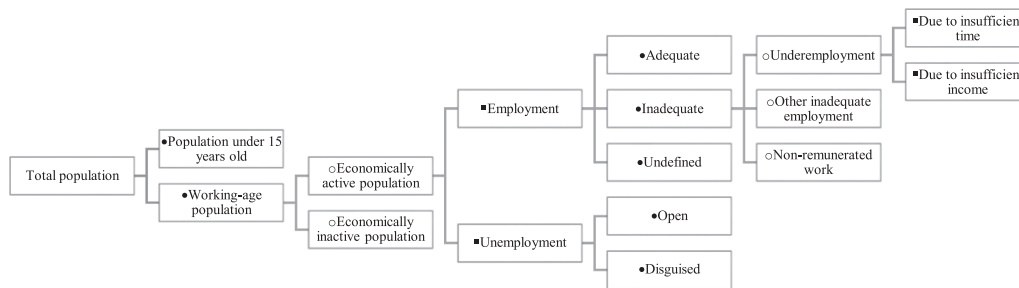


Fig. 1. Structure of the Ecuadorian Labor Market. **Source:** INEC (2021).

obligatory for all workers. Participation starts from the first month of work, and workers do not automatically lose their coverage when the employment relationship ends. The contribution corresponds to 20.60 % of the participant's wages, divided between employee and employer contributions. This contribution guarantees access to a pension for retirement (based on age),<sup>a</sup> permanent disability, or the need for support; coverage for pregnancy and illness; and health insurance for children, among other benefits (IESS, 2022). In the case of informal sector workers in Ecuador, Matano et al. (2020) indicate that there may exist possible gains from job changes, in terms of wage premium, which offset a penalty for remaining employed in the same occupation.

INEC collects statistics on employment conditions, categorizing these as formal and informal. Informal employment covers people working in production sites that do not have a tax ID (RUC, or Unique Contributor Identification) or have fewer than 100 workers. These businesses do not deduct taxes from workers (INEC, 2015a). In contrast, employment in the formal sector is defined as work in sites that are registered in the tax system (INEC, 2022).

In terms of regional labor market characteristics, in 2021 the highest levels of unemployment were reported in the provinces of Pichincha and Esmeraldas, with rates of 11 % and 10 %, respectively. The provinces registering the highest levels of adequate employment were Guayas (37.4 %) and, again, Pichincha (43.6 %) (INEC, 2022b). In January of 2022, INEC reported the results of the National Survey of Employment, Unemployment, and Underemployment. The national unemployment level was 5.4 %, with an average rate of 7.4 % in urban areas and 1.6 % in rural areas. At the national level, 33.1 % of workers reported adequate employment, distributed between 41.4 % for urban areas and 17.3 % in rural areas. Moreover, 42.5 % of employed persons worked in the formal sector and 51.4 % in the informal sector (INEC, 2022c).

It is essential to mention Olmedo's findings (2018) regarding which workers form part of the Ecuadorian informal market. He points out that this sector also includes self-employed individuals who often use their homes as their workplace, with the average lifespan of these micro businesses being 6 years.

#### Migratory Flows Within, to, and From Ecuador

We can divide migration in Ecuador into various stages. The first stage occurred between 1960 and 1980 and was chiefly marked by internal migration. Authors such as Bravo-Ureta et al. (1996) and Rudel (1983) point out that a main migratory flow in this period was toward Ecuador's Amazonian provinces,<sup>b</sup> which were sparsely populated at this time. This migration was mainly of a rural-rural or urban-rural nature.

<sup>a</sup> A worker who meets the following minimum requirements for age and contributions to the IESS (Social Security System) has the right to a lifetime monthly pension: 60 years old and 30 years of contributions; 65 years old and 15 years of contributions; 70 years old and ten years of contributions; or 40 years of contributions at any age (IESS, 2022).

<sup>b</sup> Specifically, the provinces of Morona Santiago, Napo, Orellana, Pastaza, Sucumbios, and Zamora Chinchipe.

The migrants were from groups with medium to high levels of purchasing power; that is, they sought to expand their property holdings by obtaining property in the Amazon. The petroleum production boom occurring during this period made this region particularly attractive to migrants (Cebrián, 1999).

