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Wage Assimilation between Puerto Rican and Latin American Immigrants

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Abstract

Wage assimilation into the U.S. labor market by immigrants, specifically immigrants from Latin America, has been extensively studied. This paper studies the wage differentiation and wage assimilation rate of Puerto Rican migrants in the U.S. labor market compared to Latin American migrants and Natives. Previous studies usually group Puerto Ricans with Latin American migrants, this poses an interesting dilemma, not all Latin American immigrants have similar educational levels or English-speaking ability, both qualities that are predictors for high wages once resettled in the US. These qualities lead to migrants resettling into higher paying salaries, usually in managerial positions rather than labor positions. Puerto Rican English speaking ability is 11% higher than migrants from other Latin American countries and Puerto Ricans have similar education levels compared to U.S. natives, at 12 years and 13.2 years respectively. The estimates using micro data from the US census indicate Puerto Rican migrants experience a smaller wage penalty. When Puerto Ricans resettle into the US, they experience a 0.11%, wage penalty, this is indicative that Puerto Ricans are better off than Latin Americans who only experience a 0.29% wage penalty. Due to Latin American migrants starting at lower wage there within lies an enormous potential to increase their wage over time; by reeducation in accredited American universities and becoming more proficient with their English. Latin American migrants wage increases quicker compared to Puerto Ricans, 0.549% versus 0.00725% per year, respectively. Migrants from Puerto Rico perform better when resettled than those from other Latin American countries.

1. Introduction

Previous research regarding immigrant assimilation into the United States Labor market usually groups all Latin Americans migrants. It has been documented by Buitrago (2009), that this massive group of immigrants performs worse in the U.S. Labor market in regard to wage assimilation when compared to other immigrants and U.S. natives.[1] The grouping of all Latin American immigrants raises an interesting dilemma; do all Latin American immigrants assimilate at the same rate? Latin American countries have varying socio-economics conditions and education systems. Differences in education can affect an immigrant's ability to transfer the human capital accumulated in a source country to the resettled receiving country. The degree of human capital transferability can lead to differing marginal returns to wage assimilation of immigrants. Sanroma et al. (2009) finds that education received prior to immigration from sending countries result in lower marginal returns to wage assimilation of immigrants in the Spanish labor market.[3] This reaffirms the limited transferability of education obtained in sending countries.

To test this theory in the U.S. labor market this study will compare the assimilation rates between Latin American immigrants and Puerto Rican migrants. This paper studies Puerto Rican migrants' wages because, empirical evidence suggests higher human capital transferability of Puerto Ricans migrants compared to other Latin Americans. The Puerto Rican education system mirrors that of the United States with required primary education and curriculum defined by the U.S. Department of Education. The majority of colleges and Universities are accredited by the Middle States Association of Colleges and Schools (MSA).[4] Many specific graduate programs are accredited in the United States. For example, four of the five medical schools are accredited by the Liaison Committee on Medical Education

(LCME) which is the main accreditation body for medical schools in the continental United States.[4] Crucially, most of Puerto Rico's undergraduate intuitions are accredited in the United States. This distinction delineates a crucial separation between Puerto Rican migrants and all other Latin American immigrants. For example, a graduate from the University of Puerto Rico at Mayaguez could enter the US labor market without having to be reeducated in a university in the continental United States. A graduate from a University in Honduras would have to seek reeducation in an American university to enter the US labor market with their desired degree. Under this assumption a Puerto Rican migrant will have better access to their desired field in the US labor market compared with a migrant from a different Latin American country. By entering their desired field, it is predicted that their wages will resemble a native of the US compared to a Latin American immigrant and potentially other immigrants from other countries.

2. Literature Review

Previous literature indicates a myriad of research regarding wage differences between Latin American immigrants and other immigrants and how their wages compare to native workers. As illustrated by Buitrago (2009), Latin American immigrants earn less than their native counterparts and earn even less when compared to other immigrants.[2] This conclusion of this study is striking because despite Latin Americans composing one of the largest shares of immigrant inflow to the United States, they perform worse compared to other immigrant groups. Buitrago (2009) further separates the study into cohorts based on time of arrival and confirmed that more recent cohorts have a greater wage disparity compared to older cohorts. For Latin American immigrants the trend shows a gradual decrease in immigrant skill. The opposite can be said for immigrants from other countries the cohorts seem to increase in terms of quality thus earn higher wages. Buitrago uses U.S census data from the year 2000 to estimate hourly earning differentials among Latin American immigrants, immigrants from other source countries and natives though a Chiswick wage model. Buitrago estimates log hourly wage with OLS and a novel Quantile Regression for working aged men between the age of 25-64. The dependent variable, log hourly wage, depends on educational attainment which is a dummy variable that is separable by groups, age, age squared, dummy variables for race, marital status, and crucially time since immigration expressed in the form of dummies for cohort. Results of Quantile regression indicate that in all wage distributions Latin American immigrants earn less than natives and even less compared to other immigrants. This wage disparity is most drastic in the upper ends of the wage distribution and less evident in the lower ends. Other immigrants tend to outperform natives and Latin Americans in the upper ends of the wage distribution but earn similarly to Latin Americans in the lower end of the distribution. This paper will be the foundation of this study but incorporating Puerto Ricans as a separate group.

