Immigration Wage Effect

A/Professor Sholeh Maani

The University of Auckland

s.maani@auckland.ac.nz

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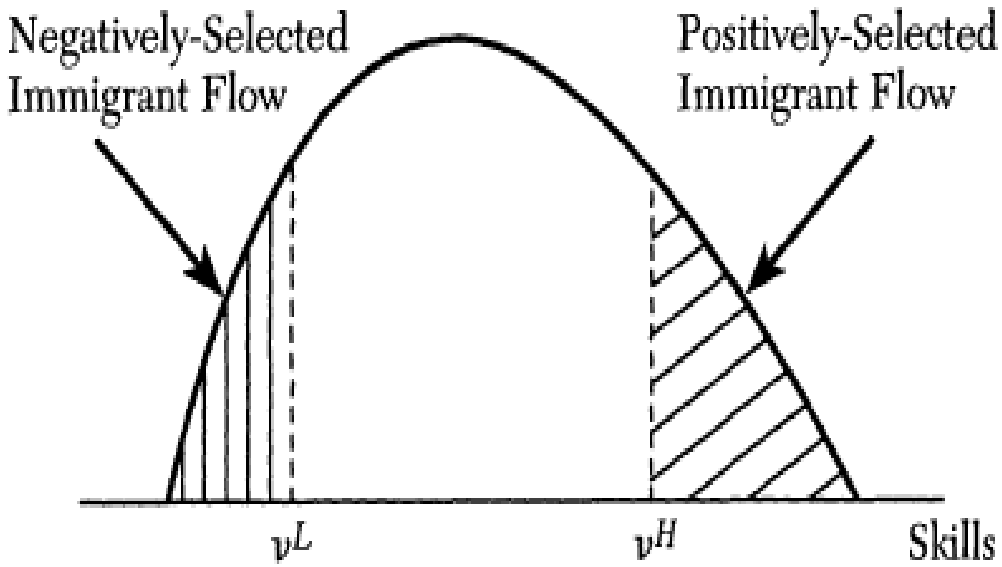
Introduction

1. Human capital and skills as labour market determinants
   - Post-compulsory and higher education
2. Labour movements
3. Role of immigration and skill selection

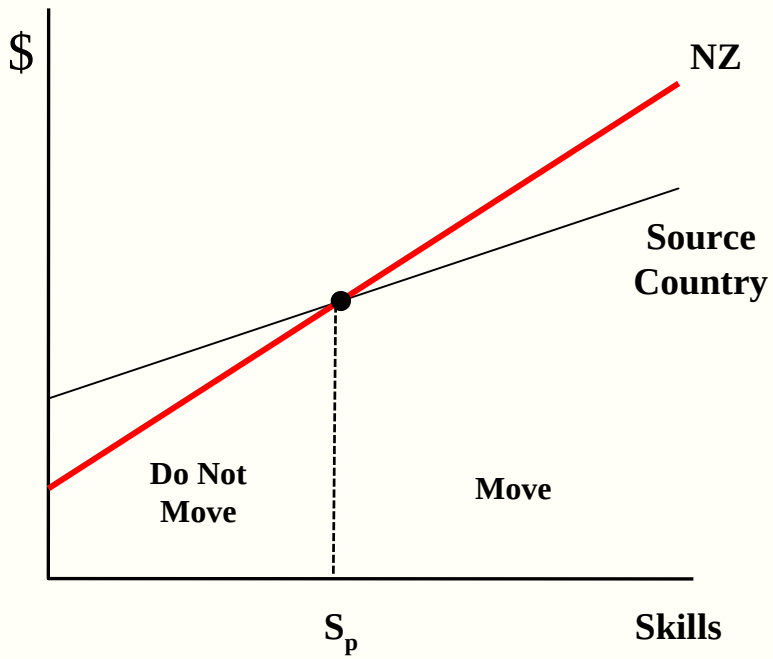
Immigrant skills and immigrant Selection

