



INTEGRATION  
OF IMMIGRANTS  
PROGRAMME

2007 – 2012

# Differences in Returns to Foreign and Domestic Education in New Zealand

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with

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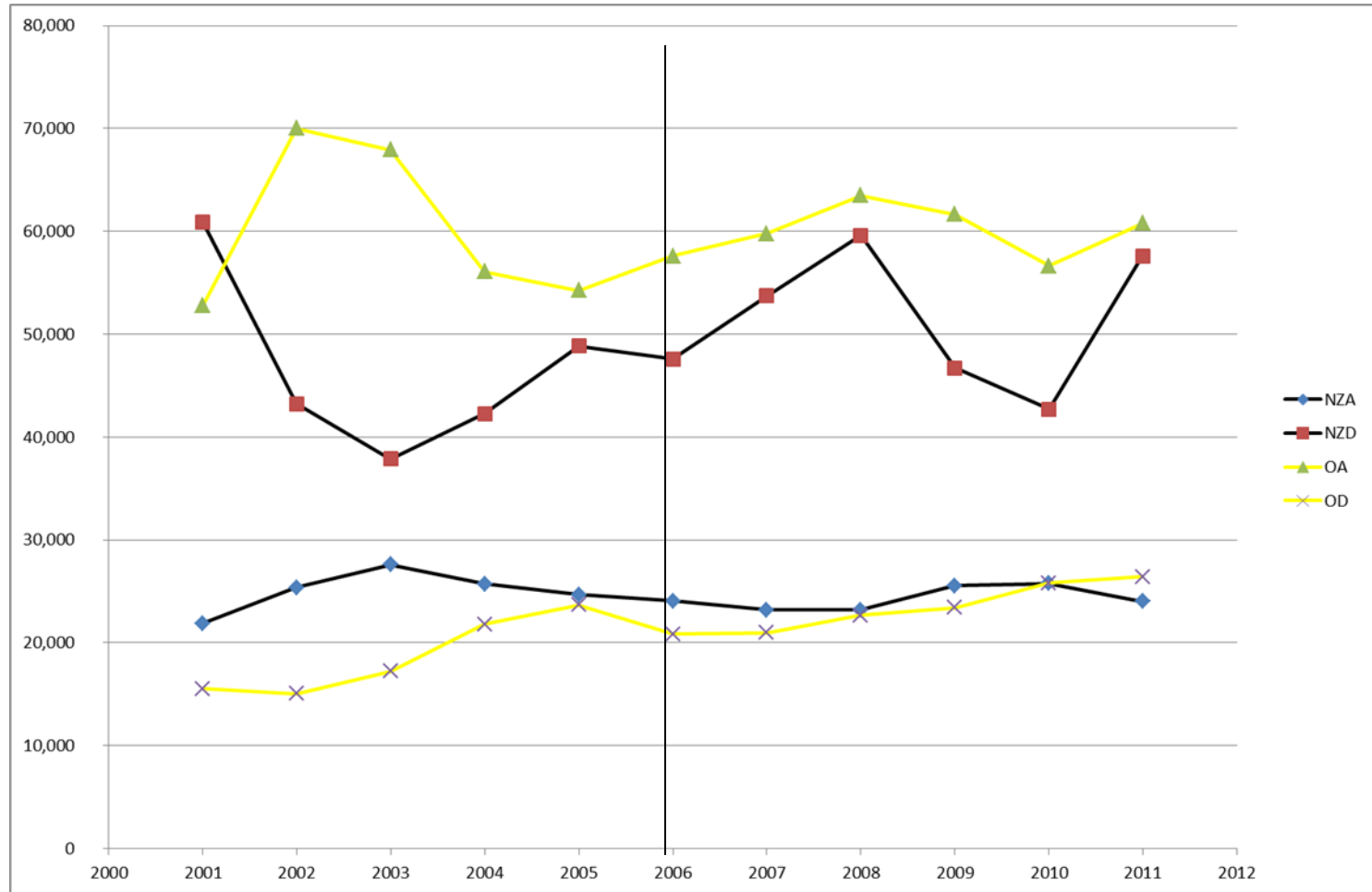
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Background: The share of people in the NZ labour market with *some* foreign education has been increasing

- Immigrants replace New Zealanders leaving: over the last 30 years, for every 10 New Zealanders leaving, 15 immigrants have been recruited to replace them
- The substitution process accelerates the % of population in NZ who were born and at least partially educated abroad, now probably more than one quarter.
- New Zealand has a large diaspora. About 1 in 6 of the global New Zealand born population of about 4 million lives outside NZ.
- However, there is considerable “churning” of the NZ diaspora. About 30-40% or more of PLT departures return eventually. *Most* have gained foreign work experience. *Some* have gained foreign education.