Buitrago clearly elucidated the wage differentials but didn't provide an empirical methodology of why this disparity exists. A study by Sanroma et al. (2009) studies the returns to human capital for recent immigrants to the Spanish Labor market. The study concludes that education received prior to immigration from sending countries result in lower marginal returns to wage assimilation of immigrants. This reaffirms the limited transferability of education obtained in sending countries. Furthermore, authors observed that labor market experience in sending countries also present lower marginal returns to wage. Sanroma et al. (2009) utilized a modified Chiswick wage model to determine the rate of assimilation for migrants with varying work and educational experiences. The regression breaks down years of Spanish potential experience into years of effective experience and idle years. In addition, it provides information on whether an immigrant has been employed in the home country, permitting the introduction of a dummy variable to try to represent this effect on wages. While this empirical model would be helpful in elucidating why wage differential exist among Latin Americans, Puerto Ricans, and natives the data regarding immigrant's education and work experience from before they resettled is not available for the US labor market. The study by Sanroma et al. (2009) overcomes this limitation due to the particular data set from the Spanish National Immigrant Survey.

3. Background

As aforementioned, this study is only possible due to the similarity between the US education system and the education system of Puerto Rico.[4] Puerto Rico is a territory of the United States; thus, all departments are under the oversight of the federal government of the United States. Importantly, all Puerto Rican state universities are accredited in the United States. This policy allows for the assumption that Puerto Ricans human capital will have a higher degree of transferability compared to other Latin American Immigrants.[4] This study will be based off of Buitrago's 2009 analysis of wage differentials. However, this analysis will be focusing on detailed immigrant groups Puerto Ricans and Latin

Americans. Thus, instead of utilizing the same 1% US census microdata obtained from IPUMS this study will expand the number of observations and utilize 5% microdata from IPUMS.

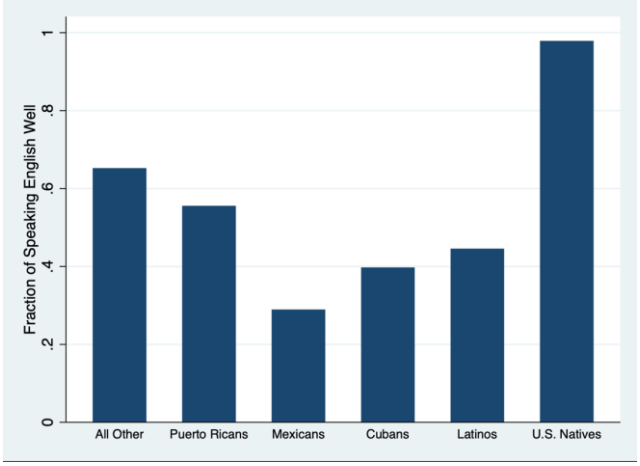

Figure 1 Percentage of Immigrants that Speak English Well

Figure 1 shows the English proficiency of different immigrant groups. 55.5 Percent of Puerto Rican migrants claim that they speak English well which is greater than 44.5 percent of all Latino immigrants, and crucially, 28.9 percent of Mexican migrants, the largest share of Latin American migrants in the United States. This finding correlates with a previous demographic study of Latin American migrants by Tienda et.al (2006) who found that among immigrants Mexicans having the lowest rate of English proficiency at 26 percent.[4]

