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DISSERTATION

THE IMPACT OF IMMIGRATION ON LOW-SKILLED NATIVES

Submitted by

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Department of Economics

In partial fulfillment of the requirements
for the Degree of Doctor of Philosophy
Colorado State University
Fort Collins, Colorado
Summer 1999

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY HANNES JOHANNSSON ENTITLED "THE IMPACT OF IMMIGRATION ON LOW-SKILLED NATIVES" BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

Advisor

Department Chair

ABSTRACT OF DISSERTATION

THE IMPACT OF IMMIGRATION ON LOW-SKILLED NATIVES

How do immigrants in the United States affect the labor market outcomes of less-skilled native workers? This dissertation addresses this question by analyzing first the effect low-skilled immigrants have on low-skilled natives in 70 metropolitan statistical areas, and then on 25 cities in which more than a quarter of the low-skilled population are immigrants. Specifically, I evaluate the impact immigrants with less than high-school education have on their native counterparts, as these individuals are most vulnerable to such labor supply shocks. Pooled cross-section data from 1994 to 1997 from the March supplements to the Current Population Surveys of the U.S. Census are the basis for the study.

This research extends the current literature in several ways. First, using a fixed-effects model on pooled cross-sectional data provides increased efficiency of the estimators and thus more reliable results. Second, this study focuses on the short-run impact of immigration by looking at only a four year period, 1994-1997. This is important as it reduces the problem associated with factor mobility commonly observed in the migration literature. As immigrants arrive into an area, natives may simply drop out of the labor force and/or move out of the area. This potential departure out of the

local labor force clearly may diminish the actual impact associated with immigration. Third, in addition to looking at the impact of immigration on annual income and unemployment, this study looks at labor force participation rates as well. This is a significant addition as it provides a potential explanation as to why previous studies have failed to find a consistent negative impact on income and employment.

The results of this research indicate that immigrants have a statistically significant negative impact on the labor market outcomes of low-skilled native workers. More specifically, immigrants reduce the labor force participation rates of natives and as the immigrant intensity increases, the impact is compounded. The impact on annual income is also relatively large although not statistically significant. The results on unemployment rates are positive, suggesting that immigrants actually reduce the unemployment rates of natives, which is consistent with what one would expect given the large observed reduction in natives' labor force participation. This result is even more profound given the time period of the study. The fact that from 1994-1997 the United States experienced sustained economic growth suggests that low-skilled immigrants do indeed have an adverse impact on low-skilled natives.

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I would like to thank my wife, Beth, for staying with me through this long and tedious process. I know it has not been easy to be around me for the last few years but hopefully it will become easier now that we can finally move on with our lives. I am truly blessed to have such a wonderful wife and a mother for our beautiful daughters.

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I dedicate this dissertation to the memory of my father. Pabbi, we did it!

Senn til náða sól er gengin
svefninn strýkur þína brá.
Syng ég ljóð við litla drenginn
ljúfur Guð þér vaki hjá.

Augunn þín fögru aftur lokast
elsku barnið sofðu rótt.
Nóttin yfir þögul þokast
þagnar ljóð mitt - góða nótt.
(Jóhann Þ. Jónsson)

Auður vex af visku best
viska af bóka lestri
lesturinn því ljósast sést
lærum af alúð mestri.
(Jóhann Þ. Jónsson)

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Chapter 1

INTRODUCTION

McCarran Act
"The blood that made this nation great
Will now be tested at the gate
To see if it deserves to be
Admitted to democracy,
Or rather to that small elite
Whose hemoglobin counts can meet
Requirements of purity
Consistent with security
And with that small and rabid mind
That thinks itself above mankind."
The Reported, July22, 1952

Focus of the Research

The enactment of the 1965 Amendments to the Immigration and Nationality Act caused a disproportionate increase in the immigration of less-skilled workers. The 1965 Amendments replaced the existing quota system with a family reunification emphasis and thereby dramatically altered the immigrant population. The primary purpose of the 1965 Amendments was to abolish discriminatory quotas and make immigration policy more

humane. Immigration policy prior to the 1965 Act was primarily a quota-based system which granted the opportunity to immigrate to the United States to people from a few selected countries. For example, people from Asia were not allowed to immigrate to the United States while individuals from countries in the Western Hemisphere were exempt from the quotas and faced no numerical restrictions.

Congress passed the 1965 Amendments at a time when the civil-rights movement was at its peak, and the legislation can be interpreted as one of a series of civil-rights statues that were enacted during that period. In particular, the 1965 Amendments abolished the discriminatory national-origins quota system. In combination with subsequent revisions in the law, the Amendments permitted the entry of 270,000 persons per year, with no more than 20,000 immigrants originating in any particular country of origin (Borjas, 1990). Appendix A summarizes the main components of current law and reports the number of legal immigrants admitted in 1994 under the various provisions.

This change in immigration policy severely changed the national composition of the immigrant flow. Whereas earlier immigrants tended to be mostly of European descent and were relatively skilled, more recent immigrants tend to originate from Asia and Mexico and are relatively less skilled (Borjas, 1990). See Appendixes B, C, and D for changes in both the size of the immigrant flow and the national composition since the implementation of the 1965 Amendments.

Although the apparent change in the immigrant population may in part be due to changing political and economic conditions, the 1965 Amendments clearly play a significant role in the observed change. The record number of immigrants arriving during

the 1970s and 1980s revived public interest in immigration issues. Particularly, the public became increasingly concerned with the impact of the increased influx of immigrants on labor market outcomes. Though much theoretical work has been done on the labor market impact of immigration, the first empirical study did not surface until 1982. Grossman's 1982 study on the substitutability of immigrant and native workers represented the first empirical study of the impact of immigration on the wages and employment of natives. Since then, several empirical studies have appeared on the potential adverse impact of immigration on the labor market outcomes of native workers.

Most empirical studies to date have emphasized the impact immigrants have on local labor markets. These studies have typically taken a cross-section of standard metropolitan statistical areas (SMSA). Assuming that immigrants and natives are substitutes in production, one would expect to a find negative impact on the labor market outcomes of native workers. Furthermore, in light of the fact that immigration is very area specific, one would expect that these area studies would be more likely to find any adverse impact on labor market outcomes than would macro studies. It is peculiar that these area studies have failed to find any consistent negative impact associated with increased immigration. Some in fact have found that immigrants yield a positive impact on both wages and employment of natives, suggesting that immigrants and natives are complements in production (see Borjas, 1994). More recent studies, however, have criticized the area studies for their overly simplistic assumptions.

The area studies have been noted for making two crucial assumptions:

i) the location choice of immigrants is exogenous to the local labor market conditions, and

ii) once immigration takes place, the local labor market represents a closed economy.

The assumption that the location choice of immigrants is exogenous to the local labor market conditions suggests that immigrants do not take into account the presence of people from their home country, their chances at getting a job, or their earnings potential as they make their location decision. As noted in recent literature, this assumption is clearly unrealistic and may bias any empirical results. This study uses the fixed-effects model to help capture any systematic differences across cities that may contribute to location choice. By doing so, this study reduces any biases this assumption introduces.

The assumption that the local labor market represents a closed economy once immigration takes place is a rather ambiguous one. It is quite apparent that if natives respond to the arrival of immigrants by migrating out of the area, the impact of the immigration will be seriously understated. Also this simplifying assumption will alter the results if natives migrate out of high immigrant areas, or if natives that might otherwise migrate into a high immigration area decide not to do so. Frey (1994), for example, has found that natives are more likely to migrate out of, and less likely to migrate into, high immigrant areas. Although this study does not take into account the potential out-migration directly, it does so indirectly. By capturing the short-run impact of immigration, the problem associated with out-migration is reduced. According to

Blanchard and Katz (1992), it takes the labor market about four to eight years to recover from an adverse labor demand shock. By capturing the impact associated with immigration prior to the completion of the adjustment process, the potential bias introduced by the closed economy assumption is reduced.

This research focuses on the short-run nature of immigration and thus partially accounts for the closed economy assumption by using a pooled cross-section, time-series data, over a relatively short time period, 1994 - 1997. Although other studies have attempted to account for the migratory response of natives, those studies have focused on the national impact as opposed to the local impact. It seems implausible, however, that the 'macro' approach will yield reliable results given the fact that immigrants represent only a small fraction of the domestic labor force, while in some cases they represents a large fraction of the growth in a given city's labor force. This especially true when attempting to evaluate the impact on a specific subgroup within the labor force.

One of the byproducts of the implementation of the 1965 Act is that the skill level of immigrants became bipolar. Today's immigrants are either highly educated or high school drop outs (less than 12 years of education). Given this bipolar skill distribution, any attempt to evaluate the impact of increased immigration that does not take into account these vast skill differences be inherently biased. Furthermore, any study that uses the fraction of immigrants in the local population as an independent variable will undoubtedly have biased results. This bias stems from the change in the immigrant population since the 1965 Amendments. If in fact immigrant skills have been

deteriorating since the passage of the Amendment, including immigrants that arrived prior to the implementation of the Amendment will understate any potential impact.

To summarize, this research corrects some of the problems that weaken the current immigration literature. Specifically, potential biases introduced by factor movements are reduced by looking at a shorter period of time. Any skill changes in the immigration population that may have resulted from the 1965 Amendments are accounted for, by including only immigrants that have arrived since 1965. Additionally, this study evaluates the short-run impact of immigration as opposed to a cross-Census approach which is a long-term impact evaluation. Also, the increasing number of immigrants in the population is evaluated to see if the labor market outcomes of natives in a given city changes as the immigrant intensity increases in the city. This is accomplished by first evaluating the seventy cities in which the fraction of low-skilled immigrants is the highest, and then by limiting the sample to the twenty-five cities in which more than a quarter of the low-skilled population are immigrants. A complete list of cities included in this research are listed in Appendices E and F. All individuals in this study are high school drop outs, which reduces problems associated with the more recent immigrant skill distribution, and all the immigrants in the sample arrived in the United States after the implementation of the 1965 Amendment.

Hypothesis

It is the hypothesis of this study that the increasing number of less-skilled immigrants arriving in the United States have an adverse impact on the real incomes and

employment opportunities of less-skilled natives. The true impact of immigration should be found in area studies that properly identify the issues at hand. For example, the impact of immigration will differ according to the economic conditions in a given city. Immigrants arriving during a recessionary period will cause a greater adverse impact than immigrants arriving during an economic boom. Additionally, it is apparent that labor market conditions will differ across metropolitan areas and time. Any study that does not allow for differences in location and time periods will surely come up with very ambiguous results. Not allowing for the possibility that natives may respond to the influx of immigrants by simply migrating out of the metropolitan area will undoubtedly underestimate the true impact associated with immigration.

Methodology

The empirical analysis used in this study diverges considerably from the methods used in previous area studies. Instead of using the standard cross-sectional analysis, this study utilizes the fixed-effects model. The fixed-effects model provides for the opportunity to evaluate cross-sectional time-series data which in turns offers the possibility to perform short-run analysis of the impact of immigration. Also, using the fixed-effects model provides the opportunity to allow for structural differences across cities. That is, the local labor market conditions are not required to be the same across cities for this analysis.

Aside from the differences in methodology, the regression variables used are consistent with those used in other immigration studies. The standard control variables of

race, education, age, and gender are included to account for local labor force characteristics. Any systematic differences in labor markets across cities is captured in the fixed-effects. Additionally, time dummies are used to account for changes in cities over time and the cities are allowed to experience differences in economic conditions over the time period of the study. This is important as it is unlikely that different cities' labor markets grow or experience the same changes over time.

Data

The data used here are drawn from the March supplements to the Current Population Surveys of the Census Bureau. The study covers the time period from 1994 to 1997. The dependent variables are: real annual income (i.e. the natural logarithms of annual income), labor force participation rates (in natural logarithms), and the unemployment rate (not in natural logarithms) of low-skilled native workers. The income variable is in natural logarithms so that it captures the earnings profile of individuals. This is a standard practice in the labor literature.

The analysis was performed on two different sets of variables. First, the regression was performed at the city level (i.e. city averages), and then at the individual level. Because of the way the questions on "weeks worked" and "weeks looking for work"[1] are asked in the March supplements, only one regression was performed at the

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[1] These questions did not ask "how many ..... did you work last year", but rather "weeks was .... looking for work or on layoff from a job" and "during 19.. In how many weeks did .... work even for a few hours, include paid vacation and sick leave as work," without specifying the time period.

individual level. Because the Census Survey did not phrase these questions properly, truncation problems were introduced. In light of this shortcoming of the Survey, the only dependent variable at the individual level is annual income. At the city level, however, all three dependent variables are used. It is important to note that the unemployment rate reported here is not the official unemployment rate in a given city for a given year. This study specifically evaluates the impact on low-skilled natives, which implies that the unemployment rate reported here is only relevant to this subgroup.

Since some of the cities report having only a few low-skilled people, it is possible to have either full employment or no one employed in a given city in a given year. If the data are collected properly, this should not pose any serious problem to the analysis, because as long as the data represent a true random sample of the general population, the reliability of the results should not be impacted. Since some of the cities in the study report a zero unemployment rate for some of the years, the unemployment rate is not in logarithms. The immigration variable is defined as immigrants with less than a high school diploma who have arrived since 1970. An immigrant in this study is defined as a foreign-born person who identified themselves as such in the 1994-1997 March supplements to the Current Population Surveys.

A clear shortcoming of the data is how an immigrant is defined. As the Census does not differentiate between legal and illegal immigrants, this study does not attempt to make that difference either. Since illegal immigrants (or illegal aliens as they are not technically immigrants) may choose not to identify themselves in the Census for obvious reasons, the data only includes some of the illegal population presently residing in the

United States. As illegal aliens are not immigrants, including them in an analysis of immigration policy will potentially overstate the adverse impact (or understate the positive impact) in the analysis. Also, some selection bias may occur due to the fact that the illegal alien sample may not be a representative sample of the illegal population. This is a problem that any study using Census data faces.

Policy Implications

The question of what immigration policy should or should not be is a complex one. Since the implementation of the 1965 Amendments to the Immigration and Naturalization Act, several adjustments have been made. These adjustments have almost without exception been geared towards increasing the number of high-skilled immigrants, i.e., immigrants with twelve or more years of education. The first significant immigration policy change since the 1965 Act came in 1986. The 1986 Immigration Reform Act gave illegal aliens residing in the U.S. prior to 1982 the opportunity to become legal residents. In 1990, the immigration policy was expanded to allow for more skilled immigrants. Any changes since 1990, including the 1990 adjustment, have focused on allowing more skilled immigrants to enter the United States rather than decreasing the number of admitted low-skilled migrants.

Should immigration be limited to only highly skilled individuals or should it take more of an account of humanitarian perspectives as the 1965 Act did? The fact that this analysis evaluates only a small portion of the immigration issue, it is not the purpose of this study to make judgement calls on what U.S. immigration policy should or should not

be. However, the study performed here *will* shed some additional light on the policy debate. In order to suggest specific policy measures, a more comprehensive evaluation of the impact of immigration is warranted. For example, a recent study by the National Research Council concludes that immigration yields a positive net economic gain to the native-born (NRC, 1997, pp. 219). Although the NRC report concludes that the overall impact of immigration is positive, does not mean that all natives benefit equally or that some subgroups of natives do not actually become worse off as a result of immigration. This research will focus on evaluating the impact associated with the arrival of low-skilled individuals on the labor market outcomes of their native counterparts, which is clearly only a small part of a bigger puzzle.

Most immigration studies to date have demonstrated that immigrants tend to have little or no impact on the labor market outcomes of natives. These studies may therefore be interpreted to suggest that the current immigration policy requires little adjustment. The continued influx of low-skilled labor and the clear bipolarization of the immigrant flow, however, leaves one to wonder if change is not warranted. How much longer can the U.S. economy sustain the continued record numbers of low-skilled immigrants? Does the impact of low-skilled immigrants change as their intensity increases in a given locale? These are some of the questions answered in this study. If the continued massive influx of low-skilled individuals leads to worsening labor market conditions for low-skilled natives, the current immigration policy may require some reevaluation.

Synopsis of the Dissertation

The following is a synopsis of the dissertation:

Chapter 1: The *introduction* includes an explanation of the focus of the research, the hypothesis and the methodology that is utilized.

Chapter 2: The *Immigration and Labor Market Adjustment* chapter gives the study its relevance by discussing the impact of a labor market demand shock on regional economies. As immigration is an example of a labor demand shock, this discussion is a lead into the immigration literature. The discussion of the literature focuses on the works that are most relevant to this research. The approaches taken by other area studies that have evaluated the impact of low-skilled immigrants on their native counterparts are discussed, along with a reporting of their findings. Macro studies are also introduced and evaluated. The results of these studies are also introduced and discussed.

Chapter 3: The *Methodology and Data* chapter discusses and justifies the particular empirical procedures that are utilized in this study. The fixed-effects model is explained along with a detailed discussion of the data.

Chapter 4: The *Empirical Findings and Discussion* chapter evaluates the findings of the study by properly identifying the theoretical foundation underlying the immigration analysis. The results are evaluated in light of the outcomes of other related studies.

Chapter 5: The *Interpretations and Implications* chapter interprets the result and discusses potential implications on immigration policy. It discusses how labor markets adjust to labor demand shocks using immigration as a cause of that shock.

Chapter 6: The *Conclusion* summarizes the key findings of the research. Possible future research topics are also discussed and evaluated.

Chapter 2

IMMIGRATION AND LABOR MARKET ADJUSTMENT

"...the general history of the United States disproves the theory that immigration tends to lower the wage scale. No country has admitted so large a number of immigrants, yet no country has so high a wage scale or standard of living."
William S. Bernard, Economic Effects of Immigration

Introduction

The first empirical study of the impact of immigration on the labor market outcomes of natives was done by Jean Grossman in 1982. Since Grossman's study came out, several other empirical studies have been done on the impact of immigration. Only four of those studies, however, have concentrated on the impact on low-skilled native workers in local labor markets (Card, 1990; Altonji and Card, 1991; Butcher and Card, 1991, Easton, 1996). Because of the disproportional increase in the arrival of low-skilled immigrants, it is important to attempt to understand how these immigrants impact their closest substitutes, the low-skilled natives. Although other studies have been performed

on the impact on low-skilled workers none of them are area studies (see, for example, Borjas, Freeman, and Katz, 1996; Jaeger, 1996). Since immigrants tend to cluster in certain cities, it is important to focus any study aimed at understanding the potential adverse impact of immigration at the city level.

Altonji and Card (1991), did an extensive study of the impact of immigration on the labor market outcomes of low-skilled natives. This study indicates that immigrants do indeed have an adverse impact on the wages of low-skilled natives. Card (1990) and Butcher and Card (1991), find little impact on the wages of low-skilled natives as a result of immigration. While all three studies represent area studies, Altonji and Card's (1991) and Butcher and Card's (1991) studies represent a cross-city evaluation. The results of these area studies are rather inconclusive. The failure of these studies to come up with consistent results can perhaps be attributed to the rather ambiguous assumptions made in this literature. There are two critical assumptions in particular that are problematic:

1. the location choice of immigrants is exogenously determined, and
2. the metropolitan areas represent a closed economy once immigration takes place.