# Permanent & Long-Term Arrivals and Departures of NZ and Other Citizens



# Previous research

- There has been considerable previous research on “economic integration of migrants”, e.g. papers reviewed in Hodgson and Poot (2010)  
<http://www.dol.govt.nz/publications/research/synthesis-research/>
- However, this is the first research to split total education into “education in NZ” and “education abroad”, also for NZ return migrants
- The approach is standard earnings regressions (Mincer)
- Hence, the core question is: How are educational qualifications of an internationally mobile population rewarded in the New Zealand labour market?

# Specification of earning regressions

- Human capital + Other Personal Characteristics
  - **Education** + qualifications
  - Occupation
  - Experience
  - Innate ability
- + Firm Characteristics
- => Productivity
- + Institutions + Markets (incl. industries, location)
- => Earnings (hours worked x hourly wage)

# Data

- Data sourced from the 2006 Adult Literacy and Life Skills survey (ALL), N = 7131
- About one quarter of respondents were foreign born
- Survey conducted in 12 countries (including U.S. & Canada) with questions relating to:
  - Education.
  - Occupation, Industry and hours worked.
  - Health and wellbeing.
  - Literacy, numeracy and computing skills.
  - Social participation.
- For NZ, participants were drawn at random from electoral roll, collection via face to face in-home interviews.

# Previous findings with ALL

- Various papers by David Earle (MoE) show the importance (and interactions!) between skills, qualifications & experience in explaining wages
- E.g. “People with English as an additional language earn less than those with English as a first language even when they have the same level of qualifications and English-based literacy and numeracy” (Earle, 2009)
- Does *where* the education was obtained matter?

# Migrant characteristics

Birthplace	ALL	Census 06	Av. YSM
New Zealand	75.1%	77.1%	0
Overseas pooled	24.9%	22.9%	17.4
Overseas from:			
(1) English speaking countries	10.5%	8.9%	22.5
(2) Continental Europe	1.8%	1.8%	17.5
(3) Pacific Islands	4.9%	3.5%	19.8
(4) Asia	6.9%	6.5%	9.0
(5) MELAA	0.7%	2.2%	6.6



