
10.0

Economic and Labour Force Conditions

This section presents a profile of the economic environment and labour force growth that IEGs join when they arrive in Canada. First, it addresses past trends in the labour force for engineers, second, it provides a macro-level view of the importance of immigration to growth in the Canadian economy, and finally, it looks at the situation of professionally-trained immigrants when they arrive in Canada.

The data are all drawn from Statistics Canada sources at the national level.²⁸ Due to the limitations of sample size and confidentiality considerations, breakdowns by province or engineering specialty are often not possible with available data. In all cases, the most detailed available figures are presented. The figures in Sections 10.1 and 10.2 were extracted from Labour Force Survey data by Statistics Canada, specifically for this study. Those in 10.3 and 10.4 are recently-released results of the 2001 Canadian Census.

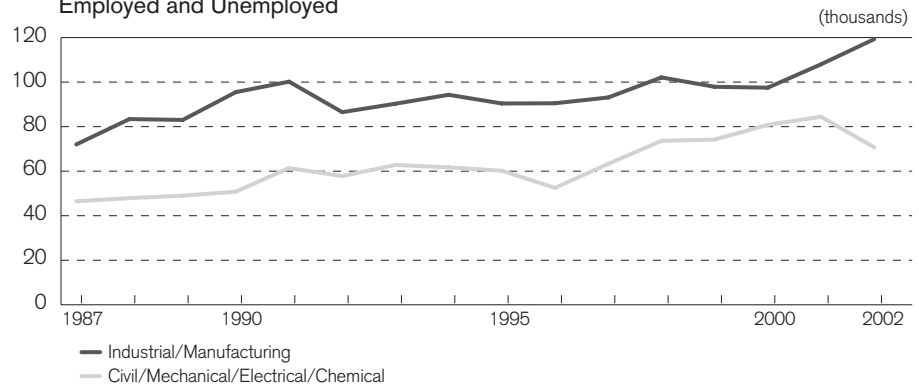
It should be noted that in this section the term “engineer” is used in its broadest sense, to include anyone who has completed university training in engineering, whether or not they are licensed to practice in Canada. In both the Canadian Census and the Labour Force Survey, “engineers” are self-identified. However, Statistics Canada guidelines require that individuals in this occupational group have a university degree, making a distinction between engineers and engineering technologists.

²⁸ This section addresses the national economy and national immigration trends only. Provincial or regional situations are left for future analysis.

THE ENGINEERING LABOUR FORCE

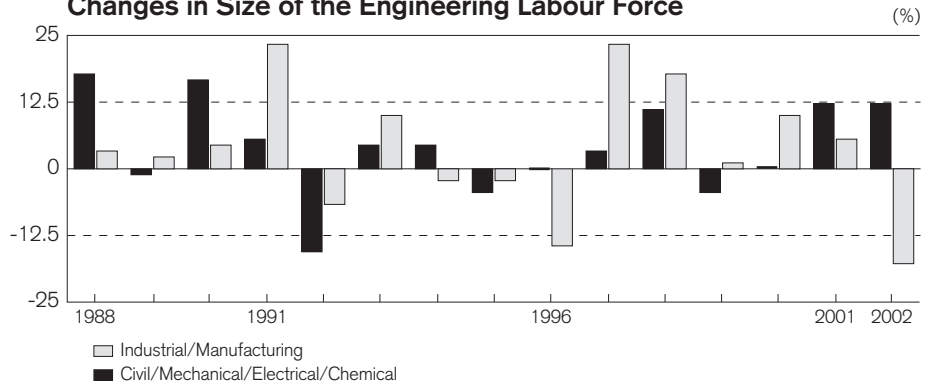
The engineering labour force has experienced substantial growth over the past 15 years. The number of engineers in the labour force²⁹ in Canada has increased from about 118,500 in 1967 to 190,000 in 2002. This represents an average increase of about 4.3% or 5,100 engineers per year, for the last fifteen years. Growth has been greater among the combination of civil, mechanical, electrical, electronics, and chemical engineers than among industrial and manufacturing engineers.³⁰ The former, comprising more employment in government and consulting, as well as expansion in private sector electrical and electronic employment, grew by an average of 4.7% per year. The labour force of industrial and manufacturing engineers, employed mainly in private industry, grew by an average of just 3.7%.

