Association between migrant status and wages for Colombian waged workers: Is it a case of positive selection?

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Abstract

Migration determines the composition of population and the impacts on economic development. Internal migration in Colombia has changed its patterns, giving a new role to the urban to urban migrants. Therefore, it represents a crucial issue for national and local governments. Through the analysis of data of the Great Integrated Household Survey of 2015, this research paper makes two contributions to the literature on migration in Colombia. First, the hypothesis of positive selection is evaluated through a measure of relative education. Second, the inclusion of migrants between the largest metropolitan areas expands the analysis on different groups of migrants, following the new patterns of internal migration. Data support the hypothesis of positive selection in urban to urban migrants, and present the concentration of high-skills workers in the largest metropolitan areas.

Introduction

Migration is a phenomenon which affects most of the demographic processes in a society and is closely related to factors associated with quality of life. As established in the Lifetime Mobility Report for the United States, "the population mobility has a crucial impact on individuals, as well as local demographics and economies" (Ren, 2010). Internal migration has become relevant in national agendas around the world; after the post-war period in the 1950s, internal migration has been increasing in both developed and developing countries, leading to an accelerated urbanization process and therefore bringing new challenges for developing countries, related to the impacts of migration in labor market conditions.

The study of internal migration in developing countries has been gaining attention from scholars in the last decades mainly because of its central relevance for governments' public policy. In less developed countries, development processes through urbanization have promoted an important pattern of migration growth (G. Fields, 1975). Internal migration in Latin America has been explored by many studies in different contexts: establishing a comparative analysis framework of rural to urban migration (Kemper, 1971), exploring the changes in migratory trends (Dufour & Piperata, 2004), analyzing the economic role of the largest cities (Banguero, 2013), and finally exploring the factors of internal armed conflicts, such as those experienced in Colombia (Calderón & Ibáñez, 2009).

Urbanization as a multidimensional phenomenon associated with the growth of cities also has a major influence in labor market conditions and movement of the labor force. Difference in wages between the main metropolitan areas is an important explanatory factor of the increasing willingness to migrate (Glaeser, Kallal, Scheinkman, & Shleifer, 1992).

The inter-cities migration approach studies the population movement between cities, which explores new relationships between individuals who move between urban areas. Rosen (1979) and Roback (1982), (1988) state that workers weigh differences in intrinsic city characteristics, defined broadly as amenities, against differences in wages when choosing a city in which to locate.

Colombia is not an exception and has had important movements of population to the largest cities in the country for the past 60 years. According to the data from the United Nations Department of Economic and Social Affairs (2014), the percentage of the population in the largest four cities in Colombia (Bogota, Medellin, Cali and Barranquilla) has increased from 39 percent in 1950 to 46.7 percent in 2010. Internal armed conflict and the concentration of economic activities in these four cities have accelerated the rate of internal migration. The GDP of these four cities represents around 46 percent of the Colombian GDP, and these cities represent the most attractive places for migrants in the country.

Labor force mobility in Colombia has been a recurrent process partly explained by the economic importance of the largest metropolitan areas. Differences in labor markets conditions have been the focus of several studies and have had implications for public policy (Banguero, 2013), (Herrera-Idárraga, López-Bazo, & Motellón, 2015). Imbalance in labor opportunities and the affordability of public services generate new movements of population, with implications for poverty and inequality levels.

Because of the increasing relevance of internal migration as a worldwide phenomenon, this research paper focuses its analytical efforts on studying the different trends of migration. This research hypothesizes that migration of waged workers between the largest metropolitan areas is associated with the theory of positive selection, implying that movements of high-skills

individuals reinforce economic concentration in larger cities.

To explore this hypothesis, the research seeks to answer the following questions based on evidence from Colombia. First, can any pattern be found between internal migration and relative education in waged workers among the largest thirteen metropolitan areas in Colombia? Second, does an association between the migration status and the wage differentials in the main thirteen metropolitan areas exist? These two questions are crucial for the public policy related to labor markets development in the country.

This analysis includes measuring relative education for adding information to the explanation of migrant individuals. A model of probability that incorporates a measure of relative education is given to support theories of positive selection in urban to urban migration. Furthermore, an analysis of migration status through Mincerian equations on the wages provides a sense of the differences between the largest and the medium-sized cities and which of them could be associated with the existence of a positive selection in labor markets in Colombia.

