The Brain Drain: The Loss of Canada's Brightest Minds To the United States

By: Stan Uhm

Introduction

Alexander Graham Bell was one of Canada's greatest inventors, James Gosling invented the computer language JAVA, the language that is slated to revolutionize computing, and Nobel economics laureate Myron Scholes, is a venture capitalist and professor at Stanford University. Surprisingly, these 3 people have a few things in common, one being that they are all Canadians. Another thing they have in common is something that is becoming a trend. They all left Canada to further their work in the United States of America (Purvis 46). Every year, thousands of our doctors, scientists, nurses, engineers, and other professionals migrate to the United States in search of higher wages, lower taxes, and enhanced opportunities. This phenomenon is known as the "brain drain". Some believe that the brain drain does not exist. This stance has been the one taken by the government of Canada, and more notably, by Jean Chretien. The other side of the argument, one taken on mainly by the media and industry, states that the brain drain is a real problem, a problem that must be dealt with before Canada loses more and more of their best and brightest to the U.S. In this paper, I will show that the brain drain is indeed a problem that needs to be dealt with, and give reasons as to why this phenomenon is occurring.

The Brain Drain: Fact or Fiction

There are two clear stances on the brain drain. One is that the brain drain does not exist. This stance has been the one taken by the government of Canada. These "anti-brain drain" proponents cite publications by Statistics Canada that show that the inflow of immigrants to Canada exceed net outflows (Population and Growth…), but further inspection shows that when the professions of people are included, Canada is a net loser to the U.S. of managers, professionals, and other skilled workers (Appendix A). As a matter of fact, another study by Statistics Canada showed that "Emigrants to the United States are more than twice as likely to hold a university degree than are immigrants to Canada" (Statistics Canada, 2000). A 1996 study by the Canadian Association of University Teachers showed that in knowledge-based occupations such as computer science, natural science, nursing, medicine, and engineering, 8.2 Canadians went to the U.S to work for every 1 that came to Canada (Robinson, 18). Also, a study in a 1998 Canadian Press Story showed that nearly one-quarter of all doctoral students have left Canada within two years of their graduation (Emery, 26). These staggering statistic show that the brain drain is a real problem, not a mythical one.

The Historical Perspective

Canadians emigrating to the U.S. is not a new trend. There has been a century long history of Canadians moving to the U.S., starting most notably with Alexander Graham Bell. By the late 1950s, approximately 10,000 highly skilled Canadians were leaving for the United States on a yearly basis until 1965, when U.S immigration policy became family based and subject to hemispheric quotas, which, along with Canadian tax cuts, virtually stopped the movement of Canadians to the U.S (Devoretz, 19). The trend began to re-emerge in 1989, after the Free Trade Agreement (FTA), and grew in magnitude after the signing of the North American Free Trade Agreement (NAFTA) in 1994. After the FTA, the 1990 United States Immigration Act greatly increased the number of employment-based visas, known as "E" and "H" visas (DeVoretz, 19). Many of the Canadians who have been leaving for the U.S. have been utilizing these visas. NAFTA inaugurated "TN" visas, which were visas for Canadians with a bachelor's degree or higher wishing to work in the U.S on a temporary basis. These visas accounted for 72% of 1995 graduates who moved to the U.S. for work related reasons (Appendix B). Of these graduates, only 22% have returned to Canada (Appendix C). These events gave those interested in leaving Canada for the U.S a means by which to go, and show that the majority of them aren't coming back, but don't explain why these highly skilled Canadians are leaving.

The Effects of the Brain Drain On Canada

Some may feel, "let them go, who needs them", but the loss of these individuals is a huge problem for the Canadian economy. First of all, the emigrants are over-represented by better-educated, higher-income earners. Appendix D shows that the likelihood of leaving Canada to work increases directly with education level. Also, the people being lost are in fact Canada's best and brightest graduates. A Human Resources Development Canada survey showed that 42% of the graduates who left in 1995 were in the top 10% of their class, and all of them were in the top half (Appendix E). Income was another area where the likelihood of moving was directly related to the number of movers (Appendix F). For example, tax filers with incomes over $150,000 were 7 times more likely to move to the U.S than those with incomes of less than $150,000 (Statistics Canada 2000). Similarly, movers were 5 times as likely to have incomes between $100,000 and $149,999 (Statistics Canada 2000). The loss of these taxpayers means less tax revenues for the government, and the magnitude of these lost tax revenues are staggering. In 1996, Canadians who left the country had paid $266 million in federal and provincial income taxes the year before (Stewart 32). Add to that the amount lost by their movement in sales tax, GST, property tax, etc., and it can be seen that in terms of Canadian tax revenue, the loss of these people is extremely detrimental to the Canadian economy. This loss of this tax revenue is a direct loss of revenue for both the provincial and federal governments, which could have otherwise been used in areas such as health care, education, debt payments, virtually anything.

