Imigrantes colombianos nos Estados Unidos: educação, qualificação trabalhista e decisão de retornar*

Carlos Alberto Medina
Christian Manuel Posso

Este documento mostra que os emigrantes colombianos que retornaram ao país desde os Estados Unidos entre 1990 e 2005 eram, em média, menos educados que os que decidiram permanecer nesse país. Este fato contribuiu a atenuar a seleção positiva de colombianos que emigram para esse país e, como resultado, aumentou a saída líquida de capital humano (a chamada fuga de cérebros). Embora os dados não permitam incluir a qualidade do trabalho que os emigrantes colombianos desempenham nos Estados Unidos como determinante da decisão de retornar, permitem mostrar que eles desempenham, usualmente, tarefas que requerem de habilidades à altura da sua educação. Também se apresenta evidência que mostra que a Colômbia é um exportador claro de 5% da sua população com estudos universitários ou pós-graduação.

Classificação JEL: F20, F22, C49.

Palavras chave: migração internacional, emigrantes retornados, habilidades por tarefas, viés de contaminação.

Inmigrantes colombianos en Estados Unidos: educación, calificación laboral y decisión de retornar[*]

Carlos Alberto Medina
Christian Manuel Posso

Este artículo muestra que los emigrantes colombianos que retornaron al país desde los Estados Unidos entre 1990 y 2005, eran en promedio menos educados que los que decidieron permanecer en ese país. Este hecho ha contribuido a atenuar la selección positiva de colombianos que emigran a ese país, y como resultado, ha aumentado la salida neta de capital humano (la llamada fuga de cerebros). Aunque los datos no permiten incluir la calidad del trabajo que los emigrantes colombianos desempeñan en los Estados Unidos como determinante de la decisión de retornar, sí permiten mostrar que ellos desempeñan usualmente oficios que requieren de habilidades a la altura de su educación. También se presenta evidencia que muestra que Colombia es un exportador neto del 5% de su población con universidad o posgrado.

Clasificación JEL: F20, F22, C49.

Palabras clave: migración internacional, emigrantes retornados, habilidades por tareas, sesgo de contaminación.

Colombian Immigrants in the United States of America: Education Levels, Job Qualifications and the Decision to Go Back Home[*]

Carlos Alberto Medina
Christian Manuel Posso

This document shows that Colombian immigrants, who returned to the country from the United States between 1990 and 2005, were on average less well-educated than those who decided to stay in the U.S. This is a fact that has contributed to emphasizing the positive selection made by Colombians when choosing the U.S. as their destination, and, as a result, has increased the net flight of human capital (the so-called brain drain). Although data does not allow us to include the quality of the jobs that immigrants are performing in the U.S. as a determinant of the decision to return, it allows us to show that Colombian immigrants are usually engaged in jobs that require qualifications commensurate with the level of education. We also provide evidence that Colombia is a net exporter of 5% of its population with a university or post-graduate degree.

JEL classification: F20, F22, C49.

Keywords: International migration, returned migrants, task qualification, contamination bias.

I.   INTRODUCTION

It is estimated that at the present time over three million Colombians are living abroad. In the year 2005, it was estimated that around one million of these Colombians were living in the United States, along with 2.23 million immigrants from South American countries.[1] It is fundamental to study the evolution of migratory tendencies among those countries in the region from which people are migrating, so that their governments can design long-term development policies that can be implemented in the light of these tendencies and which, if called for, can have an impact on these tendencies, in accordance with the objectives laid out for each particular country.

Nonetheless, governments need to understand the factors that determine migrants' decisions to either remain in their adopted country or return home, in order to be able to draw up adequate policies on the matter. Also, a better understanding of migrants' decisions can be important for people who are living in their home country, but are considering the possibility of migrating to another country. It can help them make their decision based on full and unbiased knowledge— something they usually lack. Such is the case of a potential emigrant who decides to emigrate (or not) without

---

1 The figures of Colombians abroad and those living in the United States are a result of various assumptions discussed below, while the figures on South Americans living in the United States are estimated using the 2005 U.S. Census.

having an idea of his (or her) chances of success in the country to which he (or she) intends to migrate, since he (or she) does not know why a migrant may eventually decide to come back home.

This document adopts standard methodology on the theory of evaluation of social programs and has selected a model that enables us to establish the main factors which determine the decision to stay in the United States on the part of Colombian migrants living there. In particular, our exercise shows that those who are university graduates or post-graduates have a 22.6% greater probability of remaining in the U.S than those with secondary education or less. The results of this model provide evidence that those Colombian migrants who left the United States and returned to Colombia between the years 1990 and 2005 are, on average, less well- educated than those who decided to stay in the U.S. This pattern has contributed to intensifying the selection process, which characterized the initial migratory influx, i.e., the "positive selection", and hence, the net flight of human capital (brain drain).

In order to better understand what motivates migrants to remain in the United States, we proceed to explore the relation which exists between the migrants' levels of education and the level of complexity of the tasks which these same migrants find in their jobs or places of employment. To carry out this exercise, we used the classification of occupations established by Autor, Levy and Murnane (2003). The results reveal that in the case of Colombia, the migrants' levels of education are closely linked to the level of qualification required of them for the work they do in the United States, from which we deduce that the popular belief that Colombian professionals who work in the United States are employed in jobs that require little qualification would seem to be no more than a myth.

The evidence provided in this article, along with the results of previous studies, suggests that the Colombian migrants' option to remain in the United States is more a matter of being capable of making that decision, rather than simply wanting to do so. Those who stay, because they prefer to do so, would seem to be the ones who have managed to be better assimilated in the United States, and that is generally related to their degree of qualification which enables them to remain in their country of adoption while enjoying an adequate lifestyle.

In what follows, we will proceed to describe some elements of the background on this subject before presenting, in stylized form, the main characteristics of Colombian immigrants' cases. Later, we describe the methodology employed to estimate

the factors which determine Colombians' decision to return, and present and discuss the results of these estimates. Following this, we carry out an exercise intended to determine the relation between educational levels and qualification for the migrants' tasks in their adopted country, and finally, we present some conclusions.

II.   BACKGROUND

At the present time, the developed countries have shown a growing interest in promoting the return of migrants to their home countries. This concern is also on the agenda of several medium income countries from which the migrants have originally come —India, China, Brazil—, as well as Colombia.

Thanks to experience gained during their period of migration, the returnees will have acquired general and specific skills which can contribute to the development of their home countries. There is special interest in drawing back the highest qualified citizens that had decided to migrate, —thus having given rise to the so-called "brain drain"—. Some countries are interested in capitalizing on the abilities which such individuals have developed during their time in developed countries, and want to take advantage of the benefits of what they now call "brain gain". One such example is India:

> Indian politicians are beginning to highlight, approvingly, the emerging phenomenon of 'brain gain', as large numbers of Indian-born executives decide that job opportunities and living conditions are as good, if not better, in India and make their way home. Between 1964 and 2001 (when the economy was sluggish), 35 per cent of the nation's most promising graduates moved abroad … but from 2002 onwards (the period when India's GDP began to soar) only 16 per cent chose to leave. (The Guardian, 2008, observed on April 4, 2009).

Several theories exist on the reasons that lead migrants to return home, as well as on other matters, such as the profile of the returnees, and the moment when they return, Cassarino (2004) sums up several of the theories expounded on up to now; among which, we find the approximations of the Neo-classical School of Economics, (NE) the New Economy on Labor Migration (NELM), Structural Approximation, Transnationalism and the "Social Networks" theory.

According to the NE approximation, those who migrate do so, for an indefinite period of time, as a life project. In this sense, the return home will occur, only, as the consequence of a failed migratory experience. On the other hand, NELM suggests that the decision to return home is a logical step in a previously calculated strategy, since it assumes a return to be the culmination of a migration project. Structural Approximation suggests that to analyze a migrant's return, we should bear in mind not only his (or her) personal experience, but also the social and institutional factors that are present in his (or her) home country. Thus, the decision to return is also a question of context (Cassarino, 2004), especially the economic and social context of the home country and that of the country to which he (or she) had decided to migrate.

For Transnationalism, the return home is not necessarily permanent. It occurs once the individual has obtained sufficient resources to guarantee the sustenance of his (or her) family, and when the conditions of the home country are favorable. Later, the individual will look for a way to return to the country to which he (she) migrated in the first place in order to take advantage of the relationships which he (she) has created there. Thus there will be a permanent migratory flux between the home country and the country in which he (or she) has established different ties. Finally, the "Social Network" theory sees the returnees as migrants who establish strong ties in other countries. However, what this focus considers relevant are those relationships which will contribute to their future initiatives or projects in their home countries. In this sense, the decision to return is programmed, and depends on the economic and social ties which the migrant has managed to establish to support his (her) projects in the home country.

The United States Bureau of the Census, based on previous studies by Warren and Peck (1980) and Warren and Passel (1987), estimates that the exodus of international migrants from the United States is, in the Latin American region, about 133,000 people per annum. Ahmed and Robinson (1994) developed a method for bringing these estimates up to date and showed that this figure could be 47% higher, and that it was probably nearer to 195,000 people per annum for the 1990′s.

Borjas and Bratsberg (1996) estimated the rate of emigration (out-migration) of foreigners leaving the United States at approximately 17.5% during the period 1975-1980 and 21.5% during the period 1970-1974[2]. In the case of Colombia, 24.7% of all Colombian immigrants left during the period 1975-1980, and 17% between the years

_____

2 The periods define the moment when the migrants arrived in the United States.

1970 and 1974. That is to say, during the period 1975-1980, approximately 46.136 Colombians emigrated from the United States; while during the period 1970-1974, some 28.254 had done likewise. Borjas and Bratsberg (1996) also showed that when comparison is made with migrants from countries from Central and South America and the Caribbean. Colombians are one of the groups with the greatest number of returnees (surpassed only by Mexico, the Dominican Republic and Jamaica).

Borjas and Bratsberg (1996) found evidence that shows that the decision to return home intensifies the selection which characterized the initial migratory influx. This means that in those countries where the initial migration was brought about by a "positive selection" (where the emigrants were on average better —educated— as is the case for Colombia), they observed that those migrants who returned were on average the less well- educated. And the opposite also occurs: in those countries where the migratory flux was characterized by a negative selection, they found that the migrants who returned were, on average, better- educated.

Governments of countries with a high rate of emigration are interested in finding out whether or not part of the human capital which left the country in earlier periods can be reintegrated into the country's society and so, at least to some extent, turn back the "brain drain"[3]. Besides, qualified migrants are able to absorb technologies (which in many cases are intangible) and skills that can be used to the advantage of their country of origin. This process, designed to revert the "brain drain", can enable those who have migrated to other countries to generate external values for their home countries and makes up part of what is known as the "brain gain".

Now, all depends on whether what exists is positive selection or, the contrary, nega-tive selection (Borjas and Bratsberg, 1996), If the selection is positive, then the returnees will be lower, on average, among the less educated, which means that the effects of the "brain gain" will not be an advantage for the home country, but rather the "brain drain" effect will be augmented. If, on the other hand, the selec-tion is negative, then the returnees will be, on average, the best educated among the migrants, and that will probably lead to a "brain gain" and the consequent advantage to the home country to which the migrant has returned, reverting to some extent the "brain drain" process.

---

3 The "brain drain" is also known as "human capital flight" and is understood as the emigration of highly qualified individuals.

III. STYLIZED FACTS

The International Organization for Migration (IOM) estimates that in the year 2008 there were over 200 million migrants scattered around the world, and that the amount of money being sent back to relatives in their home countries was in excess of US$337,000 million. In 2005, the region which had the greatest flow of international migrants was Europe, with 64.1 million people, while Latin America had 6 million. The principal receiver countries for international migrants are the United States, the Russian Federation, Germany, the Ukraine and France. The country with the greatest influx of Colombian immigrants is precisely the United States, with approximately 35% of the total number. Now, we want to answer some general questions that will allow us to draw our baseline: (1) How many Colombians are living abroad?; (2) What are the Qualifications of Colombian Emigrants?; (3) How are the Labor Conditions of Foreigners in the United States?, and (4) What are the main characteristics of Emigrants who leave the U.S. and return to Colombia?

A. HOW MANY COLOMBIAN ARE LIVING ABROAD?

Regarding the number of Colombians living abroad. the authors are in disagreement. Cárdenas and Mejía (2006), based on statistics supplied by Colombia's Security Department (*DAS*), estimated that between 1996 and 2005 the net number of Colombians who left the country, on average, amounted to 174,000 people per annum. Over this entire period, a total of 1.9 million Colombians emigrated. The authors quote figures from Colombia's Foreign Affairs Ministry based on population censuses carried out in different countries which reveal that, in the year 2000, the total number of Colombians living in the countries surveyed was 1.92 million. In the same year, other relevant destinations for Colombians were Ecuador (51,556 people in 2000), Panama (21,080), Canada (18,472), Italy (16,398) France (13,116) and the United Kingdom (12,331), among others. Also, according to the census taken in Colombia in 2005, 3.3 million Colombians were living abroad at that time; in other words, 8.1% of the country's entire population.

