



Department of Economics

Master Thesis

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How much does Origin Affect Earnings?

Evidence on American Second Generation Immigrants

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Abstract:

This paper examines the parental background effect on male and female second generation immigrants' annual earnings by comparing their annual income to that of workers with American descent on the US labor market. It uses data from the Current Population Surveys for the period 2000 - 2008 and utilizes the human capital earnings function into an OLS regression model to capture the income differentials. The effect of different parental composition is also analyzed to compare the impact on earnings of a domestically born parent. As an extension, the earnings gaps are studied at five different levels of schooling. Negative parental background effect is found on the annual earnings of male second generation immigrants with Mexican descent only, whereas the effect on all other categories of second generation immigrants is positive or close to zero. Furthermore, no solid proof of the advantage of having a domestic born parent could be reached.

Keywords: second generation immigrants, parental background, annual earnings, human capital earnings function, OLS regression model

1. Introduction

Immigration is a phenomenon which nowadays takes place in many countries. It is discussed, analyzed and studied by many people – students, scientists and others. Different people choose to immigrate all the time and for many reasons. Sometimes the reasons are political and the immigrants may become refugees, sometimes the reasons are economic and that makes people move from poor or less developed countries towards countries, which offer them higher living standards and better possibilities to study, work and pursue personal endeavors. Still other individuals immigrate for just reasons of pure personal taste or dream. Regardless of what makes people decide to leave one country and settle into another, this is a lifetime experience and often changes the immigrants' life entirely and forever.

Many countries accept thousands of immigrants every year and become their second, or even more, subsequent home. Most of the immigrants choose as their new homes the most developed countries in the world, such as the USA, Canada, Australia, United Kingdom and others (Borjas, 1994). Among all of the above mentioned countries, the USA is the one that has become the “dreamland” to settle in for most of the immigrants around the world. With its high living standard (being one of the highest in the world), endless opportunities to prosper, political stability, moderate climate and others, the USA attracts the major part of the immigrants every year. According to statistics published in 2004 by the United States Citizenship and Immigration Services Office more than 16 million immigrants have arrived in the country over the last two decades of the twentieth century. Looking at the same statistics, one can see that historically the immigrant flow into the USA has followed different patterns, having had periods of increase, such as the late decades of the 19th century, the first decades of the 20th century and the years after World War II as well as periods of decrease – such as during the Great Depression and the interwar period. As of 1995 the immigration flow is capped at 675,000 individuals per year (US Citizenship and Immigration Services Office, 2004) but every year thousands of illegal immigrants also arrive into the USA and try to integrate into the country.

As already mentioned the reasons for an individual to immigrate may vary considerably. One of the reasons, not mentioned earlier, has been to ensure better possibilities for living, studying and working for the immigrants' own children. Many immigrants worldwide in general and in the USA in particular give birth to their children upon arriving in their new home country. In most of the cases, but depending particularly on the country's legislation, these children automatically obtain citizenship of the country they are born in. In

the scientific literature and not only there, they are referred to as second generation immigrants. The second generation immigrants are a very interesting group of people who simultaneously grow up and live in one culture but also retain and bear the culture of their parents. According to Borjas (1994), the share of second generation immigrants in the USA from the total population of the country was 9.7% in 1990, whereas by 2050 it will reach 13.9%. In terms of integrating into the country they are born in and live in, it is common that they do better than their parents. The reasons for that are numerous – from better language skills or domestic educational credentials to increased adaptability (see Aydemir and Sweetman, 2006).

Second generation immigrants are subject to in-depth research and analysis by many scientific disciplines – psychology, anthropology, economics, demography, to name just a few. Many questions related to second generation immigrants have fascinated scholars over time and they have conducted numerous researches in order to answer them. Economics mainly tries to investigate issues like integration, earnings and educational attainments of second generation immigrants. In doing this, the Economics' studies frequently make comparison between second generation immigrants and citizens whose parents have local or same descent or between second generation immigrants and their parents – the first generation immigrants. The reason for doing this is to investigate whether the second generation immigrants are better off, worse off or at the same level compared to the other people in terms of some measure of integration. The answers to these questions usually give rise to policy recommendations, which when (and if) adopted may benefit the future cohorts of immigrants in a given country.

Second generation immigrants are the subject of this paper. In it I investigate the earnings of second generation immigrants in the USA and compare them to these of white American workers with American born parents. I conduct this study using cross sectional public use micro data from Current Population Surveys conducted in the USA for the period 2000 – 2008 and utilize an OLS regression method, based on Jacob Mincer's (1974) human capital function. The questions I was asking myself prior to beginning the study and which I have tried to answer are: firstly, if and how second generation immigrants' parental background (place of birth of parents) and parental composition (whether one or both parents are foreign born) affect their earnings; secondly – whether as a result of the first, second generation immigrants earn more, less or the same amount of income compared to the reference group, thus are they integrated into the labor market and to what extent; and thirdly – how is that income differential distributed at different levels of education (less than High

School, High School, some college, Bachelor's or similar degree and post graduate education).

My personal motivation to pursue such a study stems from two factors. Firstly, in my previous university my Bachelor's thesis was within the immigrants' context and now, 3 years later, after having done something within the area, I am eager to again explore this issue but from a different perspective. Secondly, from all areas of economics I have studied, I particularly find labor economics really fascinating and may consider pursuing a career which relates to its matter; so – enhancing my experience with a study in it may be beneficial for my future endeavors.

The structure of the paper is as follows: part two provides the reader with a literature review of some of the studies that have been conducted and published over the last 30 years on the second generation immigrants' issue. Part three explains the theoretical context and framework used in my study – the human capital theory and the human capital earnings' function (Jacob Mincer, 1974) and the transfer of human capital across generations. Part four describes the data used in the study. It gives information about data sources, variables used and generated and the limitations being imposed. It also provides and analyzes some descriptive statistics. Part five discusses the methodology of the study – it explains the regression models and regression equations used to capture the income differentials and parental background effects. Part six presents the results of the study and analyzes them. Part seven compares the results to those of other similar studies, proposes some policy implications and concludes the paper. An appendix follows, containing graphs to better visualize the results that have been found.

2. Literature Review

Most of the scientific literature on Second Generation Immigrants can be divided into three main areas: firstly – examining the income differentials between these immigrants and workers of domestic origin; secondly – exploring intergenerational integration development within the immigrant groups, thus comparing the earnings of second generation immigrants to those of first generation or earlier cohort immigrants, and thirdly – analyzing the educational and other attainment of second generation immigrants compared to the attainment of individuals with local descent. Although this paper focuses on income differentials only, it may be beneficial to provide the reader with results from some studies conducted in the other two areas as well.

An early study being conducted on the income gap between second generation immigrants and native workers is the one of Chiswick and Miller (1985). Their study analyzes the income of male first, second and other generation immigrants. They look at micro data from the 1981 census in Australia (the Household Sample File) and try to find what determines the income of immigrants. Running regression equations, the authors show that compared to individuals with native born parents, having a father who is an immigrant and a mother who is native born “translates” into 2.9% higher income, whereas the opposite parental ethnicity combination yields 1.7% higher income. When both parents are foreign born, second generation immigrants have 2.6% lower income than native Australian workers with Australian born parents. One last thing the authors look at as concerns second generation immigrants is that given a foreign born father, having an Australian born mother increases the income with 5.5%. This is in line with theories stating that mothers are more important for building initial human capital than fathers are, thus a native born mother can help the second generation immigrants integrate into the domestic labor market better. In conclusion the two authors state that among Australian born individuals, second generation immigrants have 4% higher income overall but when other variables are the same, this difference falls to statistically insignificant 1% higher income.

Ekberg and Rooth (2003) conduct another study on unemployment and earnings of second generation immigrants in Sweden, separating the whole group of second generation immigrants according to ethnic background and parent composition and using data from two sources – the National Labor Market Board and Statistics Sweden – which contains information on unemployment status, earnings and individual characteristics. The results of their study show “intergenerational persistence” (Ekberg and Rooth, 2003, pp. 18) of negative labor market outcomes among immigrants. Both male and female second generation immigrants have on average higher probability of being unemployed compared to native Swedish people; the difference varies between 1% and 13% depending on the immigrants’ parents’ background and whether one or both parents are immigrants. In terms of the earnings, the authors find from 0% to 17% lower earnings for male second generation immigrants, compared to native Swedish workers, whereas the opposite result emerges for females. Second generation female immigrants’ earnings vary from being 10% less to 5% more than those of native Swedish females, depending on parents’ background and whether one of the parents is native. Thus, female second generation immigrants may enjoy an earnings advantage over their native counterparts. In conclusion the authors state that second generation immigrants overall have lower earnings and higher probability of unemployment

than natives and that this gap is more or less due to unobservable characteristics, not related to educational attainments, ability or experience credentials. The earnings and unemployment gaps depend on parental background and composition.

Nordin and Rooth (2007) further look at the gap between second generation immigrants and natives on the Swedish labor market and try to answer the question whether skills differences or discrimination is the reason for the gap. They utilize the results from the Swedish Military Enlistment Test, which measures individuals' cognitive abilities and which every male citizen of Sweden must take at the age of 18. Utilizing regression models, the authors show a negative earnings' gap at immigrants' expense which tends to get bigger for those for whom both parents are foreign born. But their main finding is that the income gap is due mostly to differences in skills. When they account in their model for the results from the military test, the income gap tends to shrink, which leads them to conclude that years spent in school is not a very good predictor of productivity and skills.

The study by Trejo (2001) analyzes the intergenerational issue of the labor market performance of second generation Mexican–origin immigrants on the US labor market. In the study the author uses micro data from the Current Population Surveys (CPS) conducted in the USA in 1979 and 1989. He finds that second generation immigrants have higher earnings than the first generation immigrants, even when looking at first generation immigrants with more than 40 years of domestic labor market experience. One of the main results of this study is that the returns to education for Mexican origin individuals increase with every subsequent generation. In terms of work experience, this study finds equal return for second generation immigrants and native workers.

A slightly different study on the same issue has been conducted by Carliner (1980). In it the author tries to compare the earnings of first, second and third generation immigrants from Canada, Europe, Asia and Latin America on the US labor market. Data for this study is drawn from the 1970 Census of Population. He finds that whereas earnings increase from first to second generation immigrants, they fall when comparing second to third generation immigrants. The main explanation that the author provides is that accumulation of domestic human capital is offset by a decrease in the motivation to succeed on the domestic labor market. The intergenerational difference in income among the different groups in this research varies depending on whether human capital is accumulated faster than the motivation for successful integration decreases. The author shows that for some groups this accumulation is faster, reflected in higher wages for them. Another issue being researched in this study is the hours worked and the return to education. Regarding the first, the author finds that second

generation immigrants work more hours than third generation immigrants and also more hours than recent first generation immigrants. In terms of return to schooling, the researcher finds that native individuals receive “greater rewards” (Carliner, 1980, pp.97) for an extra year of schooling than recent and earlier immigrants do. Also, within the immigrant group, earlier immigrants’ return to education is higher than for recent immigrants.

The research of Nielsen, Rosholm, Smith and Husted (2001) analyzes the educational and employment attainment of second generation immigrants in Denmark (aged 35 or less) and compare them to those of native Danish people. The authors look at the so called “school-to-work transition” (Nielsen, Rosholm, Smith and Husted ,2001, pp.1) in four aspects – completion of educational level, waiting time before job entry, duration of first employment spell, and wage earnings for 1997. In doing this they try to find out if, and to what extent, the immigrants’ parental and ethnic capital is transferable to their children. In addition they try to observe if there are any “neighborhood” effects, i.e. whether the area where the second generation immigrants have grown up impacts their future educational and labor market attainments. Data for the study comes from administrative registers for the period 1985–1997. The authors find that second generation immigrants’ obtainment of a quality education depends on their parents’ characteristics, their own ethnicity and the neighborhood they have grown up in. If the parents have “bad” characteristics or the neighborhood has a big immigrant concentration, the probability for second generation immigrants to obtain a good education decreases. A similar conclusion is reached in terms of the waiting time between leaving school and beginning to work; intergenerational and neighborhood effects again put the second generation immigrants at a disadvantage in comparison to the native Danes by making their waiting time longer. Still, the authors conclude that once second generation immigrants start working, the impact of the above mentioned three effects – parental and ethnic capital and “neighborhood” effect decreases their impact on the duration of the employment spell. Finally, the authors find that the returns to education and experience for second generation immigrants are lower than they are for native Danes which, according to the authors, cannot be explained without using the theory of discrimination.