Chart 1
Engineers in the Labour Force
Employed and Unemployed



The size of the engineering labour force reflects the business cycle, particularly for industrial and manufacturing engineers. The increase in the number of engineers in the labour force has not, of course, been uniform over the 15-year period. Growth and decline in the size of the engineering labour force have reflected changes in economic conditions. Shrinkage in '92, '95 and '96, '99 and '02 was matched by substantial growth in '88, '90, '91, '97 and '98. Furthermore, growth and decline have at times been highly regional.

Chart 2
Year-over-Year
Changes in Size of the Engineering Labour Force



29 The engineering labour force is comprised of self-declared engineers who are employed in engineering jobs or unemployed, and excludes those who are no longer looking for work, and those who have taken jobs outside the occupational category.

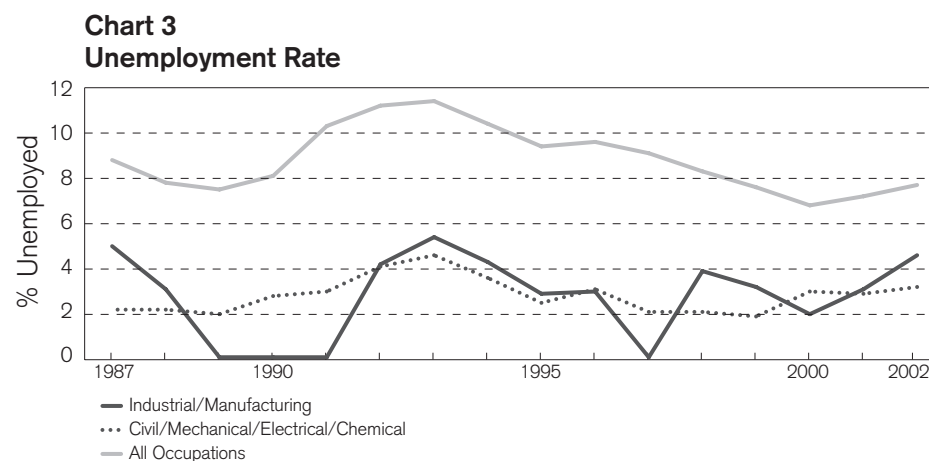
30 The category of Industrial and Manufacturing Engineers includes metallurgical and materials engineers; mining, geological and petroleum engineers; aerospace engineers; computer engineers (except software engineers); and other types of engineers not classified elsewhere.

Labour force trends were more volatile for industrial and manufacturing engineers, than for those in civil, mechanical, electrical, electronics and chemical engineering. The former group registered three years when expansion was about 20%, and two when contraction from the previous year neared 15%.

UNEMPLOYMENT RATES AMONG ENGINEERS

While labour economists view immigrants as a source of much-needed technical expertise, members of the public sometimes see immigrants as competition for “home-grown” employees. This concern becomes more prominent when unemployment rates are higher and there is competition for a limited number of jobs. However, an examination of unemployment rates for engineers suggests that this dynamic should be a relatively minor concern because unemployment rates are relatively low and increases are rarely sustained in this occupational group.

In the engineering labour market, unemployment rates have been consistently low, relative to most other occupations. In the past 15 years, the unemployment rate for engineers has exceeded 5% only once — in 1993. During this same period, the overall unemployment rate across the broader labour force ranged between about seven and eleven percent. These figures suggest that while engineers are subject to cyclical unemployment, their base level of structural unemployment is substantially lower than other occupational groups.³¹



Industrial and manufacturing engineers, more than other engineering specialties, have experienced fairly volatile labour market conditions. The table above provides a visible demonstration of this volatility. The unemployment rate for all other engineering specialties has ranged between about two and four percent — a rate reflecting relatively short-term dislocation and minor structural adjustments in the economy. For industrial and manufacturing engineers, however, the unemployment rate went from close to zero in 1989 to over five percent in 1993.

It must be recognized, however, that the foregoing analysis may under-represent employment difficulties for certain individuals. First, provincial or regional rates can be much higher than national unemployment rates. Second, figures such as these do not take into consideration under-employment (part-time, or outside one’s field of expertise), nor withdrawal from the labour force by discouraged job-seekers. Nevertheless, these

31 Hostland, Doug. *Structural Unemployment in Canada: Some Stylized Facts R-96-1E*. Applied Research Branch, Strategic Policy, HRDC, 1995.

figures are presented to dispel the argument that unemployment among Canadian-born engineers is sufficiently high that the entrance of foreign-trained individuals poses a threat to the profession.