The first of these assumptions implies that immigrants arrive into a city at random. That is, the immigrants' location choice is not driven to a significant degree by preexisting labor market conditions, such as wages and employment opportunities. The second assumption implies that native workers and capital do not respond to the influx of added labor by migrating out of the area in the case of labor, into the area in the case of capital. Both Filer (1992), and Frey (1995) have found that native workers do indeed

react to the influx of immigrants by migrating out of the local area. Furthermore, Borjas, Freeman, and Katz (1996), found that less-educated natives are the ones who are more likely to react negatively to the influx of immigrants. In order to avoid the problems associated with the first assumption, some studies have used what has been called "natural experiments" or exogenously determined immigrant flow. A natural experiment is immigrant flow that is not based on local specific factors, such as wages and employment rates.

Card's study (1990) represents a natural experiment. He evaluated the impact of the 1980 Mariel Boatlift on Miami's labor market. Another natural experiment was performed by Hunt (1992) on the impact of the 1962 Repatriates from Algeria on the French labor market. The advantage of a natural experiment is that the exogeneity assumption is validated. However, the closed economy assumption is not resolved in these studies.

One of the primary problems associated with current immigration studies is the assumption that the local economy represents a closed economy once immigration takes place. What this assumption suggests is that firms and native labor do not respond to the immigrant influx by moving into or moving out of the area. This is a rather ambiguous assumption as Blanchard and Katz (1992) found that both firms and labor respond to adverse labor demand shocks by migrating out of the area (in the case of labor), and migrating into the area (in the case of firms). This study attempts to avoid making this assumption by evaluating the impact associated with immigration over a very short time period, four years. By evaluating the impact of immigration over a relatively short time

period, it may be possible to capture the impact prior to the suggested adjustment taking place, and thus reduce any potential biases associated with this assumption.

To better understand the problems associated with the closed economy assumption, it is necessary to go through the labor market adjustment process and how it relates to immigration in some detail. Following that discussion, the immigration literature as it pertains to the low-skilled labor market is examined and some of the main weaknesses of these studies pointed out and evaluated.

The Labor Market Adjustment Process

The arrival of immigrants impacts the labor market of natives in terms of both labor demand and labor supply. Assuming that natives and immigrants are substitutes in production, the arrival of immigrants reduces the demand for natives workers. The impact of this initial adverse labor demand shock will set into a motion an adjustment process comprised of firms moving into, and workers out of, the area. This adjustment mechanism is described in detail by Blanchard and Katz (1992). What they found is that it takes income in a local labor market up to a decade to recover from the initial shock, and five to seven years for the unemployment rate and the labor force participation rates to adjust. What these results suggest is that evaluation of the impact of immigration needs to focus on relatively short time periods in order to find any impact. To get reliable results on the impact of immigration, attempts must be made to capture the impact prior to the completion of the labor market adjustment.

The adverse shock to labor demand drives down both wages and employment. The Blanchard and Katz model of labor market adjustment shows that two adjustment mechanisms come into play in response to an adverse shock in demand. First, the lower wages induce firms to move into the area as input costs are decreased. As firms enter the local market, new firms are created which will slow down the out-migration of labor. Second, people will begin to migrate out of the area as they observe their wages and employment opportunities diminishing. It is this adjustment mechanism that makes it difficult to measure the impact associated with the arrival of immigrants. By focusing on a relatively short time span, however, one can better capture the impact by capturing it prior to the completion of the adjustment process. Although this is not an ideal way to account for the apparent labor market adjustment, it is clearly better than simply ignoring any such adjustment process.

Most studies on the impact immigrants have on the labor market outcomes of natives have failed to account for this labor market adjustment process. If natives do in fact migrate out of heavy immigration areas, as Frey (1995) and Filer (1992) have concluded, any study that does not account for the migratory response of natives will underestimate any impact associated with the arrival of immigrants. Also, in light of the relatively short labor market adjustment period, any study that does not successfully account for the short-run effect of immigration will further understate any potential impact. Thus, by capturing the impact prior to the completion of the labor market adjustment period, one can expect to produce more reliable results.

Area Studies

As mentioned above, the area studies conducted so far have relied on either cross-sectional analysis or on natural experiments. Neither of these approaches have provided convincing evidence of the impact of immigrants on the less-skilled natives. To assist in understanding why these studies have been unsuccessful in finding any significant impact, a closer look is taken at each of them, beginning with the cross-section studies. The results of the area studies are summarized in Appendix G.

Altonji and Card's Study

Altonji's and Card study has been considered by some to be the most comprehensive and theoretically sound study done on the issue. Their study uses variations in the fractions of immigrants across different cities to measure the effects of immigration on the labor market outcomes of less-skilled natives. They assemble information from the 1970 and 1980 Censuses on labor market outcomes of natives in 120 major cities. By using information from two consecutive Censuses, they are able to correlate changes in immigrant fractions with changes in native outcomes within cities. This is important because it enables them to abstract differences across cities that might bias a simpler cross-section analysis. Another interesting addition provided by their study is the information on the industry distributions of natives and immigrants and how these distributions have changed in cities with higher and lower immigrant shares.

On a theoretical note, their study departs from earlier models in two ways. First, they disaggregate labor along skill lines rather than along the lines of national origin.

Sedond, they allow for demand side effects associated with increases in the local population and for supply side effects associated with the possible crowding out of native workers in response to lower wage rates. Their model leads to a simple empirical specification in which the wage and employment outcomes of less-skilled natives (either in cross-section or within cities over time) vary with the share and skill composition of immigrants in the local labor market.

Altonji and Card's empirical approach diverges from previous studies in at least two important ways. First, as stated above, they look at the changes in the outcome variables across Censuses. This enables them to look at the relationship between the change in immigrant shares and changes in outcome variables (wages, participation, and employment) across major cities. They furthermore compare the results from the first-difference analysis to that of standard cross-sectional analysis. Although the results of the two approaches vary somewhat, they argue that the first-difference analysis is less likely to be contaminated by city-specific factors that affect immigrant densities and native outcomes. The second important addition to the literature provided by this study is the usage of an instrumental variable to account for the location choice of immigrants. For the four race/sex groups that they consider, the instrumental variable estimates suggest that an inflow of immigrants equal to one percent of the population of a standard metropolitan statistical area (SMSA) reduces average weekly earnings of less-skilled natives by about 1.2 percent (statistically significant). The least squares estimates, by comparison, imply that a one percent increase in the fraction of immigrants yields a modest 0.3 percent reduction (not statistically significant).

Altonji and Card's basic empirical approach is reasonably straight forward. They regress SMSA averages of the labor market outcome variables for their four race/sex groups against measures of the immigrant fraction in the SMSA and a variety of controls for the characteristics for each city. The first step in their analysis is to construct SMSA-specific means of the outcome variables that are purged of differences in the observable characteristics of the native population across different cities. Due to the limited information collected in the Census, this step amounts to regression adjusting the outcome variables for differences in age and education. Such an adjustment has two potential advantages:

1. it should reduce the sampling variation associated with the means of the outcome variables across different cities;
2. it should eliminate any bias arising from correlations between the fraction of immigrants in a city and the age and educational attainment of natives.

For each race/sex group in each of the two Censuses, they regress each of the outcome variables against a full set of SMSA dummies and a flexible function of age and education. Specifically, they include a cubic polynomial in age, a detailed set of dummy variables for different education levels, and a full set of interactions of age and education up to the second order. They then use the estimated SMSA dummies as their regression-adjusted outcome measures.

In their second step, they include as explanatory variables the fraction of immigrants in each SMSA and three additional control variables: the logarithm of SMSA population, and SMSA-specific means of age and education for the particular race/sex

group under consideration. Although their outcome variables are adjusted for age and education, they found in preliminary work that the mean of adjusted weekly earnings is correlated across cities with the mean of education, particularly for blacks. Thus the cross-section regression equation has the form

$$\hat{Y}_{Nj} = X_{Nj}b + f_j c + e_{Nj}, \tag{1}$$

where $\hat{Y}_{Nj}$ is the adjusted labor market outcome for native group N in city j, X_{Nj} is a vector of control variable for the race/sex group and city (the mean of age and education for the group and the logarithm of SMSA population), f_j is the fraction of immigrants in the city, and e_{Nj} is a residual term. Similarly, their first-difference estimating equations have the form

$$\Delta \hat{Y}_{Nj} = \Delta X_{Nj}b + \Delta f_j c + \Delta e_{Nj}, \tag{2}$$

where ΔZ_j refers to the change in the variable Z in city j between 1970 and 1980.

Altonji and Card attempt to control for any potential correlation between immigrant inflow and local economic conditions in their first-difference analysis by including an instrumental variable. They follow Bartel's work (1989) and use the fraction

of immigrants in a city in 1970 to predict the change in the fraction of immigrants over the following decade. Bartel's analysis (1989) suggests that economic conditions have relatively small effect on the destination city chosen by immigrants. Instead, Bartel's findings suggest immigrants are mainly attracted to cities with a large concentration of previous immigrants from the same country (see also Greenwood and McDowell, 1986).

One important short coming of this analysis is the fact that although dynamic issues are addressed, short-run evaluations are not performed. Although Altonji and Card do mention their suspicion that the short-run effects of immigration on employment of less-skilled natives will be larger than the long-run effects due to labor market adjustment, their model has no way of capturing this difference. As immigrants enter a city, natives are faced with increased competition for jobs. The increased competition for jobs drives down wages and causes some natives to lose their jobs (assuming immigrants and natives are substitutes in production). As natives lose their jobs and see that the monetary return for their skills has declined, they drop out of the labor force and/or migrate out of the area.

Furthermore, as labor costs drop, firms enter the area to take advantage of these cost reductions. This labor market process causes the short-run or the initial impact of immigration to be greater than the long-term impact. As Blanchard and Katz (1994) found, it takes a local labor market five to eight years to adjust to the initial labor demand shock. Thus first-differencing across Censuses is not an appropriate way to capture the short-run impact of immigration. By using the first-difference across the two Censuses, one is using the change in the immigrant population and the change in native labor market

conditions over a ten year period which can hardly qualify as short-run. In light of Blanchard and Katz's study (1992), studying the labor market over a ten year period will not capture the primary impact associated with immigration. It should be quite clear that the primary impact of immigration will be experienced in the short-run as opposed to in the long-run.

In summary, although Altonji and Card's study (1992) represents a dramatic improvement in the way in which the impact of immigrants on less-skilled natives is measured, it is hardly complete. Most of the impact felt by immigrants would be expected to be noted within the first 5 years or so. As immigrants enter an area, the labor market competition increases, causing people either to move out of the area or to become unemployed. Using the first-difference across Censuses as the basis for measuring the short-run impact of immigration is hard to accept. As immigration into an area begins (or increases), those who are (or expect to be) hurt the most will migrate out of the area relatively early, especially if they anticipate immigration into to the area to continue.

Butcher and Card's Study

Butcher and Card (1991), using data from the merged files of the 12 monthly Current Population surveys administered in 1979, 1980, 1988, and 1989, found little impact on the wages of less-skilled workers as a result of immigration. They evaluated the impact of immigration on the hourly wages of less-skilled native workers living in 24 major cities. For each city and each year they calculated the 10th and 90th percentiles of the log wage distribution. Their empirical analysis revealed large differences across cities

in the relative growth rates of wages for low- and high-paid workers. However, these differences do not appear to be related to the size of the immigrant inflows. Their results thus confirm the findings of previous studies, based on 1970 and 1980 Census data, that suggest that immigration has little impact on the labor market outcomes of natives.

It is interesting to note that contrary to their expectations, their data suggests that higher immigration is associated with more rapid increases in the 90th percentile of wages, rather than with any relative decline in the 10th percentile of wages. This is particularly interesting in light of the educational distribution of recent immigrants. As they note, the education distribution of newly arriving immigrants is relatively dispersed: the fraction of college graduates is about the same as in the native population, but close to one-quarter of recent immigrants have less than an elementary education. As a result, recent immigrants make up seventeen percent of the population in these cities with six of fewer years of schooling, and ten percent of the population with less than an eighth-grade education.

The fact that the fraction of unskilled immigrants exceeds that of the native population while the fraction of skilled immigrants matches that of the native population would suggest that wages of skilled labor should increase while lowering the unskilled wage. That is, as the competition for jobs increases more for low-skilled workers than for high-skilled workers, one would expect the wages of low-skilled workers to decline relatively more than the wages of the high-skilled. However, the raises in the wages of high-skilled workers could be attributed to the complementarity in production that exists between low- and high-skilled workers. As relatively more low-skilled workers enter the

labor market, the demand for high-skilled labor increases, driving their wages up while the increase in the supply of low-skilled workers drives their wages down. The fact that high-skilled immigrants increased the supply of high-skilled workers is offset by the fact that relatively more low-skilled workers entered the workforce as well, increasing the demand for high-skilled workers. The end result for the high-skilled workers depends therefore on the relative size of the shift of each curve. If the demand increases by more than the increase in supply, the net impact would be higher wages, which is what their study suggests.

Butcher and Card's major contribution to the literature is that they actually attempted to account for the potential difference in the cost of living. They tested the possibility that the cost of living rose more rapidly in high immigration areas, by constructing wage changes relative to city-specific cost of living indexes using data from the Bureau of Labor Statistics. After adjusting for the local cost of living, the resulting regression coefficient relating the change in the 10th percentile of wages to the fraction of recent immigrants in 1985 became slightly negative. Thus after adjusting for city-specific changes in the cost of living, they find less evidence of a positive correlation between immigration rates and the growth of high-skilled wages, and more evidence of a negative correlation between immigration and the growth of low-skilled wages. Neither of these correlations were large or statistically significant, however.

Easton's Study

Easton (1996, unpublished manuscript) evaluated the impact of low-skilled immigrants on nominal wages of low-skilled natives. This study corrects for the endogeneity problem by using a Two Stage Least Squares approximation (2SLS). This study also attempts to evaluate the short run impact associated with immigration by looking at the impact associated with immigrants arriving between 1985 and 1990. In doing this, he uses mostly data from the 1990 Census and analyzes the impact on the largest 86 cities (cities with population greater than 500,000).

Easton uses a standard wage equation for employed natives in the sample, with three additional variables. His estimation equation includes human capital variables, along with dummy variables to measure a person's race or ethnicity. It also includes a variable intended to measure the strength of labor demand and the cost of living in each labor market. To accomplish this he uses a measure of the labor demand and living cost that is exogenous to the model of wage determination used. The metropolitan wage level variable is the coefficient of dummy variables identifying each metropolitan area included in a regression estimating wages earned in 1985. It measures average wages in a metropolitan area, relative to other metropolitan areas, controlling for the personal characteristics of people with wages. He chooses this variable as it is presumably influenced by the strength of labor demand, by living costs, and by the attractiveness of each location.

The findings of his study basically provide no evidence that previous studies have missed the negative impact of immigration by examining immigration over a long time

horizon. He actually finds that native workers in 1989 in high immigration cities actually earned higher nominal wages than native workers in cities receiving less immigration. Although this positive impact may appear surprising at first, it may not be inconsistent with what one would expect given the possibility of out-migration of natives.

Easton's study focuses on the short-run impact of immigration by evaluating the impact associated with recent immigrants. However, looking at the impact of recent immigrants is a rather ambiguous way to account for the short-run impact. In order to evaluate the short-run impact, one needs to look at the natives' wages over a short period of time as opposed to a specific point in time, 1989 in this case. Another short coming of this study is the way that cities were chosen. Basing the analysis on the 86 largest U.S. cities does not necessarily capture the cities in which the majority of low-skilled immigrants reside. Thus the analysis may possibly understate the true impact by ignoring smaller cities where significant numbers of low-skilled immigrants may reside.

The fact that this study fails to find a significant negative impact associated with immigration does not imply that no such impact exists. Like most other studies on the impact of immigration, this study focuses on the wages of natives which may not be the appropriate variable to evaluate. Although Easton's study clearly provides a contribution into the current immigration literature, it falls short in capturing the reasons why immigrants appear to have little impact on natives' wages. To be able to explain why most studies have been unsuccessful in their mission, one needs to look at other labor market variables, such as natives' labor force participation rates. If natives do indeed respond to the arrival of immigrants by dropping out of the labor force or migrating out of

the area, the impact on both wages and employment will clearly be lost. Thus in order to evaluate the true impact associated with immigration, one must evaluate the impact on variables such as natives' labor force participation rates. This way, one can at least attempt to better explain why the impact may be less significant than one would expect.

Card's Study

As mentioned above, one of the problems that have plagued all area studies discussed here is the assumption of exogenous location choice. Neither Butcher and Card's (1991), nor Altonji and Card's studies (1991), managed to deal with this issue in an adequate manner. Card (1990), however, was able to avoid this issue in his breakthrough study on the impact of the Mariel Boatlift on the Miami labor market. Virtually over night the Miami labor force grew about 7 percent and the percentage increase in the labor supply of less-skilled workers was even greater because most of the immigrants were relatively unskilled. From May to September 1980, some 125,000 Cuban immigrants arrived in Miami on a flotilla of privately charted boats. About fifty percent of the Mariel immigrants settled permanently in Miami, resulting in a 7 percent increase in the labor force and about a 210 percent increase in the number of Cuban workers in Miami. Since the timing of the immigration was independent of Miami's employment and wage rates, the endogeneity problem associated with location choice was avoided.

In spite of this tremendous influx of Cuban immigrants over a very short period, Card was unable to find any significant impact on either wages or employment on non-

Cubans in Miami's labor market. What is even more surprising is the conclusion that the Boatlift had no strong effect on the wages of other Cubans either. These results, however peculiar they may seem, are consistent with another natural experiment performed by Hunt (1992) on the impact of the 1962 repatriates from Algeria on the French labor market.

The one significant difference between the two studies is in the skill level of the immigrants. Most of the repatriates were high-skilled while most of the Mariels were low-skilled.

Card suggests three potential explanations for these surprising findings:

1. Miami's industry structure was well suited to make use of an influx of unskilled labor. This structure, particularly the high concentration of textile and apparel industries, evolved over the previous two decades in response to earlier waves of immigrants, and may have allowed the Mariel immigrants to take up unskilled jobs as earlier Cuban immigrants moved to better ones.

2. Because of the high concentration of Hispanics in Miami, the lack of English-speaking ability among the Mariels may have had smaller effect than could be expected for other immigrants in other cities.

3. Miami's growth rate, compared to other cities in Florida, indicates that the net migration rate of natives and earlier immigrants into the Miami area slowed considerably after the Boatlift. This would suggest that the Mariels may have displaced other migrants from within the United States who could have been expected to move to Miami.

The proposed explanations for Card's surprising findings, brings us back to the fundamental problems associated with the area studies. Instead of approaching these problems directly most of the recent literature has chosen to evaluate the impact immigrants may have on the rising wage inequality in the United States. More specifically, it appears as if the area approach has been abandoned and replaced with 'macro' studies. These macro studies have managed to find some indirect negative impact associated with immigration on the wages of natives. In light of the fact that about 60 percent of all immigrants arriving to the United States arrive to only six cities, it is hard to believe that a significant impact of immigration cannot be found from area studies while at the macro level significant impact can be found.