- Roy Model

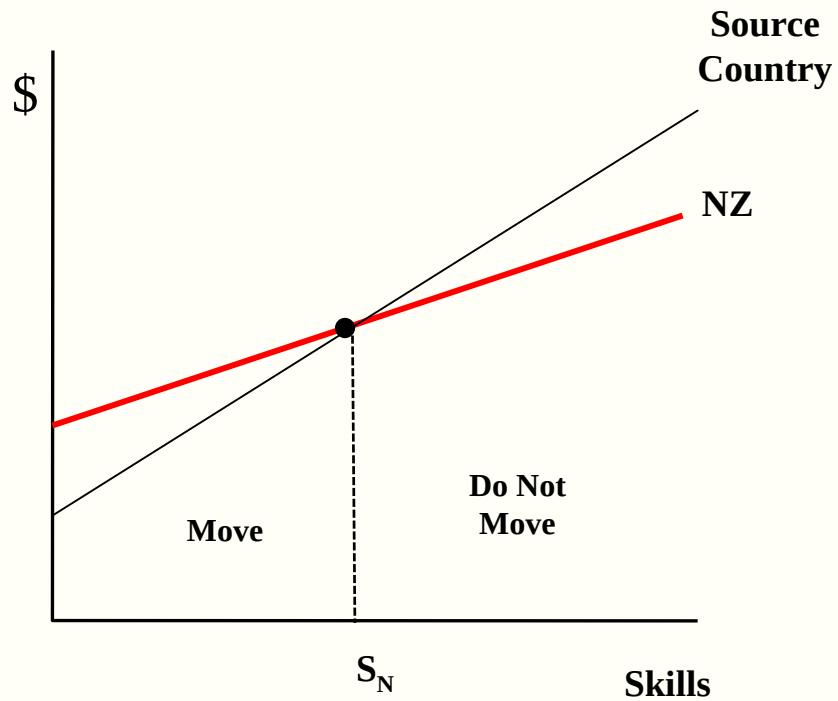


Relative Wages and Immigrant Skill Flow

Positive Selection



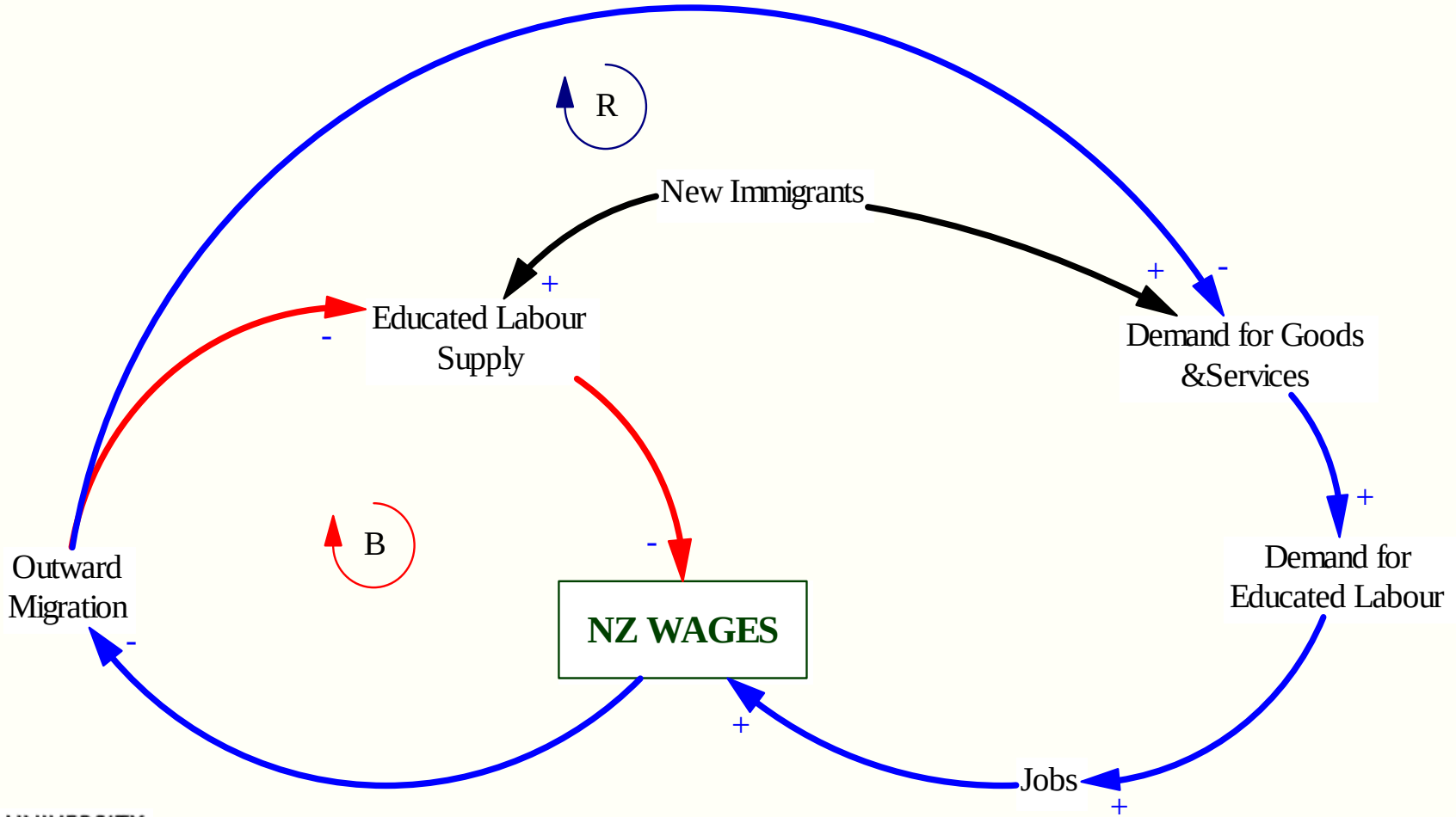
Negative Selection