The rest of the paper proceeds as follows. Section *I* reviews the literature, exploring the different theories on wage differentials and the conclusions of several studies for the specific case of Colombia. Data characteristics and the main descriptive statistics are presented according to the groups of population in the sample in Section *II*. Section *III* outlines the empirical methodology for the probability model and nested models for wages and urban migration status. Empirical results are presented in Section *IV*. The following section presents a discussion of the economic results. Finallly, Section *VI* offers conclusions and recommendations towards the public policy debate on labor markets conditions in the main urban areas of Colombia.

I. Literature review

Several theories have associated the effects of migration on wage differentials. Lewis (1954) analyzes the phenomenon of migration based on economic development theory through the definition of two differentiated sectors in the economy: the coexistence of a modern sector with high productivity and a traditional sector, associated with agriculture, generates the migration of individuals from the traditional sector because of the differentials in wages. Other studies based on development theory (M. P. Todaro, 1969), (Harris & Todaro, 1970) suppose that migrants are attracted by labor opportunities and the wage structure of the formal sector in urban areas. Additionally, in posterior research Todaro (M. Todaro, 1980) establishes that the higher the difference in wages, the more attractive for people of rural areas to move to cities.

Labor market segmentation theory establishes that a different wage is paid for the same kind of work, by the stratification of workers, based on geographic location, education, gender or race (Cain, 1976) (Gerke, 1993). Assessing regional wages in Brazil, this theory assumes differentials in wages between a primary market and a secondary market, explained by differences in labor markets, production structure, and the level of development in each location (Servo, 1999).

Borjas (1987) proposes that wage differentials between migrants and residents depend on the characteristics of the migrant cohort and the period of time since migration. Individuals with high-quality characteristics may perform better than the resident's average (positive selection). In the opposite way, migrants with low qualifications may obtain a worse performance than the average resident (negative selection). In addition, based on the model of

Roy (1951), Borjas (1987) considers that if the migration costs are constant for individuals, the decision of migration depends on two criteria: income distribution and education returns in both the origin and destination places.

Lee (1966) describes the factors that determine migration and the characteristics of migrants: the characteristics within groups of migrants are different depending on the sets of plus and minus at origin and destination places. Moreover, migration reasons will determine a positive or negative selection and the consequences that individuals will face in the destination labor market.

Chiswick (1978) mentions that the assimilation of migrants in the labor market is considered successful due to the wage of migrants' proclivity to equalize or surpass the wage of non-migrants, based on the fact that migrants are the most productive individuals. Chiswick (2000) indicates a tendency toward the favorable self-selection based on a higher level of ability and this propensity can be expected to be more intense for economic migrants.

Posterior studies, focused on urban migrants, consider that the assimilation process depends on the period of time since migration, the economic cycle of the destination place, the labor demand characteristics, and the abilities of migrants (Borjas, Bronars, & Trejo, 1992) (Szasz Pianta, 1995). Yang (1994) concludes that the patterns of urban to urban migrants differ from the ones related to the rural to urban migrants. The characteristics are more related to a positive selection.

Vignoli (2004) analyzes internal migrations in Latin America and the Caribbean from 1980 to 2000. The fact that new migrants are more educated indicates that migration decision is more associated with labor opportunity development rather than a survival decision. This fact suggests that internal migrations contribute to increasing regional disparities due to the

migration of high-skill workers to the most developed metropolitan areas in Latin America.

1. Evaluation of migration conditions

The importance of urban to urban migration has led to exploring the different roots and consequences of this type of migration compared to the traditional rural to urban migration approach (Lattes, Rodríguez, & Villa, 2002). Cerruti and Bertoncello (2003) state that there appears to be a positive selectivity among urban-urban migrants in terms of their educational attainment.

Furthermore, a recent study has included the variable of relative education for assessing the characteristics of individuals (Jensen, Gale, & Charpentier, 2010). This variable is related to the probability of migration in the population of Mexican migrants to the US, including a measure of migrant quality. Individuals over or under the mean of education in their respective birthplaces are useful to assess the hypothesis of positive, negative or adverse selection in migrants.