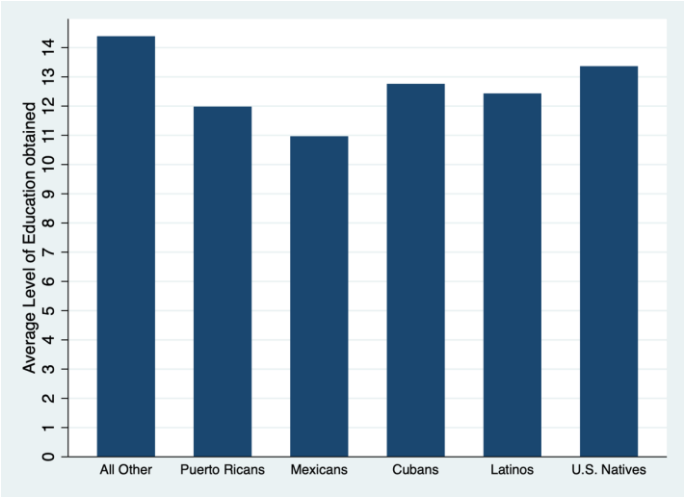

Figure 2 Average Level of Education obtained

A similar pattern is observed in regard to years of education obtained by immigrant groups. Cubans and Puerto Ricans have significantly higher years of education compared to Mexican immigrants and all other Hispanic immigrants.[4] Aforementioned studies by Borjas (1995), Buitrago (2009), and Sanroma (2009) clearly correlate the amount of education obtained by an immigrant with the wage earned once resettled. Considering Mexican migrants comprise of the largest share of Latin American immigration into the United States, this figure would suggest a higher wage penalty for Latin Americans compared to Puerto Ricans.

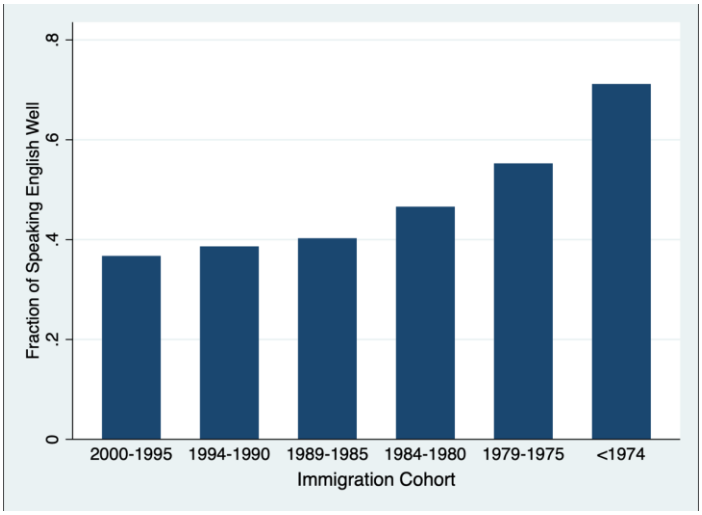

Figure 3: English Speaking Ability by Immigration Cohort

An important aspect of immigrants achieving higher wages is adopting the language of the host country.[1] Borjas elucidated that migrants with higher English-speaking abilities are comparable substitutes in managerial positions which tend to pay higher salaries than labor positions that are common for migrants from Latin America. Figure 3 displays the intuitive trend for all migrants resettling into the US; English speaking ability (y-axis) increases the longer the migrant has lived in the US (x-axis). The oldest cohort of this study, migrants who immigrated before 1974, have the highest English proficiency compared to the youngest immigration cohort, migrants who immigrated between the years of 1995 and 2000.

4. Empirical Methods

To quantify the wage differential between Latin Americans and Puerto Ricans, this paper extends the standard Chiswick wage model in the literature to capture detailed immigrant groups.

$$\log(\text{hourlywage}) = \alpha_1 * age + \alpha_2 * age^2 + \alpha_3 * black + \alpha_4 * Native + \alpha_5 * Lamerican +$$

$$\alpha_6 * PuertoRican + \alpha_7 * Other + \sum_{j=1}^{5} \alpha_j * educ_j + \alpha_{13}\, yearsincemigration *$$

$$PuertoRican + \alpha_{14}\, yearsincemigration * Lamerican + \alpha_{15}\, yearsincemigration *$$

$$Other + \varepsilon_i$$

Similar to Buitrago (2009), this empirical regression, the dependent variable log(hourlywage), would be dependent on the age of the migrant; the age of that individual squared. Furthermore, it is crucial to include characteristics such as labor market experience and educational attainment, factors that clearly influence the wage of an individual. Thus, in an effort to capture individuals with labor market experience this study only includes males between the ages of 25 and 65. Furthermore, educational attainment is captured by $\sum_{j=1}^{5} \alpha_j * educ_j$ this variable separates individuals level of education into cohort by grouping specific milestones of educational attainment, detailed breakdown of educational cohorts is located in table 3. Other controls include the race of an individual and various dummy variables indicating the source country of a migrant.

