UN/POP/EGM-MIG/2005/10
5 February 2006

EXPERT GROUP MEETING ON INTERNATIONAL MIGRATION AND DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN
Population Division
Department of Economic and Social Affairs
United Nations Secretariat
Mexico City, 30 November – 2 December 2005

BRAIN DRAIN IN LATIN AMERICA*

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* The views expressed in the paper do not imply the expression of any opinion on the part of the United Nations Secretariat.

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1. INTRODUCTION

Global economic integration is not only about the increased movement of goods, services and capital across international borders, but also involves the greater mobility of people. However, unlike the patterns we observed during the second half of the 19th Century, migration flows have not accompanied the big surge of in international flow of goods and capital that defined the wave of global integration in the post-WWII era.

There are strong indications that the tide will turn around in the 21st Century. It is estimated that some 180 million people – 3 percent of the world's population – are living in countries in which they were not born. These numbers are expected to increase rapidly in the following decades. Diverging demographic trends between the North and the South, rapidly declining transportation and telecommunications costs are making it increasingly difficult to restrain migration flows through government policies. As a result, migration flows will be among the most important factors shaping our economic, social and cultural profile in the near future.

Among the most hotly debated issues is the migration of the highly-skilled and educated people, the so-called brain drain, especially from developing countries to developed countries. Most developing countries already suffer from low levels of human capital which has been increasingly identified as among the main determinants of economic growth and development. Although there has been extensive analysis of the impact of migration on the receiving countries' economies, the links between migration and economic development, particularly as far as empirical research in concerned, have been somewhat neglected. This has been especially true in the case of brain drain, which, ironically, has been the subject of extensive theoretical analysis. The main reason for this oversight has been the absence of systematic and reliable data on international migration patterns and migrants' characteristics, both at the aggregate and the household level. Fortunately such data are finally becoming available. For instance, Docquier & Marfouk (2005) dataset presents the most-comprehensive data on bilateral migration numbers to date.

In this paper, we present the extent of the brain-drain from Latin American countries. Since vast majority of migration from the countries in Central and South America, the Caribbean and Mexico is to the United States, our focus is naturally on the migration to the US and we mostly rely on the US census. Several clear patterns emerge. First, the extent of the migration of workers with at least a college degree is extremely high for many countries in the region. This is especially true for some of the smaller and less developed countries that fail to establish adequate labor market opportunities for educated workers. For example, as of 2000, over 80% of the college educated people from Haiti, Jamaica and Guyana were living abroad. As a consequence, college educated workers are also overrepresented among the migrants from these countries, compared to their overall share in the native population.

The second important observation is that majority of the college educated people who were born in Latin American countries actually completer their education in the United States. Most of them either migrated to the United States as children with their families or came as young adults to obtain Bachelor's or further graduate degrees and stated to work. This observation will have important implications on the brain-drain debate since it is not clear whether they should be treated as part of the brain-drain flows. Furthermore, if we assume that education opportunities and quality are superior in the United States compared what would have been available at home, then such migration is undoubtedly beneficial for both the migrants and, in most likelihood, their home countries. We explore the implications in more detail in the following sections.

The final observation is on the performance of migrants in the US labor market, specifically on the quality of jobs they obtain. We find that, on most cases, Latin American migrants who completed their education in their home countries fail to obtain skilled jobs, especially when compared to migrants from other parts of the world such as East and South Asia. We present some reasons why this might be the case. Among them are the quality of the education and various selection effects.

In the next section, we explain the data sources which is followed by the presentation of our findings. We explore several policy implications and end with conclusions.

2. DATA

Empirical research on issues linked to "brain drain" has been constrained by the scarcity of data. One exceptional source is the US Census which includes detailed information on the social and economic status of foreign-born people in the United States. The data in this paper are from the 1% sample of the 2000 Census[1]. We restrict our analysis to foreign-born people who are between 25-65 years old and employed at the time of the census.[2] Each individual observation in the census has a population weight attached to it which is that representative observation's proportion in the overall US population. We end up with more than 400,000 observations in our dataset which corresponds to around 8.5 million people born in Latin American countries[3]. Each individual in the census declares an education level and a profession. The education levels are: (1) less than 4 years, (2) 5-9 years, (3) 9-12 years, (4) high-school, (5) some college, (6) bachelors degree, (7) graduate degrees which can be a masters degree, professional degree[4] or a doctorate degree.

There are over 500 separate occupations in the census and we group them into three main categories, based on the job description and the average educational attainment[5]:

[1] Extracts from the Census samples were made through IPUMS (Integrated Public Use Microdata Series), which is a database maintained by Minnesota Population Center at University of Minnesota (http://beta.ipums.org/usa/index.html).