2. Literature in Colombia

The first studies in Colombia focus on migration determinants, evaluating movements of rural population to urban areas (Schultz, 1971) (Martine, 1975) (G. S. Fields & Schultz, 1980). These studies conclude that individuals decide to migrate to improve their quality of life associated with the affordability of labor, education, and utilities. An additional reason is to move to a less violent place. Other authors have evaluated the migration conditions in posterior studies based on gravitational theory (Galvis, 2010) (Espinosa, 2003); theses studies conclude that motivation of migration is related to the market signals, specifically to changes in wages and unemployment rates in both the origin and destination areas. Likewise, migrants show a

preference pattern for central areas. In addition, Simmons and Cardona (1972) determine that the migrants profile is related to the origin region: the more qualified migrants belong to the high-income medium-sized cities and the less qualified migrants proven from rural areas.

The comparisons between wages of migrants and non-migrants have had different measures in the studies in Colombia. Leibovich (1996) finds that migrants obtain a wage 4.5 percent superior compared to non-migrants wages, and the wages difference reduces with the increase in the period of time since migration, while Roa (2008) concludes that recent migrants are related to a higher income of 10 percent compared to the non-migrants and previous migrants receive a higher income of 6 percent.

Silva and Guataqui (2011) divide the migrants according to two different factors. The first is a chronological factor which determines the condition of being a recent or a previous migrant. The second is associated to the voluntariness of migrant, classifying the individuals in economic or non-economic migrants. The results state the existence of elements for a positive selection in the group of economic migrants in the period of 2001 to 2006 in the largest ten metropolitan areas in Colombia.

The chosen literature review focuses on individuals' reasons for migrating to different places. Differences in the productivity between metropolitan areas and concentration of resources on the largest cities tend to explain the migratory dynamic of individuals and opens the discussion to the motives in urban to urban migration within developing countries. The analysis of a probability model for migration status in waged workers in main metropolitan areas in Colombia, including the relative education measure is one contribution of this paper. The second contribution of this paper is associated with the evaluation of urban to urban migration status between individuals of medium-sized cities and large cities in the largest

thirteen metropolitan areas. The analysis will give more tools for evaluating the conditions and characteristics of Colombian labor markets.

II. Data

Research analyses are based on data from the Colombian Great Integrated Household Survey (GIHS) which is developed by the National Statistics Department (DANE). This survey gathers the data for a specific year in Colombia in a representative sample of the different areas in the country. It includes the main population measures for the labor market and the conditions of migration of population. Therefore, these measures are appropriate for demographic analysis, especially when studying main sources of labor income, years of education, age, marital status, and other individual characteristic variables. The survey gathers information about employment conditions for the population aged 12 or more including income and occupation, as well as general population characteristics such as gender, age, marital status and educational attainment. The GIHS is representative of the thirteen major metropolitan areas in Colombia, composed of the main city and its associated municipalities.

According to the literature review, the measure of labor economics most frequently used in economic-theoretical and econometric studies is the individual worker as the appropriate unit for examining disparities in wage rates. As the unit of analysis, the data for the analysis are taken from Colombia's Great Integrated Household Survey of the entire year of 2015 for the group of individuals in the thirteen metropolitan areas. The analysis was restricted to salary workers that were over the age of 23 years old. The analysis does not include self-employed because their source of income is a combination of labor and physical capital and therefore may

not be compared with earnings of other employees. The sample does not include individuals who were born in any place different to the thirteen cities of the metropolitan areas. After excluding observations with missing values or inconsistencies, 43,708 individuals remained in the sample.

Migration status is determined in two different measures in this research paper. The first model defined a binary variable which takes the value of one when a person migrates to another city in the defined period of time since migration. In the second model, migration status was built through the definition of five groups based on the birthplace of individuals. The other groups were determined according to the place of origin and the place of destination. The other four categories were the migrants from larger cities to larger cities, the ones who migrate from larger cities to medium-sized cities, the migrants from medium-sized cities to larger cities, and the migrants between medium-sized cities. In addition, for the variables in this paper, the models used a measure of potential experience, calculated as age minus the number of schooling years minus six years.

