Occupation Choice in the Rural Labor Market from the Córdoba Department in Colombia

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Abstract

This article aims to establish if the rural labor market of the Department of Córdoba holds structural problems that encourage members of the rural labor force to search for other work alternatives in the urban area, by identifying factors related to supply conditions, such as human capital, age, home location area [dominion], gender, and others that affect the choice of the kind of work. A multinomial *Logit* econometric model was estimated to achieve this purpose, using statistical information from the Great Integrated Household Survey (GIHS) carried out by DANE from the third quarter of 2019, whereby the employment choice of men and women in rural and urban areas was analyzed among four categories, i.e. low manual (1), high manual (2), low non-manual (3), and high non-manual (4). Results reveal that the estimated model shows a good fit and that the education, gender, and domain variables are statistically significant with confidence levels greater than 95%. Similarly, figures of the marginal effects, which reveal changes in probabilities of choosing one job or another, may be evidence of the little consolidation that the rural labor market has to motivate its inhabitants to choose countryside activities, allowing to conclude that the migration phenomenon from the countryside to the city is largely explained by the search for better jobs, thus revealing the

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structural problems of the rural labor market in the Cordoba Department.

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Introduction

The study regarding choice of types of occupation that an individual is able to perform can contribute to understanding the dynamics of labor mobility, particularly in the diverse geographical areas of a region that could show the problems of the labor market in a specific population sector. This is especially relevant in Colombia, where there has been a large migration from rural areas to the cities Norwegian Refugee Council – NRC – (2019) a fact that contradicts the expectations that individuals who reside in rural areas work in the primary sector of the economy and those who live in urban areas occupy themselves in the secondary and tertiary sectors. This article aims to establish if the rural labor market of the Córdoba Department in Colombia, holds structural problems that may affect the desire of the members of the labor force that reside in this geographical area to seek work alternatives in the department urban area, considering factors related to supply conditions, such as human capital, age, home location area [dominion], gender, and others that affect the election of the kind of work.

To reach this goal, a multinomial *Logit* econometric model will be estimated using statistical information from the Great Integrated Household Survey (GIHS) carried out by the National Administrative Department of Statistics of Colombia (*Departamento Administrativo Nacional de Estadísiticas*, DANE), from the third quarter of 2019, giving this work a quantitative and inferential approach, whose conclusions will be supported by the empirical evidence derived from the results of the adjustment (fit) of the indicated model with its respective hypothesis tests. The model to be estimated considers as an explained variable, the election of the labor occupation of men and women in rural and urban areas in the different occupations or jobs identified by the National Classification of Occupation in Colombia (DANE, 2019), which are grouped into four categories, i.e., manual low (1), manual high (2), non-manual low (3), non-manual high (4). Furthermore, the explanatory variables correspond to the supply conditions

of individuals, such as human capital, geographic area of residence and positions within the household (head or marital status), among others.

Results reveal that the estimated model shows a good fit and that all, the model considered globally and the variables education, gender, and domain [urban and rural area] are statistically significant with confidence levels higher than 95%, indicating that they adequately explain the phenomenon under study. Similarly, figures for the marginal effects, which reveal changes in the probabilities of choosing one job or another, confirm the hypotheses proposed by the model.

Based on the obtained results, there is enough empirical evidence about the low consolidation of the rural labor market in the Córdoba Department to encourage its population to choose occupations in the countryside, whereby it can be concluded that the migration phenomenon from the countryside to the city is largely explained by the search for better job conditions, thus revealing the structural problems of the rural labor market in Cordoba.

1. Backgrounds

This first section is made up of three parts, the first of which will be dedicated to making a brief historical account of production and the rural labor market in Colombia, accompanied by a brief review of the government strategies implemented in the last three decades and ending with a description and indicators of the agricultural sector of the Córdoba Department. In the second part, the theoretical framework is presented, and finally, on the third one, a literature review is made on the subject under study from this research.

