

**EDUCATION, MIGRATION, AND  
EARNINGS OF PUERTO RICANS ON THE  
ISLAND AND U.S. MAINLAND:  
A SYNTHETIC COHORT ANALYSIS,  
2006-2011**

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# Introduction

- In Puerto Rico, the Great Recession “started earlier and was much steeper than that on the U.S. mainland” (NY Fed 2012:4), and was compounded by a fiscal crisis and other deteriorating conditions.
- These conditions have led to an exodus of Puerto Ricans from the island.
- The population in the Commonwealth of Puerto Rico fell on net by 5.6% between 2006 and 2011.

- Given its severity, the time around the recession is a “natural experiment” to analyze skill-related changes in the net migration of Puerto Ricans.
- The importance of studying Puerto Ricans is made clear when considering they are the second largest Hispanic group.
- There are now more Puerto Ricans living on the mainland than the island (4.9 versus 3.7 million).
- Their poverty rates are also quite high, on both the island and mainland.

- Using ACS and PRCS data, we examine skill-related changes for four groups of Puerto Ricans through synthetic cohorts.

*Observed* = education levels

*Unobserved* = unexplained earnings differences with non-Hispanic mainland workers

- Average education levels fell among island-born Puerto Ricans on the mainland.
- But their relative earnings also improved, which was not the case for those on the island.

# Economic Crisis in Puerto Rico

## ***Weak Labor Market***

- Island-born Puerto Rican LFP rates:  
46.2% in 2006, but 44.7% in 2011 on island;  
52.5% in 2006, but 51.7% in 2011 on mainland.

## ***2006 Fiscal Crisis In Puerto Rico***

- 7.0% sales tax (from 0%) imposed in 2006  
(*Impuesto a las Ventas y Uso* - IVU)
- Regressivity may have led to outmigration of  
low- to medium-income (skill) groups.

- During this crisis, the Puerto Rican government also reduced public-sector jobs.
- *Our estimates:* 16% loss (“state”) and 8.7% loss (local) = 40,000 total loss in public-sector jobs.
- The presence of middle- and low-skilled workers in sub-federal government jobs fell.

### ***Complete Expiration of IRS Code Section 936***

- Section 936 exempted U.S. corporations from paying income taxes on profits earned from items produced in Puerto Rico.

- These tax breaks were phased out (1996 to 2006).
- *Our estimates:* 27,000 manufacturing jobs were lost in Puerto Rico (20% decline) 2006-2011.
- The displaced workers seem to be middle-skilled workers.

### ***Increasing Returns to Schooling***

- For island-born Puerto Ricans, education returns were 8.6% (island and mainland) in 2006, but 8.9% (island) versus 7.9% (mainland) in 2011.



- This change may have led to net migration of low- to medium-skilled workers from the island.

### ***Job Polarization on Mainland***

- If migration costs inversely relate to skills, the middle-skilled workers should have migrated.
- But the mainland experienced job polarization (loss of middle-skilled jobs), not the island.
- How these changes affected skill-based migration thus becomes an empirical issue.



## ACS and PRCS IPUMS Data

- We use Public Use Microdata Samples of the 2006-2011 American Community Survey and Puerto Rican Community Survey, in the Integrated Public Use Microdata Series ([www.ipums.org](http://www.ipums.org)).
- We construct a synthetic cohort to study four Puerto Rican groups:
  - Island-born, Island Residents
  - Island-born, Mainland Residents
  - Mainland-born, Island Residents
  - Mainland-born, Mainland Residents

*Synthetic cohorts:* Individuals 25 years old in 2006 can be tracked through individuals ages:

- 26 in 2007
- 27 in 2008
- 28 in 2009...

Usually excluding immigrants who arrived to the U.S. after 2006.

- Migration between Puerto Rico and the mainland is not an issue, given the PRCs.
- Our synthetic cohort includes individuals ages 25-59 in 2006, 26-60 in 2007, ... 30-65 in 2011.

