

Earning Trajectories of High-Educated Immigrants: Does Place of Education Matter?

Neeraj Kaushal

Columbia University & NBER

Objective

- Study the effect of post-migration education on earnings
- Study if outmigration of high educated immigrants is selective on economic performance in the US

Previous Research – immigrant earnings trajectories

- Large literature on immigrant earnings ‘assimilation’

Studies using cross-sectional data

Chiswick (1978) - Period of arrival OR years since arrival?

Borjas (1985, 1987) – Synthetic cohort methodology

(Friedberg 1992, LaLonde and Topel 1992, 1997)

- Studies using longitudinal data

US based studies: Borjas (1989), Hu (2000), **Duleep and Dowhan (2002)**,
Lubotsky (2007)

Studies on other countries: Beenstock et al. (2005), Beenstock (2006), Hum
and Simpson (2004)

Issues

- Bias in cross-sectional analysis
 - selective emigration
 - sample selectivity
- Bias in longitudinal analysis
 - selective attrition
 - emigration before the first wave
 - emigration after the first wave

Previous research: effect of place of education on earnings trajectories

- US research imputes variable on place of education

Chiswick (1978), Schoeni (1997), Zeng and Xie (2004) Bratsberg and Ragan (2002)
Friedberg (2000): Israel Census data

- Problems with imputation:

Education in US = age at arrival – (years of schooling + 6)

- Evidence of data used in this analysis: The imputed measure coded 34 percent of foreign-born persons who received US schooling as having no U.S. schooling and about 8 percent without US schooling as having U.S. education.
- Age at arrival may have an independent effect

Data

- National Survey of College Graduates
 - survey of persons with at least a BA degree.
- Longitudinal NSCG: 1990 1993, 1995, 1997, 1999
 - a subsample of the 1993 survey of NSCG, who had at least one science and engineering (S&E) degree, or worked in an S&E occupation when first contacted in 1993, were interviewed in three follow up waves in 1995, 1997 and 1999. Earnings data are also available for 1990 from the 1990 census.
- Data on education history and career paths of college educated persons living in the US.

Empirical Model

$$\begin{aligned} \ln I_{it} = & X\beta + \alpha_{n1}Age + \alpha_{n2}Age^2 + \alpha_{n3}Age^3 + \alpha_{n4}Age^4 + \\ & \alpha_{f1}Age * Im + \alpha_{f2}Age^2 * Im + \alpha_{f3}Age^3 * Im + \alpha_{f4}Age^4 * Im + \\ & \gamma_1YSI + \gamma_2YSI^2 + \gamma_3YSI^3 + \gamma_4YSI^4 \\ & + \lambda_k + \lambda_t + \lambda_c + u_{ikt} \end{aligned}$$

Assimilation rate :

$$\begin{aligned} \frac{\partial \ln I_f}{\partial Age} - \frac{\partial \ln I_n}{\partial Age} = & \alpha_{f1} + \gamma_1 + 2(\alpha_{f2}Age + \gamma_2YSI) + \\ & 3(\alpha_{f3}Age^2 + \gamma_3YSI^2) + 4(\alpha_{f4}Age^3 + \gamma_4YSI^3) \end{aligned}$$

Estimated Earnings Functions, NSCG1990, 2003

	Men	Women
Foreign born	-0.093***	-0.034*
	(0.028)	(0.020)
Foreign-born* US educated	-0.054***	0.028*
	(0.017)	(0.016)
Foreign-born*no US education	-0.163***	-0.135**
	(0.058)	(0.063)
Foreign born*US-educated	-0.089**	0.073***
	(0.035)	(0.023)
Foreign-born* No education in US	-0.331***	-0.095
	(0.091)	(0.092)
Foreign born*US-educated*per capita GDP in country of birth	0.005	-0.008***
	(0.003)	(0.003)
Foreign born*No US-education*per capita GDP in country of birth	0.023***	-0.006
	(0.006)	(0.006)

Results from Cross-sectional analysis

- Earnings of foreign-born men are 9% less than earnings of native men; and earnings of foreign-born women are 3% less than those of native women.
- Place of education matters. Gap in earnings is significantly less for persons who acquired education in the US, and in fact, foreign-born US educated women on an average earn 3% more than US born women.
- The earning disadvantage for having no post-migration education is higher among men from lower income countries.
- Rewards for US education are higher for women from low-income countries.

Longitudinal Analysis: Relative Log Earnings of Foreign- Versus US-born Men, 25 to 55 years in 1990)

	Foreign-born with US-based education versus US born		Foreign-born with no US-based education versus US born	
	1990	1999	1990	1999
Arrival year	1990	1999	1990	1999
Pre-1970	0.06+	0.09+	0.11+	0.24+
1970-1979	-0.08+	-0.03	-0.06+	-0.09
1980-1990	-0.22+	-0.03	-0.22+	-0.07

Longitudinal Analysis: Relative Log Earnings of Foreign-Versus US-born Women, 25 to 55 years in 1990)

	Foreign-born with US-based education versus US born		Foreign-born with no US-based education versus US born	
	1990	1999	1990	1999
Pre-1970	0.06	0.11+	--	--
1970-1979	0.10+	0.21+	0.0043	-0.03
1980-1990	-0.19+	0.19+	-0.32+	-0.10+

Effect of US-based Education on Earnings of the Foreign-born Men: Fixed Effects Models, 1990, 1995, 1997, 1999

		US- educated	No US education
Foreign-born Men	Earnings gap ($\ln W_f - \ln W_n$) in 1990	-0.05	-0.16
	5 years since arrival	0.041***	0.034***
		(0.006)	(0.006)
	15 years since arrival	0.004	-0.011***
		(0.003)	(0.006)
Foreign-born women	Earnings gap ($\ln W_f - \ln W_n$) in 1990	0.02	-0.17
	5 years since arrival	0.052**	0.053***
		(0.015)	(0.013)
	15 years since arrival	0.028***	0.002+
		(0.006)	(0.006)

Is attrition selective?

Is attrition selective?

- Stayers: Respondents present in all four waves of 1993 survey
- Leavers: Exited the survey after 1995

Use 1990-1995 earnings data to study the earnings trajectories of leavers and stayers.

- i. Do stayers have higher relative earnings than leavers?
- ii. Is there any difference in earnings at arrival of stayers versus leavers?
- iii. Do stayers have higher assimilation rate than leavers?

Estimated Earnings Functions of S&E Professionals, NSCG 1990-1995: Longitudinal Analysis

	Men	Women
Foreign-born	-0.192***	-0.222***
	(0.054)	(0.044)
Stayers	0.037***	-0.028***
	(0.001)	(0.003)
Foreign-born*stayer	0.051***	0.071**
	(0.017)	(0.030)
Foreign-born* Education in US	0.116**	0.203***
	(0.049)	(0.041)

Longitudinal Analysis: Assimilation rate of Foreign-born Stayers versus Leavers: 1990-1995

	Men		Women	
	Stayers	Leavers	Stayers	Leavers
5 years since arrival	0.033***	0.038***	0.047***	0.050***
	(0.007)	(0.007)	(0.009)	(0.014)
15 years since arrival	0.004	-0.007	0.015*	0.005
	(0.004)	(0.006)	(0.006)	(0.012)

Conclusions

- Sample attrition among foreign-born persons is associated with success in the labor market: those who experience a relatively slower earnings growth are more likely to exit the sample.
- Earnings assimilation rates based on longitudinal data may contain an upward bias.