Which immigration selection factors best predict the earnings of economic principal applicants?

Evidence from the 2005-2015 landing cohorts

Presentation for the Pathways to Prosperity 2021 National Conference
November 8, 2021

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Background

- This study is a follow-up to an earlier similar study by Bonikowska, Hou and Picot (2015):
  - 1997-1999 and 2002-2004 landing cohorts
  - Earnings in 1998-2010
- Findings of the earlier report served as the technical guide for the development of the Comprehensive Ranking System (CRS) used by the Express Entry immigration management system to rank and screen economic immigrants
- This study updates the empirical evidence to re-evaluate the role of selection factors and to identify emerging important factors in predicting post-immigration earnings using more recent data:
  - 2005-2015 landing cohorts
  - Earnings in 2006-2018

Objectives and methods

- Objectives:
  - What is the relative importance of various human capital factors (at admission) in predicting immigrant earnings?
  - Does this relative importance change between the short, medium and long term?
  - Are there interaction effects between different human capital factors?

- Methods:
  - Estimate OLS regression models of Ln(annual earnings)
  - How much of the total variation in immigrant earnings is accounted for by the selected explanatory variables in the model?
  - Assess the contribution of each explanatory variable to model R-squared ("goodness of fit" measure)
    - Unique contribution (conditional on all other independent variables)
    - Common contribution of variable pairs

Data and variables

Data

- Longitudinal Immigration Database (IMDB-2018)
- Economic Principal Applicants (PAs)
  - Aged 20 to 54 at admission
  - With positive earnings >500 in a given year
- Landing cohorts:
  - 2012-2015: short term (1-2 ysl),
  - 2008-2011: short term (1-2 ysl), medium term (5-6 ysl)
  - 2005-2007: short, medium and long term (10-11 ysl)

Outcome variable: Ln(annual earnings)

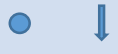
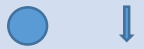
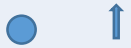
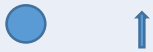
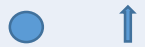
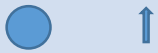
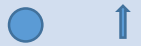
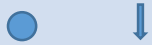
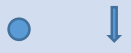
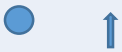
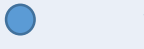
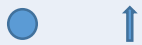
Explanatory variables (measured for PAs at time of admission):

- Age (proxy for foreign experience)
- Educational attainment
- Language (based on mother tongue and knowledge of official languages)
- Years of Canadian work experience prior to landing
- Years of study in Canada prior to landing
- Whether or not had a spouse at admission
- Spousal characteristics: same as above for PAs
- New factor not used in the current CRS: pre-landing Canadian earnings

Results: relative importance of predictors of earnings of economic PAs

Landing year	2012-15	2008-11		2005-07		
Full years since landing in Canada	1 to 2	1 to 2	5 to 6	1 to 2	5 to 6	10-11
R-Squared of the full model	**0.149**	**0.173**	**0.097**	**0.166**	**0.103**	**0.092**
Unique contribution to the R^2						
Age	0.001	0.002	0.007	0.003	0.010	0.020
Education	0.005	0.006	0.007	0.003	0.004	0.006
Language	0.010	0.009	0.009	0.015	0.009	0.006
Canadian work experience	0.075	0.084	0.032	0.053	0.026	0.018
Canadian study experience	0.009	0.023	0.005	0.020	0.004	0.002
Having a spouse at admission	0.006	0.005	0.006	0.005	0.007	0.007
Spouse's education	0.002	0.001	0.001	0.001	0.002	0.001
Spouse's language	0.002	0.002	0.001	0.002	0.001	0.002
Spouse’s Cdn work experience	0.000	0.001	0.001	0.000	0.000	0.000
Spouse’s Cdn study experience	0.001	0.001	0.001	0.001	0.001	0.001
Selected common components’ contribution to R^2						
Age, education	0.000	0.000	0.000	0.000	-0.001	-0.001
Age, language	0.000	0.000	-0.001	-0.001	-0.001	-0.001
Age, Canadian work experience	0.001	0.001	0.001	0.000	0.000	0.000
Education, Language	0.001	0.000	0.000	0.000	0.000	0.000
Education, Canadian work experience	-0.001	0.002	-0.003	0.004	0.002	0.001
Language, Canadian work experience	0.010	0.008	0.004	0.011	0.006	0.004

