Immigrant and Non-immigrant Engineers in the Canadian Labour Market

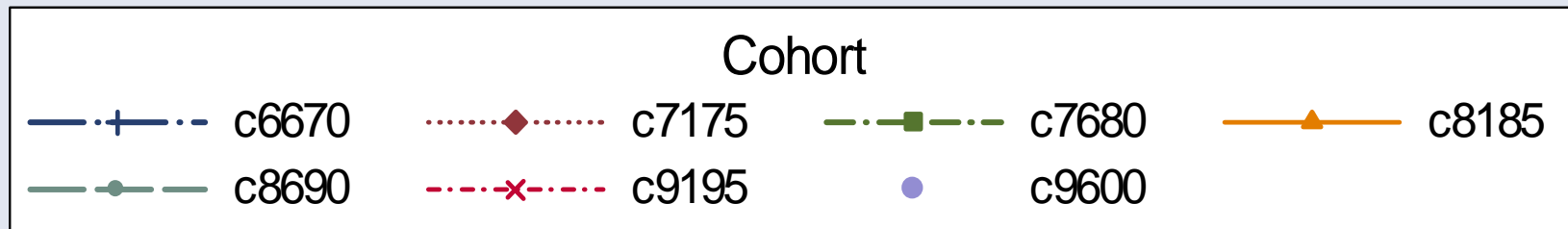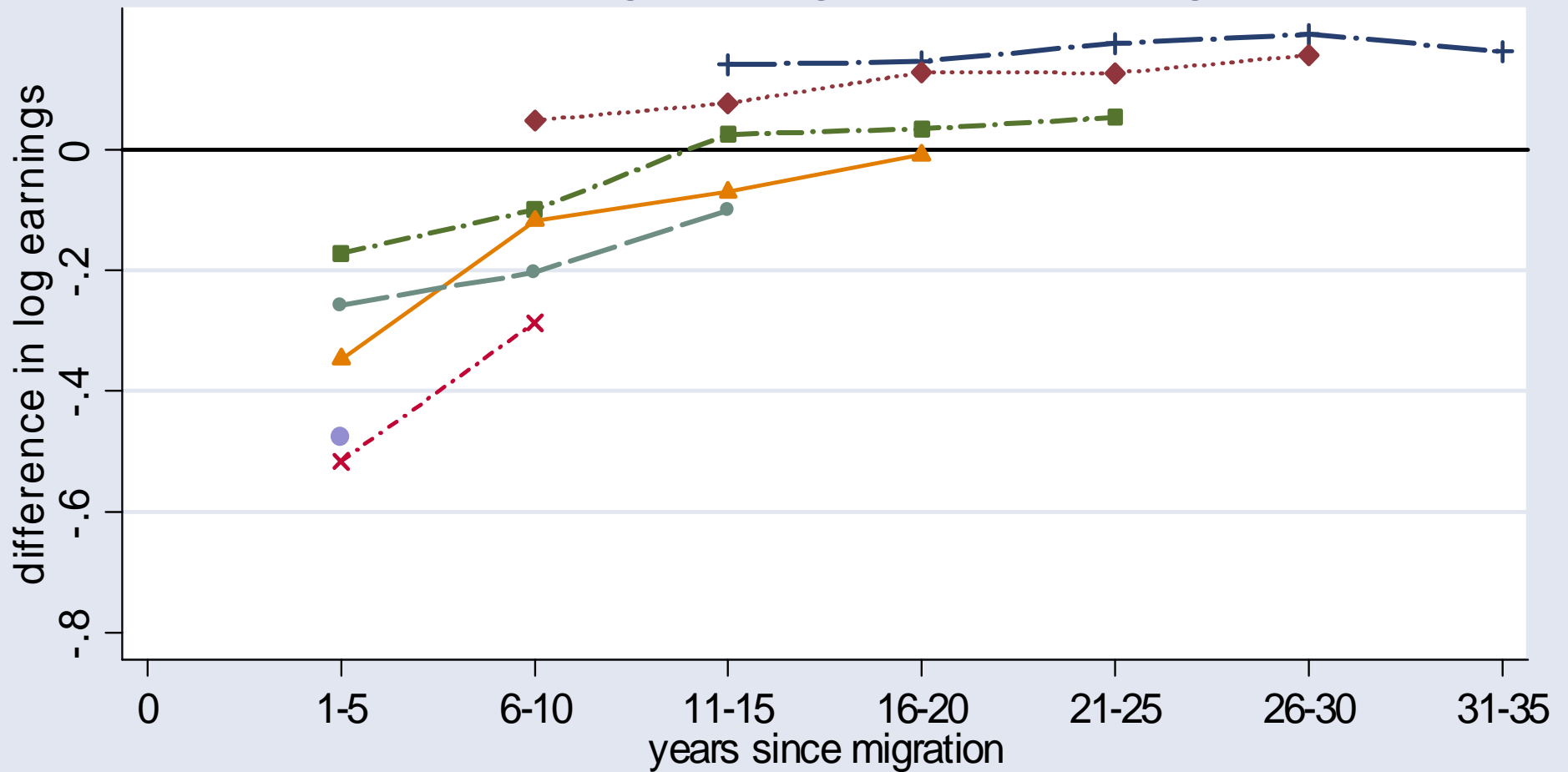**by Ross Finnie, Christine Laporte & Arthur Sweetman**