[2] The census asks the respondents their level of education, but not where they obtained it. However, we know the age at which the immigrant entered the United States. So based on this information, we designate a person "US educated" if they arrived in the US before they would have normally finished their declared education level. For example, if a university graduate arrived at the age of 23 or older, then he is considered "foreign educated."

[3] These are Antigua-Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, mexico, Nicaragua, PAnama, Paraguay,Peru, St.Kitts-Nevis, St. Lucia, St. Vincent, Trinidad & Tobago, Uruguay and Venezuela.

[4] According to census, these are medical, law, optometry, dentistry, pharmacy and veterinary degrees.

[5] Educational attainments were obtained by computing the average years of education in each profession, with all US-born and foreign-born people (males and females) included.

(i) Skilled - average education is at least 16 years; includes managers, accountants, engineers, social workers and teachers, medical and legal professionals, scientists.
(ii) Semi-skilled - the average education is between 12-16 years; includes engineering technicians, police, secretaries and administrative assistants.
(vi) Unskilled - the average education is below 12 years; includes waiters, salespersons, cashiers, construction laborers, automotive mechanics and drivers.

We divide the data into separate cohorts depending on the decade of arrival: 1980s and 1990s. The most important variable in our paper is the education level of immigrants which we present in the next section. Finally, we borrow some data from Docquier & Marfouk (2005) to compare the migrants educational composition to those of the native populations.

3. BRAIN DRAIN FROM LATIN AMERICA

i. Overall Migration Patterns

The vast majority of migrants from Latin America move to the United States. So it is natural that large portion of the highly educated and skilled migrants go to the United States as well. Figure 1 presents the overall migration patterns from the Latin American countries to the US during the 1980s and the 1990s. As explained above, we are only focusing on the migrants who are employed as of US census 2000. Thus, we are excluding children, retirees as well as people who are not currently in the labor force. Our sample has a total of 8.4 million migrants with 4.6 million having arrived since 1990.
As can be clearly seen, the largest portion of migrants came from Mexico which is followed by El Salvador, Dominican Republic and Guatemala. The migration rate shows high degree of variation. For some of the smaller countries in Central America and the Caribbean, such as Guyana, Grenada, Dominica, close to 30% of their labor force is currently in the US. The same number, according to some estimates, is 10% for Mexico. When we look at all of the Latin American countries, 8.4 million migrants to the US represent close to 3.5% of their total labor force.

Figure 2 presents the ratio of migrants with Bachelor's and Graduate degrees among all of the migrants. For comparison purposes, we included the same number from four other large migrant-sending countries - China, India, the Philippines and Russia. This is the first measure of brain drain and we see large variation here as well. For example, close 17% of migrants arriving in the 1980s have at least a college degree – 10.4% has Bachelor's and 6.5% has a Graduate degree. However, the same numbers are 2.3% and 1.4%, respectively, for Mexican migrants. On the other hand, 27% of migrants from Brazil, 33 % from Argentina, 40% from Venezuela and 30% from Chile arriving in the 1980s have at least a college degree. The same numbers are astoundingly different for migrants from the rest of the world. For example, 63% of migrants from India and 58% from the Philippines have at least a college degree.

The same patterns are maintained for the 1990s. 18% of all migrants from Latin America have at least a college degree. The relative ratios of college educated migrants from different Latin American countries are roughly the same. It is relatively high for Brazil, Argentine and Chile and relatively low for Central American countries.

When we observe the overall migration patterns into the US, we see that migrants are concentrates at the extremes of the education spectrum – they are overrepresented at the low and high end. Since it is relatively easier for all migrants from Mexico and Central America to enter the US whether illegally or via family preferences, they make up the bulk of the migrants at the low end of the education spectrum. In short, the ratio of the educated people is higher among migrants compared to the native populations but the same ratio is even higher for Asian countries.

ii. Brain Drain

The next key question is the following: What percentage of the total educated labor force from Latin American countries has migrated to the United States? Figure 3 provides the first half of the answer. Once again, we see wide variation. A very large

portion of the college educated migrants from smaller and poorer countries in the Caribbean and Central America are in the US. For example, close to 80% of college educated people born in Jamaica, Haiti, Guyana, Belize, Grenada are currently living in the US. The rate is also relatively high for some of medium-sized countries in Central America. Around 30% of the college educated from El Salvador, Guatemala, Honduras, Nicaragua and Panama are also in the US. The levels are much lower for larger and wealthier countries. For example, the ratio of the college educated among the migrants is less than 5% for Brazil, Argentina, Chile, Costa Rica, Uruguay and Venezuela.