Factors' relative importance and direction of effect

Factor (at admission)	Short-term (YSL 1-2)	Medium-term (YSL 5-6)	Long-term (YSL 10-11)	Interaction
Age				Cdn work experience Language (short term, more recent cohort)
Level of Education				Cdn work experience Language Cdn study experience
Official Language (OL) Proficiency				Cdn work experience Educational level
Canadian Work Experience				Educational level Age Language Cdn study experience
Canadian Study Experience				Cdn work experience
Having a spouse at admission				

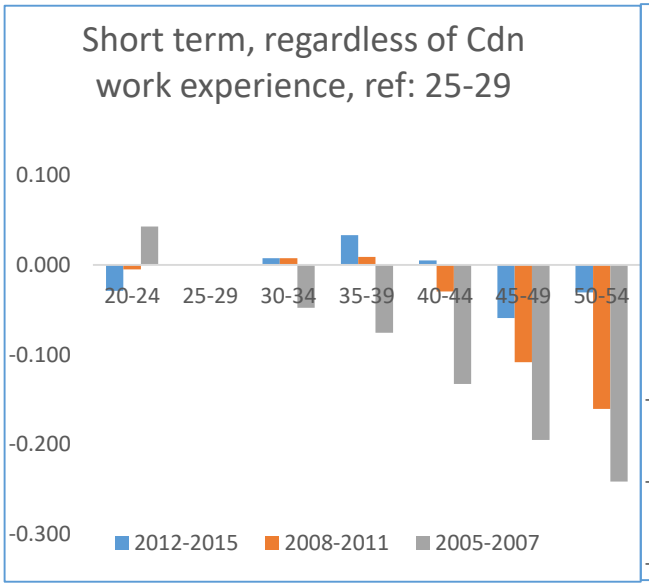
Key interaction effects

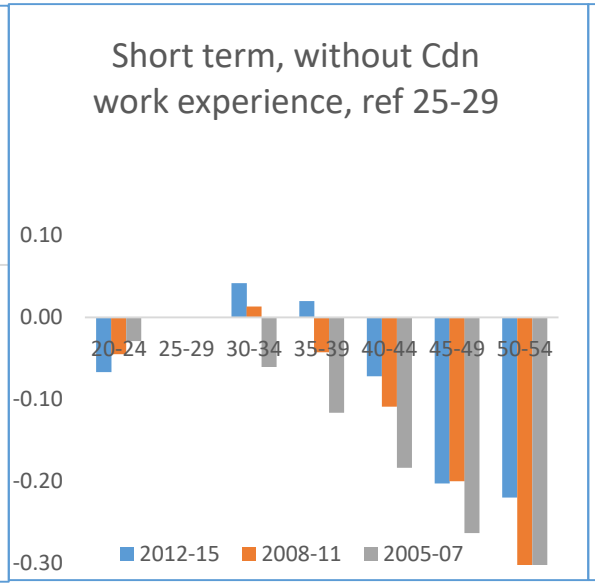
- Pre-landing Canadian work experience and age at admission (a proxy for work experience prior to landing): adds 0.1 to 0.7 percentage points to R^2; greater contribution in shorter term and more recent cohorts
- Pre-landing Canadian work experience and the level of education: adds 0.4 to 0.9 percentage points to R^2 ; greater contribution in shorter term and more recent cohorts
- Language and educational level: adds 0.1 to 0.3 percentage points to R^2, greater contribution for earlier cohorts
- Higher earnings correlated with having the following pairs:
    - Older age at entry and prior Canadian work experience
    - University degree and pre-landing Canadian work experience
    - University degree and strong language skills (long term)

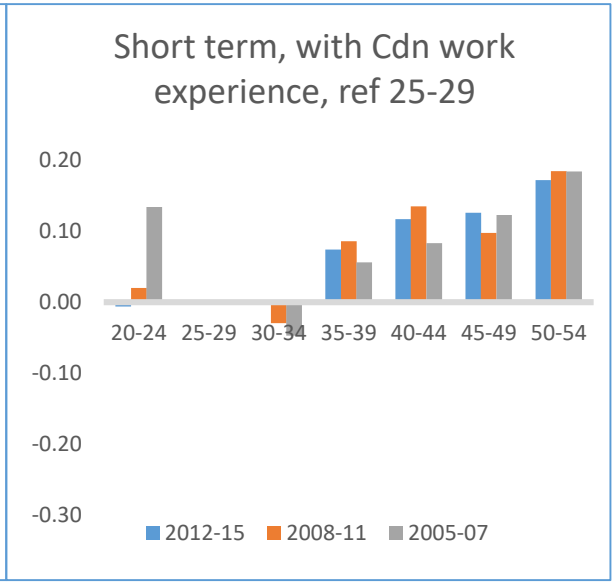
How does pre-landing Canadian work experience moderate the effect of other factors

Landing year	2012–2015	2008–2011		2005–2007		
Full years since landing in Canada	1-2 years	1-2 years	5-6 years	1-2 years	5-6 years	10- 11 years
R^2 : without pre-landing Canadian work experience	0.026	0.038	0.045	0.058	0.043	0.045
R^2: with pre-landing Canadian work experience	0.117	0.164	0.101	0.220	0.118	0.096

Interaction between age at admission and Canadian work experience







How do the results of this study differ from those of the previous study?