THE IMPORTANCE OF IMMIGRATION FOR THE CANADIAN ECONOMY

Immigration is a vital component of the current and continued strength of the Canadian economy, particularly immigration of skilled workers such as engineers.³² Statistics Canada notes that there has been a substantial demand for new skills, with a growth of 9.5% in the labour force in the past ten years. Nearly half of this growth has been in highly skilled occupations that normally require university training. The engineering labour force, for example, grew by 17.6% from 1991 to 2001.

Two demographic trends underline the importance of immigration in meeting the demand for skilled workers. First, the workforce has become much “greyer”, with a rise in average age, and the prospect of higher retirement rates. Second, low fertility rates in Canada for the last thirty years have resulted in fewer young people entering the working-age population to replace retirees. Given this environment, immigration is an important factor in providing sufficient skilled workers to fuel economic growth. Statistics Canada notes that “immigrants who landed in Canada during the 1990s, and who were in the labour force in 2001, represented almost 70% of the total growth of the labour force over the decade.”

Engineering graduates comprise a large proportion of recent immigrants to Canada. Among well-educated recent immigrants, engineering was the top field of study for men, and the fifth largest field of study for women. Nearly one in five men (18.8%) who immigrated to Canada in the 1990s with post-secondary credentials was a university graduate in engineering. Among educated female immigrants, 5.3% were engineers.³³

INTEGRATION OF IMMIGRANTS INTO THE LABOUR FORCE

The integration of immigrants³⁴ into the Canadian labour force is a wrenching process. Numerous facts underline the challenges faced by an immigrant looking for work:

- In 2001, among 25 to 44 year olds, 66% of recent immigrants (landed in past five years) were employed, compared to 82% of Canadian-born people.³⁵
- The unemployment rate of recent immigrants was almost twice that of the Canadian-born (12.1%, compared to 6.4%).
- 36% of immigrants in Canada for five years or less were below Statistics Canada’s “low income” cutoff.

In terms of earnings, immigrants to Canada are not integrating into the labour force as successfully today as in the past. Typically, recent arrivals have earned less than Canadian born employees, but the gap has narrowed as immigrants acquire more experience in the Canadian labour force. However, immigrants arriving in Canada during the 1990s were particularly hard hit by the economic downturn of the early nineties. While these immigrants

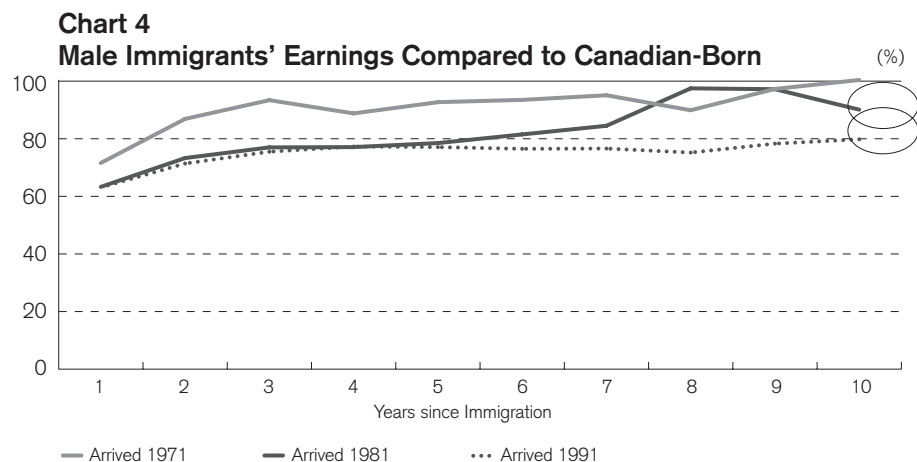
32 *The Daily, February 11, 2003*. Statistics Canada, Ottawa, 2003. (Of course, other factors such as adequate capital, access to foreign markets, and productivity levels also impact economic growth.)

33 “Education in Canada: Raising the Standard”. Statistics Canada Publication 96F0030XIE2001012. 2001 Census, 2003.

34 Note that “immigrant” refers to individuals arriving in Canada under a number of different circumstances including, skilled workers, family class immigrants, and refugees.