We should point out the following divergence between smaller and larger countries. Smaller and poorer countries, such as the ones in Central America and the Caribbean, also have lower shares of college educated workers in the labor force. A very large portion of their population tends to migrate if given the chance since the economic opportunities seem to be rather limited for everyone, not just for the highly educated. As a result, highly educated migrants make up a smaller portion of the migrant population but they form a large portion of the overall educated labor force. On the other hand, for the larger countries in South America, the total number of migrants relative to the population is much smaller and a smaller portion of the highly educated chooses to migrate – hence the lower levels on Figure 3 for these countries. But the highly educated form a large portion of the overall migration as in Figure 4. This is also partly due to difficulties faced by less educated from these far away countries to the US.

This is one of the main themes in the Docquier & Marfouk (2005) study of the global patterns of brain drain and is true for other countries in the world. For example, many smaller and poorer countries in sub-Saharan Africa and the Pacific also suffer from high degree of migration by the highly educated. On the other hand, countries like India and China are only losing less than 3% of their college educated to migration even though they make up over 75% their migrants.

iii. Does it Matter Where You Obtain Your Education?

An overlooked issue is where the migrants obtain their education. In the previous section, we established that, in some Latin American countries, a large portion of the college educated people born there have migrated to the United States. The key fact we are going to present in the section is that majority of those people have actually received their education in the US since they migrated either as children with their families or came to the US as young adults to complete their education and stayed to work.

As Figure 4 shows, over 58 % of Latin American migrants who arrived in the 1980s and have a Bachelor's degree, have obtained it in the US. The same ratio is 63% for migrants with a graduate degree. Among the people who received their Bachelor's degrees in the US and migrated in the 1980s, over 50% arrived when they were between the ages 16 and 22. For those with a graduate degree, 40% arrived between the ages 16 and 22 and another 40% arrived between 23 and 30. These numbers strongly indicate that completing their education in the US was one of the main factors of migration for these people.

The ratio of the people who completed their education in the US is actually rather similar across most Latin American countries as can be seen in Figure 4. For almost all countries, at least 40% of their citizens with college degrees who live in the US, obtained it there. The same ratio is higher, around 50%, in the case of graduate degrees. We also observe the same numbers for our comparison countries. Around 40% migrants from India and China with Bachelor's degrees completed their education in the US and the levels are much higher for migrants with graduate degrees. The Russian migrants show a slightly different pattern. This is due to sudden exodus of highly educated migrants after the collapse of the Berlin Wall.

The second half of Figure 4 shows the educational patterns of migrants who arrived in the 1990s. We observe that the ration of migrants who completed their

education in the US is much lower for this cohort. For example, only 23% of the bachelor's Degree holders and 36% of Graduate Degree holders completed their education in the US. There are various reasons for this. First and foremost is the composition effect. If a migrant has completed his education at home and comes to the US in the 1990s, he is likely to be in the labor force and in our sample right away. On the other hand, if migrants arrive in the 1990s to complete their education in the US, they are more likely to be still in school and would not appear in our sample since we only include people in the labor force. Thus they would be under-represented. The appropriate measure is to use the 2010 census to analyze the 1990s cohort, when they are fully participating in the labor force. The second reason is that educational quality has improved Latin American countries and some people might prefer to complete a larger portion of their education at home where the costs are likely to me much lower.

The data we present in this section is likely to have strong implications on the debate on brain drain. It is generally assumed that brain drain is harmful for developing countries since they lose one of their most scarce economic resources. Furthermore, most of that education is likely to be financed by public resources. The migration of the educated people without any returns to the society that paid for it might impose fiscal problems. However, it is not clear whether the same can be said if their citizens are educated abroad and that presumably higher quality education is financed by private sources or by the destination country. In addition, there might be capacity constraints in the education sector in the home country of the migrant such that he might not be able to obtain the higher education if he were to stay at home. Obviously, this is a very complicated issue that can not be fully addressed and analyzed in this paper. Our aim is to point it out and emphasize that it should be part of all debates in brain drain.

iv. Brain Waste

The final point we would like to emphasize is the labor market performance of migrants in the destination country. We analyzed this issue in great detail for all countries

elsewhere (Mattoo, Neagu and Ozden, 2005) and we would like to point out the implications for the Latin American countries. The main point is that majority of the highly educated migrants who completed their education in their home countries end up with jobs that are not commensurate with their education levels. This is especially severe in the case of migrants from Latin America as presented in Figure 5. For example, among the Latin American migrants who arrived in the 1990s and have at least a college degree obtained at home, only 36% obtains a skilled job and another 26% has a semi-skilled job. In other words, close to 40% of Latin American migrants with college degrees have unskilled jobs in the US labor market. Naturally, there is variation among different countries. College educated migrants from Mexico and Central America seem to perform worse than migrants from South America. However, migrants from the rest of world have even more impressive job placement profiles. For example, close to 70% of Chinese and Indian migrants with college degrees have skilled jobs and this is higher than the placement of US citizens with college degrees.