The study by Hansen and Kučera (2004) looks at the difference between educational attainments for children of immigrants and similarly-aged native Canadians in Canada. The authors use data from the Survey of Labor and Income Dynamics (SLID) conducted by Statistics Canada. Overall, the results show that children with at least one foreign born parent tend to acquire more education than the native Canadians do which contradicts the findings of

other previously performed studies. Also, the authors find that the second generation immigrants' parents' level of education plays a role in that of their children.

In a short paper, Rivera-Batiz (1990) examines how English language abilities affect the earnings of first and second generation immigrants in the US labor market. The data used in the study comes from the 1985 National Assessment of Educational Progress Young Adult Literacy Assessment Survey. This survey contains information about English proficiency, together with background information. The author uses human capital earnings equations for both male and female first and second generation immigrants and shows that "English reading deficiency is a major factor constraining the wage opportunities of immigrants" (Rivera-Batiz 1990, pp. 299). According to the author this effect is stronger for females; better English language skills may increase male wages with up to 13.5% and female wages with up to 20.5%.

3. Theoretical Framework and Background

The purpose of this study is to estimate the difference in annual earnings due to parental background effects between second generation immigrants and workers with American descent on the US labor market. It analyzes if, and how, the parental background of second generation immigrants influences their income – whether the different countries or regions where the parents come from play a role, and to what extent, towards determining the earnings of their children. The study also tries to analyze whether this difference in pay is positive, negative or negligible. Thus, are second generation immigrants at a disadvantage on the labor market or not and if they are – is the reason their origin or something else.

The theoretical framework of the study is presented in this section in several steps. A fully competitive labor market with homogeneous jobs and workers is the starting point. Then the theory of compensating wage differentials (see Borjas, 2007, pp. 213) is introduced which shows the equilibrium outcome of the labor market when jobs and workers are no longer homogeneous but are heterogeneous. Non-competitive market features, such as minimum wage or trade unions are added and the effect they may have on wages and earnings is examined. Then, the human capital is analyzed as a determinant of an individual's earnings and finally, all the theory is applied to immigrants and specifically to second generation immigrants.

3.1. General determinants of wages and income

Before discussing in-depth the theoretical context of the research and analyzing what may cause any difference in earnings between the two groups, an intuitive question of interest may arise, namely what in general determines the income or wages of people, so that it may also play a role in causing earnings differences? Theoretically, if one opens a standard Labor Economics textbook (e.g. Borjas, 2007), one will find out that wages are determined by the interaction of demand and supply conditions of the given or analyzed labor market and that so is annual income, assuming no unemployment periods throughout the year in question. The demand for labor on its own may be influenced by many factors – particularly firms’ or companies’ policies or business plans, economy wide macro conditions and business cycles. Assuming all jobs are identical and all workers have the same qualifications (there is homogeneity), then as equilibrium, there will be one wage rate and one level of employment. As a result all individuals will have the same earnings and there will be no difference to be analyzed.

But in the real world this is hardly the case. As Borjas (2007) puts it, most of the jobs are different – they require different skills or educational qualifications, offer different work conditions and different pay. Workers, on the other hand, are far from being identical. Some have more education while others have more experience and skills. Thus, there are heterogeneous jobs and workers. When one analyzes this scenario, one can see that in the long run the jobs that require more knowledge and skills or offer worse work conditions will also offer higher pay in order to compensate workers for this. This higher pay is referred to as compensating wage differentials (see Borjas, 2007, pp. 213). In a way, the rate of return to education or human capital is one example of a compensating wage differential; namely – individuals who have more skills and have invested in the past in obtaining more human capital are offered higher wages in order to be compensated for this. So, as a conclusion, one may state that in fully competitive labor markets but with heterogeneous jobs and workers, the compensating wage differentials play a dominant role in determining one’s earnings.

Quite often the labor markets are not fully competitive. In many countries governments also play a role in determining to a certain degree wages and income by imposing minimum wage requirements which make it illegal for employers to pay less than this rate. Minimum wage legislation can alter market equilibrium outcomes when the wage rate required by law is above the level that would be set by the free market.

As can be seen in Figure 1, D is the demand for labor and S is the supply of labor. The interaction between the two determines the equilibrium wage rate w^* (respectively earnings) and the equilibrium employment rate E^* in the given market or economy. With the imposition

of a minimum wage, the wage rate increases to w^- (assuming it is set above the previous market clearing level).

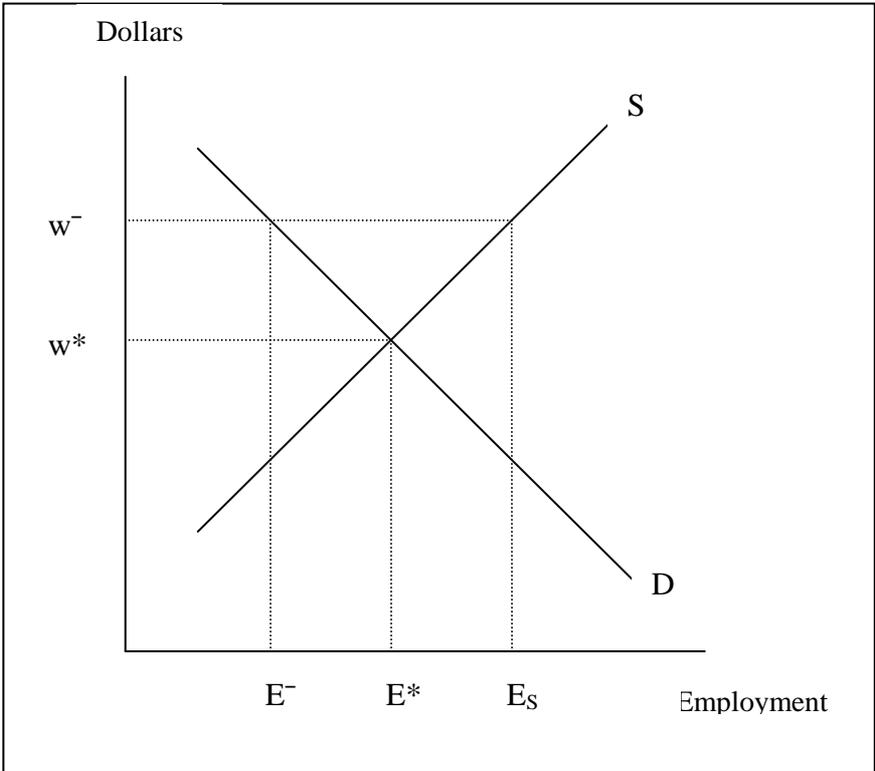


Figure 1
(Source: Borjas, 2007, pp. 138)

Furthermore, labor unions may exist and when they do, in many industries throughout the world they negotiate wages and other income benefits for its members through collective bargaining agreements. This is also likely to impact the earnings of the individual. One possible theoretical scenario for the impact of labor unions may be the monopoly union model, presented in Figure 2.

As it can be seen in Figure 2, the union chooses a wage rate w_1 such that it maximizes its utility function. The equilibrium is at point e where the union's indifference curve I_0 is tangential to the demand for labor. In this model the union has full control over the wage rate (Bosworth, Dawkins & Stromback, 1996) and the outcome will be both a higher wage level and less employment than in the fully competitive labor market without the union.

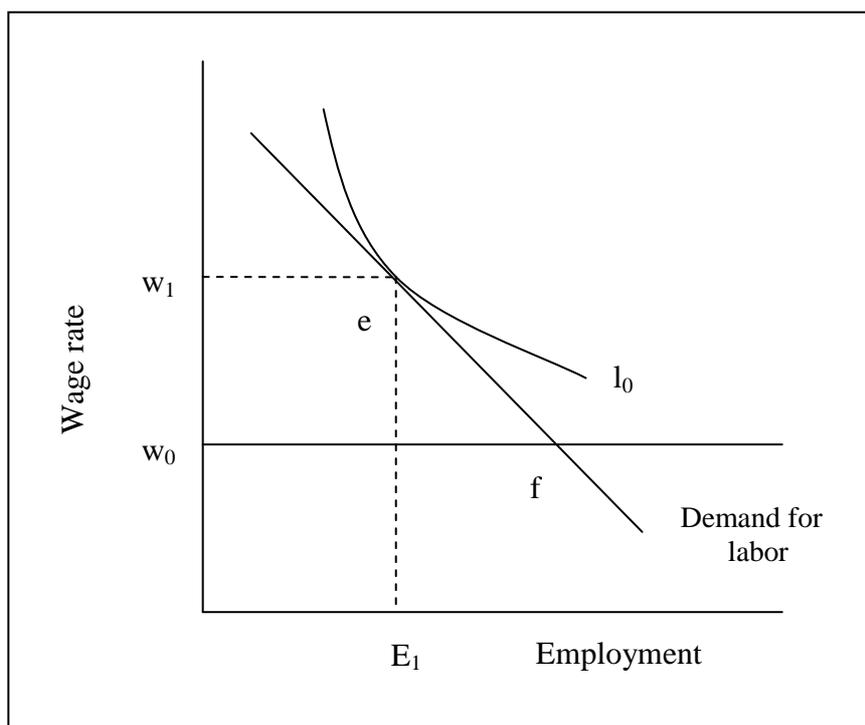


Figure 2
 (Source: Bosworth, Dawkins & Stromback, 1996, pp. 357)

3.2. Specific determinants of wages and income – Human capital theory and human capital earnings functions

The income of any individual is determined more or less by his or her human capital. That is, in most general sense, it reflects the level or years of schooling and the work experience the worker possesses. Formal schooling is measured as years spent in educational institutions or as educational degrees obtained from such institutions. As individuals study more, they accumulate knowledge and this increases their skills, abilities and productivity. With higher skills people can perform more complicated jobs, have higher productivity and thus, receive higher income. Therefore, in a way obtaining more schooling is an investment decision that everyone makes in his or her lifetime. Sometimes the level of schooling obtained can also be used as a source for educational signaling (e.g. Varian 1992, pp. 470). In this scenario an individual obtains more education or a higher schooling level and “sends” a signal to employers so as to be distinguished from other job applicants and to show his or her higher productivity. Work experience also adds to one’s human capital by making it possible to acquire skills necessary to perform a given job well. Some of the skills may be general, such as using computers, machines etc, and can be transferred from one job to another while other skills may be firm specific, such for example operating a space shuttle, skills which cannot be

used elsewhere apart from in space agencies. In general, as with schooling, the more experience a person possesses the more capable he/she is to perform various job tasks and therefore the more valuable he or she is to a given company. This, and also to keep him or her working within this specific company, is rewarded by paying this person a higher wage.

The human capital theory, together with its empirical counterpart in the form of the human capital earnings function, were developed by the famous labor economists Gary Becker and Jacob Mincer. Starting with his doctoral dissertation in 1957 and continuing in subsequent studies, inclusive his book “Schooling, Experience and Earnings” (1974), Mincer provided a theoretical and empirical framework for explaining and analyzing the income distribution among individuals based on differences in their time spent in school and at work. In his studies, among many other insights, he shows that schooling is a major determinant of the income of an individual and that more schooling in general transfers into higher earnings (Teixeira, 2007). But as important, if not more, is also the post-school on the job training (or so called experience). As Pedro Teixeira puts it in his book “Jacob Mincer The Founding Father of Modern Labor Economics”: “The emphasis on on-the-job training would become a hallmark of Mincer's work on human capital” (Teixeira, 2007, pp. 48). The work of Mincer has been used in many subsequent studies as a backbone to analyzing income distributions or reasons for income differentials. In line with this mainstream, I utilize it in my research as well which will mainly make use of the Mincer earnings equation.

