

Effects Of Immigration on the Wages of Native Born Workers

For U.S and Canada

by

Suleiman Rana

1052657

Major Paper presented to the

Department of Economics of the University Of Ottawa

In partial fulfillment of the requirements of the M.A Degree

Supervisor: Professor Grenier

ECO 7997

Ottawa, Ontario

January 15, 2001

## Introduction

In recent years, the subject of immigration has become a focus of concern for many demographic studies. There is, for example, a forecast that by result of the end of the century, Britain will cease to be a predominantly white country, as a result of the non-white population having higher birth rates as well as higher immigration rates. Such studies and surveys express profound anxieties of society in industrialized nations toward immigration. What needs to be emphasized is that such anxieties derive from concerns and considerations other than economic ones. Consider, for example, a statement issued by Cardinal Giacomo Biffi, who is a contender for the office of the Pope once the present Pope either dies or vacates the office for reasons related to health. Biffi has gone to the extent of categorizing the impact of immigration on Europe as "an invasion of Islam".<sup>1</sup>

Ironically, the oil-rich Islamic countries around the Persian Gulf, with their thin population base and dependence on immigration, have their own anxieties with regard to the size of the expatriate community within their own borders and the effect it may have on their political structures.

Such fears and anxieties about the phenomenon of immigration generate negative perceptions. These negative perceptions, in their turn, can and often do encourage a mindset which looks at immigration from a distorting emotional

perspective. For this precise reason, a conscious effort needs to be made in order to ensure that a study of the economic impact of immigration on the host country is conducted objectively and is not allowed to be clouded by emotively generated perceptions. The basic approach to assessing the economic impact of immigration is to examine the impact immigration has on the wages of the native born population. It will be important to sift and separate the empirical from the emotive, and the objective from the subjective.

Over the last 30 years, socio-economic conditions, especially in the developing world, in conjunction with various immigration policies have resulted in over 20 million people leaving their homelands and immigrating legally to the United States and Canada in search of better opportunities and a more secure future.<sup>2</sup> The continuing emigration of workers from other countries to the U. S. and Canada has rekindled popular interest in the effects of immigration on the native labor force. Various empirical studies have been conducted to examine the effects of changes in the supply of immigrant labor on the wages of natives. The existing empirical evidence appears to suggest that the potential impact of the large influx of immigrant labor on natives' wages was small.

This essay proposes to critically examine various approaches that have been proposed to determine the economic effect of immigration on the wages of native born workers and to see which kinds of native workers are more likely to be affected and to what extent, leading to recommendations regarding the policies that governments in the U.S and Canada should adopt.

Structurally, this essay is divided into six sections. Section 1 examines immigration patterns for Canada and the U.S. Section 2 explores economic, political, and social causes which encourage and sometimes force people to emigrate to other countries. In this section, supply and demand side factors are fully examined. The focus in Section 3 is on the various concerns regarding the effects of immigration on the wages of native-born workers. An effort is made to determine to what extent these concerns are imaginary versus the extent to which they are real and based on empirical evidence. This is followed by a brief account of the theoretical framework employed to explain the effects of increase in labor supply on the wages of native-born population. Section 4 examines the empirical evidence. Various empirical approaches are examined such as: a) cross sectional empirical studies conducted for Canada and the U.S, b) the case study approach, c) time series studies, and d) the factor proportion approach. In Section 5, some benefits of immigration are highlighted, and a few policy measures are recommended to neutralize whatever negative impact immigration may have on the wages of native-born workforce. Finally, in Section 6, I summarize the findings of this paper.

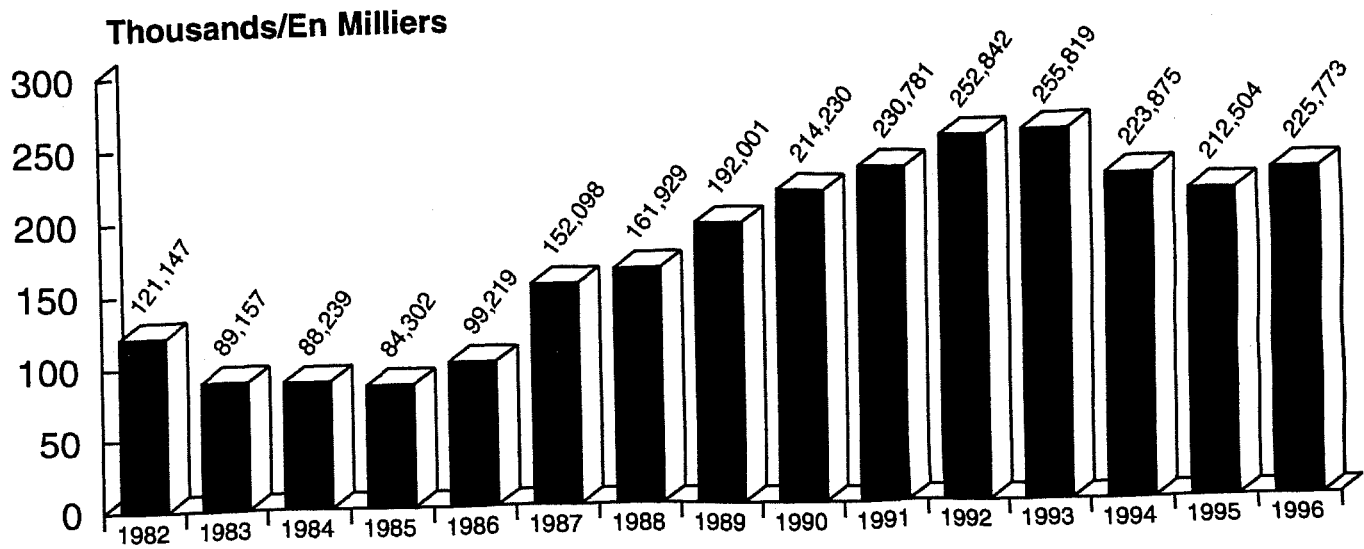
## Section 1

### Immigration Patterns For Canada

Since the late 1980's, Canada has admitted on average of 200,000 immigrants per year.<sup>3</sup> According to Figure 1, the annual flow of immigrants is not much higher as compared to the influx in the late 1950's, mid-1960, and mid-1970. On a per-capita basis, immigration levels are actually lower. In the recessionary years of the early 1980s, there was a decline in immigration. However, immigration levels increased once again by 1986. But surprisingly, the early recessionary years of 1990s did not witness a decline in immigration. That was primarily and perhaps exclusively owing to a political choice made by the Mulrooney government.

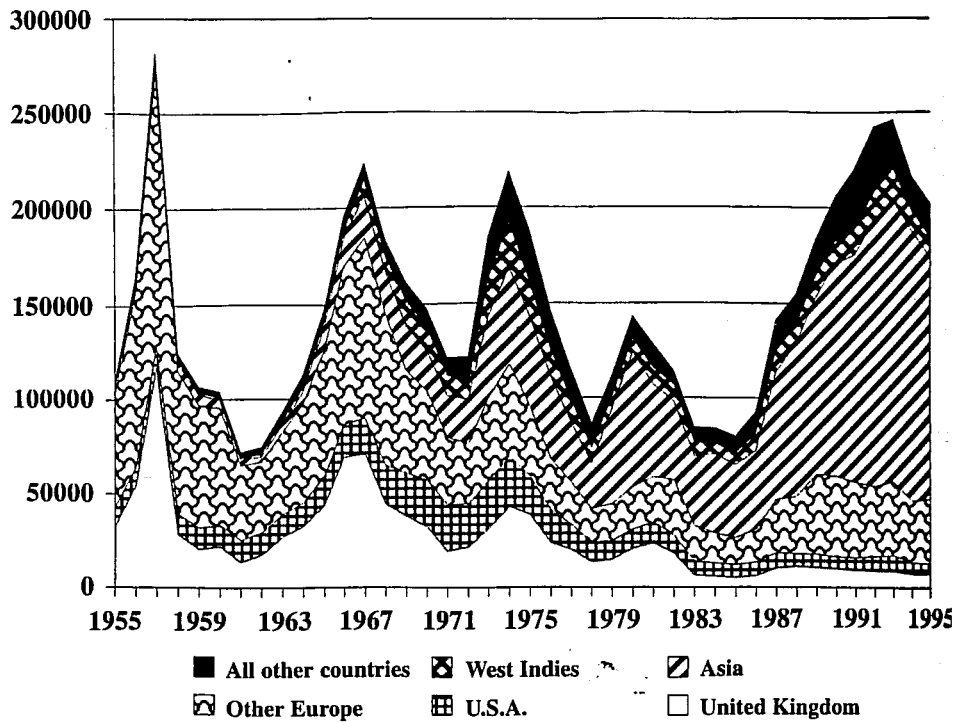
Figure 1 clearly demonstrates that the source regions of immigration to Canada have changed dramatically. In the 1960's, most immigrants came from the U.S and West European countries, such as the British Isles, Italy, Greece and Germany. But by 1995, Asia had become the largest source region of immigration. The point which needs to be made is that the composition change of immigration may or may not have a bearing on the economic consequence of immigration, but it does have an affect on the public perception regarding the overall impact of immigration.

**Figure 1.1** Immigration to Canada by Calendar Year 1982-1996



Source : <http://www.cic.gc.ca/english/pdf/files/pub>

**Figure 1** Immigration to Canada by Source Region 1955-1995



Source: Gunderson, Benjamin and Riddell, Labor Economics. Theory, Evidence and Policy in Canada (Fourth Edition), McGraw-Hill Ryerson, Toronto, 1998.

The change of source region was due to several policy changes. Until the mid-1960's, immigration to Canada from the non-European non-white regions was restricted. Since then, some of the major policy developments have been the evolution of the right to family reunification and the implementation of the point system in 1967, which evaluates individuals on the basis of their skills (Table 1). These two policy measures greatly affected the composition of immigration. Many immigrants exercised their right to sponsor family members from outside of Canada. This is particularly true of the Asians, who have strong family ties. Those immigrants who are sponsored by families do not have to be concerned about their skill level since they are not evaluated according to their skill attainment. However, those immigrants who do not have family ties are evaluated according to the point system.