As mentioned above. the United States is not only the country which hosts the greatest number of international immigrants; it is also the country which receives most Colombians. In 2005, there were approximately 566,000 Colombians in the U.S.A.; that is 45 times more than in 1960, 9 times more than in 1970, 4 times more than in 1980 and 1.9 times more than in 1990 (See Table 1 appendix). However,

Gaviria (2004) estimated that the number of Colombians in the United States in the year 2000 was nearly 700,000, while Cárdenas and Mejía (2006) estimated the number at 1,175,881 in 2005.[4]

A simple estimate would enable us to accept as reasonable a figure somewhere between the calculations of the Foreign Affairs Ministry and those of Gaviria (2004): (i) the Colombian population as represented in the U.S. Census taken in 2000 showed that some 306,000 Colombians had been living in the United States for at least ten years; (ii) between the years 2000 and 2005, approximately 62,000 Colombians left the United States, in which case, if a similar rate of influx of Colombians occurred between the years 1990 and 2000, over that ten-year period some 124,000 Colombians had back arrived in the country (see table 1). Supposing this to be correct, the 303,000 Colombians registered in the 1990 U.S. Census did not take into account a further 124,000 Colombians, or thereabouts, giving a grand total of 427,000 Colombians in the U.S. in 1990. If the Colombian population in the United States increased at an annual rate of 5.5%, as indicated in the census of Colombians taken over those years (taking into account the same ratio of people not covered by previous censuses), we would have a total of approximately 696,000 Colombians in the United States in the year 2000; and nearly 890,000 in 2005.

Table 1
Number of Return Migration, 2005

Country	National Total		Urban		Rural	
	Number of People	%	Number of People	%	Number of People	%
United States	19,989	32,1	19,386	33.0	602	17.4
Venezuela	13,175	21,2	11,759	20.0	1,416	40.8
Spain	5,667	9,1	5,518	9.4	148	4.3
Ecuador	3,693	5,9	3,225	5.5	468	13.5
Other Countries	19,707	31,7	18,874	32.1	832	24.0
Total	62,230	100	58,764	100	3,467	100

Source: DANE, CENSUS 2005.

As shown in Table 1, Appendix, based on figures from U.S. censuses, Colombia is eighth among Latin America countries with the greatest number of immigrants in

---

4 Cárdenas and Mejía (2006) base their estimate on figures supplied by Colombia's Foreign Affairs Ministry.

the United States (in 1990 and 2000, it was seventh). The countries whose numbers exceed Colombia´s are: Mexico, Puerto Rico, El Salvador, Cuba. the Dominican Republic, Guatemala and Jamaica. The countries with the highest growth rate of immigrants in the U.S. from 1990 to 2000, and from 2000 to 2005, are Brazil, Honduras and Venezuela. The number of Colombian immigrants increases at a medium rate in comparison with that of other Latin American countries.

B. WHAT ARE THE QUALIFICATIONS OF COLOMBIAN EMIGRANTS?

In the Colombian case, one of the most notable facts related to the overall profile of the resident population in the United States is that Colombians in the U.S. are generally better- educated than those who have remained at home. The information of CENSUS 2005 for U.S. and Colombia shows that Colombians between the ages of 25 and 55 who live in the United States are more highly qualified than those who live in Colombia.[5] Around 37% of Colombian immigrants in the U.S. have completed university degrees or more, while only 14% of Colombians residing at home have obtained a similar degree of education. Likewise, some 3% of Colombians between 25 and 55 years of age in the U.S., in 2005, had a level of primary schooling or less; while in Colombia, 42% of the population remains in that category.

On the other hand, Garay and Rodríguez (2005) showed that 70.5% of Colombian emigrants who send money back to relatives from Spain and the United States have completed secondary education or higher; whereas, in the case of the recipients, only 58.6% have (in the U.S., 62%; in Spain, 50%). The authors consider this result indicative of the lower socioeconomic status of the families whose members have migrated to Spain, when compared to those who have migrated to the U.S.

In general terms, the qualifications of the average Colombian who migrates to the United States are more likely to be higher than those of the average Colombian who stays at home. That is to say, Colombia is a net exporter of skilled people; in particular, Medina and Posso (2009) found that Colombia is a net exporter of skilled individuals —since the net exportation of skilled people is 5.4% of the total number

---

5 These calculations are based on data from the 2005 CENSUS for Colombia and a sample from CENSUS of 1% for the United States. Both data bases were provided by the *Integrated Public Use Microdata Series International* – IPUMS International. The graphs demonstrate the components of completed university courses or more and primary education or less, according to age.

of educated Colombians who l live in Colombia—. Also, they showed that Brazil, Argentina and Chile are net importers (see Graph 1).

Graph 1
Net Migration Rate Skilled People Between 25 and 55 Years
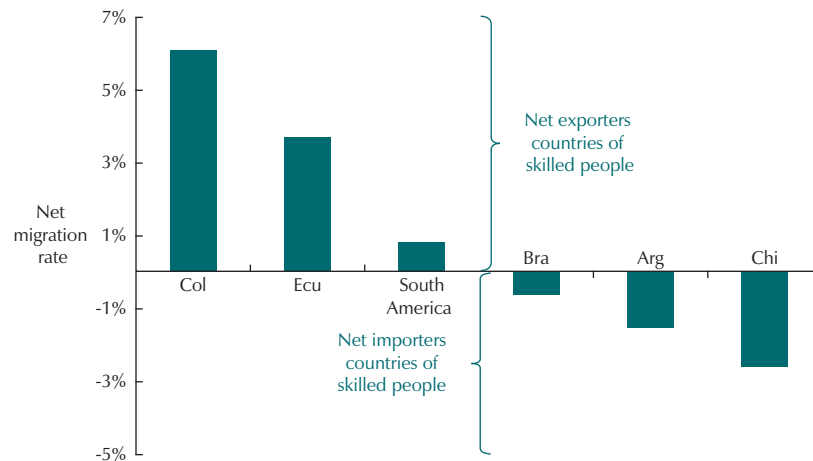
Source: Own calculations and Medina and Posso (2009).

This implies that, at least at some particular moment, there existed what Borjas (1987) and Borjas (1994) would call "positive selection", in accordance with the fact that those who leave a country are better- educated. Despite this, it is equally important to know whether those Colombians who return home from abroad are more or less well- educated than those who remain in their adopted countries. If we establish that not only are the Colombian emigrants better -educated, but also that they are the ones who will probably remain abroad and not return, and that their absence from Colombia is not compensated by the entry of foreigners into Colombia, then we will have evidence to show that the country has been experiencing an overall loss of qualified personnel —the so-called "brain drain"—.

C.   HOW ARE THE LABOR CONDITIONS OF
        FOREIGNERS IN THE UNITED STATES?

We might validly wonder whether or not a higher degree of education has contributed to the fact that well- educated migrants enjoy a higher standard of living in their adopted country, and to what extent that has determined their decision to stay abroad.

This query arises from the abundant anecdotes and stories told by the numerous professionals who have migrated to the United States and who are employed in jobs for which their academic qualifications are not required. The following press release illustrates the point:

> According to the most recent official census of New York City, of a total of 162,120 Colombian workers, both legal and illegal, 3,994 are at present engaged in subsistence employment, working in jobs that have nothing to do with their original professions in Colombia. The number has increased due to the constant influx of professionals from Colombia entering the United States (…) and according to a recent report by the Organization for Cooperation and Economic Development entitled International Migration Perspective 2007, an average of 30.6% of Colombian migrants worldwide are overqualified for their jobs (…) There are more and more surgeons, lawyers and engineers from other countries who make their living driving taxis, selling hot dogs or working on building sites in search of the American Dream. And the majority of them are here in New York.[6]

Let us begin by reporting the distribution of the overall human capital in the United States. For the year 2000, the OECD estimated that 34.6% of the total number of migrants was made up of qualified people, and that 50% of them were located in the United States. The Appendix (see Tables 2A and 2B) shows the percentage of qualified people in the U.S., by country of origin, for the years 2000 and 2005.[7] The countries with the greatest proportion of people, with at least complete university level education, are India, the Russian Federation, Iran and Taiwan. As for Latin America's place at this level, the most notable countries in 2000 were Brazil, Chile, Peru, Colombia and Cuba. However, by 2000 the countries with the greatest number of well qualified people who were migrating were India (9.5% of the total), the Philippines (8.4%), China (5.4%), Mexico (4.8%) and Germany (4.1%). Colombia participates with 1.5%.

---

6 It can be found on a Colombian media company's website. See http://www.caracol.com.co/nota.aspx?id=476144

7 These Tables were drawn up using the U.S. CENSUS for 2005 (CENSUS sample of 1%) and 2000. The two data bases were obtained from IPUMS. The graphs show the share of complete university education (or higher) and university incomplete (or more) for those employed between 25 and 55 years of age.

To determine what jobs are being done by foreigners working in the United States. we use information provided by Autor et al., (2003). ALM, who defined the levels of intensity of each kind of employment in five kinds of tasks —two of which are analytical (that is, they require analysis and quantitative abilities)—, two are routine (that is, they require precision and can often by computerized), and one is manual (not able to be computerized).[8]

Table 3, in the Appendix, shows the principal areas in which foreigners in the United States are working.[9] Immigrants from countries like Taiwan, India, Iran, Hong Kong, Nigeria, the United Kingdom, Canada, France and Japan are, on average, those whose presence is most intense in analytical tasks such as planning and/or direction. Also, as shown earlier, these tend to be the countries with the greatest number of qualified personnel who have migrated. The information above is clear proof of the "brain drain" in these countries, the migrants are not only highly qualified (on average) but also tend to develop tasks with a high analytical component, such as planning and/or direction – tasks which probably have to do with their original professions.

However, not all countries tell the same story. Migrants arriving from Mexico, Guatemala, Honduras, Haiti, El Salvador, Portugal, Puerto Rico, Nicaragua, Ecuador, the Dominican Republic and Laos are immigrants whose average work consists of manual or manual-routine jobs. That is to say, quite apart from their level of qualification, these immigrants tend to be employed in tasks with a high manual labor component, such as housecleaning, driving, wait service, and so forth. In other words, they usually do jobs with a minimum level of analytical component. Also, in the case of Latin America, Graph 2 shows that migrants from countries with high levels in analytical tasks have less intensity in manual tasks.

---

8 Peri and Sparber (2008, 2009) also use the DOT data to look for complementarities among low educated Americans and migrants, while previous work by used as proxy of the level of complexity of the tasks by the average education in the occupations.

9 Following the methodology of Autor et al., (2003), we estimate in what kind of employment foreigners in the United States are working, on average: whether analytical, routine or manual. The Table presents only those countries which had at least 100,000 migrants in the U.S. in the year 2000 and are ordered in accordance with a category known as "Nonroutine Cognitive/Analytical" which is related to employed people who have a high intensity in tasks associated with work which contains a high analytical component, in areas such as engineering, mathematics, economics, finances, etc. (which are not operative tasks).

Graph 2
Task Intensity - Latin American Immigrants in the USA 2000
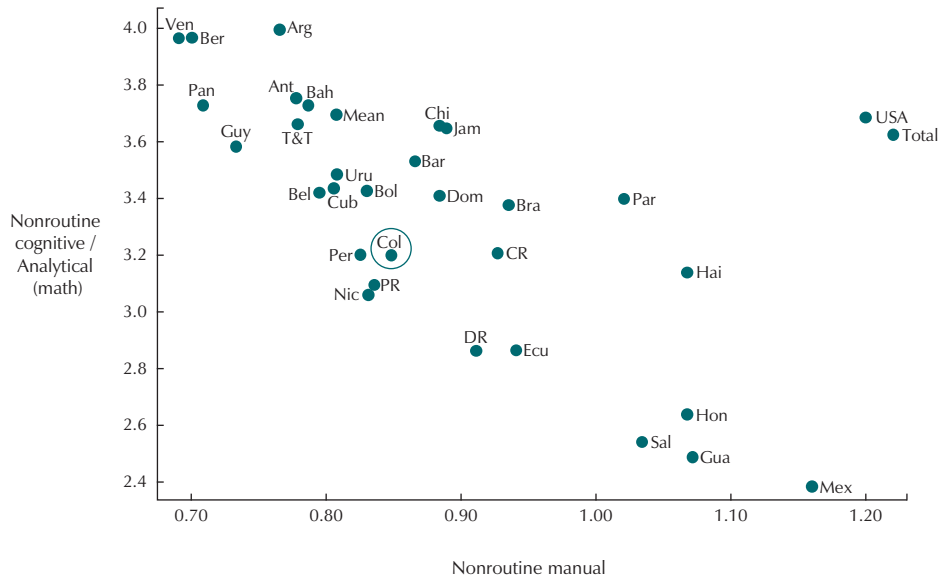
Source: Own calculations.

Colombia is number 15 in the manual labor category, number 33 when it comes to manual-routine jobs, 28 in the field of cognitive-routine work, 30 in planning and directional tasks and 34 in the analytical area.[10] While it is true that there is a significant leakage of well qualified people from Colombia, on average, Colombians are mostly employed in jobs with a high routine-manual component; as to what occurs with other migrants, such as those from India, the Philippines. Taiwan or Hong Kong, for whom the above results would not permit us to play down the evidence from the anecdotes which we mentioned above.