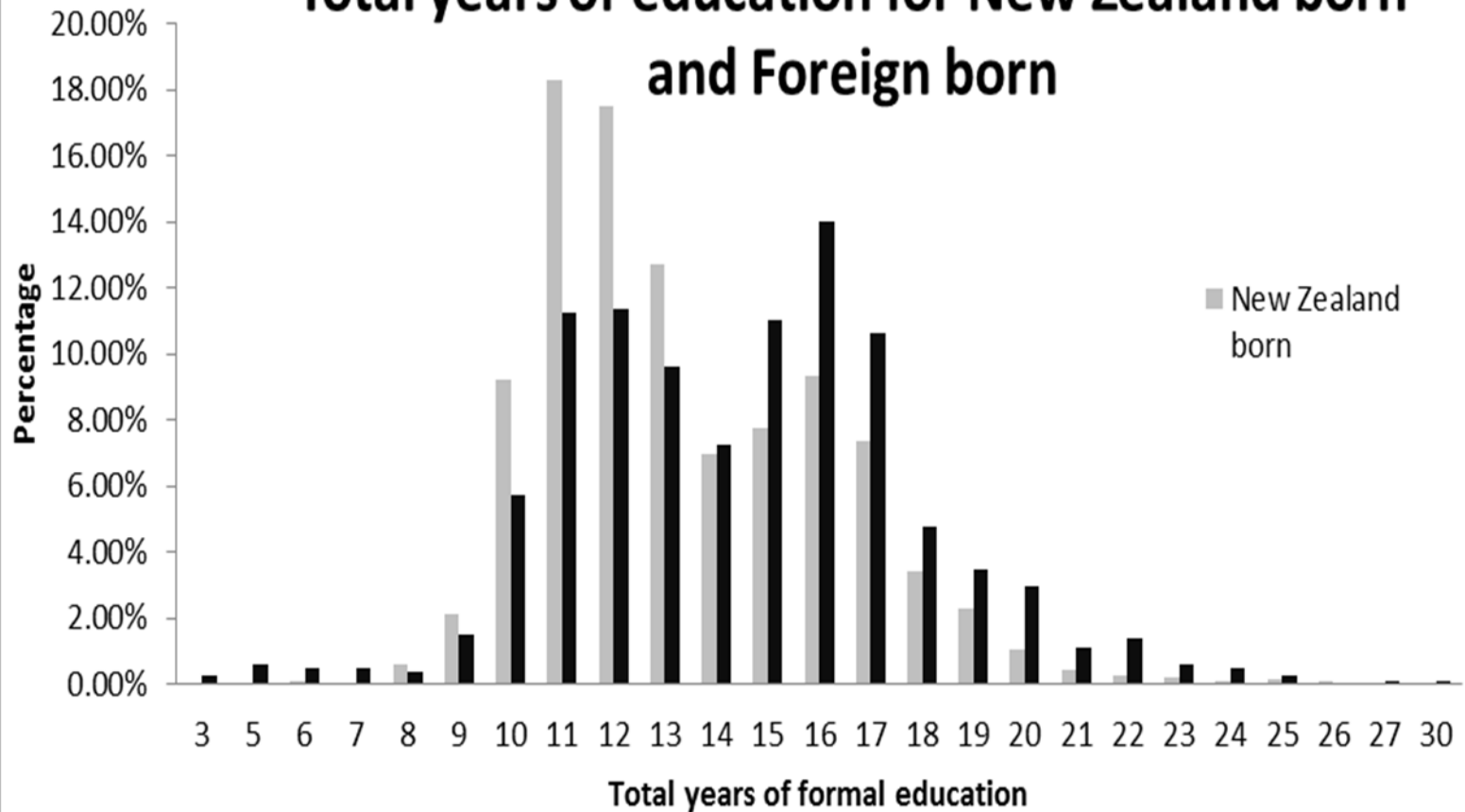
# Descriptive statistics of employed persons: demographic background

variable	New Zealand born			Foreign Born		
	<i>Pooled</i>	<i>Male</i>	<i>Female</i>	<i>pooled</i>	<i>Male</i>	<i>Female</i>
age	40.10	39.51	40.60	40.32	40.14	40.48
male	45.59%	100.00%	0.00%	48.63%	100.00%	0.00%
ysm	N/A	N/A	N/A	17.36	16.96	17.74
children	43.57%	46.40%	41.19%	39.00%	36.76%	41.12%
hh_size	2.94	2.96	2.93	3.34	3.46	3.23
ill_health	17.00%	15.09%	18.60%	14.25%	11.31%	17.03%
nz_euro	79.88%	78.73%	80.84%	21.13%	18.51%	23.60%
maori	13.63%	14.32%	13.05%	0.75%	1.03%	0.49%
pasifika	4.01%	3.94%	4.07%	21.50%	23.14%	19.95%
asian	0.34%	0.50%	0.21%	26.75%	27.25%	26.28%
other	2.14%	2.51%	1.82%	29.88%	30.08%	29.68%
sample size, <i>n</i>	2619	1194	1425	800	389	411

