Immigration and the Labor Market

George J. Borjas
Harvard University

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1. Introduction

One of the most contentious issues in the immigration debate is what happens to the job opportunities of native-born workers after immigrants enter the labor market. Economic theory has straightforward implications about what we should expect: immigration should lower the wage of competing workers and increase the wage of complementary workers.

For example, an influx of foreign-born laborers reduces the economic opportunities for laborers—all laborers now face stiffer competition. At the same time, employers and high-skill natives may gain. Firms pay less for the services that laborers provide, and high-skill natives can specialize in producing the goods and services that better suit their skills. The theory also suggests that over time, as the economy adjusts to the immigrant influx, the effect of immigration on the wage of the *average* worker will be attenuated, but the distributional impact will remain.

In addition to these distributional consequences, there is another important reason for caring about the wage effect of immigration: the net gains to the U.S. economy directly depend on how immigration affects wages. An important implication of the laws of supply and demand is that the greater the distributional wage effect, the greater the economic gain from immigration.

This essay reviews what it is we know about the labor market impact of immigration, both in terms of the distributional wage effects and the economic gains. It is important to stress that there is a lot of confusion (and sometimes deliberate confusion) regarding these estimates, so that it is important to look carefully at the details behind various claims.

The evidence suggests that immigration depresses the wage of the workers who are most likely to compete with the immigrants. A useful rule of thumb is: If immigrants increase the supply of workers in a particular skill group by 10 percent, the wage of that group probably goes down by at least 3 percent.

Because so many of the immigrants who entered the United States in the past two decades were low-skill, this means that those most affected by immigration were pre-existing low-skill workers (both native- and foreign-born). It is important to add, however, that the evidence also suggests that the wage of high-skill workers in specific occupations targeted by immigrants (such as the high-tech sector) has also been negatively affected by immigration. Finally, the economic gains from immigration accruing to natives are relatively small—less than three-tenths of one percent of GDP, or roughly around $50 billion annually.
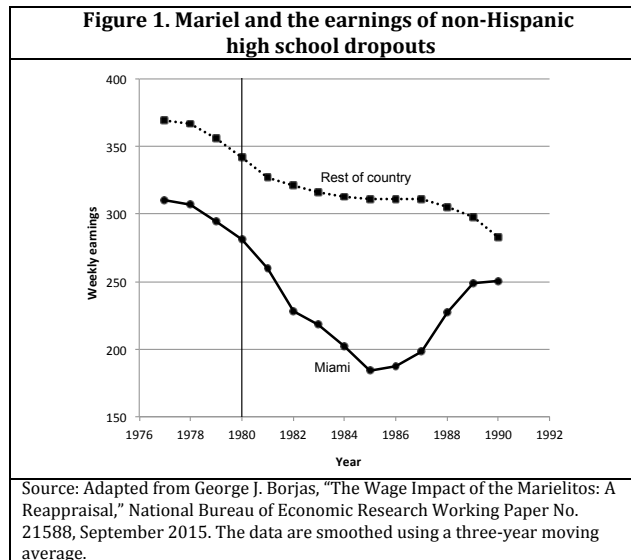
2. Local Labor Markets

Many of the studies that measure the labor market impact of immigration compare how workers do in different cities. If immigration lowers the wage of native workers, one would expect that natives living in cities that received many immigrants are worse off than natives living in cities that immigrants bypassed.

The most influential study of how immigration affects local labor markets is Card's (1990) study of the Mariel supply shock. Within a span of just a few weeks, over 100,000 *Marielitos* arrived in Miami in the spring of 1980. Card compared labor market conditions in Miami with those in other cities before and after Mariel. He could not detect any impact on the wage of Miami's workers, leading to the perception that natives have little to worry about from expanded immigration.

Last spring, as I was writing *We Wanted Workers: Unraveling the Immigration Narrative*, a book that will be published later this year, I decided to revisit the Mariel episode to see for myself what the data actually show. After all, we have learned a lot about how to think about and measure the labor market impact of immigration in the past quarter-century. This additional research suggests that it is very important to carefully match the skills of immigrants to the skills of natives in order to see if the group most likely to be affected by immigration was indeed affected. Nearly two-thirds of the *Marielitos* were

high school dropouts, increasing the number of low-skill workers in Miami by almost 20 percent within a matter of weeks. It seems that if Mariel was going to have an impact, it would have an impact on the low-skill labor market. Remarkably, Card did not specifically examine that market and neither did anyone else in the past 25 years.