D.   WHAT ARE THE MAIN CHARACTERISTICS OF EMIGRANTS WHO LEAVE THE U.S. AND RETURN TO COLOMBIA?

Several articles on Colombia have provided ideas on the profile of those who decide to return home. Table 2 shows that, according to surveys taken by the *RCN* radio station

10 Examples on the type of work can be found in Autor et al., (2003), Table 1 in the Appendix.

(*Radio Cadena Nacional*) and Colombians Abroad (*Colombianos en el Exterior*[11]), those migrants who remain abroad are slightly better- educated than those who come back —which would indicate a "positive selection" of migration as propounded by Borjas and Bratsberg (1996).

Table 2
Descriptive Statistics of *RCN* and Colombians Abroad Surveys

Variable	Emigrants			Returned Migrants	
	AMCO	USA Census	RCN Survey	AMCO	RCN Survey
Age	36,14	41,80		39,40	
Years of Schooling	11,52	12,30	14,50	12,88	14,25
Sex (Men)	46,9%	43,9%		66,7%	
Single	29,8%	22,8%		19,7%	
Years of residence abroad	6,8		5,5	3,8	5,3
Residence	64,7%				
Frequently communicates by telephone with family	62,9%		81,0%		
Employed	82,0%	64,2%		76,7%	
Unemployed	5,3%	7,7%			
Speaks English		62,3%	79,1%	55,6%	75,7%
Spouse has lived abroad				21,8%	
Parents have lived abroad				18,6%	
Sends remmittances	71,2%		73,2%	99,1%	70,2%
Monthly average amount in US$	166,8		247,6		
Spouse lives in Colombia			5,0%		5,7%
Children live in Colombia			21,0%		21,5%
Parents live in Colombia			73,8%		73,2%

Source: Medina and Cardona (2010).

However, according to the *AMCO* survey,[12] migrants abroad have approximately 11.5 years of education, while those returning have had approximately 12.9 years of similar formal education. Thus the results obtained by *RCN* and *AMCO* would seem to contradict one another. This could be due, on the one hand, as mentioned by Medina (2008), to the fact that *AMCO* carried out a haphazard survey of people in

---

11 http://www.colombianosenelexterior.com/index.php?

12 A house-to-house survey carried out by Colombia's National Statistics Department (*DANE)* in 2004 for the Central West Metropolitan Area (*AMCO* for its initials in Spanish). This survey covered the city of Pereira and the municipalities of Dosquebradas and La Virginia.

Pereira with an experience of migration. whereas *RCN* allowed the better- educated members of the population to make their own pre-selection. Also, there is the fact that the *RCN* survey did not include those Colombians who have migrated with their entire families. If those who migrate with their families prove to be better- educated on average than those who return. then the *AMCO* survey will have overestimated the educational level of those returning.

The descriptive statistics provided in the appendix show that if one relies on figures taken from the American censuses of 1990, 2000 and 2005, it will be found that, during the period from 1990 to 2005. Colombians returning home were relatively less educated than those who remained in the United States. The tables which compare the medium variables employed later on in an empirical exercise, present, in the last column, a statistic to prove the significance of the differences between averages in the year 2000 (2005) and those in 1990 (2000) (See Tables 4 and 5 from the Appendix). On the other hand, the tables suggest that, although it was less probable that from 1990 to 2000 more women returned than men, between the years 2000 and 2005 there is no difference recorded based on gender. The tables also show that from 1990 to 2000 those who were more likely to return home were older people—non-whites, non-Hispanics, people who had spent more than 59 years in a household, who did not have children under ten years of age, and who had been living in the U.S. for over five years (results consistent with our estimations).

Gaviria and Mejía (2006), using information from the *RCN* survey, noted that the desire to return stems from three factors: (1) the circumstances which originally led to migration, (2) the existence of family or social ties in the home country, and (3) the migrant's lack of adaptation to the receiver country. On the first point, the authors found that the most important factor determining the desire to return is an improvement in the perspectives of economic activity, as well as security and employment. Among the factors associated with the second point, the authors mention that the desire to return is greater for those who have a husband or wife in Colombia. Finally, among problems of adaptation they mentioned language and low educational levels; in particular, they explained that there is a greater desire to return among high school graduates than among professionals. The last results are in accordance with the "positive selection" category; that is, the better qualified remain abroad[13].

---

13 This exercise, however, is hindered by a lack of census data because it only seeks out those Colombians in the U.S. who "stayed to tell the story", in this case both selection bias and contamination bias exist.

Medina (2008), using statistics from the U.S. censuses of 1990 and 2000, designs a logit model to identify the determining factors in the probability of returning: defined as the probability that those people who were in the United States in 1990 had returned to Colombia by the year 2000. The author found that probably more men than women have returned, as well as the less educated (those with incomplete university education or less), those over age 55, whites, Hispanics, those without children under age ten to be cared for, and those who had been living in the U.S. for over five years (that is, between the years 1986 and 1990). He also found that the most likely to return were Colombians who had been living in the States of Alabama, California, Washington D.C., Illinois, Louisiana, Maryland, Massachusetts, Michigan, New Jersey, New Mexico, New York, Rhode Island, Texas and Utah; but not those who were living in Florida, Georgia, South Carolina or North Carolina.

Notwithstanding the consistency of several of these results when compared with the descriptive statistics estimated on the basis of the U.S. censuses, the results of the exercise are affected by a phenomenon known in the literature on the evaluation of social programs as the "*contamination bias*" (Heckman and Robb, 1985). In what follows we develop a calculation of the probability of not returning from the United States using a methodology which enables us to correct this bias, thus allowing us to infer the determining factors in the decision to return on the part of Colombians residing in the U.S. during the periods being studied.

IV. THE DETERMINING FACTORS IN THE PROBABILITY OF RETURNING OR STAYING IN THE U.S.

Our document presents evidence on two important questions: (1) What are the characteristics (especially the education levels) of Colombian immigrants in the United States that determine the probability of their taking up permanent residence in that country?, and (2) How well do the occupations of Colombian immigrants in the United States match the skills and education levels of those immigrants? Specifically, we want to know the following: Are educated migrants working in low-skilled occupations that do not fully use their skills? In this section, we deal with the first question. In the next section, we will answer the second.

Our main goal in this section is to find the main determinants for the probability of return to Colombia, or the probability of stayingin the U.S. Our exercise includes

several control variables, but the level of education of Colombians is the most important variable for our exercise. The general model has the following expression[14]:

$$P(Y = 1 \mid Edu, controls) = f\left(\alpha + \beta Edu_i + \gamma Controls_i\right)$$

Where:

Y is equal to one if the individual remains in the U.S. and does not return to Colombia.

Edu_i is the educational level of the individual: includes primary, secondary and university level with both complete and incomplete degrees.

Controls: includes variables like gender, age, race, children under 10 years in household, people older than 60 years in household, an indicator variable that shows whether the individual arrived in the U.S. in the last five years, and states fixed effects.

Another possible control is the task intensity. Nonetheless, since we do not have information regarding the tasks Colombian migrants (described in the 2000 U.S. census) were performing in 1990, we cannot use that information as an *additional control variable* in our empirical model of return migration. In addition, if it were available, it would require a different methodology, since people self-select into different tasks, which would thus produce an endogenous variable[15].

For this estimation we use U.S. CENSUS data for the years 1990, 2000 and 2005[16]. Nonetheless, we have to deal with the problem of c*ontamination bias*. The next section presents the solution for this problem developed by Heckman and Robb (1985).

---

14 We use the Linear Probability Model (OLS) for our estimation. Amemiya (1981) argues that this model has worked very well for slope parameters if $0.1 \leq p \leq 0.9$. In this case, the main assumption is that independent variables are normally distributed (Maddala, 1983; Cameron and Trivedi, 2005).

15 On the other hand, if we showed that task choices are highly related to migrants' education, then we would have at least partially accounted for the task dimension in the empirical model by having included education. This point will be developed in Section V.

16 Our main data source is the *Integrated Public Use Microdata Series International* – IPUMS International (see https://international.ipums.org/international/).

A.   CONTAMINATION BIAS: METHODOLOGY

The problem of contamination bias is brought about by the fact that available information does not enable us to distinguish between the population that is the subject of our study and that which is not its subject. In order to assess the factors which determine the decision to return, we need to know the characteristics of those who did return and of those who remained in the United States; that is, their characteristics previous to the moment when they made the decision to return, or otherwise.

In general, we could have three possible samples of the population under study (following Heckman and Robb, 1985):

Sample (i): The endogenous variable and covariates of those Colombians who decided to stay in the U.S.

Sample (ii): The endogenous variable and covariates of those Colombians who decided to return.

Sample (iii): The endogenous variable and covariates of those Colombians whose status is not known.

In our specific case, when we analyze the period between 1990 and 2000, we need to know what the characteristics were, in the year 2000, of those Colombians who decided to stay in the U.S. (which we shall call **Sample (i)**, following the notation of Heckman and Robb, 1985). However, with the information available in the U.S. CENSUS 1990 (which we shall call **Sample (iii)**), it is not possible to establish those Colombians who finally did decide to return to their home country[17], and those who decided to stay in the U.S. in 2000 (in other words their status is unknown).

Except in some very special cases, as for example cases in which the decision to return was taken by a random subset of the population, estimations such as those of Medina (2008) produce results that do not correspond to the parameters that interest us, since they implicitly assume that the whole population studied in 1990 was made up of people who did, in fact, return.

---

17 In fact, they are individuals who decide to leave the U.S., although the most likely to return to Colombia.

In our exercise, we will confine ourselves to information about Colombian residents in the United States in 1990, who at that time were between 25 and 55 years of age, and residents in the year 2000 who were between 35 and 65 at that time and had been living in the U.S. for at least ten years. By choosing this population range we avoid two kinds of bias. On the one hand, given that the census of people in the year 2000 does not ask retrospective questions (that is, questions about the past), and that we need information about those people as they were in 1990, we must use variables about them that cannot have undergone change between the years 1990 and 2000. Bearing in mind that the *level of education of Colombians in 1990 is the most important variable for our exercise*, the inclusion of that factor in the case of young people observed in the year 1990 does not allow us to presume with any degree of reliability that the educational level of those who studied in 2000 is the same as that of those we are looking at ten years earlier.

On the other hand, the fact that we include people over 55 years of age, would lead to a greater probability that, by the year 2000, many of them would no longer be alive; thus, weakening the significance of the data along with the respective bias deriving from this very information.

Heckman and Robb (1985) propose a simple formula for correcting this contamination bias. In our case, we would start from a standard model, like Equation (1), in which the result *Y*, in this case *the decision to remain in the United States* (where Y is 0 if the person returns home and 1 if the person remains in the U.S.), is explained by a group of control variables *X*, and a haphazard termination U:

$$Y = X\beta + U \tag{1}$$

Based on some simple suppositions, among which are included[18]:

$$p \lim_{It \to \infty} \frac{\sum X_{it}' U_{it}}{I_t} = 0 \tag{2}$$

and knowing that from **Sample (iii)**, that is, from the 1990 census, it is possible to generate the following product crossed with $I_{(iii)}$ observations:

$$\frac{\sum X_{it}' X_{it}'}{I_{(iii)}} \tag{3}$$

---

18 See Heckman and Robb (1985), pp. 184-185, assumptions A-6 and A-7.

which, under certain conditions of state, converge with the desired population-oriented counterparts. Now, note that if the decision to stay in U.S. were observed, then:

$$p\lim_{It\to\infty}\frac{\sum X'_{it}d_i}{I_{(iii)}} = p\frac{E\left(X'_{it}\mid d_i = 1\right)}{I_{(iii)}}$$

(4)

Where p is the proportionate number of Colombians who remain in the United States, which we can infer on the basis of the 1990 and 2000 censuses, and from which we deduce the proportion of those who remained in the U.S. in the year 2000.

Given the above scheme, for purposes of our exercise the so-called *contamination bias* can be corrected by Equation (5) using the information of Equations (3) and (4) (where $Y_0 = 0$ is the person who returns home and $Y_1 = 1$ is the person who remains in the U.S.)[19]:

$$\hat{\beta}_w = \left[\begin{pmatrix} X_0 \\ X_1 \end{pmatrix}'\begin{bmatrix} \widetilde{W}_D^0 & 0 \\ 0 & \widetilde{W}_D^1 \end{bmatrix}\begin{pmatrix} X_0 \\ X_1 \end{pmatrix}'\right]^{-1}\left[\begin{pmatrix} X_0 \\ X_1 \end{pmatrix}'\begin{bmatrix} \widetilde{W}_D^0 & 0 \\ 0 & \widetilde{W}_D^1 \end{bmatrix}\begin{pmatrix} Y_0 \\ Y_1 \end{pmatrix}'\right]$$

$$\hat{\beta}_w = \left[X_0'\widetilde{W}_D^0 X_0 + X_1'\widetilde{W}_D^1 X_1\right]^{-1}\left[X_0'\widetilde{W}_D^0 Y_0 + X_1'\widetilde{W}_D^1 Y_1\right]^{-1}$$

$$\hat{\beta}_w = \left[X_0'\widetilde{W}_D^0 X_0 + X_1'\widetilde{W}_D^1 X_1\right]^{-1}\left[X_1' p \widetilde{\widetilde{W}}_D^1 Y_1\right]^{-1}$$

(5)

Where:

$$W_D = \begin{bmatrix} \tilde{W}_D^0 & 0 \\ 0 & \tilde{W}_D^1 \end{bmatrix} \text{ and } W_D^j = \begin{bmatrix} W_{D11}^j & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & W_{NN}^j \end{bmatrix}$$

(6)

$$\tilde{W}_D^j = \frac{W_D^j}{\sum_{i=1}^N W_{Dii}}, \widetilde{\widetilde{W}}_D^j = \frac{W_D^j}{\sum_{i=1}^N W_{Dii}^j}, \text{ and } p = \frac{\sum_{i=1}^N W_{Dii}^1}{\sum_{i=1}^N W_{Dii}}, \text{ for } j = 0,1.$$

As mentioned previously, the population included in the exercise will be a population that was in the United States in 1990 and was still there in the year 2000. It is worth underlining the fact that, to arrive at the final bases, age (and other variables

---

19 Note that in this case Y is a binary variable, then Y_0 is a vector filled with zeros.

which require it) will be assessed on what it is assumed was their value in the year 1990. For example, when we need to construct the variable of the number of children under ten years of age for the population in 1990, we will look at the variables of the number of those under age 19 in the year 2000. In order to verify the sensitivity of the results, especially those related to education, we develop an alternative exercise for those members of the population who were between the ages of 35 and 55 in 1990, getting the same results.