The natural question is what factors can explain this divergence between different countries. We find that a large part of this country-level variation can be explained by certain country attributes. Some of these attributes affect the *quality* of human capital accumulated at home, such as expenditure on tertiary education and the use of English as a medium of education. Other attributes lead to a *selection* effect, i.e. variation in the abilities of migrants because they are drawn from different sections of the skill distribution of their home countries, and include the GDP per capita, the distance to the US, and the openness of US immigration policies to residents of a given country. For example, because of proximity and the presence of a large migrant network, it is much easier for people from Mexico and Central America to migrate to the United States. As a result, even among the college graduates, it is possible for people with lower levels of human capital to migrate. However, in the case of Chinese or Indians, the main path to enter the US is through employment authorization which requires higher levels of human capital.

CONCLUSION

The aim of this paper is to present certain patterns among the highly educated migrants from Latin American countries. These migrants predominantly migrate to the US and they compose around 2/3rd of the migration flows to the US. There are several points we would like to emphasize:

1 – There are large variations among different Latin American countries. It is difficult and dangerous to draw conclusions without detailed analysis.
2 – We see large migration flows from smaller and poorer countries and these are the ones who are losing a large portion of their highly educated citizens.
3 – In the case of wealthier and larger countries, a smaller portion of the educated people migrates. But they form a larger portion of the migration flow since the overall migration is much smaller.
4 – Majority of the college educated migrants who were born in Latin American countries actually completed their education in the US. The evidence suggests that they migrated specifically to complete their education and there are reasons to believe they would not obtain the same level or quality of education if they were to stay at home. This fact needs to be taken into account in the brain drain debate
5 – Large portion of migrants who completed their education at home fail to obtain jobs commensurate with their education levels. This is partially due to lower quality of education and this also needs to be take into in the policy debates.

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Mattoo, Aaditya, Ileana Cristina Neagu and Çağlar Özden (2005), "Brain Waste? Educated Immigrants in the US Labor Market", Policy Research Working Paper #3581, World Bank, Washington DC

