

Immigration, institutions and the labour market

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Abstract

This paper examines how the impact of immigration on native wages and employment varies with labour market institutions across U.S. states. I show that immigration has a more negative effect in states with less flexible labour markets, using state-level minimum wages, unionisation rates and exceptions to at-will employment as my measures of labour market flexibility. I show that my results are unlikely to be driven by differential bias in the OLS results, which could arise if immigration is less responsive to the business cycle in states with more protective institutions. There is no differential relationship between lagged economic outcomes and immigration in states with higher minimum wages or at will employment protections, although there is a difference across states with different levels of unionisation. Controlling for lagged economic outcomes or using an IV based on earlier immigrant settlement patterns only strengthens the results. (*JEL codes: J61, J31, J8. Keywords: Immigration, institutions, United States.*)

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1 Introduction

Each year, millions of people move across national borders. For these people, the decision to migrate offers the prospect of higher incomes, reunification with friends and family, or other improvements in living conditions. Collectively, their decisions may also affect those who do not move, both at home and in immigrant-receiving countries. In particular, immigration inflows may have an adverse impact on the wages or employment of competing host-country workers. Concerns over the negative effects of large influxes of labour are the major motivating factor behind policies restricting immigration flows in developed countries. The measurement of these effects can inform debate on whether these restrictions are justified (from the perspective of host-country voters), and whether they should be relaxed or tightened. For this reason, a large literature has attempted to empirically assess the impact of immigration on native outcomes (early references include Grossman (1982), Borjas (1994); more recently, see Ottaviano and Peri (2008), Card (2009) or Borjas, Grogger and Hanson (2011).)

While the impact of immigration on native outcomes is well-explored in the literature, an issue that has received less attention is variation in wage or employment elasticities across labour markets. Some markets may be able to absorb immigrants more easily than others. If so, it is of interest to document this fact, and to attempt to identify factors that explain differences in the impact of immigration. To date, there are few papers that take on this task. An exception is Angrist and Kugler (2003) (hereafter, AK2003), who examine the effect of immigration in Europe and its interaction with policies that reduce labour market flexibility. Using an influx of immigrants generated by the Balkan wars of the early 1990's, they find that labour market rigidities exacerbate the negative effects of immigration on native workers. This finding is consistent

with Blanchard and Wolfers (2000), who propose that European labour market policies increase unemployment primarily by amplifying the effect of negative shocks. Because this finding has not yet been reproduced in other settings, it is not clear whether it will generalize to environments with less restrictive policies than are typically found in Europe.

In this paper, I examine how the effect of immigration varies with three types of labour market institutions that are common in the U.S. and other developed countries: minimum wages, unionisation, and legal exceptions to at-will employment. I show that there are substantial differences in the estimated effect of immigration across U.S. states and over time, and reproduce the finding that more restrictive labour market institutions are associated with more negative wage and employment effects of immigration.

I argue that this is unlikely to be the result of differential bias in the OLS estimates, which could occur if immigration is less closely tied to the business cycle in states with protective labour institutions. First, I show that results become even stronger when I use the IV strategy proposed by Altonji and Card (1991), which is based on the fact that immigrants tend to settle where there are already a large number of immigrants from the same country. Although the instrument may not be entirely exogenous, it is difficult to see why it would exacerbate any differential bias between states with different types of labour market institutions. Second, the results becomes stronger when I control for lagged economic conditions, which is consistent with the bias in the OLS being upward. Finally, I show directly that the relationship between recent immigration and earlier economic conditions is similar across states, at least with respect to minimum wages and at will employment.

While it is difficult to rule out the possibility that my results are affected by an unobserved correlation between labour market policies and other factors

affecting wage and employment elasticities (a problem shared by AK2003), they do suggest that there are consistent differences in the immigration environment that are associated with labour market policies. The estimated relationship between labour market institutions and the impact of immigration is large: it could fully explain, for example, the decline in the wage impact of immigration over time.