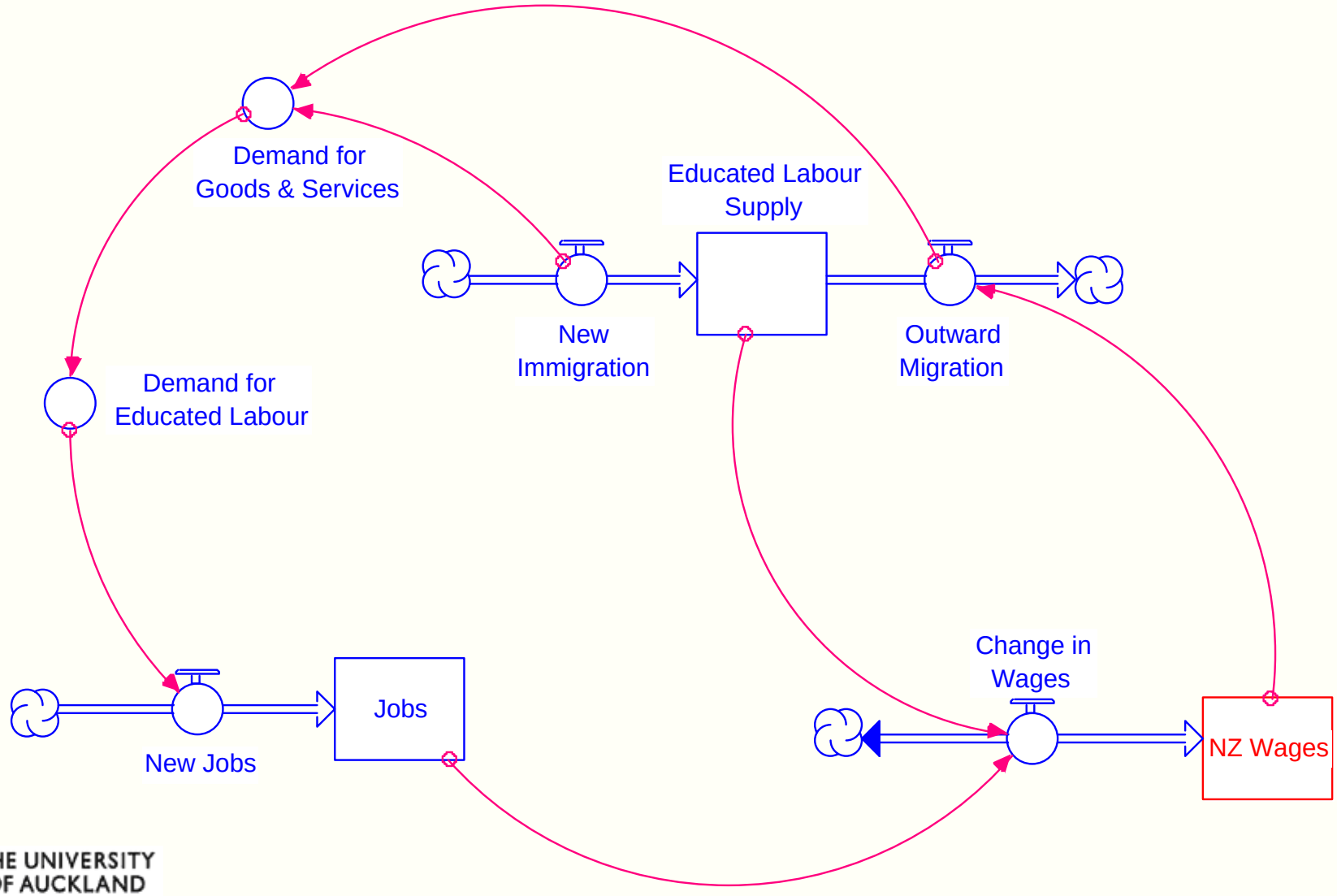
Expected immigrant selection

- Given the NZ wage and tax structures, in the absence of strong immigration policy, negative skill selection is likely