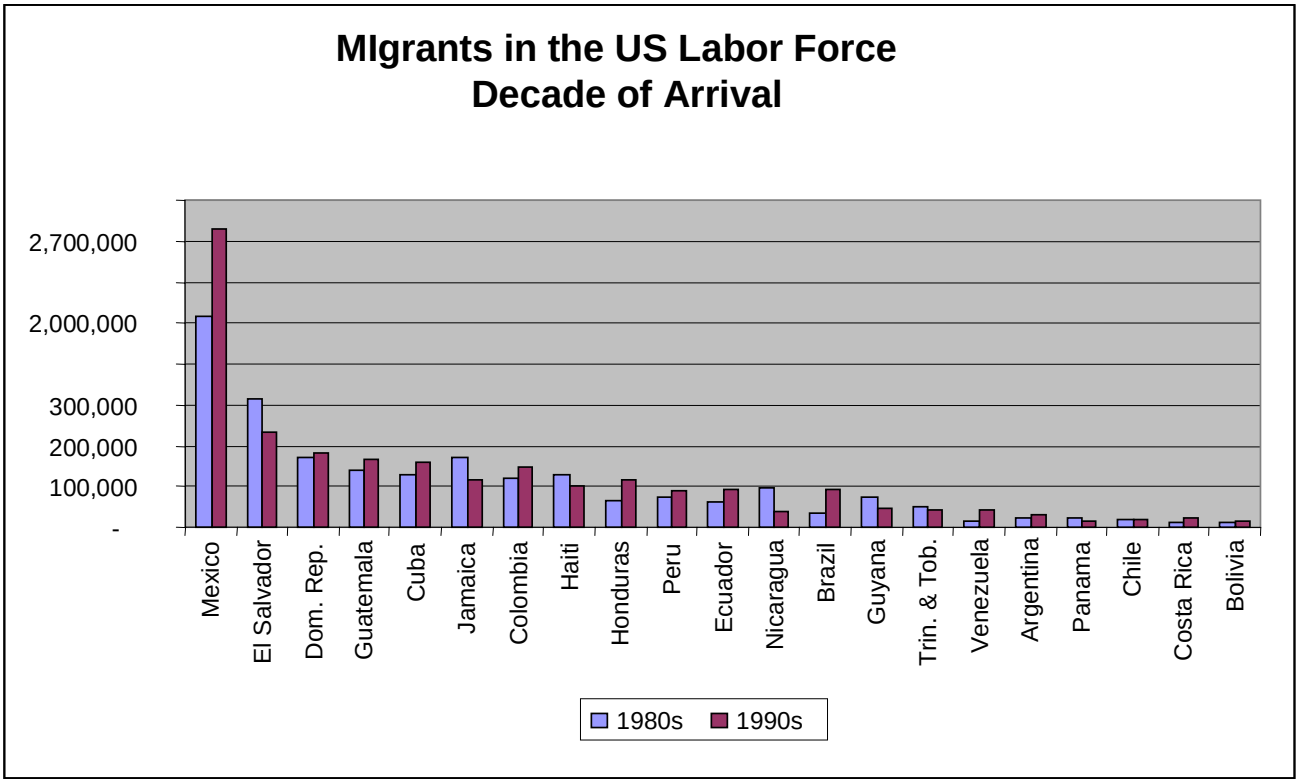


Figure 1: Migrants from Latin America who are in the US Labor Market – by Decade of Arrival

Source: US 2000 census