It is easy to show that something did happen in post-Mariel Miami. I looked at wages in a sample of prime-age (25-59 years old), non-Hispanic men who lacked a high school diploma. Figure 1 shows the 3-year moving average in the average weekly wage for this group between 1977 and 1990, and contrasts it to the wage trend of similar workers in the rest of the country. It is obvious that something did happen in Miami beginning around 1980, with the low-skill market bottoming out in 1985 and recovering by 1990.

Figure 1. Mariel and the earnings of non-Hispanic high school dropouts

Source: Adapted from George J. Borjas, "The Wage Impact of the Marielitos: A Reappraisal," National Bureau of Economic Research Working Paper No. 21588, September 2015. The data are smoothed using a three-year moving average.

Although my Mariel study was released publicly in September 2015, the striking evidence has already inspired rebuttals. Let me discuss the Peri and Yasenov (2015) rebuttal in detail, as it provides a good example of how the evidence can be altered by what David Frum calls "data dredging on an industrial scale." This data dredging helps to confuse the issue and to draw attention away from what actually happened.

The main criticism of my analysis is that it is based on a small sample of workers, a fact that I explicitly acknowledge in my paper. There are only around 20 or so workers per year in my sample, which is why Figure 1 shows a 3-year moving average of the data, so that each data point is based on a sample of around 60 observations.

But there is an alternative and very convincing way of showing that something did indeed happen in Miami even when the sample is larger. Let's pool the data for the years between 1976 and 1979, and call it the "before" period. Similarly, let's pool the data for the years between 1981 and 1986, and call it the "after" period. How does the before-after wage drop experienced by Miami's low-skill workers compare to the wage change experienced by comparable workers in other cities at that time? Figure 2 shows the distribution of wage changes across all cities. The wage drop experienced by Miami's low-skill workers was the *largest* drop seen in any local labor market in the United States.

Figure 2. Distribution of Before-After Wage Changes Across Cities

Source: Borjas (2015).
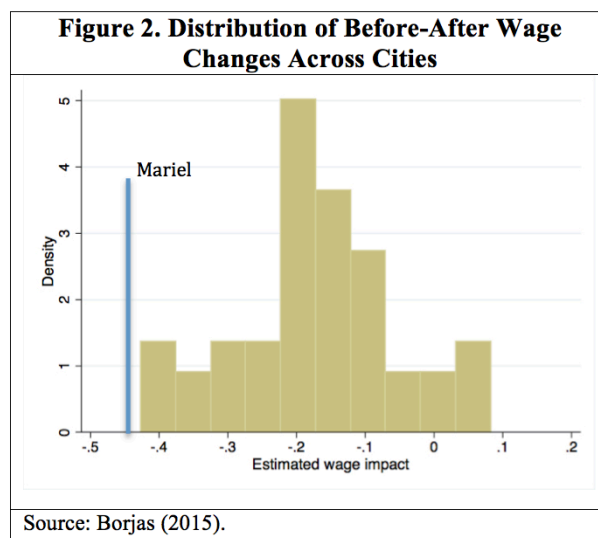
My analysis focused on what happened to non-Hispanic men aged 25-59. This sample was constructed to resemble the "native" workforce in Miami. Peri and Yasenov argue that we should instead look at a sample composed of all non-Cuban workers aged 16-61, which would help to increase sample size. But larger is not necessarily better, particularly in this context.

Think, for example, of what happens when we add Hispanics into the analysis. Many of the Hispanics we would add were immigrants who arrived in the 1980s, such as the large Mexican influx into Southern California. This means that the "average person" in the data is changing over time because we are adding new workers who have very low wages. This change in sample composition will inevitably distort wage trends.

Similar problems arise when we add women to the sample. The labor force participation of women was rising very rapidly in the 1980s, so that the characteristics of

the average person is again changing over time, with a corresponding change in the average wage.

Finally, Peri and Yasenov look at workers aged 16-61, and this is a particularly weird data manipulation. Among adult workers, a high school dropout is someone who lacks a high school diploma. But that definition, when applied to teenagers, means that 16, 17, and 18-year-olds who are sophomores, juniors, or seniors in high school are classified as high school dropouts because they do not yet have that diploma. Let me emphasize: All teenagers, whose earnings consist mainly of what they get in part-time and summer jobs, are part of the low-skill group. There are so many high school students who are being lumped with the real high school dropouts that they fatally contaminate the analysis.

2. The national labor market

The fact that it is important to match the skills of immigrants with the skills of natives to measure the labor market impact of immigration was first emphasized in a paper I published in 2003. In that paper, I tracked specific groups of workers across decades to see how their wages changed as the surge in immigration was taking place.