In the most general case the human capital earnings function can be described as:

$$Y = \alpha + \beta * S + \gamma * E + \delta * E^2$$

In this function Y is a measure of income – it can be e.g. the hourly wage or the annual income. S is a measure of schooling, it can be a certain degree attained such as high school, college or doctorate, or it can be a quantitative measure of years of schooling. E can be described as potential experience. Most often it cannot be known exactly when the individual started formally working or if he/she made any career breaks etc. and therefore potential experience is often used instead of exact, actual experience. Potential experience is usually calculated by subtracting years of schooling and 6 from the age of the individual (assuming in general that individuals start to go to school at the age of 6). The squared term of experience or potential experience captures that the earnings function is likely to be concave with years of experience or in other words showing diminishing returns to experience. This is also due to

declining ratios of investment relative to potential earnings (Chiswick, 2003). The coefficients α , β , γ and δ can be most generally interpreted as follows:

- α – measures the earning potential of the individual, assuming he or she has no schooling and experience
- β – measures the rate of return to schooling, holding all else constant. It shows how the earnings will change as schooling changes
- γ – measures the rate of return to experience
- δ – captures the diminishing returns to experience

According to Lemieux (2006) this equation can quite well be applied to most of the datasets available and that is one of the reasons why it is so widely accepted among scientists.

3.3. Application to second generation immigrants

The difference in earnings between second generation immigrants and Americans with American origin may come from several sources, differences in human capital, discrimination or reasons related to their origin. Regarding the first, whether (and if so why) the human capital (the level of schooling and experience) is lower for second generation immigrants than it is for the others, is a question which is not the subject of this research. In general human capital differences or deficiencies should have an impact on any income gaps; theoretically, people with less educational credentials or experience tend to earn less income (see Huggett, Ventura and Yaron, 2006). The amount of human capital within the group of second generation immigrants certainly varies. Some may have obtained postgraduate degree whereas others may even have dropped out of high school; some may have many years of experience whereas others may just have begun their working life after school. These differences in human capital between them will likely cause differences in their earnings. But the same goes for workers with American parents. The level of schooling and experience certainly differ between them and that should play a role also in differentiating their earnings.

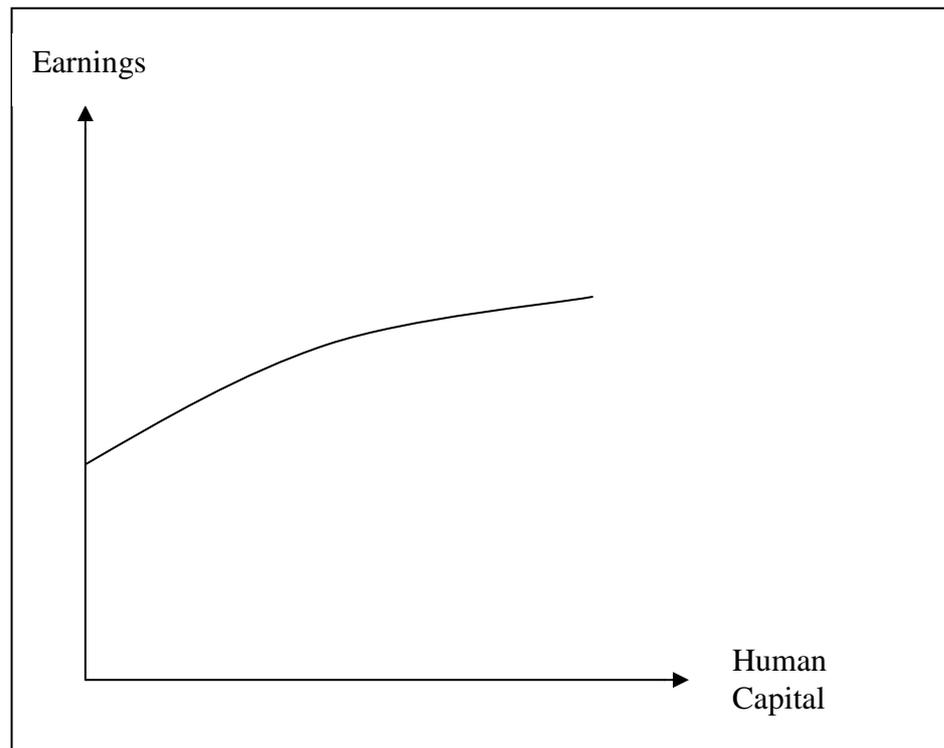


Figure 3

In a very simple manner, as shown in Figure 3, more human capital, other things the same, increases the earnings of an individual. But as already discussed, there is likely to be a diminishing return to it.

Most, if not all, of the human capital of second generation immigrants in this study is expected to be obtained in the USA. Being born in the USA and working there at the time of the surveys, they presumably have studied in American schools, colleges and universities and have begun working afterwards in the US labor market, acquiring general or firm specific skills. Due to the domestic human capital acquisition, second generation immigrants are also expected to have no major language skills deficiencies. The reference group of this study – workers who are born in the USA to American parents – does not differ much in these respects. They have also supposedly built their human capital in the USA by studying in American schools and working on the US labor market afterwards. Therefore any difference in earnings between the two groups – second generation immigrants and Americans with American descent – cannot be attributed as a main reason to unrecognized foreign obtained human capital by either of the groups.

Of course theory cannot always predict what is actually the case, so where second generation immigrants turn out to earn less than others, although their human capital is equal

to or even more, the reasons should be looked for elsewhere – for example in discrimination or in the background factors, related to it.

Discrimination in the case of second generation immigrants may be of two general types – taste discrimination (according to the theory of Gary Becker) or statistical discrimination (see Borjas, 2007, pp. 378). Under the first, the employers, employees or the customers may discriminate certain individuals and give rise in some cases to wage differentials and income gaps. Statistical discrimination may also play a role in differentiating earnings between second generation immigrants and other workers if the second generation immigrants are statistically at a disadvantage compared to others – either by lower human capital or other labor and personal characteristics and if employers look at this statistics when hiring individuals and determining their incomes (see Borjas, 2007, pp. 380). But as already mentioned – discrimination is not primarily analyzed in this study and is not the focus of it.

The main focus of interest in my paper is such sources of income gaps – namely the parental origin and its effect on earnings. Origin in the case of second generation immigrants is considered as the place where their parents were born or have lived before going to the USA. In many studies (see Haveman and Wolfe, 1995) scholars have argued that parents transfer human capital to their children in many ways – it can be by preschool upbringing, choice of elementary or high school, place or neighborhood to settle and live in, cultural habits etc. All these may play crucial roles in the initial and subsequent development of an individual, with an impact on his or her earnings later in life. Parents can also transfer human capital to their children which is specific to the country they live in - for example the language spoken (Ekberg and Rooth 2003). In general, it can be said that parents with their origin and the way they settle into their new home country may be crucial for their future children's success in the labor market.

Second generation immigrants' origin may differ not only by geographical area but also by parental composition. In some cases second generation immigrants have only one foreign born parent whereas in other cases both parents are foreign born. Whether and what difference in terms of earnings this can make is something also being researched in this paper. Initially, one would expect that in the general case having two foreign born parents should cause lower earnings than having only one, because as already discussed above the domestically born parent may be able to transfer valuable human capital or country specific human capital to the child. Also it may be expected that if a second generation immigrant has a domestically born mother that should cause higher earnings than having a domestically born

father, since mothers seem to be more important for early human capital accumulation than fathers are (see Chiswick and Miller, 1985).

Thus, with the use of the basic human capital earnings function and extending it with the background effect, the expected earnings of second generation immigrants and workers with domestic background can be estimated using the OLS regression:

$$\mathbf{Ln\ Income}_i = \alpha_1 + \alpha_2 \mathbf{Background}_i + \alpha_3 \mathbf{H}_i + \alpha_4 \mathbf{D}_i + \varepsilon_i$$

where Background represents a set of dummy variables describing origin and taking a value of 0 when the origin is American (and therefore not second generation immigrants) and 1 if other (meaning the individual is a second generation immigrant). H is human capital and D represents demographic and other characteristics which are believed to impact earnings and will be discussed later. The income is expressed in natural logarithmic form to allow for the set of coefficients to be interpreted as percentage effects of the independent variables on the dependent one.

As already mentioned the focus of this paper is on the background effects on second generation immigrants and not on the differences in human capital between second generation immigrants and workers with American origin. Therefore, using the equation above, income for natives will be measured by:

$$\mathbf{Ln\ Income}_i = \alpha_1 + \alpha_3 \mathbf{H}_i + \alpha_4 \mathbf{D}_i + \varepsilon_i$$

Whereas for second generation immigrants it will be:

$$\mathbf{Ln\ Income}_i = \alpha_1 + \alpha_2 \mathbf{Background}_i + \alpha_3 \mathbf{H}_i + \alpha_4 \mathbf{D}_i + \varepsilon_i$$

Assuming the usual “ceteris paribus” condition, the main focus will thus be on the vector of coefficients in front of the Background dummy variables, i.e. on α_2 . By analyzing these coefficients, it will be possible to capture the effect of the background which the second generation immigrants bear and analyze how it affects their earnings.

In Figure 4, assuming constant returns to human capital, a possible scenario is shown where parental ethnic background affects earnings negatively (α_2 is negative) and second generation immigrants thus earn less income than individuals with American origin at given levels of human capital.

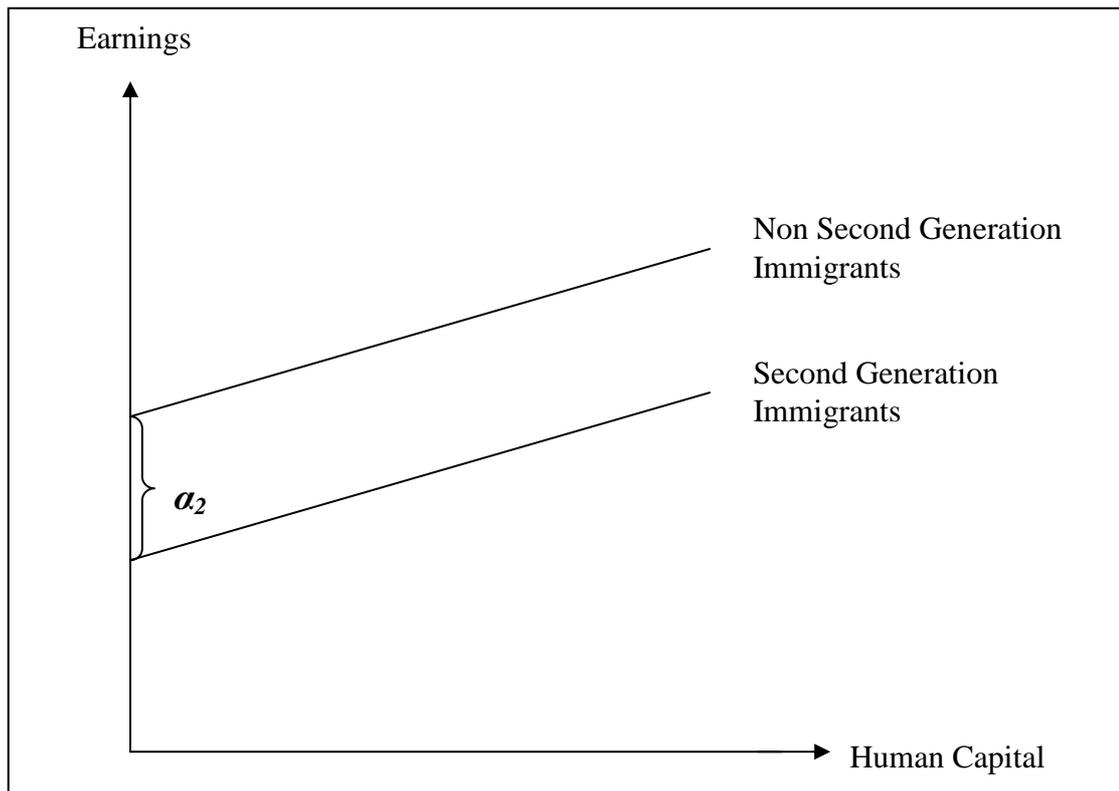


Figure 4

Similarly to the study by Ekberg and Rooth (2003), the parental background of second generation immigrants in this research is divided on a geographical basis. The difference with this study is that the division utilized also follows an economic pattern. Second generation immigrants are separated into four areas – Mexico, Canada, other OECD countries and the rest of the world including mixed background. If one tries to make a preliminary analysis or describe the four groups, one will see that different characteristics apply to them. For example, it is expected that one of the most numerous groups of second generation immigrants will be of Mexican origin due to the proximity with USA and the large immigrants flow between the two countries. It is also a fact that many Mexican immigrants into the USA do not integrate well into the labor market due to many reasons – lack of adequate language skills or unrecognized foreign obtained educational credentials (see Feliciano, 2001). This lack of proper or full integration is expected to influence the integration and subsequently the earnings of their children – the second generation immigrants. Second generation Mexican immigrants may therefore be at a disadvantage compared to workers with American descent. As for second generation immigrants with Canadian or other OECD countries background – it is expected that their number will be less, and that their parents

should have integrated (due to economical or similar culture reasons) more fully into the US labor market – and thus the earnings of their children should be less negatively impacted.

