
Immigration and Wages: The American Dream and Its Consequences

Heather Cohen
Master of Public Policy

Abstract

The period from January 2000 to March 2005 was the highest five-year period of immigration in U.S. history. The large influx has intensified the national immigration debate, as opponents often assert that immigration depresses wages, especially in those occupations that require little education. I created a simple regression model to determine if immigration has an impact on wages by studying the difference in wages in construction within the same 61 cities over a 5-year period. I have chosen to focus solely on occupations in the field of construction since it has absorbed a disproportionate number of immigrants, both documented and undocumented. The cities that I chose to examine were geographically diverse and had widely varying levels of immigrants in the labor market. I have examined the intervention of immigration by using a pretest-posttest design with statistical controls to account for simultaneous changes in unemployment, poverty, and population. My findings reveal that immigrants have a small positive impact on wages and a negative effect on unemployment.

Immigration Theories

The period from January 2000 to March 2005 was the highest 5-year period of immigration in U.S. history, when approximately 8 million new immigrants settled in the United States, 2.5 million of them undocumented (Camorata 2002; Pew Hispanic Center 2006). The estimated population of undocumented immigrants in the United States reached 12 million in March 2006 (Pew Hispanic Center 2006). The large influx has intensified the national immigration debate, as opponents often assert that documented and undocumented immigration depresses wages, especially in those occupations that do not require formal education. To scholars such as George Borjas, immigrants harm the economic prospects of the Americans with whom they compete (Lowenstein 2006).

The changes in the immigration market have caused the impact of immigration on the host economy to be hotly debated in many countries. (Borjas 1994, 1667). According to George Borjas, the immigration debate focuses on three issues: how immigrants perform in the host country's economy; what impact new immigrants have on the employment of natives; and which immigration policy benefits the host country (Borjas 1994, 1667). Immigrants with high productivity that can quickly adapt to a host country's labor market are thought to increase economic growth while their uneducated, unskilled counterparts are perceived to burden the economy. Moreover, there is a prevalent belief that immigrant masses can adversely impact the employment opportunities of natives (Borjas 1994, 1667). Finally, the choice of the correct immigration policy can have significant consequences for the economy at large. Ultimately, immigration policy should aspire to raise the national incomes of natives (Borjas 1994, 3-22).

The history of immigration in the United States is a checkered one. The first big wave of immigration occurred between 1881 and 1924, when 25.8 million foreigners entered the United States (Borjas 1994, 1667). Congress reacted to this influx by enacting the national-origins quota system in the 1920s in an effort to close the floodgates (Borjas 1994, 1669). The quota system restricted annual immigration from Eastern Hemisphere countries to 150,000 immigrants and allocated visas based on ethnicity (Borjas 1994, 1669). Consequently, 60% of all visas were awarded to German and British applicants (Borjas 1994, 1669).

The 1965 Amendments to the Immigration and Nationality Act repealed the national origin restrictions, increasing the number of allocated visas and making family ties to U.S. residents the key to admittance (Borjas 1994,

1669). The amendments were responsible for a huge increase in immigration and also changed the face of the new immigrant. During the 1950s, over two-thirds of admitted documented immigrants hailed from Europe or Canada (Borjas 1994, 1669). By the 1980s, the number of European and Canadian immigrants dwindled to 13% (Borjas 1994, 1669).

A growing backlash against the steady tide of immigration since the 1965 amendments prompted further action from Congress. In 1986, Congress enacted the Immigration Reform and Control Act (IRCA), which gave amnesty to three million undocumented immigrants and implemented employer sanctions designed to restrict the flow of additional undocumented workers.

The 1965 Amendments markedly increased the number of immigrants originating from Asian and Latin American countries. Because the immigrants that followed were more likely to come from countries with less skilled populations, there was a decline in the relative skills of subsequent immigrant waves. In 1970, the average new immigrant in the United States had 11.1 years of school, similar to the average native worker with 11.5 years of education (Borjas 1995, 3). By 1990, the average immigrant held 11.9 years of education compared to 13.2 for natives (Borjas 1995, 3). There is also a bigger wage disparity between new immigrants and the immigrants of old. Those who immigrated in the late 1960s earned 16.6% less than natives (Borjas 1995, 4). After 1990, the wage disparity between recent immigrants and natives swelled to 31.7% (Borjas 1995, 4).