The brain drain is also a problem for productivity in Canada. Canada is lagging behind the U.S in terms of productivity, and the loss of many of Canada's higher educated to the U.S is

widening the gap. Immigrants do come from the U.S, but the number of these immigrants is much less than the emigrants (Appendix A), and a 1991 study showed that on average, these immigrants only worked 32-hour work weeks (Laryea 23), which is a further blow to Canadian productivity. The above reasons show that the brain drain is a real problem, and a solution is necessary as the Canadian economy is hurt by this trend. The best way to solve this problem is to understand why it is occurring, and implement changes that make staying in Canada a better option for these people. The main reasons behind why the brain drain is occurring are high taxes in Canada, better employment opportunities in the U.S., and the weak Canadian dollar.

The Tax Systems

In comparison to Americans, Canadians have a huge tax burden. In an analysis by the Fraser Institute in 1999, the average Canadian family of two or more had a combined income, including all sources of income, of $61,825. Of this $61,825, $30,585 was paid in taxes (Chwialkowska). Calculating the amount of tax this family would have paid under United States tax laws gives tax payments of $13,580. This gives a difference of $17,005, meaning that the average family paid $17,005 more in taxes under Canadian tax laws as opposed to U.S laws (Chwialkowska). Since this calculation was made, the Canadian government introduced a fourth tax bracket, for those whose income exceeds $100,000. The change has brought more equity to the two tax systems, but there are still glaring differences. In the U.S, the high tax bracket starts at $297,350 (Tax Rate Tables…), while in Canada, the high tax bracket begins at $100,000 (Canada Customs…). These figures are important as the people being lost to the brain drain are high income earners, who are most affected by these differences in the tax brackets (The tax rates and tax brackets can be seen in Appendix G and H). The implementation of the new tax bracket system in Canada has brought more equality to the tax systems, as the federal taxes are similar between the two countries, but differences still arise.

Differences between the two countries' federal tax systems can be seen in things such as deductions, exemptions, and other areas. For example, in the U.S., one's mortgage is deductible (Itemized Deductions), while in Canada it is not. This can be a very substantial difference, which makes the U.S. tax system much more appealing. Also, there is a standard deduction in the U.S., which ranges from $4350 to $8450. In Canada, there are tax credits, such as energy refunds, child tax credits, and GST credits, but there is no deduction, and there is a 5% surtax for those in the high tax bracket, which furthers the American advantage. Although not huge, Canadian federal taxes are higher than those in the U.S. when it comes to federal taxes, but this does not tell the entire tax story.

Differences also arise in state vs. provincial taxes. These differences can be seen in Appendix G and I (State/provincial tax rates), as the average state tax for the high tax bracket in the U.S. on average is 4.6%*, while in Canada it is 14.99%**. The 10% gap

*This excludes Vermont and North Dakota as the state tax rates in these states are a fixed proportion of
Federal taxes.

*, **, Calculated using Appendices B and C by taking the averages.

means that on average, a person making $100,000 in Canada will pay $10,000 more in provincial tax than an American would pay in state tax. An example of this difference shows how much of an effect this can have. Provincial income tax in British Columbia is very close to the Canadian average, as it moves marginally from 7.3% on the first $30,484, 10.5% on the next $30,485, 13.7% on the next $9,031, 15.7% on the next $15,000, and 16.7% on any amount over $85,000 (Canada Customs...). Just south of the border is Washington state, home of Microsoft. On top of the allure for working for the world's premier computer company, state income tax in Washington is 0%. This is troubling because relocation in this situation could be a matter of a one-hour drive, and a work visa would take 4-5 days to process (Purvis 49). This short move is no longer, or no more inconvenient than an inter-province move, but the end result is the loss of another Canadian worker to the U.S. The differences from province to province and state to state may not be this extreme, but the difference, along with the differences in federal income tax, can lead to a difference significant enough to provide enough of pull from the U.S for high-income Canadians to leave.

Wages and Opportunity

Along with the high tax burden, another major reason for the brain drain is the higher wages and greater opportunities available in the U.S. When comparing the wages of the professions in questions, it becomes clear that there are higher wages offered in the U.S. Appendix J (teachers wage) shows that in 1996-1997, the American university professor was paid 25% more than their average Canadian counterpart. This 25% was a difference of $22,627. This wage difference is present in many knowledge-based occupations, such as engineering, computer science, and others (Appendix K). As stated previously, taxes play a part in the difference of after-tax income, but the increase in wage plays a larger role (Appendix L). Since 1996, many major American law firms have been recruiting in Canada offering starting salaries as high as $100,000 as opposed to the $45,000 being offered to them by Toronto Law firms (Purvis 47). These numbers are scary statistics, as it shows that our top graduates, and our most educated people are being offered huge salary increases as an incentive for moving to the U.S. The trend is similar with computer science and engineering, as American high-tech companies heavily recruit top graduates from many Canadian universities. A trip to the job fair at the University of Western Ontario shows the huge interest of American companies in Canadian graduates. At the 2001 campus recruiting fair for engineering, computer science and Ivey school of business students, a job fair I had the pleasure of attending, the majority of the companies recruiting were American companies, looking for graduates to relocate to the U.S. upon graduation. This pull from American recruiters, as well as higher wages in the U.S., are huge factors leading to more and more Canadians moving to the U.S.