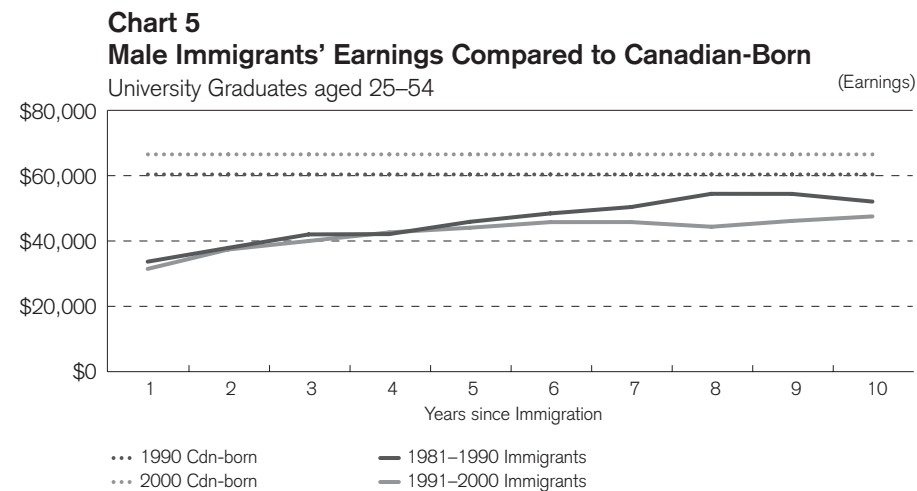
35 *The Daily, Thursday, June 19, 2003*. “Low Income Rates Among Immigrants”. Statistics Canada.

did eventually regain some ground, Statistics Canada notes that “the earnings of recent immigrants, compared to those of the Canadian-born, have deteriorated sharply.”³⁶



In the past, immigrants' earnings have equalled those of the Canadian-born by about ten years after immigration. Immigrants who arrived in Canada before the 1980 Census were making 72 cents for every dollar made by the Canadian-born in their first year, but their earnings equalled the Canadian-born by their tenth year in Canada. In 1990 and 2000, immigrants of one year were earning just 63 cents for every dollar made by Canadian-born employees. But, in 2000, the differential after ten years in Canada was still 80 cents for every dollar made by the Canadian-born.

The premium in earnings gained by having a university education is not as large as it has been in the past for immigrants to Canada. In 1990, university-educated male immigrants aged 25–54, were earning 86 cents for every dollar earned by their Canadian-born counterparts, after ten years in Canada. By 2000, the same category of immigrants was earning, after ten years, only 71 cents for every dollar of a university-educated male of the same age, born in Canada.



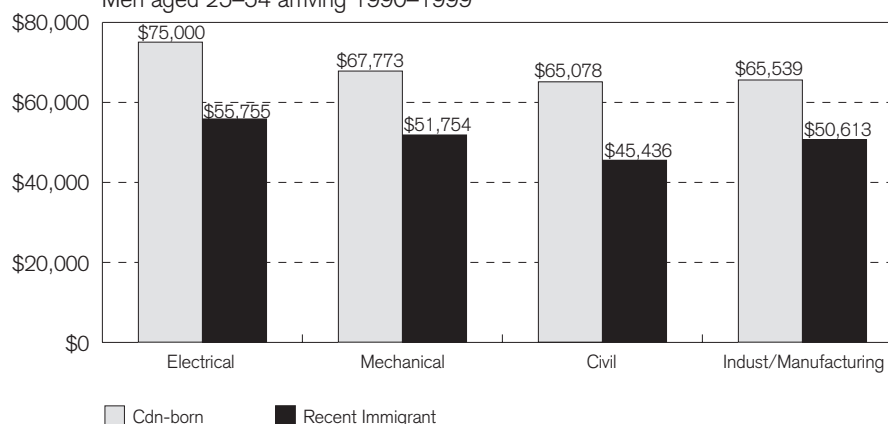
36 "Earnings of Canadians: Making a Living in the New economy". Statistics Canada Publication 96F0030XIE2001013, 2001 Census, 2003.