Macro Studies

The macro approach, or factor of production approach, assumes that the effects of immigration and trade are sufficiently diffused across areas due to native migration or capital responses that it is best to examine the effect of immigration through its effect on the national supplies of labor with different skills. Most of the studies using this approach have evaluated the change in relative wages of low- and high-skilled workers (or high-school and college graduates). Most of these studies find that immigration has significant impact on the relative wages of less-skilled workers (Topel, 1994; Borjas, Freeman, and Katz, 1996).

Borjas, Freeman, and Katz (1996) used the factor-proportion approach to evaluate how immigrants affect the labor market outcomes of natives. This approach requires

estimates of the changed number of immigrants with different skill levels, the implicit change in labor supply due to net trade, and the elasticities of relative wages to relative labor supplies. They obtain the number of immigrants for their evaluation from the 1980 and 1990 Censuses of Population. Their sample includes workers aged 18-64 years from the 5 percent Public Use Microsamples (PUMS) of the 1980 and 1990 Censuses of Population. They acknowledge three problems with these data:

1. the data may include some but not all illegal immigrants,
2. immigrants with a certain level of schooling may be imperfect substitutes for natives with the same nominal level, and
3. the question on education changed between the two Censuses, causing a classification problem.

They concentrated on the comparison of high school dropouts versus all other workers and high school equivalents versus college equivalents. Their study demonstrates that the influx of less-educated immigrants appears to dominate the impact on high school dropouts, whereas trade and immigration have similar effects for high school versus college equivalents. Their factor-proportion approach demonstrates that immigration has been important in reducing the pay of high school dropouts, while immigration and trade have contributed modestly to the falling pay of high school-equivalent workers.

Jaeger (1996), evaluated the impact of immigration on both the relative wage levels and real wages of less-skilled workers (or high school dropouts). He reports that immigration accounts for as much as 3 percentage points of the decline in their real

wages. He further notes that the effects of immigration are unlikely to be uniformly distributed across the United States since immigrants tend to locate in relatively few metropolitan areas. It is precisely this point that this research is focusing on by evaluating the impact of increased immigration on local labor markets. By allowing for local labor market differences, the true impact of immigration should be discovered.

Policy Perspectives

What should immigration policy be? In 1965, the U.S. government decided to make the immigration policy more family oriented. Family reunification became the new emphasis as opposed to skill based immigration policy or the national quota that had preceded the 1965 Amendment. One of the main reasons for the implementation of the 1965 Amendments was to make immigration policy more humanitarian in nature. Prior immigration policies had been quota based and immigrants from countries deemed undesirable were simply not allowed to enter.

The majority of the empirical work done on the impact of immigration on the labor market outcome of natives suggests that the current immigration policy does not have a noticeably harmful effects on natives. This result indicates that perhaps no changes in immigration policy are necessary. Furthermore, an immigration policy primarily based on a humanitarian perspectives as opposed to economics appears to have little, if any, adverse impact on the labor market outcomes of natives.

However, Blanchard and Katz's study (1992) suggests that these studies have failed to account for an important aspect associated with immigration. By not accounting

for the migratory response of natives to an immigration influx, a study will underestimate the impact of immigration. As immigrants arrive to a given area, the labor demand curve for native workers shifts inwards, driving income and employment down. Blanchard and Katz (1992) show that this adverse impact on the labor demand for natives will throw into action two adjustment mechanisms. First, firms will migrate to the area to take advantage of the lower labor cost. Second, workers will out-migrate as they find themselves unemployed and the return for their skills has decreased.

Any study on the impact of immigration that does not account for this reaction process will yield a rather suspect result. It takes the labor market up to a decade to adjust from these demand shocks, suggesting that any study that does not evaluate the impact of immigration over a shorter time span will underestimate any potential impact. A more detailed discussion on policy implications will be done in Chapter 5.

Summary

Utilizing the fact that immigration is geographically concentrated, area studies contrast the level or change in immigration by area with the level or change in the earnings of non-immigrant workers. Like other area studies, the area studies that have concentrated on the impact of increased immigration on the wages of low-skilled labor have found little evidence of adverse impact associated with immigration. That is, virtually all area studies have found only a slight difference in native earnings between the gateway cities that receive immigrants and other parts of the country.

The failure of the area studies to find any significant impact of immigration on the wages of nativesare commonly contributed to two critical assumptions:

1. the location choice of immigrants is exogenously determined, and
2. the metropolitan area represents a closed economy once immigration takes place.

It is quite apparent that these critical assumptions will cause the impact of increased immigration to be undervalued. Although there is some conflicting evidence that natives react to an increased inflow of foreigners by locating elsewhere, thus dissipating the adverse impact of increased immigration, the majority of the evidence appears to point in that direction (see for example, Chiswick, 1992, 1993; Filer, 1992; Butcher and Card, 1991). Furthermore, failure to allow the impact of immigration to differ across cities will clearly underestimate the true impact of immigration. For example, as Borjas, Freeman, and Katz (1996) found, the 1980 and 1990 cross section on real wages for males had negative and positive signs respectively. They explain their findings in the following way:

> "The changes in coefficients over time suggest that the cross sectional calculations are dubious structural relations of the effect of immigrants on the native wages. One possible reason for the different relations over time is that, for exogenous reasons, demand changed markedly across regions. The 1980's were a period of economic boom in the coastal areas that receive most immigrants and of rust-belt problems in many interior areas."
>
> (Borjas, Freeman, and Katz, 1996)

This observation strongly suggests that in order to find the true impact of immigration, one must take into account the different economic conditions across different metropolitan areas. It is the purpose of this research to attempt to shed some

further light on this issue by allowing for different labor market conditions in each labor market and by using the fixed effect model. This approach allows different metropolitan areas to have different labor market conditions by incorporating any structural differences into the fixed-effects.

Chapter 3

METHODOLOGY AND DATA

"The injury of unrestricted immigration to American wages and American Standard of living is sufficiently plain and is bad enough, but the danger which this immigration threatens to the quality of our citizenship is far worse."

Henry Cabot Lodge, Congressional Record, March 16, 1896

Introduction

All area studies on the impact of immigration on the labor market outcomes of natives have used a cross-sectional analysis. Cross-sectional analysis, however, has the shortcoming of being static in nature and they only capture the impact of immigration at a specific point in time. Furthermore, such analysis assumes that there are no structural differences across U.S. metropolitan areas. For example, Pinschke and Velling (1994) suggested that the impact of immigration would be sensitive to the general economic conditions. This would suggest that if the economic conditions at any given time differ

across cities, the impact of immigration will differ as well. For example, the type of jobs, the presence of labor unions, and the degree of unemployment all differ across cities. Those structural differences, along with several other differences, will cause the impact associated with the influx of immigrants to vary across cities. It is the goal of this study to attempt to capture to some extent the problems associated with the assumption that the labor market is homogenous across Metropolitan Statistical Areas (MSAs). Furthermore, this study attempts to capture the impact of immigration before the factor migration adjustment is complete. This is accomplished by evaluating the impact over a short period of time, four years.

This chapter introduces and explains the methodology and the regression model used in this study. The regression equation is also introduced and justified along with the data source and type. Using the fixed-effects model on pooled cross-sectional, time-series data provides new ways to evaluate the impact of immigration. Most studies on the issue to date have utilized a more standardized cross-sectional approach. Furthermore, this study takes advantage of the March supplement to the Census which did not include questions on immigrant status until 1994. Hence this study provides new insights into the way in which natives are affected by the continued arrival of immigrants by using a different methodological approach as well as different data sources.

Analytical Framework

How immigrants will impact natives will clearly depend on the economic conditions prevalent in the locale as well as the type of immigrants arriving into a given area. This study aims to account for the impact immigrants have on low-skilled natives (i.e., natives with less than a high school diploma). In order to accomplish this, the labor force is split up into two skill levels, high-skilled and low-skilled. The model presented here is similar to that of Altonji and Card's (1991), except that this study makes a distinction between recent and "old" immigrants. For the purposes of this study, recent immigrants are considered to be individuals who arrived since the implementation of the 1965 Amendments to the Immigration and Naturalization Act.

The Model

Suppose we view a labor market as a closed economy where a single competitive industry uses a linear homogeneous production function to produce Q units of a good. The production process uses both high-skilled and low-skilled workers. The wage rate of high-skilled and low-skilled workers are w_s and w_u respectively. The cost function in this industry is then given by $Qc(w_s, w_u)$, where $c(w_s, w_u)$ is the unit cost function. Perfect competition implies that long-term profits are zero, which suggests that the price of the product equals the unit cost of production. Thus the price of the output, p, equals the unit cost of production, or $p = c(w_s, w_u)$.

Let us further assume that both skilled and unskilled workers purchase the good. Each type-*i* worker ($i = s, u$) has an output demand function given by $D_i(w_i, p)$. There are

N_s high-skilled workers and N_u low-skilled workers, and the fraction of low-skilled workers in the population is b. Product-market equilibrium requires:

$$(1) \qquad Q = N_s D_s(w_s, p) + N_u D_u(w_u, p).$$

To close the model, suppose the labor-supply function of each type-*i* worker is $L_i(w_i, p)$. Labor-market equilibrium implies:

$$(2) \qquad N_s L_s(w_s, p) = Q c_s(w_s, w_u)$$

$$(3) \qquad N_u L_u(w_u, p) = Q c_u(w_s, w_u),$$

where $c_i = \frac{\partial c}{\partial w_i}$.

Consider now what would happen if ΔN immigrants enter the labor market exogenously. Suppose that the fraction of low-skilled workers in the immigrant flow equals β. Under some simplifying conditions, Altonji and Card (1991, pp.204-205) show that the resulting change in the wage of skilled and unskilled workers is given by:[2]

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[2] To derive these equations, differentiate the labor market equilibrium conditions, the product market equilibrium condition, and the zero profit condition assuming that $\partial D_i / \partial w_i = 0, \partial L_i / \partial p = 0$, and that the cross-elasticity of factor demand are zero, so that the demand for skilled (unskilled) workers is independent of the unskilled (skilled) wage.

$$\Delta \log w_s = \frac{\lambda}{\varepsilon_s - \delta_s} \cdot \frac{\beta - b}{b(1-b)} \cdot \frac{\Delta N}{N} = \alpha_s \frac{\Delta N}{N}, \tag{4}$$

$$\Delta \log w_u = \frac{1-\lambda}{\varepsilon_u - \delta_u} \cdot \frac{b - \beta}{b(1-b)} \cdot \frac{\Delta N}{N} = \alpha_u \frac{\Delta N}{N}, \tag{5}$$

where $\lambda = N_u D_u(w_u, p)/Q$; $\varepsilon_i \geq 0$ is the labor supply elasticity of type-*i* workers; and $\lambda_i < 0$ is the labor demand elasticity for type-*i* workers.

Equations (4) and (5) give the reduced-form impact of immigration on the skilled and unskilled wage. Suppose that the fraction of unskilled workers in the immigrant flow (β) equals the fraction of unskilled workers in the native population (b). The linear homogeneity of the production function then implies that neither the skilled nor the unskilled wage changes as a result of immigration. Alternatively, if the fraction of unskilled workers in the immigrant flow exceeds the respective fraction among natives ($\beta > b$), immigration increases the skilled wage and decreases the unskilled wage.

This conceptual experiment, therefore, indicates precisely how the impact of immigration on native employment opportunities can be measured. Practically all empirical studies in the literature, beginning with Jean Grossman (1982), have attempted to replicate this experiment by treating a city or metropolitan areas as the empirical counterpart of the closed labor market in the theoretical analysis. Equations (4) and (5) clearly point out the importance of taking into account the skill distribution of immigrants

relative to that of natives. Although some empirical studies have evaluated the impact of immigration on less-skilled natives, only a few of them have actually accounted for the differences in the fraction of native unskilled workers across cities. By using the fixed-effect model on pooled cross-section time-series data, this structural difference across cities is accounted for. By allowing for structural differences, the results become more consistent with reality.

This study also accounts for the possibility of an in- and out-migratory response by natives by evaluating the impact of immigration over a relatively short time span of four years. This study attempts to capture the impact of immigration before the labor market adjustment process is completed. Butcher and Card (1991), and White and Liang (1993), found that states with high levels of low-skilled immigrants have a relatively high level of in-migration of high-skilled natives. This result suggest potential complementarity between low-skilled workers and high-skilled workers which is consistent with theoretical predictions. Frey (1994), concluded that less skilled native workers residing in states which receive large immigrant flow are relatively likely to out-migrate. These studies would suggest that the arrival of immigrants set into motion two forces. Low-skilled natives move out of high-immigrant areas while high-skilled natives move into such areas. The combination of these two forces, would suggest that the immigrant flow decreased the unskilled wage (i.e. $\beta > b$). The objective of this study is

to better account for the structural differences that exist in the local labor markets across the United State, as well as account for the adjustment process that the influx of immigrants sets into motion.

The Dynamic Effects of Immigration

In evaluating the impact immigrants have on the labor market outcomes of natives, a basic supply/demand model is used. This simple framework captures the basic impact associated with immigration. As low-skilled immigrants arrive into an area, the labor supply of low-skilled natives shifts out, causing real income to decrease and employment to increase. However, the noted increase in employment may not go entirely to native workers. How the new jobs are distributed between natives and immigrants will depend to some extent on how substitutable in production the two groups are.

The initial impact of immigration is to put downward pressure on income, ceteris paribus. The greater the immigrant concentration, the greater the negative effect on income. Natives may respond to the declining income in several ways. For example, as income decreases in an area, some natives may opt to drop out of the labor force as income has fallen below reservation income level. Second, as immigration into an area intensifies, some natives lose their jobs due to increased competition (assuming natives and immigrants are substitutes in production). To put it simply, as immigrants arrive into a locale, some natives will be directly replaced by immigrants while others will opt to drop out of the labor force due to lower income.

Some of the natives that lost their jobs (regardless of the reason) may choose to move out of the area to areas where their income is maximized. In any case, the end result on the unemployment rate of natives may be somewhat ambiguous. If income falls a lot, more natives may opt to drop out of the local labor force, causing the end result on the unemployment rate to be negative (i.e., lower it). As unemployed natives find themselves faced with increased competition for jobs as well as diminished returns for their skills, they may simply drop out of the labor force. This would reduce the labor force participation rate of natives as well as the unemployment rate. Therefore, the end result on the unemployment rate of natives will depend to a large extent on the exact degree of the reduction in income.

In light of this, one would expect to find a greater negative impact on income, lower labor force participation rates, and possibly reduced unemployment rates in cities reporting the greatest amount of low-skilled immigrants. At the same time, one would expect to find somewhat smaller negative impact on natives' income, labor force participation, and unemployment rates in cities where immigration is less concentrated. To capture this initial impact associated with immigration, a short-run analysis must be used.

In order to further justify, or establish, the importance of capturing the short-run impact of immigration, it is useful to go through a simple exercise that captures the dynamic impact of immigration. Blanchard and Katz (1991) have, for example, found that it takes local labor markets less than a decade to recover from a labor demand shock. What they found is that people tend to move out of an area that just experienced a labor

demand shock while firms tend to move in to take advantage of the lower labor costs. As immigrants enter an area, the demand for native workers decreases (assuming natives and immigrants are substitutes in production). This decrease in labor demand for natives drives their wages down as the competition for jobs increases. Furthermore, as natives lose their jobs, or simply quit as income has now dropped below their reservation level, they leave the labor force. Some of those people actually migrate out of the area, while firms may enter the market. Eventually, or five to eight years later, the market will be back in equilibrium. Blanchard and Katz's study suggests that studies which use first-difference analysis across Censuses will come short of capturing the initial impact of immigration. To further demonstrate the importance of analyzing the short-run impact, let us consider the impact of immigration on wages and employment.

Most of the focus below will be on what happens to MSAs that face an increase in labor supply, caused by immigration. There are at least two initial impacts of immigration into an area. First, immigration will increase the local supply of labor and hence decrease nominal wages while increasing employment. Second, immigration will cause an increase in the demand for goods and services. This increase in goods and services will drive up prices and thus reduce real income. The lower incomes and higher prices will set into effect an adjustment process that will cause income to begin to rise again and employment to decrease towards its original levels. Thus, the impact of increased labor supply should clearly be greater in the short run than in the long run.

Let us assume that initially the labor market is in equilibrium at the macro level. That is, factor prices are equal across the country. As immigrants enter certain

metropolitan areas, the labor supply curves of these specific labor markets shifts outwards. This initial increase in the local labor supply will lower local income and increase local employment. The decrease in local income will have two effects. First, workers will leave the area and move to areas that compensate their skills better. Second, firms will observe the decline in labor costs in the area, causing them to move in to take advantage of the lower costs (Blanchard and Katz, 1992). As these forces continue, income begins to rise and the initial rise in employment begins to shrink. This process can be illustrated with a simple labor demand - labor supply diagram.

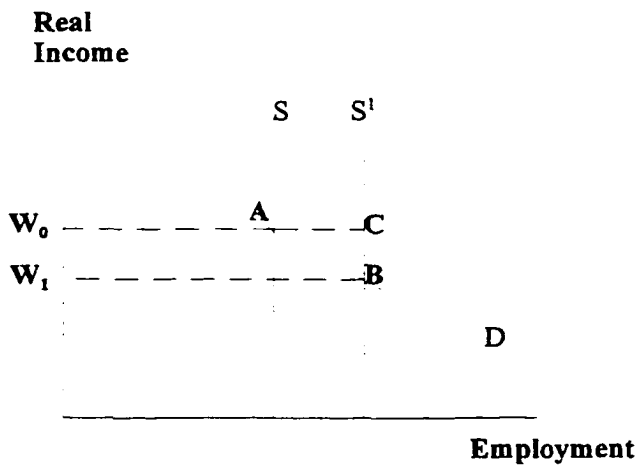

Figure 3.1

Suppose that initially the economy is at point A in figure 4.1, with inelastic labor supply S, and a downward sloping labor demand D. At time 0, a positive shock to supply shifts S to S^1; under the assumption of full employment the new equilibrium will be at point B in figure 4.1. Employment has increased while real income has decreased. However, this only applies to the overall labor market. The natives will experience

increased competition for jobs (assuming low-skilled natives and low-skilled immigrants are substitutes) which will drive down their labor demand. As the demand for low-skilled natives is decreased, natives' income and employment opportunities in the city are reduced.

This sets two things into motion: lower income causes people to move out of the metropolitan area, shifting S^1 steadily to the left; and lower labor costs lead to net in-migration of firms, shifting D steadily to the right. Whether the final impact on real income or employment will be greater depends on the relative speeds at which the two curves adjust. That is, the precise location of the long run equilibrium depends on the relative speeds at which workers leave and firms enter. If firms arrive at a greater speed than workers leave, the employment effect will be greater than if it were the other way around (Blanchard and Katz, 1992).

It should be apparent by this simplified exercise that the greatest impact of immigration into an area will be felt in the short run. That is, in light of the results from studies made by Filer (1992), White and Hunter (1993), and Frey (1994), any impact associated with immigration should be primarily found in the short run. Thus, by using data that allows for true short-run analysis, problems that have plagued the literature to date, such as factor mobility, are reduced.