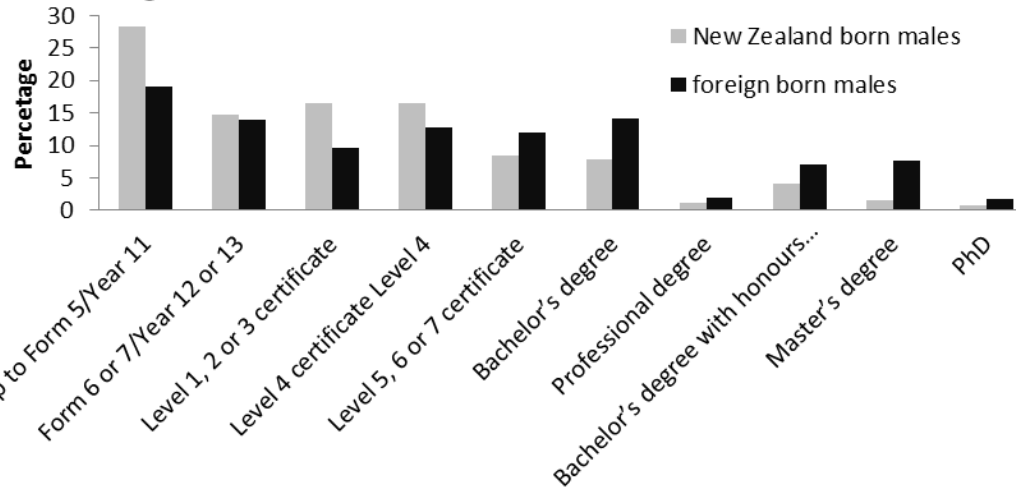
## Descriptive statistics of employed persons: earnings, and other background variables except education

variable	New Zealand born			Foreign Born		
	<i>Pooled</i>	<i>Male</i>	<i>Female</i>	<i>pooled</i>	<i>Male</i>	<i>Female</i>
lnwage	3.20	3.24	3.17	3.21	3.26	3.16
inc_use	56675	66816	48178	59845	66363	53676
hours_year	1830	2100	1603	1858	2017	1707
tenure	6.77	7.56	6.11	5.62	5.96	5.30
part_time	21.63%	8.01%	33.03%	19.42%	9.51%	28.85%
ability1	0.73%	-11.34%	10.86%	-0.70%	-2.17%	0.70%
rural	12.41%	13.99%	11.09%	6.25%	6.68%	5.84%
mumpostsec~1	22.99%	20.90%	24.63%	27.60%	29.31%	26.04%
dadpostsec~1	32.59%	32.21%	32.91%	45.29%	42.30%	48.14%
sample size, <i>n</i>	2619	1194	1425	800	389	411

## Total years of education for New Zealand born and Foreign born

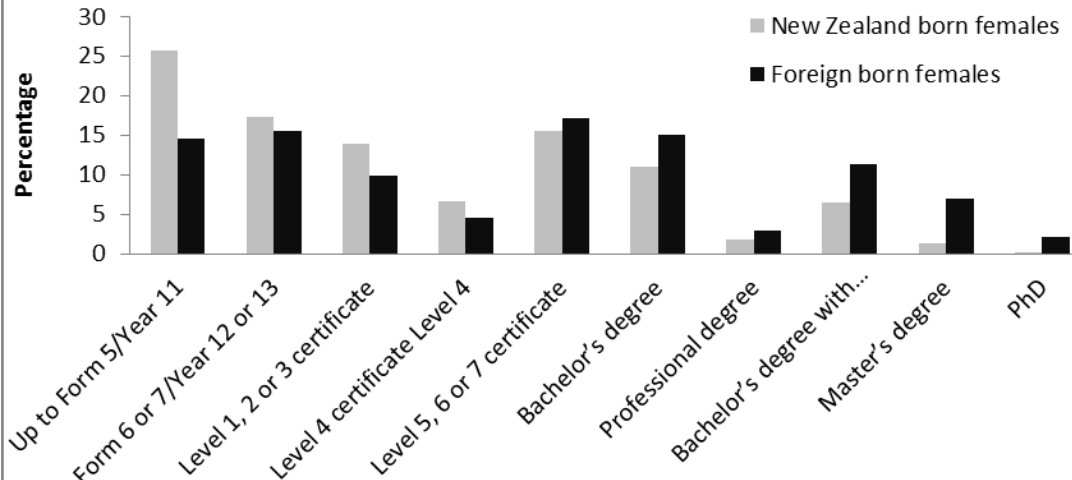


## Highest attained education level - Males



New Zealand education levels

## Highest attained education level - Females



New Zealand education levels

# Employment by industry and occupation

Industry	New Zealand Born		Immigrants	
	<i>Frequency</i>	<i>Percent</i>	<i>Frequency</i>	<i>Percent</i>
Agriculture	153	5.85	31	3.88
Manufacturing	438	16.76	143	17.90
Construction	169	6.47	41	5.13
Trade	707	27.05	212	26.53
Private services	341	13.05	135	16.90
Public services	806	30.83	237	29.66
Total	2614	100	799	100

