

ABSTRACT

Previous studies have suggested that the wage gap between immigrants and the native-born can be accounted for by human capital factors including education and work experience and more importantly where they are acquired. However, current Canadian economic immigration policies do not consider either a potential immigrant's location of birth or their location of study.

In this paper, we study the effects of the interaction between a worker's location of birth and location of study on their wage with data from the 2011 National Household Survey. Using both OLS and median regression LAD, performed in STATA, we show that:

- (1) location of birth is generally not indicative of worker's earning
- (2) without the interactions, all foreign degrees lead to a lower wage compared to Canadians, with a U.S. degree being the least punitive
- (3) a U.S. degree would lead to a wage premium for workers from some countries, and
- (4) when a worker from a non-traditional foreign student source country receives a degree in a culturally and geographically distant location, there is a significant wage premium.

INTRODUCTION

Research Question: How the interaction of the location of education and the location of birth affects earnings of workers?

Motivation: Canadian economic immigration system awards

- Additional points for Canadian degrees.
- Same points for foreign degrees regardless where it is obtained.
- No points for country origin.

DATA

- Our data comes from the **2011 National Household Survey**.
- Voluntary cross-sectional data for 21% of population (Canadian citizen, landed immigrants, and non-immigrants).
- Restricted to 18-64 years old / degrees higher than high school / full-time job / positive income.
- Includes education level, work experience, years since immigration, knowledge of official languages and gender.

Top Immigration Source Countries and Locations of Study

Location of Study	Canada	United States	Other Americas	Europe	East Asia	South Asia	Other	Total
Philippines	4.98	2.55	0.03	0.14	0.09	40.44	0.08	8.83
India	5.69	8.02	0.06	1.02	0.04	35.82	0.65	8.70
China	6.94	8.67	0.12	1.37	61.87	0.23	0.47	8.53
United Kingdom	8.99	5.20	0.06	17.39	0.00	0.03	0.55	6.63
Hong Kong	6.27	6.94	0.06	0.85	9.40	0.05	0.41	3.97
Total (Top 5)	32.86	31.38	0.34	20.76	71.41	76.57	2.15	36.66
United States	4.11	63.74	0.09	0.24	0.00	0.00	0.10	3.34
Other Americas	15.28	13.28	98.75	1.26	0.01	0.04	0.31	11.39
Europe	22.09	11.44	0.46	67.38	0.12	0.01	5.90	19.82
Africa	8.95	9.11	0.24	5.03	0.07	0.41	47.91	8.56
East Asia	3.34	10.24	0.06	0.28	27.61	0.00	0.11	3.99
South Asia	17.47	24.55	0.15	5.29	0.77	22.97	43.62	16.23
Total (Outside Top 5)	67.14	68.62	99.66	79.24	28.59	23.43	97.85	63.34
Grand Total	46.75	2.15	3.81	13.05	7.84	15.87	7.19	100.00
Observations	40,125	1,845	3,274	11,204	6,732	13,622	6,172	85,837

Note: The columns indicate the percentage of immigrants from each listed source countries/regions who acquired their highest post-secondary degree in the indicated location according to the 2011 NHS

METHODOLOGY

Model

Based on the empirical immigration framework used by Fortin et al (2016) we add the interaction of "location of birth" and "location of Study". We have:

$$\ln w_i = \alpha_c + \alpha I_i + X_i' \beta + \lambda BL_i + \delta SL_i + \gamma BL_i * SL_i + u_i$$

$\ln w_i$: the logarithm of wage of worker i

I_i : indicates if the person is an immigrant

X_i : vector of socioeconomic characteristics incl. education/work experience/language/gender.