The Empirical Approach

In order to evaluate the impact low-skilled immigrants have on low-skilled natives, a fixed-effects model is used. There are several advantages associated with choosing the fixed-effects model. First, it allows the labor-market conditions to vary across cities. The fixed-effect model accounts for any structural differences that exist in the labor-market conditions across cities by incorporating them into the intercepts. This is a very important aspect of the fixed-effects model, as it would be unrealistic to assume no structural differences across U.S. cities. Although this study focuses on a relatively short time span, 1994 - 1997, time dummies are included to account for any structural changes across cities over time. Furthermore, it forces fewer restrictions on the model to be estimated. That is, the fixed-effects model does not require that there be no structural differences across cities.

Along the same lines, any omitted variable bias which is introduced by not including variables that are systematically related to the cities in the study is avoided as any such variable is accounted for in the error terms. Accounting for the problem associated with the omitted-variable bias provides an increased confidence in the results. Although the specific regression equation employed in this study does not differ from previous studies in terms of the independent variables chosen, using pooled cross-section time-series data enhances the efficiency of the estimators.

Using pooled data increases the number of observations per variable and thus increases the efficiency of estimators. Furthermore, the shortness of the time period used adds to the reliability of the results as any bias introduced by out-migration is reduced.

By capturing the short-run nature of the labor market, and allowing for structural differences across labor markets (as well as across cities over time), the analysis that follows provides an important new insight into the existing immigration debate.

Altonji and Card (1991), captured the dynamic nature of the labor market by first-differencing the data across the 1980 and 1990 Censuses. Although this approach captures the dynamic nature of the labor market, it fails to capture the more important short-run impact. If natives do indeed react to the influx of immigrants into an area by out-migrating, it is important to utilize shorter-run analysis. As Blanchard and L. Katz's (1992) empirical study on regional labor market adjustments in the United States showed, an adverse economic shock to a state's labor market lasts up to ten years. As immigration represents an adverse shock to labor demand (assuming immigrants and natives are substitutes in production), one can conclude that it would take the local market about ten years to recover from the arrival of immigrants. Consequently, in order to find any adverse impact associated with immigration, shorter time periods must be studied. In hopes of obtaining some of the more significant impact associated with immigration, this study uses the fixed-effect model to analyze the impact over a four year period, 1994-1997.

The Empirical Model

The regression equation (presented in chapter four) was estimated using the fixed-effects model. The general form of the model to be estimated is as follows:

(6) $$y_{it} = \alpha + X_{it}\beta + v_i + \varepsilon_{it}$$

where i = 1,2,.....,n and t = 1,2,.....,T. v_i is the unit specific residual; it differs between units, but for any particular unit its value is constant. Thus, the model that ends up being estimated, applies OLS to:

(7) $$(y_{it} - \bar{y} + \bar{\bar{y}}) = \alpha + (x_{it} - \bar{x}_i + \bar{\bar{x}})\beta + (\varepsilon_{it} - \varepsilon_{it} - \bar{\varepsilon}_i + \bar{v}) + \bar{\bar{\varepsilon}}$$

where $\bar{y}_i = \sum_{i=1}^{T} y_{it} / T_i$, and similarly, and $\bar{\bar{y}} = \sum_i \sum_t y_{it} / (nT)$.

A clear advantage of using this model, is that it takes into account heterogeneity across labor markets. Any differences across cities are captured in the v_i term in the regression equation above. The specific fixed-effects model employed in this study employs time dummies to account for any changes in labor-market conditions across cities over the time period under study. Thus, the need to assume local labor markets to be time invariant is avoided. That is, this study allows for any structural changes both across cities and time. In light of the structural differences such as unemployment rates, fraction of immigrants already residing in the city, type of jobs, educational/training quality, the presence and strength of labor unions etc., this is not an unrealistic assumption to make.

Data

The data used for this research are obtained from the 1994 - 1997 March supplements to the Current Population Survey (CPS) of the Census Bureau. Hence this study focuses on a four year period during which the United States economy was very strong. This is important because the impact of immigration would be expected to be less severe during a period of high economic growth than it would be during a recessionary period. It is interesting to note that, in spite of how well the economy was doing during this time period, this study still finds a statistically significant negative impact associated with the arrival of immigrants during this time. Thus, this study may understate the true adverse impact associated with immigration over the period of the study due to the good economics conditions that prevailed in the U.S. over the years of the study.

Every individual in this study has less than a high-school education. Other studies have broken down the labor force in a similar manner to better be able to evaluate the impact on low-skilled natives. Low-skilled natives have been believed to bear the brunt of the large increase in the number of low-skilled immigrants due to the 1965 Family Reunification Act, which basically changed the focus of immigration policy from an ethnic and country quota based policy to a family-oriented policy.

The individuals included in this study are all between 16 and 64 years old, with less than 12 years of education. The empirical analysis is done in two steps. First the regression analysis is performed on the 70 cities that report having low-skilled immigrants over the four years of the study. The second regression analysis evaluates the impact of immigration on the cities in which the majority of the low-skilled population

are immigrants. There are twenty-five cities that report having a majority of the low-skilled population as immigrants. All the individuals included reported being in the labor force. The regressions were done at two levels. First at the city level (using city averages of the reported variables), and next at the individual level. Unfortunately, due to the way that the unemployment and employment questions were asked at the individual level, the results at the individual level are only reported for the average annual income. The questions on employment (or weeks worked) and on unemployment (weeks looking) did not specify a year for which the question was applicable. That is, the questions did not ask "how many weeks did you work last year" or "how many weeks did you spend looking for work last year," but rather, "how many weeks did you work" and "how many weeks did you spend looking for work." As the phrasing of these questions introduce problems associated with truncation, and no other variable in the survey captures unemployment, or employment, at the individual level, only one dependant variable was used at the individual level, annual income.

Dependent Variables

As mentioned before, this study evaluates the impact of immigration on three labor-market outcome variables: real annual income (at the individual level as well as the city level), unemployment rates (at the city level), and labor force participation rates (at the city level). These variables include only native individuals who report being in the age and educational categories specified above, and who are in the labor force. The income variable includes individuals who reported earning between $2,000 and $60,000

per year. The labor force participation rate is calculated by dividing the number of natives in the sample who report themselves to be either employed or unemployed by the working-age native population.

The annual income variable includes people who are quarter-time workers to full-time workers earning at least minimum wage. The lower boundary for these workers is $2000 while the upper boundary is $60,000. Prior to restricting the data to this specific income range, a regression was performed on the unrestricted data set. As the results from this regression give very similar results to the income restricted data set, the restricted data set was chosen. The primary reason for this choice is that the unrestricted data set included people who reported earning $1, $5 and so on per year, along with a few individuals reporting in excess of $300,000 per year. As these numbers are hardly representative of the low-skilled annual income, they were excluded from the regression.

Furthermore, the range of income was selected based on the idea that part-time workers and the people reporting the lowest incomes can be expected to be impacted the most by increased labor-market competition. Incorporating people working less than full time provides the opportunity to study the group of natives that are most likely to feel the impact of the influx of immigrants. Finally, the annual income variable is measured in real terms, using 1982 as the base year.

The unemployment rate variable is simply the number of unemployed natives divided by the number of natives in the labor force. The labor force participation rate simply includes all individuals reporting to be either employed on unemployed (i.e., in

the labor force) divided by the working age native population. The only outcome variable that is not in natural logarithm is the unemployment rate variable.

As explained earlier, the unemployment rate used here is not the reported unemployment rate but rather the unemployment rate in the data. It is calculated by dividing the number of low-skilled, unemployed natives by the number of low-skilled natives in the labor force as reported in the data. Since some of the cities only included a few individuals who were reported to meet the required criteria, some cities may only have included very few low-skilled individuals, none of whom were unemployed. As long as the data were properly gathered this should not impact the analysis. In light of this shortcoming in the data, the unemployment rate is not in natural logarithms. As taking the log of zero would yield a missing observation, the unemployment-rate variable was left in levels. The labor force participation variable along with the income variable are, however, in natural logarithms. The annual-income variable is in natural logarithms to capture the nature of the income profile. Early on in our careers income, grows relatively faster than later on. The natural log captures this trend.

Independent Variables

The control variables include race, gender, age, the square root of age, and the fraction of immigrants in a given city. Again, these variables account only for those individuals who are in the labor force as either employed or unemployed and who meet the age and educational criteria specified above. These control variables are standard in the immigration literature. What is nice about using the fixed-effects model is that it

accounts for any omitted variables, making it somewhat less crucial to include every city-specific control variable, which is the case when using straight cross-section analysis.

Ethnicity is captured by using three dummy variables. The three ethnicity dummy variables are Race1, Race2, and Race3. Race1 takes on the value of one if the person is black and zero for white. Race2 equals one if the person is American Indian or an Eskimo, and zero if white. Race3 equals one if the person is Asian or a Pacific Islander, and zero if white. This dummy variable represents the general racial make up of the labor force in a given city.

The gender variable takes on the value of one if the individual in question is a female and a zero otherwise. Again this variable represents the general gender make up of the local labor market. The age variable accounts for the age distribution in the local labor force while the age-square variable takes account of the quadratic nature of the earnings profile. That is, the square root of age is included in the regression equation to capture the impact of aging on income. The older one becomes, the lower the rate of increase in the annual income. That is, income tops out at some point and after that it begins to decrease. As mentioned earlier, all of these variables are standard labor market variables in the Mincer fashion which is commonly observed throughout the immigration literature (see for example, Borjas and Katz, 1996).

Finally, the immigrant-fraction variable accounts for the fraction of immigrants in the low-skilled labor force population of a given city. This is the variable of primary importance in this study, as it captures the impact of immigration on any of the above dependent variables. This study evaluates the impact of immigration at two levels. First,

the impact associated with immigrants in the 70 cities which report having the largest low-skilled immigrant fraction is evaluated. Then the cities that report having more than a quarter of its low-skilled population as immigrants are reported. See Tables 3.1 and 3.2 for a list of the variables.

TABLE 3.1

DESCRIPTION OF DEPENDENT VARIABLES

DESCRIPTION OF DEPENDENT VARIABLES	NAME OF VARIABLE	VALUE OF VARIABLE (1,2,3,4, or Mean) *The 26 Cities*	VALUE OF VARIABLE (1,2,3,4, or Mean) *All 70 Cities*
City Averages			
Real Annual Income	laun (not reported in logs)	$14,689.5 (Range $4,230 - 28,410.81) Std.: 4,179.276	$15,067.18 (Range $3166 - $30,000) Std.: 4,078.325
Unemployment Rate	vinlaus (not in logs)	0.1571(average rate) (Range 0-.5) Std.: 0.1102056	0.139 (average rate) (Range 0-.5) Std.: 0.1090678
Labor Force Participation Rate	lfp (not reported in logs)	0.2022994 (Range 0.033 - 0.68) Std.: 0.1743691	0.2255 (Range 0.033 - 0.79) Std.: 0.1822
N n T		100 25 4	280 70 4
Individual Level			
Real Annual Income	laun (not reported in logs)	$115,655.8(Range $2,000 - 60,000) Std.: 11,694.95	$15,480.46.5 (Range $2,000 - 60,000) Std.: 11,785.75
N n T-bar		2194 25 87.76	5,475 70 78.2143

TABLE 3.2

DESCRIPTION OF INDEPENDENT VARIABLES - THE CITY LEVEL

DESCRIPTION OF INDEPENDENT VARIABLES	NAME OF VARIABLE	VALUE OF VARIABLE (1,2,3,4, or Mean) *The 26 Cities*	VALUE OF VARIABLE (1,2,3,4, or Mean) *All 70 Cities*
Age	age	36.87 (Range 20 - 51) Std.: 4.336143	37.1893 (Range 20 - 52) Std.: 4.354966
Square root of Age	agesq	1553.24	15,555.119
Ethnicity	race	1 = White (80.13% of sample) Std.: 0.216	1 = White (83.05% of sample) Std.: 0.182
		2 = Black (14.38% of sample) Std.: 0.196	2 = Black (13.13% of sample) Std.: 0.1702
		3 = American Indian or Eskimo (0.78% of sample) Std.: 0.0207175	3 = American Indian or Eskimo (1.244% of sample) Std.: 0.0422325
		4 = Asian or Pacific Islander (3.13% of sample) Std.: 0.118698	4 = Asian or Pacific Islander (1.59% of sample) Std.: 0.0784617
Gender	gender	1 = Male (61.47% of sample) Std.: 0.1902	1 = Male (59% of sample) Std.: 0.1776
		2 = Female (38.53% of sample) Std.: 0.1902	2 = Female(41% of sample) Std.: 0.178
Fraction of low-skilled Immigrants	imfr	50.91% immigrants (on average) Range 27.3% - 81.4%, Std.: 0.1295	32.5% immigrants (on average) Range 2.17% - 81.4%, Std.: 0.196
N n T		100 25 4	280 70 4

TABLE 3.3

DESCRIPTION OF INDEPENDENT VARIABLES - THE INDIVIDUAL LEVEL

DESCRIPTION OF INDEPENDENT VARIABLES	NAME OF VARIABLE	VALUE OF VARIABLE (1,2,3,4, or Mean) *The 26 Cities*	VALUE OF VARIABLE (1,2,3,4, or Mean) *All 70 Cities*
Age	age	36.67 (Range 16 - 64) Std.: 13.23	36.88 (Range 16 - 64) Std.: 13.34
Square root of Age	agesq	1,519.304	1,537.8
Ethnicity	race	1 = White (74.38% of sample) Std.: 0.436607	1 = White (79.07% of sample) Std.: 0.4068569
		2 = Black (20.56% of sample) Std.: 0.404203	2 = Black (17.72% of sample) Std.: 0.3818465
		3 = American Indian or Eskimo (0.912% of sample) Std.: 0.095062	3 = American Indian or Eskimo (0.95% of sample) Std.: 0.097
		4 = Asian or Pacific Islander (1.96% of sample) Std.: 0.138649	4 = Asian or Pacific Islander (0.986% of sample) Std.: 0.0988308
Gender	gender	1 = Male (57.5% of sample) Std.: 0.494425	1 = Male (58% of sample) Std.: 0.4939106
		2 = Female (42.5% of sample) Std.: 0.494425	2 = Female (42% of sample) Std.: 0.4939106
Fraction of low-skilled Immigrants	imfr	50.34% immigrants Range 27.3% - 81.4%) Std.: 0.1340963	30.55% immigrants Range 2.17% - 81.4% Std.: 0.2053283
N n T		100 25 4	280 70 4

Sample Size

The initial total sample size was about 400,000 observations over the four years under study. That is roughly 100,000 observations per year. After excluding everyone that did not meet the criteria for the study, the sample size was reduced to the 5,475 (in 70 cities over 4 years) individuals used in this study. The second set of results (i.e., the results in the cities in which more than a quarter the low-skilled population are immigrants) cover 2,194 (in 25 cities over 4 years) individuals. The criteria all individuals (immigrants and natives) must meet are:

1. Age, i.e. all individuals must be between the ages of 16 and 64.
2. All individuals must report being in the civilian labor force.
3. All individuals must be high school dropouts.
4. Any city not reporting any low-skilled immigrants were dropped from the study.
5. Individuals in the sample must have reported earning income of at least $2,000 and no more than $60,000 per year.
6. Anyone reporting to be self-employed was excluded from the sample.
7. All immigrants in the sample must have reported arriving in the United States since 1970. That is, they must have arrived since the 1965 Amendment to the Immigration and Naturalization Act. Although that Act went into effect in 1968, the Census does not account for this.

After making these adjustments, the study includes 5,475 and 2,194 individuals in the larger and smaller samples, respectively. The bigger sample includes 70 cities while the smaller sample only includes 25 metropolitan areas. On average, about 78 individuals meeting the required sorting criteria were observed over the four years per city in larger data set, while only about 88 individuals were observed on average, per city, over the four years in the smaller sample.

Conclusion

Employing the fixed-effects model on cross-section time series data, provides a new insight into the existing immigration literature. More specifically, one of the most commonly heard complaints about the existing literature, the failure to capture factor mobility, is circumvented here by evaluating the true short-run impact associated with the influx of immigrants. In order to capture the impact associated with immigration before the labor market adjustment process in concluded, this study focuses on four years of data. Blanchard and Katz (1992), concluded that it takes the local labor market four to eight years to adjust after an adverse labor demand shock, which suggests that the time span of this study should provide the opportunity to capture any impact before the labor market is fully adjusted.

As discussed above, as immigrants arrive into a city, the lower-skilled natives may migrate out of the city. Frey (1994), for example, found that as immigrants arrive, less-skilled white males represent the group of natives that are the most likely to migrate

out of the area. In light of this result, one would expect to find the greatest impact of immigration by looking at a shorter time span. This study does this by evaluating the impact of immigration over a four year period. By evaluating a longer time period, the problem associated with out-migration becomes greater, and the chances of discovering any significant impact associated with immigration are lowered.

Furthermore, the fixed-effects model provides more efficient estimators and avoids omitted variable biases by incorporating any impact left out, due to omitting city-specific variables, into the error term. The assumption of homogeneous labor markets is also avoided by the usage of the fixed-effects model. That is, by allowing the constant to differ across cities, the labor markets across cities are allowed to differ. By allowing for heterogeneity, assumptions such as same the economic conditions across cities, and same skill distribution across cities, same industry structure, and the same degree of unionization, are not necessary. Furthermore, this study provides new insights by utilizing data from the 1994-1997 March suppiements to the Current Population Surveys which have not been used before.

This research, therefore, provides potential answers to some puzzling dilemmas, such as the one introduced by Borjas and Katz (1996), who found that cross-sectional area comparisons of the 1980 and 1990 Censuses of Population do not yield stable estimates of the effects of immigrants on male earnings. Assuming that the labor market conditions are the same across cities over a time period of ten years is a rather dubious assumption. The impact of immigration in 1980 may have differed from that of the 1990, simply because of differences in economic conditions and the skill distribution of

immigrants compared to natives. This study manages to avoid such structural changes by employing the fixed-effects model and by evaluating the short-run impact associated with the influx of low-skilled immigrants into the various U.S. metropolitan areas.

Chapter 4

EMPIRICAL FINDINGS AND DISCUSSION

"If immigration has not absolutely lowered the urges and standard of living of the American workman, it certainly has kept them from rising to the level that they otherwise would have reached."
Henry Pratt Fairchild, Immigration

Introduction

This chapter reports and discusses the results of the empirical analysis. Prior to the reporting of the results, descriptive statistics are presented to give a better context to the results that follow. Following the descriptive statistics comes the theoretical foundation for the study. This theoretical foundation does not differ in its basic terms from that of the existing literature. The main distinction is the use of a short-run labor-market analysis, in contrast to most of the current literature that evaluates the impact of

immigration by using long-run analysis. The empirical results are introduced next. The empirical methodology captures the endogeneity assumption associated with the current literature by employing the fixed-effects model. Finally, the results are discussed and interpreted. The results of the regression analysis on the larger data set are introduced and discussed first, followed by a discussion on the results of the smaller sample. Then, the overall findings of this dissertation are discussed and evaluated in light of economic theory.