It should also be noted that the point system has had a major impact on the skill level of immigrants entering Canada. The point system helps the government evaluate immigrants according to their skill. Certain points are awarded according to certain skill sets that immigrants possess. In order to be considered for immigration, an immigrant needs to attain 70 points. Because of the point system, the average immigrant entering Canada had one more year of schooling than an immigrant entering the U.S.<sup>4</sup> The dramatic change in the composition of immigrants since the late 1960's, tilting the scale in favor of the Asians, can directly be attributed to the above-mentioned two policy measures.



Table 1 Canada's Point System

Factor	Maximum Points
1. <b>Age:</b> Maximum points are given for individuals ages 21-44, with declining points given for older individuals (zero for age 49 and older).	10
2. <b>Education:</b> Increasing points for level of education, for example with 0 for incomplete high school, 15 for a bachelor's degree, and 16 for advanced degrees.	16
3. <b>Specific Vocational Training:</b> Since occupation is a primary determinant of admission, occupational qualifications comprise a large part of the assessment.	18
4. <b>Occupation:</b> Points are assessed according to the perceived demand for an individual's skills in the Canadian labour market. An applicant is automatically disqualified if he/she obtains zero points in this category.	10
5. <b>Arranged Employment/Designated Occupation:</b> If an individual has a pre-arranged job, he/she gets 10 points. Points are also awarded for being in a "designated" occupation.	10
6. <b>Work Experience:</b> Points are awarded for years of experience, with the most points being awarded for experience in occupations in high demand.	8
7. <b>Language Ability:</b> Points are awarded for fluency in English or French. Fluency in one language yields 9 points, while fluency in both official languages yields 15 points.	15
8. <b>Demographic Factor:</b> This is essentially an "intercept" factor, and is currently set to 8 points for everyone.	10
9. <b>Personal Suitability:</b> Points are assigned on the basis of an interview, providing a more subjective evaluation of the probability of success in Canada.	10
10. <b>Relative in Canada:</b> 5 points are awarded if the applicant has a relative who is a permanent resident of Canada.	5

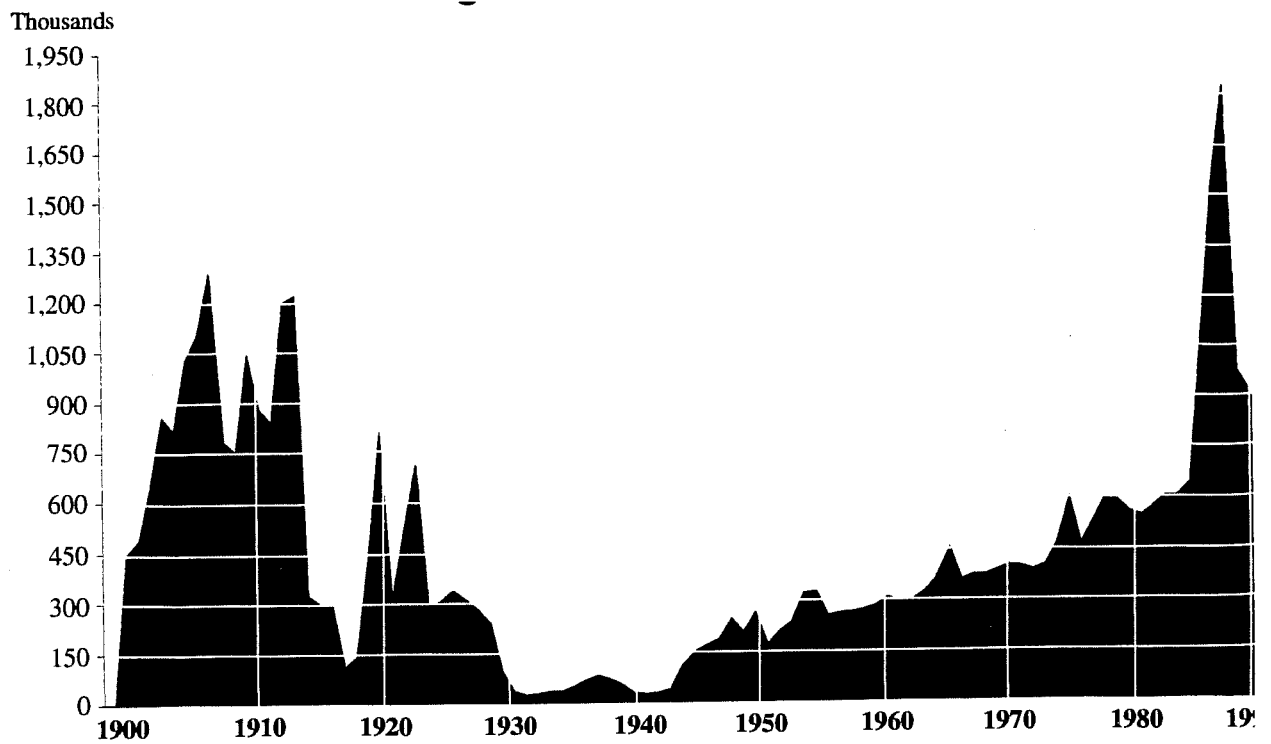
Source: Gunderson, Benjamin and Riddell, Labor Economics. Theory, Evidence and Policy in Canada (Fourth Edition), McGraw-Hill Ryerson, Toronto, 1998.

## Immigration Patterns for the U.S

Similarly, immigration levels of Asians entering the U.S have dramatically risen since the mid -60s. Ever since 1940 immigration levels have been at a rise in the U.S (figure2 and table 2).<sup>5</sup> The 1980s witnessed the largest influx of Asian immigrants to the U. S. since the first decade of the twentieth century, with more than 7.3 million Asian immigrants being legally admitted between 1981 and 1990. Overall, the average annual flow of immigrants more than doubled in the 1990s compared with the previous decade to reach on average close to 800,000 persons per year.<sup>6</sup> This phenomenal increase in numbers is attributable, at least partly, to the large immigration to the United States from the neighboring Mexico, which shares a long and porous border with the U.S. Since the border is too long to be effectively monitored and controlled, a very large number of illegal immigrants from Mexico have also entered the U.S with far-reaching consequences. Since these illegal immigrants do not have a recourse to legal remedies, they are more likely to be exploited and employed at lower-than-the-legal wages, thus exercising a downward impact on wages, effectively depressing the wage levels in the region where these illegal immigrants are located and in the economic sectors in which they are employed.

Due to geographical location, the U.S is faced with a large number of illegal migrants not only from Mexico but also from Cuba. Political considerations make deportations of Cubans an impossible task . In fact, migrants from Cuba

Figure 2 Immigrant Flows To The U.S



Source: U.S Immigration and Naturalization Service

**Table 2** Legal Immigrant Flow To The U.S

Decade	Immigrant Flow (in 1000s)	Immigrant Flow as Percentage of Change in Population	Percentage of Population that is Foreign-Born at End of Decade
1881-1890	5,246.6	41.0	14.7
1891-1900	3,687.6	28.3	13.6
1901-1910	8,795.4	53.9	14.6
1911-1920	5,735.8	40.8	13.2
1921-1930	4,107.2	24.6	11.6
1931-1940	528.4	5.9	8.8
1941-1950	1,035.0	5.3	6.9
1951-1960	2,515.5	8.7	5.4
1961-1970	3,321.7	13.7	4.7
1971-1980	4,493.3	20.7	6.2
1981-1990	7,338.1	33.1	7.9

Source: Borjas, George J. (1994), "The Economics of Immigration", Journal of Economic Literature, December, XXXII (4): p1668

always seek and are invariably granted political asylum. The number of illegal immigrants in the U.S is estimated to be around 300,000 to 600,000 per year,<sup>7</sup> a number which is low relative to the case for Canada after adjusting for the size of the population. The U.S Immigration and Naturalization Service estimates that 420,000 new illegal immigrants settle permanently in the U.S each year. However, it is also believed that one in four immigrants to the U.S eventually returns to their home nation.<sup>8</sup> Many of these immigrants make trips back and forth from the host to the recipient country. It is thus estimated that 200,000 to 300,000 illegal immigrants actually settle in the U.S per year.<sup>9</sup> The current influx has caused an enormous growth in the immigrant population, from 9.6 million in 1970 (4.8% of the population) to 26.3 million (9.8% of the population) today.<sup>10</sup>

The recent increase in immigration in both the U.S and Canada has taken place in periods of declining purchasing power and inflationary pressures in the source countries, and higher wage inequalities between the source and recipient countries as well as within the recipient countries.

In setting immigration levels, policy makers are concerned about the effect on native-born labor markets. Does higher immigration indeed lower wages and employment for native-born individuals? One must understand the theoretical issues as well as the various other factors that drive immigration. Any analysis should be based on the supply and demand side factors effecting immigration patterns.

## Section 2

### Reasons Behind Immigration

A major incentive for an individual to migrate is the income differential that exists between the source nation and the recipient nation. A reasonable summary indicator of the incentive to move is the ratio of per capita income in the source countries relative to the host country. For example, on average per capita income levels in 1997 for Canada were much higher compared to those of the source nations. The weighted average GDP per capita of all source countries was \$9,900, or 44 percent of the U.S per capita GDP (Table 3). Therefore, it is likely that when immigrants migrate to the developed nation, their income would rise. However, this supply side factor is limited by the immigration policy of the host nation. For example, Canada's point system has had a huge influence on the numbers and composition of immigrants allowed to enter Canada. Non-economic factors are also important. The psychological stress associated with moving to live in another country, and the language and cultural differences impinge on the decision to move. A large presence of an expatriate community from the source country in the country of preferred destination can function to reassure the perspective immigrant that he/she would receive active assistance from his community in settling down, and also a perceived assurance that he/she would not be emotionally and culturally isolated in the host country.