Rural sector and the strategic framework of agricultural production

The rural sector in Colombia has historically been considered a great source of employment and wealth (Pérez & Pérez, 2002). This favorable consideration is the result of the country's great agricultural vocation that gives it comparative advantages in the production of exportable goods and staples such as tobacco, coffee, flowers, and bananas since the nineteenth century. It is appropriate to point out that, since 2014, the National Planning Department (*Departamento Nacional de Planeación*; DNP) established a new methodology to delimit the concept of rurality in Colombia and define the population that makes it up, in order to reorient agrarian policy. Through this methodology, the Colombian rural population was made up of the inhabitants of the 373 municipalities classified as 'rural' and the 318 municipalities included in the 'dispersed rural' typology, in which both agricultural economic activities and non-agricultural activities are carried out

(DNP, 2015). According to this new method, and the national census carried out in 2018, the rural population is 11,969,822 people, out of which 5,760,524 (48.13%) are women and 6,209,298 (51.87%) are men (DANE, 2020).

Nonetheless, the Colombian rural labor market has shown significant dynamics since the first decades of the twentieth century as a result of these comparative advantages, the distribution of its population in rural areas, and the notable participation of the agricultural sector in the Gross Domestic Product (GDP), especially in the 1960s, with average contributions of 31% and an annual growth of over 5% in the years 1960, 1964, 1967 and 1968 (DNP, 1969). This dynamic in the agricultural sector was widely supported by State institutions such as the Colombian Institute of Agrarian Reform, Colombian Agricultural Institute, Institute of Agricultural Marketing, Caja Agraria, Banco Ganadero, National Institute of Renewable Natural Resources and the Environment, Banco Cafetero, Instituto Agrario, Colombian Veterinary Products Company, the Agricultural Development Finance Corporation, and others (DNP, 1972).

In this dynamism, the Integrated Rural Development program was also important as well, which included significant investments in physical and social infrastructure in the countryside (DNP, 1975). The program contributed to the increase in basic food production in the 1970s, when the peasant economy subsector produced 65% of mass consumption products (rice, beans, corn, wheat, yams, bananas, cassava, and vegetables) and generated 831,000 jobs; i.e., 55.3% of the people employed in the rural sector (DNP, 1979).

The agricultural research development, which began in 1915 with the creation of several experimental stations such as the first national research center in *Tibaitatá* and the farm research division from the Ministry of Agriculture, had an important contribution to these data on rural employment and the share of the agricultural sector in GDP, making it possible to deliver the first improved versions of beans, corn, barley, and potatoes (DNP, 1979).

Nevertheless, with the subsequent restructuring, liquidation, and privatization of the aforementioned institutions, the sector dynamism began to diminish in the subsequent decades, affecting the rural labor market and the conditions of workers in the Colombian countryside. Other causes of the decreasing trend in the contribution of the primary sector are related to the rise in the manufacturing industry in the main cities of the country and the increase in investment in the energy mining sector, which received between 1980 and 1989 investments of 5,400 million dollars for Carbocol in Cerrejón and Ecopetrol (DNP, 1979). These two aspects stimulated migration from the countryside to the city and had a notable impact on the Colombian rural labor market.

The Córdoba department is located in the Colombian Caribbean region and has a population of 1.8 million inhabitants (2019), out of which 53% dwells

in rural areas according to (DANE, 2021). It has 25,020 square kilometers of surface, out of which 19% are suitable for agricultural uses and 60% has a vocation for livestock, overlapped with transitory and semi-permanent crops. According to (Viloria, 2004), in 2003 the Córdoba Department made a global contribution of 2.3% to the national GDP with approximately 200,000 rural jobs, which included 100,000 in livestock activity, while in 2019 its contribution reached 1.8% of the national GDP, while the employed population was 795,000, out of which 375,000 [47%] worked in rural areas and 226,000 [28%] were employed by the primary sector of the departmental economy (DANE, 2021). These two subsectors, livestock and agriculture, maintain a significant contribution to the departmental GDP of 24.7% and 10% (Government of Córdoba, 2020).