The empirical approach is easy to explain: We can observe long-term wage trends in the U.S. labor market for specific skill groups (e.g., high school graduates in their late 20s or college graduates in their early 50s). We can then attempt to determine if these trends are correlated with the entry of immigrants into that particular skill group. Presumably, those skill groups that experienced the largest supply shocks would be the ones where wages either fell the most or grew the least.

I classify workers into 40 distinct skill groups (5 education groups and 8 age groups) and use data from 1960 through 2010. Figure 3 shows the link that exists between trends in the wages of native-born workers and the changes in the number of immigrants within these schooling-age cells. The figure suggests a negative relation between the growth in weekly earnings and immigration. Put simply, weekly earnings in any particular decade grew most for workers in the skill groups least affected by immigration in that decade. If we use a regression model to estimate the wage impact implied by the data

scatter, a 10 percent increase in the size of a skill group reduces the wage of that group by 3 to 4 percent.

Figure 3. Earnings of native workers and immigration, 1960-2010

Source: Borjas (2014), p. 95.
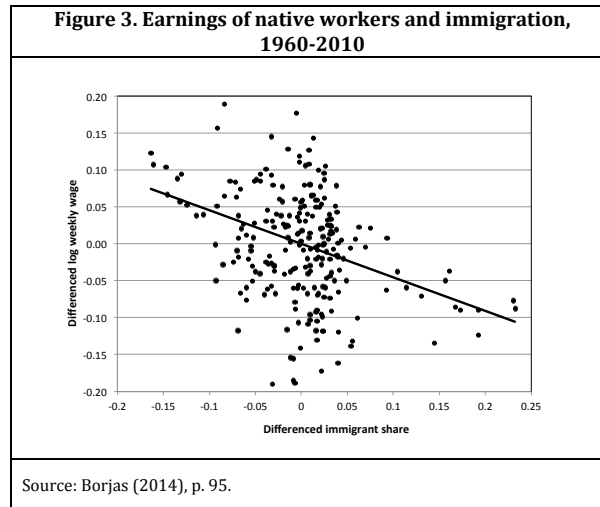
There is, however, one problem with the evidence reported in Figure 3 and in Miami's wage trends before and after Mariel. They look at the impact of immigrants on the wage of similar workers, but ignore that immigrants also influence the wage of workers who are different. For instance, low-skill immigrants will likely affect the wage of high-skill workers, and it is important to take these complementarities into account.

The problem with measuring the complementarities is that the exercise quickly becomes intractable. I used 40 skill groups to derive the data scatter in Figure 3. If every one of those groups were to affect the wage of every other group, there would then be 1,600 (or 40×40) wage effects to measure.

To measure the complementarities, therefore, it is crucial to reduce the dimensionality of the problem. The standard approach is to write down a mathematical model of a hypothetical economy, and then stream the data in Figure 3 through that model. This would let us "visualize" what would happen in the short run (immediately after the supply shock) and in the long run (after natives make all possible adjustments to immigration). It is important to point out that any such exercise depends crucially on the assumptions that are used to construct the hypothetical economy.

To simplify, I will focus on what happens to the wage of high school dropouts using the various assumptions that are now commonly used in the academic literature. Table 1

summarizes what the model would imply if all the immigrants who entered the country between 1990 and 2010, a supply shock that increased the size of the workforce by about 10 percent, were to arrive in a single instant.

Table 1. Percent wage effects on high school dropouts in alternative scenarios, after accounting for complementarities			
	Basic simulation	Allows for carbon-copy complementarity	*Plus* assuming high school dropouts and graduates are productive clones
Native high school dropouts:			
Short run	-6.3	-4.9	-2.1
Long run	-3.1	-1.7	1.1
Source: George J. Borjas, *Immigration Economics* (Cambridge: Harvard University Press, 2014), pp. 120, 126.			

In my original 2003 paper I assumed that all workers who "looked alike"—that is, who had the same education and were the same age—were productive clones (or "perfect substitutes"). The results reported for the basic simulation in Table 1 imply that the wage of high school dropouts would then fall by 3 to 6 percent—even after accounting for all potential complementarities allowed by the model.

Ottaviano and Peri (2012) argue that "look alike" natives and immigrants are not productive clones—that somehow they are complements. Put simply, the entry of a 30-year-old high school dropout from Mexico makes a comparable 30-year-old African American more productive. The second column of Table 1 shows that allowing for such "carbon-copy" complementarities still implies a decline of between 2 and 5 percent in the wage of high school dropouts.

Of course, whether such complementarities exist or not is a different matter. A recent survey by Lewis (2013, p. 169, emphasis added) concludes that "there is a *very* modest degree of imperfect substitutability" between immigrants and natives. Let me rephrase: The empirical evidence on the existence of carbon-copy complementarities is *very* weak.