Warning

- Some of what I say in reviewing the background will be interpretive

- Discussion is invited

- Plan of talk
  1) Background
  2) Immigration system's direct effect on engineering
  3) Characteristics and outcomes of engineers

Part I - General Background

- **New immigrants' labour market outcomes declining for over two decades in Canada**
  - Poverty is increasing
  - Frustration in growing

- **The "system" has responded to the decline, but always within the scope of the existing framework**

School of Policy Studies

Difference in log earnings of females age 25-59

y-axis: difference in log earnings

x-axis: years since migration

Cohort

- c6670
- c7175
- c7680
- c8185
- c8690
- c9195
- c9600

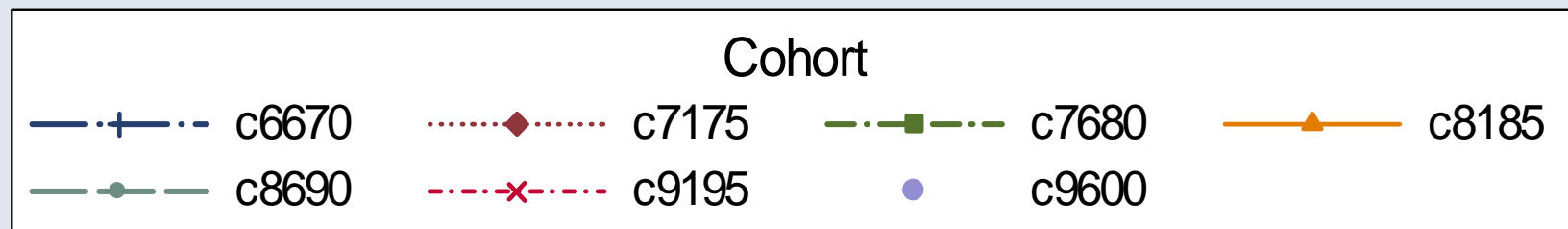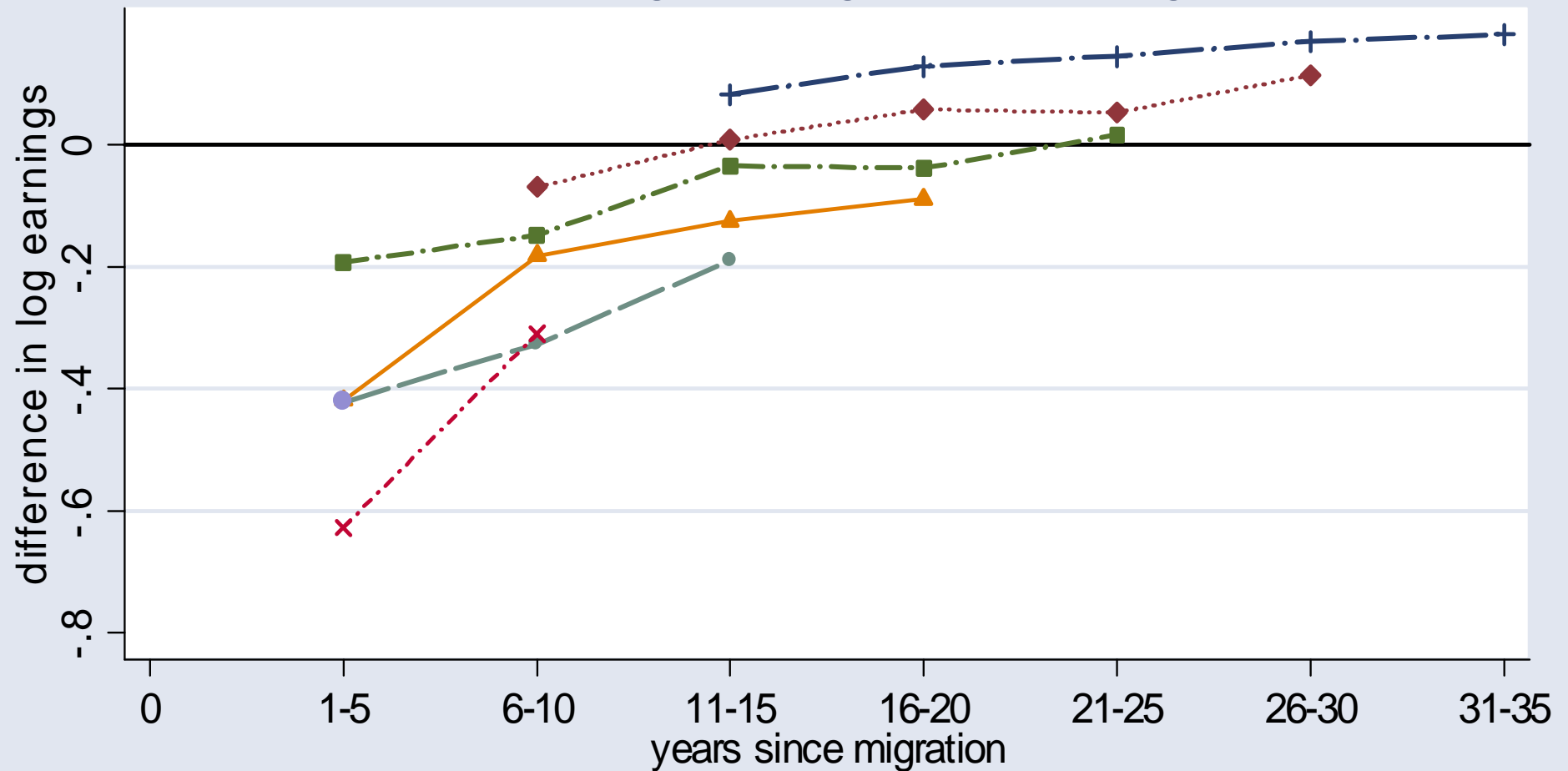# Difference in log earnings of males age 25-59