The measure of wages used is obtained through information from monthly wage earnings and worked hours; the dependent variable for the model of wage is the gross hourly wages. A first look at the degree of migration wage differentials in Colombia is obtained from a simple inspection of Table 1, which displays the average gross hourly wage by each defined status included in the sample. Large differences in average wages across the five groups in the main metropolitan areas are observed, and then the analysis focuses on those differences after controlling for the productivity level of each place, extending the analysis to different conditions on the period of time since migration.

Some explanatory factors in those wage gaps may be differences in characteristics for

each group of workers. In particular, worker groups are known to differ in the endowment of education, which is one of the essential determinants of wages. Table 1 shows the average of education years of workers in each migration status group. As it can be seen, there are notable differences in this education variable, measured through the number of schooling years. However, there is not a consistent difference between these groups when the factor of period of time since migration is considered.

Table 1: Descriptive Statistics

	Since Birth			Five Years			Last Twelve Months		
Migration Status	Wage (COP)	School Years	Obs.	Wage (COP)	School Years	Obs.	Wage (COP)	School Years	Obs.
Non-migrants	5,764	11.80	36,438	5,963	11.86	41,839	6,002	11.89	43,214
Large City to Large City	7,992	12.65	2,255	8,217	12.86	575	9,252	12.21	161
Large City to Medium City	7,390	12.69	1,648	6,940	12.70	469	6,076	12.42	124
Medium City to Large City	8,575	11.99	1,026	7,759	12.23	233	8,464	12.37	52
Medium City to Med. City	5,920	11.91	2,341	6,089	12.00	592	5,166	11.25	157
Total	6014	11.89	43,708	6014	11.89	43,708	6,014	11.89	43,708

Source: Data from GIHS 2015 Colombian National Department of Statistics (DANE)

The differences presented in this section reinforce the importance of the research questions, trying to identify the association of the characteristics of individuals on the probability of migrating to a specific place in Colombia. Likewise, the analysis of the migration status on wage differentials would be a crucial source for identifying possible strategies in the public policy framework for local labor markets in the main metropolitan areas in Colombia through the models described in next section.

III. Methodology

In Colombia, the studies on wage differentials have focused on two specific topics: the impact of immigrants on wages for natives and the analyses of migrants who move to the main four cities. These studies classified migrants according to the birthplaces, being the rural condition the most explored in the literature. However, the process of urbanization has generated a new interest in analyzing the effects on the population who move from one city to another one. In this sense, this research tends to remark the conditions of inter-cities migrants, considering the impact on cities economies and specifically in labor markets of these cities.

Therefore, the research paper develops two models for evaluating the conditions of labor markets. The first model evaluates the association of urban migration status, which represents migration from one city to another city, with measures of relative education of individuals and the possible consequences in labor markets and cities economy. The second model assesses the differentials in wages of the several groups of the population associated with a specific migration status. In this sense, the analysis included nested models which are evaluated for the three definitions of periods of time since migration, looking for consistency in the outcomes of the analysis on wage differentials.

1. Probability Model

The model for evaluating the probability of migration between cities in Colombia is developed for measuring the influence of relative education on the migration decision for the

waged workers. The model only includes individuals who have the condition of being heads of households. The dependent variable is a binary variable which refers to individuals who ever migrate to any of the thirteen metropolitan areas.

A variable of relative education is included as the independent variable of interest for evaluating the hypothesis of positive selection. This variable is measured by the normalized difference of years of education compared to the mean of schooling years in the area of birthplace. Additionally, the model included several controls which affect the probability of migration. The characteristics of age, gender, and marital status represent the controls in the equation.

The models are evaluated for three different definitions of migration status, according to the period of time since migration. The probability model is defined as a logit model as follow:

$$P(migst_i = 1) = \beta_0 + \beta_1 age_i + \beta_2 agesq_i + \beta_3 head_i + \beta_4 female_i + \beta_5 marst_i + \beta_6 rel\_ed_i + \varepsilon_i$$

The decision of migration would respond to the alternatives of workers in their origin places. The recognition of job skills and education in a specific place are usually the factors which define the wage differentials at a regional level. Then, the evaluation that each individual does of the total benefits, depending on the potential revenues and the migration costs, determines the final decision of migration. Moreover, the probability of certain kind of urban workers to migrate will increase in the specific universe of waged workers, assuming a certain level of integration of labor markets. Thus, the hypothesis would be associated with a positive relationship between the indicator of relative education and the probability of migration for urban to urban migrants, according to the theories of the urban economics of the concentration

of high-skilled workers in the main cities in a country.