A preliminary exercise is carried out on the period from 1990 to the year 2000. Nonetheless. IPUMS has made available a CENSUS sample of 1% of the population in the United States in the year 2005. On the basis of this information we can carry out an exercise similar to the one detailed above. but with information from the years 2000 to 2005 (in which case the information will be standardized to the year 2000).

Several assumptions are implicit in the approach outlined above, among which are those that highlight the fact that if the U.S. census did not include a representative sample of the whole Colombian population in that country, in one of the years (maybe because illegal Colombians did not show up on the interview day), then inferences would only be applicable to the sample of Colombians included in the census; taking into account that in the other year used in the estimation, the source of bias did not change.

B.   RESULTS FOR COLOMBIA

The following results intend to establish the factors determining the decision to remain in the United States on the part of Colombian immigrants, especially in that particular aspect which pertains to the part played by educational levels when making a decision.

We showed above that the rate of migration by Colombians to the United States (Borjas and Bratsberg, 1996) was approximately 24.7% (46,136 Colombians) for the period 1975-1980; whereas, for the period 1970-1974, it was approximately 17% (28,254 Colombians). Medina and Cardona (2006) showed that the net rate of migration reaches a maximum in the year 1999 and from then on begins to descend until the year 2003.[20] which indicates a behavioral pattern of Colombians returning

_____

20 Estimates are based on migration reports by Colombia's Security Department (*DAS*).

home. Gaviria and Mejía (2006) show that, for the *RCN* survey, 65% of those queried desired to return or had contemplated returning to their home country, which implies a subjective indication of the behavioral pattern of those who did return.

Table 3
Effects on Likelihood of Remaining in the U.S. 1990-2000
OLS with Contamination Bias

"P(Y = 1|X). Conditional Prob. to stay in U.S."	(1) Coeff.. s.e.		(2) Coeff. s.e.		(3) Coeff. s.e.		(4) Coeff. s.e.	
Complete Secondary or Incomplete Higher	0.053	(0.015)						
Incomplete or Complete Secondary			0.124	(0.063)				
Incomplete Secondary					0.159	(0.087)	0.158	(0.087)
Complete Secondary					0.114	(0.064)	0.113	(0.064)
Incomplete Higher							0.069	(0.068)
Incomplete Higher or more			0.113	(0.063)	0.114	(0.063)		
Complete Higher or more	0.080	(0.019)					0.181	(0.071)
Age	0.005	(0.005)	0.006	(0.005)	0.006	(0.005)	0.006	(0.005)
Age Squared	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)
Incomplete or Complete Secondary * Age			-0.004	(0.002)				
Incomplete Secondary * Age					-0.006	(0.002)	-0.006	(0.002)
Complete Secondary * Age					-0.003	(0.002)	-0.003	(0.002)
Incomplete Higher * Age							-0.002	(0.002)
Incomplete Higher or more * Age			-0.003	(0.002)	-0.003	(0.002)		
Complete Higher or more * Age							-0.004	(0.002)
Woman	0.031	(0.008)	0.030	(0.008)	0.030	(0.008)	0.030	(0.008)
White	0.115	(0.029)	0.119	(0.029)	0.117	(0.029)	0.115	(0.029)
Children under 10 in household	-0.024	(0.009)	-0.025	(0.009)	-0.025	(0.009)	-0.024	(0.009)
People older than 60 in household	-0.090	(0.016)	-0.091	(0.016)	-0.091	(0.016)	-0.091	(0.016)
Children under 10 * People older than 60 in hhold	0.037	(0.028)	0.038	(0.028)	0.037	(0.028)	0.037	(0.028)
Hispanic	-0.056	(0.024)	-0.059	(0.024)	-0.059	(0.024)	-0.056	(0.024)
Arrived in the USA in last 5 years (1985-1990)	0.084	(0.010)	0.085	(0.010)	0.085	(0.010)	0.084	(0.010)
Connecticut	-0.008	(0.028)	-0.010	(0.028)	-0.008	(0.028)	-0.008	(0.028)
Massachusetts	-0.081	(0.028)	-0.081	(0.028)	-0.080	(0.028)	-0.081	(0.028)
Rhode Island. New Hampshire. Maine. Vermont	-0.124	(0.031)	-0.127	(0.031)	-0.124	(0.031)	-0.124	(0.031)
New Jersey. Pennsylvania	-0.083	(0.013)	-0.083	(0.013)	-0.083	(0.013)	-0.083	(0.013)

Table 3 (continued)
Effects on Likelihood of Remaining in the U.S. 1990-2000
OLS with Contamination Bias

"P(Y = 1|X). Conditional Prob. to stay in U.S."	(1) Coeff.. s.e.		(2) Coeff. s.e.		(3) Coeff. s.e.		(4) Coeff. s.e.	
East North Central division (does not include Illinois)	-0.051	(0.045)	-0.050	(0.046)	-0.047	(0.045)	-0.048	(0.045)
Illinois	-0.074	(0.028)	-0.074	(0.028)	-0.073	(0.028)	-0.075	(0.028)
West North Central division	-0.024	(0.064)	-0.018	(0.064)	-0.017	(0.064)	-0.024	(0.064)
Georgia. Virginia. West Virginia. North and South Carolina	0.055	(0.023)	0.057	(0.023)	0.056	(0.023)	0.055	(0.023)
Maryland, Delaware, District of Columbia	-0.128	(0.033)	-0.127	(0.032)	-0.126	(0.033)	-0.128	(0.032)
East South Central division	-0.063	(0.058)	-0.064	(0.058)	-0.064	(0.058)	-0.065	(0.058)
West South Central division (does not include Texas)	-0.201	(0.053)	-0.198	(0.053)	-0.198	(0.053)	-0.198	(0.053)
Texas	-0.050	(0.021)	-0.050	(0.021)	-0.049	(0.021)	-0.051	(0.021)
Mountain division	-0.041	(0.035)	-0.040	(0.035)	-0.041	(0.035)	-0.041	(0.035)
California	-0.123	(0.015)	-0.123	(0.015)	-0.123	(0.015)	-0.124	(0.015)
Washington, Oregon, Alaska	-0.024	(0.057)	-0.024	(0.057)	-0.025	(0.057)	-0.024	(0.057)
Constant	0.386	(0.099)	0.321	(0.118)	0.318	(0.118)	0.324	(0.118)
Number of Observations	17,714							
Population	393,228							

Source: Own calculations, Robust standard errors in brackets were estimated with bootstrap method with 100 replications. The comparison.

In an attempt to establish the determining factors for remaining in the United States on the part of Colombian migrants, we designed a model on the lines of the methodology described above. As our baseline scenario, we estimate a standard OLS model[21] which is affected by the contamination bias, similar to that estimated by Medina (2008), and its results are presented in Table 3.[22] Later, the models were estimated correcting the contamination bias, adhering to proposals made by Heckman and Robb (1985), and presented in the methodology in Equation (5).

According to the model presented in Table 3, Colombians who have completed secondary level education, or have taken university courses, but without graduating,

---

21 In this case, the model is called the Linear Probability Model.

22 The table shows the results of biased calculations using OLS so that they may be directly comparable with the results of estimates that correct the bias. Nonetheless, the biased estimates were calculated on the Logit and Probit models, arriving at results very like those of OLS.

are 5.3% more likely to stay on in the United States than those with an incomplete secondary education or less; while Colombians who have graduated from university, or have an even higher level of education, are *8%* more likely to remain in the U.S. To measure the education factor in this regard, we designed a model for the population between the ages of 35 and 55.

Table 4 presents the results once we have corrected the contamination bias (Equation (5)), The results for 1990-2000 provide evidence to suggest that the better- educated Colombians stay on in the United States. The significance of the effect is the same, for the biased regression and the unbiased one. Nevertheless, *the magnitude of the effect changes significantly*, especially for higher levels of education. For example, the coefficient of those who have completed a university degree or more is over *8%* in the OLS model (without the correction of the contamination bias), and *22.6%* when this bias has been, in fact, corrected.

When one introduces interactions between educational dummies and the age variable (see Table 4, models 2, 3 and 4), the results suggest that part of the effect found initially could be explained by the educational process of migrants in the U.S. However, the magnitude does not manage to alter the initial result; but rather, it maintains consistency once both coefficients are weighted one against the other (*the net effect*)[23]. Also, the effect's solidity is verified by the results of the exercise that was carried out on the population between the ages of 35 and 55 in 1990, in which case the conclusions did not vary. In the particular case of people with a university degree or more, the coefficient is *19.8%*. The above results are consistent with the presence of "positive selection" (as expounded by Borjas and Bratsberg, 1996), in the case of Colombian migrants in the United States.

Results on the basis of surveys in 2000 and 2005 are consistent with the above results (See Table 5), although the effect of education is more noticeable. This indicates that the phenomenon of exporting educated Colombians to the United States would seem to be of a structural nature.

---

23 Assuming that the average age is 35 years, the net effect would be 17.4%.

Table 4
Effects on Likelihood of Remaining in the U.S. 1990-2000,
Correction of Contamination Bias

"P(Y = 1|X). Conditional Prob. to stay in U.S."	(1) Coeff. s.e.		(2) Coeff. s.e.		(3) Coeff. s.e.		(4) Coeff. s.e.	
Complete Secondary or Incomplete Higher	0.056	(0.041)						
Incomplete or Complete Secondary			0.497	(0.191)				
Incomplete Secondary					0.654	(0.292)	0.595	(0.309)
Complete Secondary					0.459	(0.269)	0.411	(0.243)
Incomplete Higher							0.263	(0.246)
Incomplete Higher or more			0.464	(0.260)	0.458	(0.279)		
Complete Higher or more	0.226	(0.066)					0.740	(0.306)
Woman	0.128	(0.036)	0.117	(0.040)	0.118	(0.037)	0.116	(0.028)
Age	-0.003	(0.019)	0.018	(0.019)	0.017	(0.023)	0.016	(0.020)
Age Squared	0.000	(0.000)	0.000	(0.000)	-8.9607E-05	(0.000)	-7.96295E-05	(0.000)
Incomplete or Complete Secondary * Age			-0.0107	(0.007)				
Incomplete Secondary * Age					-0.023	(0.007)	-0.022	(0.008)
Complete Secondary * Age					-0.013370795	(0.007)	-0.013	(0.006)
Incomplete Higher * Age							-0.006568611	(0.006)
Incomplete Higher or more * Age			0.565376395	(0.446)	-0.0104	(0.007)		
Complete Higher or more * Age							-0.016	(0.008)
White	0.385	(0.085)	0.497	(0.191)	0.407	(0.083)	0.386	(0.099)
Children under 10 in household	-0.089	(0.039)	-0.093	(0.034)	-0.092	(0.036)	-0.100	(0.039)
People older than 60 in household	-0.325	(0.052)	-0.326	(0.049)	-0.336	(0.048)	-0.340	(0.053)
Children under 10 * People older than 60 in hhold	0.155	(0.105)	0.158	(0.088)	0.151	(0.081)	0.169	(0.092)
Hispanic	-0.252	(0.130)	-0.269	(0.127)	-0.260	(0.114)	-0.262	(0.123)
Arrived in the USA in last 5 years (1985-1990)	0.368	(0.059)	0.372	(0.050)	0.373	(0.056)	0.364	(0.048)
Connecticut	0.009	(0.140)	-0.007	(0.156)	0.017	(0.179)	0.010	(0.138)

Table 4 (continued)
Effects on Likelihood of Remaining in the U.S. 1990-2000,
Correction of Contamination Bias

"P(Y = 1|X). Conditional Prob. to stay in U.S."	(1) Coeff. s.e.		(2) Coeff. s.e.		(3) Coeff. s.e.		(4) Coeff. s.e.	
Rhode Island. New Hampshire. Maine. Vermont	-0.498	(0.115)	-0.521	(0.114)	-0.506	(0.118)	-0.494	(0.099)
New Jersey. Pennsylvania	-0.351	(0.055)	-0.355	(0.058)	-0.346	(0.057)	-0.344	(0.056)
New York	-0.420	(0.050)	-0.428	(0.046)	-0.428	(0.050)	-0.424	(0.047)
East North Central division (does not include Illinois)	-0.220	(0.180)	-0.218	(0.196)	-0.172	(0.206)	-0.126	(0.227)
Illinois	-0.333	(0.117)	-0.315	(0.112)	-0.331	(0.112)	-0.334	(0.114)
West North Central division	-0.089	(0.449)	-0.054	(0.415)	-0.110	(0.318)	-0.135	(0.313)
Georgia. Virginia. West Virginia. North and South Carolina	0.426	(0.152)	0.387	(0.147)	0.396	(0.189)	0.391	(0.182)
Maryland. Delaware. District of Columbia	-0.502	(0.118)	-0.541	(0.110)	-0.512	(0.105)	-0.519	(0.120)
East South Central division	-0.296	(0.272)	-0.319	(0.241)	-0.274	(0.280)	-0.262	(0.259)
West South Central division (does not include Texas)	-0.706	(0.145)	-0.727	(0.148)	-0.746	(0.135)	-0.716	(0.145)
Texas	-0.226	(0.102)	-0.222	(0.099)	-0.239	(0.099)	-0.227	(0.085)
Mountain division	-0.181	(0.169)	-0.187	(0.174)	-0.186	(0.166)	-0.201	(0.153)
California	-0.501	(0.059)	-0.504	(0.057)	-0.506	(0.054)	-0.504	(0.051)
Washington. Oregon. Alaska	-0.015	(0.318)	-0.090	(0.313)	-0.079	(0.374)	-0.027	(0.353)
Constant	1.080	(0.389)	-0.016	(0.005)	0.570	(0.516)	0.645	(0.436)
Number of Observations = 8,802								
Population = 197,184								

Source: Own calculations. Robust standard errors in brackets were estimated with bootstrap method with 100 replications. The comparison.