Another American advantage can be seen in terms of opportunity. The problem of less opportunity in Canada is especially apparent in the high-tech industry, as many young Canadian computer engineers and computer scientists go to the U.S. simply because the U.S. has what they're looking for. The U.S. has the Microsoft campus in Seattle, Silicon Valley in California, plus many other huge high-tech areas and

places to work. Canada doesn't have the big draw of a Microsoft or a silicon valley. Canadians have Kanata Ontario, "Silicon Valley of the North", but with Nortel doing poorly, Corel becoming almost nonexistent, and a whole bunch of little telecommunications companies, it's nothing compared to the real silicon valley. This Canadian government has identified this opportunity problem as an area that needs improvement, and has tried to implement policy to entice Canadians to stay. In 1997, the federal government put "$800 million into a new foundation to invest in research facilities at hospitals, universities, and colleges to stop the brain drain of Canadian scientists and researchers to the United States (Chang 1997)", and "the new Canadian Foundation for Innovation ... will award grants ($180 million/year) to modernize facilities at universities and hospitals by establishing computer networks, databases and state-of-the art equipment (Chang 1997)". These are great initiatives and putting much needed money into hospital and university computing facilities, but without scientists and engineers to use the resources, how much good will it really do?

On top of wages and opportunity, there are also employment issues. Canadian unemployment rates are nearly double the U.S. rates in many science and engineering occupations (Human Resources..., pg. 19), and the unemployment rates are higher rates in managerial, math, computer science, and medical positions, among others (Appendix M). Another prime example is the nursing field. There is a shrinking Canadian labour market for nurses, and in light of this, young Canadians continue to seek training in nursing. The two reasons for this are that training is highly subsidized, and relocation to the U.S. is becoming easier (DeVoretz 22). This is exactly the problem. Young Canadians take advantage of the Canadian education system, train and learn here, and head south. Canada is almost becoming a training ground for the U.S. in some professions, and must reverse this trend. This huge difference in employment opportunities and wage between Canada and the U.S. is another major reason for the brain drain.

The Canadian Currency

A third factor contributing to the brain drain is the weak value of the Canadian dollar. The Canadian dollar is currently in a period where its value is at an all time low. As of March 20, 2002, the Canadian dollar was worth only $0.6333 American Dollars and since 1990, the Canadian dollar has been falling consistently. In 1990, the Canadian dollar was worth $0.8618 (International Financial..., 2001), which is a difference of $0.2285. The difference of nearly $0.23 is a staggering statistic. It represents a 27% drop in the value of the dollar in a matter of 10 years. There is still great uncertainty about the Canadian dollar, which is a further disincentive to work for Canadian currency. This disincentive is that someone who chooses to work in Canada, despite higher taxes and lower wage, receives payment in Canadian dollars, which reduces the spending power of the money that they are earning. For example, suppose that the tax systems and wages in Canada and the U.S were identical (which has been shown to be a tremendous assumption!). The effect of the dollar alone means that if a there are two workers making $100,000, one in Canadian dollars and the other making American dollars, after converting the money, the worker earning Canadian dollar makes $63,330 compared to the

American making his $100,000. This difference is enormous, and on top of that, the American is probably making better money and paying less in taxes! In order to compete with the U.S in trying to keep our highly skilled workers, the Canadian dollar needs to become more stable and gain back some of its value.

Conclusions and Recommendations

Many of Canada's best and brightest minds are leaving Canada for the United States. The main reason for this is money. The combination of higher wages, lower taxes, better opportunities, and a strong dollar makes emigration to the United States a very appealing option for many Canadians. Many businesses state that the brain drain is a very real problem, and staffing positions in medicine, nursing, engineering and science is becoming tougher as many leave for the United States. There are many statistics claiming that the "brain drain" doesn't exist, but the people making this claim are the government, the ones that are responsible for the problem. As a computer engineering student, I can honestly say that I do not know if I will work in Canada upon graduation, and I am seeing that moving to the U.S. is an extremely easy, and extremely tempting option. A discussion with my classmates ended with the conclusion that although there is a desire to stay in Canada, realistically speaking, the U.S. is a probably destination upon graduation. This further shows that the brain drain is a real problem, a problem which could easily spiral out of control. Unless something is done, there is no reason for the trend to stop.