to dominate selection outcomes.

Immigration–Wage Effect Causal Model



Immigration-Wage Effect Stock-Flow Model

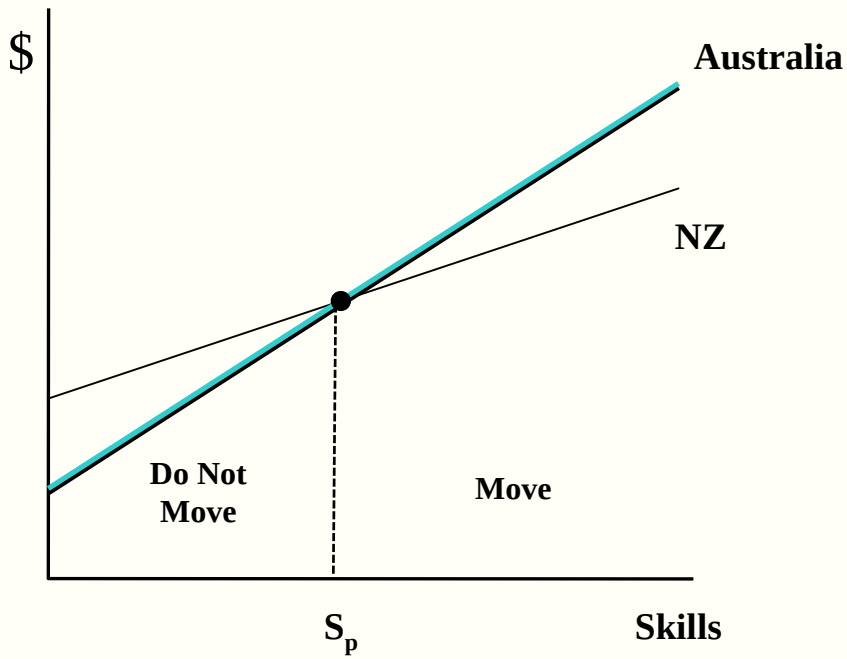


Out-migration effects?