**Table 3 Per Capita income in source relative to host countries**

Host country	Average number of immigrants <sup>1</sup> (thousands)	Per cent of immigrants counted	Weighted source country GDP per capita in 1997, PPP\$	Ratio of source country GDP per capita to host country GDP per capita in 1997
Australia	87.4	66.6	12265	60.7
Belgium	51.2	74.1	17688	77.7
Canada	207.3	48.6	9900	44.0
Denmark <sup>2</sup>	26.1	33.4	16679	70.4
Finland	7.8	61.2	8744	43.4
France	77.5	55.3	6231	28.3
Germany	679.3	49.9	10016	47.1
Italy <sup>3</sup>	111.0	67.4	8279	40.8
Japan	243.9	67.3	10387	43.2
Netherlands	75.6	43.2	15497	73.4
Norway	18.0	61.7	17565	71.8
Sweden	33.6	32.6	17835	90.1
Switzerland	77.5	50.4	19262	76.3
United Kingdom <sup>2</sup>	219.8	89.4	14832	71.5
United States	773.8	77.8	6371	22.0

Source: OECD International Migration, World Bank Indicators, 1999

Transportation costs also play a big role in determining whether immigration to the recipient country is advantageous or not.

Immigration can also be influenced by demand side factors. Existence of shortages of workers in the recipient country can be mitigated through immigration. However, with technological progress occurring at a phenomenal pace, especially in the information technology sector, demand has shifted visibly in favor of more skilled labor and away from unskilled labour. Since there are more skilled immigrants relative to what was previously the case, as well as relative to unskilled workers, it appears that demand side factors are still encouraging immigration, especially in high skilled sectors such as technology and information. In Canada, for instance, where some data on the skill composition of immigrants are available, skilled workers accounted for about half the total number of immigrants to Canada in 1997, compared with about only 1/5 or 20 per cent at the beginning of the decade.<sup>11</sup>

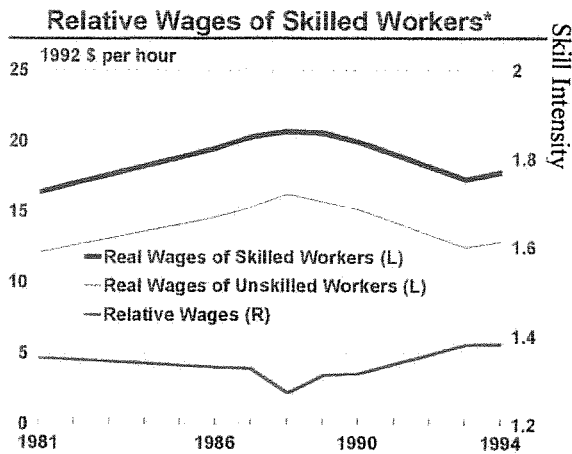


### Section 3

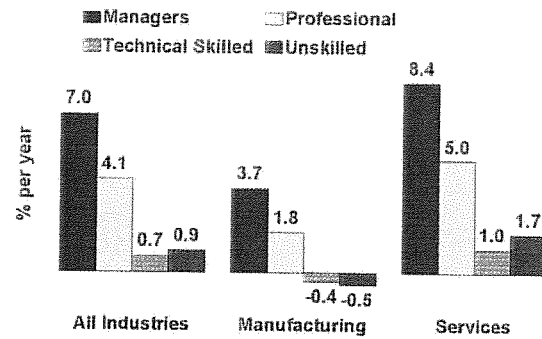
#### Concerns regarding the Effects of immigration on native wages

Immigration gives rise to tensions between the new arrivals and the existing native born population. Tensions are generated because of the fear of undesirable economic conditions that may arise because of immigration. One of these undesirable conditions is the possible decline of wages and employment for the native born population because of immigrants, especially in the early years of settling down, are more likely to accept lower wages than native-born individuals, thus driving the wage levels for the native workers down. A central aspect of the immigration debate is its impact on workers employed at the bottom of the labor market. These workers are thought to be especially vulnerable to immigrant competition because demand for this kind of labor is generally weak, and because most immigrants are heavily concentrated in less-skilled and lower-paying jobs. According to figure 3, the real wages of unskilled workers in Canada has not improved much since 1981. Ever since 1988, unskilled real wages have been declining compared to skilled real wages, making unskilled workers more resentful of if not necessarily more vulnerable to immigration. Similarly in the U.S, while unskilled workers have made some gains in the last few years, the real wages of these workers are still below what they were in the 1970s.<sup>12</sup> The main question is what effect will immigration have on the wages of the native-born workers?

**Figure 3 Relative Wages by Skill Level in Canada**



**Growth in Hours Worked by Skill Level\*: 1981-94**



- In 1981, managers, professionals and technical skilled workers earned 35% more on average than did unskilled workers.
- Real wage rates for both skilled and unskilled workers increased over the 1981-1988 period. However, since wages for unskilled workers rose at a faster pace than did those for skilled workers, the gap between skilled and unskilled wages narrowed to 27% by 1988.
- After peaking in 1988, wages for both skilled and unskilled workers fell in real terms until a modest recovery in 1994. By 1994, the wage premium for skilled workers was 38%, slightly higher than that prevailing in 1981.

- Over the 1981-94 period, total hours worked by skilled workers grew 2.9% per year in the non-primary business sector.
- Among skilled workers, managers were the fastest growing occupation in terms of hours worked, with an average annual increase of 7.0%.
- By comparison, total hours worked for unskilled workers rose only 0.9% per year.

Overall, there seems to be several reasons to be concerned about the impact of immigration on the wages of native workers. First, because immigrants usually come from countries where wages are low, they may be willing to work for lower reservation wages than native-born workers. Immigrants are likely to have a lower reservation wage compared to native-born individuals. The reservation wage is the wage rate at which an individual is indifferent between participating and not participating in the labor force. An individual will work in the labor force only if his/her market wage is higher than the reservation wage. If immigrants do underbid native-born individuals for jobs, then in order to remain competitive in the labor market, natives will have to reduce their own reservation wage and expectations for compensation. Second, it is possible that employers may see immigrants as more pliable, cooperative, and even docile, and hence more desirable workers. As it will be seen later, in Canada different immigrant cohorts have different levels of earnings. If this is the case, native-born individuals will have to choose between offering their services for wages lower than before in order to remain competitive or suffer higher unemployment. The third reason for concern is that employers can use the threat of further immigration as a way of holding down the wages and benefits of workers. Even though employers do not control immigration policy, the more open the immigration policy, the more credible the threat becomes. The fourth and probably the most important reason to examine the immigration is the impact that increased supply of labor would have on less educated native-born workers.

Turning to the first question, do immigrants work for less, especially those employed at the bottom of the labor market? For the most part, the research generally indicates that a few years after arrival, immigrant wages are very similar to those of natives in the same occupation with the same demographic characteristics. In Canada, studies such as that of Baker and Benjamin (1995) show that earlier immigrants earnings fell below those of Canadian born individuals, but immigrant's earnings grow more rapidly over time than those of Canadian born individuals. However, in Canada, earlier cohorts of immigrants have assimilated faster than recent immigrants. Recent immigrants get much lower wages upon arrival than past immigrants and have a harder time increasing their earnings; it has taken recent immigrants a longer time to match their earnings to native-born individuals. Therefore, newly arrived immigrants that usually settle in large metropolitan cities may undercut native wages.

On the question of whether immigrants are viewed as better employees, there is certainly sizeable evidence that some employers view immigrants as better workers.

A Canadian study conducted by Pendakur and Pendakur (1996) shows that most South Asian immigrants have higher earnings in comparison to native-born blacks as well as native-born Greeks. Pendakur and Pendakur's study also revealed that Chinese immigrants have higher earnings compared to many other native born cohorts. A study by Hum and Simpson (1999) also reveals that South Asian immigrants have higher earnings compared to native-born blacks

and native-born Latin Americans. Therefore, newly arrived South Asian and Chinese immigrants earn higher wages compared to some native born cohorts. Some newly arrived immigrant cohorts possess higher human capital compared to native-born individuals. This makes them more preferred employees. Therefore, they are rewarded through higher wages.

For the U.S, it is certainly not uncommon to find small business people who will admit that they prefer Hispanic or Asian immigrants over native-born blacks. This is especially true of Hispanic and Asian employers, who often prefer to hire from within their own communities rather than hiring native-born African Americans. We would expect that this preference on the part of some employers to prefer immigrants will result in lower wages and higher unemployment for those natives who are seen as less desirable, all other factors held constant. A U.S study of the Harlem labor market by Newman and Lennon (1995) provides evidence that employers prefer immigrants to native-born blacks. Their study found that although immigrants were only 11 percent of the job candidates in their sample, they represented 26.4 percent of those hired. 41 percent of the immigrants in the sample were able to find employment within one year, in contrast to only 14 percent of native-born blacks. The authors conclude that immigrants fare better in the low-wage labor market because employers see immigrants as more desirable employees than native-born African-Americans. However, it is also alleged that discrimination is involved in the hiring process. Native-born African-Americans are more discriminated against compared to

newly arrived Asians. Whether it is true or not is a moot point. What is important is the perception that discrimination is indeed there. Of course, the Newman and Lennon study does not have a direct relevance to Canada of today, since ethnic ghettos comparable in scale to Harlem do not exist in Canada. But, we will do well to be aware of the situation pertaining to Harlem as similar situation can arise in Canada in the future with the ethnic ghettos emerging in Canada. As immigration levels in Canada increase, most immigrants settle down in large cities. The unskilled and low skilled from amongst these newly arrived immigrants will have low wages, therefore they will only be able to afford low cost housing. This could lead to the eventual emergence of ethnic ghettos. The presence of "China Towns" in various Canadian cities, and the emergence of "Punjabi Bazar" in Vancouver are pointers in that direction.

Immigration may also exert a significant downward pressure on wages. For example, workers in a meat packing plant that has seen a sudden rise in the number of immigrant workers will very quickly become aware that their employer now has another pool of labor from which he can draw. Even if immigrants remain a relatively small portion of the plant's total workforce, because of open immigration policy, the potential of further immigration exists. Therefore, a relatively open immigration policy may have an effect on wages beyond what might be expected simply by looking at the number of immigrants in the country at any one time.