A disproportionate number of immigrants are high school dropouts, which increases the supply of less-educated workers (Borjas 1996, 246-251). Because economic theory indicates that immigration should lower the wage of competing workers, Borjas views the deluge of unskilled immigrants as a threat to the livelihood of less-skilled Americans (Borjas and Katz 2005, 31). In the 1980s alone, wages and employment-population rate of less-skilled Americans fell relative to those of more-skilled workers (Borjas and Freeman 1991, 1). Borjas estimates that from anywhere from 30% to 50% of the approximately 10-percentage-point decline in the weekly wage of high school dropouts between 1980 and 1988 can be attributed to trade and immigration flows (Borjas and Freeman 1991, 1).

Today, the biggest contingent of immigrants in the United States is Mexican. (Lowenstein 2006). The influx of Mexican immigrants can be traced to the bracero program launched by the U.S. government in 1942. The bracero program was a guest worker initiative designed to address the labor

shortage caused by World War II in the agricultural industry. Five million Mexican-born farm workers were brought to the United States between 1942 and 1964 until the program was ended abruptly by the U.S. government after allegations that the bracero program depressed the wages of native-born Americans in the farm industry (Borjas and Katz 2005, 3). The latest wave of Mexican immigration began in the late 1960s and there is an obvious connection between the end of the bracero program and the beginning of the flow of undocumented immigrants, as measured by the number of Mexicans apprehended by U.S. Border Patrol (Borjas and Katz 2005, 3).

The skill set of the Mexican immigrant workforce is particularly troublesome for poorer, less-skilled Americans. According to the U.S. Census, 67.3% of male native-born workers were high-school dropouts in 1940, compared with 94.6% of Mexican immigrant men and 84.4% of non-Mexican immigrants (Borjas and Katz 2005, 8). In 2000, only 8.7% of Americans failed to complete high school as compared to 63% of Mexican immigrants and 17% of non-Mexican immigrants (Borjas and Katz 2005, 9). In fact, the composition of male high school dropouts in the United States is overwhelmingly Mexican. As a result, Mexican immigrants mainly populate such occupations as laborers, farm laborers, gardeners, and cooks (Borjas and Katz 2005, 11).

In an effort to determine how immigration impacts the employment and earnings of native workers, Borjas designed a labor demand model to simulate the impact of the Mexican immigrant influx on wages of competing workers (Borjas and Katz 2005, 34). Borjas analyzed male workers from the 1980 and 2000 Censuses, classifying them by education and work experience (Borjas and Katz 2005, 34). Overall, the immigrant influx from 1980 to 2000 is estimated to have reduced the wage of the typical native worker by 3.3% (Borjas and Katz 2005, 37-38).

But there is another side to this story, a position that states that immigrants are simply working jobs that would not have existed if immigrants were not here. Immigrants make up 15% of the labor force, yet the country's unemployment rate is at a low of 4.4% (Lowenstein 2006). Economist David Card asserts that the influx of immigrants has very little effect on native wages because immigrants have only slightly lower skills than the native population and tend to move to places with labor demands that can accommodate their supply (Card 1990, 245). Because the demand curve also shifts out, immigrants not only add to the supply of labor but also to the demand since they consume as well. Locales with more immigrants, such as

New York, tend to be more affluent, likely the result of immigrants settling where demand is greatest (Lowenstein 2006).

Card formulated his own natural experiment when he studied the 1980 Mariel boat lift in which 125,000 Cubans immigrants arrived in Miami after Castro declared that Cubans were free to emigrate to the United States from the port of Mariel (Card 1990, 245-6). Half of the Mariel immigrants made Miami their home, resulting in a 7% spike in the labor force of Miami and a 20% increase in the number of Cuban workers in Miami (Card 1990, 245-6). Moreover, there was an increase in labor supply to less-skilled occupations because most of the immigrants were relatively unskilled. A March 1985 mobility supplement survey verified that the Mariel immigrants had less education than the Cuban population. Mariel immigrants also were more represented in the laborer and service occupations and had an unadjusted wage gap of 34% as compared to other Cubans (Card 1990, 248).

Miami also had a large black population (greater than 15%), making it ideal to study the effect of increased immigration on the labor market opportunities of black natives (Card 1990, 246). Despite the influx of unskilled labor, black wages in Miami remained constant from 1979 to 1981, falling in 1982 and 1983, then rising to their previous level in 1984. It is clear from the data that black wages did not fall as a result of the Mariel immigration, and the downturns can be attributed to the 1982-83 recession (Card 1990, 250).