The crucial variable to take note of are the dummy variables for Latin American immigrants (α_5) and Puerto Rican migrants (α_6) the coefficient of these variables when subtracted by the Native dummy variable (α_4) will indicate the wage penalty of a migrant. A coefficient with a smaller difference compared to Natives signifies that specific migrant group experienced a smaller wage penalty. A small wage penalty indicates that a migrant's pre-migration characteristics were similar to that of the US labor market. A large coefficient difference would indicate the inverse,

migrants with a larger wage penalty were not able to transfer their human capital from their source country to the US effectively.

The interaction variables $\alpha_{13}, \alpha_{14}, \text{and } \alpha_{15}$ multiplies the year since migration and the dummy variable of a source country (either Puerto Rican, Latin American, or Other). When this coefficient is more positive this indicates an increased speed of assimilation for the select migrant group. This variable would be expected to be higher for migrant groups with less education and poor English-speaking ability. The longer these low skilled migrant groups live in the United States the more marginal return they could accrue in by becoming more proficient in English and achieving more education in the US. Migrant groups with higher English-speaking ability and higher degree of human capital transferability wouldn't experience high marginal returns the longer they live in the US for they have little to improve upon to increase their wage.

5. Results

The methodology presented allows an estimation of the wage penalty of immigrants from Latin America, Puerto Rico, and all other source countries. As aforementioned, the more similar the immigrant dummy coefficient to Native will indicate which source country's migrants experience the minimal amount of wage penalty in the U.S. labor market. Table 1 displays the results from the regression.

Table 1: Percent wage penalty estimation compared to U.S. natives

	(1)	(2)	(3)	(4)
Native	*1.085011*	1.575561	1.604153	1.617333
	(.0115701)	*(0109205)*	*(.0109284)*	*(.0109067)*
Latin American	0.6706057	1.322137	1.22837	1.231683
	(.0118188)	(.0112431)	(.0114142)	(.0113901)
Puerto Rican	0.8515417	1.442531	1.299835	1.308341
	(.0161953)	(.0152649)	(.0155596)	(.015527)
Other Migrants	1.120505	1.533382	1.425724	1.442769
	(.011815)	(.0111308)	(.0113614)	(.0113397)
Age	Yes	Yes	Yes	Yes
Age Squared	Yes	Yes	Yes	Yes
Educational Cohorts	--	Yes	Yes	Yes
Year since migration	--	--	Yes	Yes
Black	--	--	--	Yes

Table 1- Source: 2000 U.S. Census 5% Public Use Microdata Sample.
Sample Size: 1,226,289
Regression Standard error in parenthesis
All variables are statistically significative at the 1% level unless stated by the usual criteria:
* p-value<0.1; ** p-value<0.05; *** p-value<0.01

Puerto Ricans across all four regressions experience a smaller wage penalty compared to immigrants from other Latin American countries this would indicate that due to their high degree of educational attainment, high English proficiency, and ease of human capital transferability Puerto Ricans wages are more similar to Native wages. Other migrants were expected to perform better than migrants from Latin America and Puerto Rico for they have higher English-speaking ability and higher educational attainment compared to Latin America and Puerto Rico. On column 4 the difference between Native and Puerto Rican coefficients is 0.308 thus Puerto Ricans experience a 0.308% wage penalty compared to Natives. Latin American migrants in the same regression experience a 0.381% wage penalty, indicating that Puerto Rican migrants are more substitutable in higher earning professions compared to immigrants from other Latin American countries. Migrants from other countries are the most substitutable, as elucidated by Borjas (1995) and others. Migrants from other countries are highly substitutable because of the overall higher education attainment and English-speaking ability compared to Puerto Ricans and Latin American migrants.

Table 2: Original Regression Results with years

	(1)	*(2)*	*(3)*
Natives	1.123374	1.607639	1.621242
	(.0115895)	(.0109374)	(.0109157)
Puerto Ricans	0.846375	1.383488	1.39216
	(.025385)	(.0238512)	(.0238007)
Latin Americans	0.5079965	1.199575	1.199857
	(.0125192)	(.0119241)	(.0118987)
Other	1.059079	1.442102	1.46136
	(.0123615)	(.0116358)	(.0116141)
*Years since migration * PR*	0.0017799	0.0037165	0.0036731
	(.0008124)	(.0007621)	(.0007605)
*Years since migration * LA*	.5079965	0.0089221	0.0090702
	(.0125192)	(.0002739)	(.0002733)
*Years since migration * Other*	.0051619	0.006366	0.0062204
	(.0001983)	(.0001861)	(.0001857)
Age	Yes	Yes	Yes
Age Squared	Yes	Yes	Yes
Educational Cohorts	-	Yes	Yes
Black	-	-	Yes