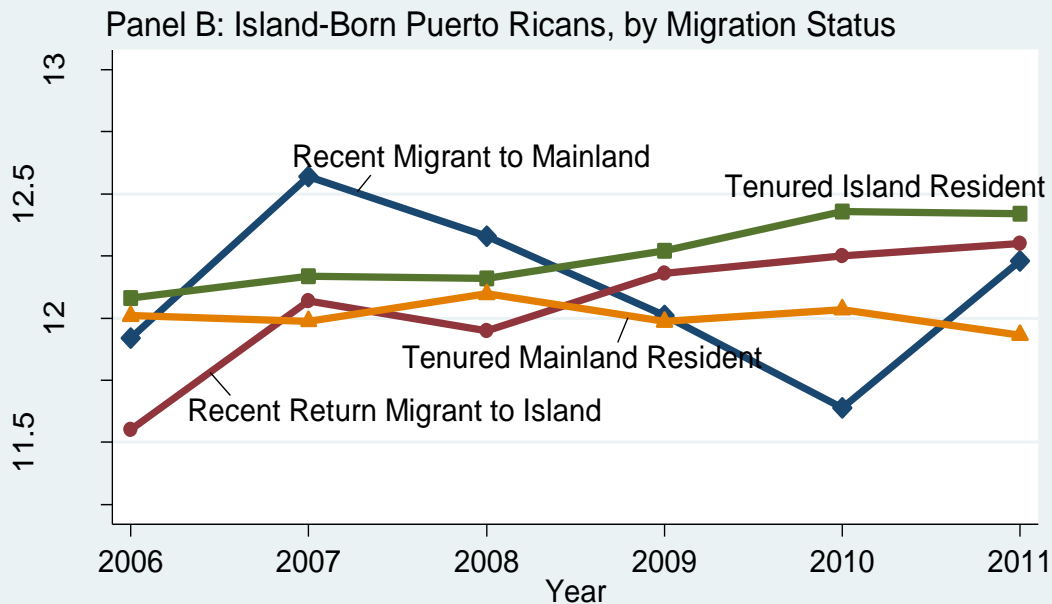
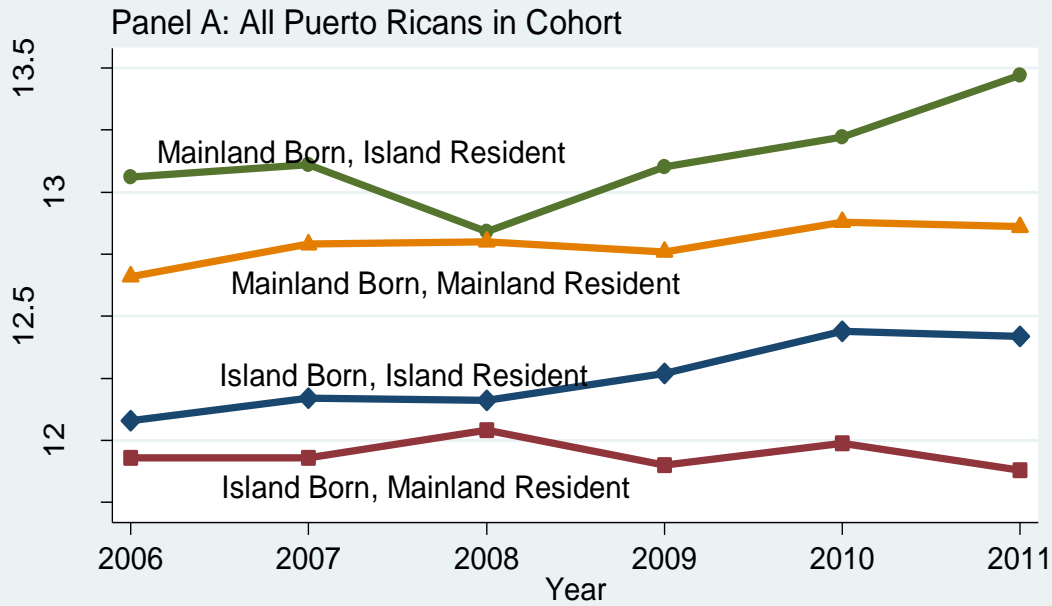


Figure 1:  
Average Schooling Levels of Puerto Ricans in the Synthetic Cohort: 2006-2011, by Birthplace and Residence