The fourth reason for concern about the impact of immigration on the wages of natives is that it increases the supply of labor and thus reduces wages.

In Canada, due to socio-economic conditions prevailing in the source countries and particularly in some Asian countries as well as Canadian government policy, recent immigrants are less educated compared to earlier immigrants upon arrival. Even if a recent immigrant does have a degree, professional and technical degrees gained abroad are not recognized or are not regarded as equivalent to those gained in Canada. According to Pendakur and Pendakur (1996), an immigrant would earn 16.2% less than a native-born individual due to the lack of adequate education or even with comparable education. An individual born or educated in Canada with the same education attainment as an immigrants would earn more in Canada since either his/her education has more value or employers have no ways of recognizing the relative worth of degrees obtained abroad. Since recent immigrants in Canada have a lower educational attainments compared to earlier immigrants upon arrival, many of these newer immigrants obtain lower paying jobs that require less education. As it will be discussed in the next section, basic economic theory states that a rise in the supply of labor may reduce wages. Since newer immigrants obtain lower paying jobs, those native born individuals with lower paying jobs might feel threatened by the new arrivals and have good reasons to be concerned about a decline in their wages

For the U.S, according to the Current Population Survey conducted of March 1998, there were about 16 million immigrants in the workforce.<sup>13</sup> However, they were not distributed evenly across occupations. Most of these immigrants are employed in low paying unskilled jobs that require little education. In 1998, 31 percent of the immigrants in the labor market had no high school education, and for those who entered in the preceding five years, 36 percent lacked a high school degree. In comparison, only 9 percent of natives in the work force did not have a high school education. Immigrants now comprise about 32 percent of the high school dropouts in the work force, while they account for only 9 percent of workers with more than a high school education. If we look at occupations, we see the high concentration of immigrants are located at the bottom of the occupational ladder of the labor market. In 1998, immigrants made up only 9 percent of individuals in managerial and professional jobs; in comparison, they comprised 20 percent of workers in service jobs, such as janitors, security guards, and childcare workers.<sup>14</sup> This means that immigration has increased the supply of some kinds of workers much more than others. As a result, any effect on the wages or job opportunities of natives will likely fall on natives employed in less-skilled and low-paying occupations.

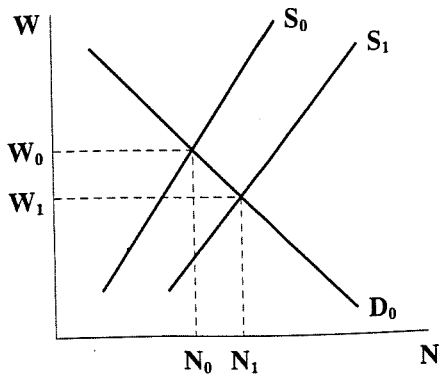
#### Economic Theory On The Effects Of Increase In Labor Supply

A simple supply and demand model can illustrate how the increase in immigration might decrease native-born wages. By referring to figure 4a, we see that the increase in the supply of workers increases employment while

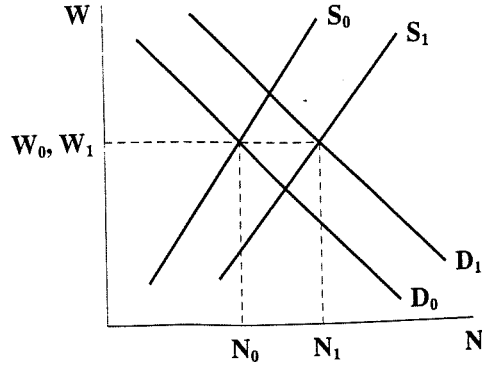


Figure 4a & 4b Supply and Demand Theories

a)



b)



Source: Gunderson, Benjamin and Riddell, Labor Economics. Theory, Evidence and Policy in Canada (Fourth Edition), McGraw-Hill Ryerson, Toronto, 1998.

depressing wages. However, as seen in figure 4b, an increased demand for labor could result in wages remaining constant while employment increases. As discussed earlier in Section 2, an increase in demand or supply could occur because of a number of reasons such as a shortage of skilled workers in the technology sector. Many Canada-born and Canada-educated workers in the field of Information Technology are being lured by higher wages in the United States, the so called "brain drain" problem. They are being increasingly replaced by high-tech labour from abroad (e.g. IT workers from the "Bangalore Corridor" in India) through the mechanism of immigration. Immigrants in this category are highly conscious of their market value and are least likely to accept wages lower than what a native born with comparable education and training would get. They are thus least likely to depress the wages for the native workers. However, the dependents of such highly educated immigrants may not be equally well endowed and the entry of these dependents into the low skilled labor market is likely to depress the wage levels for the native workers/ While it is important to keep the distinction between the labor market for low skilled labor and the market for high-skill labor firmly in mind, it is difficult, especially in a case like the one cited above, to determine shifts of the demand and supply curves as well as knowing the elasticities, therefore economic theory is quite limited and one must turn to empirical studies that have more explanatory power.

## Section 4

### Empirical Research

Over the past years, there have been many empirical studies that attempted to answer the question whether immigration depreciates the earnings of native-born individuals. Various empirical approaches will be examined such as : a) cross sectional empirical studies conducted for Canada and the U.S, b) the case study approach, c) time series studies, and d) the factor proportion approach. Before these approaches are examined, one must be fully conscious of, and extremely cautious with regard to, the existence of data problems that may influence the conclusions generated by the empirical studies.

### Data Problems

In most developed countries, the principal sources of immigration data are population registers, residence, work permits, censuses and a few cases of dedicated surveys. One can say that these sources generally do not provide a completely reliable recording of migration. It is also difficult to compile data that accounts for immigration trends over time, as some immigrants leave the country. Also, it is hard to collect data based on a common approach given the diversity of sources, lack of common definitions and the different compilation methods used. The data is further flawed when the levels of immigration may be

underestimated or overestimated because of illegal immigration. For example many immigrants that enter Canada illegally migrate to the U.S. Therefore, one might think there are more immigrants in Canada than there actually are. Even though illegal immigration in Canada is not as significant or important as it is in the U.S, it could still contribute to the underestimation of immigrants. However, in the United States, a relatively recent estimate suggested the number of illegal immigrants entering in 1996 was approximately 300,000, equivalent to 1/3 of the number of legal immigrants that year.<sup>15</sup> It is difficult to say for sure, but it is thought that illegal immigrants are more significant in size now compared with earlier periods. Improvements in transportation and communication have also lowered the barriers of distance. Therefore, since precise and accurate data is crucial for valid econometric studies, the inability to record accurate data for immigration may result in the inaccurate conclusions being drawn from such econometric studies.

Many econometric studies dealing with immigration are cross sectional. As we will see, cross sectional studies also have their flaws. Other approaches, such as the case study approach, time series and the factor proportion approach, attempt to reduce errors present in cross sectional studies. These approaches will also be examined.

#### 4a) Cross Sectional Studies

The unit of observation in cross sectional studies is the individual—both native and immigrant.

Many econometric studies regarding the effects of immigration on native wages follow the regional or geographical area approach. Such cross-section studies usually regress wages on human capital variables. Such variables include controls for immigration status and also take into account the number of immigrants in a given area. Empirical studies also compare the economic performance of native-born individuals who live in areas with few immigrants to the economic performance of native-born individuals in areas where there are higher proportion of immigrants. If immigrants do in fact have an impact on the wages of native-born individuals, then one would expect the earnings of native workers to be lower than the earnings of those workers living in areas where immigration is not as abundant. Most of these empirical studies regress the log of weekly wages on a set of human capital variables, regional dummy variables, controls for occupation and industry, and a variable controlling for the proportion of immigrants.

## U.S Studies

There are, of course, many U.S studies on the effect of immigration on wages. The following have been selected for their seminal contribution to the subject.

### George Borjas (1994)

A lot of extensive work has also been done by one of the pioneers on this subject; University of California Professor George J. Borjas has conducted many empirical studies on the effects of immigration on wages. Borjas stated:

*"Remarkably, economists have quickly reached a consensus on the direction and magnitude of the labor market impacts of immigration. The conclusion suggested by the empirical evidence is likely to be controversial: the methodological arsenal of modern econometrics cannot detect a single shred of evidence that immigrants have a sizable adverse impact on the earnings and employment opportunities of natives in the United States."*<sup>16</sup>

Borjas defines a labor market model by a closed economy with a single competitive industry that has a linear homogenous production function, meaning basically constant returns to scale. In this model Borjas displays that when immigrants enter the model exogenously, the effect on the changes in wages for skilled and unskilled workers due to an increase in the supply of workers may be

measured. Borjas shows the log changes in wages for skilled and unskilled workers from an increase in immigration. He concludes that if the proportion of unskilled workers in the immigrants inflow equals the proportion of unskilled workers in the native labor force, then neither skilled nor unskilled wages change because of immigration. However, Borjas also concludes that if the proportion of unskilled workers in the immigrant inflow is greater than the proportion of unskilled workers in the native labor force, then immigration would decrease wages for unskilled laborers, while increasing the wage for skilled workers. Borjas stresses that this model could be used to measure the effects of immigration on the wages of the native-born population by relating the changes of wages for unskilled and skilled workers due to immigration. Most empirical studies are based on this approach. The closed economy is instead treated as a metropolitan city, i.e. a local labor market, and wages are regressed on the quantity of immigrants as well as other factors.