The department of Córdoba as well as Colombia, had a very dynamic agricultural sector in the last decades of the last century, especially in the production of cattle, mechanized rice, technified corn, wheat, sorghum, banana, cassava, and cotton, as the main generator sources of rural employment and income in each of the subregions that comprise it. However, production of these foods and their profitability have been affected by imports from more competitive countries since the 1990s, when the country replaced the import substitution model with that of economic and commercial openness. Evidence of this effect is indicated by Viloria (2004) who finds a decrease in the participation of the agricultural sector in the departmental GDP, which went from 35% to 31% between 1994 and 2004, with a downward trend since, for 2019, the participation of the primary sector (made up of four branches of activities: agriculture, livestock, forestry and fishing) only reached 11.9% of Cordoba's GDP (DANE, 2021).

Theoretical framework

This article belongs to the theory of labor supply proposed by the neoclassical school, based on the decision of each individual in terms of work, guided by their desire to maximize their benefit (utility) or satisfaction, which in turn, leads them to determine the amount of time that will be dedicated to work to obtain the necessary income to satisfy their needs, in addition to the time allocation that can be assigned for leisure, corresponding to those resting activities that are outside the labor market, but within the established 24 hour-day (Nicholson, 2004).

This can be compactly expressed as follows: If $U(D, C)$ is considered as the individual's utility function, where D is leisure and C is consumption, then the individual will want to maximize it under the constraint of the 24 hours a day limit, as indicated by equation [1].

$$MAX: U(D, C), \text{sujeto a}, w * (24 - D) + Yn = C \quad\quad [1]$$

Where, w is the wage per hour worked and Yn, the non-labor income. To use the *Lagrangian* method with the objective of maximizing the utility function, the Lagrangian expression is initially formalized and equation [2] is obtained, which, when partially derived with respect to each of its variables and set equal to zero, equation [3] is obtained.

$$L = U(D, C) + \lambda(w * (24 - D) + Yn - C) \quad\quad [2]$$

$$\frac{\partial L}{\partial D} = \frac{\partial U}{\partial D} - w\lambda = 0 \quad y \quad \frac{\partial L}{\partial C} = \frac{\partial U}{\partial C} - \lambda = 0 \quad\quad [3]$$

By solving for l and equating the two results, equation [4] is estimated

$$TMS_{DC} = \frac{\dfrac{\partial U}{\partial D}}{\dfrac{\partial U}{\partial C}} = w \quad\quad [4]$$

This expression [4], in the words of McConnell *et al.* (2014) establishes that "the optimal work position is reached at the point where the marginal rate of substitution of income for leisure is equal to the wage", criteria under which individuals make the decision about the number of 'hours' to offer to work. Subsequently, varying w and keeping Yn fixed, the labor supply is obtained as a function of wage $q^w = f(w, Yn)$ (Nicholson, 2004).

Bearing in mind these results, authors such as Olivera Martínez (2012) assure that the neoclassical school justifiably maintains the assumption of choice and flexibility of the labor market, since individuals choose where to work considering their own characteristics such as educational level, experience, and others. Therefore, such characteristics stand as the explanatory variables of that choice.

Literature review

Rural labor market has been the object of analysis in different geographical contexts in recent years. The interest in analyzing, establishing, and describing its characteristics is reflected in a significant number of publications, some of which are reviewed below, in which situations are

confirmed and specific characteristics are described related to activities, income, level of schooling, gender, hiring and conditions of rural workers.

In the international context, some studies focus on analyzing the incidence of gender, age, and level of schooling in the choice of occupation in rural areas, as well as salary differences and gender gaps. Among these studies, Mwabu & Evenson (1997) analyzed occupational patterns in rural Kenya, using cross-sectional data collected from agricultural households, finding that 74% of households were engaged in agriculture compared to 26% employed in non-agricultural activities. They identified back then, that education and proximity to markets are key factors in the transformation of the rural occupational structure of that country.