Bride (1971) has shown that during this period, Ecuador was also experiencing a notable urbanization process, however, with the coastal provinces absorbing significant numbers of migrants motivated by opportunities offered by burgeoning export activities. Guayas and El Oro, located in Ecuador's coastal region, and Pichincha, located in the Andean region where Ecuador's capital, Quito, is also located, were the provinces perceived as particularly attractive to migrants, even up until 2001 (Pontarollo & Segovia, 2019).

In 1984, the number of people living in urban areas surpassed the rural population, and in 2021 urban residents comprised 64.36 % of the total population, as indicated in Fig. 2. This trend of urbanization triggered other cumulative effects in specific economic and demographic sectors (Correa, 2016). According to Alvarado López et al. (2017) the most attractive sectors—provinces—to migrants are those that are hubs of significant economic activity with businesses, production centers, tourist centers, as migrants tend to originate from provinces with less economic activity. Indeed, authors such as Royuela and Ordóñez (2016) indicate that migrants are concentrated in the two provinces that contain the country's main cities, Quito and Guayaquil. However, these authors also note that the trend has weakened, to the extent that the provinces with the greatest influx of recent migrants are not necessarily the most populated.

Beginning in 1900, Ecuador experienced the most jolting crisis in its history, characterized by an elevated level of poverty, high inflation, high levels of unemployment, restrictions on liquidity, and a deterioration of living conditions (Acosta et al., 2005; Bertoli, Fernández-Huertas Moraga, & Ortega, 2011). These factors compelled many Ecuadorians to migrate abroad (Bertoli & Marchetta, 2014), with Spain, the USA, and Italy being the preferred destinations (Sotomayor, Barrios, & Chininin, 2019).

Overseas emigration again became common in the late 1990 s. Between 1998 and 2001, more than half a million Ecuadorians migrated out of the country (Bertoli, Fernández-Huertas Moraga, & Ortega, 2011). Villamar (2004) notes that most migrants were from the provinces of Azuay and Cañar, located in the highland region.

In 2000, Ecuador's transition to the US dollar coupled with remittances from the new emigrants allowed the country to regain a sense of economic and political stability, thus reducing levels of emigration (Acosta et al., 2005). The reduction in migratory flows can be seen in Fig. 3, which shows comparative rates of immigration and emigration for Ecuador—migratory balance.<sup>c</sup> With respect to internal migration trends, Pontarollo and Segovia (2019) show that levels of this type of migration also decreased, from 30 % in 2011 to 10 % in 2010.

Fig. 3 also provides insight into migratory flows to Ecuador, and

<sup>c</sup> Migratory balance: the difference between entry and exit movements for Ecuadorians and foreigners to and from Ecuador.

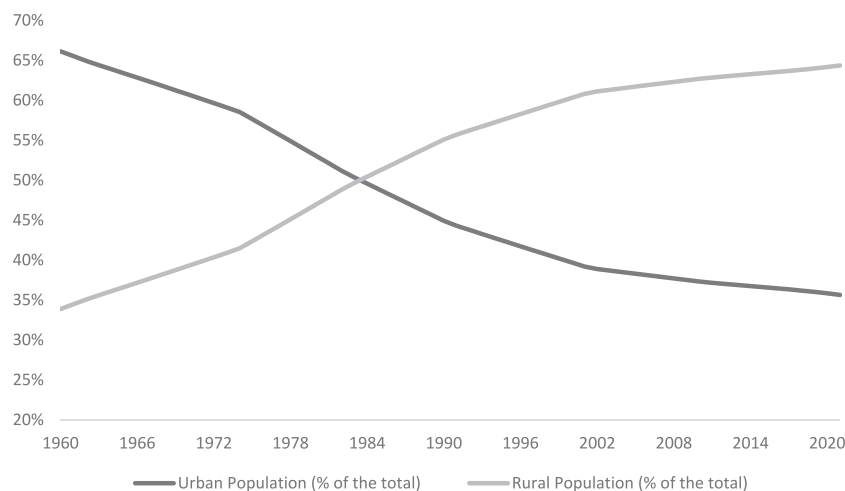


Fig. 2. Urban vs. Rural Population Growth – % of the total population.