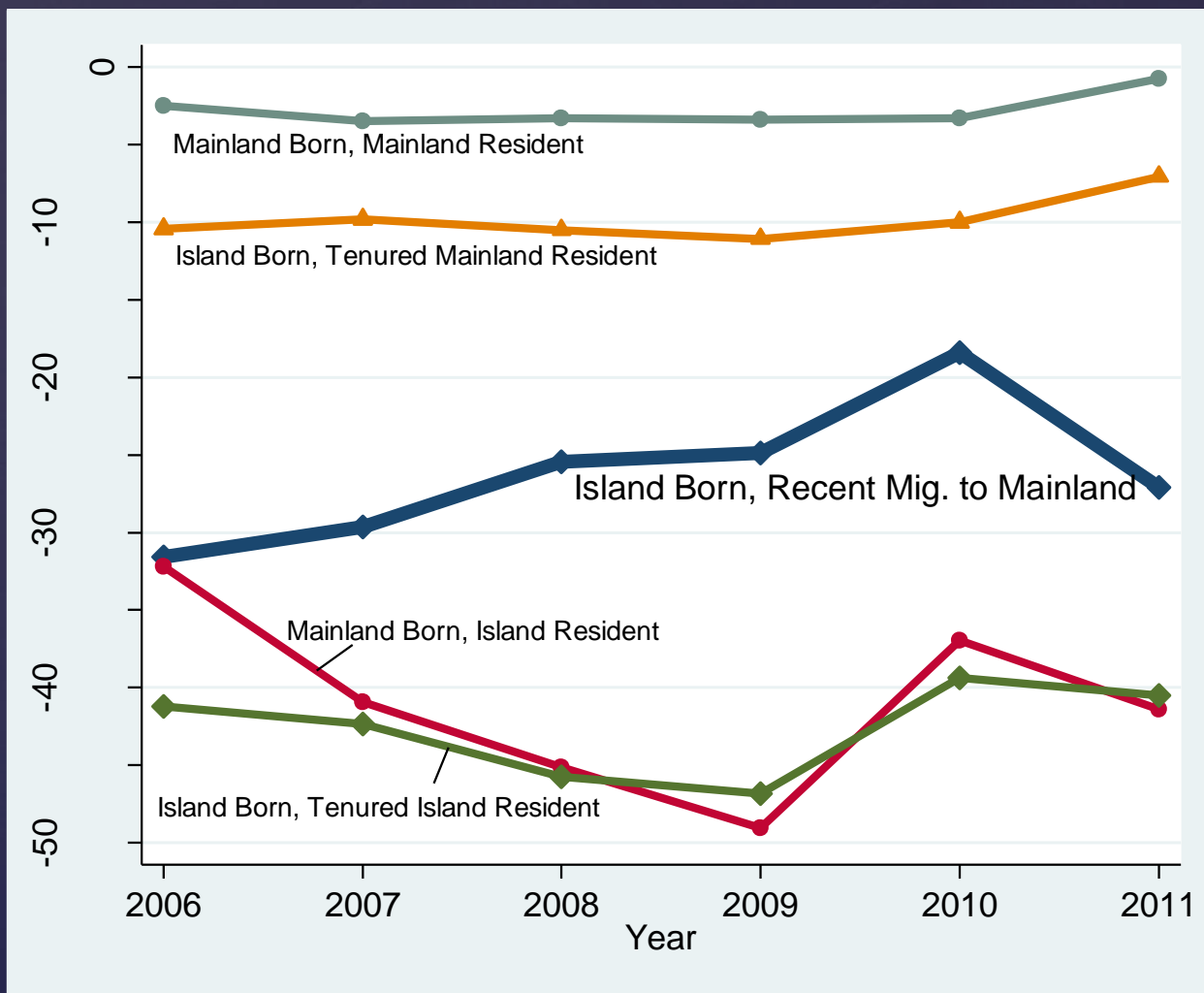
# Methodology and Results for Unmeasured Skills (via Unexplained Earnings)

- Using the Oaxaca-type earnings decomposition technique, for non-Hispanics workers on the mainland, we first estimate:

$$\ln(\text{Earnings})^{NH} = \chi^{NH} \beta^{NH} + e^{NH}.$$

- Imputing Puerto Rican earnings using  $\beta$  estimates, we then calculate the unexplained earnings gaps *vis-à-vis* mainland-resident non-Hispanics.

Figure 2: Unexplained Earnings Differences between Puerto Ricans and Non-Hispanic Mainland Workers in the Cohort: 2006-2011



# Summary and Concluding Remarks

- The timeframe 2006-2011 provides an ideal backdrop to study how deteriorating economic conditions affect skill levels in net migration flows between Puerto Rico and the continental U.S.
- Our results are mixed.
- Puerto Rico appeared to experience a “brain gain” in terms of observable skills (measured by education).
- But the island seemed to have a net loss of unobservable skills (unexplained earnings gaps).

- One potentially alarming characteristic of the Puerto Rican labor market, should it continue, is the low labor force participation rate.
- In addition to discouraged worker effects, the island's income tax structure might affect work incentives (e.g., lack of EITC).
- A restructuring of income taxes might generate higher labor force participation in Puerto Rico, while yielding poverty-reducing outcomes.
- We expect such changes to improve the average socioeconomic status of Puerto Ricans.



*Thank you.*

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