#### Jean Grossman (1982)

One of the earliest studies to examine the effects of immigration on the wages of native workers was conducted by Jean Grossman (1982). She uses the basic model identified by Borjas above. The model correlates a measure of the native wages on the relative numbers of immigrants. A production function is estimated to compute elasticities of substitution between immigrants and native born workers. If immigrant labour is complementary to native labour, then the

impact of immigration is likely to be more positive than if immigrants and native born individuals are substitutes. A high elasticity of substitution is not a favorable condition for native born workers. Grossman estimated the effect of foreign-born workers upon second-generation workers, and upon native workers (persons with two native born parents), in a sample of 19 metropolitan areas using the 1970 census. In addition to the proportions of these groups in the labor force, she introduced a variable for quantity of capital. Grossman reveals that a 10 percent increase in the relative number of immigrants reduces native wages by 1 percent. Since the number of sample observations are quite small, 19 metropolitan areas, one may question the validity of Grossman's conclusions. Also, the division of native born workers into groups based on parents' place of birth fails to capture all of the relevant skill differences for estimating a true production function. The empirical study may be biased, because it fails to recognize the migratory responses of natives to increased immigration. Immigrants want to migrate to areas with the highest rewards and opportunities. Therefore, native born workers may respond to the inflow of immigrants by moving to areas that offer better opportunities. This model assumes a closed economy and ignores the movement of native born workers out of the labour force in response to the increased immigration. Therefore, the coefficients on the immigration variable do not capture the true impact of immigration. As immigrants compete for jobs with native born workers, wages would fall and native born workers would have to migrate out of these markets causing the equilibrium wages to rise. Failing to control shifts in native workers supply causes



immigration coefficients to be biased downwards. Focusing on the local markets may be obscuring the overall impact of immigration.

Geroge Borjas (1991)

In one of his empirical studies, Borjas (1991) sets out to compare native earnings across SMSA's (Standard Metropolitan Statistical Areas) in which there are varying numbers of immigrants to determine if SMSA's with large proportions of immigrants have lower or higher wages than SMSA's with smaller proportions of immigrants. Here he is primarily concerned with the impact of the share of immigrants in labor force on the wages of the natives. He finds that for a 10 percentage point increase in immigrant numbers, there is only a minimal impact on natives. For example, 10 percentage points rise in the number of immigrants decreases native wages by only 0.2 percentage points. Therefore, a doubling of immigrants in labor force would decrease all natives' wages by only 2 percentage points.<sup>17</sup>

Borjas' study, however, contains similar flaws to Grossman's study. This makes Borjas' model fragile and at best, tentative. Because of regression coefficients of low magnitude, the data does not fit the model very well, thus putting the validity of the model under doubt. Also, there are different skill levels amongst the native-born and immigrants populations across different SMSA's. The model used by Borjas attempts to correct for factors such as skill

differences, differences in the amount of capital per worker, and whether a SMSA is in a recession or a period of economic growth. Of course these variables should be included in any study, but since these variables are not precisely or accurately measured their inclusion affect the validity of the model. Borjas' model assumes that all important factors have been included in the model. Even though all important factors can not be included in a regression model, the closed nature of the model effects the outcomes. Economic conditions in a labor market depend upon its history of economic growth and development and on other variables. It is important to account for such variables in any model in order to ensure that the findings are not distorted and do no lead to misleading conclusions. In Borjas' model, for example, the limitation of trade and investment variables may lead to distorted and misleading results. Since the model is closed, trade and investment is excluded. Trade and investment patterns can shift immigration impacts to other areas of the economy. The movement of labor, capital, and goods across local markets leads to factor prize equalization in the long run. The closed economy of the local labor markets hides the overall effect of immigration on native born workers.

In a nutshell, there is a potential problem of reverse causality in Borjas' model; is it that higher wages lead to increased immigration or increased immigration leads to higher wages?

### Altonji and Card (1991)

A study by Altonji and Card (1991) attempted to explain the changes in wages due to immigration across SMSA's from 1970 to 1980, controlling for age and education in each area. They focus on the unskilled native population, white males high school dropouts, white and black females, and black males, i.e. only a segment of the labor force. Altonji and Card apply the instrumental variables approach. The objective is to find instruments for immigration density. These instruments do not affect the outcome variables directly. The purpose of the instrumental variables is to remove bias that arises when immigrants and natives migrate towards better opportunities. For example they use the stock of immigrants in 1970 as an instrument instead of another year, the reason being that in 1970 most newly arrived immigrants settled into areas where older immigrants already resided. Therefore, this instrument does not have a huge impact on the outcome variable. Altonji and Card found the following results:

*"the instrumented first-differences results indicate a significantly negative effect of immigration on wages. The coefficient is -1.2 with a standard error of .242. The more negative effect associated with the instrumental variables scheme is consistent with the hypothesis that the least squares estimate is positively biased by endogenous immigration inflows." <sup>18</sup>*

Therefore, the model showed a decline of more than 12 percent in the earnings of low-skilled natives for each 10 percentage point increase in the

share of immigrants in a SMSA. Furthermore, a 10 percentage point increase in the number of immigrants in an SMSA results in almost a 20 percent fall in Black males' earnings, and 14 percent for Black females. Clearly it is revealed that immigrants negatively affect native unskilled earnings. They then developed an "instrumented first differences model" for the same period. This approach captures the short-run effects of immigration, when the capital stock and the industry skill composition of labor demand have not had time to adjust fully. It also showed negative impacts.

Unlike Borjas, Altonji and Card focused on low-skilled native workers. Aside from that shift of focus, they believe the new model eliminates any bias introduced by city-specific effects. Also, their model had the lowest standard error. Their "instrumental variables" approach takes account of the possibility that immigrant inflows are influenced by local economic conditions. However, this approach generated the negative results while most other studies do not use this approach. It is not always easy to obtain instrumental variables. Even if one does have instrumental variables that yield efficient estimators, these instrumental variables may suffer from multicollinearity and thus produce inefficient but consistent estimators. In order to compare Altonji and Card's study to other studies that do not use the instrumental variable approach, one must convert the wage coefficient into elasticity form. By doing so, it is revealed that a 10 percentage point increase in share of immigrants in labor force in fact reduces wages by only 0.86 percent. This conclusion is consistent with what we

have found in previous studies, but contradicts the conclusions reached by using the instrumental variable approach. Most econometric studies agree that an increase in immigration does not have a significant impact on the wages of native-born individuals. Even though Altonji and Card's instrumental variables approach eliminates positive bias, when one converts the wage coefficients into elasticity form, an increase in immigration is seen to have a minimal effect on the wages of native-born workers.

### Canadian Studies

So far we have analyzed empirical studies conducted for the U.S. In the case of Canada there has been limited research to study the impact of immigration on wages of the native born population. Most studies in Canada have rather focused on the assimilation of immigrants. Those empirical studies that look at the impact on wages of the native born population have focused on the substitutability of immigrants and native born individuals rather than directly measuring the impact of immigrants on the wages of the native born population.

### Laryea (1997)

A study conducted by Laryea (1997) looks at whether or not immigration affects the wages of young entry-level workers. Laryea employs an economy wide age-cohort technique which estimates the effects of immigration by age groups on wages. This approach estimates a two-stage Constant Elasticity of Substitution (CES) model that aggregates immigrant groups by age cohorts and aggregate cohorts into effective labour, which is used to study the substitution relationships between age cohorts and between immigrant groups. One advantage of this immigrant cohort size approach is that immigrant age cohorts are not mobile at any one point in time.<sup>19</sup> The 1991 Canadian census reveals that 37% of immigrants were aged 25 - 44 years at arrival, another 27% between 15 - 24 years, while 28% were younger than 15 years of age.<sup>20</sup> Laryea's study estimated wage equations using 1991 census data by age groups classified into eight five-year cohorts ranging from the 25-29 year-old age group to the 60-64 year-old age cohorts. Individuals were also classified into four groups by birth status: (1) Canadians, (2) early immigrants (those who immigrated to Canada before 1970), mid-vintage immigrants (those who immigrated between 1971 and 1980), and recent immigrants (those who immigrated to Canada after 1981).

Given these wage equation estimates, Laryea reports a economy wide simulation exercise which measures the wage impact by age and entry year from a 20% increase in the number of recent immigrants. The results show that the

wage impacts of a 20% increase in recent immigration levels on the native-born wages is minimal. The wage decreases associated with this hypothetical inflow is no more than 1%. Thus economy wide it appears that the wage impacts of immigration flows are minimal and have no adverse impacts on Canadian labor markets. However, the absence of significant wage impacts of immigration flows economy-wide can mask the potential outcomes in the various industries in the economy.

In order to see the effects of immigration by industry rather than economy wide, Laryea also estimated a random effects model to examine the impact of foreign-born labor on native-born wages by industry using panel data from the 1988-1990 Labor Market Activity Survey (LMAS). A random effects model is useful when there are repeated sub samples or measurements on sampled units, one may be interested in both the overall mean and the contributions of various levels of sampling to the overall variability. He uses the following equation:

$$w_{it} = a + b\phi X_{it} + e_{it} + u_i$$

where

$w_{it}$  = hourly wage rate of native-born worker  $i$  in year  $t$ ,

$X_{it}$  = Set of exogenous variables including the proportion of foreign-born workers in various industries between 1988 and 1990,

$e_{it}$  = Traditional error term unique to each observation,

$u_i$  = error term representing the extent to which the intercept of the  $i$ th cross-sectional unit differs from the overall intercept

Laryea shows that looking at the total sample, and then to male and female subsamples separately, immigration had a positive impact on the wages of Canadians economy wide. However, when the data was disaggregated by industry, wage depression was detected in the primary, transportation and storage industries. That is, immigration had depressed wages of Canadian blue-collar workers, in the primary, transportation, and storage industries, and increased the wages of white-collar workers.

#### Hibert (1997)

Hiebert (1997) investigates the patterns of occupational distribution by ethnicity in Canada's three major cities. He argues that if immigrants are marginalized into urban ethnically concentrated occupations, then this finding would be entirely consistent with limited wage effects or isolated occupational displacement reported on Canada's native-born population. Hiebert sets up an index where an index value of unity indicates that an ethnic group's presence in a particular occupation matches its presence in the total population and hence no segmentation. Table 4, reproduced from the study shows that males of British descent are distributed near their expected numbers (i.e. ratio is near unity), while Jewish males are well above unity for the human capital intensive occupations. Newly arrived male ethnic groups are under represented in human capital intensive occupations. Therefore, newly arrived immigrants are



**Table 4 Occupation by Ethnic origin for Males and Females in Vancouver**

- This index reports the ratio of the actual to the expected number of immigrants by ethnicity in occupations across Canada's three largest cities.