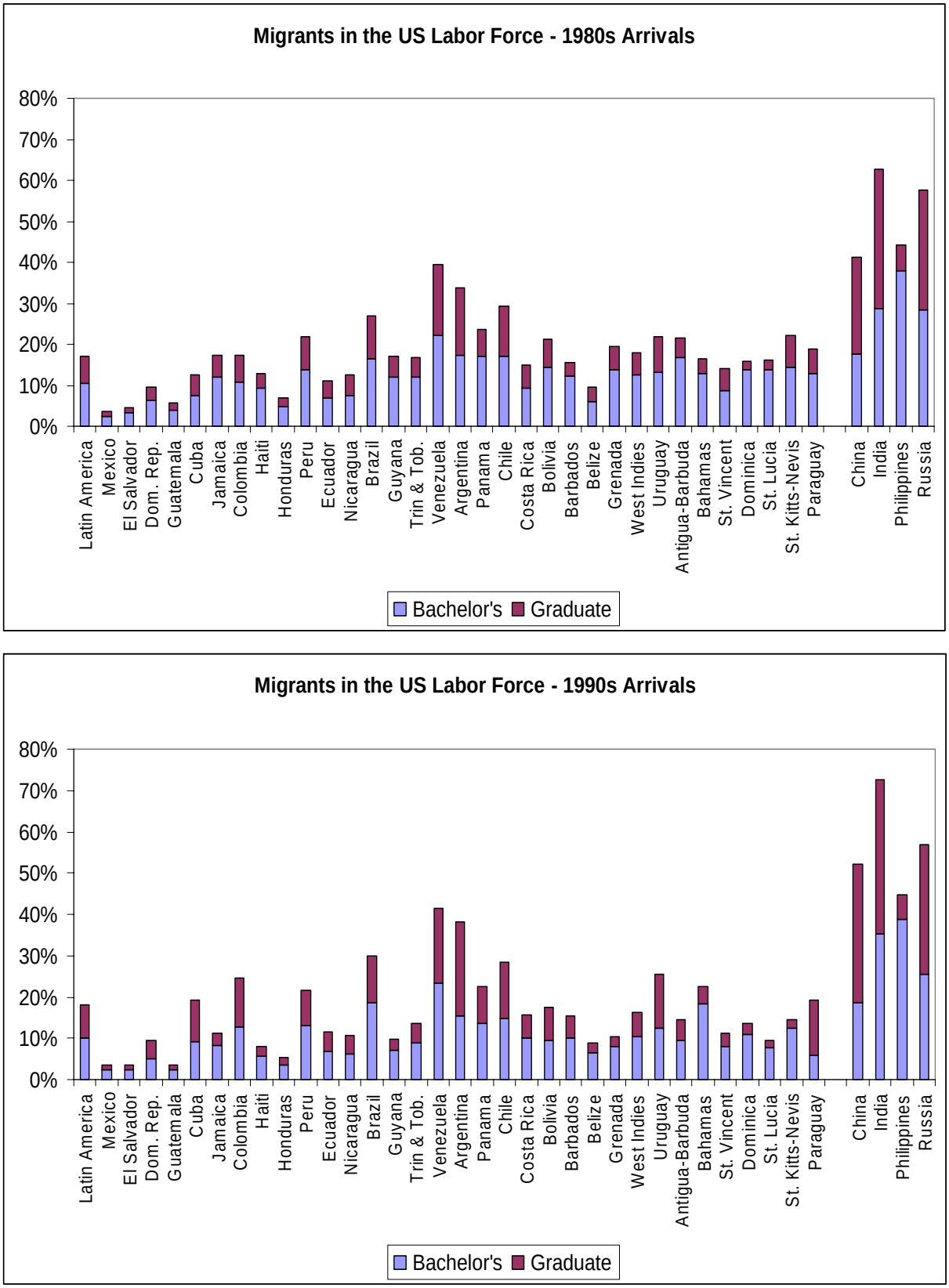


Figure 2: Ratio of Migrants from Latin America who have at least a College Degree and who are in the US Labor Market – by Decade of Arrival