To answer the question of whether the Mariel immigration reduced the earnings of less-skilled natives in Miami, Card designed a linear regression equation for the logarithm of hourly earnings to workers in comparison cities (Card 1990, 251). Explanatory variables included education, experience, gender, and race. The estimated coefficients were used to "form a predicted wage rate for each non-Cuban worker in Miami, and [Card] sorted the sample from each year into quartiles on the basis of predicted wage rates" (Card 1990, 251). If the Mariel immigration had reduced the wages of unskilled natives, a decline in the wage of workers in the lowest skill quartile would have been apparent. However, Card's analysis demonstrated no such decline as the distribution of non-Cubans' wages in Miami was consistently stable from 1979 to 1985 (Card 1990, 252).

Card also points out that despite the rise in immigration, U.S. cities have fewer unskilled workers today than in 1980 (Lowenstein 2006). In fact, America has become so well educated that immigrants merely mitigate the decline in the native unskilled population (Lowenstein 2006). While 24% of

the workforce in cities consisted of dropouts in 1980, by 2000 the rate decreased to 18% (Lowenstein 2006). Data compiled from the 2000 Census reveal that the proportion of immigrants in U.S. cities has nearly doubled since 1980, from 9.5% to 18% (Card 2004, 6). In 1980 and 2000, over one-third of immigrants had less than a high school education (Card 2004, 6). Finally, the fraction of natives with less than a high school education has fallen dramatically, offsetting the inflow of less-educated immigrants (Card 2004, 6).

Interviews with vintners and roofing companies, both of which rely heavily on Mexican labor, reveal that immigrants may have little effect on the economy because businesses operate differently when immigrant labor is available (Lowenstein 2006). Less is spent on machines and more on labor in a scheme known as capital adjusting (Lowenstein 2006). In Southern California, if Mexicans were not available to work at vineyards, some of the grapes would be harvested by machine (Lowenstein 2006). Moreover, Mexican immigrants have revived some occupations that would have foundered in the United States, such as meat processing, which would have closed or moved to Mexico without immigrant labor (Lowenstein 2006). Employers seem to prefer immigrant labor over that of native dropouts because dropping out of high school is the norm in Mexico. In the United States, dropping out of high school often is associated with drug use, a bad work ethic, and even incarceration (Lowenstein 2006). In fact, if you control for the fact that 20% of black males without high school degrees are in jail, Borjas' connection between wages and immigration is made weaker (Lowenstein 2006).

Economist Giovanni Peri asserts that because U.S. and foreign-born workers are not perfect substitutes in terms of education and experience, those that are really hurt by immigration are previous immigrants who compete for the same jobs with the new immigrants (Ottaviano and Peri 2006, 33). The wages of previous immigrants were most negatively affected by immigration, losing an average of 19% of their real wages (Ottaviano and Peri 2006, 27-8). Because immigrants either arrive without a high school degree or with a postgraduate degree, commonly in engineering and science, they tend to occupy vital jobs that are unoccupied by native-born Americans, making their skills complement rather than compete with the American workforce while increasing U.S. productivity (Ottaviano and Peri 2006, 17). Immigrants with little education come to occupy fields in agriculture or services, while their native-born counterparts are employed in manufacturing. Those foreign-born immigrants with high socioeconomic status enter the science, engineering or technology fields, while their U.S.

born counterparts have occupations in the social sciences, education, and law (Ottaviano and Peri 2006, 1). It is not surprising then that the National Research Council found that immigration in the 1980s cut the wages of previous immigrants by 1% to 2% since they tended to be competing with new immigrants for the same low-wage jobs (*Economist* 2004).

Because the debate often focuses on the impact of immigration on less-skilled native wages, my desire was to create a simple regression to address such concerns. My project has sought to determine if immigration has an impact on wages in the occupation of construction. By studying the difference in wages in this select occupation within the same locales over a five-year period, I hope to find an answer to this charged and often convoluted issue.