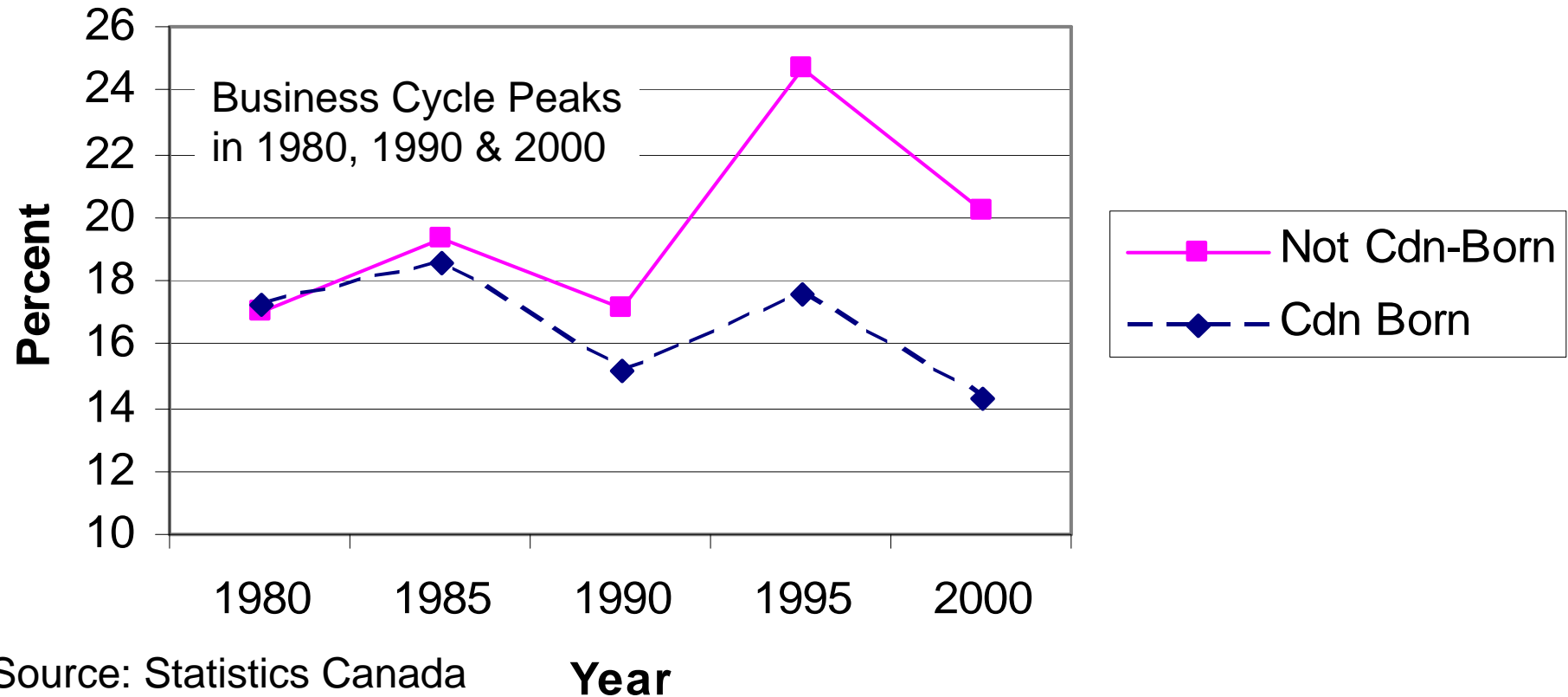Source: Canadian Censuses 1981 through 2001   From Warman and Worswick (2004)

Having incomes below the low income cut-off (LICO – poverty line) is increasingly common for immigrants

Pre-tax, Post-transfer Low-Income (LICO) Rates

Business Cycle Peaks
in 1980, 1990 & 2000

Percent

— ■ — Not Cdn-Born

– ◆ – Cdn Born

1980   1985   1990   1995   2000

Year

Source: Statistics Canada
Picot & Hou (2003)

Canada's "mixed" immigration system

- **Rhetorically, and in comparison to many countries, Canada emphasizes a "high skills" route**
  - 262,236 people, or 0.8% of pop in 2005
- **Canada's system has 3 "classes" of immigration**
  - In 2005 Economic (59.6%), Family (24.2%) & Refugee (13.6%)
  - Most well known is the "skilled worker category" within the economic class
  - It employs points grid that sets minimum bar among *principal applicants* (not all skilled worker category)
  - Skilled worker principal applicants (points apply): 33% of econ class; 20% of all immigrants in 2005
- **Easy to gain citizenship by international norms**

In response to declining labour market outcomes (& increasing poverty), the government made the following policy changes (some unannounced)

- Modified the points system (but implementation is slow because of backlog)

- Increased the percentage economic class/ skilled worker (next slide)

- Increased percentage who are professionals, esp., engineering and engineering-like professions, such as IT (within & across classes)

- HOWEVER, as far as we can see outcomes are not improving (though there are delays)