Some additional results for data supplied in 1990 and 2000 show that women are more likely to remain in the U.S. However, if they have children under ten years old or adults over sixty years old at home, the likelihood of their remaining in the U.S. is lessened. Those who have arrived in the U.S. recently (that is, in the last five years) are more likely to stay. For the period that goes from 2000 to 2005, the meaning of some of these variables changes. For example, the gender effect is no longer statistically significant.

Having children under ten years of age increases the likelihood of remaining in the U.S., and those who arrived after 1999 are less likely to remain in the United States. This last observation may reflect the effects of the 1999 crisis in Colombia, which could have altered the Colombians' normal migration pattern.

Table 5
Effects on Likelihood of Remaining in the U.S. 2000-2005,
Correction of Contamination Bias

"P(Y = 1|X). Conditional Prob. to stay in U.S."	(1)		(2)		(3)		(4)	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Complete Secondary or Incomplete Higher	0.316	(0.052)						
Incomplete or Complete Secondary			0.349	(0.380)				
Incomplete Secondary					0.045	(0.420)	-0.089	(0.456)
Complete Secondary					0.447	(0.330)	0.326	(0.362)
Incomplete Higher							0.411	(0.378)
Incomplete Higher or more			0.775	(0.326)	0.806	(0.284)		
Complete Higher or more	0.575	(0.070)					0.984	(0.369)
Woman	0.021	(0.051)	0.023	(0.048)	0.015	(0.045)	0.016	(0.050)
Age	-0.017	(0.024)	-0.007	(0.027)	-0.008	(0.028)	-0.014	(0.028)
Age Squared	0.000	(0.000)	0.000	(0.000)	0.000163118	(0.000)	0.000192736	(0.000)
Incomplete or Complete Secondary * Age			-0.4952	(0.096)				
Incomplete Secondary * Age					0.002	(0.010)	0.005	(0.011)
Complete Secondary * Age					-0.001198083	(0.008)	0.001	(0.009)
Incomplete Higher * Age							-0.001689431	(0.009)
Incomplete Higher or more * Age			0.066583159	(0.158)	-0.0083	(0.007)		
Complete Higher or more * Age							-0.009	(0.009)
White	-0.041	(0.148)	-0.025	(0.149)	-0.026	(0.174)	-0.047	(0.165)
Children under 10 in household	0.237	(0.121)	0.251	(0.121)	0.245	(0.105)	0.232	(0.127)
People older than 60 in household	-0.156	(0.049)	-0.160	(0.051)	-0.158	(0.051)	-0.154	(0.058)

Table 5 (continued)
Effects on Likelihood of Remaining in the U.S. 2000-2005,
Correction of Contamination Bias

"P(Y = 1|X). Conditional Prob. to stay in U.S."	(1)		(2)		(3)		(4)	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Children under 10 * People older than 60 in hhold	-0.417	(0.050)	-0.433	(0.065)	-0.429	(0.066)	-0.425	(0.070)
Hispanic	0.141	(0.140)	0.110	(0.127)	0.112	(0.131)	0.129	(0.120)
Arrived in the USA in last 5 years (1985-1990)	-0.242	(0.054)	-0.221	(0.051)	-0.225	(0.048)	-0.249	(0.055)
Connecticut	-0.503	(0.083)	0.069	(0.184)	-0.486	(0.103)	-0.518	(0.088)
Massachusetts	0.030	(0.162)	-0.065	(0.077)	0.051	(0.168)	0.016	(0.149)
Rhode Island. New Hampshire. Maine. Vermont	0.070	(0.187)	-0.139	(0.062)	0.048	(0.186)	0.085	(0.206)
New Jersey. Pennsylvania	-0.061	(0.068)	-0.369	(0.189)	-0.065	(0.072)	-0.067	(0.077)
New York	-0.143	(0.055)	-0.308	(0.134)	-0.140	(0.066)	-0.139	(0.058)
East North Central division (does not include Illinois)	-0.407	(0.181)	-0.132	(0.247)	-0.382	(0.148)	-0.413	(0.147)
Illinois	-0.347	(0.139)	-0.189	(0.099)	-0.323	(0.121)	-0.317	(0.146)
West North Central division	-0.155	(0.253)	-0.052	(0.199)	-0.097	(0.312)	-0.137	(0.270)
Georgia. Virginia. West Virginia. North and South Carolina	-0.187	(0.095)	0.429	(0.380)	-0.173	(0.093)	-0.197	(0.090)
Maryland. Delaware. District of Columbia	-0.071	(0.212)	-0.160	(0.382)	-0.061	(0.178)	-0.075	(0.206)
East South Central division	0.413	(0.388)	0.342	(0.141)	0.522	(0.428)	0.441	(0.386)
West South Central division (does not include Texas)	-0.193	(0.393)	-0.231	(0.125)	-0.200	(0.383)	-0.202	(0.381)
Texas	0.334	(0.144)	-0.084	(0.087)	0.331	(0.168)	0.316	(0.155)
Mountain division	-0.243	(0.142)	-0.079	(0.232)	-0.221	(0.142)	-0.229	(0.141)
California	-0.101	(0.087)	0.000	(0.009)	-0.076	(0.089)	-0.094	(0.078)
Washington. Oregon. Alaska	-0.135	(0.247)	-0.007	(0.008)	-0.022	(0.260)	-0.084	(0.286)
Constant	0.974	(0.513)	0.645	(0.630)	0.658	(0.596)	0.846	(0.630)
Number of Observations	2000 = 14,701				2005 = 2,310			
Population	2000 = 328,927				2005 = 273,208			

Source: Own calculations. Robust standard errors in brackets were estimated with bootstrap method with 100 replications. The comparison.

Also, results for the period 1990 to 2000 show that, in the following regions – the States of Massachusetts (-0.311); Rhode Island, New Hampshire, Maine, Vermont (-0.49); New Jersey, Pennsylvania (-0.35); New York (-0.42); Illinois (-0.33); Maryland. Delaware, District of Columbia (-0.50); West South Central division, not including Texas (-0.70); Texas (-0.22) and California (-0.50) – there exists a negative and statistically significant effect when compared with Florida, Georgia, Virginia, West Virginia, North and South Carolina, where one finds a positive and statistically significant effect. This latter result could be associated with the fact that on the south-east coast, from Florida on, there is a considerable presence of Colombians. Map 1 (see Appendix) shows the zones of greatest presence of Colombians.

Medina and Posso (2009) present an application for the case of considering South America as a whole. Graph 3 shows a comparison between the results of Colombia and South America. In this case, the conclusions for South America are the same as for Colombia.

Graph 3
Marginal Effect of Education in both Colombia and South America
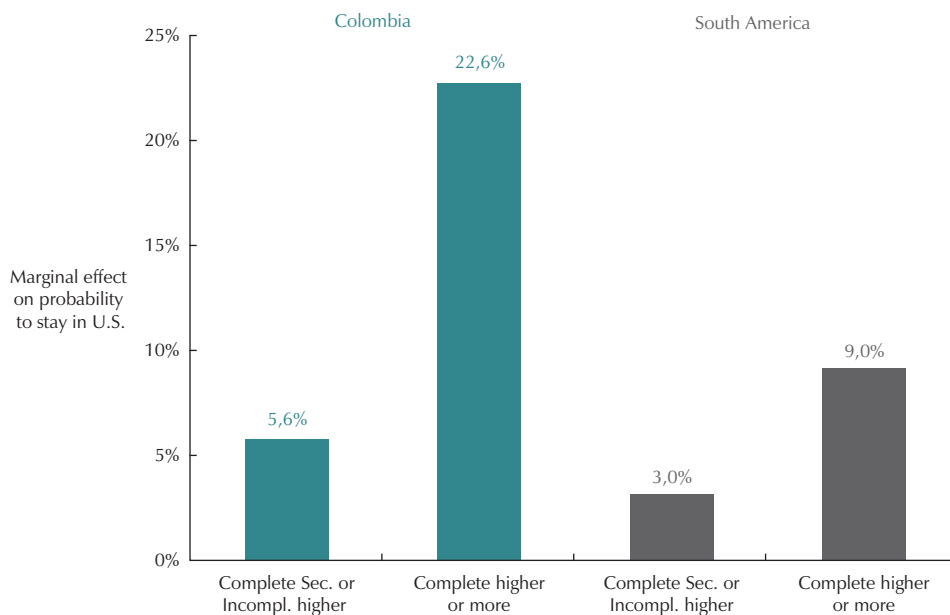
Source: Medina y Posso (2009). The comparison base is incomplete secondary or less.

V.   JOBS EMPLOYING FOREIGNERS IN THE UNITED STATES BY LEVEL OF EDUCATION

Evidence provided in the previous section points out, therefore, beyond any doubt, that a good level of education is an important determining factor in a Colombian migrant's decision to remain in the United States. On the other hand, the benefits that countries obtain when their emigrants return home depends —to a large extent— on the sorts of jobs that these same people had been working at while they were abroad; especially in such activities that they will have acquired knowledge and skills which may be used to advantage in their countries of origin (spillovers). In this sense, it is fundamental that we assess what are the determining factors that enable migrants to work in tasks which will generate the greatest personal and social benefits. It is especially important to determine *whether or not education contributes to enhancing the possibilities of the migrant's gaining employment in tasks which lead to obtaining further knowledge and greater satisfaction.*

In order to better understand what motivates migrants to remain in the United States, we proceed to explore the relation which exists between the migrants' levels of education and the level of complexity of the tasks which these same migrants find in their jobs or places of employment. We begin by analyzing descriptive statistics of the complexity of the tasks that migrants perform conditional on their education levels[24].

Graph 4 illustrates the relationship between the education level and the task intensities for the two tasks —the least complex, "*Manual*" or "ehf", and the most complex, "*Math*" (Autor, Levy and Murnane, 2003)— for Colombia and the *aggregate of the top ranked countries* in the Math task intensity (see Appendix, Table 3). Let us keep in mind that each occupation has a level of intensity for each of the five possible tasks adopted, thus a higher level of intensity in one specific column implies that migrants are more likely to be in occupations that are more intensive in that task. Both axes (left *Manual* and right *Math*) show a close relationship between education and task intensity, decreasing with education in Manual and increasing in Math.

---

24 We use information provided by Autor et al., (2003) who classify the task in five: (1) Nonroutine Manual (**ehf**), (2) Routine Manual (**finger**), (3) Routine Cognitive (**sts**), Nonroutine Cognitive/ Interactive (**dcp**), Nonroutine Cognitive/Analytical (**math**).

Graph 4
Task Intensity by Country Conditional on Education.
Colombia and Aggregate of Top Math Countries, 2000
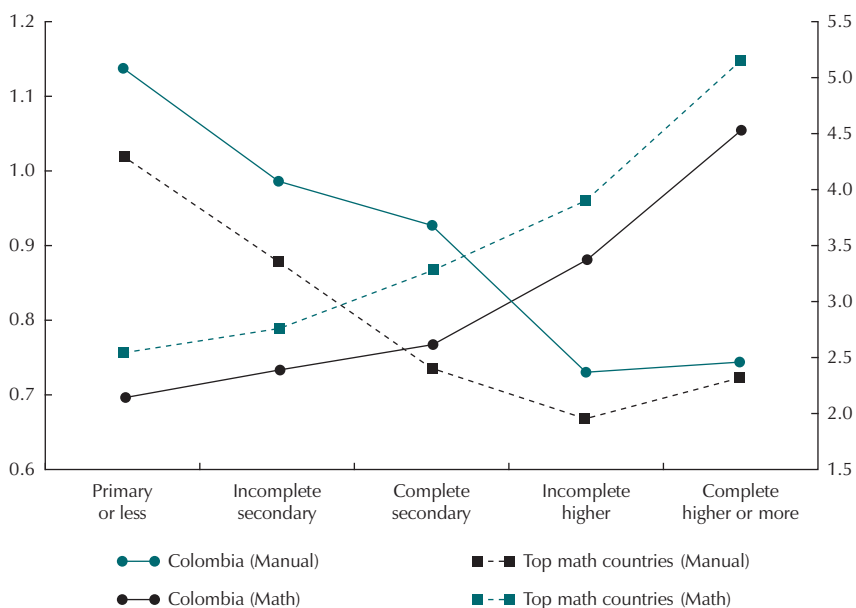
Source: own calculations. CENSUS 2000 from IPUMS University of Minnesota, DOT and Censuses codes crosswalk University of Wisconsin.