Hypothesis

I expected that the massive onset of documented and undocumented immigration from 2000 to 2005 would have had little or no effect on wages because of the phenomenon known as capital adjusting. Because construction is one field that has absorbed a disproportionate number of immigrants, I have chosen to focus on occupations in construction and extraction, such as drywall, carpentry, roofing, and marble setting. While Census data often fail to furnish accurate accounts of undocumented workers, the 2005 Current Population Survey reports that the construction industry employs the largest share of the nation's 7.2 million undocumented workers (Pew Hispanic Center 2006). Hiring undocumented immigrants is an easy feat for supervisors since two out of three establishments in the construction industry employ fewer than five people and the industry has a large number of self-employed workers (U.S. Dept. of Labor 2006). Scrutiny of wages in construction thus will shed some light on the wage implications of documented and undocumented immigration.

There is also reason to believe that data from the Bureau of Labor Statistics do include earnings by undocumented immigrants. As a result of the Immigration Reform and Control Act of 1986, which set penalties for employers who knowingly hired undocumented immigrants, such workers have been forced to buy fake social security numbers to get a job (*New York Times* 2005). The Social Security Administration started an "earnings suspense file" in the 1980s after a flood of W-2s with incorrect Social Security numbers (*New York Times* 2005). In 2002 alone, 9 million W-2's with incorrect Social Security numbers landed in the suspense file, accounting for \$56 billion in earnings, or about 1.5% of total reported wages

(*New York Times* 2005). Social Security's chief actuary Stephen C. Goss claims, "our assumption is that about three-quarters of undocumented immigrants pay payroll taxes" (*New York Times* 2005). According to an analysis by the Government Accountability Office, about 17% of the businesses with inaccurate W-2's were restaurants, 10% were construction companies and 7% were farm operations. Because the Bureau of Labor Statistics produces occupational employment and wage estimates by surveying employers, it is more than likely that such data could include employment statistics for undocumented immigrants with doctored Social Security numbers.

My outcome variable is recorded hourly mean wages in construction in 2005 using the Bureau of Labor Statistics Occupational Employment Statistics (Bureau of Labor Statistics 2006). My units of analysis (n) are 61 metropolitan areas with varying levels of immigration (U.S. Census Bureau 2002). I also employ a pretest to determine hourly mean wages in construction in 2000 for those same 61 metropolitan areas.

Research Design

I am using a pretest-posttest design with statistical controls to account for confounding variables. I am using a mix of quasi-experimental and non-experimental designs. My design is a quasi-experiment which compares the same group before and after the treatment by including a pretest and a posttest observation (Langbein and Felbinger 2006). My experiment cannot be considered a randomized field experiment since it is infeasible and unethical to randomly assign immigrants. Because the pretest-posttest design cannot control for changes over time that are not due to immigration, I have added statistical controls for simultaneous changes in unemployment, poverty, and population. However, the statistical controls I have incorporated make my design a non-experiment as well. The non-experiment typically utilizes statistical controls for Z variables to see if X has an impact on Y once confounding variables are held constant (Langbein and Felbinger 2006).

I wish to examine the intervention of immigration through my experiment. My treatment variable is the percentage of people who are foreign born within 61 cities in 2004, courtesy of the U.S. Census Bureau (2002). I have included a pretest of hourly mean wages in 2000 in the occupational field of construction along with a posttest of the hourly mean wages in 2005, which is also my outcome variable (Bureau of Labor Statistics 2006). My statistical

controls include variables for changes in unemployment, poverty, and population.

Wages are largely a function of supply and demand. A tight labor market can produce an increase in wages across the board, as the current economic conditions demonstrate (*Wall Street Journal* 2006). Therefore, I thought it would be useful to control for unemployment in those 61 cities since unemployment is one measure for supply. Unemployment rates were garnered from the Bureau of Labor Statistics Unemployment Rates for Metropolitan Areas in 2000 and 2005 for the 61 metropolitan areas studied (Bureau of Labor Statistics 2005).

Conversely, high poverty rates can put downward pressure on wages. While low wages are assumed to be the catalyst for poverty, new research by Joseph Sabia and Richard Burkhauser (2005) supports the idea that factors such as working fewer hours and supporting large families are more responsible for poverty than low wages. Poverty in 2000 and 2005 was measured by the percentage of people living below the poverty line in the 61 metropolitan areas according to the U.S. Census Bureau (2000).