In order to solve this problem, there are a few things that can be done by the government of Canada. Tax cuts would be a huge incentive for many of the emigrating to stay. An increased focus on R&D would provide much more opportunity, and also provide incentive for workers to choose to stay in Canada. The current value of the Canadian dollar is an extremely complex situation, and economists don't have an explanation for its current low value, but nonetheless, fiscal policy to try to stimulate the weak value of the dollar could also entice others to stay. Before any policy change, the first thing that the Canadian government needs to be do is recognize the brain drain as a real problem. Until they do, Canada's best and brightest will continue to leave, and it will have detrimental effects on tax revenue, productivity, and indirectly, the entire Canadian economy.

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Table 2: ***Canadian Emigration to the United States, Gross and Net of US Immigration to Canada, by Occupational Groups, 1982–96***

	Professionals[a]			Managers			Skilled[b]			Unskilled[c]		
	Canadian Flows to US (1)	US Flows to Canada (2)	Net Flows (3) = (1) - (2)	Canadian Flows to US (4)	US Flows to Canada (5)	Net Flows (6) = (4) – (5)	Canadian Flows to US (7)	US Flows to Canada (8)	Net Flows (9) = (7) – (8)	Canadian Flows to US (10)	US Flows to Canada (11)	Net Flows (12) = (10) – (11)
1982	1,690	1,576	114	831	616	215	264	325	– 61	664	1,191	– 527
1983	1,627	1,043	584	914	438	476	343	215	128	900	954	– 54
1984	1,628	876	752	996	397	599	368	205	163	933	882	51
1985	1,757	797	960	928	383	545	378	195	183	1,097	908	189
1986	1,751	980	771	971	474	497	336	197	139	1,127	894	233
1987	1,848	1,067	781	1,122	542	580	383	243	140	1,143	972	171
1988	1,867	910	957	934	457	477	380	190	190	1,111	743	368
1989	1,772	927	845	1,187	476	711	499	245	254	1,129	797	332
1990	2,493	*d*	2,493	1,751	*d*	1,751	752	*d*	752	3,571	*d*	3,571
1991	2,080	834	1,246	1,327	351	976	539	182	357	2,709	659	2,050
1992	2,384	980	1,404	1,853	360	1,493	322	149	173	2,082	574	1,508
1993	2,916	999	1,917	2,022	370	1,652	318	147	171	2,092	600	1,492
1994	2,929	877	2,052	1,861	374	1,487	262	123	139	1,798	522	1,276
1995	2,440	676	1,764	1,415	332	1,083	176	72	104	1,512	245	1,267
1996	3,581	641	2,940	2,065	302	1,763	351	50	301	1,000	319	681
1982–89												
Total flow[e]	13,940	8,176	5,764	7,883	3,783	4,100	2,951	1,815	1,136	8,104	7,341	763
Yearly ave.	1,743	1,022	721	985	473	513	369	227	142	1,013	918	95
1990–96												
Total flow[e]	18,823	5,007	13,816	12,294	2,089	10,205	2,720	723	1,997	14,764	2,919	11,845
Yearly ave.	2,689	715	1,974	1,756	298	1,458	389	103	285	2,109	417	1,692
Total	32,763	13,183	19,580	20,177	5,872	14,305	5,671	2,538	3,133	22,868	10,260	12,608

[a] Includes professionals in the natural and social sciences, teaching, medicine and health, and the performing arts.

[b] Includes workers in precision production, machining, crafts, and repair and construction occupations.

[c] Includes operators, fabricators, laborers, sales, clerical, farming, forestry, mining, fishing, and service occupations.

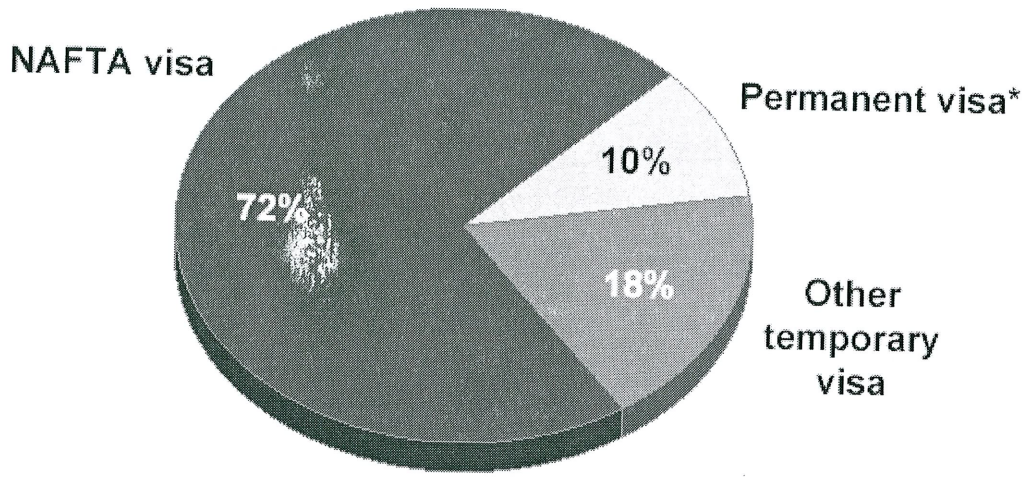
[d] Data not available.