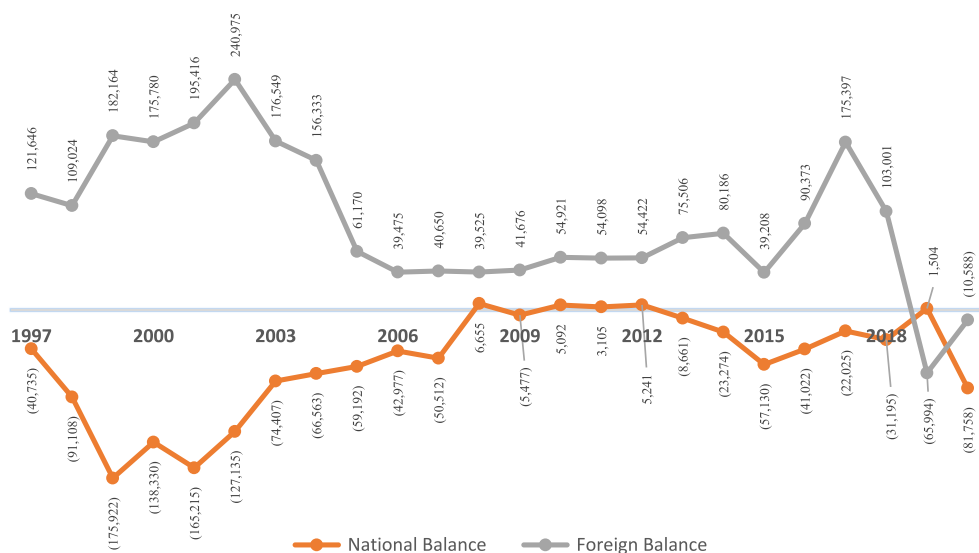


Fig. 3. Comparative rates of immigration and emigration for Ecuador 1997–2021.

shows that the migratory balance of foreigners from 1997 to 2019 was positive; that is, the number of foreigners who stayed permanently in the country outnumbered those who left. Since 2020, however, the migratory balance of foreigners has been negative: more foreigners have left than have remained. Regarding this trend, [Cortez and Medina \(2011\)](#) indicate that in 2010, Columbians, Peruvians, and Americans (USA) formed the most significant blocks of migrants living in Ecuador. However, [Díaz-Sánchez et al. \(2020\)](#) suggest a recent increase in Venezuelans among migrant communities; they estimate that the number of Venezuelan refugees and migrants was 510,039 as of March 2022. Quito, Guayaquil, Ibarra, Manta, and Cuenca are the destination cities preferred by migrants ([Grupo de Trabajo para Refugiados y Migrantes \(GTRM\) & R4V, 2022](#)).

With regard to the migrant community's relationship to labor in Ecuador and potential differences regarding the work status of regular and irregular migrants, the [UNHCR \(2021\)](#) summarizes the situation as being alarming. Out of the total migrant population, 51 % work in the informal sector, with most working as street vendors. Thirty-nine percent of migrants are unemployed. Regarding migrant status, the [UNHCR \(2021\)](#) indicates that there is no substantial difference between the work status of regular and irregular migrants.

## Methodology

### Model

Given the nature of our endogenous variable, that is, being employed in the formal sector, we apply a binary choice econometric model to analyze the association between immigration and the formal labor market and identify the factors that have a bearing on the probability of securing formal work.

Throughout history, migration has always been an option for people seeking to improve their living conditions, but these human flows into the labor force usually occur slowly. Are there differences in how people insert themselves into the workforce over the short and long term? Do migrant and local people insert themselves into the workforce in distinct ways? In order to address these questions, we formulated a probit model that describes the probability of an individual having a position in the formal work section. We defined the model of formal employment was defined in terms of migration, along with various control variables, as the following:

$$FormalW_i = \int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{t^2}{2}} dt, \quad (1)$$

where  $FormalW_i$  is a dummy variable that represents the labor condition of individual  $i$  and is assigned a value of 1 if person  $i$  works in the formal sector and 0 in the informal sector. More specifically, we employed a dichotomous variable similar to that used by Canelas (2014), assigning a value of 1 if the person is affiliated with the social security system<sup>d</sup> and 0 otherwise. This affiliation is required for workers in Ecuador.  $M_i$  is a dummy variable that is assigned the value of 1 if person  $i$  is a migrant and 0 otherwise.  $X_i$  is a vector of control variables (including socio-demographic information) and  $u_i$  is the stochastic error term of the model.