To reiterate, this study differs from previous studies in three fundamental ways:

1. It avoids the endogeneity assumption by employing a fixed-effects model,
2. it analyzes the short-run impact associated with immigration as opposed to long-run implications, and
3. instead of concentrating on the impact of immigration on employment and income only, it expands it to evaluating the impact on labor force participation rates.

Descriptive Statistics

Tables 3.1, 3.2, and 3.3 above include detailed information on each of the variables used in this study. The purpose of this section is to discuss the numbers found in Table 3.1 and attempt to give them some meaning. Since the analysis is broken up into two data sets, the larger set and the smaller set, the descriptive statistics associated with

the larger data set will be introduced first, followed by the descriptive statistics of the smaller data set.

The Larger Data Set

As mentioned earlier, the larger data set includes the 70 metropolitan areas that report having low-skilled immigrants for all of the four years of the study. To start off with, the data only includes individuals between 16 - 64 years of age with less than a high school education. Although the regression analysis was carried out at both the individual and the city level, only the descriptive statistics at the city level will be discussed here. For information on the individual descriptive statistics see Tables 3.1 - 3.3. This is done primarily in order to keep the discussion focused and less confusing.

The fraction of low-skilled immigrants in a city ranges from about 2.2 percent to about 81 percent of the low-skilled population, at both the city and the individual level. In an average MSA, low-skilled immigrants represent about 33 percent of the low-skilled population (30 percent at the individual level). As the focus of this study is on the impact low-skilled immigrants have on the labor market outcomes of low-skilled natives, part-time workers are included.

People reporting working quarter-time over the year are included, while those who reported less than quarter-time are excluded from the sample. This is done to capture the impact on those native individuals that may be faced with the greatest amount of competition from arriving immigrants. Individuals who can perhaps be said to be less 'loyal' to the labor force are more likely to leave the labor force as competition for jobs increases. Those individuals may also be more sensitive to income changes as they may

not be the primary income earners in the family. Additionally, the part-time workers and the workers at the bottom of the income distribution may be more prone to out-migration, as they have less at stake than those further up the income ladder. Given this possibility, it is even more crucial to attempt to capture the short-run impact associated with immigration if one wants to capture the impact of immigration before the local labor market has had the opportunity to adjust to the initial labor demand shock.

On the upper boundary, the sample only includes individuals reporting incomes of $60,000 or less in a year (in nominal terms). The analysis was performed on income levels either greater than or less than the $60,000 a year limit, but no significant change in the results occurred. The number $60,000 a year was simply chosen based on this observation along with the fact that most high-school dropouts are not earning in excess of $60,000 annually. Furthermore, this upper limit is set in order to exclude self-employed individuals and those low-skilled people that clearly do not directly compete with low-skilled immigrants. Low-skilled individuals earning more than $60,000 per year can hardly be considered to be threatened by the arrival of low-skilled immigrants. The average real annual income in a given city in the sample is $9,759 ($10,069 at the individual level). The lowest observed average real income in a given city is about $2,077, while the highest reported average is about $19,120. The real annual income was found by dividing the reported annual income by the U.S. Consumer Price Index for the respective year.

The average age in the sample is about 37 years at both the city and individual level. In an average city, whites represent about eighty-three percent of the low-skilled

population (about 79 percent at the individual level). Close to thirteen percent are black (17 percent at the individual level) and the remaining four percent or so are split between American Indians/Eskimos and Asians/Pacific Islanders. The average MSA has about fifty-nine percent of its low-skilled population as males (about 58 percent at the individual level). These demographic characteristics are reasonably consistent with the overall population. Thus, this sample includes 5,475 individuals residing in 70 metropolitan statistical areas (MSAs) over the four years of the study. On average, there are about 78 individuals that meet the required characteristics observed per city, per year. Refer to Tables 3.1 - 3.3 for more specifics about the data.

The Smaller Data Set

There are twenty-five cities included in this sample. What these cities have in common is that the majority of the low-skilled (i.e. individuals with less than 12 years of education) population are immigrants. The primary reason for evaluating these cities separately is to see whether or not the impact of immigration changes much as immigrant concentration increases. Since it is important for policy purposes to understand how increased low-skilled immigrant densities impact the labor market outcomes of low-skilled native workers, the data are analyzed at these two levels.

As compared with the larger data set, individuals here are about the same age and have basically the same real annual income at the individual level ($10,174 here as opposed to $10,069 in the larger sample). At the city average level, real annual income is about $9,519 here, and about $9,759 in the larger data set. The primary difference

between the two data sets (aside from the immigrant fractions) can be found in the ethnic and gender make up of the population. The smaller data set includes two percent less females than does the larger data set. Only about eighty percent of the population in this sample are white as opposed to about eighty-three percent of the population in the larger data set. The fractions of the other three ethnic groups used in the study clearly increase. The opposite holds at the individual level. The larger data set contains about seventy-nine percent whites, while about seventy-four percent of the low-skilled population in the smaller sample are white. This can be said to be somewhat consistent with the conclusions of Frey's study (1994), who found that less-skilled whites are most likely to migrate out of an area in the presence of immigration.

The reported unemployment rate is also clearly different from that found in the larger data set. Here about 16 percent of the sample are reported unemployed as opposed to about 14 percent in the larger data set (at the average MSA level). This finding is not all that surprising given Blanchard and Katz's (1992) findings that natives tend to move out of areas that are hit with adverse labor demand shocks. Although this study does not actually capture the dynamic aspect of the adjustment process, these results are consistent with what one would expect if out-migration did indeed take place. The labor force participation rate here is also smaller than in the larger data set, twenty-three percent and twenty percent respectively (at the city level). This further suggest that natives do drop out of the labor force as immigrants arrive.

Again, in interpreting the unemployment rate in either sample, it is important to keep in mind the construction of the unemployment rate. The unemployment rate

represents the low-skilled unemployed natives only, which means that it is not the official unemployment rate. Furthermore, some of the cities reported few individuals that meet the required criteria which, in some cases, meant that either the city reported a zero unemployment rate or a 100 percent unemployment rate. This also would differ by the year in question. In light of these distinctions and under the assumption that the data accumulation is scientific and accurate, the reported average unemployment rate and its range are indeed representative of the population as a whole.

Results

This section discusses the empirical findings of this study. The discussion of the results is broken up into two different sections. The first section discusses the results of the regressions on the larger sample. The second section reports the results of the analysis on the smaller sample. Although different studies have used different variations of the control variables in the regression, all include the same core variables. The regression equation used in this study follows the typical regression equation observed in the literature (Borjas and Katz, 1996):

$$
\begin{aligned}
(1) \qquad & Y_{it} = \beta_0 + \beta_1 Race2_i + \beta_2 Race3_i + \beta_3 Race4_i \\
& + \beta_5 Female_i + \beta_6 Age_i + \beta_7 Agesq_i + \beta_8 imfr_i \\
& + Tdum2 + Tdum3 + Tdum4 + \mu_{it}
\end{aligned}
$$

where Y_{it} represents the three outcome variables, annual income (either at the individual or the city level, in natural logs), unemployment rate, and the labor force participation rate (in natural logs). The subscript *i* represents the various cities in this study, *i* = 1,2,.....,70 (or i = 1,2,....,25 in the smaller sample), while *t* represents the time frame of the study, *t* = '94, '95, '96, '97. The error term is assumed to be an independently, identically distributed random variable with mean zero and variance σ_{μ}^{2}. As mentioned earlier, the error term represents the effects of the omitted variables that are peculiar to both the individual units and time periods. The time dummies (Tdum1,Tdum2, Tdum3, and Tdum4) are included to allow for differences across cities over time. By including these time dummies, it is not necessary to assume that different labor markets grow equally over time. Tdum1, 2, 3, and 4 represent the years 1994, 1995, 1996, and 1997 respectively.

The variable of interest is the imfr variable which represent the fraction of immigrants in a given city. It measures the ratio of immigrants to natives in any of the 70 (or 25) cities used in this study. It only includes low-skilled workers, workers with less than high school diploma and that report being in the labor force. A closer look at the results of the three regressions follows.

The Larger Data Set

Let us now turn to the discussion and reporting of the results from the larger data set. In order to accomplish this, the discussion will first focus on the impact of

immigration on annual income and then discuss the impact on unemployment rate. These results are then put into a broader context by looking at the impact on labor force participation rates of natives.

Income

As the theoretical discussion above suggested, the initial arrival of immigrants can be expected to have an adverse impact on natives' income. Although the results reported here do not directly support that claim, evidence on labor force participation rates suggest that the discovered impact on income may be underestimated due to natives' departure from the labor force.

The regression on annual income shows that low-skilled immigrants clearly have a negative impact on the income of low-skilled natives. However, although the results are not statistically significant, the magnitude of the coefficient is relatively large. Furthermore, the magnitude of the coefficient increased as the immigrant fraction increased, suggesting that as more immigrants arrive in a city, the adverse impact becomes more noticeable. This result is consistent with the theoretical model introduced above. The statistical results show that if the fraction of immigrants increases by ten percent, natives' average income will be decreased by 1.3 percent[3] (and 0.99 percent at the individual level). This result is generally consistent with the findings of the existing

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[3] The 1.3 percent is the elasticity associated with result reported in Table 4.1. The elasticity is calculated by multiplying the calculated coefficient by the average of the independent variable (the average of IMFR, in this case). That is, $\beta_2 X$.

literature. As mentioned earlier, most studies have concluded that immigrants do indeed have an adverse impact on natives' income. However, very few studies have found this to be a statistically significant result.

What the result of this study suggests is that even though immigrants have been arriving in record numbers since the implementation of the 1965 Amendment, natives appear to have suffered in terms of annual income (although the coefficient tends not to be statistically significant). This result is consistent with the conclusions of previous studies on the impact of immigration on natives income (or wages and earnings). The fact that this study fails to find a large impact on natives' income suggests that an even shorter time period is needed in order to capture the impact associated with immigration, or that the true impact is masked by natives' departure from the labor force as immigrants enter the area. This suggests that outcome variables other than income (wages, earnings) need to be looked at to capture the initial impact. One such variable could be the labor force participation rate of natives, which will be evaluated below. This brings us to the next outcome variable, the unemployment rate. Results from the regression on real annual income are reported in Table 4.1 below.

TABLE 4.1

RESULTS ON ANNUAL INCOME - THE CITY LEVEL

Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	0.186	0.1967	0.946	0.345	-0.20191	0.574
Race3	-0.642	0.6308	-1.017	0.310	-1.886	0.6021
Race4	-0.92	0.6142	-0.149	0.882	-1.3026	1.12
Gender2	0.104	0.1389	0.745	0.457	-0.1703	0.3774
Age	0.06	0.03154	1.846	0.066	-0.00397	0.1204
Agesq	-0.00078	0.00041	-1.887	0.061	-0.0016	0.00004
imfr	***-0.413***	***0.2185***	***-1.891***	***0.060***	***-0.84399***	***0.01774***
Tdum2	-0.061	0.05942	-1.028	0.305	-0.17824	0.0561
Tdum3	-0.0282	0.0593	-0.476	0.635	-0.1451	0.0887
Tdum4	-0.10	0.0589654	-1.698	0.091	-0.2164	0.01613
cons	8.03	0.536411	14.982	0.000	6.9786	9.0941
Number of Obs	280			R-sq between		0.0293
n	70			R-sq overall		0.0361
T	4			F(10, 200)		1.14
R-sq within	0.0538			Prob > F		0.3363

TABLE 4.1.1

RESULTS ON ANNUAL INCOME - THE INDIVIDUAL LEVEL

Outcome Variable: ln Real Annual Income						
Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	0.012	0.03145	0.370	0.712	-0.05	0.07
Race3	0.049	0.11415	0.425	0.671	-0.18	0.27
Race4	-0.14	0.13103	-1.048	0.295	-0.39	0.12
Gender2	-0.4	0.02222	-17.597	0.000	-0.43	-0.35
Age	0.05	0.00493	10.352	0.000	0.041	0.061
Agesq	-0.001	0.00006	-8.189	0.000	-0.0006	-0.0004
imfr	***-0.32***	***0.16229***	***-1.976***	***0.048***	***-0.64***	***-0.003***
Tdum2	-0.09	0.03019	-2.967	0.003	-0.15	-0.03
Tdum3	-0.06	0.03048	-1.957	0.050	-0.12	0.0001
Tdum4	-0.08	0.03030	-2.546	0.011	-0.14	-0.018
cons	8.13	0.09856	82.469	0.000	7.94	8.322
Number of Obs	5475			R-sq between		0.0717
n	70			R-sq overall		0.0896
T	78.2143			F(10, 200)		57.73
R-sq within	0.0967			Prob > F		0.0000

Unemployment

As mentioned above, the regression on the unemployment rates was only performed at the city level. This was done because of the way the Survey questions were asked in the March Supplement. Rather than asking "how many weeks did you look for work last year" they asked "work experience, weeks looking for work - Person. Weeks was.....looking for work or on lay off from a job." The way in which this question is phrased introduces a truncation problem.

Blanchard and Katz's (1992) findings show that natives are most apt to move out of an area when unemployment rates are high. That is, the primary reason for out-migration is high or higher unemployment rates. In light of this prediction, or conclusion, one would not expect to find much impact of immigration on the unemployment rates of natives. The results reported here on the unemployment rate of natives is reasonably consistent with the results of other studies. A 10 percent increase in the fraction of low-skilled immigrants in a given city decreases the average unemployment rate of native high-school drop outs by an average of 0.13 percent[4]. This suggests that natives do indeed respond to the influx of immigrants relatively quickly by dropping out of the labor force. Again, this suggests that in order to find any potential impact of immigration, a broader outcome variable must be used, such as natives' labor force participation rates. This variable will most likely capture the changes in the labor

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[4] This is the elasticity associated with the reported result in Table 4.2. The elasticity was calculated using the following equation: $\beta_{imfr} X / Y$, where X is the average of the IMFR variable and Y is the average unemployment rate.

force due to immigration. As immigrants enter, natives drop out causing the impact on either income or unemployment rates to be diminished. This diminished impact on unemployment and income should be captured in the labor force participation rates. If cities in which a large number of immigrants reside have significantly lower native labor force participation rates, it would at least partially explain why one would not find significantly large impact on unemployment rates or income.

Although this analysis does not capture the dynamic nature of the labor market, its results are consistent with the predictions of the dynamic labor model introduced above. More specifically, the results suggest that the out migration of workers happens somewhat faster than the in migration of firms. It was stated above that if this were the case, we should observe that the impact on employment (unemployment) should be smaller than the impact on real income.

This result also suggests that low-skilled immigrants and low-skilled natives reporting the lowest annual incomes are reasonably close substitutes. The fact that the impact on unemployment rates is somewhat smaller than the impact on income suggests that low-skilled natives do migrate out of the area fairly quickly. The quicker the out-migratory response of natives, the less impact one would expect to find on the natives' unemployment rates. That is, as immigrants come into an area, the returns to skills is lowered, causing natives to drop out of the area and possibly migrate to a city where the returns are higher. Thus those natives who drop out of the labor force can either be employed or unemployed causing the impact on labor force participation to be larger than the impact on unemployment. Additionally, if in fact natives respond to the arrival of

immigrants by migrating out of the area, one would expect to find a relatively large impact on the labor force participation rates. This is consistent with the results presented below.

Moreover, this result suggests that the natives' labor supply curve is relatively inelastic. As substitute labor (immigrants) arrives the natives' labor demand curve would be expected to shift inwards. This inward shift of the labor demand curve would suggest that income would decrease as well as employment. If the labor supply curve is relatively steep, the impact on income would be expected to outweigh the impact on employment. This would furthermore suggest that as the intensity of the immigrant flow increases, the greater decrease in income and employment causes the migratory response of natives to increase even more. Thus, the greater the adverse impact on income, the greater the migratory response of natives, causing the exact end result on unemployment rates to depend on the relative size of the shifts of the two curves: natives' labor demand and labor supply curves. The regression results on unemployment rate are reported in more detail in Table 4.2

TABLE 4.2

RESULTS ON UNEMPLOYMENT RATE - THE CITY LEVEL

Outcome Variable: Unemployment Rate						
Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	0.187	0.0618	3.030	0.003	0.654	0.3090
Race3	-0.027	0.1981	-0.135	0.893	-0.4173	0.364
Race4	0.21	0.193	1.088	0.278	-0.1704	0.5901
Gender2	-0.034	0.044	-0.771	0.441	-0.1196	0.05235
Age	0.006	0.0099	0.597	0.551	0.01362	0.0254
Agesq	-0.000013	0.00013	-0.101	0.920	-0.0003	0.00024
imfr	***-0.013***	***0.069***	***-0.186***	***0.853***	***-0.148***	***0.1226***
Tdum2	-0.025	0.0187	-1.351	0.178	-0.062	0.0116
Tdum3	-0.0162	0.0129	-0.870	0.385	0.0529	0.0205
Tdum4	-0.0007	0.0185	-0.039	0.969	-0.0372	0.0358
cons	-0.06	0.1684	-0.356	0.722	-0.392	0.2721
Number of Obs	280			R-sq between		0.0112
n	70			R-sq overall		0.0184
T	4			F (10, 200)		2.29
R-sq within	0.1029			Prob > F		0.0144

Labor Force Participation Rates

Natives' labor force participation rate is perhaps the most likely outcome variable to capture the impact associated with immigration. This is primarily true in light of the potential migratory response of natives as discussed above. That is, as natives react to the initial labor demand shock by leaving the local labor market, the impact on both income and unemployment is masked. The impact on the labor force participation rate should, however, be unmasked.

As mentioned above, the labor force participation rate includes two groups of individuals, the employed and the unemployed. As immigrants enter an area, one would expect some natives to drop out of the labor force as their income drops and they are faced with increased competition for jobs. Some of the individuals may already have a job, but see the returns for their skills diminished below their reservation level, which causes them to quit their job. At the same time those natives who are unemployed see the same thing. The income they can now earn is lower than before as the competition for those jobs has increased. This may cause some individuals within this latter group to become discouraged and drop out of the labor-force. Individuals from either group may opt to drop out of the labor force, and even migrate out of the area in hope of receiving better returns elsewhere. In any case, this reaction should be captured in the labor force participation rates of natives.

This analysis suggests therefore that the arrival of immigrants should have negative impact on the labor force participation rates of natives. This is consistent with the results of this study (see Table 4.3). As immigrants arrive the labor force

participation rate is clearly negatively impacted. A ten percent increase in the fraction of immigrants in a city causes the labor force participation rates of low-skilled natives to drop by about 4.3 percent[5]. This is clearly a significant impact and consistent with what studies on the migratory response of natives in the presence of immigrants mentioned above. In light of the labor market adjustment mechanism introduced earlier, this result is expected. Again, although this study does not capture the dynamic labor market adjustment, it does indicate that natives do indeed drop out of the labor force as immigrants arrive. Whether natives continue to reside in the area or opt to migrate out is another issue. In any case, the results on the labor force participation rates, income and unemployment rates would be expected to be the same.

[5] The 4.3 percent is the elasticity associated with the result reported in Table 4.3. Is was calculated by multiplying the coefficient by the average of IMFR and divided by the average of the dependent variable (LFPR). That is, $\beta_{imfr} X$, where X is the average of the immigrant fraction variable.