[e] Cumulative flows for the years shown.

Sources: United States, Department of Justice, Immigration and Naturalization Service, *Statistical Yearbook of the Immigration and Naturalization Service* (Washington, DC: Immigration and Naturalization Service, Office of Policy and Planning, Statistics Branch), various years; Canada, Department of Citizenship and Immigration, *Immigration Statistics* (Ottawa: Supply and Services Canada), various years; plus special tabulations.

Appendix B

1995 Graduates who Moved to the U.S. for Work-Related Reasons, by Type of Admission

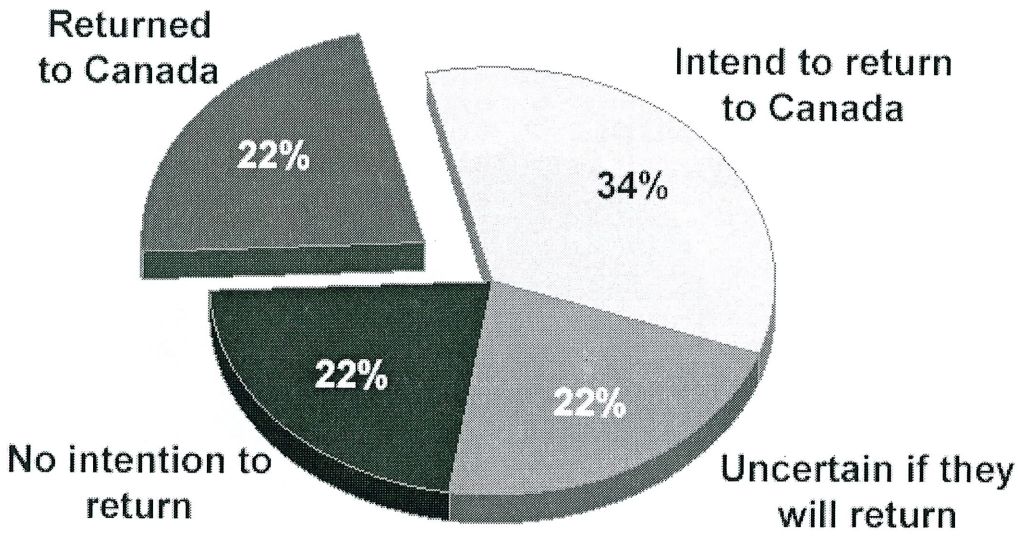


* Also includes graduates who had dual Canadian/U.S. citizenship.

(Human Resources Development Canada/Industry Canada)

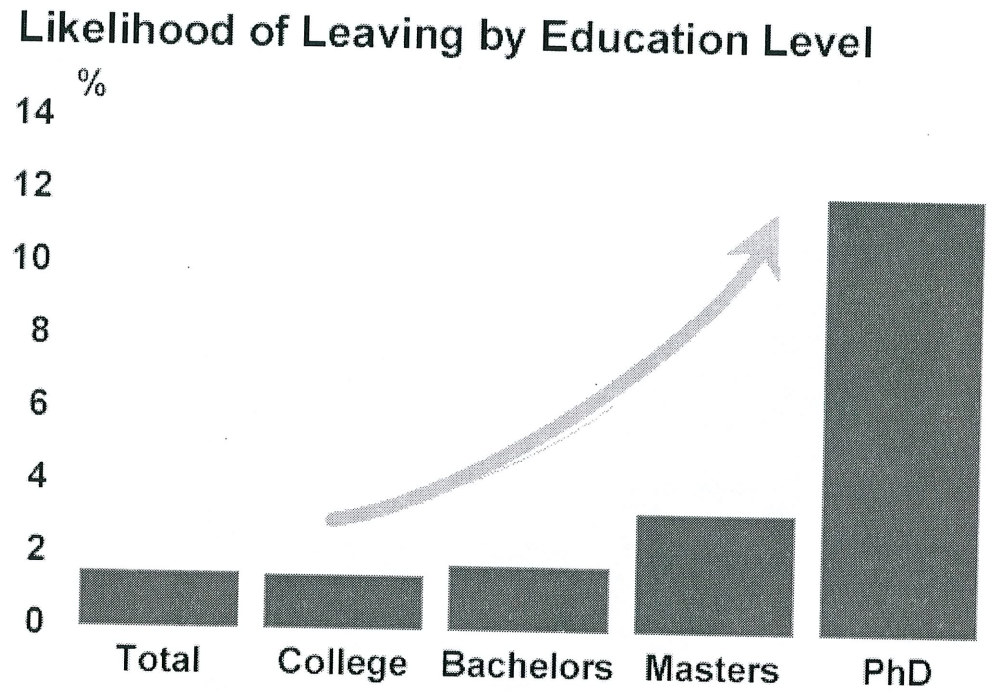
Appendix C

Current Status of 1995 Graduates who Moved to the U.S. for Work-Related Reasons



(Human Resources Development Canada/Industry Canada)