In accordance with the options that the 2010 Census on Population and Housing (INEC 2022a) offers to define migrants, we use two alternative definitions. The first defines a migrant as any person that was born in a place other than that in which they now reside ( $M^{(1)}$ ); the second defines a migrant as any person who, five years ago, was a resident of a place other than that in which they now reside ( $M^{(2)}$ ). In addition, for each general definition, we can distinguish whether the migrant is a foreigner based on their place of birth ( $M^{(1,1)}$ ) and the number of years they have been in Ecuador, or in the case of the second definition, their place of residence five years ago, if they lived in another country ( $M^{(2,1)}$ ).

The literature confirms the existence of segmented labor markets, in which the demand for migrant workers is high, resulting in conditions in which migrants integrate themselves into the activities rejected (by local workers). These jobs are considered unskilled (Fernández, 2010; García, 2006; Rodríguez & García, 1997). Therefore, our estimates capture different types of internal and international migration in which, we assume, migrants encounter inequalities in terms of opportunity upon inserting themselves into the labor market, compared to local workers.

Along the same lines as Herrera and Badr (2012), who investigated relationships between internal migration, wages, and job probabilities, and Pradhan and van Soest (1995), who examine jobs in both the formal and informal sectors, we took into account a list of socio-demographic variables including sex, age and its quadratic form (Cabrera, Álvarez, & Castañeda, 2007), years of education, area of residence, ethnicity, civil status, and the status of the head of household. We present descriptive statistics for the quantitative and qualitative variables in the model in Tables 1 and 2, respectively.

## Results

Table 3 shows the results of the probit model estimates, using the different migration variables described in the previous section. In column (1), we see that residing in a place other than one's place of birth is positively associated with the probability of having formal employment, compared to those who currently reside in the same place in which they were born, at a level of significance of  $\alpha = 1\%$ . This analysis does not

**Table 1**  
Descriptive statistics of quantitative variables.

Variable	Mean	Q1	Median	Q3	Std. Dev.	Min.	Max.
Age	35,95	23	33	46	16	15	84
Squared age	1536	529	1089	2116	1326,218	225	529
Years of education	10,36	7	10	13	4,61276	0	24
Years in the country	0,1545	0	0	0	2,06043	0	84

<sup>d</sup> Types of social security: Institute of Social Security of the Armed Forces (ISSFA, for its acronym in Spanish), Institute of Social Security of the National Police (ISSPOL), general social security (IESS), and farmworker's social security.

**Table 2**  
Descriptive statistics of qualitative variables.

Variable/categories	Freq. (%)
Formal work	
Yes	23,47
No	76,53
Migration.1 (born in a place other than the one in which they now reside)	
Yes	38,72
No	61,28
Migration.1.1 (foreigner according to the place of birth)	
Yes	1,36
No	98,64
Migration.2 (five years ago, was a resident of a place other than the one in which they now reside)	
Yes	9,44
No	90,56
Migration.2.1 (five years ago, if they lived in another country)	
Yes	1,35
No	98,65
Area of residence	
Urban	66,16
Rural	33,84
Sex	
Man	49,61
Woman	50,39
Civil status	
Married	35,63
Free union	22,40
Separate	5,30
Divorced	2,04
Widowed	2,76
Single	31,86
Ethnic self-identification	
Indigenous	5,56
Afro-Ecuadorian	6,91
Montubio	7,23
Mestizo	73,81
White	6,10
Other	0,39
Head of household	
Yes	38,01
No	61,99

differentiate between internal and foreign migrants, but sheds some light about the insertion in the formal labor market between migrants vs. not migrants. This result agrees with Arendt et al. (2016), who assert that the probability of securing a position in the formal sector increases as time passes, reflecting people's ability to adapt. The negative coefficient (statistically significant at the level of  $\alpha = 1\%$ ) associated with the migration variable in column (4), which captures the effect of migration (internal or cross-border) for a person who lived in a place other than the current one 5 years ago, reinforces the previous finding. This coefficient suggests that the probability of a recent migrant obtaining a position in the formal workforce is lower than for non-migrants. Analyzing the results from (1) and (4), we can see that as migrants establish themselves in the destination, the probability that they enter the labor market increases.