On his part, Kumar (2016) explores the determinants of the structure of the labor force, using a multinomial regression model to identify and analyze the factors that impede the choice of employment of workers in rural areas of Uttar Pradesh in India. He incorporates variables such as property dimension, social groups, religion, educational level, and age. He considers that the relative influence of educational levels, physical capital and the socioeconomic background of workers, i.e., human capital and physical capital, rather than caste and religion, influence the occupation choice. He finds that workers with better educational levels are employed in the non-agricultural sector, while those who did not attend school depend on the agricultural sector.

In that same geographical context, Agrawal (2021) argues that segregation in rural labor markets in India stems from educational outcomes. In the same manner, he warns that education explains a considerable part of the gender wage gap in rural areas. Nonetheless, they identify that the degree of gender segregation in rural areas of this country is lower than in urban areas. On the other hand, Balsadi & del Grossi (2018) show a continuous decrease in the economically active population employed in rural agriculture and the majority abandonment of women and young people from agricultural activities in the northeast of Brazil. Conversely, they evidenced the increase in the schooling of the employed rural population, especially of those who are integrated into non-agricultural activities.

In the Colombian context, Tenjo Galarza & Jaimes (2018) in their work called 'income and education in the Colombian rural sector', ratify that education contributes more to the increase in labor income in the case of women than in that of men, and note women's preferences for jobs outside of agriculture. Likewise, they point out significant differences (26%-29%) between the hourly income of men and women, although they warn that these differences are smaller in the income obtained in agriculture. They argue that: "perhaps education is not reducing social differences in the rural sector, but quite the opposite: it accentuates the differences" (p. 232). Finally,

they verify that salaried rural workers have higher incomes than non-salaried workers, especially in non-agricultural activities where incomes are higher.

On his part, Otero-Cortés (2019) in his analysis of the rural labor market in Colombia between 2010-2019, highlights the following characteristics: high rural labor informality, low and unstable income, an average employment rate of 55.5%, and a rural retirement coverage of less than 15% during the analyzed period. Informality and retirement coverage had been evidenced on a regional scale a few years earlier by Ortega *et al*. (2014) who, when analyzing the working conditions of agricultural workers in rural areas of the Montería municipality, confirmed an informality of 95%, lower incomes 50% of the legal minimum wage in force and a reduced affiliation of 1% to professional risk management and retirement contribution.

These negative retirement data are well above those evidenced by DANE for the employed population in rural areas throughout the country in 2019. Said data shows that 85.3% of women and 81.9% of men do not contribute to a retirement fund, with the aggravating circumstance that social security coverage is lower for women than for men, since only 12.3% of employed women are affiliated with both health and retirement fund, compared to 15.6% of men, which in any case is very low (DANE, 2020).

Similar problems were identified by Triviño *et al*. (2020) when they analyzed the living conditions of rural workers and the production relationships between them and landowners in the rural area of the Marulanda municipality in the Caldas Department. They specifically evidenced the predominance of the figure of sharecropping, land concentration, and low wages, which discourage the incorporation of young workers and their migration to urban areas.

An important fact about the rural labor market is the notable participation of women in unpaid agricultural work in peasant economies and in the production of exportable agricultural goods, specifically in flower cultivation and in coffee harvesting, in which they participate with 70% and 40%, respectively (Pérez & Pérez, 2002). Female participation in the rural market continues to be important in recent years, nonetheless, in agricultural and livestock activities they only represent 17.9% out of 2,884,385 employed in the agricultural sector and 29.7% out of the 4,757,555 rural workers in Colombia (DANE, 2020). In other words, according to this information from DANE, the employment rate of men is much higher than that of women, with 71.9% and 34.6%, respectively.

These characteristics of the rural labor market in the international and national scenario show common aspects and evidence similar problems that affect in one way or another the level of income and the life quality of workers in rural areas. The analysis of these aspects and problems can

contribute when analyzing aspects that affect the rural labor market in the department of Córdoba and the occupation choice by workers in this region of Colombia.