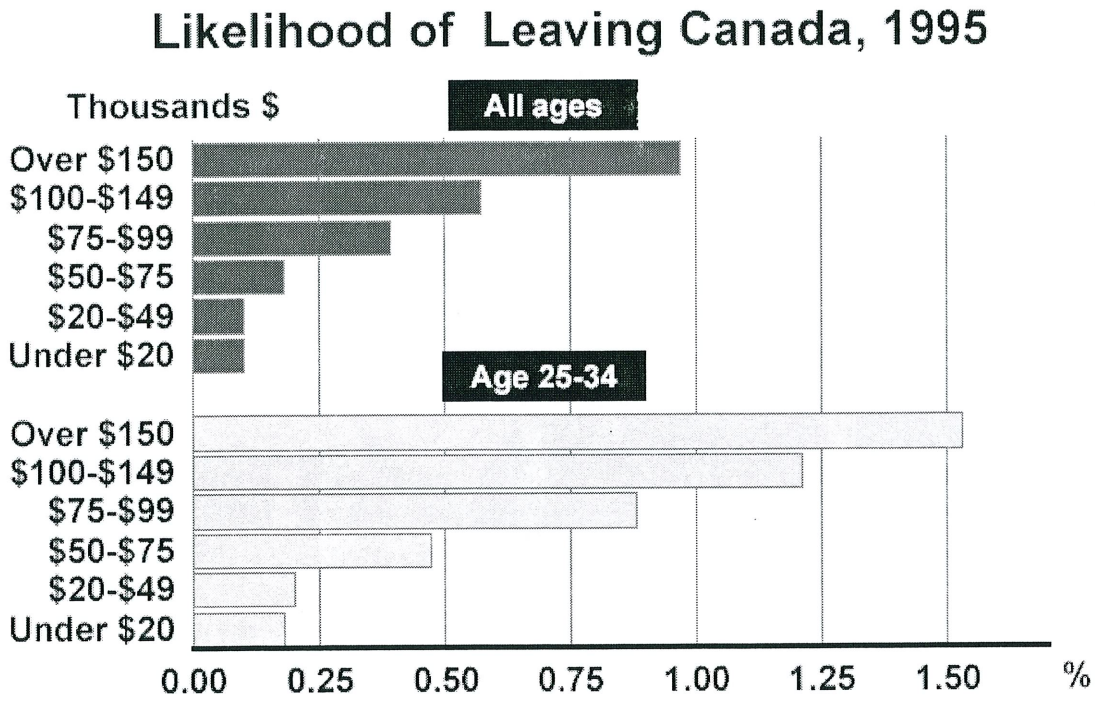
Appendix D



Source: Survey of 1995 Graduates Who Moved to the United States

(Human Resources Development Canada/Industry Canada)

Appendix F



(Human Resources Development Canada/Industry Canada)

Appendix G

Canadian Tax Rates - Federal and Provincial

Canadian Federal

16% on the first $30,754 of taxable income;
22% on the next $30,755 of taxable income;
26% on the next $38,491 of taxable income; and
29% of taxable income over $100,000.

Canadian Provincial

Newfoundland and Labrador

10.57% on the first $29,590 of taxable income, +
16.16% on the next $29,590, +
18.02% on the amount over $59,180

Prince Edward Island

9.8% on the first $30,754 of taxable income, +
13.8% on the next $30,755, +
16.7% on the amount over $61,509

Nova Scotia

9.77% on the first $29,590 of taxable income, +
14.95% on the next $29,590, +
16.67% on the amount over $59,180

New Brunswick

9.68% on the first $30,754 of taxable income, +
14.82% on the next $30,755, +
16.52% on the next $38,491, +
17.84% on the amount over $100,000

Ontario

6.16% on the first $30,814 of taxable income, +
9.22% on the next $30,815, +
11.16% on the amount over $61,629

Manitoba

10.9% on the first $30,544 of taxable income, +
16.2% on the next $30,545, +
17.4% on the amount over $61,089

Saskatchewan

11.5% on the first $30,000 of taxable income, +

Alberta

10% of taxable income

British Columbia

7.3% on the first $30,484 of taxable income, +
10.5% on the next $30,485, +

13.7% on the next $9,031, +
15.7% on the next $15,000, +
16.7% on the amount over $85,000