- The R^2 values are higher for the later cohorts examined in this study (2005-2007, 2008-2011, and 2012-2015) than for the two cohorts of the earlier study (1997-1999 and 2002-2004)

- Pre-landing Canadian work experience has a much stronger predictive power for the later cohorts (2005-2015) examined by this study

- Level of education has a lower predictive power for the later cohorts than for the earlier cohorts(1997-1999) examined in the previous study

Pre-landing Canadian earnings as a predictor of post landing earnings

- **When pre-landing Canadian earnings are added to the predicting models:**
  - Large increase of R^2, especially for short-term models and for more recent cohorts
    - For short term earnings: R^2 from 16% to 23%
    - The unique contribution by this variable is high at 10.7 percentage point for the 2012-15 cohorts
    - With pre-landing earnings in the model, the unique predictive power of the other variables falls to almost zero
    - For medium and longer term: the predictive power decreases, but still present
  - High pre-landing earnings predict high post-landing earnings
    - PAs with higher pre-landing earnings (e.g., with more than twice the national median annual earnings) earned 3.4 times more than their comparable counterparts with no pre-landing earnings in the short term (2012-2015 cohort)
    - There was little earnings advantage (compared to those with no pre-landing earnings) for those with less than half the national median Canadian earnings prior to entry

Adding pre-landing Canadian earnings to the model

Landing cohort	2012-2015	2008-2011		2005-2007		
Full since landing	**1-2**	**1-2**	**5-6**	**1-2**	**5-6**	**10-11**
R^2 of the full model	**0.257**	**0.252**	**0.143**	**0.210**	**0.127**	**0.108**
Unique contribution from Pre-landing earnings in Canada	**0.107**	**0.079**	**0.047**	**0.044**	**0.025**	**0.016**
Unique contribution from all other factors	**0.013**	**0.019**	**0.025**	**0.027**	**0.030**	**0.038**
Age	0.001	0.003	0.009	0.004	0.011	0.022
Education	0.001	0.002	0.003	0.002	0.002	0.004
Language	0.002	0.004	0.006	0.012	0.007	0.004
Canadian work experience	0.001	0.002	0.001	0.001	0.001	0.000
Canadian study experience	0.001	0.002	0.000	0.001	0.001	0.001
Spouse	0.003	0.003	0.004	0.004	0.006	0.006
Spouse's education	0.001	0.001	0.001	0.001	0.002	0.001
Spouse's language	0.001	0.001	0.001	0.002	0.001	0.001
Spouse Canadian work experience	0.000	0.000	0.000	0.000	0.000	0.000
Spouse Canadian study experience	0.000	0.000	0.000	0.000	0.000	0.000

How do pre-landing Canadian earnings moderate the effect of age and education on earnings?

- Age at admission
  - With high pre-landing Canadian earnings: older workers earned more after landing than younger arrivals, at least in the short term
  - With no or low pre-landing Canadian earnings: immigrants who were older at landing had substantially lower post-landing earnings than those landing in their youth, both in the short and medium term, and in the long term
- Education at admission
  - With high pre-landing Canadian earnings: clear post-landing earnings premium for those with higher educational attainment, in both the short and longer term.
  - With low pre-landing Canadian earnings: earnings premium for higher education in the longer term, not in the short-term
  - With no pre-landing Canadian earnings: no clear pattern observed

Summary: Key predictors of post-landing earnings

- Among current selection factors:
  - Pre-landing Canadian work experience, language at admission, and age at admission are the best predictors of short- and medium-term earnings.
  - Age at admission and pre-landing Canadian work experience are the best predictors of long-term earnings
  - Effect of age and education depend on pre-landing Canadian work experience and language

- Adding pre-landing Canadian earnings
  - Pre-landing earnings is by far the best predictor of post-landing earnings among all variables included in the analysis
  - Adding this factor, improves models' predictive power considerably; contributions of other variables become very small
  - Pre-landing Canadian earnings likely captures a number of important unobserved characteristics