2. Materials and methods

This section is divided into two segments, the first is dedicated to exposing the source of statistical information, as well as identifying the variables that will be considered to propose the generic model and indicate the statistical program to be used for the purpose of estimating a *Logit* multinomial econometric type model, while in the second part a presentation of the Logit multinomial model is made that will make it possible to understand the results obtained.

The variables, model and data

To determine if the socioeconomic conditions of rural workers, which characterize their labor supply conditions, affect the decision to seek jobs in the urban area of the of Córdoba Department, as stated at the beginning, a Multinomial Logit probabilistic econometric model will be estimated, using the Stata program with statistical information from the GIHS applied by DANE and corresponding to the third quarter of 2019.

To construct the qualitative dependent variable of this model, called 'job', with four categories of possible results or values, the answers provided to the question included in the survey form, literally states: what do you do in this job?, which allow to catalog the occupations of individuals according to their degree of manual and non-manual skills and their high and low qualification levels in the different areas of performance provided for in the National Occupation Classification (DANE, 2019). Following, Jiménez & Restrepo (2011) the different occupations of the workers are grouped, as stated before, into four categories, i.e., Low Manual [LM=1], which includes primary and extractive exploitation, laborers, High Manual [HM=2] in which equipment operation, transport and trades, processing, manufacturing and assembly are considered, Low Non-Manual [LNM=3] which contains occupations in sales and services, auxiliary and technical, and High Non-Manual [HNM=4] where occupations of direction and management, finance, administration, science, technology, and innovation are incorporated.

On their part, the independent variables of the model are: education level [years of study completed], age [years], marital status [married or not], gender [male, female], household domain [urban, rural], relationship with the

head of household [head or not], which are the result of the corresponding questions that are also included in the GEIH form and that are paired with the dependent variable occupation already constructed to form the database with 3,190 observations in total, used to fit the model.

Now, it is important to clarify that the model that will be estimated here will have as regressors the variables mentioned above and that correspond to characteristics of the individuals, i.e., the regressors are those characteristics of the individuals that are invariant between alternatives and that are considered determinants of labor choice in the framework of the neoclassical economic hypothesis. Both the returned variable and the regressors are described in Table 1.

Thus, the model to be estimated is a categorical or qualitative response model in which its dependent variable has four response options with the same number of categories, so it is a multiple choice or multinomial

Table 1 - Description of Model Variables

Variable Name	Model Name	Description
Job	Job	Categorical dependent variable that takes values 1, 2, 3 and 4
Education Level	EL	Discrete variable that takes values of the years of education of the individual
Age	Age	Discrete variable that takes values of the life years of the individual
Age^2	Age^2	Discrete variable that takes the value of the square of the age of the individual
Married	Married	Dummy variable that takes the value 1 if the individual is married and zero otherwise
Boss	Boss	Dummy variable that takes the value 1 if the individual is the head of the household and zero otherwise
Woman	Woman	Dummy variable that takes the value 1 if the individual is female [woman] and zero otherwise
Rural	Rural	Dummy variable that takes the value 1 if the individual lives in the rural area and zero otherwise [lives in the urban area]
Rural Woman	Rural Woman	Dummy variable of interaction between women and rural [result of multiplying the values of the two variables involved]

Source: Author's own elaboration based on GEIH (DANE, 2019).

probabilistic model that, in the case of this study, the *Logit* was used, instead of the *Probit*, due to its simplicity, Cabrer *et al.* (2001) which can be stated generically as in [5].

$$Job = \beta_0 + \beta_1 Esc + \beta_2 age + \beta_3 age2 + \beta_4 Married + \beta_5 Boss + \beta_6 Woman + \beta_7 Rural + \beta_8 RuralWoman + \varepsilon \tag{5}$$

The Multinomial Logit Model

The multinomial Logit model is an extension of its binary counterpart (in which the dependent variable takes only two values), estimated with the Maximum Likelihood [MV] method instead of the Ordinary Least Squares [OLS] (McFadden, 1984). To establish the multinomial *Logit* model, the linear model given in [6] was initially considered.

$$Y = C + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_n X_n + \varepsilon \tag{6}$$

Which can be presented in a compact way as in [7]

$$Y = \beta X + \varepsilon \tag{7}$$

Thus, the response probabilities, i.e., of choosing each category, are given by [8]

$$P_{ij} = Prob(Y_i = j) = F(X_i, \beta_j) = \left(\frac{e^{\beta_j X_i}}{1 + \sum_{h=1}^{J} e^{\beta_h X_i}}\right) \tag{8}$$

That in the specific case of this research work, J=4=LM, HM, LNM and HNM.