Population growth can also have an impact on wages since it changes the composition of the labor force. Economic growth can be maintained by a one to 2% annual increase in labor force growth as well as a 2% increase in productivity, or output per labor hour. While population growth would seem to have a positive impact on wages, there is one important caveat. Growth in GDP per capita only can be attained when growth in output exceeds population growth. If a population increase leads to higher productivity of U.S. workers, then a wage increase theoretically can follow. Moreover, population growth in an aging society such as the United States can have a positive influence on the economy. Population data were recorded for the 61 metropolitan areas in 2000 and 2005, courtesy of the U.S. Census Bureau (2005).

Immigration and Wages

My regression model is as follows:

$$Y_{it} = a + bX_i + cY_{it-1} + Dz_i + Ez_i + Fz_i + e_i$$

- Y_{it} = posttest score/hourly mean wages for 2005
- a = value of it if $X=0$ (if immigration does not impact wages)
- b = change in posttest/hourly mean wages with impact of immigration
- c = impact of pretest on posttest
- X = treatment status dummy
- Y_{t-1} = pretest score/constant mean wages for 2000
- Dz = estimate of impact of unemployment on Y
- Ez = estimate of impact of population on Y
- Fz = estimate of impact of poverty on Y
- e = error

Findings

First, I examined the descriptive statistics for my variables, as seen in table 1. Mean wages, mean unemployment, and mean population in 2005 are higher than their 2000 counterparts, a logical result considering that an increasing population can lead to higher wages and more unemployment. The mean of the poverty rate variable, on the other hand, has actually decreased from the year 2000 to 2005, which is slightly counterintuitive when considering the booming economy of 1999-2000. The range of immigration in 2004 in the 61 cities studied is interesting as its minimum is 3.8 (Louisville), while its maximum is 58.7 (Miami) (U.S. Census Bureau 2002). It is clear when examining the immigration data that there are immigration hotspots such as Los Angeles and New York where previously established ethnic enclaves attract hordes of new immigrants. It also is apparent that most of these immigration hotspots are far from economically disadvantaged as they make up some of the most expensive housing markets in the country (San Francisco, San Jose, Boston, New York) (CNN 2006).

My first regression equation uses dollars of 2005 hourly mean wages in construction (Y) as the dependent variables and the immigration rate for the 61 cities in 2004 (X), hourly mean wages in construction in 2000 (Y_{t-1}), unemployment rate within the 61 cities in 2005 (Z_1), population rate in the 61 cities (Z_2), and poverty rate for the 61 cities (Z_3) as the independent variables. When I regress 2005 mean wages on the 2004 immigration rate, 2000 mean wages, 2005 unemployment rate, 2005 population rate and 2005 poverty rate while controlling for heteroscedasticity, I obtain the results in table 2.

Immigration and Wages

Table 1. Descriptive Statistics

Variable	Obs.	Mean	Standard Deviation	Min.	Max.
Hourly Wage in 2000	62	17.0621	3.46018	11.13	24.7
Hourly Wage in 2005	62	18.91661	3.792281	11.37	25.98
Unemployment in 2000	62	4.01129	1.357204	2.4	10.4
Unemployment in 2005	62	5.156452	1.149286	2.7	9.0
Population in 2000	62	2,400,829	2,703,893	30,096	1.84e+07
Population in 2005	62	2,530,509	2,777,334	29,530	1.87e+07
Immigration in 2004	61	16.37213	12.44063	3.8	58.7

Table 2. The Impact of Independent Variables on Hourly Wage in 2005

Dependent Variable	Obs.	F-stat. (5, 55)	Prob. > F	R-squared	Root MSE
Hourly Wage in 2005	61	256.50	0.00	0.9631	0.75399
Independent Variable	Coefficient	Robust Std. Error	t-stat	P-value	95% Confidence Interval
Immigration in 2004	0.0174431	0.0073462	2.37	.021	[0.002721, 0.0321652]
Hourly Wage in 2000	1.050205	0.0386184	27.19	.000	[0.9728116, 1.127597]
Unemployment in 2005	0.0791781	0.1287782	0.61	.541	[-0.1788992, 0.3372554]
Population in 2005	-3.85e-08	5.60e-08	-0.69	.494	[-1.51e-07, 7.37e-08]
Poverty in 2005	-0.0522552	0.0398561	-1.31	.195	[-0.1321286, 0.0276182]
Constant	1.09087	0.8372179	1.30	.198	[-0.5869518, 2.768693]

Only two variables, immigration rate in 2004 and hourly mean wages in 2000, are statistically significant at a .05 level of significance. Every 1% increase in immigration increases hourly mean wages for construction in 2005 by 0.017%, holding other included variables constant. A \$1.00 increase in hourly mean wages for construction in 2000 increases the hourly mean wages in construction for 2005 by \$1.05, holding other included variables constant. An R-squared of 0.96 shows that 96% of the variation in 2005 mean construction wages can be explained by the included independent variables.