School of Policy Studies

Composition of immigrants by class
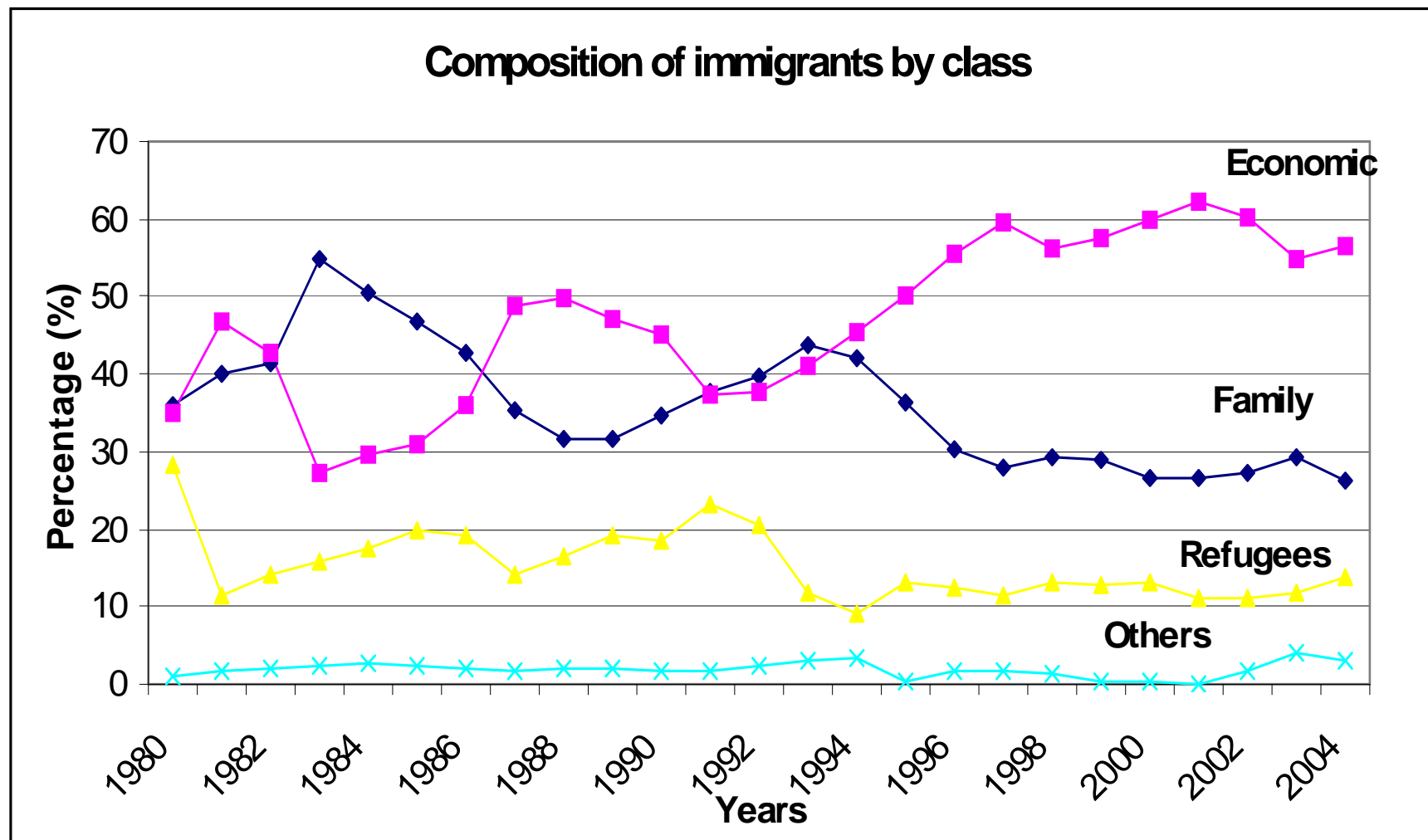
Source: Citizenship and Immigration Canada

School of Policy Studies

Part II – Focus on Engineers

Direct effects of Selection System

Changing entering characteristics

(From Picot, Hou and Coulombe, 2006)

	1992	1997	2000	2003	2004
Distribution by education among					
15 years of age or older (%)					
University degree	16.9	29.0	40.7	46.0	44.7
Distribution by intended					
occupation among principal					
skilled applicants (%)					
IT professional	3.6	16.0	26.8	26.2	27.7
Engineers	2.5	10.2	15.1	16.1	17.2
Other professional	23.5	43.8	35.1	37.6	35.0

School of Policy Studies

Population Distribution (%)

	Canadian Born	Cdn Educ Immigrant	Foreign Educ Immigrant
Entire Population	79.7	6.0	14.3
All Engineers	50.7	12.3	37.0
Eng Working Sample	52.1	12.6	35.3

Note that for the purposes of this analysis engineers are defined according to their university field of study

Source: Canadian Census restricted to those age 25-65

Distribution by Year of Entry into the Canadian Labour Market

Rows sum to 100%

Labour Mkt Entry	Canadian Born	Cdn Educ Immigrant	Fgn Educ Immigrant	Total Number
1956-1960	84.2	14.2	1.6	746
1961-1965	78.4	13.5	8.1	2,024
1966-1970	58.5	17.7	23.8	3,562
1971-1975	54.4	19.2	26.5	4,661
1976-1980	63.8	14.3	21.9	5,257
1981-1985	66.7	12.6	20.7	6,368
1986-1990	55.9	13.1	31.0	7,923
1991-1996	45.8	11.7	42.5	9,758
1996-2000	26.5	6.7	66.9	11,995
All	50.7	12.3	37.0	52,295

Each row asks the question:

What % entering the labour market each year are from each source?