Yukon

7.36% on the first $30,754 of taxable income, +
10.12% on the next $30,755, +
11.96% on the next $38,491, +
13.34% on the amount over $100,000

Northwest Territories

7.2% on the first $30,754 of taxable income, +
9.9% on the next $30,755, +
11.7% on the next $38,491, +
13.05% on the amount over $100,000

Nunavut

7.2% on the first $30,754 of taxable income, +
9.9% on the next $30,755, +
11.7% on the next $38,491, +
13.05% on the amount over $100,000

Appendix H.1
U.S. Federal Tax rates – Head of Household

Head of Household - Tax Year 2002	
Taxable Income	**Tax**
Not Over $10,000	10% of the taxable income
Over $10,000 but not over $37,450	$1,000 plus 15% of the excess over $10,000
Over $37,450 but not over $96,700	$5,117.50 plus 27% of the excess over $37,450
Over $96,700 but not over $156,600	$21,115 plus 30% of the excess over $96,700
Over $156,600 but not over $307,050	$39,085 plus 35% of the excess over $156,600
Over $307,050	$91,742.50 plus 38.6% of the excess over $307,050

Head of Household - Tax Year 2001	
Taxable Income	**Tax**
Up to $36,250	15% of the taxable income
Over $36,250 but not over $93,650	$5,437.50 plus 27.5% of the excess over $36,250
Over $93,650 but not over $151,650	$21,222.50 plus 30.5% of the excess over $93,650
Over $151,650 but not over $297,350	$38,912.50 plus 35.5% of the excess over $151,650
Over $297,350	$90,636.00 plus 39.1% of the excess over $297,350

(Tax Rate Tables 2001 & 2002)

Appendix H.2
U.S. Federal Tax Rates – Unmarried Individuals

Unmarried Individuals (other than surviving spouses and heads of household) - Tax Year 2002

Taxable Income	Tax
Not over $6,000	10% of the taxable income
Over $6,000 but not over $27,950	$600 plus 15% of the excess over $6,000
Over $27,950 but not over $67,700	$3,892.50 plus 27% of the excess over $27,950
Over $67,700 but not over $141,250	$14,625 plus 30% of the excess over $67,700
Over $141,250 but not over $307,050	$36,690 plus 35% of the excess over $141,250
Over $307,050	$94,720 plus 38.6% of the excess over $307,050

Unmarried Individuals (other than surviving spouses and heads of household) - Tax Year 2001

Taxable Income	Tax
Up to $27,050	15% of the taxable income
Over $27,050 but not over $65,550	$4,057.50 plus 27.5% of the excess over $27,050
Over $65,550 but not over $136,750	$14,645.00 plus 30.5% of the excess over $65,550
Over $136,750 but not over $297,350	$36,361.00 plus 35.5% of the excess over $136,750
Over $297,350	$93,374.00 plus 39.1% of the excess over $297,350

(Tax Rate Tables 2001 & 2002)

Appendix J

Salary comparisons between university teachers in 13 large Canadian universities and US doctoral institutions, 1996-97

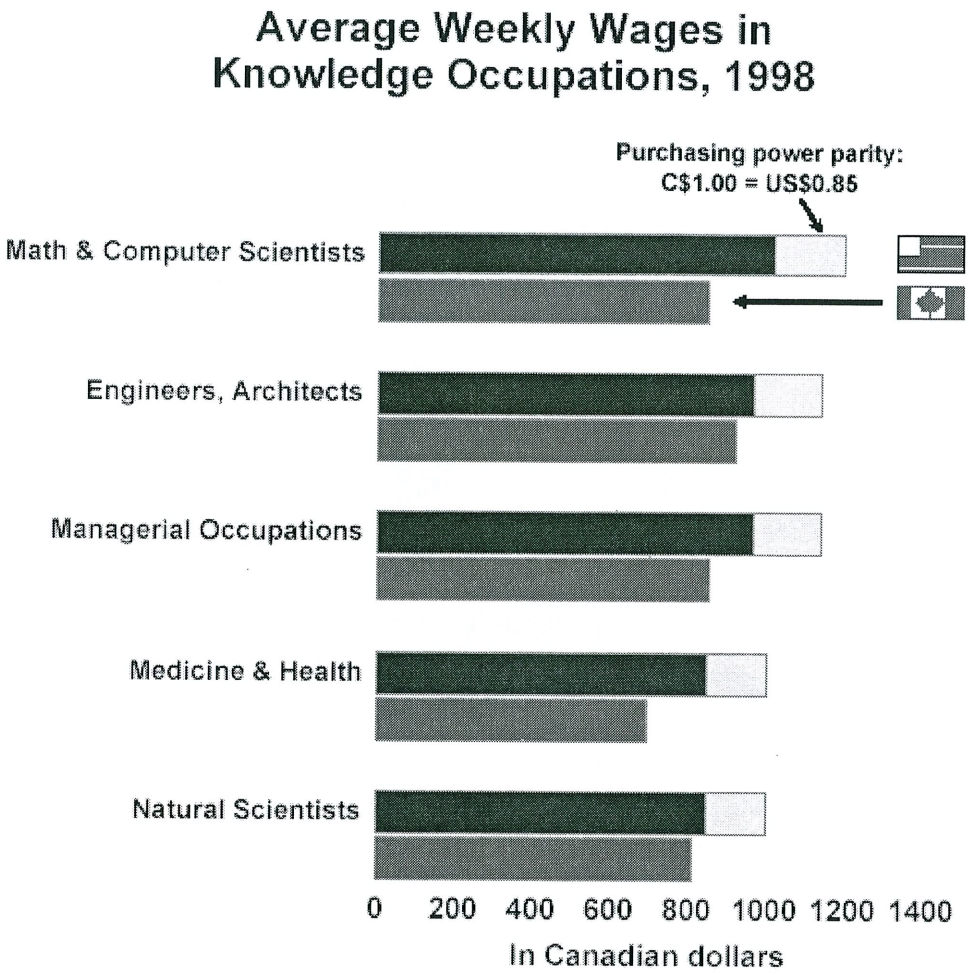
($Canadian)