A second regression of the 2005 unemployment rate in construction on the 2004 immigration rate for the 61 cities, 2000 unemployment rate for the 61 cities, 2005 hourly mean wages for construction, 2005 population rate for the 61 cities and the 2005 poverty rate for the 61 cities, yields the results presented in table 3.

Table 3. The Impact of Independent Variables on Unemployment in 2005

Dependent Variable	Obs.	F-stat. (5, 55)	Prob > F	R-squared	Root MSE
Unemployment in 2005	61	34.10	0.00	0.6295	0.73646

Independent Variable	Coefficient	Robust Std. Error	t-stat	P-value	95% Confidence Interval
Immigration in 2004	-0.0265133	0.0088542	-2.99	.004	[-0.0442576, -0.0087691]
Unemployment in 2000	0.5194018	0.1045232	4.97	.000	[0.3099326, 0.7288711]
Hourly Wage in 2005	0.0536484	0.0398074	1.35	.183	[-0.0261275, 0.1334242]
Population in 2005	-7.08e-09	3.49e-08	-0.20	.840	[-7.71e-08, 6.29e-08]
Poverty in 2005	0.0718913	0.0480394	1.50	.140	[-0.0243818, 0.1681644]
Constant	1.574092	0.9104777	1.73	.089	[-0.2505455, 3.39873]

The results show that both the 2004 immigration rate and 2000 unemployment rate are statistically significant at a .05 level of significance.

A 1% increase in the 2004 immigration rate decreases the unemployment rate in 2005 by 0.027%, holding other included variables constant. Moreover, a 1% increase in the unemployment rate in 2000 will increase the rate of unemployment in 2005 by 0.52%, holding constant other included variables. An R-squared of 0.63 reveals that 63% of the variation in 2005 unemployment levels can be explained by the included independent variables.

Interpretation

According to the results, the presence of immigrants does have an impact, albeit small, on wages and unemployment. Naturally, cities with high unemployment in 2000 continue to have high levels of unemployment in 2005. Moreover, mean wages in 2000 have more than a passing influence on mean wages in 2005.

More notable is the fact that the presence of immigrants puts downward pressure on unemployment. This is consistent with a recent report from the Bureau of Labor Statistics, which found that immigrants have lower unemployment rates than native-born Americans. In 2005, foreign born workers had a 4.6% unemployment rate as compared to 5.2% for native-born workers (*Business Week* 2006).

But the most startling discovery is the fact that immigrants have a small positive but statistically significant effect on wages. In a flexible economy, such as in the United States, the labor market adjusts to an increase in the supply of workers by creating more jobs. Immigrants have added to the labor productivity of the United States, increasing wages in the occupations in which they participate. My results demonstrate that immigrants shift the demand curve outward more than they shift the supply curve downward since they also consume goods and services. In other words, when immigrants settle in the United States, neighborhoods are transformed, investments are made, and new businesses cater to the new population, stimulating economic growth and expanding our production possibilities.

Conclusions

The pretest-posttest design with statistical controls is vulnerable to certain threats to internal validity such as history and maturation. This is because it is virtually impossible to isolate the impact of immigration from any underlying trends using the pretest-posttest single group design. I have tried to mitigate threats to internal validity by incorporating statistical

controls for influencing variables such as unemployment, population growth, and poverty. However, there is a chance that several variables are omitted and not controlled for, therefore biasing my parameter estimates. If omitted variables are not being held constant for the calculation of the other coefficients, the expected value of the estimated coefficients could be forced away from the true value of the population coefficient. Typically, theory is used as the primary guide, which is problematic since the theory is quite convoluted in this case. While I have many insignificant coefficient estimates, my R-squared is quite high and it is difficult to predict the correct coefficient signs because the theory in this area is not very useful.

My experiment may also suffer from a history threat. It is possible that something other than increasing immigration has increased wages in construction. Because wages are a result of supply and demand, I have tried to control for the supply of workers as measured by the unemployment rates in the 61 cities. Unfortunately, unemployment alone may not fully explain the dynamics of labor supply, especially when considering the labor status of undocumented immigrants who probably would not file for unemployment. History threats such as an increase in demand for construction as a result of the housing boom could have also had an upward effect on construction wages in 2005.