"Total column" shows increase in total supply, not only shift in sources occurring.

School of Policy Studies

Part III – Focus on Engineers

Characteristics
and Labour Market Outcomes

Engineers' Descriptive Statistics by Immigrant Status

	Canadian Born	Cdn Educ Immigrant	Foreign Educ Immigrant
Male (%)	89.2	88.9	83.8
Urban (%)	75.7	91.1	94.4
Visminority (%)	3.2	52.7	58.9
Official Language Knowledge			
English (%)	58.2	72.7	82.5
French (%)	3.2	0.5	1.1
Bilingual (%)	38.6	26.7	14.8
Neither (%)	0.0	0.2	1.5
Earnings ($)	68,371	65,171	42,235
Working Sample			
Hours	41.4	40.7	37.7
Weeks	48.8	48.6	44.6
Earnings ($)	73,413	69,999	48,734

School of Policy Studies

Engineers (%) by Level of Education

	Canadian Born	Cdn Educ Immigrant	Fgn Educ Immigrant
Bachelor	77.8	67.1	55.8
Bachelor_plus	5.2	6.5	11.9
Master	14.7	19.5	26.1
Doctorate	2.3	6.8	6.3
Total	100	100	100

Immigrants are more likely to have Master and PhD degrees.

Composition (%) by Discipline

	Canadian Born	Cdn Educ Immigrant	Fgn Educ Immigrant	Total Number	Total
Biosystem	58.4	8.2	33.4	902	100
Chemical	52.7	13.2	34.1	3,542	100
Civil	51.7	9.8	38.5	8,760	100
Computer	36.9	19.2	43.9	1,739	100
Electric	43.0	13.2	43.8	10,804	100
Environment	75.5	9.6	14.9	1,434	100
Industrial	53.6	12.6	33.8	1,647	100
Geo/mat/mining	69.5	8.0	22.5	1,533	100
Mechanical	48.3	10.7	41.0	9,076	100
Other	53.4	14.4	32.2	12,858	100
All	50.7	12.3	37.0	52,295	100
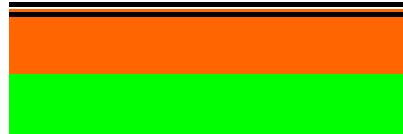
= Maximum

= Minimum

Mean Earnings by Discipline

	Canadian Born	Cdn Educ Immigrant		Fgn Educ Immigrant	
		Earnings Ratio (%)			
	Unadjusted	Unadjusted	Predicted	Unadjusted	Predicted
Biosystem	54,975	83	63	58	65
Chemical	73,639	92	82	56	66
Civil	61,436	98	75	57	67
Computer	69,808	90	82	68	87
Electric	73,489	93	80	63	78
Environment	42,559	105	84	83	84
Industrial	62,094	92	75	59	79
Geo/mat/mining*	67,763	110	84	62	69
Mechanical	68,914	91	76	60	69
Other	73,570	93	79	62	74
All	68,371	95	80	62	73

= Maximum

= Minimum

* Grouping for predictions and unadjusted do not match perfectly

Predictions: are for a 30 year old who, if an immigrant, landed age 21 to 25, in 1991-95; set all other characeristics at the overall sample mean; use each group's own regression coefficients.

School of Policy Studies

Conclusion

- Engineers seen as part of the solution to declining labour market outcomes of new immigrants
  - Also, perhaps, tech bubble – although not successful
- Massive increase in the supply of new immigrant engineers
- This group is well educated
- But is having difficulty in the labour market (on average)

- Individual characteristics, including immigration-specific ones, play a substantial role in "explaining" the earnings gaps and this is not sufficiently understood yet

- Impact on domestically educated not understood yet