Refining the Estimation of Immigration's Labor Market Effects
Sarah Bohn and Seth Sanders

Long Abstract

Researchers and policymakers, despite years of study, still do not adequately understand the impact of immigration on native workers. However, whether immigration harms, improves, or has no effect on native workers' labor market outcomes has serious implications for policy and for a country's attitude towards non-natives. Reviewing a large set of papers that analyzed the effect of immigration on the wages of native workers in the U.S., the National Academy of Science Panel on Immigration (1997) concluded "there is only a small adverse impact of immigration on the wage and employment opportunities of competing native groups." Borjas (2003), however, employs an innovative identification strategy and finds a much larger impact. For theoretical and practical reasons, it is important to understand what drives his result and to test whether his measured impact should be employed as the new standard. We find that although the theoretical underpinnings of the Borjas approach are compelling, his result could be explained by numerous alternatives. To further test the theory and methods in Borjas (2003) we use data from Canada and exploit the differences between labor market trends in the U.S. and Canada.

Background

If a country is made up of many small, closed economies where the native labor force stays in one place, then exogenous influxes of immigrants may allow us to test the basic textbook model of labor supply and demand using cross-sectional data. In fact, most papers on immigration and the labor market use the relationship between the fraction of new immigrants and changes in wages across cities to measure the effect of immigration. Studies that employ this identification strategy find both positive and negative effects, with most estimates close to zero. A basic concern with these estimates is that immigration to the U.S. and to particular U.S. cities is not exogenous but rather is related to local labor market conditions[1]. If immigration decisions are indeed endogenous, then estimates of the effect on wages using variation across cities are biased upwards since wages are higher in markets where immigrants choose to locate. Altonji & Card (1991) use instrumental variable techniques to correct for the endogeneity of immigrants' locational decision and find larger, but still quantitatively small negative effects of immigration (consistent with the belief that previous estimates were biased toward zero).

Beyond this endogeneity problem, other complications exist. In particular, it may be implausible to assume that local labor markets are closed and native workers do not relocate in the face of worsening labor market conditions. Ignoring this shortcoming would bias estimates towards zero since migration of natives mitigates the effect of the influx of immigrants. One of the most recent advances in the study of the effects of immigration is provided in Borjas (2003), which does not rely on the assumption of no native migration in the face of immigrant supply shocks. Rather, Borjas exploits the differences between education-experience (skill) groups and the variation in immigrant shocks within these groups nationally. Since workers in different

---

[1] Card [1990] uses the rare event of an exogenous immigration shock and finds no discernable effect on the labor market.

education-experience groups are believed to be imperfectly substitutable, the labor markets within these groups are "closed", unlike geographical labor markets.   Then variation in immigrant shocks across skill groups is independent, and coupled with the variation within a group over time helps identify the labor market effects of immigration. Borjas estimates quite a large effect: a 10% increase in supply of workers causes a 3-4% decrease in the wage. This implies that the average earnings of native born men were approximately $1,700 lower in 2000 than 1980 because of the rise in the number of immigrants in the U.S. His estimates do not correct for endogeneity bias from immigrants locating in high wage areas. If such endogeneity were accounted for, the estimated negative impacts would be even larger.

However, the Borjas result uses variation within skill groups without also taking account of the differential trends in wage between these groups. Over the period, real wages increased for all workers, but wages grew more at the top of the wage distribution. Katz and Autor (1999) show that the wage inequality patterns differ between education and experience groups. Possible explanations for this that have been discussed in the literature include shifts in labor supply due to trade and immigration, changes in the minimum wage, decreasing unionization rates, skill-biased technological change, and the increasing negative selectivity of low skilled workers. The Borjas paper explicitly studies the shift in labor supply due to immigration without also accounting for other plausible shifts in labor demand. If the skill groups that drive his result are also those most negatively affected by changes in the wage distribution from other sources, then his result may spuriously attribute wage decreases to immigration and thus overestimate the negative effects of immigration on natives.