Maturation threats may also abound in this design. The outcome variable could be affected by a long-term underlying trend other than immigration (Langbein and Felbinger 2006, 95). Changes in construction wages from 2000 to 2005 could have been due to normal economic growth. Inflation, rather than immigration, could have played a major role in driving up wages. The aggregate inflation rate from January 2000 to January 2005 was 12.97%, a figure which could easily explain the average 11% increase in wages between the years (InflationData.com 2006). It also is likely that wages grew at a faster rate in some urban areas as compared to others and that those outliers might skew my results. Alternatively, in those five years, construction workers who entered at an entry level position may have also moved up in the ranks and earned a higher wage. This is in keeping with Peri's theory that if enough immigrants enter construction, a few native workers will be promoted because with more crews there is a greater demand for foreman, who will more likely be natives (Lowenstein 2006).

Increases in cost of living may represent a maturation threat. Among U.S. cities, New York is the most expensive city to live in along with Chicago, San Francisco, and Los Angeles, while Pittsburgh is considered the cheapest (CNN 2004). Although my results present average wage increases, it may

not be a normal distribution across the country since large wage increases in more expensive cities may be so positively skewed that they do not offset the lower increases in less expensive cities.

Finally, regression artifacts, which refer to the tendency of extreme scores to revert to the mean, could impact the experiment. Construction earnings are higher than the average for all industries in the private sector. In 2004, the typical construction worker averaged \$19.23 an hour, but each individual's salary depends largely on his or her level of skill. Workers with higher skills such as electricians (\$19.09 an hour) generally earn more than less-skilled laborers (\$12.50 an hour) (U.S. Dept. of Labor 2006). Those with more education and experience earn higher wages as well. In addition to the discrepancies in wages, earnings are also affected when poor weather prevails and construction workers are prevented from working (U.S. Dept. of Labor 2006). Winter presents many problems for construction and is generally an inactive season for the occupation (U.S. Dept. of Labor 2006). Subjects that come from high earning groups are more likely to have their earnings regress toward the mean.

Reliable measurement increases statistical validity and reduces the likelihood of Type I or Type II errors. Measurement reliability does not require multiple indicators in this case since mean wages, population, and poverty data provided by the Bureau of Labor Statistics and Census Bureau are quite reliable. The fact that earnings, population, and poverty statistics are easy to measure also adds to the statistical validity.

Randomness in human behavior could threaten the model's statistical validity. If the stochastic term is too large, it will be more difficult to isolate the effects of immigration on wages from random patterns (Langbein and Felbinger 2006, 65). By including pretest scores of wages in 2000, I have reduced the random component of human behavior and enhanced the statistical validity. Because I am simply comparing the impact of immigration on theoretically the same group after a five year period, I did not use a comparison group, and therefore do not have to contend with any selection threats.

Implications

My estimates show that immigrants, both documented and undocumented, have a positive effect on hourly wages and employment. The labor market has adjusted to the increase in the supply of workers by creating more jobs. In turn, immigrants have stimulated economic growth by consuming more

goods and services. The findings have important implications for not policymakers at large. Contrary to popular belief, immigration does depress wages, even in occupations that require little skill.