2. Wage differentials evaluated through Mincerian equations

The next model in the paper was focused on the effect of urban migration status in wages. Several models were estimated by analyzing three different groups according to the time of migration. All the models followed a structure of nested models constructed for evaluating the impacts of the migration status, adding variables for controlling the city fixed effects and control variables for a specification of a Mincerian equation. This analysis is done evaluating the theories of assimilation of migrants in every labor market. Three models were estimated for each definition of the migration status:

$$(1)\ w_{ij} = migration_i\alpha + \varepsilon_{ij}$$

$$(2)\ w_{ij} = migration_i\alpha + \gamma_j + \varepsilon_{ij}$$

$$(3)\ w_{ij} = migration_i\alpha + \gamma_j + X_i\beta + \varepsilon_{ij}$$

Where w_{ij} represents logarithm of the hourly wage of individual i in the city j. The variables of migration are four indicators variables which indicate if an individual migrates from a large city to another large city, from a large city to a medium-sized city, from a medium-sized city to a large city, or from a medium-sized city to another medium-sized city. The variable X represents the characteristics of the individual, including education, potential experience, squared potential experience and gender. The model includes a variable of fixed effects for controlling the conditions associated to the destination place. Finally, ε_{ij} is the measure of the error.

The main hypothesis under this model is the differences in wages responding to the

migration status of individuals. The possibility of positive selection on individual's decision will be consistent with the migration of the most capable individuals, looking for the opportunities in the places that concentrate the high-skilled positions in an economy, usually the largest cities.

IV. Empirical Results

Table 2 shows the probability margins of the Logit model for the three definitions of migrants, depending on the period of time since migration. These margins indicate a significant positive effect of relative education in increasing the probability of urban-to-urban migration for waged workers, referring to the migrants since birth and in the previous five years. Individuals with a relative education of one standard deviation over the average education in their birthplaces increase the probability of being a waged migrant in 3 and 1 percentage points, respectively. The effect on migrants with a period of migration less than one year is not significant. Nevertheless, it is important to check the proportion of the population in the last group of individuals and be careful over the population analyzed in the present paper; this population refers to waged workers rather than the universe of the entire migrant population.

Table 2: Logit Model

Probability margins for the Logit model on migrant status			
	(1) Since Birth	(2) Five Years	(3) Last year
Age	-0.00	-0.00	-0.00
	(-0.81)	(-2.20)	(-0.73)
Age squared	0.00	0.00	0.00
	(0.47)	(0.12)	(-0.45)
Female	-0.05	-0.02	-0.01

	(-6.04)	(-5.57)	(-3.26)
Marital status	-0.03	-0.02	-0.01
	(4.49)	(5.17)	(3.11)
Relative Education	0.03	0.01	0.00
	(11.52)	(6.71)	(1.54)

Notes: N= 18,172; Source: GIHS 2015; Z scores in Parenthesis

The probability model presents some variables with high significance for explaining the migration status in the universe of waged workers. The coefficients associated with the marital status and being female have a negative effect on the probability of urban-to-urban migration. The coefficients have the same sign on the effects for the three definition of migration status, but the effects are smaller in the models for migrants since last twelve months. One limitation of the data is the proportion of migrants in the last twelve months in the universe of waged workers.

Referring now to the second model, the outcomes on the reasons for migration have been evaluated in several studies. The ones obtained by this research paper, shown in Table 3, agreed with other studies when the result referred to the differences in wage between people who are urban-to-urban migrants. The first fact to underline is the positive differential for individuals who move from any of the thirteen metropolitan areas to one of the largest cities. The effect of this migration is associated with an increase in the wage for migrants since birth, ranged from 3 percent to 13 percent (column 3). Data for migrants from the urban areas to medium sized cities have mixed results. For those who move from one of the largest cities it is associated with a higher wage of 8%, while for those who moves within medium-sized cities the increment is about 3%. Another fact to mention in the outcomes of the model is the diminution in the coefficients being more significant for the migration to a larger city, which would be related to the human capital requirements in the main cities for an economy.