Nonetheless, there are differences between countries: Migrants from the Top Math countries have lower levels of intensities in the Manual task and higher in the Math task. However, the trend in both cases is the same; especially, this Graph shows that Colombia's most skilled population has low intensity on manual tasks —similar to that for people from the Top Math countries. Notwithstanding, Colombian immigrants in the U.S. lag in the Math task intensities, even when there is controlling for education.

In order to assess whether or not there exists an important mismatch between educational levels and tasks′ complexities. Graph 4 shows the distribution of *Manual* and *Math* tasks by educational level of migrants from Colombia and the top ranked countries in their *Math* task intensity. The graph shows that there is actually a share of educated migrants in each country with incomplete higher education or more, that are misplaced in occupations with some amount of *Manual* task intensity; nonetheless, the vast majority of them has no *Manual* task dedication. It is true though that

it is less likely for an educated migrant of the denominated "Top Countries" to be working in an occupation with any amount of *Manual* task intensity than it is for any average Colombian.

On the other hand, while the distribution across *Math* task intensities is very similar for Colombians, they clearly have more weight on their right for the cases of the migrants of the *Top Countries*.

In short, Graph 5 presents a picture much less dramatic than what has previously been presented in terms of skilled Colombians commonly performing low- skilled tasks. For example, the work developed by Ozden (2006) used, as we do, the 2000 U.S. Census data to show that only 42 percent of Colombian migrants in the U.S. with a bachelor´s degree work in skilled jobs; while Graph 5 shows that only a small share of them work in activities with low levels of *Math* task intensities —yet most of them perform tasks with no *Manual* intensity at all. Ozden's definition leads him to conclude that for Taiwan, Iran and Nigeria— countries that are included in our "Top Countries"— only 46, 34 and 40 percent (respectively) of their migrants with a bachelor´s degree work in skilled jobs, at levels at, or below, those for Colombians.

The difference between these results should be explained by the way skilled jobs are defined in Ozden's paper. According to his definition, a skilled job is that in which the average education needed for that occupation is, at least, 16 years. That definition is very likely to misclassify several migrants with a bachelor´s degree who perform a complex task; nonetheless, it works with peers whose average accumulated education is less than 16 years. Despite these differences in the magnitude of the mismatches between education and job quality of migrants. Ozden's conclusions and ours point in the same direction: Colombian migrants have a poor performance in the U.S. labor market in relation to migrants from developing countries in Asia, and from developed countries.

We now proceed to build a model in which the intensity of each of the five tasks under consideration is explained through its relation with variables associated with the amount of human capital that a person has, and the variables which determine his or her decision to participate, or not, in the labor market; and implicitly, to choose from among the different kinds of employment available. The model is the following:

$$Y_i^j = X_i B^j + u_i^j \tag{7}$$

Graph 5
Distribution of Task Intensities by Education Level of Migrants

Manual

Eye, hand and foot coordination (Task), Colombia

Math

Math general education (Task), Colombia

—— Complete university   ---- Incomplete university

—— Complete secondary   ---- Incomplete
secundary or less

Source: CENSUS 2000 from IPUMS-University of Minnesota and DOT.

Eye, hand and foot coordination (Task), top
(Taiwan, India, Iran, Hong Kong, Nigeria,
United Kingdom, Canada, France, Japan)

Math general education (Task), top
(Taiwan, India, Iran, Hong Kong, Nigeria,
United Kingdom, Canada, France, Japan)

—— Complete university   ---- Incomplete university

—— Complete secondary   ---- Incomplete
secundary or less
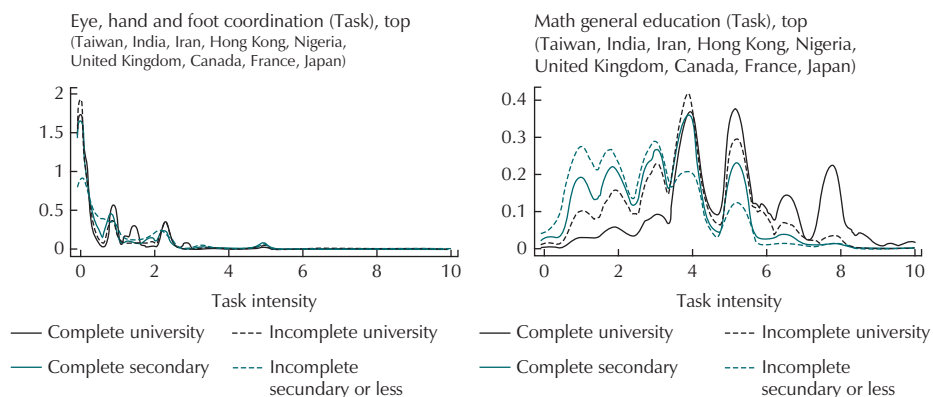
Where Y_i^j is the intensity of the task j carried out by migrant i. Our variable of interest is the level of education. Nonetheless, our estimation includes some socio-economic variables as controls.

Table 6 presents the results of the model estimated (Equation 7) on the basis of the United States population census of Colombian migrants in the year 2000. The results conclusively refute the idea that Colombian migrants are systematically employed in jobs for which they are over qualified. In fact, Colombians with a university educa-tion (or more) are less likely to be systematically employed in manual labor, and are more likely to find work which requires analytical and cognitive skills. Medina y

Posso (2009), using the same estimation and data, argue that migrants from Argentina, Bolivia, Chile, Uruguay and Venezuela are employed in activities relatively more intense in cognitive, non-routine analytical tasks, than the Colombians. The only countries whose migrants are employed on average with less intensity than the Colombians in these kinds of jobs are those from Ecuador and Peru.

Table 6
Task Intensity Vs Skill – Colombians

"Task Intensity Vs Skill, Colombians"	Nonroutine Manual	Routine Manual	Routine Cognitive	Nonroutine Cognitive / Interactive	Nonroutine Cognitive / Analytical
Incomplete Secondary	-0,0927	0,0828	0,0524	0,0324	0,125
	(0,044)	(0,048)	(0,075)	(0,152)	(0,056)
Complete Secondary	-0,1632	0,091	0,2667	-0,067	0,3521
	(0,033)	(0,036)	(0,059)	(0,116)	(0,043)
Incomplete Higher	-0,3413	0,1184	0,9625	-0,225	1,039
	(0,034)	(0,038)	(0,069)	(0,121)	(0,047)
Complete Higher or more	-0,3526	0,0677	2,8796	-1,2669	2,2222
	(0,035)	(0,043)	(0,084)	(0,125)	(0,053)
Age	0,0247	-0,0183	0,0303	-0,0259	-0,0104
	(0,003)	(0,005)	(0,009)	(0,013)	(0,005)
Age2	-0,0002	0,0002	-0,0005	0,0003	-0,00004
	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)
Hosehold size	0,0051	-0,0117	-0,028	0,001	-0,0232
	(0,005)	(0,006)	(0,013)	(0,019)	(0,008)
Female	0,2321	-0,1171	0,2712	0,6578	-0,0742
	(0,018)	(0,022)	(0,045)	(0,063)	(0,028)
Year of immigration	0,0057	-0,0007	-0,0257	0,0013	-0,0262
	(0,001)	(0,001)	(0,003)	(0,003)	(0,001)
Hispanic	-0,0507	-0,0068	0,0661	0,2061	-0,0607
	(0,054)	(0,075)	(0,146)	(0,195)	(0,086)
White	-0,0356	-0,1043	0,0441	-0,5127	-0,0289
	(0,063)	(0,084)	(0,155)	(0,238)	(0,109)
Unearned Income	-0,000001	0,000002	0,000011	-0,000007	0,000007
	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)
Constant	10,8078	5,7388	51,2359	2,576	54,9306
	(1,833)	(2,285)	(4,916)	(6,586)	(2,830)
Observations	16778	16778	16778	16778	16778
R-squared	0,030	0,004	0,160	0,030	0,220

CENSUS 2000 from IPUMS-University of Minnesota. Job task from the Dictionary of Occupational Titles (DOT). Censuses codes crosswalk files - National Crosswalk Service Center, University of Wisconsin system. The DOT data we employ here are based on an aggregation of these detailed occupations into three-digit CENSUS Occupation Codes (COC) following Autor, Levy and Murnane (2001). Author's calculation.
Source: Own calculations. Robust standard errors in parenthesis.

To sum up, the results indicate that the belief that Colombian professionals are employed in the United States in poorly qualified jobs —that is, in jobs unrelated to their level of qualification – is no more than a popular myth— or at least, not true for the average emigrant.

VI.   CONCLUSIONS

Colombia is engaged in a process of net exportation of those members of its population that have university or post-graduate degrees, while some other countries in the region are net importers of well qualified people. Also, the estimations provided in this article enable us to conclude that the flight of human capital (brain drain) is being accentuated by the "negative selection" of the returnees; in other words, by the fact that the Colombians who are most likely to leave the United States and return to Colombia are the less well-educated from among the migrants in that country. Although it is true that certain countries in the region are net importers of highly qualified personnel. South American countries, taken as a whole, suffer from the phenomenon of "negative selection" of their returnees, albeit to a lesser degree than Colombia. Colombians in the United States who are university graduates or post-graduates are 22.6% more likely to remain in the U.S. than those who have only secondary education or less.

The fact that the exercise has produced consistent results for the period 1990-2000, and also for the years between 2000 and 2005, and bearing in mind that the former period included the economic crisis which Colombia suffered towards the end of the 1990´s —whereas during the latter period the country underwent a process of economic recovery— the results would suggest that over and above short-term considerations and contingencies, the "negative selection" tendency of the returnees is a structural phenomenon that will continue to contribute to the flight of human capital. at least in the medium-term.

Also, the results show that Colombians in the U.S., with a university education (or more), are less likely to be systematically employed in manual labor, and are more likely to find work that requires analytical and cognitive skills. In closing, this indicates that the belief that Colombian professionals are employed in the United States in poorly qualified jobs is not true for the average skilled emigrant.

REFERENCES

1. Ahmed, B.; Robinson, J. "Estimates of Emigration of the Foreign-born Population: 1980-1990", *Population Division Working Paper*, num. 9, U.S. Census Bureau, 1994.

2. Amemiya, T. "Qualitative Response Models: A Survey", *Journal of Economic Literature*, pp. 1483-1536, 1981.

3. Autor, D.; Levy, F; Murnane. R. "The Skill Content of Recent Technological Change: An empirical exploration", *Quarterly Journal of Economics*, November 2003, vol. 118. num, 4. pp. 1279-1333, 2003.

4. Borjas, G. J. "Self-Selection and the Earnings of Migrants", *The American Economic Review*, vol. 77, num. 4, 531-553, 1987.

5. Borjas, G. J. "The Economics of Immigration". *Journal of Economic Literature*, vol. 32, num. 4, 1667-1717, 1994.

6. Borjas, G. J.; Bratsberg, B. "Who Leaves? The Outmigration of the Foreign-Born", *The Review of Economics and Statistics*, vol. 78, num. 1, pp. 165-176, 1996.

7. Cameron, C.; Trivedi, P. *Microeconometrics: Methods and Applications*. Cambridge University Press, New York, 2005.

8. Cárdenas, M.; Mejía C. "Migraciones internacionales en Colombia: ¿qué sabemos?", *Documentos de Trabajo de Fedesarrollo*, núm. 30, 2006.

9. Cassarino, J. P. "Theorising Return Migration: The Conceptual Approach to Return Migrants Revisited", *International Journal on Multicultural Societies*, vol. 6, num. 2, pp. 253-279, 2004.

10. Garay, L.; Rodríguez, A. Estudio sobre Migración Internacional y Remesas en Colombia. Ministerio de Relaciones Exteriores de Colombia y Organización Internacional para las Migraciones, 2005.

11. Gaviria, A. "Visa USA: Fortunas y Extravíos de los Migrantes Colombianos en los Estados Unidos", *Documento CEDE*, núm. 17, Universidad de los Andes, 2004.

12. Gaviria, A.; Mejía. C. "Las varias caras de la diáspora: los nexos de los emigrantes colombianos con su país de origen", *Documento CEDE*, núm. 29, Universidad de los Andes. 2006.

13. Heckman, J.; Robb. R. "Alternative Methods for evaluating the impact of interventions" in J. Heckman and B. Singer, *Longitudinal Analysis of Labor Market Data*, Econometric Society Monograph 10, Cambridge University Press, 1985.

14. Maddala, G. *Limited-Dependent and Qualitative Variables in Economics*, Cambridge, UK, Cambridge University Press, 1983.

15. Medina, C. "Selección en Retornados y Selección en Migración: el Caso Colombiano" en Efectos de la Migración en Colombia, Debates de Coyuntura Social, núm. 24, Fedesarrollo, 2008.