	Full Professor	Associate	Assistant
Mean US faculty salaries*	$112,255	$79,178	$66,612
Mean Canadian faculty salaries	89,628	69,502	54,442
Absolute difference	22,627	9,676	12,170
Percentage difference	25.2	13.9	22.4

* Annualized US salaries were converted to Canadian dollars using the OECD purchasing power parities index of 1.22 for 1996.

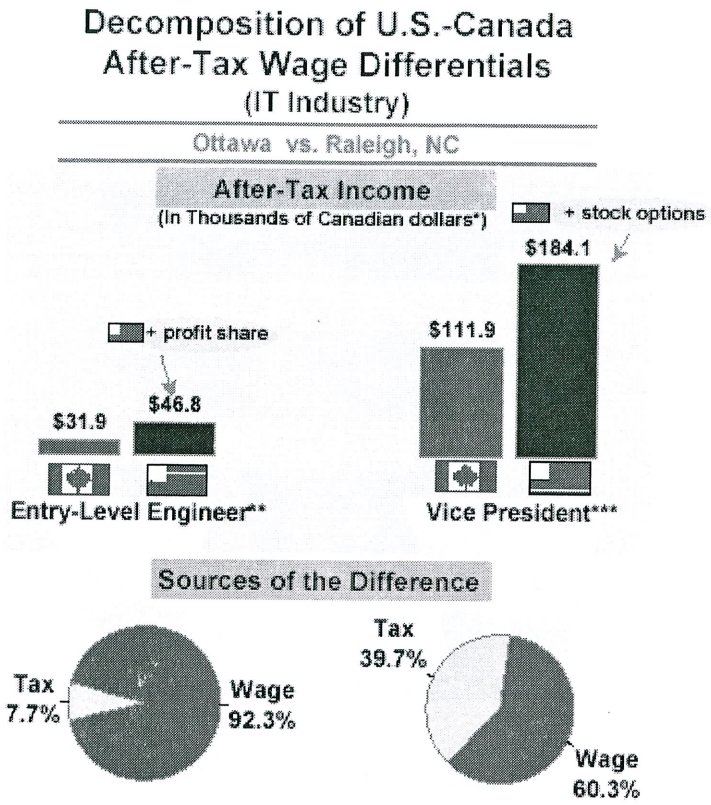
(Emery, 29)

Appendix K



(Human Resources Development Canada/Industry Canada)

Appendix L



* Exchange rate at purchasing power parity, C$1.00 = US$0.85
** Tax assumptions: Single, claiming itemized deductions at 15% of gross income (U.S.), includes social security taxes and federal and provincial (state) income taxes.
*** Tax assumptions: Married, one-earner, 2 children, includes social security taxes and federal and provincial (state) income tax. For the U.S., itemized deductions are estimated at 15% of gross pay.
Source: Industry Canada

(Human Resources Development Canada/Industry Canada)

Appendix M

Unemployment Rates by Occupation, 1998

		
All occupations	8.3	4.5
Managerial & professional	3.0	1.8
Managerial & administrative	2.7	1.8
Professional	3.2	1.9
Natural sci., engineering & math	3.2	1.8
Physical Sciences	4.2	2.9
Life Sciences	8.3	1.4
Architects & Engineers	2.6	1.7
Arch., Eng. Technologists, related	3.6	2.7
Math, Statistics, Systems Analysis	2.6	1.4
Computer Prog., Systems Analysts	2.5	1.3
Social sciences	3.8	2.0
Teaching	3.4	2.0
Medicine & health	1.6	1.5
Artistic, literary & recreational	5.5	4.2

(Human Resources Development Canada/Industry Canada)