TABLE 4.3

RESULTS ON LABOR FORCE PARTICIPATION RATE - THE CITY LEVEL

Outcome Variable: ln Labor Force Participation Rates						
Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	-0.0021	0.1434	-0.015	0.988	-0.285	0.281
Race3	-0.77	0.4567	-1.675	0.095	-1.676	0.136
Race4	0.276	0.448	0.618	0.537	-0.6061	1.159
Gender2	0.21	0.1012	2.070	0.040	0.0099	0.409
Age	-0.034	0.023	-1.620	0.107	-0.0826	0.0081
Agesq	0.0005	0.0003	1.599	0.111	0.0001	0.0012
imfr	***-1.32***	***0.1592***	***-8.296***	***0.000***	***-1.635***	***-1.01***
Tdum2	-1.42	0.0433	-32.727	0.000	-1.502	-1.332
Tdum3	-1.366	0.04318	-31.632	0.000	-1.451	-1.281
Tdum4	-1.369	0.04297	-31.879	0.000	-1.455	-1.29
cons	0.2595	0.3909	0.664	0.508	-0.511	1.030
Number of Obs	280			R-sq between		0.3643
n	70			R-sq overall		0.8317
T	4			F (10, 200)		214.30
R-sq within	0.9146			Prob > F		0.0000

The Smaller Data Set

The results from the regressions associated with the smaller sample set are reported in Tables 4.4, 4.4.1, 4.5, and 4.6. One would expect the results here to reveal stronger adverse impact than the larger data set. The impact on the labor force participation rates would be expected to be even stronger as the intensity of immigration increases and the labor demand curve shifts inwards even further. That is, as the immigration fraction increases the competition for jobs increases even further, causing the migratory response of natives to be even larger. The focus of the discussion here will be on the differences that exist between the two results and the potential explanations for those differences. First, the impact low-skilled immigrants have on the annual income of low-skilled natives (at the city and the individual level) is examined.

Income

Consistent with what one would expect, the impact of immigration on the income of low-skilled natives does indeed increase as the immigrant fraction in a given city increases. The magnitude of the coefficient in this case is considerably larger than the one in the larger sample. In this case, a ten percent increase in the fraction of low-skilled immigrants lowers the low-skilled natives' income on the order of 4.9 percent. This is a relatively large impact given the results of the existing literature. However, the estimated coefficient is not statistically significant at the 95 percent level. This result is not surprising given the theoretical discussion above. As immigrants arrive, natives may drop out of the labor force and some may even leave the area, causing the supply of native workers to decrease in the area. This could cause the immigrants' observable

impact on the native income to diminish or even disappear. The faster any potential out-migratory response, the smaller observable impact on natives' income. This would especially be true in cities with the greatest immigrant intensity.

TABLE 4.4

RESULTS ON ANNUAL INCOME - THE CITY LEVEL

Outcome Variable: ln Real Annual Income						
Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	0.485	0.3545	1.369	1.176	-0.223	1.1932
Race3	-3.64	2.2261	-1.623	0.109	-8.059	0.83212
Race4	-0.887	1.152	-0.770	0.444	-3.188	1.414
Gender2	0.49	0.2522	1.944	0.056	-0.0135	0.994
Age	-0.095	0.0659	-1.436	0.156	-0.2262	0.037
Agesq	0.001	0.00085	1.220	0.227	-0.00066	0.00274
imfr	***-0.487***	***0.4834***	***-1.007***	***0.317***	***-1.452***	***0.4784***
Tdum2	0.061	0.10189	0.598	0.552	-0.14255	0.2644
Tdum3	0.117	0.10771	1.087	0.281	-0.0981	0.3322
Tdum4	0.0267	0.01052	0.254	0.801	-0.1835	0.2369
cons	10.75	1.1234	9.565	0.000	8.502	12.989
Number of Obs	100			R-sq between		0.0009
n	25			R-sq overall		0.0474
T-bar	4			F(10 , 65)		1.36
R-sq within	0.1735			Prob > F		0.2170

TABLE 4.4.1

RESULTS ON ANNUAL INCOME - THE INDIVIDUAL LEVEL

Outcome Variable: ln Real Annual Income						
Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	-0.011	0.0496	-0.225	0.822	-0.12	0.09
Race3	0.067	0.182	0.368	0.713	-0.29	0.423
Race4	-0.16	0.155	-1.029	0.303	-0.46	0.144
Gender2	-0.35	0.035	-10.115	0.000	-0.424	-0.29
Age	0.052	0.008	6.592	0.000	0.04	0.067
Agesq	-0.001	0.0001	-5.494	0.000	-0.001	-0.0004
imfr	***-0.4***	***0.305***	***-1.300***	***0.194***	***-0.99***	***0.202***
Tdum2	-0.04	0.048	-0.755	0.450	-0.132	0.06
Tdum3	-0.01	0.047	-0.192	0.848	-0.102	0.08
Tdum4	-0.04	0.047	-0.918	0.359	-0.14	0.05
cons	8.24	0.205	40.288	0.000	7.84	8.64
Number of Obs	2194			R-sq between		0.0382
n	25			R-sq overall		0.0763
T-bar	87.76			F(10 , 65)		17.44
R-sq within	0.0826			Prob > F		0.0000

Unemployment

The impact on the unemployment rates of natives in this smaller sample is also somewhat consistent with what one would expect given the migratory responses of natives. One would expect to see white males be the most prone to out-migration as the immigration fraction increases (Frey, 1994). The sample does indeed support this finding which suggests that as the immigration intensity increases, the population composition changes as well. As more natives opt to drop out of the local labor force and/or migrate out of the area, the unemployment rate of natives should be expected to be reduced as fewer natives are now in the labor force. As mentioned earlier, as the concentration of immigrants intensifies, natives' may choose to drop out of the labor force as they see their incomes declining. The reduction in the labor force can either be due to out-migration or simply because people who have less loyalty to the labor force opt to quit work as income has now fallen below their reservation, or a combination of the two.

It is not entirely surprising that we observe the coefficient on unemployment rates to be negative as the intensity of immigrants increases. As the fraction of low-skilled immigrants increases, and more low-skilled natives choose to migrate out of the area, the unemployment rate begins to drop. If the labor force participation rate drops significantly enough, one could expect to see the impact on unemployment rates to actually switch signs, suggesting that immigrants actually reduce the unemployment rates of natives. This may appear somewhat contrary to what one would expect at first sight, but in light of the fact that some of the unemployed natives may become discouraged as the competition for

jobs increases and the return for their skills decreases, the results of this study are actually consistent with what the migration literature has found.

As the immigration fraction becomes larger in a given city, more and more natives find themselves unemployed, causing them to drop out of the labor force and/or migrate out of the area. How long it takes natives to leave the area or give up on the job search process in the presence of immigration may vary, but this study suggests that it takes less than four years. Furthermore, the disutilities that some natives get from living in ethnically diverse areas causes them to move out even if they do not actually lose their jobs. The combination of these two factors may cause the net results to appear to be a beneficial one for the remaining natives. Since the discussion of the unemployment rate is closely related to that of the labor force participation rate, the two will be discussed more closely below.

Again, although this study does not actually capture the dynamic aspects of the labor force, its results are consistent with what one would expect if in fact natives choose to migrate out of high immigration areas. Since the impact on labor force participation rates is as large and significant as this study finds (see also discussion below), this study suggests that the arrival of immigrants does impact natives' willingness or opportunities to stay in the local labor force. What happens to the natives that opt to drop out of the labor force is not the focus of this study. However, the results of this study could potentially be explained in light of the migration literature's results.

TABLE 4.5

RESULTS ON UNEMPLOYMENT RATE - THE CITY LEVEL

TABLE 4.5						
Outcome Variable: Unemployment Rate						
Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	0.0823	0.112	0.737	0.464	-0.141	0.305
Race3	0.077	0.7014	0.110	0.913	-1.324	1.478
Race4	0.187	0.363	0.516	0.608	-0.538	0.912
Gender2	-0.07	0.0794	-0.887	0.378	-0.229	0.0882
Age	0.0099	0.0208	0.447	0.635	-0.03155	0.0514
Agesq	-0.00002	0.0003	-0.073	0.942	-0.0006	0.00052
imfr	***-0.0552***	***0.1523***	***-0.362***	***0.718***	***-0.3594***	***0.249***
Tdum2	0.0346	0.0321	-1.077	0.285	-0.0987	0.0295
Tdum3	-0.057	0.034	-1.672	0.099	-0.125	0.01103
Tdum4	-0.025	0.0332	-0.748	0.457	-0.091	0.04142
cons	-0.112	0.354	-0.318	0.752	-0.819	0.5945
Number of Obs	100			R-sq between		0.1324
n	25			R-sq overall		0.0067
T	4			F (10 , 65)		1.01
R-sq within	0.1340			Prob > F		0.4485

Labor Force Participation Rates

The largest impact is found on the labor force participation rates oF low-skilled natives. In the larger data set, a ten percent increase in the fraction of low-skilled immigrants lowered the labor force participation rate of natives by approximately 4.3 percent. Here, however, that impact is increased to a 11.2 percent[6] decline in the native labor force participation rate. This is clearly a large change, but it is consistent with the migration literature and with the results reported for the other variables in this study. If low-skilled natives respond to the influx of immigrants by dropping out of the labor force and/or migrating out of the area to places which reward their skills better and are deemed more 'desirable' to live in, the impact on both income and unemployment rates may be lost or even appear to yield a positive change. The impact on labor force participation, however, captures the apparent impact and helps shed light on why one would fail to observe a dramatic effect on these variables.

As natives migrate out of the area, the unemployment rate is bound to drop as some of those migrants may be currently unemployed. This potential out-migration of native workers causes the labor supply of low-skilled natives to shift inwards, raising their income and lowering the measurable net impact of immigration.

The arrival of immigrants throws into action at least two things. First of all, assuming natives and immigrants are substitutes in production, natives' labor demand curve shifts inwards, driving income and employment down (I1 to I2 and E1 to E2 in

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[6] Again this is the elasticity associated with the reported coefficient in Table 4.6. That is, $\beta_{imfr} X$, where X is the average of the immigrant fraction variable.

Figure 4.1 below), ceteris paribus. The combination of lower employment, and lower income causes some natives to drop out of the labor force as income has now dropped below their reservation level and the competition for jobs has increased. Furthermore, some of the natives may choose to migrate out of the area as they derive disutility from living in ethnically diverse areas (Frey , 1994). Some of those individuals will currently be employed while some will be unemployed. The currently unemployed natives may drop out of the labor force as they become discouraged due to increased competition for the available jobs. Second, as natives migrate out of the area, the labor supply curve of low-skilled natives decreases. This reduction in labor supply causes the potential impact on the unemployment rate and income to be masked, and could even possibly indicate that the unemployment rate has decreased. That is, the initial impact of immigration is to lower income and employment rates by decreasing natives' labor demand, while the end result will depend on how natives will react to the apparent income decrease and the presence of immigrants (i.e. how far to the left the labor supply curve will shift). If natives migrate out of the city in significant enough numbers, the influx of immigrants may appear to have a positive impact on the remaining natives.

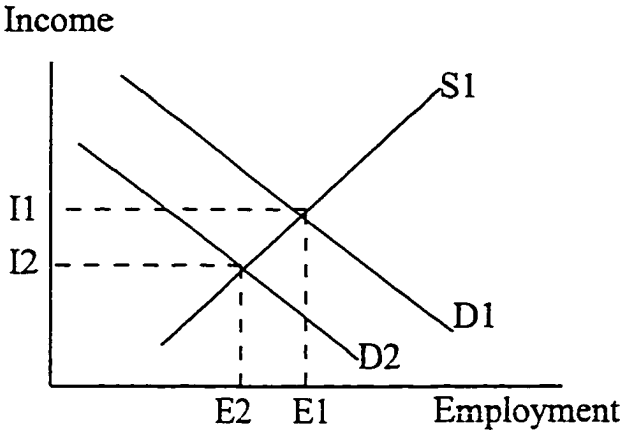

Figure 4.1

TABLE 4.6

RESULTS ON LABOR FORCE PARTICIPATION RATE - THE CITY LEVEL

Outcome Variable: ln Labor Force Participation Rates						
Control Variables	*Coef.*	*Std. Error*	*t*	P > |t|	*95% Conf. Interval*	
Race2	-0.094	0.2199	-0.427	0.671	-0.533	0.3452
Race3	-0.025	1.381	-0.018	0.986	-2.783	2.733
Race4	1.034	0.7146	1.446	0.153	-0.394	2.461
Gender2	0.32	0.156	2.054	0.044	0.009	0.6336
Age	-0.036	0.041	-0.890	0.376	-0.118	0.045
Agesq	0.0003	0.00053	0.621	0.537	-0.00073	0.0014
imfr	***-2.19***	***0.2999***	***-7.302***	***0.000***	***-2.79***	***-1.591***
Tdum2	-1.49	0.632	-23.550	0.000	-1.615	-1.36
Tdum3	-1.44	0.067	-21.521	0.000	-1.57	-1.304
Tdum4	-1.47	0.0653	-22.460	0.000	-1.597	-1.34
cons	1.01	0.397	1.451	0.152	-0.381	2.403
Number of Obs	100			R-sq between		0.4021
n	25			R-sq overall		0.8625
T	4			f(10 , 65)		104.01
R-sq within	0.9412			Prob > F		0.0000

Interpretation of Results

In light of the results of other studies on the labor market outcomes of natives, the results presented here are quite strong and conclusive. Borjas (1994) in his summary of the existing literature and the National Research Council's Report (1997) discussion of existing literature, concluded that immigrants have A weak effect on the labor market outcome of natives. What this study suggests is that in order to find any significant impact from immigration, one must look at the labor force participation rates. The impact associated with immigration on income and unemployment of native workers is bound to be hidden due to the potential migratory reaction of natives. As immigrants enter an area, some native workers may react to this influx by migrating out of the area. This out-migration causes the natives' supply curve to shift left and therefore increases income. Any study that does not take account of this phenomenon will understate the true impact of immigration. The exact impact on income will thus depend on the relative sizes of the demand and supply shifts.

Since out-migration is not going to be unique to working natives, but also native unemployed individuals, the unemployment rate could possibly appear to have decreased as the concentration of immigrants increases. That is, as more and more unemployed natives move out, fewer and fewer natives will report being unemployed. As more immigrants enter, any potential out-migration may be intensified, giving the false appears that immigrants do not impact the labor market outcomes of natives. Capturing the impact of immigration before the potential out-migration is complete provides new insights into the immigration literature.

In order to account to some extent for the migratory response of natives, this study does two things. First, it evaluates the impact of immigration over a relatively short time span, four years. By concentrating on a relatively short time period, the impact of immigration should be realized before any potential out-migration takes place (or is completed). Second, this study looks at the labor force participation rates of low-skilled natives in the presence of immigration. Looking at the labor force participation rates gives an added insight into the reaction of natives to the immigrant inflow. As immigrants enter a city, some natives will drop out of the labor force (assuming natives and immigrants are substitutes in production), as the increase in labor supply lowers income below their reservation level. It is this reduction in the labor force participation of natives that will ultimately cause the estimated impact on income and unemployment rates to be underestimated.

This study finds that the analysis of the labor force participation rates show the strongest impact. Since this impact is the most direct, one would expect it to be the strongest. As the fraction of immigrants in a city increases, the labor force participation of natives declines, suggesting an added adverse impact as immigration intensity increases. The outcome on income is negative and increases in magnitude as immigration intensity increases. However, the statistical significance diminishes somewhat, suggesting that enough natives have left the area for the impact on income to appear to have disappeared. This is to be expected as more natives have now left the labor force, causing the results on income to be somewhat decreased.

Furthermore, the results on unemployment rates are also consistent with this argument. If natives do indeed leave the labor force as immigrants arrive, any potential impact on the unemployment rates is bound to be masked. As this research finds that the greatest impact associated with immigration is on the labor force participation rates, the lack of conclusive findings in the literature is not all that surprising. This conclusion further strengthens the argument that one must evaluate the impact of immigration over a relatively short period of time, or in some way directly capture the dynamic nature of the labor force, if one hopes to find more conclusive evidence of the potential adverse effects of immigration.

As the intensity of immigrants increases in a given city, natives tend to drop out of the labor force in increasing numbers. Keeping in mind that this study includes part-time workers who may have less labor market loyalty than full-time workers, it is not surprising to find that some natives simply drop out of the labor force. Another reason for the apparent reduction in natives' labor force participation rate is that some natives may simply receive negative utility from living in close quarters with people with different ethnic backgrounds. These people would be expected to simply move out of the area to areas which better meet their needs. Furthermore, since those who leave may not all be currently employed, the natives' unemployment rate could be expected to drop as well. Thus, in order to capture any impact associated with immigration, one must attempt to perform a short-run analysis, or drop the closed economy assumption. This study captures a significant impact on the labor force participation rates, which were then used to explain the lack of impact on income and unemployment.

It is clear from this discussion that the primary impact of immigration on local labor markets can be found by evaluating the labor force participation rates of native workers. This should not come as a surprise as the migration literature has clearly demonstrated the migratory patterns of natives in the presence of immigration (Frey, 1994; Filer, 1992; Frey and Liaw, 1998). If natives respond to the arrival of immigrants by migrating out of the area, one would expect to find reduced natives' labor force participation rates. Although immigrants impact income and unemployment rates of natives, that impact tends to disappear due to natives' reduced labor force participation, and/or any potential migratory response to the observed adverse labor demand shock as explained by Blanchard and Katz (1992). In light of these studies it is not surprising to find that the impact on natives' unemployment rates tends to diminish with increased immigrant intensity, as is observed in this study.

To summarize, over time the local labor market will adjust to the initial supply shock presented by arriving immigrants. This adjustment process can be caused, for example, by the out-migration of native to areas which provide more "desirable" living conditions. Furthermore, the arrival of immigrants represents an overall increase in the supply of labor in a given city, which according to economic theory, should drive income down. As natives move to areas which provide better returns for their specific skill levels, this initial impact is diminished. Thus, the greater the immigrant influx, the greater the adverse impact on the labor force participation rates of natives and, as a result, the weaker the impact on income and unemployment. It is because of this labor market adjustment mechanism that it is vital to study the short-run aspect of immigration.

Chapter 5

Interpretations And Implications

"The typical immigrant of the present day does not really live in America at all, but, from the point of view of nationality, in Italy, Poland...or some other foreign country."

Henry Platt Fairchild, The Melting-Pot Mistake

Introduction

What should the United States' immigration policy be? The U.S. has seen renewed interest in this question in recent years as the country continues to receive record-breaking immigrant flows. In evaluating what type of immigration policy a country should have, it is important to keep at least two things in mind. First, the humanitarian aspect of immigration policy needs to be considered. Second, the economic impact on natives associated with immigration policy needs to be considered. This study

evaluated the economic impact on low-skilled natives associated with accepting large numbers of low-skilled (less than 12 years of education) immigrants.

The differences in views on what immigration policy should be can be summarized by two opposite views, those who believe that the U.S. borders should be completely closed off to immigration and those who say that immigration should be completely open. These two views can be contrasted through the views of Briggs (1975) and Simon (1989). Briggs believes that the borders should be completely closed off, while Simon thinks that the borders should be completely open to immigrant flow. Whether the U.S. borders should be opened up even more than they already are or completely closed off is not the focus of this dissertation. However, this dissertation does deal with the impact associated with immigration on the labor market outcomes of native workers and as such a brief discussion on immigration policy in light of the results reported here is relevant.