Tabla 3: Nested models

	Since Birth			Five Years			Last Twelve Months		
Log Hourly Wage	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
LarCity-LarCity	0.18	0.19	0.08	0.16	0.14	0.06	0.24	0.21	0.21
	(0.01)	(0.02)	(0.01)	(0.03)	(0.03)	(0.02)	(0.05)	(0.05)	(0.04)
LarCity-MedCity	0.20	0.22	0.08	0.16	0.19	0.10	0.06	0.09	0.05
	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	(0.02)	(0.06)	(0.06)	(0.04)
MedCity-LarCity	0.22	0.16	0.13	0.19	0.11	0.14	0.23	0.17	0.16
	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)	(0.03)	(0.09)	(0.09)	(0.07)
MedCity-MedCity	0.07	0.08	0.03	0.09	0.11	0.09	-0.06	-0.03	0.05
	(0.01)	(0.02)	(0.01)	(0.03)	(0.03)	(0.02)	(0.05)	(0.05)	(0.04)
Years of Schooling			0.12			0.12			0.12
			(0.00)			(0.00)			(0.00)
Potential Exp.			0.01			0.01			0.01
			(0.00)			(0.00)			(0.00)
Squared Pot. Exp.			0.00			0.00			0.00
			(0.00)			(0.00)			(0.00)
Female			-0.15			-0.15			-0.15
			(0.00)			(0.00)			(0.00)
Adjusted R2	0.01	0.03	0.41	0.00	0.02	0.41	0.00	0.02	0.41
City Fixed Effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Notes: N= 43,708; Source: GIHS 2015; Standard Errors in Parenthesis

Likewise, evaluating the coefficients obtained in the models, which include the migration variable since five years or migration in the last twelve months, the majority of coefficients are significant. For the first case, the one which refers to migrants in the last five years, the coefficients are statistically significant for all the migration statuses. The main fact referred to the association of the migration status from medium-sized cities to a place of the same characteristics with an increase of 9% in the hourly wage. Now, looking at the data for the most recent migrants, conclusions have to be drawn with caution because the migrant population represented less than 2%. The coefficients for the migrants to largest cities are statistically significant, having effects on the hourly wage of 21% and 16% for the large cities and medium-sized cities migrants, respectively. The coefficients for migrants to medium-sized cities are not significant for the last twelve months migrants.

V. Discussion

The empirical findings of the models showed two facts that should be analyzed. First, some explanations may determine the positive association of relative education in the migration decision. Second, observing to the positive difference in wages for urban to urban migrants would be explained by positive selection in the universe of waged workers. In addition, the differences in coefficients with different periods of time since migration can be associated with assimilation reasons of migrants. These theories would be in line with other studies on the effects of migration between cities.

The relative education can be associated with the possibility of a positive selection of waged workers who make the decision of having an urban-to-urban migration. The model of probability gave some light for analyzing the structure of population who migrate in the universe of people who receive a wage. The outcomes may represent two specific facts in Colombian labor markets. First, as supported by some previous work, the concentration of high-skilled workers in the main four cities. Second, the movement of individuals from larger cities taking advantage of the relative comparative advantage compared to individuals in medium-sized cities. In addition, individuals who migrate to medium-sized cities seem to have the same behavior in terms of relative education, which would provide an advantage in terms of average education compared to individuals who have been born in medium-sized cities.

However, considering only the universe of waged workers would bias the effects of relative education on the entire Colombian labor markets. The inclusion of other resources that are not associated to the wage, such as the individuals who employ themselves in the informal

sector or the conditions of unemployment or underemployment in the main thirteen metropolitan areas studied would have different results, looking at the relative education variable.

Referring to the differences in the individuals considering the period of time since migration, the analysis gave some light for analyzing the migration decision. Even though the conclusions for the models of recent migrants depended on the number of observations, it seems to have some different patterns in the probability model of migration. Then, it is important to signal that this study is done based on a cross-section data, and the conclusions would be strengthened through the expansion to a panel data analysis, to include the behavior of individuals along their life cycles, and the differences between cohorts in a population.