Column (2) captures the effect of place of birth (i.e., being a foreigner) on one's probability of being employed in the formal sector, and column (5) reports the effect when that person is registered as living abroad five years ago. These have negative coefficients and are statistically significant at the level of  $\alpha = 1\%$ . The results suggest that foreign migrants have a lower probability of accessing the formal labor sector in comparison with non-migrants. Column (3) shows the attenuating role of adverse circumstances that the foreign migrant faces when trying to penetrate the formal labor market. Our variable of interest indicates that the longer the time the foreign migrant resides in Ecuador, the higher the probability of acquiring a job in the formal sector. Regressions (2) and (5) indicate that foreigners have a lower probability of gaining formal work than non-migrants. Nevertheless, (3) suggests that the longer a foreigner resides in Ecuador, the higher their probability of

**Table 3**

Estimation results.

Dep. Var. Formal Work	(1)	(2)	(3)	(4)	(5)
Migration.1	0.00530*** (0.00107)				
Migration.1.1		−0.620*** (0.00527)	−0.888*** (0.00733)		
Migration.1.1x Years in the country			0.0195*** (0.000340)		
Migration.2				−0.0240*** (0.00180)	
Migration.2.1					−0.721*** (0.00535)
Age	0.0813*** (0.000204)	0.0817*** (0.000204)	0.0818*** (0.000204)	0.0813*** (0.000204)	0.0821*** (0.000204)
Age2	−0.000833*** (0.00000240)	−0.000836*** (0.00000240)	−0.000839*** (0.00000240)	−0.000833*** (0.00000240)	−0.000842*** (0.00000240)
Years of education	0.0929*** (0.000127)	0.0937*** (0.000127)	0.0937*** (0.000127)	0.0929*** (0.000127)	0.0936*** (0.000127)
Area (Rural = 1)	0.211*** (0.00117)	0.212*** (0.00117)	0.212*** (0.00117)	0.211*** (0.00117)	0.210*** (0.00117)
Sex (Man = 1)	0.293*** (0.00116)	0.294*** (0.00116)	0.294*** (0.00116)	0.293*** (0.00116)	0.296*** (0.00116)
Civil status (Single = 0)					
Married	0.177*** (0.00154)	0.177*** (0.00154)	0.177*** (0.00154)	0.177*** (0.00154)	0.178*** (0.00154)
Free union	−0.000644 (0.00166)	0.00243 (0.00166)	0.00272 (0.00166)	0.000883 (0.00166)	0.000284 (0.00166)
Separate	−0.0726*** (0.00268)	−0.0735*** (0.00269)	−0.0738*** (0.00269)	−0.0716*** (0.00268)	−0.0733*** (0.00269)
Divorced	0.161*** (0.00358)	0.161*** (0.00358)	0.161*** (0.00358)	0.162*** (0.00358)	0.171*** (0.00358)
Widowed	0.0840*** (0.00385)	0.0835*** (0.00385)	0.0839*** (0.00385)	0.0848*** (0.00385)	0.0853*** (0.00386)
Ethnic self-identification (Indigenous = 0)					
Afro-Ecuadorian	0.245*** (0.00332)	0.251*** (0.00333)	0.252*** (0.00333)	0.246*** (0.00332)	0.249*** (0.00333)
Montubio	0.211*** (0.00327)	0.209*** (0.00327)	0.209*** (0.00328)	0.211*** (0.00327)	0.209*** (0.00328)
Mestizo	0.277*** (0.00266)	0.278*** (0.00267)	0.278*** (0.00267)	0.277*** (0.00266)	0.279*** (0.00267)
White	0.165*** (0.00338)	0.202*** (0.00339)	0.204*** (0.00339)	0.167*** (0.00338)	0.191*** (0.00338)
Other	−0.000786 (0.00925)	0.124*** (0.00915)	0.139*** (0.00919)	0.00301 (0.00924)	0.0716*** (0.00923)
Head of household	0.175*** (0.00129)	0.176*** (0.00129)	0.176*** (0.00129)	0.176*** (0.00129)	0.174*** (0.00129)
Interception	−4.039*** (0.00463)	−4.054*** (0.00463)	−4.055*** (0.00464)	−4.035*** (0.00462)	−4.058*** (0.00464)
Observations	8,388,692	8,388,692	8,388,692	8,388,692	8,388,692
AIC	7841636.1	7825158.0	7821997.5	7841475.5	7819447.3
BIC	7841887.0	7825408.9	7822262.4	7841726.5	7819698.3
Log.Lik.	−3920800	−3912561	−3910979.7	−3920719.7	−3909705.7
F	65233.763	65.572.364	61.866.340	65.228.654	65.688.365
Wald test	65.234	65.573	61.867	65.229	65.689
McFadden R2	0.142	0.144	0.144	0.142	0.145
% Correctly Predicted	0.7867	0.7876	0.7877	0.7868	0.7878