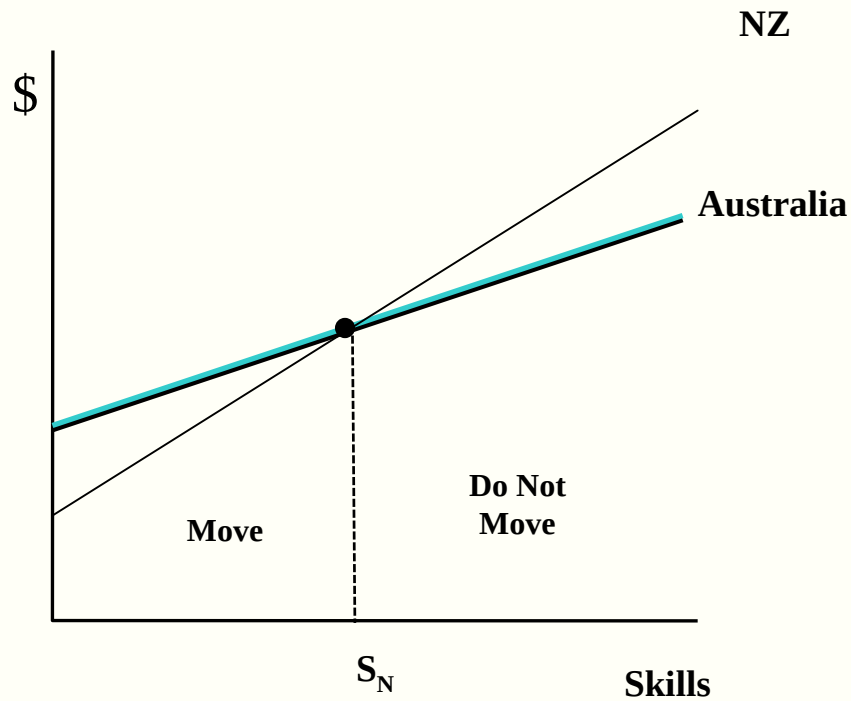
- e.g. Trans-Tasman labour movements.