Equation [4] corresponds to a multinomial Logit model proposed by Greene (1997) which, as noted above, is a generalization of the binomial Logit, where P_{ij} is the probability that individual i chooses the **j**-th option. Since $\Sigma^J \; P_{ij} = 1$, the model must be normalized by taking a base category to guarantee the identification of the estimators, which for this case, by default, the Stata program takes the LNM option, so the vector of coefficients associated with this choice will be equal to zero, i.e., $Q_{LNM} = 0$.

Conversely, in nonlinear models, particularly multinomial, care must be taken with the interpretation of the signs of the coefficients, because there is not necessarily a direct relationship between them and the probability coefficient. Considering this, from [4], the marginal effects can be calculated using equation [9].

$$\frac{\partial P_{ij}}{\partial X_i} = \frac{e^{X_i\beta_j}}{1 + \sum_{h=1}^{J} e^{X_i\beta_h}} \beta_j - \frac{e^{X_i\beta_j}}{\left(1 + \sum_{h=1}^{J} e^{X_i\beta_h}\right)^2} \left(\sum_{h=1}^{J} e^{X_i\beta_h}\right) \beta_h \qquad [9]$$

Simplifying the second term of [9] and replacing [8] in [9] we get [10]

$$\frac{\partial P_{ij}}{\partial X_i} = P_{ij}\beta_j - P_{ij} \sum_{h=1}^{J} P_{ij}\beta_h \qquad [10]$$

Factoring P_{ij} into [10] we get [11]

$$\frac{\partial P_{ij}}{\partial X_i} = P_{ij}\left(\beta_j - \bar{\beta}_i\right) \qquad [11]$$

Where $\bar{\beta}_i = \sum_{h=1}^{J} P_{ij}\beta_h$ is the average probability of β. Equation [11] allows a simpler explanation of the marginal effects, given that an increase in the independent variable increases (or decreases) the probability of selecting the *j*-th alternative, expressed as a percentage. Thus, two considerations must be made regarding the estimation of the coefficients and the marginal effects. First, there are *j*-1 sets of estimated coefficients, but *j* sets of marginal effects. Second, while the coefficients of the multinomial model and their corresponding signs, according to Gujarati & Porter (2010) cannot be interpreted directly [since they do not depend solely on β_j as in binomial models] and only allow comparison of the probability of being employed in a job is greater [or less] than the probability of being employed in the base job category [LNM for this specific case], the marginal effects indicate the change in the probability of choosing a job caused by the change in the regressor [ceteris paribus], both conditional on the characteristics of the individual (Schmidt & Strauss, 1975).

Finally, it is important to point out that the results of qualitative or probabilistic response models, such as the one presented in this research study, can be evaluated, globally considered, using Wald statistics and/or Likelihood Ratio [LR], while the significance of the coefficients, individually considered, with the Z statistic, and the goodness of fit, with the Pseudo R^2.

3. Results

The obtained results in this work are divided into descriptive and inferential and are presented in the same order below.

Descriptive results

Table 2 shows some indicators of the labor market and characteristics of the individuals differentiated by gender and area of residence in the Córdoba Department. Large gender gaps are observed, specifically in terms of income and occupation, despite the fact that women have higher levels of education on average.