Finally, apart from human capital and background there are other, demographic factors that may influence the earnings of both second generation immigrants and other workers. Two of them are the marital status and the number of children in the household. Usually some of the individuals who are single focus on their careers and try advancing in it as quickly as possible, which translates into higher earnings. On the other hand being married or having children may impact your earnings by deferring entry or advancement in the career (especially for females) which can cause the earnings to not grow as fast or not at all for a period of time. Living in a big city may also have an impact on earnings. Usually in the big cities there are more possibilities to find work as there are more companies. This may create competition for attracting the best employees and can cause earnings to rise. Also it is a fact that the living expenses in big cities usually are higher, which means that businesses are likely to have to pay higher wages there as well. The higher chances of finding and starting a job makes immigrants usually choose big cities as their destination when they decide to immigrate and subsequently to give birth to their children. In general, in many OECD countries around the world and especially in the USA, “the immigrants are concentrated in older neighborhoods of large cities” (Immigrants, Integration and Cities – Exploring the Link, OECD publishing, 1997, pp. 33). Another reason why immigrants choose to settle there is the fact that big cities do have more immigrants. Having many other immigrants around is in a way helpful, especially for newcomers, since they need a lot of advise and information from people who have experienced similar or the same situations in the near past upon arrival. But there is a downside of this, especially for second generation immigrants, which is analyzed in terms of the so called “neighborhood effect” (Nielsen, Rosholm, Smith and Husted, 2001). As already mentioned earlier in reviewing their study, living in an area with a high concentration of immigrants may affect negatively the second generation immigrants’ earnings in the future due to the lack of full integration of their parents.

4. Data and Descriptive Statistics

4.1. Data source and variables used

The data for this study is taken from 2000 – 2008 Current Population Surveys (CPS) in the USA. The CPS is conducted in the USA annually every March jointly by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (US Census Bureau 2009). It provides

general, demographic, income, ethnic and other information for all respondents – households and individuals. Access to the data in the form of Integrated Public Use Microdata Series (IPUMS) files is provided upon registration by the Minnesota Population Center of the University of Minnesota in the USA.

The IPUMFs contain samples of anonymous responses to the CPS questionnaires. The data in these files is not aggregated and the variables in them can be manipulated to fit any research requirements. For the purpose of this study, the dataset variables used are (the variables and codes descriptions are taken from the database website):

- year*** – survey year
- age*** – respondent's age
- sex*** – respondent's gender
(2 possible codes: male and female)
- race*** – respondent's race
(5 major possible codes: white, black, American Indian, Asian and other plus codes for mixed race)
- metro*** – respondent's metropolitan center city status
(indicates whether respondents were inside or outside metropolitan area and if in metropolitan area whether inside or outside the central city)
- nchild*** – respondent's number of own children in the household
(indicates the number of children residing with respondent)
- marst*** – respondent's marital status
(5 major possible codes: married, separated, divorced, widowed and never married)
- bpl*** – respondent's birthplace
(indicates whether the person is born in the USA or if not – the foreign country of birth)
- mbpl*** – respondent's mothers' birthplace
(indicates if the respondent's mother is born in the USA and if not – the foreign country of her birth)
- fbpl*** – respondent's fathers' birthplace
(indicates if the respondent's father is born in the USA and if not – the foreign country of his birth)
- nativity*** – respondent's foreign birthplace or parentage

(classifies each respondent as native or foreign born and specifies whether the parents of a native-born respondent are native or foreign born; 5 codes: native born with both parents native born, native born with a foreign-born father and a native-born mother, native born with a foreign-born mother and a native-born father, native-born with foreign-born parents, foreign born)

- educ99*** – respondent’s highest level of educational attainment
(15 codes: no school completed, 1st – 4th grade, 5th – 8th grade, 9th grade, 10th grade, 11th grade, 12th grade with no diploma, high school graduate or GED, some college but no degree, associate degree in occupational program, associate degree in academic program, Bachelor’s degree, Master’s degree, Professional degree and Doctorate degree)
- hourwage*** – respondents’ hourly wage rate
- incwage*** – respondents’ annual wage and salary income

4.2. Data limitations imposed

Before proceeding with providing descriptive statistics, the following limitations were imposed for the dataset. The study was limited to individuals aged between 28 and 65. These are the prime age workers, and by imposing this restriction I “allow time to settle” in the labor market after graduation and include the individual until his or her retirement. All individuals who are born outside the USA were excluded from the study, together with those who did not specify their educational attainment. In order to avoid the inclusion of data errors or individuals who report extremely low income I deleted individuals who report earnings below the minimum hourly wage or below \$1000.00 per year. For reference of the minimum wage rate in the USA I use the year 2000 federal minimum, not the individual states’ ones. Information about minimum wage rates in the USA is available at the U.S. Department of Labor electronic website (<http://www.dol.gov>). Finally I impose the restriction of including in the sample, apart from second generation immigrants, only white Americans whose parents are also Americans. The reason this is done is because I want to compare second generation immigrants’ earnings to these of white workers with American parents. Otherwise, comparing the second generation immigrants to for example black workers with American parents may not be appropriate since black workers may be additionally discriminated against on their own.

4.3. Generated variables

In the study second generation immigrants are defined as individuals who are born in the USA but have at least one parent born abroad. In line with the Ekberg and Rooth (2003) study, second generation immigrants are divided into eight groups and the following dummy variables are generated corresponding to each one of them:

- mexparent*** – having either a Mexican mother or a Mexican father
(A dummy variable, taking a value of 1 if the respondent has either a Mexican mother and an American father or a Mexican father and an American mother and a value of 0 if otherwise)
- mexbackground*** – having Mexican parents
(A dummy variable, taking a value of 1 if the respondent has two Mexican born parents and a value of 0 if otherwise)
- canparent*** – having either a Canadian mother or a Canadian father
(A dummy variable, taking a value of 1 if the respondent has either a Canadian mother and an American father or a Canadian father and an American mother and a value of 0 if otherwise)
- canbackground*** – having Canadian parents
(A dummy variable, taking a value of 1 if the respondent has two Canadian born parents and a value of 0 if otherwise)
- oecdparent*** – having either a mother or a father born in an OECD country
(A dummy variable, taking a value of 1 if the respondent has a mother born in a country, member of OECD, and an American born father or has a father born in a country, member of OECD, and an American born mother and a value of 0 if otherwise)
- oecdbackground*** – having both parents born in an OECD country
(A dummy variable, taking a value of 1 if the respondent has two parents born in the same OECD country)
- otherparent*** – having a mother or a father born in any of the other countries around the world
(A dummy variable, taking a value of 1 if the respondent has a mother born in another country in the world, not included in the other categories above and an American born father or has a father born in another country in the world, not included in the

other categories above and an American born mother and a value of 0 if otherwise)

otherbackground – having both parents born in any other country around the world
(A dummy variable taking a value of 1 if the respondent has two parents born in a country or countries in the world, not included in the other categories above)

Two notations are necessary here. Firstly, in the categories with either or both parents being born in an OECD country, Canada and Mexico are not included since there are separate categories for them. Secondly, in the categories for other background, a mixed origin is allowed – meaning that parents may be born in different countries (but not in these already included in the other categories) and have different origins.

The educational background of all respondents is divided into five categories for which the respective dummy variables are:

educ1 – less than high school completed
(A dummy variable taking a value of 1 if the respondent's highest educational attainment level is less than high school and a value of 0 if otherwise)

educ2 – high school graduate
(A dummy variable taking a value of 1 if the respondent's highest educational attainment level is a high school diploma and a value of 0 if otherwise)

educ3 – some college education
(A dummy variable taking a value of 1 if the respondent's highest educational attainment level is some college but no degree and a value of 0 if otherwise)

educ4 – Bachelor's or similar degree
(A dummy variable taking a value of 1 if the respondent's highest educational attainment level is a Bachelor's or similar degree and a value of 0 if otherwise)

educ5 – postgraduate degree
(A dummy variable taking a value of 1 if the respondent's highest educational attainment level is a Master's or a Doctorate degree and a value of 0 if otherwise)

For the purpose of generating experience related variables, a variable indicating the respondent's years of schooling is calculated:

years_educ – years of schooling

(A quantitative variable indicating respondent's years of schooling; assigned values: 0 if the respondent has no school completed, 2 if the respondent's highest educational attainment level is between 1st and 4th grade; 6 if the respondent's highest educational attainment level is between 5th and 8th grade; 9 if the respondent's highest educational attainment level is 9th grade; 10 if the respondent's highest educational attainment level is 10th grade; 11 if the respondent's highest educational attainment level is 11th grade; 12 if the respondent's highest educational attainment level is 12th grade with no degree or high school diploma; 14 if the respondent's highest educational attainment level is some college years with no degree; 16 if the respondent's highest educational attainment level is Bachelor's or associate degree; 18 if the respondent's highest educational attainment level is Master's or Doctorate degree)

It is worth noting that this variable takes the average amount of school years and assigns this value when the respondent's highest educational attainment level is between 2 or more grades.

The generated experience related variables are for potential experience and its squared term:

exp – potential experience

(A quantitative variable, indicating the respondent's potential experience and calculated by subtracting "years of schooling + 6" from the respondent's age)

exp² – squared potential experience

(A quantitative variable calculated by squaring the potential experience of the respondent)

Additionally, dummy variables for demographic factors are generated as follows:

single – single marital status

(A dummy variable taking a value of 1 if the respondent's marital status is never married and a value of 0 if otherwise)

married – married marital status

(A dummy variable taking a value of 1 if the respondent's marital status is married, regardless of whether spouse is present or not and a value of 0 if otherwise)

othermarstat – other marital status

(A dummy variable taking a value of 1 if the respondent's marital status is separated, divorced or widowed and a value of 0 if otherwise)

child – having an own child or children

(A dummy variable taking a value of 1 if the respondent has one or more children and a value of 0 if otherwise)

metropolitan – living in a metropolitan city area

(A dummy variable taking a value of 1 if the respondent lives in a metropolitan area regardless whether inside or outside the main city and a value of 0 if otherwise)

Finally, the dependent variable which is generated is the following:

lnannualincome - natural logarithm of annual salary income

In this way, after all limitations and variable generations, the sample consists of 441, 501 individuals of which 211, 857 females and 229, 644 males. The second generation immigrants are 29, 540 and the individuals with American parents are 411, 961. Table 1 shows the dispersion of second generation immigrants according to their background and gender:

Table 1. Background and gender dispersion of second generation immigrants (Source: CPS 2000–2008)

	<i>Mexican Background</i>	<i>Mexican Parent</i>	<i>Canadian Background</i>	<i>Canadian Parent</i>	<i>OECD Background</i>	<i>OECD Parent</i>	<i>Other Background</i>	<i>Other Parent</i>
<i>Male</i>	1 769	1 488	319	1 697	1 740	5 116	1 628	1 565
<i>Female</i>	1 711	1 414	297	1 550	1 502	4 713	1 575	1 456
<i>Total</i>	3 480	2 902	616	3 247	3 242	9 829	3 203	3 021

As can be seen from Table 1, the most numerous group of second generation immigrants is the one having one OECD parent and the smallest – the group with two Canadian parents. It can also be noticed that in every category male and female second generation immigrants tend to be almost equally represented.