How natives are impacted by immigration depends on the degree to which natives and immigrants are substitutes and/or complements in production. If immigrants and natives are complements in production, natives would benefit from immigration, suggesting that the aim of immigration policy should be to admit as many immigrants as possible. However, this is unlikely to be the case. Although some immigrants may be complements to some subgroups of natives, and thus benefit them, some will represent substitutes, in which case that subgroup of natives are harmed. The National Research Council's report (1997) concludes that immigrants represent a net benefit to natives. This is not to say, however, that certain subgroups of natives are not losing out as a result of

immigration, while others benefit. This study has focused on a specific subgroup of the native population, the low-skilled, who are believed to be negatively impacted by the current immigrant flow.

This chapter evaluates the current immigration policy in light of the conclusions of this study. This study clearly suggests that low-skilled immigrants and low-skilled natives represent substitutes in production. This implies that as immigrants enter the United States, the lower-skilled natives lose out, both in terms of income and employment opportunities. This impact is hidden, however, in the labor force participation rates of natives. That is, since natives appear to drop out of the labor force as immigrants arrive, any impact on income and unemployment will be masked. In order to account for this possibility, the analysis incorporates labor force participation rates and finds that immigrants do in fact impact the labor force participation rates of natives significantly. As the presence of immigrants intensifies, the negative impact on labor force participation intensifies, causing the impact on income and unemployment to appear to diminish.

Before embarking on the theoretical implications of immigration, and a broader discussion on immigration policy, it is useful to look at a brief description of the development of the U.S. immigration policy. As this study evaluates the impact of low-skilled immigrants arriving since the implementation of the 1965 Amendments to the Immigration and Naturalization Act, it is important to attempt to better understand why these Amendments were passed and how it changed the immigrant flow to the United States. After introducing the pre- and post-1965 immigration policy, some consequences

of the 1965 policy change are discussed and tied in with the theoretical discussion that follows.

Immigration Policy Prior to 1965

Prior to the 1870s, there was no immigration policy in the United States. The first restrictive immigration policy was written in the 1870s as a response to the increasing number of Chinese immigrants to the western states. Due to increasing political pressures, Congress decided to restrict the entry of certain groups into the U.S.. By 1917, these restrictions applied to a large number of people, including all Asians, political radicals, persons with tuberculosis, and polygamists. A major shift occurred in the immigrant composition as a result of this complete ban on Asian immigrants. Traditionally, a majority of the immigrant flow had originated in northwestern Europe, such as Germany and the United Kingdom. As economic and political factors shifted, the origin of the immigrant flow turned toward southern and eastern European countries, such as Italy, Poland, and Russia. Congress enacted the national origin quota system in the 1920s. The national origin quota system allocated visas to countries in the Eastern Hemisphere depending on their representation in the national origin composition of the U.S. population in 1920. Since the ancestors of the great majority of the U.S. population at the time originated in northwestern Europe, the majority of the visas were allocated to the United Kingdom and Germany (Borjas, 1992, p.19).

The national origin quota system only applied to people originating in countries in the Eastern Hemisphere. Applicants from the Western Hemisphere countries were

exempt from the quota and faced no numerical restrictions on the number of visas. In 1952, the national origins quota system was reaffirmed with the inclusion of a skill based preference system for immigrants arriving from the Eastern Hemisphere. Preference was given to applicants whose skills were 'needed urgently' in the country. About half of all these visas were allocated to such persons but all the remaining visas were allocated to relatives of U.S. residents. The first major revision of the Immigration and Nationality Act occurred in 1965.

Immigration Policy Since 1965

The 1965 Amendments to the Immigration and Nationality Act, along with the revisions of them through the 1980s, regulated the process by which immigrants were admitted in to the United States until the enactment of the 1990 Immigration Act. The 1965 Amendments focused the immigration criteria towards family reunification and abolished the discriminatory national origin quota system completely. The Amendments and the subsequent revisions in the law authorized the entry of 270,000 individuals per year, with no more than 20,000 immigrants originating in any particular country of origin.

The family reunification objective of the of the 1965 Amendments was institutionalized through several provisions. First, the Amendments (and subsequent revisions) require that 80 percent of the 270,000 numerically limited visas go to "close" relatives of U.S. citizens or residents. These close relatives include unmarried adult children of U.S. citizens, siblings of adult U.S. citizens, and spouses of resident aliens. The remaining 20 percent of the visas are allocated to persons on the basis of their skills

(Borjas, 1990). It is interesting, however, that of the 20 percent of the immigrants admitted on the basis of their skills, a majority of those visas were actually given to people who had previous family ties. Thus in reality only a small fraction of the 298,306 immigrants arriving in the United States in 1989 did so solely on the basis of their skills. Furthermore, the fifth preference which allocates visas to brothers-in-law and sisters-in law of adult U.S. citizens, potentially introduces the problem of exponential growth of immigration over time.

This emphasis on family reunification must have had some impact on how immigrants affect native workers. The Amendments also opened the borders like never before to immigrants from the Eastern Hemisphere who had for a long period of time been excluded from the U.S. prior to the 1965 Amendments. However, although the 1965 Amendments did open up the borders for persons originating from the Eastern Hemisphere, and thus severely altered the national origin mix of the immigrant population, it would be erroneous to attribute the entire national origin shift solely to the changes in the U.S. immigration policy. The 1965 Amendments also introduced some numerical restrictions on immigrants originating from western Europe and thus reduced the potential size of the immigrant flow from that region of the world. Furthermore, although visas are freely available, potential immigrants will not choose to come to the United States unless they gain from that move. Even before the enactment of the 1965 Amendments, quotas allocated to many European countries went unfilled. For example, during the first half of the 1960s, the United Kingdom was allocated over 65,000 visas per year, but only about 28,000 persons took advantage of the offer (Borjas, 1992, p.22).

The Immigration Act of 1990 created the current U.S. immigration system, which is a modification and expansion of the previously existing immigration system in operation since 1965. The most salient feature of the 1990 act is a significant increase in the total level of legal immigration. For the first time, it placed a yearly cap on total immigration, including both numerically limited categories and numerically exempt categories. The act retained family unification as the major entry path, while increasing employment-related immigration. As a part of the latter, a new category called "investor immigrants" was added for investors of $1 million or more in urban areas and $500,000 or more in rural areas, provided the funds are used to create ten or more jobs. To diversify the sources of immigration and provide opportunities for nationals of some countries adversely affected by the 1965 legislation, the act created a new admission category called "diversity immigrants," which allows nationals of certain countries to immigrate through a lottery process (Yang, 1995).

Consequences of the Post - 1965 Policies

If the 1965 immigration reform had not occurred, the level of total immigration after 1965 have probably stayed at its level of the early 1960s (about 300,000 annually) for a long time, largely because the demand for immigration in European countries - the major suppliers of pre-1965 immigration - had declined (Yang, 1995). It is clear that this increased influx of immigration is the primary cause of the renewed interest in immigration policy and the economic impact associated with immigration. To put these numbers into a better context, the foreign-born population as a share of the total U.S.

population increased from 5.5 percent in 1960 to 6.2 percent in 1980 and to about 10 percent in 1996. Hence immigration has regained a major role in the growth of the U.S. total population and labor force (Yang, 1995). It is because of this enormous increase in immigration since the 1965 Amendment that this study has focused on the impact of immigrants arriving under the 1965 Act and any subsequent revisions.

Another significant change, the spatial distribution of immigrants, occurred after the 1965 Amendments,. Historically, immigrants have been relatively evenly distributed across the U.S., although each immigrant ethnic group tended to have certain areas of concentration. However, since 1965 the spatial distribution of immigrants has become very clustered as the countries of origin have shifted to Asia and Western Hemisphere. For example, more than two-thirds of immigrants intended to settle in six states: California, New York, Texas, Florida, Illinois, and New Jersey. Furthermore, the post-1965 immigrants have tended to reside primarily in metropolitan areas. This focus of immigrants on only a few metropolitan areas (Los Angeles, New York, San Francisco, Chicago, and Miami) forces studies on the impact of immigration to be area specific as opposed macro oriented or studying the impact on the nation as a whole (Yang, 1995).

It should be clear from this brief discussion how changes in immigration policy have changed the dynamic nature of immigration. Immigrants have been entering the U.S. in record numbers and they are increasingly focusing their arrival on only a handful of cities. This enormous concentration has clearly caused natives to migrate out of high immigration areas to areas where they find less competition and/or discomfort. Specifically, as Frey (1994), Filer (1992), and White and Hunt (1993) conclude, low-

skilled natives tend to respond to immigration by migrating out of the area. This is a very important result in light of the nature of the immigrant flow. That is, large number of immigrants arriving in only a few selected cities will cause lower-skilled natives to migrate out. This out-migratory response of low-skilled natives will clearly mask the impact of immigration on both income and unemployment levels of low-skilled natives.

It can thus be said that the immigration policy of 1965 changed the dynamics of immigration by increasing the total number of immigrants and by causing the immigrant flow to become more concentrated and urban in nature. Furthermore, the skill levels of immigrants became more bipolar. That is, immigrants that have arrived since the enactment of the 1965 Amendment have either high levels of skills or low levels of skills as measured by educational attainment. In light of the dramatic increase in the number of low-skilled immigrants, this study has focused on the impact these immigrants have on their native counterparts. Since one would expect low-skilled natives and low-skilled immigrants to be substitutes in production, one would expect to find this policy change to disproportionately harm lower-skilled natives.

Theoretical Considerations

How immigrants impact the natives' labor market outcomes depends on whether they substitute or complement natives in production. If immigrant labor are substitutes in production, they will have a negative impact on the labor demand curve of native workers. However, if they complement natives, they will improve the labor market outcomes of natives. The outcome of any immigration policy will be contingent upon the

extent to which immigrants represent substitutes or complements in production. Although it is likely that most low-skilled immigrants will substitute low-skilled natives, some may indeed represent complements.

The results of this study clearly suggest that low-skilled immigrants and low-skilled natives are substitutes in production, which is why the negative impact on natives' labor force participation rates was observed. This reduced participation of natives in the labor force masks the total impact of immigration on other variables such as income and unemployment, which is why the results of studies that specifically evaluate the impact on these variables are often less than convincing. To better understand how the process works, a brief review of the impact associated with the arrival of immigrants on the labor market outcomes of natives when immigrants represent a) substitutes in production, and b) complements in production, is in order.

Immigrants As Substitutes in Production

Figure 5.1 below demonstrates graphically the impact of the arrival of substitute labor into the low-skilled native market. The graph clearly demonstrates that as low-skilled immigrant labor arrives, the labor demand for low-skilled native labor decreases, resulting in both lower income and lower employment. Most studies to date have assumed this result to hold as they assume the labor market to be closed once immigration takes place. Although this study does not correct for this assumption directly, it does so indirectly. Evaluating the impact associated with immigration over a relatively short period of time provides the opportunity to capture the effects of

immigration before the labor market adjustment is complete. By capturing any potential impact before the adjustment process ends, the problems associated with the closed economy assumption are reduced. Although it would be better to somehow incorporate the dynamic nature of the labor force into the analysis, this was not done here.

This assumption suggests that as immigrants enter the local area, natives simply watch idly while their income levels drop and they get replaced in the labor force. Under this scenario, income of natives would simply drop from I_1 to I_2 and employment levels

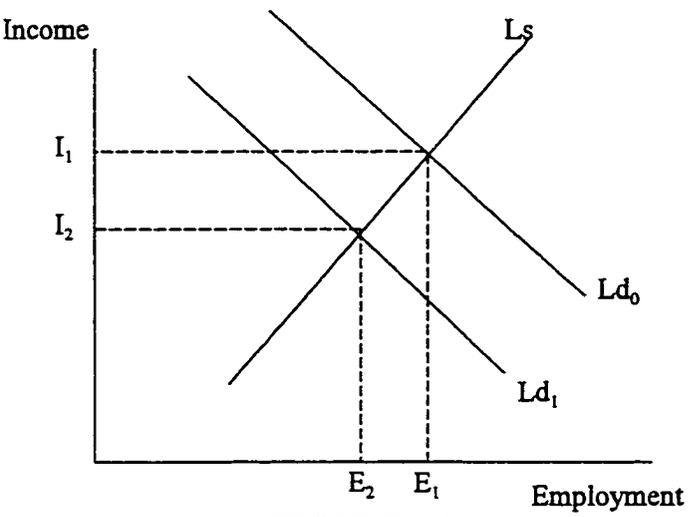

FIGURE 5.1

would drop as well from E_1 to E_2 (see Figure 5.1 above). Under the assumption that the labor market is closed once immigration takes place, the policy implications would be fairly clear. Immigrants would evidently reduce the employment opportunities of natives as well as reducing their income. If this were indeed the case, the current immigration

policy would possibly need to be adjusted. However, most studies on the issue have failed to show strong adverse impact on the labor market outcome of natives in the presence of immigration. This suggests that either the majority of immigrants are actually complements in production, or that the impact gets washed out somehow.

Blanchard and Katz (1994) showed that natives do not sit idle in the presence of adverse labor demand shocks. They concluded that natives migrate out of the negatively hit areas as they see their incomes and employment opportunities diminishing. Since immigration in this case represents an example of an adverse shock to the labor demand of natives, one could expect to see low-skilled natives move out of the area, reducing the initial impact on income and decreasing the number of natives that are employed in the area. In light of the Blanchard and Katz study, it is clear that any study that fails to account for potential labor mobility will underestimate the full impact associated with the arrival of immigrants.

If natives do migrate out of the area as immigrants enter, the labor supply curve of native workers, in Figure 5.1, would shift to the left. This leftward shift of the labor supply curve would reduce the impact on income, or even make it positive if enough natives move out, and increase the impact on employment. If the additional reduction in employment is due to out-migration, one would not expect to see the unemployment rates of natives necessarily increasing much. The unemployment rates could actually appear to be decreasing, as natives that are currently unemployed will move out as they observe increased competition for jobs and lower returns to their human capital. Thus, not accounting for labor mobility, by either performing a short-run analysis or by somehow

capturing the labor market dynamics, can potentially severely alter the conclusions on the impact of immigration.

Immigrants As Complements in Production

In the case where immigrants are complementary to natives in production, the impact of immigration would primarily be positive. That is, the labor demand curve in Figure 5.1 above would shift outwards instead of inwards, resulting in increased income levels and added employment opportunities for low-skilled natives. Under this scenario, immigration policy should be adjusted to include even more low-skilled immigrants. Although it is possible that some low-skilled immigrants complement low-skilled natives to some extent, it seems rather unlikely that the majority of low-skilled immigrants have this impact.

The degree to which low-skilled immigrants are complements or substitutes in production will ultimately determine the end result of the immigrant flow. If immigrants are to a greater extent substitutes than they are complements in production, the net impact will be negative. How negative that impact is, however, depends on the degree to which immigrants are substitutes rather than complements. The greater the substitutability, the greater the negative impact and the greater the need to reconsider the current immigration policy.

Results and Implications

In light of the above discussion on immigration policy since 1965, and the results of this study, it is apparent that the 1965 Amendments to the Immigration and Nationality Act has caused some significant changes in the economic well being of low-skilled native workers. By opening the doors to disproportionate numbers of low-skilled immigrants, the low-skilled natives have possibly paid an heavy price. This adverse impact, however, is difficult to find if one focuses on the income and employment opportunities of natives due to the potential migratory reaction of low-skilled natives to the immigrant inflow. This study, by evaluating the impact on the labor force participation rates, annual income, and the unemployment rate of natives specifically, has found that low-skilled immigrants arriving since the 1965 Amendments have significantly altered the labor market opportunities of low-skilled natives.

More specifically, as the immigration intensity increases into a city, more and more natives drop out of the labor force. What those individuals do, move out of the area or stay, is not entirely clear, but what is clear is that low-skilled natives are losing opportunities as a result of the intensified immigrant flow. Although the Immigration Act of 1990 attempted to make immigration more skill based, it failed to do so by not restricting the number of immigrants allowed through the Family Reunification Act even more. If in fact, low-skilled natives are being disproportionately impacted as a result of the current immigration policy, it can be argued that the current policy needs to be revised.

Although most other studies of the impact of immigration on low-skilled natives (see discussion above) have concluded that natives are not being significantly impacted by immigration, they are suspect for several reasons. First, they fail to account for the migratory response of natives. As immigrants enter an area, lower-skilled natives have a tendency to migrate out (Frey, 1994). Second, most of the studies assume labor markets to be homogeneous, as opposed to heterogeneous. It is important to allow for heterogeneous labor markets, as it is rather questionable to assume that labor market conditions are the same across cities. Furthermore, allowing for labor market differences across cities over time is also important as cities do not grow equally over time. Third, those studies that are dynamic in nature look at labor market changes over a ten year span, which according to Blanchard and Katz (1992), is too long of a time period. They concluded that it takes a local labor market five to eight years to adjust to an adverse labor demand shock. In order to better understand the impact associated with immigration, one must better understand the migratory response of native workers. Only by accounting for the migratory reaction, and/or by looking at a shorter time span, can one expect to capture the impact associated with immigration on the labor market outcome of natives.

So what type of immigration policy should the United States adapt? It seems clear from this discussion that there is little need to close the borders completely as suggested by Briggs (1975). As the NRC Report (1997) concludes, immigration appears to have a overall net positive impact on natives. Most studies on the adverse impact on income, and unemployment find that immigrants have little to no impact on natives. The

result of this study suggests that low-skilled immigrants do appear to cause low-skilled natives to drop out of the local labor force by either simply giving up their job, and/or by moving to an area deemed more 'desirable' to live in. In any case the, the literature provides little empirical support for closing down the borders. Although the present national makeup of the present immigrant flow may be changing the nationality composition of the United States, it is hard to make the argument that the borders should be closed as a result.

Does the lack of hard empirical evidence on the negative impact of immigration support the view that the borders should be completely opened up? The results of this study suggests that as the immigrant intensity increases, the negative impact associated with immigration increases. This result suggests that if the borders are opened further, the negative impact on natives will intensify. Thus the answer to the question of what immigration policy should be is a difficult one. In deciding what immigration policy should or should not be, one must evaluate at least two things: the humanitarian aspect of immigration, and the economic impact on natives. From the economic perspective, although the overall impact of immigration may be positive, some natives will lose from immigration. The objective of any immigration policy should therefore be to minimize the loss to those who inadvertently will lose from the given immigration policy.

Current immigration policy could be adjusted to include more skilled immigrants to take advantage of any potential across-skill complementarity. Adjusting immigration policy in this way, could balance of the disproportionate burden currently shouldered by low-skilled natives. Changing the current immigration policy in this way, would spread

the burden associated with immigration across a larger group and thus make immigration policy more just.