16. Medina, C.; Cardona, L. "The Effects of Remittances on Household Consumption, Education Attendance and Living Standards: the Case of Colombia", *Lecturas de Economía*, Universidad de Antioquia, Departamento de Economía, Issue 72, pp. 11-44.

17. Medina, C.; Posso. C. "Colombian and South American Immigrants in the United States of America: Education Levels, Job Qualifications and the Decision to Go Back Home", *Borradores de Economía*, num. 572, Banco de la República de Colombia, 2009.

18. Ozden, C. "Educated Migrants: Is There Brain Waste?" in International Migration: Remittances and the Brain Drain, Edited by OZDEN, Caglar y Schiff, Maurice, World Bank, 2006.

19. Peri, G.; Sparber. C. "Task Specialization, Immigration, and Wages", *American Economic Journal: Applied Economics*, vol. 1, num. 3, pp. 135-69, 2009.

20. Peri, G.; Sparber, C. "Highly-Educated Immigrants and Native Occupational Choice", *Discussion Paper Series*, CDP No 13/08, Centre for Research and Analysis of Migration, 2008.

21. The Guardian "'Brain gain' for India as elite return", Waching, April 21 2009. http://www.guardian.co.uk/world/2008/apr/20/india.globaleconomy?gusrc=rss&feed=networkfront, 2008.

22. Warren, R.; Passel, J. "A Count of the Uncountable: Estimates of Undocumented Aliens Counted in the 1980 United States Census", *Demography*, vol. 24, num. 3, pp. 375-393, 1987.

23. Warren, R.; Peck, J. "Foreign-Born Emigration from the United States. 1960-1970", *Demography*, vol. 17, num. 1, pp. 71-84, 1980.

APPENDIX

Table A1.1
Latin American Migrants in United States

Country of birth	1960 Population	1970 Population	1980 Population	1990 Population	2000 Population	2005 Population	
Argentina	16,579	44,803	68,887	99,587	131,055	192,195	
Bolivia	2,168	6,872	14,468	32,194	52,913	64,667	
Brazil	13,988	27,069	40,919	94,529	222,836	344,475	
Chile	6,259	15,393	35,127	62,092	84,242	95,890	
Colombia	12,582	63,538	143,508	303,204	525,881	566,394	
Costa Rica	5,425	16,691	29,639	48,455	76,276	101,400	
Cuba	79,150	439,048	607,814	751,988	883,439	923,608	
Dominican Republic	11,883	61,228	169,147	353,755	698,106	729,244	
Ecuador	7,670	36,663	86,128	143,006	299,106	352,466	
El Salvador	6,310	15,717	94,447	472,449	823,832	994,418	
Guatemala	5,381	17,356	63,073	228,029	487,288	652,909	
Haiti	4,816	28,026	92,395	225,639	429,848	491,131	
Honduras	6,503	19,118	39,154	112,004	287,470	393,349	
Jamaica	24,759	68,576	196,811	341,590	568,686	592,879	
Mexico	575,902	759,711	2,199,221	4,409,033	9,325,452	11,164,770	
Nicaragua	9,474	16,125	44,166	171,045	228,346	227,606	
Panama	13,076	20,046	60,740	121,714	146,216	148,832	
Paraguay	595		2,858	7,092	13,542	17,772	
Peru	7,102	21,663	55,496	151,856	282,264	381,052	
Puerto Rico	-	-	-	1,180,383	1,437,006	1,339,162	
Uruguay	1,170	5,092	13,278	23,121	25,031	53,251	
Venezuela	6,851	11,348	33,281	50,862	116,867	162,466	
Total	817,643	1,694,083	4,090,557	9,383,627	17,145,702	19,989,936	

Source: IPUMS-University of Minesota (1990,2000,2005), US CENSUS BUREAU (1960,1970,1980). Author's calculation.

	Annual Population Growth				
	60-70	70-80	80-90	90-00	00-05
	10.5	4.4	3.8	2.8	8.0
	12.2	7.7	8.3	5.1	4.1
	6.8	4.2	8.7	9.0	9.1
	9.4	8.6	5.9	3.1	2.6
	17.6	8.5	7.8	5.7	1.5
	11.9	5.9	5.0	4.6	5.9
	18.7	3.3	2.2	1.6	0.9
	17.8	10.7	7.7	7.0	0.9
	16.9	8.9	5.2	7.7	3.3
	9.6	19.6	17.5	5.7	3.8
	12.4	13.8	13.7	7.9	6.0
	19.3	12.7	9.3	6.7	2.7
	11.4	7.4	11.1	9.9	6.5
	10.7	11.1	5.7	5.2	0.8
	2.8	11.2	7.2	7.8	3.7
	5.5	10.6	14.5	2.9	-0.1
	4.4	11.7	7.2	1.9	0.4
	-	-	9.5	6.7	5.6
	11.8	9.9	10.6	6.4	6.2
	-	-	-	2.0	-1.4
	15.8	10.1	5.7	0.8	16.3
	5.2	11.4	4.3	8.7	6.8
	7.6	9.2	8.7	6.2	3.1

Table A1.2
A. Pattern of Skilled Emigration in the United States, 2000

Pattern of Skilled Emigration in the United States, 2000				
Rank	Country	% Complete university (25-55)	% Incomplete or complete university (25-55)	Total population (25-55)
1	India	74.6%	85.6%	622,827
2	Taiwan	72.0%	87.8%	201,848
3	Russia/USSR	64.1%	82.1%	160,776
4	Iran	60.1%	83.7%	165,971
5	Pakistan	56.3%	72.9%	121,488
6	Hong Kong	54.4%	75.9%	136,120
7	France	51.7%	79.8%	105,894
8	Ukraine	51.5%	75.4%	103,118
9	China	50.9%	63.4%	515,404
10	Japan	50.7%	81.8%	254,252
11	Philippines	49.2%	79.6%	831,110
12	Venezuela	48.9%	78.6%	64,051
13	Canada	45.9%	77.8%	413,270
14	Korea	45.9%	70.2%	375,872
15	United Kingdom	44.5%	78.0%	398,049
16	Germany	36.4%	71.5%	548,303
17	Brazil	35.6%	58.9%	121,907
18	Chile	33.6%	64.7%	45,875
19	Poland	27.7%	55.5%	219,619
20	Italy	27.5%	50.8%	189,856
21	Peru	26.2%	59.8%	160,946
22	Colombia	25.0%	52.8%	287,597
23	Cuba	24.1%	51.2%	404,501
24	Vietnam	22.8%	49.9%	602,603
25	Jamaica	21.2%	52.8%	320,605
26	Trinidad and Tobago	21.0%	54.2%	115,549
27	Guyana/British Guiana	19.0%	46.8%	122,272
28	Puerto Rico	16.0%	42.1%	636,995
29	Haiti	15.5%	44.1%	240,288
30	Nicaragua	15.1%	41.8%	125,448
31	Ecuador	15.1%	41.8%	165,790
32	Dominican Republic	11.9%	34.2%	364,635
33	Portugal	10.9%	27.6%	118,162
34	Laos	9.6%	32.4%	116,858
35	Honduras	8.8%	24.2%	157,824
36	Guatemala	6.6%	21.0%	269,693
37	El Salvador	5.3%	18.8%	494,672
38	Mexico	4.9%	16.3%	4,727,944

Source: IPUMS-University of Minnesota. Author's calculation. Employees.

Table A1.2
B. Pattern of Skilled Emigration in the United States, 2005

	Pattern of Skilled Emigration in the United States, 2005		
Rank	Country	% Complete university (25-55)	% Incomplete or complete university (25-55)	Total population (25-55)
1	India	78.5%	87.9%	873,528
2	Russia/USSR	65.4%	85.6%	182,682
3	Nigeria	64.6%	89.8%	117,221
4	Iran	64.2%	83.5%	162,511
5	China	59.7%	72.8%	992,143
6	Pakistan	58.7%	74.3%	135,309
7	France	57.6%	84.4%	106,755
8	Korea	57.3%	78.5%	518,959
9	Israel	54.7%	73.6%	76,275
10	Venezuela	52.1%	77.0%	91,001
11	Japan	51.9%	85.8%	264,037
12	Canada	51.6%	80.2%	431,794
13	Ukraine	51.2%	78.5%	139,403
14	Philippines	50.2%	80.8%	935,803
15	Romania	49.9%	71.1%	86,818
16	United Kingdom	48.3%	78.8%	391,536
17	Argentina	41.6%	62.5%	108,660
18	Chile	37.8%	68.3%	48,067
19	Thailand	37.9%	65.5%	98,157
20	Germany	37.3%	72.2%	536,849
21	Colombia	36.8%	63.2%	318,092
22	Greece	35.3%	58.5%	61,249
23	Panama	34.2%	71.4%	78,631
24	Poland	33.6%	62.5%	233,371
25	Italy	33.1%	59.4%	140,917
26	Brazil	32.5%	52.6%	214,230
27	Peru	31.7%	63.3%	233,919
28	Africa. n.s.	28.7%	61.9%	92,151
29	Vietnam	27.1%	53.0%	669,301
30	Trinidad and Tobago	26.9%	60.4%	116,914
31	Jamaica	26.4%	55.5%	346,339
32	Cuba	25.8%	54.0%	396,178
33	Guyana/British Guiana	21.0%	50.9%	151,246
34	Puerto Rico	20.5%	47.4%	579,786
35	Nicaragua	19.3%	45.7%	136,173
36	Haiti	18.9%	48.7%	289,113
37	Ecuador	18.2%	43.2%	205,270

Table A1.2 (continued)
B. Pattern of Skilled Emigration in the United States, 2005

		Pattern of Skilled Emigration in the United States, 2005		
Rank	Country	% Complete university (25-55)	% Incomplete or complete university (25-55)	Total population (25-55)
38	Cambodia (Kampuchea)	17.3%	42.6%	87,771
39	Portugal	16.4%	33.2%	97,440
40	Dominican Republic	14.9%	39.2%	406,424
41	Laos	14.6%	39.8%	129,917
42	Honduras	10.2%	26.2%	232,946
43	El Salvador	7.3%	21.7%	679,702
44	Guatemala	6.0%	20.5%	380,239
44	Mexico	5.8%	17.3%	6,278,681

Source: IPUMS-University of Minnesota. Author's calculation. Employees.

Table A1.3
Means of Dictionary of Occupational Titles Job Task Measures by Country of the Immigrant

		Means of Dictionary of Occupational Titles Job Task Measures by Country of the Immigrant								
Country (immigrant)	Rank (ehf)	Nonroutine Manual	Rank (finger)	Routine Manual	Rank (sts)	Routine Cognitive	Rank (dcp)	Nonroutine Cognitive / Interactive	Rank (math)	Nonroutine Cognitive / Analytical
USA Total	-	1.220	-	3.700	-	4.210	-	2.590	-	3.600
USA Americans	-	1.200	-	3.700	-	4.160	-	2.660	-	3.660
Average Foreigners	-	0.917	-	3.959	-	1.852	-	4.747	-	3.252
Taiwan	44	0.611	18	3.992	34	4.157	1	3.925	1	4.642
India	34	0.744	2	4.289	29	4.267	2	3.725	2	4.544
Iran	41	0.685	9	4.053	44	3.746	3	3.519	3	4.470
Hong Kong	45	0.599	20	3.989	21	4.610	5	3.197	4	4.303
Nigeria	7	0.973	28	3.959	36	4.137	15	2.779	5	4.246
United Kingdom	39	0.702	30	3.939	37	4.009	6	3.174	6	4.230
Canada	30	0.782	19	3.990	35	4.149	9	2.991	7	4.211
France	38	0.705	44	3.803	45	3.699	4	3.260	8	4.144
Japan	40	0.685	38	3.875	42	3.904	8	3.014	9	4.123
Pakistan	20	0.844	5	4.129	40	3.934	7	3.050	10	4.060
Russia/ USSR	28	0.792	4	4.129	26	4.408	17	2.590	11	4.044
Argentina	31	0.778	14	4.021	41	3.922	10	2.884	12	3.972

Table A1.3 (continued)
Means of Dictionary of Occupational Titles Job Task Measures by Country of the Immigrant