4.4. Data descriptive statistics

In Table 2 I present descriptive statistics (means and standard deviations) for some of the variables in regards to males.

Table 2. Descriptive statistics for men (Source: CPS 2000 – 2008)

	<i>Annual income</i>	<i>Years of Schooling</i>	<i>Experience</i>	<i>Age</i>	<i>Married</i>	<i>Child / Children</i>	<i>Metropolitan City Status</i>
<i>American Background</i>	10.6463 (0.8088)	14.2872 (2.4079)	23.7549 (9.6314)	44.0421 (9.4027)	0.7632 (0.4251)	0.5925 (0.4914)	0.7430 (0.4370)
<i>Mexican background</i>	10.3256 (0.7498)	12.79876 (2.8808)	19.7292 (10.1983)	38.5280 (9.6180)	0.6602 (0.4738)	0.5670 (0.4956)	0.9135 (0.2812)
<i>Mexican Parent</i>	10.3856 (0.7881)	13.2278 (2.5466)	23.7776 (10.6986)	43.0054 (10.1578)	0.6673 (0.4713)	0.5450 (0.4981)	0.8495 (0.3577)
<i>Canadian Background</i>	10.6529 (0.9160)	14.0846 (2.6710)	26.6019 (9.0797)	46.6865 (8.6090)	0.7555 (0.4305)	0.5862 (0.4933)	0.7273 (0.4461)
<i>Canadian Parent</i>	10.6851 (0.8727)	14.6117 (2.3842)	26.7054 (9.8884)	47.3170 (9.6530)	0.7578 (0.4285)	0.5286 (0.4993)	0.7602 (0.4271)
<i>OECD Background</i>	10.8159 (0.8807)	15.0897 (2.2628)	23.5695 (10.5684)	44.6592 (10.3154)	0.7379 (0.4399)	0.5368 (0.4988)	0.9161 (0.2773)
<i>OECD Parent</i>	10.7421 (0.8709)	14.8696 (2.2864)	24.6685 (10.0508)	45.5381 (9.8381)	0.7512 (0.4324)	0.5541 (0.4971)	0.8436 (0.3632)
<i>Other Background</i>	10.6770 (0.8260)	14.9539 (2.3574)	17.1849 (9.1809)	38.1388 (8.8711)	0.6044 (0.4891)	0.4650 (0.4989)	0.9509 (0.2162)
<i>Other Parent</i>	10.7635 (0.8672)	15.0869 (2.2275)	22.3297 (10.3969)	43.4166 (10.3997)	0.6716 (0.4698)	0.5118 (0.5000)	0.8856 (0.3184)

This descriptive statistics of the raw data gives several interesting facts for males. First, those with an OECD background have the highest income and the most years spent in school. In contrast, the second generation immigrants with Mexican background have the lowest annual earnings and years of schooling of all the groups. In comparison with second generation immigrants, the Americans with domestic born parents have higher annual income and more years of schooling than just three categories of second generation immigrants. When comparing experience and age, among second generation immigrants the ones with one Canadian parent are the most experienced and the ones with other background the least. These two groups are also the oldest and youngest respectively. The individuals with American background are again “in between” the second generation immigrants in regards to these two factors. Finally, comparing the percentages being married, having at least one child and living in a metropolitan city area, it can be seen that second generation immigrants with one Canadian parent have the highest percentage of being married, whereas those with other background have the lowest; second generation immigrants with Canadian background are

most likely to have at least one child and those with one “other” parent are the least likely to be parents; second generation immigrants with “other” background present the highest percentage living in a metropolitan city whereas those with Canadian background present the lowest. Compared to second generation immigrants, individuals with American background have the highest percentage of being married and having at least one child but their percentage of living in a metropolitan city is the second lowest from all.

Similar comparisons can be made for females. Table 3 shows the same descriptive statistics for women:

Table 3. Descriptive statistics for women (Source: CPS 2000 – 2008)

	<i>Annual income</i>	<i>Years of Schooling</i>	<i>Experience</i>	<i>Age</i>	<i>Married</i>	<i>Child / Children</i>	<i>Metropolitan City Status</i>
<i>American Background</i>	10.0644 (0.8876)	14.3774 (2.2832)	23.5620 (9.7219)	43.9393 (9.3215)	0.6916 (0.4618)	0.6130 (0.4871)	0.7351 (0.4413)
<i>Mexican Background</i>	9.9654 (0.8016)	13.1444 (2.8226)	19.6745 (10.4307)	38.8188 (9.6041)	0.5850 (0.4929)	0.6897 (0.4628)	0.9193 (0.2724)
<i>Mexican Parent</i>	9.9717 (0.8695)	13.4314 (2.5736)	22.6528 (10.2308)	42.0842 (9.6173)	0.5926 (0.4915)	0.6471 (0.4780)	0.8663 (0.3404)
<i>Canadian Background</i>	10.0910 (0.9483)	14.1044 (2.1993)	26.6128 (9.7818)	46.7172 (9.4017)	0.6532 (0.4768)	0.5556 (0.4977)	0.7239 (0.4478)
<i>Canadian Parent</i>	10.1215 (0.8866)	14.6871 (2.2416)	25.9742 (9.7363)	46.6613 (9.3563)	0.6794 (0.4669)	0.5626 (0.4962)	0.7355 (0.4412)
<i>OECD Background</i>	10.1825 (0.9436)	14.9554 (2.2320)	23.7923 (11.0869)	44.7477 (10.4676)	0.6831 (0.4654)	0.5812 (0.4935)	0.9228 (0.2670)
<i>OECD Parent</i>	10.1648 (0.9228)	14.8339 (2.2175)	24.6431 (10.3533)	45.4770 (9.8734)	0.6684 (0.4709)	0.5572 (0.4968)	0.8430 (0.3639)
<i>Other Background</i>	10.3357 (0.9252)	15.2165 (2.3292)	16.8832 (9.4187)	38.0997 (8.8547)	0.5829 (0.4932)	0.5435 (0.4983)	0.9632 (0.1884)
<i>Other Parent</i>	10.2212 (0.8939)	14.9931 (2.1924)	21.8173 (10.4841)	42.8104 (10.2543)	0.5755 (0.4944)	0.5096 (0.5001)	0.8949 (0.3068)

From the Table 3 it can be seen that in terms of earnings and years of schooling second generation immigrants with “other” background have the highest annual income and the most time spent in education whereas those with Mexican background have the lowest level for both. Females with American origin have lower annual earnings than most of the second generation female immigrants except for those originating from Mexico; also their years of schooling are more than only again second generation immigrants with either one or

two Mexican born parents and also than second generation immigrants with Canadian background. Comparing experience and earnings it can be seen that among female second generation immigrants those with Canadian background are the most experienced and the oldest, whereas those with “other” background are the least experienced and the youngest. Compared to second generation immigrants, females with American origin tend to “be in the middle” both when it comes to experience and age. Finally, it can be seen that females with OECD background have the highest percentage of being married, whereas those with Mexican background have the highest percentage of having at least one child. Second generation immigrants with “other” background, on the other hand, have the highest probability of living in a metropolitan city area. Females with American background have a higher percentage of being married than any of the second generation immigrants’ groups. Their percentage of having at least one child is higher than for all the second generation immigrants groups except for those originating from Mexico. As was the case for males, females with American background have one of the lowest probabilities of living in a metropolitan city area.

5. Methodology and Regression Analysis

5.1. Regression model for background effect

An Ordinary Least Squares (OLS) regression model is used to capture any parental background effects on second generation immigrants’ earnings. The OLS methodology is one of the most often used econometric techniques (Verbeek, 2004, pp. 15).

As stated by this author, an OLS regression model can be written as:

$$y = \beta_1 + \beta_2 x_{i2} + \dots + \beta_k x_{ik} + \varepsilon_i$$

In this model y is the dependent and observable variable and all x are the independent and also observed variables. The coefficients β estimate the true population parameters which reveal the effects of the different independent variables on the dependent one. According to the assumptions of the Gauss – Markov theorem, the coefficient estimates are “BLUE” – Best Linear Unbiased Estimators of the true population parameters (Verbeek, 2004, pp. 18). ε_i is the random error term with assumptions, stated by the same theorem:

$$E [\varepsilon_i] = 0$$

$$E [\varepsilon_i | X_i] = 0$$

$$Cov \{ \varepsilon_i, \varepsilon_j \} = 0$$

$$V \{ \varepsilon_i \} = \sigma^2$$

In this study, following a multi-specification method as Nordin and Rooth (2007) did in their study, several regressions are run to capture the effect of origin on earnings. In each of the four specifications used, the emphasis, as previously indicated in the theoretical part, is on the parental background effect. Although differences in human capital or other demographic factors between second generation immigrants and workers with American descent are present, as seen from the descriptive statistics of the data, their effects on earnings are not what is primarily investigated and interactive terms between ethnicity and human capital or demographic indicators are not included in the regression equations.

Specification 1:

$$\begin{aligned} \ln \text{ annualincome}_i = & \beta_0 + \beta_1 \text{Mexbackground}_i + \beta_2 \text{Mexparent}_i + \\ & \beta_3 \text{Canbackground}_i + \beta_4 \text{Canparent}_i + \beta_5 \text{OECDbackground}_i + \beta_6 \text{OECDparent}_i + \\ & \beta_7 \text{Otherbackground}_i + \beta_8 \text{Otherparent}_i + \varepsilon_i \end{aligned} \quad (1)$$

Under the first specification of the model a linear regression is run separately for males and females in which the natural logarithm of annual salary earnings is regressed against the eight dummy variables indicating parental background of the second generation immigrants.

The earnings are expressed in natural logarithmic form to allow the estimated parameters to be interpreted as percentage effects. The reason this first regression model is estimated is to capture any basic effects the origin may have on earnings without taking into account the individuals' human capital and other factors that impact their earnings.

Specification 2:

$$\begin{aligned} \ln \text{ annualincome}_i = & \beta_0 + \beta_1 B_i + \beta_9 \text{educ1}_i + \beta_{10} \text{educ3}_i + \beta_{11} \text{educ4}_i + \beta_{12} \text{educ5}_i + \\ & \beta_{13} \text{exp}_i + \beta_{14} \text{exp}^2_i + \varepsilon_i \end{aligned} \quad (2)$$

As a next step, in accordance with Mincer's human capital earnings function (1974), schooling and experience variables are added to specification 1 of the model. These variables

include four educational dummy variables – for less than high school, some college education, Bachelor’s or similar degree and postgraduate degree. The high school degree educational variable is used as the reference category. As usual, the squared term for experience is added to account for the possible existence of diminishing returns to experience. In specification 2 above, to avoid excessive writing and repetition, all parental background variables are represented by the vector \mathbf{B} and β_I is the set of their coefficients.

Specification 3:

$$\ln \text{ annualincome}_i = \beta_0 + \beta_1 \mathbf{B}_i + \beta_9 \mathbf{S}_i + \beta_{13} \text{exp}_i + \beta_{14} \text{exp}_i^2 + \beta_{15} \text{single}_i + \beta_{16} \text{married}_i + \beta_{17} \text{child}_i + \beta_{18} \text{metropolitan}_i + \varepsilon_i \quad (3)$$

In the third specification, demographic dummy variables are added to the regression equation. As seen from the equation above these are two dummy variables for marital status (single and married marital status), one dummy variable for having at least one child and one dummy variable for living in a metropolitan city area. For similar reasons as with the previous specification, all schooling dummy variables are represented here by the vector \mathbf{S} , whereas \mathbf{B} still contains all parental background variables.