Occupation	New Zealand Born		Immigrants	
	<i>Frequency</i>	<i>Percent</i>	<i>Frequency</i>	<i>Percent</i>
Manager	256	9.78	61	7.63
Professional	787	30.07	282	35.29
Trade	280	10.70	83	10.39
Service	238	9.09	79	9.89
Administration	413	15.78	120	15.02
Retail	149	5.69	26	3.25
Machine operator	248	9.48	90	11.26
Labourer	246	9.40	58	7.26
Total	2617	100	799	100

## Education in NZ and abroad: NZ born and foreign born

NZ born with ed\_for > 0 (4% of NZ born)

Variable	Obs	Mean	Std. Dev.	Min	Max
ed_nz	226	11.6	5.0	0	22
ed_for	226	3.3	3.2	1	19
ed_tot	226	14.9	3.5	7	25

Foreign born with ed\_for > 0 (84% of foreign born)

Variable	Obs	Mean	Std. Dev.	Min	Max
ed_nz	1429	1.9	3.6	0	21
ed_for	1429	12.5	4.5	1	29
ed_tot	1429	14.4	3.5	3	29

# Income and education by industry and occupation

Industry	New Zealand Born			Immigrants		
	<i>Ed total</i>	<i>Ed foreign</i>	<i>Inc_use</i>	<i>Ed total</i>	<i>Ed foreign</i>	<i>Inc_use</i>
Agriculture	12.14	0.07	53137	13.35	10.54	41924
Manufacturing	12.54	0.09	56200	12.59	9.97	45422
Construction	12.31	0.16	49411	12.65	8.71	57417
Trade	12.62	0.11	42219	14.24	10.01	53817
Private services	14.02	0.10	71262	15.19	11.45	58277
Public services	14.61	0.16	65787	15.83	11.55	77703

Occupation	New Zealand Born			Immigrants		
	<i>Ed total</i>	<i>Ed foreign</i>	<i>Inc_use</i>	<i>Ed total</i>	<i>Ed foreign</i>	<i>Inc_use</i>
Manager	14.49	0.13	68229	15.85	11.80	90903
Professional	15.10	0.13	71524	16.52	11.72	79956
Trade	12.45	0.14	40613	12.58	9.66	51558
Service	12.50	0.13	49210	13.42	9.58	43402
Administration	12.82	0.13	43216	13.98	11.03	47271
Retail	12.39	0.11	32026	13.62	7.85	27318
Machine operator	11.56	0.89	42721	12.14	9.40	40000
Labourer	11.77	0.08	32645	12.07	9.57	35365

# The basic earnings equation and the returns to total education

(1).	Pooled	Males	Females
<b>forborn</b>	-0.152*** (0.038)	-0.114* (0.053)	-0.195*** (0.055)
<b>for_ysm</b>	0.004** (0.002)	0.003 (0.002)	0.005* (0.002)
<b>age</b>	0.055*** (0.006)	0.061*** (0.009)	0.050*** (0.008)
<b>age<sup>2</sup> / 100</b>	-0.059*** (0.007)	-0.063*** (0.010)	-0.055*** (0.010)
<b>Ed_tot</b>	0.062*** (0.004)	0.057*** (0.005)	0.069*** (0.005)
<b>Constant</b>	1.199*** (0.121)	1.152*** (0.170)	1.215*** (0.173)
<b><i>R</i><sup>2</sup></b>	0.117	0.133	0.110
<b><i>n</i></b>	3414	1582	1832

Notes: dependent variable is log hourly wages. Standard errors in parenthesis. \*\*\* Significant at 1%, \*\* significant at 5% and \* Significant at 10%