The assumption that will alter the nature of the evidence redefines what we mean by "low skills." In my original 2003 study, I assumed that high school dropouts and high school graduates were in different skill groups. But what would happen if, as Card (2009)

proposed, high school dropouts and high school graduates were productive clones instead? We could then pool these two groups into a *very big* low-skill workforce, greatly diluting the impact of immigration on the workers at the very bottom of the skill distribution.

As the last column of Table 1 shows, this additional assumption overturns the conclusion that low-skill immigrants lowered the wage of low-skill workers. Of course, whether this assumption is true or not is questionable, and the Mariel evidence suggests that it is false. If the two groups were productive clones, we would expect that the *Marielitos* would have the same wage effect on both groups. As Borjas (2015) shows, however, the *Marielitos* lowered the wage of high school dropouts but did not lower the wage of high school graduates.

Let me conclude by highlighting an incongruity in the two arguments that have been used to "produce" a weaker wage impact of immigration: (a) carbon-copy immigrants and natives are complements; and (b) high school dropouts and high school graduates are clones. The cognitive dissonance in the two assumptions is often overlooked. It requires a belief that somehow workers who most of us view as different (high school dropouts and high school graduates) are identical; while workers who most would view comparably ("look-alike" natives and foreigners) are different. Although algebraically possible, it seems like an arbitrary and peculiar mix of technological assertions.

7. The benefits from immigration

The economic *gains* from immigration depend directly on the impact that immigrants have on native wages. Existing estimates of these benefits use the simplest "textbook model" of a competitive labor market to calculate the gains. In this framework, wages and employment are set by the interplay between the supply of and the demand for workers. When wages are high, many persons want to work, but few firms are looking to hire. When wages are low, few persons want to work, but many firms are competing for their services. The labor market balances out the conflicting interests of workers and firms, and sets employment and wages so that persons who want to work at the going wage can find jobs.

A supply shock of immigrants lowers native wages, but raises the profits accruing to employers. A crucial implication of the laws of supply and demand is that the winners gain more than the losers lose, so that immigration creates an "immigration surplus"—an increase in the aggregate income accruing to the native population.

Table 2. The short-run immigration surplus, 2015	
	In billions of dollars
Immigration surplus	50.2
Loss to native workers	515.7
Gain to native firms	565.9
Total increase in GDP	2,104.0
Payments to immigrants	2,053.8
Source: George J. Borjas, *We Wanted Workers: Unraveling the Immigration Narrative* (New York: Norton, forthcoming 2016), Chapter 8. The calculations assume that GDP is $18 trillion; that immigrants compose 16.3 percent of the workforce; and that a 10 percent increase in supply lowers the wage by 3 percent.	

Table 2 reports that the immigration surplus is about $50 billion annually, a number that is "small" in the context of an $18 trillion economy. Needless to say, this estimate of the surplus depends on the many assumptions that underlie the textbook model of a competitive labor market. Nevertheless, the model says something that is very useful: it is mathematically impossible to manipulate the laws of supply and demand so as to yield a huge number for the immigration surplus, even after immigration has increased the size of the workforce by over 16 percent.

The small surplus of $50 billion, however, masks a sizable redistribution of wealth from workers to the users of immigrant labor. Let me restate this point in a different way: If one wishes to believe that the immigration surplus is around $50 billion, it follows from the same calculation that the redistribution of wealth from workers to firms is around half-a-trillion dollars.

Note that I assumed that a 10 percent increase in supply lowers wages by 3 percent to calculate the immigration surplus. Ironically, those who believe that the immigration surplus is much larger should welcome new evidence that immigrants depress the wage of native workers by even more. The economic benefits from immigration are the flip side of

the wage losses suffered by workers. The greater the wage loss, the greater the profits to employers and the greater the benefits to those who consume the services immigrants provide.

Although standard calculations of the immigration surplus suggest it is small, there are many claims that immigration increases wealth by hundreds of billions or trillions of dollars. These claims, however, often use a misleading picture of exactly what it is they are talking about. The immigration surplus measures the additional wealth *that accrues to natives.* This surplus is not the same thing as the actual increase in GDP because immigrants receive part of that increase in national income in return for their work.

As Table 2 also shows, a supply shock of 16 percent generates a $2.1 trillion increase in GDP in the short run. This huge increase is not surprising; a 16 percent increase in the number of workers substantially increases the size of the aggregate economy. However, the immigrants themselves get paid about 98 percent of this increase in GDP. The laws of supply and demand predict that very little of this aggregate increase in GDP actually goes to the native population.

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