Scenario 2: Relative Wages and Emigrant Skill Out-Flow

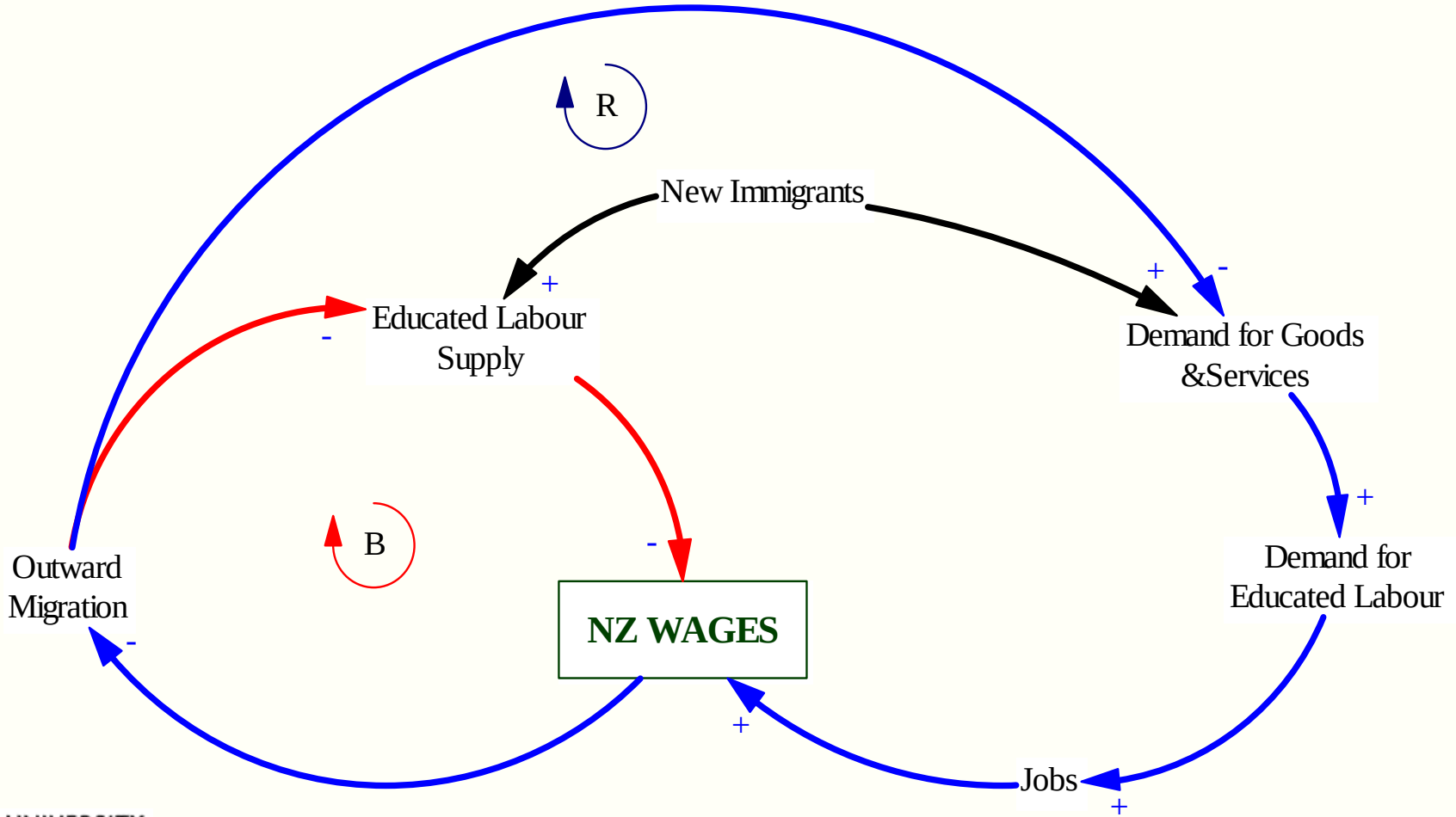
Positive Selection



Negative Selection



Immigration–Wage Effect Causal Model



Economic Analysis of Wage Effects

1. Immigrant wages relative to the domestic labour force
2. Equilibrium wage outcomes after immigration inflow
3. Feedback loop effects?
   - labour out-movements
   - increased demand (expansionary) effects

Question & motivation of my current research

- Does immigration with high human capital decrease the wage rate of the native born with similar educational qualifications?

- Characteristics of New Zealand immigration policy:

-high human capital

-weak family reunion, or illegal immigration

1. Immigrants: 21.7% of the NZ population.

2. Significant increases in immigrant populations.
   (e.g. 1.9% increase in immigrant share of population between 2003 and 2004).

3. Significant variation in regional settlement of immigrants.

4. Immigrants on average have significantly higher education.

Table 1

Immigrant Densities and the Relative Fractions of Highly Educated Workers for six regions, 2004

	Percentage of Immigrants In regions	Percentage with Bachelor or higher degree	
		Among Immigrants	Among NZ born
All regions	21.7	34.0	16.7
Northern North Island (Northland, Waikato, Bay of Plenty)	12.2	29.9	12.8
Auckland	39.1	34.9	21.0
Central North Island (Gisborne,Hawkes Bay,Manawatu-Wanganui, Taranaki)	11.1	33.7	11.0
Wellington	17.9	33.1	24.5
South Island (excluding Canterbury)	11.8	24.5	14.0
Canterbury	17.3	38.7	15.6

Notes: Based on individuals age 25-54 and with non-missing country of birth, qualification and occupation in 2004 HLFS/ NZIS.

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Table 2

Educational Attainment of NZ- born and Immigrants in 2004 HLFS/ NZIS

Highest Qualification(2004)	All(%)	NZ born (%)	Immigrants(%)
No Qualification	15.2	16.3	11.5
School Qualification	22.5	22.8	21.5
Vocational or trade Qualification	37.9	40.6	28
Bachelor or higher degree	20.5	16.7	34
Post-School Qualification	3.9	3.7	5

Notes: Based on individuals age 25-54 and with non-missing country of birth, qualification, occupation, weekly earnings and hourly wages in 2004 HLFS/ NZIS.

International literature with contrasting results:

- Altonji & Card 1991: 1 % point increase in fraction of immigrants reduces the wages of less skilled by O.3 %.
- Card 2005: no effect.
- Addison and Worswick 2002: no adverse effect.
- Borjas 2003: 10% point increase in the supply of skilled group reduces wages by 3 to 4 %.

Modelling approaches to wage effects for the native-born

1. Time-series/panel (Borjas 2003)
2. Production functions (Grossman, 1982; Mare´& Stillman, 2007)
3. Cross-section (Lalonde & Topel, 1991; Jaeger, 1996; Card, 2001, 2005).

Expected wage effects of immigration:

- Are immigrants and the native-born with similar educational qualifications perfect substitutes?
- Increased demand effects?
- Effects of labour complementarities due to other skills, networks, etc.?

Two step approach:

- Using geographical differences and variation across cities or regions.

- Step 1: test of labour supply feedback effects (factor price equalisation)
- Step 2: estimation of wag effects.

- We use regional –occupation labour markets.

Two estimation issues:

1. Tests of labour supply feedback effects ('factor-price equalisation' hypothesis, e.g. Card 2005).

2. Potential endogeneity.

   Immigrants may choose the city in which they settle in, based on higher average wages for native born (e.g. Friedberg & Hunt, 1995).