Note: Robust (heteroskedasticity adjusted) standard errors are in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1, denote significance at 1 %, 5 % and 10 % levels, respectively.

finding a formal job, likely as a result of creating bonds and adapting to their new surroundings,

Putting these findings together, we show that there are differences in how foreign migrants and local people insert themselves into the labor market. The findings show the difficulty migrant communities have when moving countries to seek work in the formal sector, difficulties that are likely due to discrimination, xenophobia, or a lack of opportunities for those coming from abroad (Valenzuela et al., 2018).

The control variables show some interesting results. For example, the more years of education a person has, the higher the probability that they will hold a formal position in the labor market, with the result being significant at the level of  $\alpha = 1\%$  a finding in line with Vega (2018). Similarly, the age variable and its quadratic form exhibit positive and negative estimators, respectively. This suggests that age contributes to

the outcome in an inverted U form. That is, the older someone is, the higher the probability that they will secure a job in the formal sector, but only up to an inflection point, after which this probability begins to decrease.

In addition, living in a rural area increases the probability that a person will secure formal employment compared to those who live in urban areas (significance level of  $\alpha = 1\%$ ). This result is in contrast to Ruesga et al. (2020), who found more informal workers in rural areas. We should note that there are more workers in urban areas, although they often work under conditions of underemployment (Olmedo, 2018).

Likewise, men have a higher probability of finding work in the formal labor sector than women (significance level of  $\alpha = 1\%$ ). This result indicates that the gender gap in the labor market persists and provides support for the findings of Olmedo (2018), who reports that

most individuals who work under adequate conditions are male.

Concerning civil status, for all specifications, our results show that married people have a higher probability of securing work in the formal labor sector than single people. We can infer that civil status serves as an index of stability and that married people adhere more to the labor market, given their family obligations<sup>e</sup> (Banerjee, 1983; Uribe, Ortiz, & García, 2008).

Columns (2), (3), and (5) offer evidence that workers who identify as Afro-Ecuadorian, Montubio, Mestizo, White, or “Other” have a higher probability of accessing formal employment than those who identify as Indigenous (Native American), at a significance level of  $\alpha = 1\%$ . This result suggests that Indigenous people in Ecuador face significant obstacles to obtaining work in the formal labor market. This result may be attributable to the fact that Indigenous Ecuadorians find it more difficult to access formal education, causing them to be subject to violations of their fundamental rights at work, discrimination in employment, child labor, and forced labor (Navegador Indígena, 2021).

For the five specifications, individuals who are the head of their household have a higher probability of securing a position in the formal sector than those who do not identify as heads of their household, with the difference being significant at the 1% level. These findings are in line with Günsel (2012) but contradict the results of Zuo (2013), who reported that being a head of household is negatively related to the probability of working in the formal labor sector. We may explain our results by acknowledging that being the head of a household represents a responsibility to support all household members and thus obliges the worker to earn an income sufficient to sustain the family.

The five specifications correctly classify observations into the categories of “formal work” and “informal work” with an accuracy of 78%, indicating a high level of performance for the models.

## Discussion and conclusion

We analyzed the effects of human migration on the labor market. Specifically, we tried to verify whether there are significant differences in how internal and international migrants insert themselves into the workforce. To achieve this, we applied a probit binary choice model to determine the factors influencing the probability of obtaining a position in the formal labor sector, using data from the 2010 Population and Housing Census in Ecuador. We used the whole population for the empirical analysis, ensuring the robustness of our results.