Table 2 - Descriptive statistics and labor market indicators

|	Urban		Rural	
	Men	**Women**	**Men**	**Women**
GPR	69.8%	53.8%	68.7%	46.3%
OR	62.5%	42.9%	56.3%	39.9%
UR	10.3%	20.2%	18.1%	13.7%
Mean Income ($)	902,011	695,515	583,051	427,431
Mean age (Years)	31.6	31.9	31.5	35.0
Mean Years of Education	7.8	8.1	5.8	6.8

GPR: Global Participation Rate; OR: Occupation Rate; UR: Unemployment Rate.
Source: Own Elaboration based on GEIH (DANE, 2019).

Regarding the distribution of occupations by sex and area, Figure 1 shows that most of the employed women (67%) have occupations predominantly in the service sector [NMB] in both areas. Another result that stands out is that both men and women in rural areas show greater participation in jobs other than those of the countryside, which accounts for the little motivation that this population has to be employed in them.

Table 3 shows the regression results using *Stata*, with the Huber-White option to obtain robust standard errors, in which the coefficients of the estimated multinomial model are shown, marked with their corresponding significance level, where of course those of the HNM base category are not shown because of the explanation above.

Figure 1 - Distribution of Occupations According to Gender and Area
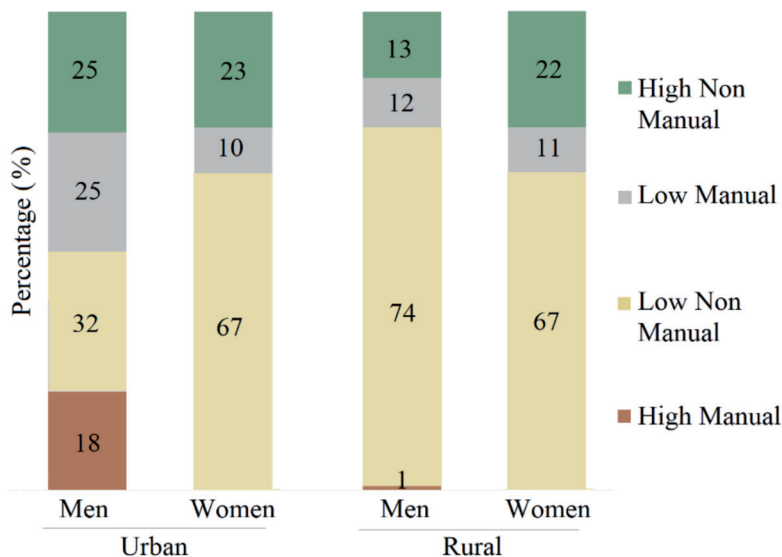
Source: Author's own elaboration based on GEIH (DANE, 2019).

Table 3 - Regression Results

Variables	(1) LM	(2) HM	(3) LNM	(4) HNM
	-0.035**	-0.094***		0.422***
Age	0.001+	0.060**		-0.009+
Age 2	0.000+	-0.001**		0.000+
Married	-0.045+	0.196+		-0.054+
Boss	-0.381***	-0.388**		-0.102+
Woman	-1.736***	-4.441***		-1.122***
Rural	-1.761***	-3.707***		-0.701***
Rural Woman	1.668***	-8.837***		1.071***
Constant	0.144+	-0.717+		-5.223***
Wald chi²	15157.79	Pseudo R²	0.2145	0.2145
p-value	0.0000			

*** $p<0.01$; ** $p<0.05$; * $p<0.1$; + Not significant.

Source: Own elaboration based on *Stata* (2022).

The results confirm that the model is highly significant at a global level, since the *p*-value of the Wald chi-square test was practically equal to zero, i.e., that the variables together, with more than 99% confidence, manage to explain the probability of choosing the specified job categories. On the other hand, the variables education, sex, area of residence and kinship with the head of household are significant with confidence levels higher than 95%, which allows us to reject the hypothesis that they do not contribute to the explanation of the phenomenon under study and finally, a Pseudo R^2 of 0.21 is revealed, i.e., in non-linear models, the explanatory variables included increase the likelihood by 21%, revealing a good fit of the model (McFadden, 1984).