Two step approach:

Step 1. Test for factor-price equalisation across cities:

$$S^{d}(c) = \alpha + \beta S^{dI}(c) + e(c).$$

$S^{d}(c)$ is the share of dropouts in the local working age population in city c, and is the sum of the share of native dropouts $S^{dN}(c)$ and the share of immigrant dropouts $S^{dI}(c)$, and e(c) is a residual.

Step 2. Estimation of relative wage and employment of native-born high-school dropout labour force in the city.

$$\text{Log}\,(w^d / w^H) = a_1 + b_1 \log\,(s^d / s^H) + u_1,$$
$$\text{Log}\,(E^d / E^H) = a_2 + b_2 \log\,(s^d / s^H) + u_2$$

IV estimation.

- Proportion of immigrants in city consisting of high-school drop-outs (Card 2005).
- Previous (decade) inflow of Mexican immigrants to city (Card & Dinardo 2000).

Data

Household Labour Force Survey (HLFS), & its Income Supplement (NZIS).

(June quarter 2004).

- HLFS includes 15000 households and 27, 847 individuals.

- 48 occupational-regional labour market groups.
- Males age 25-54.
- OLS, IV and Difference in Differences estimations.
- Hourly wage and weekly earnings.

Estimation

- Step 1: Test of 'factor-price equalisation' for group with a Bachelor degree or higher: (region i, occupation k)

$$S^{b}(c)_{ik}=\alpha+\beta S^{bI}(c)_{ik}+e(c)_{ik}$$

Where $S^{b}(c)_{ik}$ is the share of labour with a Bachelor's or higher degree in the local labour force in labour market c (constructed by region i and occupation k) which is the sum of the percentage of natives with a Bachelor or higher degree of regional labour force in labour market c $S^{bN}(c)_{ik}$ and the percentage of immigrant with a Bachelor's or higher degree of regional labour force in labour market c $S^{bI}(c)_{ik}$, and $e(c)_{ik}$ is the residual.

- Step 2: Wage effects:
- Comparison group with secondary education (IV):

$$\text{Log}\,(w^{b} / w^{s})_{ik} = a_1 + b_1 \log\,(s^{b} / s^{s})_{ik} + u_{1ik} \qquad (2)$$

Where w^{b} and w^{s} are, respectively, the mean weekly earnings or hourly wages of male natives with a Bachelor's or higher degree and School Qualification in a labour market which is constructed by region i and occupation k, similarly, s^{d} and s^{s} are the shares of immigrants with a Bachelor's or higher degree and School Qualification in the local labour force in a labour market (constructed by region i and occupation k). u_{1ik} is the disturbance.

- Step 3: Wage effects on low skilled native-born (without school qualifications)

$$\text{Log}\,(w^{d} / w^{s})_{ik} = a_1 + b_1 \log\,(s^{b} / s^{s})_{ik} + u_{1ik} \qquad (3)$$

Where w^{d} is the mean weekly earnings or hourly wages of male natives with No Qualification.

Results-1

- Factor price equalisation is rejected in our sample in all cases. The estimated coefficient is 2.53.
- This effect is highly significant.
- Highly educated immigrants and native-born reside in the same labour markets.

Table 3

Supply Effects: Effects on Overall Fraction of Labour Force with Bachelor or higher degree

-2004 Equation (1) $S^{b}(c)_{ik}=\alpha+\beta S^{bI}(c)_{ik}+e(c)_{ik}$

Explanatory Variable	OLS
Fraction of Immigrants with a Bachelor or higher degree	2.53
	(0.2490)
t-value	10.15*
P-value	0
R-squared	0.6913

Notes: Standard errors in parentheses.

**: significant at 1% level*

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Results-2

- Insignificant wage effect:

  The effect of high human capital immigrants on the wage rate and earnings of the native-born with high qualifications is insignificant.