We found that regardless of whether a migrant is internal or foreign, or whether a person lives and works in a place distinct from their place of birth, this person has a higher probability of securing a job in the formal sector compared to non-migrants. In addition, recent migrants, that is, those who were living in a place other than their current place of residence five years prior, have a lower probability of finding work in the formal sector than non-migrants. These findings conform to results from prior studies that show that there are different work inclusion is not homogeneous and is influenced by factors such as one’s ability to adapt to new surroundings, personal networks, and discrimination (Arendt

<sup>e</sup> An anonymous reviewer has noted the potential for reverse causality between marital status and the likelihood of being employed in the formal sector. While our study primarily explores associations rather than establishing causal relationships, we recognize the importance of addressing concerns related to the direction of causation. The interpretation that being married increases the probability of formal employment prompts a valid consideration: Could it be that individuals delay marriage until they have achieved labor stability? This alternative direction of causation suggests that marital status may be influenced by employment status rather than the reverse. To provide a more comprehensive understanding of these dynamics, we have considered the temporal aspects of our data. However, due to the limitations of cross-sectional data, establishing definitive causation remains challenging. We encourage future research to explore longitudinal datasets that capture the sequencing of life events to unravel the complexities of these relationships.

et al., 2016; White & Liang, 1998).

Another interesting result that our investigation uncovered is related to the foreign migrant’s ability to enter the formal labor market. Our empirical study reveals that over both the short and long term, the difficulties migrants face in accessing formal employment persist, that is, the foreign migrant community has a lower probability of obtaining work in the formal sector compared to those born in Ecuador. As years of residence in Ecuador increase, the probability of obtaining formal work will depend on how well a migrant adapts to the new environment and how extensive the migrant’s network of contacts is. Our findings corroborate those of Godin and Renaud (2005) and Valenzuela et al. (2018), who identify difficulties that migrant communities that emigrate to developing countries encounter when they try to enter the formal sector, probably due to discrimination and xenophobia, or to a general lack of opportunities available to foreigners.

From the viewpoint of public policy and knowing the potential that migration represents in recipient economies, the government should prioritize programs of rapid labor incorporation for migrants (both internal and foreign), preferably in the formal market. For example, professional training in areas that face labor shortages or local language courses for non-Spanish-speaking foreigners could help migrants overcome some of the obstacles they encounter in trying to enter the formal labor market. In addition, in the case of skilled workers, it would be helpful to facilitate the recognition and standardization of degrees for foreign migrants; estimates indicate that 73% of migrants reside in Ecuador without the possibility of practicing their profession legally (GTRM & R4V, 2022). Clearly, if a migrant lacks the necessary documentation, they cannot bid for jobs in the formal market, nor can they quickly set up their own formal business.

The migration process has many repercussions for both source and destination countries. For example, one of the significant repercussions in receiving countries is the accelerated urbanization that migration triggers. Governments need to formulate plans that identify anticipated migratory flows in receiving zones and establish systems that offer essential services, connectivity (transportation), access to public health and education, etc., in those areas, so as to effectively manage urban development. Moreover, given that half the total workforce in Ecuador works in the informal sector, which consists primarily of small businesses with little value added, policies should focus on distributing resources that extend the lifetimes of these businesses, as well as support their expansion and formalization.

Fruitful avenues for future research in this area include differentiating between different types of migrant flows—for example, voluntary vs. refugee migration—since this may affect the ability of migrants to insert themselves into the labor market. In addition, the relationship between the labor market and generational differences among migrants may provide interesting insights into the labor market outcomes of second- and third-generation migrants, as according to Neilsen et al. (2003), the children of migrants still face problems in terms of access to the formal labor market.

**Availability of data:** Data is available in the web page of the Ecuadorian National Institute of Statistics.

## CRediT authorship contribution statement

**Juan Pablo Díaz-Sánchez:** Conceptualization, Formal analysis, Investigation, Project administration, Supervision, Validation, Writing – review & editing. **Helen Correa:** Writing – original draft, Methodology, Formal analysis, Data curation.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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