Table 2- Source: 2000 U.S. Census 5% Public Use Microdata Sample.
Sample Size: 1,226,289
Regression Standard error in parenthesis
All variables are statistically significative at the 1% level unless stated by the usual criteria:
* p-value<0.1; ** p-value<0.05; *** p-value<0.01

The assimilation rates for migrants from all other source countries is consistent with results from previous studies performed by Buitrago 2009 and Borjas 1995; that lower skilled Latin American migrants, despite experiencing an initial wage penalty, assimilate quicker than other migrants. Furthermore, the longer any migrant resides in the US they will experience a lesser wage penalty over time. This theory is supported by Figure 3 which corresponds to increased English proficiency over time. The assimilation rate for Latin American immigrants (0.00907%) (α_{14}) is the highest compared to migrants from Puerto Rico (0.0036731). Latin American migrants possess a greater potential return on migrating due to their lower education and lower English-speaking ability. As aforementioned English-speaking ability improves for all migrant the longer they reside in the US, combined with lower overall education Latin American migrants will experience the largest return due to improving upon these skills. This theory is further supported by the Puerto Rican interaction variable (α_{13}) which is the lowest compared to the other two groups (0.0036731). Puerto Ricans have the lowest marginal return to resettlement because of higher English-speaking ability and comparable education systems. Thus Puerto Rican migrants have less potential for faster wage growth compared to Latin American migrants. This is further supported by the Latin American dummy variable (α_5) that displays the lowest contribution to wage out of the three groups while the Puerto Rican dummy variable (α_6) and the other source country dummy variable (α_7) are comparable and higher compared to the Native dummy variable (α_4).

6. Conclusion

Results from the regression indicate that the differences in human capital, human capital transferability and English-speaking ability are correlated with wage penalty and wage assimilation experienced by immigrants. Immigrants from Latin America assimilate fastest into the US labor market compared to Puerto Rican migrants and immigrants from other countries; this finding indicates the potential to increase the aforementioned skills is crucial to earning higher wages faster than other groups. Latin Americans have the highest wage penalty compared to Native workers this finding indicates a penalty for the lower skills compared to other groups. Puerto Ricans have the lowest wage assimilation compared to the other migrant groups, this is due to their high degree of human capital transferability, which is unique to this particular migrant group, moreover, Puerto Ricans have the highest English proficiency in Latin America and an average level of education similar to US natives. While this study cannot claim that human

capital transferability is causal to immigrant wage penalty nor wage assimilation. It is evident that English-speaking ability, and education are significant to determining the future wage and wage assimilation of a migrant.

7. References

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8. Appendix

Table 3: Variable Descriptions

Dependent Variable	***Dependent Variable Description***
log(hourlywage)	Natural logarithm of an individual's hourly wage in the year 1999. Computed by dividing total pre-tax income of 1999 by the product weeks worked in 1999
	Independent Variables Descriptions
Independent Variables	
Age	Reports individual's age in years
Agesq	Individual's age squared
Black	Dummy Variable 1=individual is black
Lamerican	Dummy Variable 1=individual migrated from a Latin American country (not Puerto Rico)
Puerto Rico	Dummy Variable 1=individual migrated from Puerto Rico
Other	Dummy Variable 1=individual migrated from a non-Latin American country
Cohort	Set of dummy variables describing immigrants according to their year of arrival *Cohort 1:* 0 to 5 years since arrival individuals arrived between 1995 and 2000 *Cohort 2:* 6 to 10 years since arrival individuals arrived between 1990 and 1994 *Cohort 3:* 11 to 15 years since arrival individuals arrived between 1985 and 1989 *Cohort 4:* 16 to 20 years since arrival individuals arrived between 1980 and 1984 *Cohort 5:* 21 to 25 years since arrival individuals arrived between 1975 and 1979 *Cohort 6:* 26 years since arrival individuals arrived before 1974
Educ	Set of dummy variables describing immigrants according to their highest educational level attained *No School:* 1=individual has no education *1 to 8 years:* 1=individual has 1 to 8 years of education *9 to 11 years: 1*=individual has 9 to 11 years of education *High School:* 1=individual has a high school diploma *Some College:* 1=individual has 1 to 3 years of college education (no diploma) *College or more:* 1=individual has a college degree or more