Source: US 2000 census

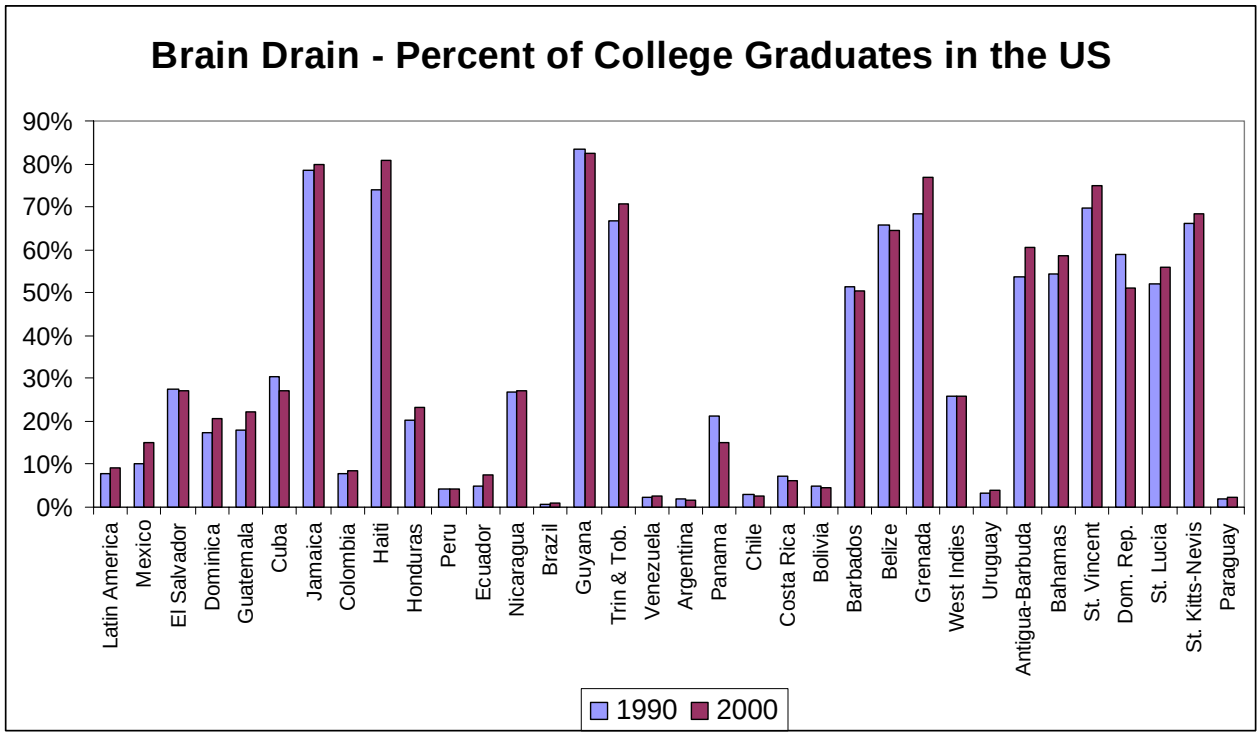
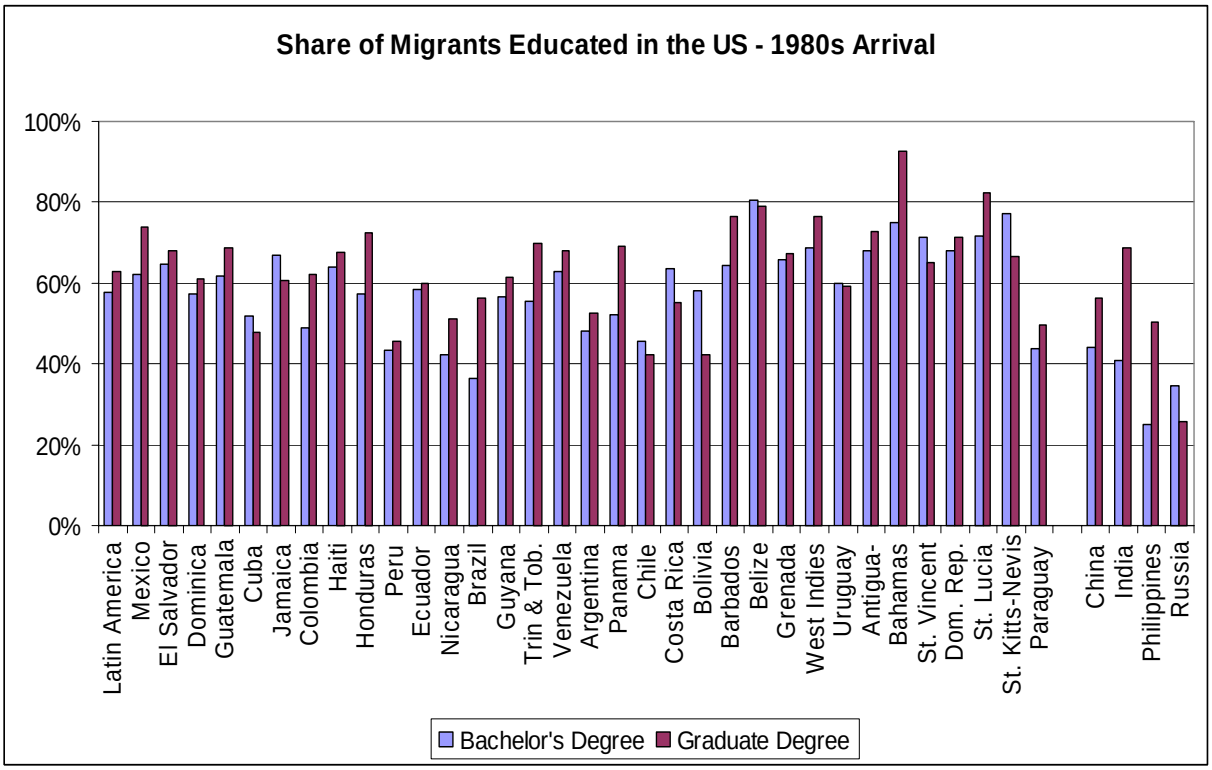