BL_i : vector of locations of birth

SL_i : vector of locations of highest level of study

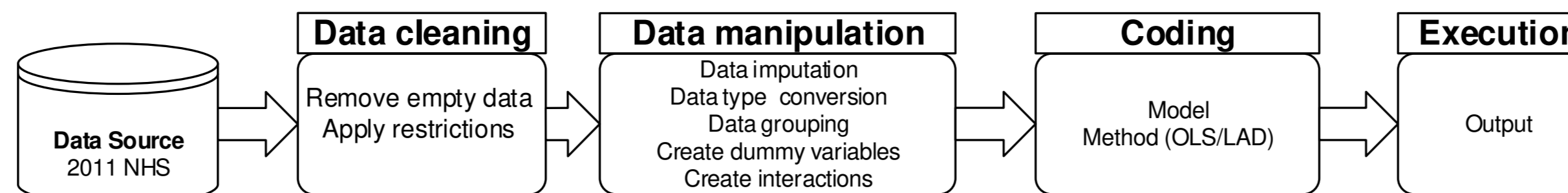
$BL_i * SL_i$: signifies the interaction between locations of birth and locations of study

u_i : the stochastic disturbance term

Estimation

- **Ordinary Least Squares (OLS):** Card (1999) suggests that OLS method, despite its flaws, is a suitable tool with modest bias for estimating the return to education.
- **Least Absolute Deviation (LAD):** noticeable skewness of the distribution of log wage. LAD emphasizes on median instead of average as in the case of OLS. It is more robust to outliers than OLS and would produce great comparison estimates.

STATA Process



RESULTS

Regression Results of Location of Birth Variables

Location of Birth	Excluding Interactions		Including Interactions	
	OLS	LAD	OLS	LAD
Philippines	0.0453 (0.0367)	0.0382 (0.0265)	0.0359 (0.0407)	0.0169 (0.0294)
India	0.0126 (0.0366)	0.0233 (0.0271)	0.0267 (0.0402)	0.0220 (0.0313)
China	-0.0641* (0.0381)	-0.0291 (0.0276)	-0.0546 (0.0415)	-0.0365 (0.0325)
Hong Kong	0.00970 (0.0382)	0.0487* (0.0275)	0.00479 (0.0407)	0.0303 (0.0321)
U.K.	0.193*** (0.0357)	0.174*** (0.0261)	0.116*** (0.0381)	0.109*** (0.0296)
U.S.	0.0325 (0.0374)	0.0152 (0.0287)	0.00257 (0.0400)	-0.00346 (0.0332)
Europe	0.00887 (0.0335)	0.0172 (0.0243)	0.0485 (0.0353)	0.0452* (0.0266)
Other Americas	-0.0551 (0.0356)	-0.0324 (0.0252)	-0.0500 (0.0374)	-0.0445 (0.0277)
Africa	-0.0782** (0.0369)	-0.0530* (0.0274)	-0.0833** (0.0402)	-0.0653** (0.0293)
East Asia	-0.149*** (0.0431)	-0.122*** (0.0326)	-0.0910* (0.0498)	-0.0755* (0.0393)
South Asia	-0.0826** (0.0353)	-0.0521** (0.0263)	-0.0473 (0.0375)	-0.0519* (0.0288)

- Mostly statistically insignificant
- Wage premium: UK/lowered if incl. interaction
- Negative impact: origin of Africa, East Asia, and South Asia. With interaction, impact lessened except for Africa which worsens

Regression Results of Location of Study Variables

Location of Study	Excluding Interactions		Including Interactions	
	OLS	LAD	OLS	LAD
U.S.	-0.0808*** (0.0134)	-0.0742*** (0.0116)	-0.0211 (0.0186)	-0.0151 (0.0152)
Europe	-0.182*** (0.0254)	-0.145*** (0.0195)	0.0197 (0.0351)	0.0162 (0.0310)
Other Americas	-0.233*** (0.0213)	-0.223*** (0.0170)	-0.317* (0.181)	-0.130 (0.0854)
East Asia	-0.302*** (0.0152)	-0.319*** (0.0135)	-0.237 (0.265)	0.0241 (0.0799)
South Asia	-0.141*** (0.0194)	-0.109*** (0.0166)	-0.419** (0.187)	-0.535*** (0.0375)
Other	0.135 (0.0894)	0.0401 (0.0835)	-0.0725 (0.0472)	-0.0118 (0.0120)

When interactions are excluded:

- All statistically significant results are negative
- Foreign degrees are correlated with lower wages
- U.S. degree gives smallest negative effect