- An index value of unity indicates that an ethnic group's presence in a particular occupation matches its presence in the total population and hence no segmentation.

**Occupation by Ethnic origin for Males in Vancouver: 1991**

<i>Occupation</i>	<i>British</i>	<i>Jewish</i>	<i>South Asian</i>	<i>Filipina</i>	<i>Vietnamese</i>
<i>Manag</i>	1.2	1.7	.6	.4	.3
<i>Law</i>	1.3	3.4	.5	.2	.9
<i>teacher</i>	1.3	2.1	.4	.2	.2
<i>UnivT</i>	1.1	8.8	.5	.2	.2
<i>Clerical</i>	1.0	.8	1.0	1.7	.5
<i>Sales</i>	1.1	1.6	.9	.6	.4
<i>MDs</i>	1.1	8.8	.5	.2	0
<i>labor</i>	1.2	0	1.3	0	0
<i>taxis</i>	.7	0	6.1	.4	0
<i>farmers</i>	1.0	.2	2.4	.6	2.7

**Occupation by Ethnic origin for Females in Vancouver: 1991**

<i>Occupation</i>	<i>British</i>	<i>Jewish</i>	<i>South Asian</i>	<i>Filipina</i>	<i>Vietnamese</i>
<i>Manag</i>	1.2	1.3	.5	.3	.6
<i>Law</i>	1.3	3.8	.3	.1	0
<i>Teacher</i>	1.3	2.6	.2	.2	.1
<i>UnivT</i>	1.0	3.4	.8	0	1.3
<i>Clerical</i>	1.1	1.4	.7	.2	1.0
<i>Sales</i>	1.1	1.4	.7	.3	.6
<i>House</i>	.5	0	2.7	2.4	1.2
<i>Labor</i>	1.2	0	2.9	0	0
<i>Taxis</i>	.7	0	0	0	0
<i>Nurses</i>	1.2	.7	.5	.4	0

Source: Hiebert, D. (1997): "The Color of Work: Labor Market Segmentation in Montreal, Toronto and Vancouver, 1991," Working Paper No. 97-02, Vancouver Centre of Excellence: Research on Immigration and Integration in the Metropolis

marginalized into urban ethnically concentrated occupations and do not exercise a huge impact on the wages of the native born population.

### Problems Associated With Cross Sectional Studies

So far we have studied some cross sectional empirical studies and have pointed out some difficulties associated with these studies. The cross sectional approach has a few problems. For example, an increase in the fraction of immigrants in a city does not necessarily imply a net increase in the supply of labor. An increase in supply due to immigration can be nullified across the entire economy through the mobility of labor, and there could be an upward bias in the correlation of immigration and wages because of demand shocks.

The main problem is that most studies assume that the labor market effects of immigration are confined to only those cities where immigrants reside, the models assume that the labor markets are closed and that immigration flow is exogenous. However, the interconnected nature of a nation's economy makes comparisons of this kind very difficult for several reasons. Labor, capital, and goods flow across areas and tend to equalize the wage rate across a nation.

Research by William Frey (1996) and others indicates that native-born workers in the U.S, especially those natives with few years of schooling, tend to migrate out of high-immigrant areas. The migration of natives out of high-immigrant areas spreads the labor market effects of immigration from these

areas to the rest of the country. There is also evidence that as the level of immigration increases to a city, the in-migration of natives is reduced. In addition to internal migration patterns, the huge volume of goods and services exchanged between cities across a country creates pressure toward an equalization in the price of labor. For example, newly arrived immigrants who take jobs in manufacturing in a high-immigrant city such as Los Angeles come into direct and immediate competition with natives doing the same work in a low-immigrant city like Pittsburgh. The movement of capital seeking to take advantage of any immigrant-induced change in the local price of labor should also play a role in preserving wage equilibrium between cities. Beside the response of native workers and firms, immigrants themselves tend to migrate to those cities with higher wages. In short, the mobility of labor, goods, and capital as well as choices made by immigrants may diffuse the effect of immigration, making it very difficult to determine the impact of immigration by comparing cities. As long as native workers and firms respond to the entry of immigrants by moving to areas offering better opportunities, there may be no reason to expect much of a correlation between the wages of natives and the presence of immigrants.<sup>21</sup>

#### 4b) Case Study

In most cross sectional studies, immigration and labour market outcomes may be jointly determined. A study would be more accurate if immigration would

be exogenous of labour market outcomes. Such studies have been limited and have similar flaws as other cross sectional studies.

### Card (1990)

A study by Card (1990) examines the labor market effects of an increase in the number of Cubans in the Miami area, the May 1980 Mariel boatlift. In 1980 Fidel Castro permitted approximately 125,000 Cubans to leave Mariel for Miami. The effect was a 7% increase in the local labor force. Card uses yearly data from the Current Population Survey to conclude that the increase in immigration only had a marginal effect on the wages of native born or earlier immigrant Cubans.

*“First, the Mariel immigration had essentially no effect on the wages or employment outcomes of non-Cuban workers in the Miami labor market. Second, and perhaps even more surprising, the Mariel immigration had no strong effect on the wages of other Cubans”<sup>22</sup>*

Card also finds that the population growth in Miami slowed down and the immigration of the Mariel Cubans might have led to the emigration of other native born cohorts already living in the area. Therefore, the overall population would have remained the same in Miami resulting in no labor market effects as a consequence of the immigration, although it could also mean that the inflow of immigration might have induced an outflow of native workers already in the area.

Many other empirical studies have attempted to find the impact of immigration on the wages of specific sub-groups of the native work force. The general conclusion of these studies is that immigrants have no effects on the wages of black workers. However, there is a problem with these studies. Most immigrants do not live in the same areas as black Americans. 30 percent of blacks live in areas where immigrants account for only 2 percent of the population.<sup>23</sup> Therefore, some wages for black Americans may be affected by immigrants, but wages are largely affected by other factors and the presence of merely 2 percent of immigrants in their midst does not seem to have hurt the black Americans.

As we have seen, most cross sectional studies conclude that immigration does not have a large impact on the wages of native born workers. As discussed, these studies have biases associated with them that can be partially dealt with instrumental variables. Cross sectional studies are limited since immigration and labour market outcomes may be jointly determined. Canada and the U.S are not closed economies; labor, capital, and goods flow across the countries. If factor price equalization does exist in the long run then one must not use closed models but rather look at a single national labor market. To avoid the problems with cross sectional studies, one may utilize time series data or the factor proportion approach.

#### 4c) Time Series Studies

Cross-sectional studies are much less useful compared to time series studies in estimating the impacts of specific factors over time. Cross section data is collected at the same point in time. The marginal effects estimated in a cross-section are likely to differ from those estimated using aggregate changes over time. This is partly because the relationships among factors may change over time, and partly because the personal behavior of individuals may introduce sufficient errors in the data to mask the effects of aggregate variables, unless very large sample sizes are available. Cross sectional data contains biases such as selectivity, simultaneous-equation, and specification bias. Selectivity bias exists when individuals choose not to respond to surveys, these individuals also have different views from those who did respond. Selectivity bias can have a great impact on the results of a survey, therefore jeopardizing any conclusions. Simultaneous equation bias exists when the explanatory variables are correlated with the disturbance term. Estimation of the equation in which there is no explicit treatment of the interdependence will violate the sixth assumption of the Classical Model, the assumption that the error and the explanatory variables are uncorrelated. Simultaneous equation bias results in biased estimates of the parameters. It is also hard to determine the individual effects of the explanatory variable and the disturbance term on the dependant variable. Specification error exists when either omitting a relevant variable from a regression model or including a irrelevant variable. Usually there is a theoretical basis for selecting

the independent variables. However, the best a researcher can do is search for variables that seem consistent with theory and practice. If significant explanatory variables are left out, the model's worth becomes questionable even though the least squares estimates of the parameters are obtained. Using time series data may cure these biases.

Time series data are any set of data from a quantifiable or qualitative event that is recorded over time. The main goal of time series analysis is to identify the nature of the phenomenon represented by the sequence of observations. This goal requires that the pattern of observed time series data is identified. Once the pattern is established, one can interpret and integrate it with other data. Using time series data on a national level avoids any biases.

Borjas, Freeman, and Katz (1997)

A U.S study conducted by Borjas, Freeman, and Katz (1997) examined the effects of immigration on native born individuals across areas for different time periods, from 1960 to 1970, from 1970 to 1980, and from 1980 to 1990. The data for these time periods was obtained from the Public Use Micro Data Samples. Borjas, Freeman, and Katz use three different geographic areas, metropolitan areas, states, and regions. It is better to look at larger geographic areas since smaller areas may diffuse the affects of immigration through migration and capital flows. The following equation is regressed for each period,

$$Y_{ijkt} = Z_{ijkt}\beta_{skt} + r_{jkt} + U_{ijkt},$$

where

$Y_{ijkt}$  is the labor market outcome for person  $i$ , living in area  $j$  and belonging to skill level  $k$ , in year  $t$ ,

$Z_{ijkt}$  is a vector of dummy variables for age,

$r_{jkt}$  is a labor market outcome for a native, and

$U_{ijkt}$  is the error term.

The results of the regression prove that the wage growth of natives across states declined from 1980 to 1990 compared to the period from 1970 to 1980, while immigration levels increased from 1980 to 1990 compared to the period from 1970 to 1980. Therefore, it may seem that the decline in the wages of the native born workers is associated with the increase in immigration. Borjas, Freeman, and Katz further refined their study by attempting to determine the exact amount of decline in the wages of the native born workers by also controlling for factor unrelated to immigration that might affect outcomes across states. They regress the following equation :

$$\Delta r_{jkt} = \alpha_t + \beta_t \Delta M_{jkt} + V_j + \Gamma_k + U_{jkt}$$

where

$$\Delta r_{jkt} = r_{jkt} - r_{jkt-10},$$

$V_j$  indicates the group's area of residence,

$\Delta M_{jkt}$  is the change in labour supply due to immigration,

$\Gamma_k$  is the group's educational attainment and

$U_{ijkt}$  is the error term.