The Problem

Since the estimated effects of immigration can have a large impact on policy and perception, it is important to understand how such estimates are derived. This paper first examines the Borjas findings in great detail to understand how different skill groups contribute to his overall finding. Confidence in his results would be gained if they are found consistently both across skill groups and within skill groups over time. We find that the experience of one group during two consecutive time periods has a very large influence on his overall results (High School dropouts between 1980 and 2000). This does not mean that Borjas' conclusions are incorrect. But it does mean that any other factor correlated with high school dropouts between 1980 and 2000 is an alternative explanation. Since the skill level of Canadian immigrants tended to be higher then immigrants to the U.S. over the period of study, Canada's experience serves as a natural way to start to sort out the competing hypotheses for Borjas' results.

We start by replicating the Borjas analysis using 1960-2000 Census IPUMS data. Borjas estimates the effect of the immigrant shock on a labor market outcome (weekly wage, annual earnings, fraction working) by year-experience-education group, while differencing out fixed effects from education, experience, and time. His first differences model thus uses the demeaned decadal change in immigrant shock and weekly wage for individuals in the same education-experience group.[2] The first difference specification is:

---

[2] The results of this first differences model should be identical to a fixed-effect specification in the absence of measurement error. In fact, Borjas' estimation of both models, with weekly wage as outcome variable, yields

$$\Delta Y_{it,t-1} = \alpha + \beta * \Delta X_{it,t-1} + \varepsilon_{it,t-1}$$

where i denotes an education-experience cell, Y denotes log weekly wage, and X denotes percentage foreign born. This regression allows a simple test of our hypothesis that a few cells are driving the result. In particular, the alternative explanations for rising wage inequality that we suggest would all predict that changes in wages of low-education, low-experience groups in recent decades are larger than for other groups. Since these cells have also experienced the largest immigrant shocks, it seems likely that they have the largest negative effects on the regression. We measure the influence of each education-experience group on the decadal change in labor market outcome by a variety of techniques. Our results to date reveal that low education-experience groups, particularly in 1980 to 2000, entirely determine the slope of the regression line. These same cells have experienced the negative effects of the trend toward bifurcation of the wage distribution. Even if immigration has caused the bifurcation of the wage distribution in recent decades, and has decreased mean wages for low-educated native workers, it has not necessarily harmed more skilled workers. Hence, we have reason to suspect that Borjas' estimated negative relationship between immigration and wages is overstated. It is possible that what drives the negative relationship is not immigration directly, but rather other causes of the trends in wages.

The second part of this paper conducts another test of the hypothesis by analyzing data from Canada, using the fact that some trends in labor demand have been international, yet immigrants to Canada have a different skill composition than those to the U.S. The wage gap in Canada is less pronounced than in the U.S., and thus skill-driven differential trends in wages will be less important as a plausible alternative explanation for Borjas' result. Also, immigrants to Canada tend to be more skilled than those to the U.S. Hence, the skill groups that influence the regression in the U.S. analysis, which happen to also be the groups with stark decreases in wages, will likely not be the groups influential in the analysis of the Canadian data. Instead, the skill groups likely to have the largest immigrant shocks, and hence a lot of influence on the regression, may very well be the groups experiencing *increases* in wages. If the Borjas supply shift theory is correct, then it should be the case that even though immigrants to Canada are more skilled and the wage distribution less bifurcated across skill, immigration should still have a negative effect on the wages of native Canadians. This section of the analysis will help identify what drives the Borjas result – immigration or one of the competing hypotheses for trends in wages.

References

Altonji, Joseph and David Card (1991). "The Effects of Immigration on the Labor Market Outcomes of Less-skilled Natives", in Abowd, J. and R. Freeman, eds., *Immigration, Trade and the Labor Market,*. Chicago: University of Chicago Press, pp. 201-234.

---

similar results. We find the simplicity of the first difference model compelling, so we will proceed with the analysis using the first differences specification and provide similar results from the fixed effects specification in the appendix.

Borjas, George (2003). "The Labor Demand Curve *Is* Downward Sloping: Reexamining the Impact of Immigration on the Labor Market," *Quarterly Journal of Economics*, pp.1335-1374.

Card, David (1990). "The Impact of the Mariel Boatlift on the Miami Labor Market", *Industrial and Labor Relations Review* XLIII, pp. 245-257.

Katz, L. and D. Autor (1999). "Changes in the Wage Structure and Earnings Inequality," in O. Ashenfelter and D. Card, *Handbook of Labor Economics*, Vol 3a, pp. 1463-1555.

National Research Council (1997). *The New Americans: Economic, Demographic and Fiscal Effects of Immigration*. Washington, DC: National Academy Press.