Works Cited

- Borjas, George, and Richard Freeman. 1991. On the Labor Market Effects of Immigration and Trade. National Bureau of Economic Research Working Paper No. 3761 (June): 1-33.
- Borjas, George. 1994. The Economics of Immigration. *Journal of Economic Literature* 32 (4): 1667-1717.
- . 1995. The Economic Benefits from Immigration. *The Journal of Economic Perspectives* 9 (2): 3-22.
- Borjas, George et al. 1996. Searching for the Effect of Immigration on the Labor Market. *The American Economic Review* 86 (May):246-251.
- Borjas, George, and Lawrence Katz. 2005. The Evolution of the Mexican-Born Workforce in the United States. National Bureau of Economic Research Working Paper No. 11281 (April): 1-63.
- Bureau of Labor Statistics. 2006. Occupational Employment Statistics. http://data.bls.gov/oes/search.jsp?data_tool=OES.
- Bureau of Labor Statistics. 2005. Unemployment Rates for Metropolitan Areas. <http://www.bls.gov/lau/lamtrk05.htm>.
- Burkhauser, Richard V., and Joseph J. Sabia. 2005. Raising the Minimum Wage: Another Empty Promise to the Working Poor. Employment Policies Institute.
- Camarota, Stephen. 2005. *Immigrants at Mid-Decade*. Washington, DC: Center for Immigration Studies.
- Card, David. 1990. The Impact of the Mariel Boatlift on the Miami Labor Market. *Industrial and Labor Relations Review* 43 (2): 245-257.
- . 2004. Is the New Immigration Really So Bad? National Bureau of Economic Research IZA Discussion Paper No. 1119 (Apr.): 1-29.
- CNN. 2004. World's Most Expensive Cities. <http://money.cnn.com/2004/06/11/pf/costofliving/>.
- CNN. 2006. Most Expensive Housing Markets. http://money.cnn.com/pf/features/lists/hpci_data/index.html.
- Economist*. 2004. Myths and Reality, Feb. 28.
- InflationData.com. 2006. Inflation Rate Calculator. <http://inflationdata.com/Inflation/InflationRate/InflationRateCalculator.asp#results>.
- Langbein, Laura and Claire L. Felbinger. 2006. *Public Program Evaluation: A Statistical Guide*. New York: M.E. Sharpe.

- Lowenstein, Roger. 2006. The Immigration Equation. *New York Times*, July 9.
- Massey, Douglas S. and Z. Liang. 1989. The Long-Term Consequences of a Temporary Worker Program: The U.S. Bracero Experience. *Population Research and Policy Review* as cited in Borjas, George, and Lawrence Katz. 2005. The Evolution of the Mexican-Born Workforce in the United States. National Bureau of Economic Research Working Paper No. 11281 (April).
- New York Times*. 2005. Illegal Immigrants are Bolstering Social Security with Billions, April 5.
- Ottaviano, Gianmarco, and Giovanni Peri. 2006. Rethinking the Effects of Immigration on Wages. National Bureau of Economic Research Working Paper 12497 (August): 2-53.
- Pew Hispanic Center. 2006. The Labor Force Status of Short-Term Unauthorized Workers. <http://pewhispanic.org/files/factsheets/16.pdf>.
- Pew Hispanic Center. 2006. Fact Sheets: Estimates of the Unauthorized Migrant Population for the States, <http://pewhispanic.org/files/factsheets/17.pdf>.
- U.S. Census Bureau. 2000. American Community Survey: Percent of People Living Below the Poverty Level. <http://www.census.gov/acs/www/Products/Ranking/2000/R01T160.htm>.
- U.S. Census Bureau. 2002. Places Within United States: Percent of Population that is Foreign Born. http://factfinder.census.gov/servlet/GRTTable?_bm=y&-geo id=01000US&- box head nbr=R0501&- ds name=ACS 2004 EST G00 &-redoLog=false&-format=US-32&- mt name=ACS 2002 EST G00 R15 US32&-CONTEXT=grt.
- U.S. Census Bureau. 2005. July 1, 2005 Population Estimates for Metropolitan, Micropolitan and Combined Statistical Areas 2000-2005. <http://www.census.gov/population/www/estimates/Estimates%20pages final.html>.
- U.S. Dept. of Labor. 2006. Career Guide to Industries: Construction. <http://www.bls.gov/oco/cg/cgs003.htm>.
- Wall Street Journal*. 2006. Jobs Data Keep Economic Optimists Smiling; Payroll Gains Indicate Solid Growth Despite Slump in Auto, Housing Industries, December 9.

Dimensions of Public School District Consolidation

Kate McGreevy

Candidate, Master of Public Administration

Abstract

Public school district consolidation is investigated in this paper, with a focus on the ramifications of consolidation for rural districts in particular. A general review of the current state of public education provides the backdrop for a discussion that includes defining consolidation and its history and exploring the modern context, as viewed through two lenses: 1) federalism and competition, and 2) the interests of rural communities. The heart of the paper outlines the benefits and concessions of consolidation, with an emphasis on factors such as economies of scale, efficiency, cost, and student performance. Finally, the paper concludes with an analysis of consolidation tradeoffs, a consideration of mitigating factors that might affect consolidation going forward, as well as a brief look at public charter schools to frame the concept of consolidation in a modern, everyday policy dilemma.