Specification 4:

$$\ln \text{ annualincome}_i = \beta_0 + \beta_1 \mathbf{B}_i + \beta_9 \mathbf{S}_i + \beta_{13} \text{exp}_i + \beta_{14} \text{exp}_i^2 + \beta_{15} \mathbf{D}_i + \beta_{19} \mathbf{Y}_i + \varepsilon_i \quad (4)$$

Finally, since the data used in this research cover a multi-year period, dummy variables for specific years (all but one) are added to account for year effects. As before \mathbf{B} is the vector of dummy variables representing different second generation immigrants’ background, \mathbf{S} is the vector of four schooling level dummy variables, \mathbf{D} is the vector with the four demographic characteristics, and \mathbf{Y} is a vector containing year dummies for every year between 2001 and 2008 (the dummy variable for the year 2000 is dropped).

5.2. Regression model for background effects at different levels of schooling

Before analyzing the background effect on second generation immigrants earnings at different levels of schooling, a few changes are made. All background dummy variables are

aggregated into one called “*sgi*”. The reason this is done is because looking at second generation immigrants at specific educational levels and specific origin separately for males and females yields very few observations in each category. Thus, instead of eight origin dummies, they are replaced by only one. This means that the regression equation which is used for all five educational levels, separately for males and females, can be written as:

$$\ln \text{annual income}_i = \beta_0 + \beta_1 \text{sgi}_i + \beta_2 \text{exp}_i + \beta_3 \text{exp}^2_i + \beta_4 \mathbf{D}_i + \beta_5 \mathbf{Y}_i + \varepsilon_i$$

As usual, “*exp*” and “*exp*²” are the experience of the individual and its squared term, \mathbf{D} is the vector containing the demographic characteristics, \mathbf{Y} is the vector with the year dummies and ε_i is the error term.

6. Results

6.1. Parental background effects for male second generation immigrants

Table 4 presents the results for males from running the regressions under the four specifications. Overall it can be seen that only Mexican parental origin – both as two parents born there or one – has a negative impact on earnings. All the other parental backgrounds have positive impacts on the earnings of second generation immigrants. The reasons for this may be many, but to mention two, Mexican immigrants may not integrate well enough into the American labor market or may have language deficiencies and for this reason they may not be able to transfer valuable human capital to their children. Looking at the results from the first column (specification 1), it can be seen that the raw or basic effects of the ethnic origin vary between negatively affecting earnings by more than 30% (if both parents are Mexicans) to adding more than 15% to the earnings if both parents are born in a country, member of the OECD. From these results it can also be seen that having one domestic born parent yields different results depending on from where the other parent is: if he or she is Mexican, then the domestic born parent decreases the negative income difference by approximately 6%. Similar positive impacts can be observed if the foreign born parent is from Canada or another country, not a member of the OECD. The only opposite effect of a domestically born parent is observed when the other parent is born in a OECD country – in that case second generation immigrants with two parents born in a OECD country earn around 8% more annual income than those with one American and one “OECD” born parent. But in general, more in-depth

Table 4. Regression results for male second generation immigrants

	(1)	(2)	(3)	(4)
Mexican background	-.321 (.02)***	-.109 (.02)***	-.102 (.02)***	-.114 (.02)***
Mexican parent	-.261 (.02)***	-.106 (.02)***	-.088 (.02)***	-.089 (.02)***
Canadian background	.007 (.05)	.009 (.04)	.014 (.04)	.014 (.04)
Canadian parent	.039 (.02)**	-.004 (.02)	.001 (.02)	.006 (.02)
OECD background	.170 (.02)***	.086 (.02)***	.093 (.02)***	.103 (.02)***
OECD parent	.096 (.01)***	.028 (.01)***	.032 (.01)***	.035 (.01)***
Other background	.031 (.02)	.009 (.02)	.063 (.02)***	.048 (.02)***
Other parent	.117 (.02)***	.043 (.02)**	.078 (.02)***	.072 (.02)***
Educ1	-	-.305 (.01)***	-.290 (.01)***	-.284 (.01)***
Educ3	-	.163 (.00)***	.145 (.00)***	.145 (.00)***
Educ4	-	.453 (.00)***	.415 (.00)***	.410 (.00)***
Educ5	-	.801 (.01)***	.747 (.01)***	.741 (.01)***
Experience	-	.050 (.00)***	.040 (.00)***	.040 (.00)***
Experience²	-	-.001 (.00)***	-.001 (.00)***	-.001 (.00)***
Single	-	-	-.109 (.01)***	-.113 (.01)***
Married	-	-	.208 (.01)***	.211 (.01)***
Child	-	-	.107 (.00)***	.100 (.00)***
Metropolitan	-	-	.067 (.00)***	.066 (.00)***
Year dummies	-	-	-	<i>Yes</i>
R2	<i>.002</i>	<i>.153</i>	<i>.194</i>	<i>.200</i>
N	<i>229 644</i>	<i>229 644</i>	<i>229 644</i>	<i>229 644</i>

Note: Standard errors in parentheses; * - significance at 90% confidence level; ** - significance at 95% confidence level; * - significance at 99% confidence level. The reference group is white Americans with American born parents.**

analysis of these results may be doubtful since, as seen in the table, this model's explanatory power is very low. Therefore, the review of further results will be done based on the results from the subsequent three specifications.

When human capital variables are added into the model (specification 2) the background effects change. Both one and two Mexican parents still have a negative impact on the earnings of their American children, but with a smaller magnitude – specifically by about 10% in both cases. This can mean that part of the negative background effects (observed in column 1) is due to reasons related to human capital. Again, as in the previous specification, these are the only negative significant effects on earnings. As can be seen, having either one or two Canadian parents has almost no effect on the earnings of second generation immigrants. The reason for this is probably that they have the same language skills (assuming the Canadian parents are English and not French speaking) and the similar culture between the two nations, thus allowing for proper integration into the American society and labor market. When it comes to OECD origin it is noticeable that either one or two parents being born in an OECD country have a positive impact on the earnings; the gap is positive of around 3% if only one parent is OECD born there and almost 9% if both parents are. As before, this is the only statistically significant case where having both parents born abroad is better in terms of income than having one parent from abroad and one from the USA. Finally, having two parents born in another country in the world has almost no impact on the earnings and is statistically insignificant, whereas having one domestic parent increases the annual earnings by about 4%. The coefficients of the other variables included in the regression are as predicted and make economic sense. Having higher education yields higher earnings and the only negative impact is observed when the individual has not completed high school. Experience also affects earnings positively but with a diminishing return, as seen from the two coefficients related to experience. Finally, it is noticeable that the R square statistic of this model increased to more than 15%.

As seen in column 3 in the table (specification 3), adding demographic factors to the regression estimate does not much change the effects of parental background on the earnings of male second generation immigrants. The only exception is with the effects on those second generation immigrants with other origin whose earnings increase between 3% and 6% depending whether one or two parents are born in another country in the world respectively. Adding demographic factors increases also the explanatory power by almost 4%. Again as before, the only negative income gap arises when one or both parents of the second generation immigrants are from Mexico – the negative gap is around 10%. In all other six cases, second

generation immigrants enjoy higher annual earnings than workers with American parents and the positive effect on their earnings is the strongest when both parents are born in an OECD member country – the positive gap is approximately 9%. As before the effects both of one or two Canadian born parents – although positive – are statistically insignificant. What is different here is that the effect of one domestically born parent is negative compared to two foreign born parents not only in the case of an OECD parental origin but also when the parents (or only one of them) originate from Canada. As before the coefficients for the educational and experience variables are in accordance with what is expected from economic theory but their impact on earnings is a bit lower in magnitude than in the previous specification. Finally, looking at the demographic effects, it can be seen that the results show a negative impact of being single and a positive impact of being married, having at least one child and living in a metropolitan city area on second generation immigrants' annual earnings. In regards to the second and third results, they probably are due to the fact that males are “more responsible” for providing income for the family than females are, when their wives are taking care of the children and/or perform more of the housework.

In the last regression (specification 4) I add dummy variables for specific years. As seen from the fourth column of Table 4, the coefficients for most of the variables do not change markedly. As a result of the addition of the year dummy variables, the R square statistic also increases slightly and in this specification it reaches 20% as the model's explanatory power.

Several conclusions may be drawn from these 4 specifications of the OLS regression model for males. Firstly, a negative income gap arises at second generation immigrants' expense if one or both of their parents originate from Mexico. Still, having one American and one Mexican parents impacts the earnings less negatively than having both parents foreign born. Canadian origin – whether by one or two parents – has a positive effect on annual earnings but the effect is very small in magnitude. In almost all specifications it also turned out to be statistically insignificant. OECD origin yields the highest positive impact, followed by “other countries”. Also, in the case of the first – having two parents from abroad increases the positive income gap, compared to having only one. Finally, the fact that the income gaps changed markedly (decreased their magnitude) when adding the human capital variables shows that the raw gaps are due mostly to reasons within the education and experience of male individuals.

6.2. Parental background effects for female second generation immigrants

The analysis of the results for female second generation immigrants follows the same pattern. Looking first at column 1 of Table 5 (specification 1), one can see the basic impacts of parental background on annual earnings, without including human capital or other effects. It can be seen that as for males, the Mexican origin is the only one that creates a negative income gap relative to workers with American origin. Both having one or two Mexican parents lowers income by approximately 9%. The impact of the other six background categories is positive, being highest when female second generation immigrants have both parents born in “another” country – 27% – and lowest when both parents are Canadians – 3%. As for the males, it can be observed that one domestic born parent does not result in higher annual income for all categories. It has a positive impact on annual earnings when the other parent is Mexican or Canadian and a negative in the other two cases.

When adding the human capital variables to the regression (specification 2), the impact of the parental background changes not only in magnitude but also in direction which is interesting. Surprisingly and unlike for males, Mexican origin now has a positive impact on earnings both when one and when two of the parents are born there. Furthermore, having a domestic born parent lowers the annual income by about 5% - from 8% to 3.4%. Still, it should be noted that the coefficient estimate for the impact of having one Mexican parent is statistically insignificant even at the 90% confidence level. Going on with the analysis, all of the remaining six origin categories have a positive impact on the earnings of second generation immigrants (as for males). Having two Canadian parents “adds” approximately 5% to the earnings, whereas having only one has a negligible and statistically insignificant positive effect. The OECD background has a similar effect in magnitude as the Canadian one – 5% when both parents are born in a country member and 4% when only one is. Finally, the case when both parents are born in a country not member of the OECD yields the highest positive impact – around 20%. This result is quite high and I do not exclude as a reason some data measurement errors. As with the males, the coefficients of the educational dummy variables and those of the experiences variables have signs and magnitudes as expected – high school dropout affects the annual income negatively, whereas higher educational achievements increase the earnings incrementally.