Table 4

Wage and Earnings Effects: Relative Hourly Wage and Weekly Earnings of the NZ- born with Bachelor or higher degree

-2004 Equation (2) $\text{Log}\,(w^b / w^s)_{ik} = a_1 + b_1 \log\,(s^b / s^s)_{ik} + u_{1ik}$

Explanatory variable	Log Hourly Wage		Log Weekly Earnings	
	OLS	IV	OLS	IV
Log Relative Overall Supply of Bachelor or higher degree vs. School Qualification	0.0379	0.0339	0.0797	0.0457
	(0.0409)	(0.0540)	(0.0597)	(0.0792)
t-Value	0.93	0.63	1.33	0.58
P-Value	0.36	0.534	0.19	0.568
R-squared	0.0221	0.0218	0.0447	0.0366

Notes: 1. Overall Supply of labour with a Bachelor or higher degree vs. with School Qualification

2. Standard errors in parentheses.

3. Instrument is fraction of immigrants with Bachelor or higher degree in labour market.

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Table5

Wage and Earnings Effects: Relative Hourly Wage and Weekly Earnings of the NZ- born with No qualification vs. with School Qualification

–2004 Equation (3): $\text{Log}\,(w^d / w^s)_{ik} = a_1 + b_1 \log\,(s^b / s^s)_{ik} + u_{1ik}$

Explanatory variable	Log Hourly Wage		Log Weekly Earnings	
	OLS	IV	OLS	IV
Log Relative Overall Supply of Bachelor or higher degree vs. with School Qualification	-0.0802	-0.083	-0.099	-0.0982
	(0.0235)	(0.031)	(0.0299)	(0.039)
t-Value	-3.41*	-2.66*	-3.32*	-2.47*
P-Value	0.001	0.011	0.002	0.018
R-squared	0.2169	0.2166	0.0019	0.2047

Notes: 1. Overall Supply of labour with a Bachelor or higher degree vs. with School Qualification

2. Standard errors in parentheses.

3. Instrument is fraction of immigrants with Bachelor or higher degree in labour market.

*4. *: significant at 1% level*

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Results (3)

- There is a small, but significant negative effect associated with increased supply of immigrants with-higher-education on the wage rate and earnings of the native-born without school qualifications.

- This effect persists across IV estimations.

Results (4)

- Difference in Differences results support the cross-section model results on both accounts.

Table 8

Relative Hourly Wage and Weekly Earnings of NZ-born with Bachelor or higher degree vs. with School Qualification

Explanatory variable: Relative Overall supply of labour with Bachelor or higher degree[1] ***–Difference in differences***

Explanatory Variable	Log Hourly Wage	Log Weekly Earnings
	OLS	OLS
Log Relative Overall Supply of Bachelor or higher degree vs. School Qualification	0.0657 (0.0808)	0.0529 (0.0782)
t-Value	0.81	0.68
P-Value	0.419	0.501
R-squared	0.1213	0.1523

Notes: 1. Overall Supply of labour with a Bachelor or higher degree vs. with School Qualification

2. Standard errors in parentheses.

Table 9

Relative Hourly Wage and Weekly Earnings of NZ born with No Qualification vs. with School Qualification

Explanatory variable: Relative Overall supply of labour with Bachelor or higher degree[1] ***–Difference in differences***

Explanatory Variable	Log Hourly Wage	Log Hourly Wage
	OLS	OLS
Log Relative Overall Supply of Bachelor or higher degree vs. with School Qualification	-0.0682 (0.0445)	-0.1053 (0.0428)
t-Value	-1.53	-2.46*
P-Value	0.129	0.016
R-squared	0.1307	0.1271

Notes: 1. Overall Supply of labour with a Bachelor or higher degree vs. with School Qualification

2. Standard errors in parentheses.

*3. *: significant at 1% level*

Immigrants not perfect substitutes for natives

Additional occupational analyses:

Are immigrants with higher education competing with the native-born without qualifications?

- Occupations classified are:

(1) Legislators, administrators & managers
(2) Professionals, techn. & assoc. professionals
(3) Clerks
(4) Service & sales workers
(5) Agriculture & fisheries workers
(6) Trades workers
(7) Plant & machine operators & assemblers
(8) Elementary occupations

Elementary occupations, and Plant and Machine Operators and Assemblers (e.g. includes Taxi drivers).

Conclusions

- No evidence of adverse effects on native-born with similar qualification levels.
- A significant effect on the earnings of the native-born without school qualifications.
- This effect is most significant as a disproportionately high group of immigrants are found in jobs requiring significantly less education or degrees.

- Implications..