When interactions are included:

- Most statistical significance disappears except South Asia
- Most of the location of study effect comes from interactions

RESULTS

Regression Results of Interaction Variables with Six Locations of Study

Location of Birth	United States		Europe		Other	
	OLS	LAD	OLS	LAD	OLS	LAD
Philippines	0.101 (0.102)	-0.0304 (0.0246)	-0.341 (0.270)	-0.113*** (0.0354)	-0.402 (0.294)	-0.694*** (0.0804)
India	0.00787 (0.0796)	0.0816* (0.0492)	-0.132 (0.103)	-0.0411 (0.0505)	-0.196 (0.154)	-0.256** (0.110)
China	-0.0378 (0.0908)	-0.0402 (0.0594)	-0.108 (0.0809)	-0.147** (0.0678)	-0.00338 (0.158)	-0.187 (0.148)
Hong Kong	0.00889 (0.0832)	-0.180 (0.223)	0.0674 (0.134)	-0.0414 (0.0403)	-0.485** (0.231)	-0.603 (0.504)
U.K.	-0.0951 (0.141)	-0.0452 (0.0370)	/	/	0.686*** (0.198)	0.338 (0.255)
U.S.	/	/	-0.205 (0.294)	-0.356*** (0.129)	0.252 (0.172)	-0.0754 (1.927)
Europe	0.0838 (0.0787)	0.0971** (0.0462)	/	/	0.149* (0.0775)	0.0604 (0.0517)
Other Americas	0.0331 (0.0830)	0.0995*** (0.0273)	0.0673 (0.0971)	0.0874 (0.105)	0.260 (0.200)	0.169 (0.342)
Africa	0.142 (0.103)	0.139* (0.0812)	-0.0986 (0.0642)	-0.0992* (0.0527)	0.118 (0.125)	-0.0539 (0.104)
East Asia	-0.286*** (0.104)	-0.315*** (0.0342)	-0.473 (0.353)	-0.227 (0.438)	0.394*** (0.0568)	0.150 (0)
South Asia	-0.0105 (0.0667)	0.00952 (0.0467)	-0.223*** (0.0685)	-0.167*** (0.0418)	-0.103* (0.0567)	-0.140*** (0.0512)

- Only US/Europe/Other
- Other includes all but those studied in U.S./Europe
- To eliminate omitted variables problem caused by small number of some unpopular study destinations.
e.g. Brazilian studied in Africa before immigrating to Canada.
- U.S. and Europe are two biggest foreign student destinations among our geographic groups.

- With median regression LAD, U.S. degree gives wage premium for India/Europe/Other Americas/Africa-born.
- Significant wage premium: a worker from non-traditional foreign student source country with education in a culturally and geographically distinct country.
- But reversed effect for those who are from traditional foreign student source country.

CONCLUSIONS

- The inclusion of the interaction variables does not alter relationship significantly per previous studies except knowledge of official language.
- A worker's location of birth largely does not play a significant role in their wage with a few notable exceptions. (U.K. born experiences wage premium).
- Overall, a worker with a foreign degree (regardless where) receives lower wage.
- Punitive effect from a foreign education comes from the interactions between birth location and study location.
- We find that there is no overwhelming evidence to suggest any universally best location of study for a worker in terms of earning potential.
- U.S. degree offers best outcome in certain cases.
- Worker from a non-traditional foreign student source country goes to a culturally and geographically distinct country to study, they would expect to experience a large wage premium.
- The opposite is true for those from traditional foreign student source country.

POLICY IMPLICATIONS

- No preference for country origin since it largely doesn't matter to potential wage in Canada.
- In general, immigrants with foreign degrees are expected to receive lower wages. U.S. degree is the least punitive.
- U.S. degrees should be given preference as U.S. degree has most earning potential for workers with diverse backgrounds.
- Immigrants with diverse background should be prioritized (from non-traditional source but with a degree from culturally and geographically distinct location)

Note: Robust standard errors in parentheses

*** p < 0.01, ** p < 0.05, * p < 0.1

/ Omitted variable based on Home Study

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