Table 4 shows the estimation of the marginal effects, indicating the change in the probability of being employed in one job or another. It is observed that characteristics such as education, age, or being head of household are important when explaining the job choice in which an individual is going to work. Particularly, the estimation indicates that individuals with a higher accumulation of human capital tend to value less the LM (occupations in primary and extractive exploitation, laborers), HM (operation of equipment, transport and chores, processing, manufacturing, and assembly) and LNM jobs (occupations in sales and services, assistants and technicians), on the other hand, they value HNM jobs more (direction and management, finance, administration, science, technology and innovation occupations). Marginal effects reveal that one more year of education significantly reduces the probability of choosing LM, HM, and LNM jobs by 1.4%, 1.2%, and 3% respectively, while significantly increasing the probability of choosing HNM in 5.5%, which suggests that investing in education is a way to scale productively.

Table 4 - Marginal effects estimate

Variables	(1) LM	(2) HM	(3) LNM	(4) HNM
Education Level	-0.0141***	-0.0117***	-0.0294***	0.0552***
Age	-0.00120+	0.00455**	-0.00133+	-0.00202+
Age 2	1.97e-05+	-6.12e-05**	-5.49e-06+	4.70e-05+
Married	-0.00985+	0.0165+	0.00149+	-0.00811+
Boss	-0.0382**	-0.0172+	0.0522***	0.00317+
Woman	-0.0838***	-0.267***	0.383***	-0.0318**
Rural	-0.119***	-0.218***	0.325***	0.0118+
Rural Woman	0.432***	-0.714***	0.0756+	0.207***

*** $p<0.01$; ** $p<0.05$; * $p<0.1$; + Not significant.
Source: Own elaboration based on *Stata* (2022).

Regarding the variables of interest in this research, corresponding to the rural area and the gender of the individual [woman], the estimation results allow us to infer the following: On the one hand, that individuals in rural areas value jobs less associated with the countryside, in particular, the fact of being from the rural area reduces the probability that an individual chooses high manual and low manual jobs, in this case, by 12% and 22% respectively, while, on another hand, they are preferring occupation in the sector of sales and services [predominantly urban], since the probability of choosing them increases by 33%.

Lastly, the results differentiated by gender show evidence in favor of the type of occupation carried out by women, indicating that they are more prone to low non-manual jobs offered in the service sector [occupations in sales and services, auxiliary and technical]. Interestingly, however, rural women are more likely than men to work in primary sector jobs, and therefore men may be more likely to seek job opportunities in urban areas.

4. Conclusions

Among the obtained results, gender gaps were observed in terms of income and occupations, wherewith it can be established that the household roles of women, apparently, condition their participation in the labor market and therefore the structure of the market demand punishes such conditions.

On the other hand, it was observed that both men and women in rural areas are likely to be employed in occupations other than those in the countryside, which accounts for the little appetite that this population has for jobs in this area and that probably, for being a poorly structured labor market, with few opportunities, these people have to move to the urban area in search of better opportunities and labor conditions.

The foregoing is confirmed by the low assessment of jobs associated with the countryside by residents of the rural area of the Cordoba Department, especially by the male population, which highlights the low consolidation of the rural labor market to encourage its inhabitants to choose countryside activities, which is largely explained by the migratory phenomenon from the countryside to the city in search of better jobs, a situation that makes evident the structural problems of the rural labor market.

It is important to point out that the migratory phenomenon in Colombia, differentiated between economic migrants and displaced persons, is present in all regions of the country, especially affecting intermediate cities such as Montería, capital of the department of Córdoba. In relation to economic migrants, the object of study of this research, it can be affirmed that they encounter barriers mainly when moving, as well as generating a change in

the labor supply of the receiving labor markets that has not been possible to estimate quantitatively due to lack of data, among other reasons (Valencia-Agudelo *et al.*, 2019)

To conclude, it is recommended that complementary studies be carried out to deepen the economic migration phenomenon, particularly in its effects on the receiving labor market in the department of Córdoba.

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