## Returns to NZ and foreign education

Includes dummies  
for occupations

VARIABLES	(1) NZ born	(2) Foreign born
for_ysm		-0.002 (0.003)
male	0.155*** (0.028)	0.139*** (0.049)
age	0.043*** (0.007)	0.049*** (0.015)
age2	-0.050*** (0.008)	-0.051*** (0.018)
nz_ed	0.028*** (0.005)	0.032*** (0.009)
ed_for	0.033** (0.014)	0.023*** (0.009)
tenure	0.011*** (0.002)	0.013*** (0.004)
ability1	0.006 (0.010)	0.034* (0.018)
hh_size	-0.003 (0.009)	-0.019 (0.015)
ill_health	0.030 (0.033)	-0.057 (0.067)
rural	-0.054 (0.038)	0.106 (0.095)
mumpostsecqual	-0.007 (0.031)	-0.024 (0.056)
dadpostsecqual	0.026 (0.028)	0.150*** (0.051)
Constant	2.059*** (0.154)	1.912*** (0.324)
Observations	2,153	697
R-squared	0.202	0.237

# Sample selection problem

- The total number of respondents is 7131, but earnings regressions are based on at most 3419 respondents:
  - Excludes non-employed and self-employed
  - Excludes those working less than 5 hours per week
- Because earners are not a random sample of all respondents, the coefficients on the latter are a biased estimate of what would apply to the entire population
- The Heckman sample selection model controls for this bias by first modelling the probability of working and then adding an additional variable (the “inverse Mill’s ratio”) to the earnings equation that controls for this omitted information

## Heckman Sample Selection model

VARIABLES	(1) NZ born	(2) select	(4) Foreign	(5) select
male	0.139*** (0.028)	-0.279*** (0.086)	0.103** (0.052)	-0.226 (0.151)
rural	-0.011 (0.041)	-0.369*** (0.056)	0.164* (0.099)	-0.331** (0.137)
hh_size	0.006 (0.010)	-0.000 (0.020)	-0.011 (0.015)	0.042 (0.031)
ill_health	0.059* (0.035)	-0.221*** (0.049)	-0.022 (0.069)	-0.127 (0.092)
age	0.038*** (0.007)	0.055*** (0.010)	0.030* (0.016)	0.104*** (0.019)
age2	-0.041*** (0.009)	-0.084*** (0.012)	-0.026 (0.020)	-0.136*** (0.023)
nz_ed	0.024*** (0.005)	0.035*** (0.007)	0.028*** (0.009)	0.018 (0.011)
ed_for	0.033** (0.014)	-0.003 (0.021)	0.018** (0.009)	0.021** (0.011)
tenure	0.011*** (0.002)		0.012*** (0.004)	
ability1	0.007 (0.010)		0.032* (0.018)	
lambda	-0.181*** (0.064)		-0.320*** (0.116)	
for_ysm			-0.003 (0.003)	
Constant	2.291*** (0.176)	-0.702*** (0.221)	2.570*** (0.405)	-1.682*** (0.401)
Observations	4,661	4,661	1,592	1,592

*Notes:* Standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Regressions include dummies for occupation and region. The probit selection equations include investment income, household size, public income support and ethnicity.

# Conclusions

- Foreign qualifications have lower returns for the foreign born, but higher returns for the NZ born
- OLS somewhat overestimates the returns due to sample selection bias (possibly due to recruitment from electoral rolls and features of the ALL survey)
- The highest education premiums are obtained among NZ migrants returning with foreign qualifications
- The observed differences in returns may still be partially due to unobserved “selection effects” that “sort” the population into migrants and non-migrants (even though ability is measured)
  - Could use pseudo-experimental methods (Studies of Twins, Propensity Score Matching, etc.)

# Broad implications for policy analysis

- Consider barriers to economic integration due to limited recognition of foreign qualifications, workplace discrimination, etc.
- Encourage return migration of NZ born with foreign experience and foreign education
- The issue whether foreign education should be encouraged is complex due to domestic and foreign education externalities, diaspora networks and incidence of return migration

# Example of encouraging diaspora linkages

From

<http://www.frenz.org.nz/Activities/Diaspora/NZinEU.aspx>

“For many New Zealand researchers the inclusion of a period of work in Europe is common, with the expectation that such a stay will develop their international standing and the peer linkages required to support a career back in New Zealand.”

“Whether expatriate researchers intend to return or not, the New Zealand Ministry of Research, Science and Technology (MoRST) wishes to build and maintain links with these researchers.”



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AND SOCIAL SCIENCES  
TE KURA PŪKENGĀ TANGATA