Means of Dictionary of Occupational Titles Job Task Measures by Country of the Immigrant										
Country (immigrant)	Rank (ehf)	Nonroutine Manual	Rank (finger)	Routine Manual	Rank (sts)	Routine Cognitive	Rank (dcp)	Nonroutine Cognitive / Interactive	Rank (math)	Nonroutine Cognitive / Analytical
Ireland	14	0.863	24	3.973	24	4.496	18	2.462	13	3.900
Germany	35	0.730	29	3.940	30	4.262	16	2.595	14	3.894
China	11	0.913	8	4.066	13	4.828	13	2.836	15	3.850
Korea. RO (South)	43	0.641	16	4.002	39	3.993	14	2.812	16	3.846
Korea	42	0.663	11	4.029	38	4.003	11	2.854	17	3.835
Philippines	23	0.828	3	4.151	5	5.234	27	1.877	18	3.778
Greece	25	0.799	41	3.850	33	4.171	12	2.850	19	3.705
Panama	36	0.723	37	3.879	31	4.253	20	2.277	20	3.704
Ukraine	17	0.852	7	4.078	14	4.787	22	2.153	21	3.693
Africa, n.s.	16	0.853	36	3.908	32	4.171	19	2.330	22	3.653
Trinidad and Tobago	29	0.791	22	3.979	22	4.565	25	1.980	23	3.636
Jamaica	12	0.898	23	3.977	18	4.688	31	1.766	24	3.621
Guyana/ British Guiana	33	0.747	13	4.025	11	4.915	28	1.869	25	3.557
Italy	18	0.847	17	3.992	16	4.721	21	2.249	26	3.506
Thailand	32	0.755	15	4.016	19	4.671	23	2.031	27	3.458
U.S. Outlying Areas and Territories	27	0.797	27	3.962	12	4.849	33	1.728	28	3.427
Cuba	24	0.817	21	3.982	20	4.643	26	1.948	29	3.409
Brazil	9	0.943	45	3.781	43	3.853	24	1.990	30	3.350
Poland	13	0.878	10	4.035	8	4.982	29	1.793	31	3.285
Vietnam	37	0.719	1	4.362	4	5.244	34	1.654	32	3.253
Peru	22	0.836	34	3.919	25	4.435	32	1.751	33	3.174
Colombia	15	0.859	33	3.921	28	4.347	30	1.769	34	3.172
Haiti	4	1.071	39	3.867	27	4.380	38	1.337	35	3.111
Puerto Rico	19	0.846	32	3.922	17	4.701	35	1.608	36	3.067
Nicaragua	21	0.842	31	3.937	15	4.725	37	1.420	37	3.032
Portugal	6	0.997	12	4.027	2	5.395	36	1.525	38	2.956
Ecuador	8	0.949	25	3.965	10	4.924	39	1.323	39	2.836
Dominican Republic	10	0.920	26	3.965	23	4.553	40	1.268	40	2.834
Honduras	3	1.071	35	3.909	6	5.027	42	0.997	41	2.609

Table A1.3 (continued)
Means of Dictionary of Occupational Titles Job Task Measures by Country of the Immigrant

Means of Dictionary of Occupational Titles Job Task Measures by Country of the Immigrant										
Country (immigrant)	Rank (ehf)	Nonroutine Manual	Rank (finger)	Routine Manual	Rank (sts)	Routine Cognitive	Rank (dcp)	Nonroutine Cognitive / Interactive	Rank (math)	Nonroutine Cognitive / Analytical
Laos	26	0.798	6	4.106	1	5.710	41	1.089	42	2.533
El Salvador	5	1.039	43	3.835	9	4.961	44	0.942	43	2.511
Guatemala	2	1.076	40	3.863	7	4.983	43	0.959	44	2.458
Mexico	1	1.162	42	3.839	3	5.298	45	0.855	45	2.35522

Note:
Nonroutine Manual   =   ehf
Routine Manual   =   finger
Routine Cognitive   =   sts
Nonroutine Cognitive/Interactive   =   dcp
Nonroutine Cognitive/Analytical   =   math

Source: CENSUS 2000 from IPUMS-University of Minnesota. Job task from the Dictionary of Occupational Titles (DOT), Censuses codes crosswalk files - National Crosswalk Service Center, University of Wisconsin system. The DOT data we employ here are based on an aggregation of these detailed occupations into three-digit CENSUS Occupation Codes (COC) following Autor, Levy and Murnane (2001). Author's calculation.

Table A1.4
Means and t-test of Main Variables, CENSUS 1990 and 2000

Variable	1990 Mean	sd	2000 Mean	sd	ALL Mean	sd	t
Complete Secondary or Incomplete Higher	0.621	0.485	0.611	0.487	0.616	0.486	-1.25
Incomplete or Complete Secondary	0.457	0.498	0.416	0.493	0.437	0.496	-5.50
Incomplete Secondary	0.097	0.297	0.074	0.262	0.086	0.280	-5.57
Complete Secondary	0.360	0.480	0.342	0.474	0.351	0.477	-2.44
Incomplete Higher	0.261	0.439	0.269	0.444	0.265	0.441	1.26
Incomplete Higher or more	0.426	0.495	0.467	0.499	0.447	0.497	5.51
Complete Higher or more	0.165	0.371	0.198	0.399	0.182	0.386	5.66
Woman	0.533	0.499	0.560	0.496	0.546	0.498	3.53
Age	37.383	8.443	37.136	8.390	37.260	8.418	-1.95
Age Squared	1468.77	660.47	1449.48	655.46	1459.16	658.05	-1.95
Incomplete or Complete Secondary * Age	17.205	19.626	15.488	19.133	16.349	19.401	-5.90
Incomplete Secondary * Age	3.735	11.664	2.773	10.069	3.255	10.909	-5.87
Complete Secondary * Age	13.471	18.701	12.715	18.308	13.094	18.510	-2.72

Table A1.4 (continued)
Means and t-test of Main Variables, CENSUS 1990 and 2000

Variable	1990 Mean	sd	2000 Mean	sd	ALL Mean	sd	t
Incomplete Higher * Age	9.371	16.290	9.701	16.496	9.536	16.394	1.34
Incomplete Higher or more * Age	15.459	18.681	16.870	18.818	16.163	18.763	5.01
Complete Higher or more * Age	6.088	14.061	7.169	14.869	6.627	14.479	4.97
White	0.975	0.158	0.984	0.126	0.979	0.143	4.38
Children under 10 in household	0.442	0.497	0.425	0.494	0.434	0.496	-2.18
People older than 60 in household	0.116	0.321	0.088	0.283	0.102	0.303	-6.36
Children under 10 * People older than 60 in hhold	0.038	0.190	0.029	0.167	0.033	0.179	-3.25
Hispanic	0.973	0.161	0.968	0.177	0.970	0.169	-2.21
Arrived to USA in last 5 years (1985-1990)	0.175	0.380	0.232	0.422	0.203	0.403	9.41
Connecticut	0.019	0.136	0.025	0.155	0.022	0.146	2.55
Massachusetts	0.021	0.144	0.020	0.142	0.021	0.143	-0.33
Rhode Island, New Hampshire, Maine, Vermont	0.018	0.134	0.014	0.120	0.016	0.127	-2.02
New Jersey, Pennsylvania	0.156	0.363	0.143	0.350	0.150	0.357	-2.51
New York	0.293	0.455	0.243	0.429	0.268	0.443	-7.43
East North Central division (does not include Illinois)	0.009	0.094	0.010	0.099	0.009	0.096	0.72
Illinois	0.028	0.166	0.027	0.163	0.028	0.165	-0.43
West North Central division	0.005	0.070	0.006	0.077	0.005	0.073	0.99
Georgia, Virginia, West Virginia, North and South Carolina	0.025	0.157	0.044	0.204	0.035	0.183	6.67
Maryland, Delaware, District of Columbia	0.017	0.130	0.014	0.117	0.016	0.124	-1.77
East South Central division	0.005	0.070	0.005	0.071	0.005	0.071	0.12
West South Central division (does not include Texas)	0.008	0.087	0.004	0.067	0.006	0.078	-2.73
Texas	0.043	0.203	0.046	0.210	0.045	0.207	0.96
Mountain division	0.013	0.114	0.015	0.122	0.014	0.118	1.16
California	0.111	0.314	0.088	0.283	0.099	0.299	-5.24
Washington, Oregon, Alaska	0.005	0.071	0.007	0.081	0.006	0.076	1.31
Number of Observations	8,802		8,912		17,714		
Population	197,184		196,044		393,228		

The comparison state is Florida.

Table A1.5
Means and t-test of Main Variables, CENSUS 2000 and 2005

Variable	2000		2005		ALL		t
	Mean	sd	Mean	sd	Mean	sd	
Complete Secondary or Incomplete Higher	0.594	0.491	0.593	0.491	0.593	0.491	-0.02
Incomplete or Complete Secondary	0.398	0.489	0.379	0.485	0.389	0.488	-1.70
Incomplete Secondary	0.073	0.260	0.049	0.216	0.062	0.241	-4.80
Complete Secondary	0.325	0.468	0.330	0.470	0.327	0.469	0.51
Incomplete Higher	0.269	0.443	0.263	0.440	0.266	0.442	-0.57
Incomplete Higher or more	0.511	0.500	0.572	0.495	0.539	0.499	5.56
Complete Higher or more	0.242	0.428	0.309	0.462	0.273	0.445	6.56
Woman	0.549	0.498	0.551	0.497	0.550	0.497	0.20
Age	39.275	7.984	39.371	8.038	39.318	8.009	0.53
Age Squared	1606.26	638.42	1614.67	646.32	1610.08	642.03	0.58
Incomplete or Complete Secondary * Age	15.781	20.044	15.273	20.180	15.551	20.107	-1.13
Incomplete Secondary * Age	2.890	10.529	1.996	8.976	2.485	9.865	-4.34
Complete Secondary * Age	12.891	19.116	13.277	19.485	13.066	19.285	0.89
Incomplete Higher * Age	10.387	17.644	10.260	17.646	10.329	17.645	-0.32
Incomplete Higher or more * Age	19.637	20.043	21.996	19.907	20.707	20.016	5.29
Complete Higher or more * Age	9.251	16.811	11.735	18.047	10.378	17.427	6.21
White	0.981	0.137	0.980	0.141	0.980	0.139	-0.34
Children under 10 in household	0.427	0.495	0.391	0.488	0.410	0.492	-3.28
People older than 60 in household	0.141	0.348	0.094	0.292	0.119	0.324	-6.95
Children under 10 * People older than 60 in hhold	0.052	0.221	0.038	0.192	0.046	0.208	-3.04
Hispanic	0.973	0.162	0.973	0.161	0.973	0.161	0.07
Arrived to USA in last 5 years (1985-1990)	0.259	0.438	0.214	0.410	0.239	0.426	-4.83
Connecticut	0.023	0.151	0.011	0.106	0.018	0.132	-4.76
Massachusetts	0.027	0.161	0.028	0.166	0.027	0.163	0.47
Rhode Island, New Hampshire, Maine, Vermont	0.016	0.127	0.018	0.134	0.017	0.130	0.61
New Jersey, Pennsylvania	0.153	0.360	0.147	0.354	0.150	0.357	-0.78
New York	0.216	0.412	0.192	0.394	0.205	0.404	-2.80
East North Central division (does not include Illinois)	0.011	0.102	0.008	0.088	0.009	0.096	-1.42
Illinois	0.022	0.148	0.016	0.127	0.020	0.139	-2.06
West North Central division	0.009	0.094	0.009	0.093	0.009	0.093	-0.07
Georgia, Virginia, West Virginia, North and South Carolina	0.055	0.229	0.049	0.215	0.052	0.223	-1.38

Table A1.5 (continued)
Means and t-test of Main Variables, CENSUS 2000 and 2005

Variable	2000		2005		ALL		t
	Mean	sd	Mean	sd	Mean	sd	
Maryland.Delaware, District of Columbia	0.014	0.118	0.015	0.122	0.015	0.120	0.35
East South Central division	0.006	0.080	0.011	0.103	0.008	0.091	1.91
West South Central division (does not include Texas)	0.004	0.062	0.004	0.062	0.004	0.062	0.00
Texas	0.044	0.205	0.067	0.250	0.055	0.227	4.22
Mountain division	0.018	0.134	0.016	0.124	0.017	0.130	-0.94
California	0.072	0.259	0.074	0.262	0.073	0.260	0.30
Washington, Oregon, Alaska	0.007	0.081	0.007	0.084	0.007	0.083	0.25
Number of Observations	14701		2310		17011		
Population	328927		273208		602135		

The comparison state is Florida.

Map 1
The Zones of Greatest Presence of Colombians, 2000

% Colombians by state, USA 2000
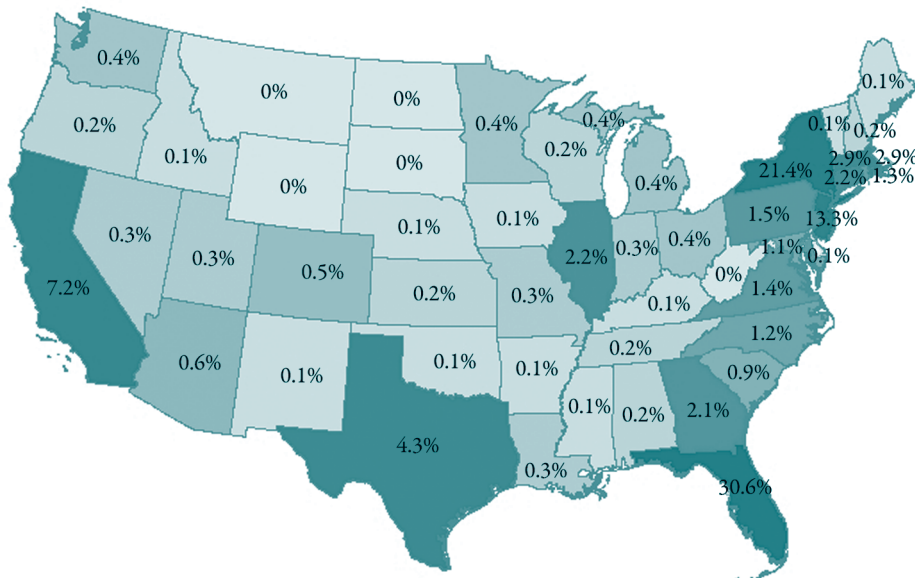
Source: Authors. NHGIS & IPUMS University of Minnesota.