The outcomes for the second model had some important facts. First, the positive coefficients in the urban to urban migration status would reinforce the outcomes of the probability model, giving additional support to the positive selection outcome. Furthermore, the outcomes depending on the period of time since migration reinforced the differences analyzed in the literature. Second, the element for the definition of migration status exposed some interesting issues in the movements of population in a country. The process of distribution and redistribution of skilled labor seems to be represented by the coefficients of the outcomes of the model of Mincerian equations. Individuals who move inter-cities tend to have better wages than the average native waged worker. The movement of high-skilled individuals from medium-sized cities would respond to agglomeration economies, looking for taking advantage of high productivity and better amenities level in the largest cities. Likewise, the movement of individuals from largest cities to medium-sized cities would be the answer for a

relative higher skills compared to the native waged workers. Thus, the conditions of migration and the characteristics in the entire labor markets in Colombia can be strengthened the labor markets in the largest cities and the other cities in the country may suffer from a process of brain drain through migration.

Finally, the differences in the outcomes, according to the period of time since migration, reflected the process of assimilation of migrants. For recent migrants, the effects tend to be less important in the differential compared to native workers, rather than for those effects that refer to previous migrants. The coefficient in the migrants from largest cities to medium-sized cities is the only one with a greater effect for the most recent migrants. In this case, the positive differentials would be explained by the characteristics of individuals who moves between locations, which can be related to a group of the population with a defined job alternative before the migration occurred.

VI. Conclusions and Recommendations

This research paper includes the measure of relative education for evaluating the theory of positive selections in the population of wages workers. The outcomes obtained represent a statistical support for including this measure for future studies in the analysis of migration patterns of different groups of population. The analysis of the urban to urban migration is complementary to the migration studies over the entire population. The outcomes of the probability model give additional tools to governments in facing the employment problem.

The outcomes presented in the paper gave some light on the hypothesis of positive selection for waged workers in individuals who are urban to urban migrants. The impacts on the labor markets of largest cities are directly related to the increase in productivity and generation of agglomeration economies that are supported for migration of high-skilled individuals. Moreover, the largest cities have the challenge of generating enough job opportunities for residents and new high-skilled migrants to procure the positive impacts of inter-cities movement of human capital. However, this movement of the more capable individuals from a group of places to another one will increase the differences in productivity and may enlarge inter-cities disparity in Colombian economic development, resulting in a central polarization in the main four cities of the country.

The implications for public policy referring to this fact present two different perspectives. First, the employment policies may be focused on incentivizing new modes of development in the country to avoid the increase in regional dissimilarities for workers. Then, the creation of positions attractive for the most skilled workers would represent a tool for increasing the competitiveness of medium-sized cities. Second, local governments have to offer the conditions for a growing population which additionally includes informal workers and people looking for new job alternatives. In this sense, the productivity differences may produce large movements of population, generating pressures in the employment conditions in the short term.

Regarding the outcomes on the relative education consequences, the differences in wages have to be analyzed in a broader perspective. The possibility of increasing differentials would be related to earlier stages of the life cycle. The combination of those characteristics

would reinforce the process of concentration of the economic activity in the main Colombian metropolitan areas, through the differences in human capital levels and the prioritization of potential gains in prospect careers for young individuals, looking for opportunities in the largest labor markets in the country.

Some limitations of the present work are the separation of the consequences of employment conditions in Colombia and the evaluation of the models over a cross-data universe. The implications and theories would have some complementary approaches through the inclusion of important groups of individuals who were in the informal sector or those who were unemployed at the time of the analysis. Additionally, the inclusion of the measure of relative education for the population who were born in places other than the thirteen metropolitan areas would give new tools of analysis for evaluating some characteristics in the Colombian labor market.

Hence, this research opens the space for a new research topic including the relative education measure in evaluating the possible consequences in the labor markets in Colombia. This first approach was focused on the main urban metropolitan areas, but the analysis will be expanded to two specific focuses. First, the analysis of the relative education measure over the other localities in Colombia incorporating the rest of the municipalities may provide a complete picture of the waged workers' migration. Second, the inclusion of the entire population universe, evaluating the conditions of unemployment and underemployment through probability models would give a complete understanding of the effects of migration on labor markets in the country.

VII. References

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