From a humanitarian aspect, immigration policy should provide the opportunity to potential immigrants to come to the United States for humanitarian reasons. Current immigration policy does provide this opportunity under its Refugee Act, which basically provides the opportunity to those who face religious or political persecutions in their home country to come to the United States. In 1994 about 121,434 individuals were permitted into the country under the Refugee Act., while in 1993 about 127,343 individuals were accepted into the country under the Act. This represent about 1 percent increase in the acceptance of refugees between the two years. In 1994 only about 15 percent of all immigrants accepted into the United States arrived under the Refugee Act which perhaps could be argued, from a humanitarian perspective, to be too little.

It is clear that writing an immigration policy is no simple task. However, in light of the empirical studies that have been performed on the issue, not much change seems to be needed. Starting with the 1990 Amendments, U.S. immigration policy is already beginning to incorporate greater opportunities for people to enter the country based on their skill levels as opposed to on the grounds of family reunification. As more and more immigrants enter the country under the skill category, the apparent disproportional burden placed on less-skilled natives may diminish, making the current immigration policy more just.

Chapter 6

CONCLUSIONS AND FUTURE RESEARCH

"I totally disbelieve in the theory that the prosperity of the United States depends upon the prosperity of the rest of the world. I believe precisely the reverse is true, that the prosperity of the rest of the world....depends upon....the United States."

Merwin K. Hart, President, National Economic Council, Testimony before House Judiciary Subcommittee on Immigration, June 25, 1947

Purpose of the Research

The primary objective of this research was to evaluate the impact low-skilled immigrants have on the labor market outcomes of low-skilled native workers. Although the results are somewhat more conclusive than much of the previous research into the area, the results are consistent with general results of the literature. In particular, low-skilled natives are adversely impacted by the arrival of low-skilled immigrants. This

result is especially apparent in regards to natives' labor force participation as the intensity of the immigrant population increases in an area.

The remainder of this chapter presents a summary of the results in light of the existing literature. How the results presented here impact immigration policy is then discussed, followed by a synopsis of future research.

Summary of Results

A fixed-effects model was used on pooled cross-section time-series data from the 1994-1997 March Supplements to the Current Population Surveys. The analysis was divided into two stages. Stage one evaluated the impact of low-skilled (low-skilled is defined as high school drop outs) immigrants on the labor market outcomes of low-skilled natives residing in the 70 cities reporting the largest low-skilled immigrant fraction. The second stage utilized cities in which more than a quarter of the low-skilled population reported to be immigrants. The second stage included 25 cities. Descriptive statistics were used to provide the means and ranges of the variables in the two samples.

The results of this study are, in most parts, consistent with the results of other studies (see Appendix E). The most significant difference between this study and other studies on this issue is the result on natives' labor force participation rates. No other study has found such strong and convincing results on the labor market outcome of natives. What this result suggests is that studies on the impact of immigration on income and employment opportunities of natives underestimate the true impact due to the apparent reduced labor force participation. If natives respond to immigrant inflow by

dropping out of the labor force, any potential adverse impact on income and/or employment is bound to be missed.

Furthermore, this study evaluates the impact at two levels. First, the impact of immigration is studied for all cities reporting having low-skilled immigrants for all four years of the study. Second, the analysis was repeated for the cities reporting to have more than a quarter of its low-skilled population as immigrants. This is the first study that does this. It is clear from this study that as the immigrant intensity increases, so does the adverse impact associated with immigration. Specifically, the impact on labor force participation rates was clearly considerably larger in the smaller sample. As the immigrant fraction increases by ten percentage points, the impact went from a 4.3% reduction to about 11% reduction in the smaller sample.

It is precisely because of this apparent reduction in the labor force participation rates that it is difficult to capture the true impact on income and unemployment rates. As natives drop out of the labor force, the true impact on other labor market variables is masked. That is, as natives react to immigrant inflows by dropping out of the labor force, it is hard to quantify the adverse impact on either income or unemployment rates. Blanchard and Katz (1994), found that natives respond to adverse labor demand shocks by migrating out of the area. Since immigrant influx represents an adverse labor demand shock, it is not surprising that studies that have focused on natives' income and employment have failed to find consistent adverse impact associated with immigration. Although this study does not attempt to capture this migratory reaction, its results suggest that this is precisely what may happen.

Thus the result of this research indicates that the influx of low-skilled immigrants has an adverse impact on the labor market outcomes of low-skilled native workers. These results are stronger and more conclusive than most other studies done on this issue. The methodology applied in this study gives a new insight into how immigrants affect natives. Although the results of this study are not dramatically different from those of other studies, utilizing the fixed-effects model provides the opportunity to analyze the short-run impact, which is unquestionably the best way to go given the dynamic nature of the labor force. This study thus provides a more convincing conclusion on the labor market impact of immigration.

Policy Implications

The question of what immigration policy should be is a complex one. Since the implementation of the 1965 Amendments to the Immigration and Naturalization Act, several adjustments have been made. In 1986 the Immigration Reform Act was implemented. Primarily, this act provided amnesty and temporary resident status to all illegal aliens who had lived in the U.S. since January 1, 1982. In 1990, the immigration policy was expanded to allow for more skilled immigrants. Basically all changes in immigration policy since the 1965 Amendment have been attempts to increase the number of skilled immigrants, not decrease low-skilled.

Should immigration be limited to only highly skilled individuals or should it take more of an account of the humanitarian perspective as the 1965 Act did? Although this study is not a comprehensive study on the overall impact on immigration in terms of the

fiscal impact or total net impact of immigration, it does suggest that some revisions may be necessary to counter the apparent adverse impact that current immigration policy has on the low-skilled native population. Unless immigration policy is somehow adjusted to account for this disproportional negative impact on the low-skilled, income distribution will become even more unequal. Although immigration represents only one factor contributing to the increased income inequality in the United States, it is one that is relatively amendable by policy control.

It appears that low-skilled natives bear the brunt of the adverse impact of immigration. Furthermore, in light of the impact of low-skilled immigrants on natives in cities where the majority of the low-skilled population are immigrants, some adjustments need to be made. The results of this study suggest that the greater the low-skilled immigrant fraction, the greater the potential negative impact associated with immigrants. Thus, the continued massive influx of low-skilled immigrant labor could lead to continued worsening labor market conditions for low-skilled natives. With this in mind, it may be suggested that the current immigration policy needs to be reevaluated to incorporate more skilled immigrants, or reduce the influx of low-skilled labor. Although a humanitarian based immigration policy is warranted, such a policy needs to be balanced with the economic impact associated with such a policy. It makes little sense to expect the lower-skilled natives to bear the brunt of costs associated with immigration policy.

Future Research

It is clear from this study that in order to capture the impact of immigration on natives' income and unemployment one needs to be able to account for the labor force participation response of natives as well as be able to evaluate the impact over a relatively short time span (even shorter than four years). Blanchard and Katz (1994) clearly point out the importance of accounting for factor mobility in the face of an adverse labor demand shock. Since immigration represents such an adverse shock (assuming natives and immigrants are substitutes in production) any study hoping to capture the full impact of immigration must account in some way for mobility.

Concerning future studies, it would be beneficial to look at first difference in order to account for the dynamic nature of the labor force. This would provide an even better insight into the impact associated with immigration. It would also be interesting to look at the fixed-effects themselves to better understand location choice. Why do immigrants tend to reside in only a few selected cities? Furthermore, it would be interesting to perform a similar analysis on the high-skilled population as most studies on the migratory response of natives concludes that it is primarily low-skilled natives who move out of high immigration areas while high-skilled natives tend to migrate into such areas (Filer, 1992). In order to be better able to suggest an immigration policy, it is vital to understand the impact of immigration on all workers, not just the low-skilled. Moreover, further study is required into areas other than income and employment as natives apparently drop out of the labor force when faced with competition from foreigners. Studying the income

inequality across high-immigration areas may provide additional information as to how immigrants are changing the income dynamics of the United States.

APPENDIX A

CATEGORIES OF ADMITTANCE:

UNADJUSTED AND FISCAL YEAR 1994 LIMITS

Category of admission	1994
All immigrants	804,416
Subject to numerical cap	662,029
Family-sponsored immigrants	463,608
Family-sponsored preferences	*211,961*
Unmarried sons/daughters of U.S. citizens	13,181
Spouses & children of alien residents	115,000
Married sons/daughters of U.S. citizens	22,191
Siblings of U.S. citizens	61,589
Immediate relatives of U.S. citizens	*249,764*
Spouses[1]	145,247
Parents	56,370
Children[2]	48,147
Children born abroad to alien residents	*1,883*
Legalized dependents	34,074

[1] Includes fiances(ees) of U.S. citizens.

[2] Includes children of fiances(ees) of U.S. citizens.

Category of admission	1994
Employment-based immigrants	123,291
Priority workers	21,053
Profs. with advanced degrees or of exceptional ability	14,432
Skilled, professionals, unskilled	76,956
Chinese Student Protection Act	21,297
Others	55,659
Special immigrants	10,4065
Investors	444
Diversity transition	41,056
Not subject to numerical cap	142,387
Amerasians	2,822
Parolees (Soviet Union & Indochina)	8,253
Refugee and asylee adjustments	121,434
Total IRCA legalization	6,022
Resident since 1982	4,436
Special Agricultural Workers	1,586
Other	3,856

Source: 1994 Statistical Yearbook of the Immigration and Naturalization Service, U.S. Department of Justice pp. 20.

APPENDIX B

PERCENT OF IMMIGRANTS ADMITTED BY REGION AND PERIOD:

FISCAL YEARS 1955-1994

Region	1955-64	1965-74	1975-84	1985-90	1991	1992	1993	1994
All regions	100	100	100	100	100	100	100	100
Europe	50.2	29.8	13.4	8.9	7.4	14.9	17.5	20.0
North and West	28.6	11.0	5.2	4.0	1.8	5.3	5.4	6.0
South and East	21.6	18.7	8.1	4.9	5.6	9.6	12.1	14.0
Asia	7.7	22.4	43.3	33.8	19.6	36.6	39.6	36.4
Africa	0.7	1.5	2.4	2.6	2.0	2.8	3.1	3.3
Oceania	0.4	0.7	0.8	0.5	0.3	0.5	0.5	0.6
North America	35.9	39.6	33.6	48.0	66.3	39.4	33.3	33.8
Carribean	7.0	18.0	15.1	12.0	7.7	10.0	11.0	13.0
Central America	2.4	2.5	3.7	7.2	6.1	5.9	6.4	5.0
Other N. America	26.4	19.0	14.8	28.8	52.5	23.5	15.9	15.9
South America	5.1	6.0	6.6	6.2	4.4	5.7	6.0	5.9

Source: 1994 Statistical Yearbook of the Immigration and Naturalization Service, U.S. Department of Justice pp. 21.

APPENDIX C

IMMIGRANTS ADMITTED FROM TOP TWENTY COUNTRIES OF BIRTH:

FISCAL YEAR: 1994

Category of Admission		1994
	All countries	804,416
1.	Mexico	111,398
2.	China, Mainland	53,985
3.	Philippines	53,535
4.	Dominican Republic	51,189
5.	Vietnam	41,345
6.	India	34,921
7.	Poland	28,048
8.	Ukraine	21,010
9.	El Salvador	17,644
10.	Ireland	17,256
11.	United Kingdom	16,326
12.	Canada	16,068
13.	Korea	16,011
14.	Russia	15,249
15.	Cuba	14,727
16.	Jamaica	14,349
17.	Haiti	13,333
18.	Iran	11,422
19.	Colombia	10,847
20.	Taiwan	10,032
	Other	235,721

Source: 1994 Statistical Yearbook of the Immigration and Naturalization Service, U.S. Department of Justice pp. 22.

APPENDIX D

IMMIGRANTS ADMITTED BY DECADE AND SELECTED COUNTRIES OF ORIGIN: 1941-1990 (in thousands)

Decade	United Kingdom	Mexico	Philippines	Other
1941-50	139	61	5	830
1951-60	203	300	19	1,994
1961-70	214	454	98	2,556
1971-80	137	640	355	3,361
1981-90	159	1,656	549	4,974
1941-90	852	3,110	1,026	13,715

Source: 1990 Statistical Yearbook of the Immigration and Naturalization Service, U.S. Department of Justice pp. 28.

APPENDIX E

LIST OF CITIES AND CENSUS CITY CODES:

THE LARGE DATA SET (70 CITIES)

City Code	City	City Code	City
200	Albuquerque, NM	3290	Hickory-Morgantown, NC (Caldwell County not in sample)
240	Allentown-Bethlehem-Easton, PA		
380	Anchorage, AK	3320	Honolulu, HI
520	Atlanta, GA	3360	Houston, TX (Chambers County not in sample)
640	Austin-San Marcos, TX		
680	Bakersfield, CA	3640	Jersey City, NJ
875	Bergen-Passaic, NJ	3760	Kansas City, MO-KS
1080	Boise City, ID	3980	Lakeland-Winter Have, FL
1120	Boston, MA-NH (NH portion not identified)	4120	Las Vegas, NV-AZ (Nye County, NV and Mohave County, AZ not in sample)
1240	Brownsville-Harlingen-San Benito, TX	4480	Los Angeles-Long Beach, CA
1280	Buffalo-Niagara Falls, NY	4560	Lowell, MA-NH (NH portion not in sample)
1520	Charlotte-Gastonia-Rock Hill, NC-SC	4880	McAllen-Edinburg-Mission, TX
1600	Chicago, IL (Dekalb County not in sample)	5000	Miami, FL
1680	Cleveland-Lorain-Elyria, OH	5015	Middlesex-Somerset-Hunterdon, NJ
1880	Corpus Christi, TX	5080	Milwaukee-Waukesha, WI
1920	Dallas, TX	5120	Minneapolis-St. Paul, MN-WI (St. Croix County, WI not identified)
2080	Denver, CO		
2160	Detroit, MI		
2320	El Paso, TX		
2680	Fort Lauderdale, FL	5170	Modesto, CA
2720	Fort Smith, AR-OK	5190	Monmouth-Ocean, NJ
2800	Fort Worth-Arlington, TX	5380	Nassau-Suffolk, NY
2840	Fresno, CA	5600	New York, NY (White Plains Central City recoded to balance of PMSA)
3280	Hartford, CT		

5640	Newark, NJ	7160	Salt Lake City - Ogden, UT
5775	Oakland, CA	7240	San Antonio, TX
5880	Oklahoma City, OK	7320	San Diego, CA
5920	Omaha, NE-IA (Iowa portion not identified)	7360	San Francisco, CA
		7400	San Jose, CA
5960	Orlando, FL	7600	Seattle-Bellevue-Everett, WA
6160	Philadelphia, PA-NJ	8000	Springfield, MA
6200	Phoenix-Mesa, AZ	8120	Stockton-Lodi, CA
6440	Portland-Vancouver, OR-WA	8280	Tampa-St. Petersburg-Clearwater, FL
6480	Providence-Fall River-Warwick, RI-MA (Newport	8480	Trenton, NJ
		8520	Tucson, AZ
6640	County, RI portion suppressed)	8840	Washington, DC-MD-VA-WV (West Virginia portion not identified)
6720	Raleigh-Durham-Chapel	8960	
6780	Hill, NC	9160	West Palm Beach-Boca Raton, FL
6840	Reno, NV		
6920	Riverside-San Bernardino, CA		Wilmington-Newark, DE-MD (Maryland portion suppressed)
	Rochester, NY		
	Sacramento, CA		

APPENDIX F

LIST OF CITIES AND CENSUS CITY CODES:

THE SMALLER DATA SET (25 CITIES)

City Code	City Name	City Code	City Name
200	Albuquerque, NM	5000	Miami, FL
875	Bergen-Passaic, NJ	5600	New York, NY (White Plains Central City recoded to balance of PMSA)
1240	Brownsville-Harlingen-San Benito, TX		
1600	Chicago, IL	6200	Phoenix-Mesa, AZ
1920	Dallas, TX	6440	Portland, OR
2320	El Paso, TX	6720	Reno, NV
2840	Fresno, CA	6780	Riverside-San Bernardino, CA
3320	Honolulu, HI	6920	Sacramento, CA
3360	Houston, TX (Chambers County not in sample)	7320	San Diego, CA
		7360	San Francisco, CA
3640	Jersey City, NJ	7400	San Jose, CA
3980	Lakeland-Winter Haven, FL	8840	Washington, DC-MD-VA-WV (West Virginia portion not identified)
4120	Las Vegas, NV		
4480	Los Angeles-Long Beach, CA		
		8960	West Palm Beach-Boca Raton-Delray Beach, FL

APPENDIX G

SUMMARY OF LITERATURE RESULTS

Study	Impact of Immigration on:	Dependent Variable	Elasticity
Grossman (1982, p 600)	All Natives	Factor Share of Native Workers	-.02
Bean, Lowell, & Taylor (1988, p.44)	Native Mexican Men	Annual Earnings	-.005 to +.05
	Black Men	Annual Earnings	-.003 to +.06
	Other Males	Annual Earnings	-.01 to +.028
	Females	Annual Earnings	-.06 to +.023
Borjas (1990, p.87)	White Native Men	Annual Earnings	-.01 to -.02
	Black Native Men	Annual Earnings	-.03 to -.01
	Women	Annual Earnings	+.02 to +.05
	Young Blacks	Annual Earnings	-.01
	Young Hispanics	Annual Earnings	-.03 to +.02
	Manufacturing Workers	Annual Earnings	-.04
Card (1990)	Less-Skilled Natives	Hourly Wage	Little Impact
LaLonde & Topel (1991, p. 186)	Young Black Natives	Annual Earnings	-.06
	Young Hispanic Natives	Annual Earnings	-.01
	Young Black Natives	Wages	-.024
	Young Hispanic Natives	Wages	-.009
Altonji & Card (1991, p 220)	Less Skilled Natives '70	Weekly Wages	.0467
	Less Skilled Natives '80	Weekly Wages	.018
	for the 4 race/sex groups	Weekly Wages (using instruments)	-1.2
	Low Skilled Black Males	Weekly Wages '70	.074
		Weekly Wages '80	-.153
	Low Skilled White Males	Weekly Wages '70	.264
		Weekly Wages '80	-.178
	Low Skilled Black Females	Weekly Wages '70	1.213
		Weekly Wages '80	.533
	Low Skilled White Females	Weekly Wages '70	.667
		Weekly Wages '80	.397

Hunt (1992)	All Natives	Average Salaries	-1.3
Borjas, Freeman, & Katz (1996) Relative number of immigrants in metropolitan area *j* (I_j / N_j) Relative number of immigrants in metropolitan area *j* and education group k (I_{jk} / N_{jk})	Male Natives Female Natives Male Natives Female Natives	Weekly Wages Weekly Wages Weekly Wages Weekly Wages	-.017 in '80 +.29 in '90 +.45 in '80 +.56 in '90 -.012 in '80 +.135 in '90 +.288 in '80 +.287 in '90
Altonji & Card (1991, p.220)	Less Skilled Natives	Employment-Population Ratio Weeks Worked	-.01 -.062
Borjas (1990, p. 92)	White Native Men Black Native Men	LFPR LFPR	-.01 +.04
Simon, Moore, & Sullivan (1993)	Natives	Unemployment Rate	.001
Thomas Muller & Thomas Espenshade (1985)	Black Natives	Unemployment Rate	-.01
C. Winegarden & Lay Khor (1991)	Young White Natives Young Black Natives	Unemployment Rate Unemployment Rate	.01 -.003

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