Estimates for the coefficient  $\beta$  are calculated. Due to a 10 percentage point increase in the relative amount of immigrants, native born annual earnings from 1980 to 1990 fell by about 0.175 percentage point for the region and by 0.054 percentage point for metropolitan areas.

### Borjas and Ramey (1993)

Another U.S study by Borjas and Ramey (1993) endeavors to explain why wage inequality exists due to immigration and trade. They use the data from 1977 to 1991 CPS files using 44 metropolitan areas as their SMSA. Borjas and Ramey regress the following equation,

$$Y_{kt} = I_{kt}\beta_0 + Z_{kt}\beta_1 + V_k + U_t + \epsilon_{kt}$$

Where

$Y_{kt}$  is the premium in area  $k$  in year  $t$ ,

$I_{kt}$  is the a vector indicating the industrial composition,

$Z_{kt}$  is a vector explaining the characteristics of the area,

$V_k$  is a area fixed effect,

$U_t$  is a period effect, and

$\epsilon_{kt}$  is the disturbance term.

The study reveals that a 10 percentage point increase in immigration reduces the wages of the native born population by 1.2 percent. Borjas and Ramey agree that the increase in wage inequality is vastly due to trade in durable goods. Workers employed in this sector enjoy higher wages due to higher rents and unions. When this industry exports more, higher rents leads to even higher

wages. Newly arrived immigrants are unable to enter this sector and have to accept lower wages. Therefore, immigration would have little effect on the wages of native born workers employed in the durable goods sector.

Time series data also has certain problems such as spurious regressions. That is, a regression might fit perfectly but it is not an accurate representation. All indications such as high t ratios, and high R squared, might make it seem that the regression is a good fit when in fact it is not. One way to identify that a spurious regression exists is to observe that the Durbin Watson test is lower than R squared. In time series studies, data constraints sometimes overstate immigration effects on native wages. That is, the possible negative impacts of immigration on native born wages is confused with the purely mechanical negative effects. It is also difficult to model wages over a long time frame. Such problems with time series studies has led to the emergence of the factor-proportions approach.

#### 4d) The Aggregate Factor-Proportion Approach

The factor-proportions approach takes a national perspective, focusing on the impact of immigration on native labor market opportunities in the aggregate economy, rather than in a particular local market. This approach views an increase in immigrants as an increase in the entire workforce of a nation.

Because immigration tends to expand the supply of some skill groups more than others, it changes the factor proportions in the economy, for example, the ratio of unskilled to skilled workers. The factor-proportions approach then uses the estimated elasticities of substitution to simulate how labor market opportunities for particular skill groups must have changed when immigration shifted the relative number of less-skilled workers. Even though the factor proportions approach has certain advantages, there are also certain disadvantages that will be discussed later.

Borjas, Freeman, and Katz (1997)

Borjas, Freeman, and Katz (1997) used the factor-proportions approach to provide evidence of the macro impact of immigration in the U.S using time-series data drawn from the Current Population Surveys and the decennial census. The 1980s and early 1990s witnessed a substantial increase in the wage gap between workers who do not have a high school diploma and workers with more education, the decade also witnessed the entry of large numbers of less-skilled immigrants. Borjas, Freeman, and Katz show that the increase in the supply of workers due to immigration was concentrated among high school dropouts. Post-1979 immigration increased the relative supply of dropouts by roughly 13 percent. Over that same period, the relative wages of high school dropouts fell by roughly 11 percent. Therefore, if wages went down by 3 percent for every 10 percent increase in supply, then the immigration-induced increase in the relative

amount of high school dropouts lowered wages by 4.8 percent. They claim that 44 percent of the decline in the relative wage of high school dropouts between 1980 and 1994 was attributed to the large influx of less-skilled immigrants who entered the United States during that period. The study reveals that immigration had few effects on the wages of other groups. For example, since 1979, wages of college graduates relative to high school graduates increased by 19 percent. Immigration had only a very modest impact on the relative supply of these college graduates relative to high school graduates over this period.

#### Edmonston and Smith (1997)

A U.S study conducted by Edmonston and Smith (1997) for the National Research Council (NRC) also used the factor proportions approach. Edmonston and Smith concluded that the wages of this group, 11 million of whom are natives, are reduced by roughly five percent (\$13 billion a year) as a consequence of immigration. In 1998, nearly one out of three native workers living in poverty lacked a high school education. Additionally, 1.6 million native families or more than three million people living in poverty depended on the wages of a person who lacks a high school education for support. The wage losses suffered by high school dropouts because of immigration are roughly equal to the combined federal expenditures on subsidized School Lunches, low-income energy assistance, and the Women Infants and Children program. They

conclude that immigration has had a significant negative effect only on the wages of high school dropouts.

The factor-proportions approach also has its limitations. First, it does not truly estimate the actual impact of immigration on the labor market. Rather, it simulates the impact. Given the existing estimates of the elasticity of substitution among different types of workers that were derived outside the immigration context, these studies calculate what a change in the relative number of skilled to unskilled workers implies for the wage ratio between the two groups. The factor proportions approach requires estimates of the changes number of immigrants with different levels of skill. The data for the number of immigrants can be obtained from the Censuses of Population. A problem with this data is that it may include the a value for illegal immigrants. In addition, by its very nature, the factor-proportions approach must be based on an underlying model of the economy. In a sense, the approach does not let the data speak freely. As a result, if the economic model used in the simulations does not accord with the real-world labor markets, the validity of the conclusions comes into question.<sup>24</sup>

## Section 5

### Policy Discussion

There are two possible sets of policy options that are pursued by the government. Most of the empirical literature indicates that there is limited negative effects of immigration on the wages of the native born population. If there are any negative effects on wages, it falls on the lower skilled native born individual. Since the effects of immigration are not clear, it would not be wise to set a policy to reduce immigration. There could be positive benefits of immigration. If immigration does indeed have a negative effect on natives in low-skilled occupations, the first set of policy options would involve leaving immigration policy in place and doing more to help neutralize any negative effects, if any, of immigration. We have seen that most of the research indicates that the negative impact from immigration falls on those employed at the bottom of the labor market. An increase in the minimum wage may be helpful in offsetting some of the effects of immigration. Economic research indicates, however, that the minimum wage does increase the wages for those who already have jobs. Research also indicates that by raising the cost of labor, the minimum wage can cause unemployment by increasing the incentive to lay off workers and by making employers less willing to hire new ones. The size of the dis-employment effect, however, is a matter of significant debate in the economic literature. In regards to immigration, it seems clear that increasing the minimum

wage and at the same time allowing in large numbers of less-skilled immigrants can only aggravate whatever dis-employment effects exist.

The second set of policy options that might be enacted to deal with this problem would involve changing immigration policy with the intent of reducing job competition for natives and earlier immigrants. If we were to reduce unskilled immigration we might want to change the selection criteria to ensure that immigrants entering the country will not compete directly with the poorest and most vulnerable workers. In Canada, this policy would be similar to the point system. Due to the point system, immigrants that enter Canada are much more skilled compared to immigrants that enter the U.S. At present in the U.S, only about 12 percent of legal immigrants are admitted based on their skills or education. Therefore, there is a higher urgency in the U.S to develop a similar point system as in Canada in order to protect lower skilled native-born workers. Also, since two-thirds of permanent residency visas in the U.S are issued based on family relationships, reducing the flow of low-skilled legal immigrants would also involve reducing the number of family-based visas.<sup>25</sup> These changes would not only reduce low-skilled legal immigration immediately, they would also limit the chain migration of low-skilled immigrants that occurs as the spouses of those admitted in the sibling and adult child categories petition to bring in their relatives. Even though reducing immigration may be a solution, one must also recognize the possible benefits from immigration for both Canada and the U.S.

## Benefits of Immigration

To catalogue and enumerate the benefits of immigration requires a separate study and is essentially outside the limited scope of this paper whose primary focus is to study the impact of immigration on the wage levels of native born workers. A brief reference to the benefits of immigration is being included here only to give the discussion a wider perspective.

Beneficial or not, immigration is becoming a necessity for countries like Canada with declining birth rates and ageing populations. Added to this demographic fact is the growing tendency to seek early retirement. According to a paper released in July 2000 by Ignazio Visco, the chief economist at the Organization for Economic Cooperation and Development (OECD) in Paris, less than half of the population between 55 and 64 is working. In Canada, there are currently four workers for every retiree, but the ratio is expected to drop to two workers for every retiree by 2030.<sup>26</sup> Immigration can play a vital role in keeping the dependency ratio stable. But while economically feasible and necessary, this idea may prove to be politically difficult to implement. To make it politically acceptable, it may be necessary to dismantle some common but fallacious myths about immigrants. The most commonly held of these myths is the belief that immigrants place extra pressure on social programs by collecting welfare payments or not paying taxes.



Borjas conducted a study for the U.S to determine whether immigrants take more out of the social welfare system than they put in. He found out that immigrants take out \$23.8 billion in entitlement programs, but the total income of immigrants households being \$284.7 billion for the same period, immigrants households pay about \$85.4 billion in taxes. In other words, immigrants pay more in taxes than they take out. In an earlier study conducted in 1994, Jefferey Passel and Rebecca Clark had come out with similar findings, concluding that immigrants in the United States pay \$27 billion more in taxes than they take out of the system.

In Canada, Akbari's study (1995) calculates the effects of immigrants on public treasury. Akbari bases his work on the life cycle theory. The life cycle theory states that young adults are likely to pay more taxes and rely less on transfer payments. Since a majority of immigrants are young and healthy, one would expect them to be a benefit to the host country through net transfers of public funds for a substantial time after arrival in the new country. Akbari uses data from the 1991 Survey of Consumer Finances (SCF), economic family file. Akbari concludes that immigrants actually pay more in taxes than they take out in EI or SA programs. Therefore, immigrants are a net benefit to the Canadian economy.