In the past, having a university degree has “protected” recent immigrants from having a low income. This is much less the case now, compared to twenty years ago. Statistics Canada notes that “the gap in low-income rates between the Canadian-born and recent immigrants was highest among those who had a university degree, particularly those with applied science degrees.”³⁷ The deterioration in earnings of recent immigrants is attributable, in part, to less robust economic conditions than 20 years ago. Labour market entrants of all kinds, including young Canadian-born university graduates, have experienced declining earnings over the same period. But, there were also declining returns for foreign work experience — it would appear that Canadian firms are now recognizing work experience from other countries less than in the past. Furthermore, Statistics Canada suggests, “higher education credentials from foreign universities may also have received less recognition [than in the past].”³⁸

Changes in the composition of immigration in the past 30 years account for some, but not nearly all of the income handicap experienced by recent immigrants. Two factors that may affect the ability of immigrants to assimilate into the Canadian labour force are country of origin, and language. The proportion of immigrants from the Orient, the Indian sub-continent, and the Middle East increased from one-quarter to more than one-half from 1980 to 2000. Two-thirds of recent immigrants had a home language other than English or French, compared to just under half in 1980. However analysis of income data controlling for these characteristics indicates that disparities in earning capabilities persist. Less than half the negative effect on income was due to source region, home language, education level or family type and age. This led Statistics Canada to conclude “[income] differences persist, likely due to cultural differences, education quality, and the extent to which employers recognize education credentials and experience.”³⁹

Recent male immigrants who are university graduates may be employed in professional and technical jobs for which they are trained, but some are employed in low-paying, low-skill jobs. Engineering jobs comprise four of the top thirty occupations employing the majority of recent, university-educated, male immigrants. Four engineering specialties together account

Chart 6
Male Immigrants’ Earnings Compared to Canadian-Born — 2000
 Men aged 25–54 arriving 1990–1999



37 *The Daily, Thursday, June 19, 2003*. “Low Income Rates Among Immigrants”. Statistics Canada. Applied Science includes many occupations in the physical and life sciences, including physicists, chemists, geologists, biologists, engineers, architects, mathematicians, actuaries, and information systems professionals.
 38 *The Daily, June 19, 2003*. “Low-Income Rates Among Immigrants”.
 39 Picot, Garnett, and Hou, Feng. “The Rise in Low-Income Rates among Immigrants in Canada”. Statistics Canada Publication 11F0019MIE2003198, 2001 Census, 2003.

for almost six percent of all males aged 24–54 who came to Canada in the ten years preceding the last Census. However, an equal number of *well-educated*, recent male immigrants were also employed in low-skill jobs such as retail sales, driving taxis and trucks, janitorial, shipping and receiving, and security.

Comparing the average earnings of recent immigrants to the Canadian-born, there is a wage gap of between 70 and 77 cents per dollar earned by a Canadian-born engineer for the four specialties with the most immigrants. In 2000, electrical and electronics engineers who had immigrated in the past ten years earned 74.3% of Canadian-born engineers in the same specialty. For mechanical engineers the figure was 76.3%; for civil engineers, 69.8%; and for industrial and manufacturing engineers, 77.2%.⁴⁰ While these figures do not control for years of work experience or other factors, they nevertheless suggest that even immigrant engineers who find jobs may suffer a wage disadvantage.⁴¹

CONCLUSIONS

Statistics Canada Census data has been used to describe the economic and labour market context into which International Engineering Graduates immigrate. The data demonstrates that employment in engineering has grown consistently — an average annual increase of 4.3% over the past 15 years. Unemployment has been relatively low for engineers during that period, although more difficult economic conditions have impacted the profession recently. The labour market has been more volatile for industrial and manufacturing engineers, but despite this, their average unemployment rate over the long term has been just 3.3%. The average unemployment rate for all other types of engineers been 3.9%.

Immigration is an important source of skilled workers for the Canadian economy, and this is particularly so for occupations in the applied sciences. Engineers are a significant proportion of highly-educated immigrants coming to Canada — the number one field among males immigrating during the 1990s.

The transition into the Canadian work force is difficult for immigrants, even highly-educated ones. Census data from 1980 onward suggest that immigrant integration is becoming even more difficult, with more unemployment, lower starting salaries, and less likelihood of matching the earnings of Canadian-born colleagues.

40 "Earnings of Canadians: Making a Living in the New Economy". Statistics Canada Publication 96F0030XIE2001013, 2001 Census, 2003.

41 These figures include all self-reported immigrant engineers, including those who were unemployed or employed in unrelated jobs.