Figure 3: Ratio of College Educated People from Latin America who are in the US Labor Market to the total Labor Force from that country – by Decade of Arrival

Source: US 2000 census, Docquier & Marfouk (2005)



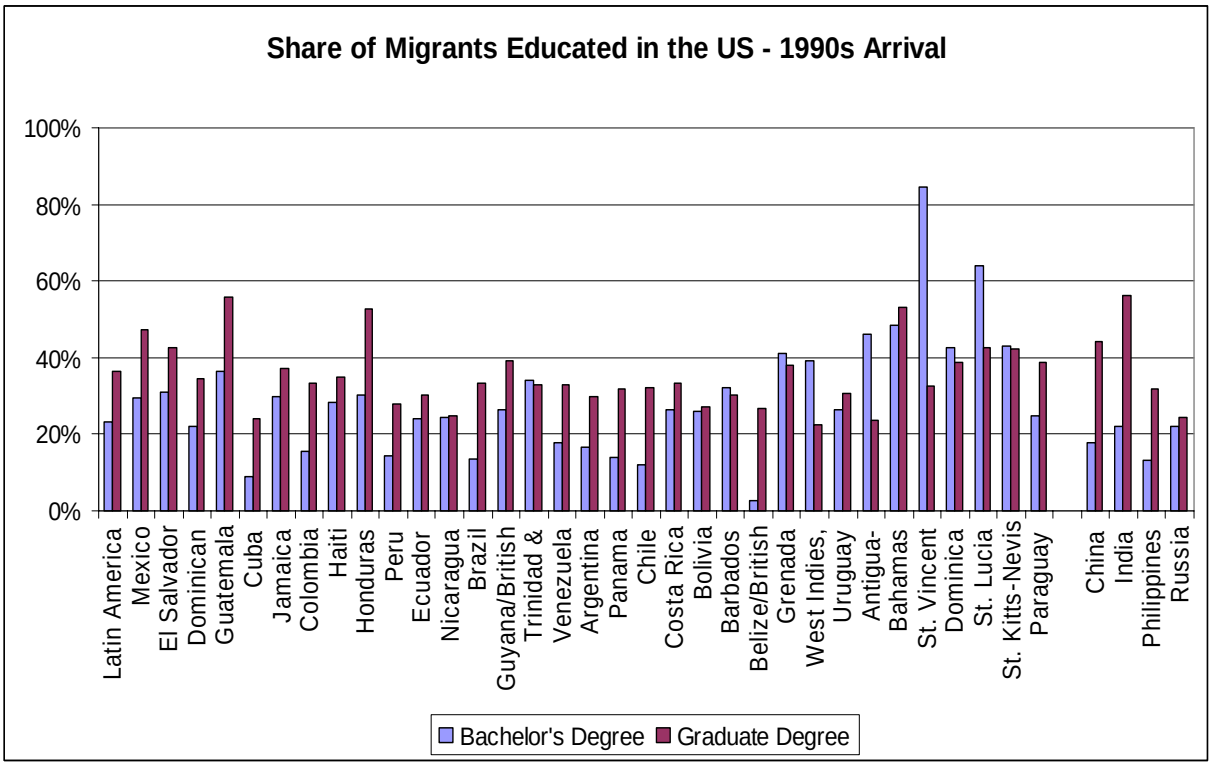
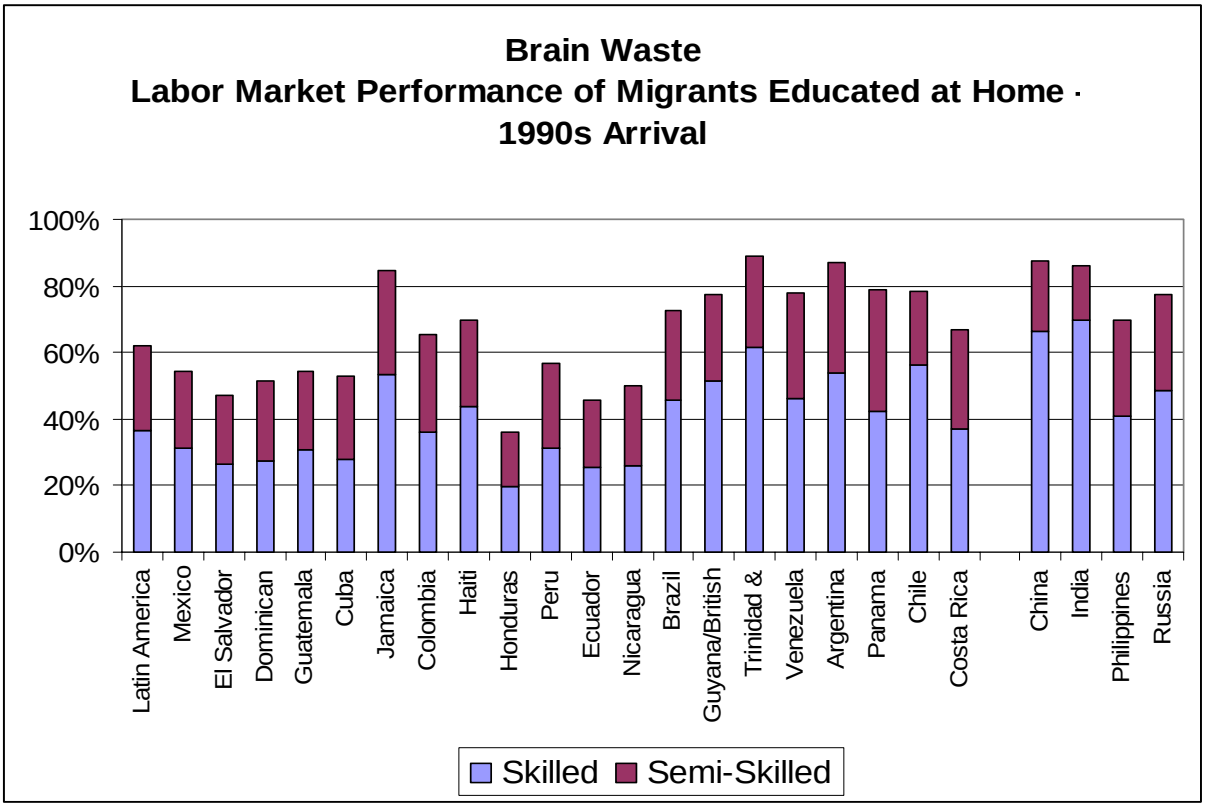


Figure 4: Share of Educated Migrants from Latin America who received their last degree from the US and who are in the US Labor Market – by Decade of Arrival

Source: US 2000 census


Brain Waste
Labor Market Performance of Migrants Educated at Home · 1990s Arrival
100%
80%
60%
40%
20%
0%
Latin America
Mexico
El Salvador
Dominican
Guatemala
Cuba
Jamaica
Colombia
Haiti
Honduras
Peru
Ecuador
Nicaragua
Brazil
Guyana/British
Trinidad &
Venezuela
Argentina
Panama
Chile
Costa Rica
China
India
Philippines
Russia
Skilled
Semi-Skilled