One could also advance the hypothesis that the wage losses suffered by the native born unskilled workers due to the induction of unskilled immigrants in

the labor force can result in higher profits which can be funneled into paying higher wages to the more educated native born workers. In the U.S. the gain resulting from the wage losses suffered by the unskilled workers is estimated to be between 1 and 10 billion dollars.<sup>27</sup> More research is, however, required to determine whether this amount of money is actually diverted towards higher payments to the more educated and skilled native born workers.

Another commonly held but fallacious perception about immigrants is that they take jobs away from the locals. Whether this is true or not will largely depend on whether the immigrants are selected, as is mainly the case with Canada, or whether they are asylum seekers, as is mainly the case in Europe and, to some extent, in the U.S. Canada runs a targeted immigration program that tries to broadly match aspiring immigrant with job opportunities that exist. Whether it is farm labor or high-tech technicians to replace those who have left for higher salaries and lower taxes in the U.S. immigrants usually fill jobs that would otherwise go begging.

In many cases, immigrants also accept jobs that natives would not take. With more educational opportunities and higher yearnings for better jobs, native born workers are moving away from menial jobs. These are being filled by immigrant labor on an increasing scale. This phenomenon is visibly at work in the lumber industry in British Columbia (where the majority of workers are Sikhs from India), the construction industry in Montreal (where the majority of workers

are Italian), and the taxi-driving business in New York (where the dominant number hails from Pakistan).

## Section 6

### Conclusion

It is difficult to evaluate empirically with precision the size of the effects of immigration on the wages of the native born population. The largely abundant empirical literature for both Canada and the U.S suggests that in fact immigration does not have a significant impact on the wages of the native born population.

However, the validity of these studies may be called into question. Further empirical studies need to be undertaken, especially for Canada. In the long run the effects may vary as immigrants acquire new skills and experience in the local labor market. It is important to keep in mind that other factors in addition to immigration have had impacts on the wages of the native-born population.

Technological change and increased trade have also played a significant role in the labor market opportunities for native-born workers. In the final analysis, it appears that arguments for or against immigration are as much political and moral as they are economic.

## References

Akbari, Ather S.(1995), " The Impact of Immigrants on Canada's Treasury, Circa 1990", in Diminishing Returns The Economics of Canada's Recent Immigration Policy (ed), D J. DeVoretz, C D. Howe Institute, Toronto 1-30.

Akbari, Ather S and Don J. Devoretz (1992), "The Substitutability of foreign-born labor in Canadian-production", Canadian Journal of Economics, 25(3), 605-614.

Altonji, Joseph G. and David Card. 1991. "The Effects of Immigration on the Labor Market Outcomes of Less-skilled Natives" in John M. Abowd and Richard B. Freeman editors, Immigration, Trade and Labor. Chicago: University of Chicago Press.

Baker, Michael and Dwayne Benjamin (1995), "The Performance of Immigrants in the Canadian Labor Market", Journal of Labor Economics, 12 (3). 369-405.

Baker, Michael and Dwayne Benjamin (1995), "Labor Market Outcomes and the Participation of Immigrant Women in Canadian Transfer Programs", in Diminishing Returns: The Economics of Canada's Recent immigration Policy, D J.DeVoretz, C D. Howe Institute, Toronto.

Bean Frank D., B. Lindsey Lowell, and Lowell J. Taylor, (1988) "Undocumented Mexican Immigrants and the Earnings of Other Workers in the United States", Demography, 25 (1), 35-52.

Borjas, George J; Freeman, Richard B; Katz, Lawrence F. How Much Do Immigration and Trade Affect Labor Market Outcomes? Brookings Papers on Economic Activity. Vol. 0 (1). p 1-67. 1997.

Borjas, Freeman, and Katz (1996), "Searching for the Effect Of Immigration on the Labor Market", Journal of Economic Perspectives, 86(2), 246-250.

Borjas, George J. (1995), "The Economic Benefits From Immigration", Journal of Economic Perspectives, 9 (2), 3-22.

Borjas, George J. (1994), "The Economics of Immigration", Journal of Economic Literature, December, XXXII (4): 1667-1717.

Borjas, George J. The Economic Benefits from Immigration. Cambridge, MA. National Bureau of Economic Research, 1994.

Borjas, George J and Ramey, Valerie A, Foreign Competition, Market Power, and Wage Inequality: Theory and Evidence. National Bureau of Economic Research Working Paper: 4556. p 27. 1993.

Borjas, George J., Friends or Strangers: The Impact of Immigrants on the U.S. Economy. (Basic Books Inc., New York, 1990) 80-81.

Card, David (1990), "The Impact of the Mariel Boatlift on the Miami Labor Market," Industrial Labor Relations Review, 43 (2) , p 66-67.

Chiswick. Carmel (1989), " The Impact of Immigration on the Human Capital of Natives", Journal of Labor Economics. 7 (4), 464-86.

DeVoretz, DI., and D. Maki (1980) "The size and distribution of human capital transfers from LDC's to Canada". Economic Development and Cultural Change 28, 779-800. Edmonston, Barry and James Smith Ed. 1997. *The New Americans: Economic, Demographic, and Fiscal Effects of Immigration*, Washington D.C.: National Academy Press.

Edmonston, Barry and James Smith Ed. 1997. *The New Americans: Economic, Demographic, and Fiscal Effects of Immigration*, Washington D.C.: National Academy Press

Friedberg, M. and Hunt J. (1995), "The Impact of Immigrants on Host Country Wages, Employment and Growth", Journal of Economic Perspectives, 9 (2), 23-44.

Frey, William H. 1996. "Immigration, Domestic Migration, and Demographic Balkanization in America: New Evidence for the 1990s, Population and Development Review. Vol. 22.

Grossman, J.B. (1982) 'The substitutability of natives and immigrants in production' Review of Economics and Statistics 64, 596-603.

Gunderson, Benjamin and Riddell, Labor Economics. Theory, Evidence and Policy in Canada (Fourth Edition), McGraw-Hill Ryerson, Toronto, 1998.

Hiebert, D. (1997): "The Color of Work: Labor Market Segmentation in Montreal, Toronto and Vancouver, 1991," Working Paper No. 97-02, Vancouver Center of Excellence: Research on Immigration and Integration in the Metropolis (RIIM).

Hum, Derek and Simpson, Wayne, "Wage Opportunities for Visible Minorities in Canada" 1999. Canadian Public Policy 25( 3) , 379-394.

LaLonde Robert J. and Robert H. Topel, "Labor Market Adjustments to Increased Immigration in John M. Abowd and Richard B. Freeman editors, Immigration, Trade and Labor. Chicago: University of Chicago Press.

Laryea, S.A. (1997): "The Impact of Foreign-Born Labor on Wage Rates in Canada," Ph.D. Dissertation, Department of Economics, Simon Fraser University.

Maki, D.R., and L.N. Meredith (1987) 'A note on unionism and the elasticity of substitution.' This Journal 20.792-801.

Newman, Katherine and Lennon, Chauncy, "The Job Ghetto" 1995. American Prospect. Vol. 0 (22). p 66-67.

OECD (1998d), *Trends in International Migration*, Paris.

OECD (1997b), *Economic Survey of the United States 1997*, Paris.

OECD (1999), International Migration Database; World Bank Development Indicators.

Pedace, R. (1998), "The Impact Of Immigration On The Labor Market For Native-Born Workers", Eastern Economic Journal, 24(4), 449-463.

Pendakur, Krishna and Pendakur, Ravi (1996), ""The Color of Money: Earnings Differentials Among Ethnic Groups in Canada,"", Canadian Journal of Economics, 31(3), 518-548.

Roy, A.S. (1987) 'An analysis of substitutability and complementarity of immigrants and Canadian-born work force' Labor Market Bulletin 4(9), 5-11.

Simon, Julian L. The Economic Consequences of Immigration, (Basil Blackwell Ltd. and The Cato Institute, 1989.

Warren R. (1997), "Estimates of the unauthorized immigrant population residing in the United States: October 1996", U.S. Immigration and Naturalization Service.

Internet Sources

U.S Immigration and Naturalization Service :

<http://www.ins.usdoj.gov/graphics/index.htm>

Current Population Survey: <http://www.bls.census.gov/cps/cpsmain.htm>

Statistics Canada : <http://www.statcan.ca/start.html>



- 
- <sup>1</sup> Ottawa Citizen, Friday September 15, 2000. Section A9
  - <sup>2</sup> OECD (1997), *Economic Survey of the United States 1997*, Paris
  - <sup>3</sup> Benjamin, Gunderson, Riddell (1998) p388
  - <sup>4</sup> Ibid p394
  - <sup>5</sup> Friedberg and Hunt p25
  - <sup>6</sup> OECD (1997), *Economic Survey of the United States 1997*, Paris
  - <sup>7</sup> Friedberg and Hunt p27
  - <sup>8</sup> Ibid p28
  - <sup>9</sup> Ibid p27
  - <sup>10</sup> U.S Immigration and Naturalization Service
  - <sup>11</sup> OECD International Migration Database1999
  - <sup>12</sup> Borjas (1994), "The Economics of Immigration"
  - <sup>13</sup> Current Population Survey (March 1998)
  - <sup>14</sup> Ibid
  - <sup>15</sup> Warren (1997) p196
  - <sup>16</sup> Borjas (1990), Friends or Strangers p80
  - <sup>17</sup> Ibid p80
  - <sup>18</sup> Altonji and Card (1991) p221
  - <sup>19</sup> Laryea (1997) p
  - <sup>20</sup> Statistics Canada (1994)
  - <sup>21</sup> Frey, William H
  - <sup>22</sup> Card (1990) p255
  - <sup>23</sup> Current Population Survey
  - <sup>24</sup> Borjas, Freeman, and Katz, p43
  - <sup>25</sup> OECD (1997b), *Economic Survey of the United States 1997*, Paris.
  - <sup>26</sup> Ottawa Citizen, 19 July, 2000, p. B11/
  - <sup>27</sup> OECD (1997b), *Economic Survey of the United States 1997*, Paris