The addition of the demographic variables decreases the magnitude of the origin effects by a bit, which means that part of the earnings gap for female second generation immigrants may be due to demographic reasons. As before, all background effects are positive. Having two Mexican parents has the highest effect – 7%, whereas the effect of one Canadian parent is just 0.4% and statistically insignificant. The effects of the other origin

Table 5. Regression results for female second generation immigrants

	(1)	(2)	(3)	(4)
Females:				
Mexican background	-.099 (.02)***	.080 (.02)***	.070 (.02)***	.054 (.02)***
Mexican parent	-.093 (.02)***	.034 (.02)	.025 (.02)	.022 (.02)
Canadian background	.027 (.05)	.051 (.05)	.046 (.05)	.049 (.05)
Canadian parent	.057 (.02)**	.008 (.02)	.004 (.02)	.010 (.02)
OECD background	.118 (.02)***	.050 (.02)**	.040 (.02)*	.050 (.02)**
OECD parent	.100 (.01)***	.041 (.01)***	.028 (.01)**	.032 (.01)***
Other background	.271 (.02)***	.208 (.02)***	.183 (.02)***	.167 (.02)***
Other parent	.157 (.02)***	.095 (.02)***	.068 (.02)***	.062 (.02)***
Educ1	-	-.350 (.01)***	-.344 (.01)***	-.337 (.01)***
Educ3	-	.142 (.01)***	.133 (.01)***	.127 (.01)***
Educ4	-	.433 (.00)***	.424 (.00)***	.412 (.00)***
Educ5	-	.846 (.01)***	.827 (.01)***	.813 (.01)***
Experience	-	.028 (.00)***	.033 (.00)***	.033 (.00)***
Experience²	-	-.000 (.00)***	-.001 (.00)***	-.001 (.00)***
Single	-	-	-.022 (.01)***	-.028 (.01)***
Married	-	-	-.077 (.00)***	-.078 (.00)***
Child	-	-	-.137 (.00)***	-.146 (.00)***
Metropolitan	-	-	.060 (.01)***	.058 (.00)***
Year dummies	-	-	-	<i>Yes</i>
R2	<i>.002</i>	<i>.112</i>	<i>.124</i>	<i>.131</i>
N	<i>211 857</i>	<i>211 857</i>	<i>211 857</i>	<i>211 857</i>

Note: Standard errors in parentheses; * - significance at 90% confidence level; ** - significance at 95% confidence level; *** - significance at 99% confidence level. The reference group is white Americans with American born parents.

variables are in between these values. Also, it can be concluded that having one domestically born parent does not impact the annual earnings positively in any of the four second generation immigrants' categories. The educational and experience related variables also have predicted effects and there is no need to further comment on them. Interestingly, but also as expected, the effects on the annual earnings of female second generation immigrants of some of the demographic variables – mainly being married and having at least one child – are negative. Being married “translates” into 8% lower annual income, whereas having a child or children decreases the annual earnings by approximately 14%. This is probably mainly due to the fact that married women in the USA and those with children take some time off from work to take care of housework duties and raise their children which negatively impacts their earnings. Finally, it can be seen that, as with males, living in a big metropolitan city increases annual earnings.

In the final, fourth specification, dummy variables for year effects are added. After doing this, as observed in column 4 of Table 5, the eight background effects still have positive impacts on the earnings of second generation immigrants, although some of them are increased in magnitude, whereas others are decreased. The addition of the year dummy variables does not change the coefficients in front of the educational and experience related variables significantly but does increase the explanatory power of the model.

To sum up for female second generation immigrants, unlike for males, Mexican origin does not affect the annual earnings negatively. The reason may hide in higher human capital for females than males or in something else – such as better abilities to overcome negative parental background impact. Another reason may also be higher amount of hours worked during the year. Also, it can be concluded that for females there is no negative income gap observed for any of the categories.

In order to visualize better the results and the comparison of parental background effects on male and female second generation immigrants' annual earnings, bar charts and diagrams are presented in the appendix.

6.3. Parental background effects at specific educational attainment levels

As an extension to the analysis I look at the second generation immigrants' background effect at five different educational levels. As already discussed in the methodology part of this study the origin categories are aggregated into one, due to the fact that quite few observations are in each of them. The analysis is done separately in two ways – gender wise and educational level wise.

Table 6. Regression results for specific educational attainment levels

	Less than High School	High School Level	Some college education	Bachelor's or Similar degree	Postgraduate Level
Males:					
SGI coefficient	<i>-.034 (.02)</i>	<i>-.009 (.01)</i>	<i>.035 (.01)**</i>	<i>.007 (.01)</i>	<i>.090 (.02)***</i>
R²	<i>.081</i>	<i>.081</i>	<i>.080</i>	<i>.080</i>	<i>.075</i>
N	<i>13 367</i>	<i>70 342</i>	<i>41 582</i>	<i>75 056</i>	<i>29 297</i>
Females:					
SGI coefficient	<i>.063 (.03)**</i>	<i>.040 (.01)***</i>	<i>.073 (.01)***</i>	<i>.045 (.01)***</i>	<i>.067 (.02)***</i>
R²	<i>.024</i>	<i>.035</i>	<i>.041</i>	<i>.029</i>	<i>.026</i>
N	<i>9 073</i>	<i>63 247</i>	<i>40 849</i>	<i>73 869</i>	<i>24 819</i>

Note: Standard errors in parentheses; * - significance at 90% confidence level; ** - significance at 95% confidence level; * - significance at 99% confidence level. The reference group is white Americans with American born parents.**

Table 6 presents the results. It shows the coefficients in front of the aggregated background variable, showing how it affects annual earnings. Looking first at males, it can be seen that the parental background effect changes positively with educational level. It negatively impacts annual income with approximately 3% for second generation immigrants with less than high school education, has almost no effect for those with high school diploma and Bachelor's or similar degree, has a small positive effect for the second generation immigrants with some college education, and has a much bigger positive effect of about 9% for those with postgraduate education. Unfortunately more than half of the coefficients are not significant. Looking at females, it can be seen that the effect is positive and "rather flat" across educational levels – it varies between 4% and 7%. Unfortunately here, however, the explanatory power of the model for females is very low.

Analyzing the background income gaps level wise yields interesting results. At all educational levels but the highest one, females have higher positive effect on their annual earnings from their parental immigration background. The difference in effects is biggest at the lowest educational level – 9.7% – and stays at approximately 4% for the other 3

categories. When looking at the highest educational category, individuals with postgraduate education, then the male second generation immigrants have a higher positive effect by about 2%.

As with the previous results, bar charts and diagrams are presented in the appendix to allow better visualization and comparison of the parental background effects on male and female second generation immigrants' annual earnings.

7. Comparison of Results, Policy Implications and Conclusions

Comparing the results of this research to the results of others reveals both some similarities and differences. The conclusions reached in this study are also discovered earlier by Chiswick and Miller (1985) who found that Australian second generation immigrants earn 4% more than non second generation immigrants in general. Although the magnitude of the background effect is not the same, my study still finds results in accordance with the one, done by the two scientists. As previously summarized, Ekberg and Rooth (2003) find that, depending on their background, female second generation immigrants may earn higher income than workers of domestic origin. The study I performed also reveals positive parental background effects for females but regardless of their ethnic origin. The research I have conducted differs in results to what Ekberg and Rooth (2003) have found for male second generation immigrants. While here, some positive impact on earnings are revealed, both authors conclude in their study that male second generation immigrants earn less than non second generation immigrants. Finally, the conclusions of my research also differ to the ones made by Nordin and Rooth (2007) who find negative income gaps for second generation immigrants.

Several conclusions may be made from this study. Firstly, it showed that Mexican background affects the annual earnings of male second generation immigrants negatively. This negative impact was present in both cases when one or two parents come from this country. But interestingly, the Mexican parental background does not affect the earnings of female second generation immigrants. Because the basis of comparison is annual earnings, it might be the case that female Mexican second generation immigrants work more hours than male Mexican second generation immigrants and thus have higher annual earnings. It can be said that the negative income gap of male Mexican second generation immigrants cannot fully be attributed to discrimination. The descriptive statistics for the second generation immigrants with Mexican parental origin revealed that their human capital lags behind that of both other

second generation immigrants and individuals with American parental background. Therefore, most probably the differences in the annual earnings are also partly due to the deficiencies in human capital, discovered in this group of individuals.

This study could not find other negative parental backgrounds impacts on earnings of second generation immigrants. In all categories of second generation immigrants the foreign background of either one or two parents yielded positive coefficients, meaning that second generation immigrants are not only not being at a disadvantage but also receive a bit higher annual income. The research also discovered that their human capital is comparable to that of American descent workers. All this shows that second generation immigrants are not discriminated against and that they have managed to integrate into the US labor market.

Contrary to some theory, this research did not find solid arguments for the benefit a domestic born parent gives second generation immigrants in terms of their earnings. With the exception of few cases, this study showed that a domestically born parent is not always better for the integration of second generation immigrants in the labor market.

As a policy implication, this study can imply that male Mexican second generation immigrants need to more fully be integrated into the labor market. The reasons for their negative income gap may stem within their own characteristics or may start one generation earlier – with their parents. Therefore, any policies aiming at helping Mexican immigrants build more human capital in the USA or integrate more fully into the labor market would be beneficial as this later can be transferred across generations and would definitely yield positive results in the future for second generation immigrants.

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9. Appendix

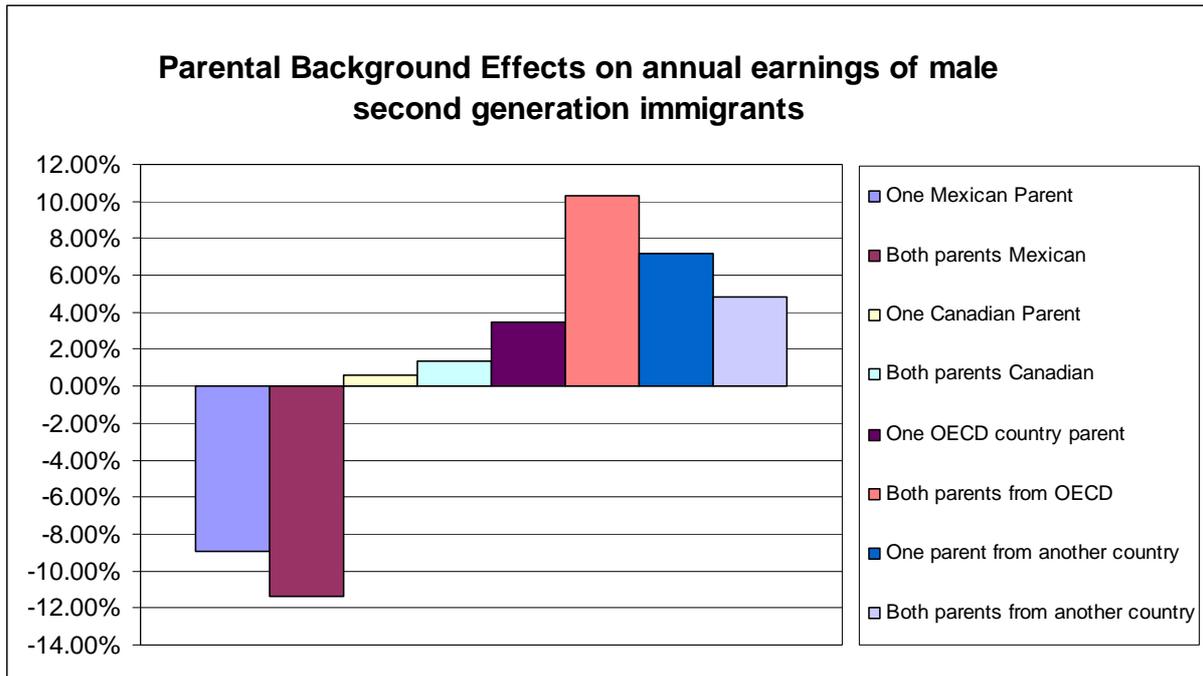


Diagram 1.

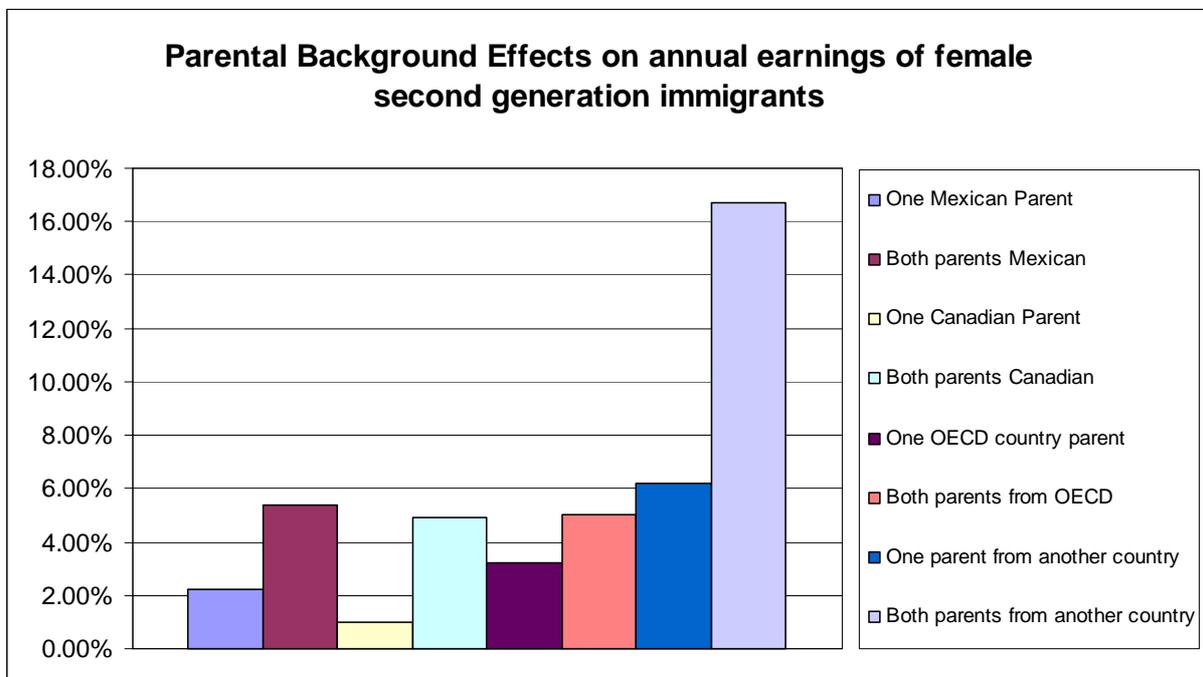


Diagram 2.

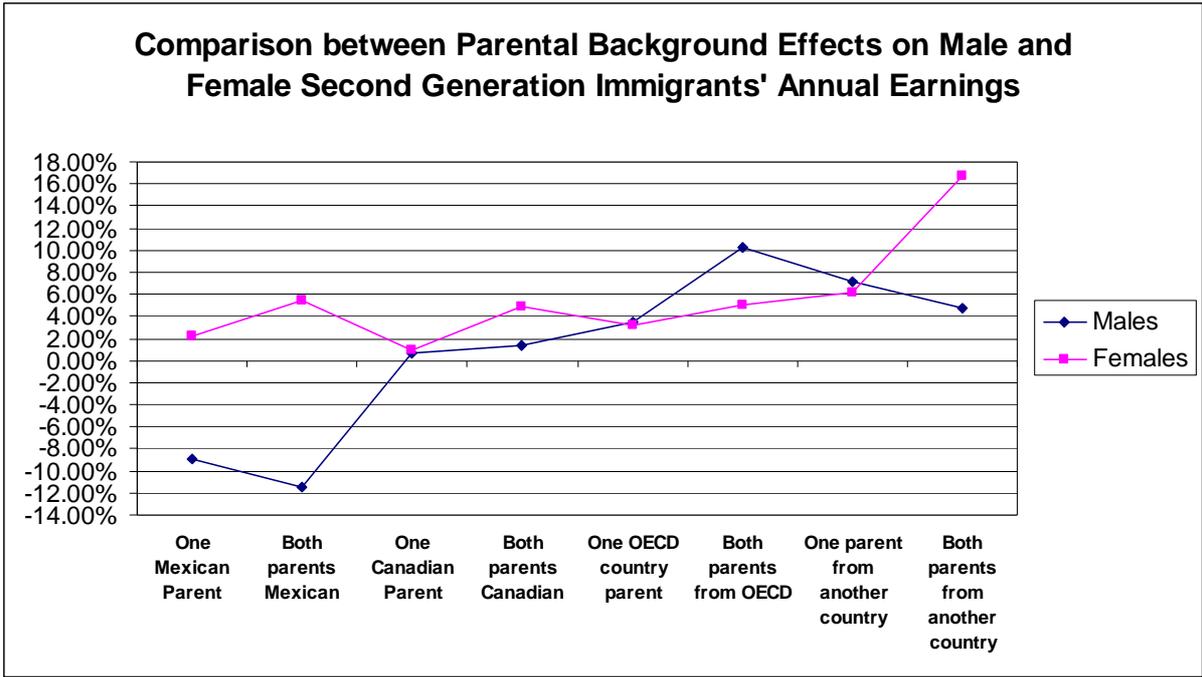


Diagram 3.

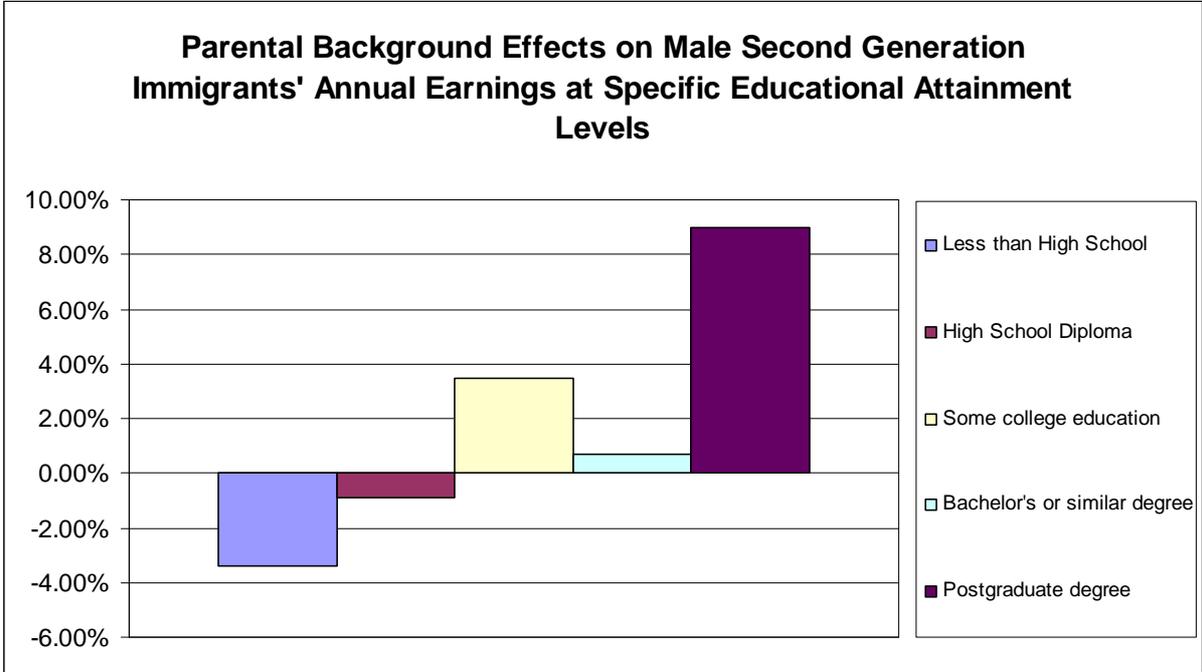


Diagram 4.

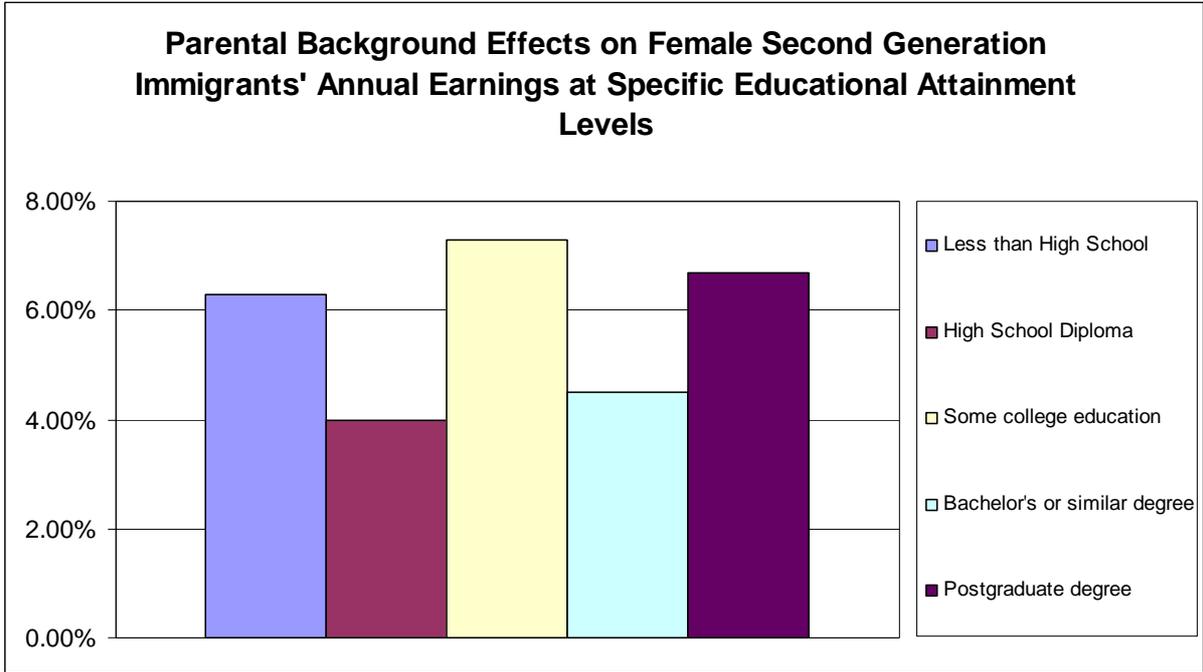


Diagram 5.

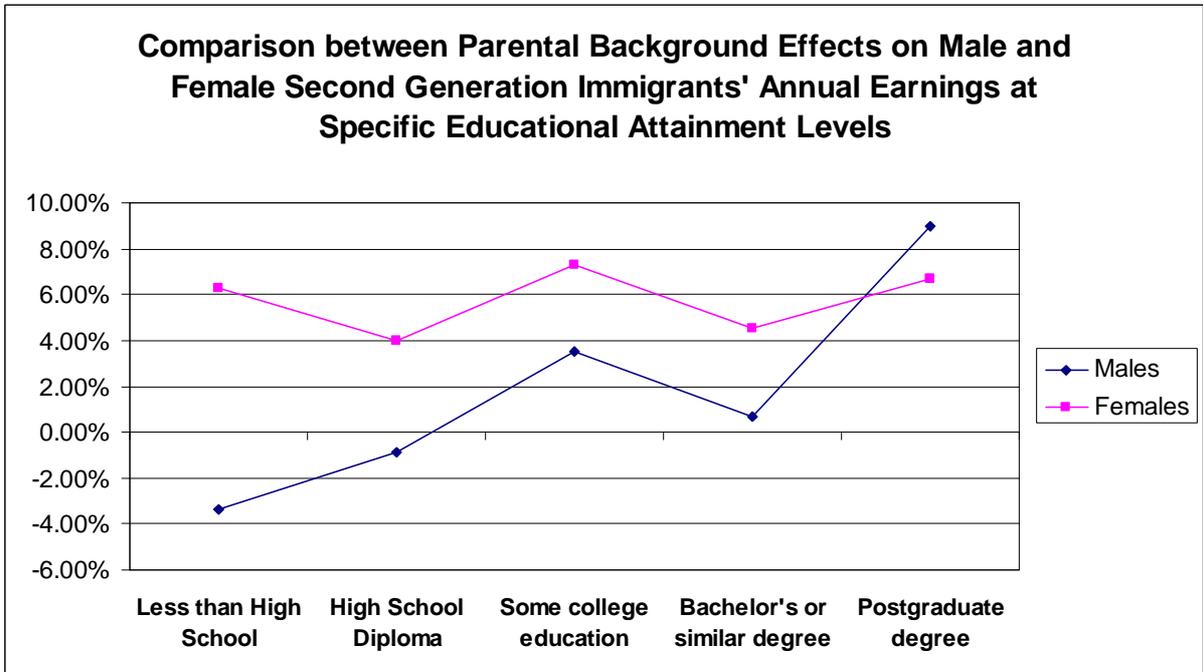


Diagram 6.