In the next section, I outline my data and empirical strategy. Next, I provide summary statistics on immigration, native wage patterns and labour market institutions; I also update the estimates of Borjas and Aydemir (2011) on the partial wage and employment effects of immigration at the national level. I then show how the results change when switching to a state-level model, which is required for my analysis. In section 3, I show how the impact of immigration varies with state-level labour market institutions, using both OLS and IV specifications. I show how labour market institutions affect the impact of immigration at different points in time, and how they interact with one another. Section 4 presents robustness tests, and shows that there is no difference in the pattern of immigration with respect to wage and employment across states. Section 5 concludes.

2 Data and Empirical Strategy

2.1 Data

Information on immigration and native labour market outcomes are taken from the 1980-2000 public use Census samples, and the 2012 3-year American Community Survey. The two native outcomes I examine are mean log wages, and the fraction of the time worked (weeks worked, divided by 52.) My key independent variable will be the fraction of immigrants in a given market. Details on the

sample selection and construction of these variables are available in the Data Appendix.

I examine the effect of three types of labour market institutions: minimum wages, unionisation and exceptions to at-will employment. Data on state-level minimum wages over time are taken from the website of the United States Department of Labor (Department of Labor, 2016.) Any state that is reported to have a minimum wage below the federal minimum, or which does not have a minimum wage listed, is treated as though it has the federal minimum wage for that year. Wages are transformed to 1999 dollars.

Data on unionisation come from the March Current Population Survey, which asks whether a respondent belongs to a union or is covered by a collective agreement. I use the former definition in most specifications, but show that the broader specification (including those not belonging to a union but covered by a collective agreement) produces very similar results. I restrict the sample to private sector workers when constructing this variable; I show in the robustness section that the results are similar if government employees are included when constructing the unionisation measure.

At-will employment is a doctrine that permits employers to legally fire employees “at-will”, or without cause. There are three recognized exceptions to this doctrine, known as the “public policy” exception (which prevents firms from firing workers if doing so would undermine an important public policy; this, for example, could be used to protect a worker from being fired for performing jury duty), the “implied contract” exception (which protects workers who have been implicitly or informally offered ongoing employment) and the “good faith” exception (which prevents firms from firing workers to avoid giving them earned benefits); see Autor, Donahue and Schwab (2006) for a review. States may recognize any or all of these exceptions. Data on at-will employment exceptions

from 1978-1999 were provided by David Autor and are updated using a table in Gibson and Lindley (2010). I use the 1999 figures for the year 2000 and the 2010 figures for the year 2012. My primary measure for at will employment exceptions is the number of exceptions in place in a state in a given year. In the robustness section, I also examine the impact of the three types of exception separately. Because the at-will employment exceptions data go back only to 1978, I use only the sample years 1980-2012 in my analysis.

2.2 Empirical strategy

To frame ideas, consider the framework of Borjas (2003) and Aydemir and Borjas (2007, 2011), who relate market-level immigrant shares to native wage and employment outcomes using data from the 1960-2000 Census. The key regression in these papers is

$$y_{mt} = \alpha + \beta * p_{mt} + \sum_m M_m + \sum_t T_t + \epsilon_{ist} \quad (1)$$

where y_{mt} is a measure of native outcomes for a market m (defined in this case by experience and education groups) at time t , and p_{mt} is the immigrant share of the population in that market. M_m and T_t are a set of market and time fixed effects, respectively. The key dependent variables are the average log wage of native-born men in the civilian labour force, and the fraction of time worked in the previous year (the number of weeks worked divided by 52.)

The coefficient β generated from regression 1, which measures the impact of immigration on native outcomes, is expected to be biased upwards, because immigration flows are likely to be higher in markets where the economy is strong. If we observe a negative estimate of β , however, we can be reasonably certain that the true value is negative.

Next, consider an extension of equation 1 to the state level, which will be

required to analyse the impact of state labour policies on immigration elasticities. I define markets at the state by year by skill group level, and allow the impact of immigration to vary with labour market institutions. My regression equation will be

$$y_{ist} = \alpha + \beta * p_{ist} + \delta * p_{ist} * LMI_{st} + \gamma * LMI_{st} + \Sigma_i D_i + \Sigma_s S_s + \Sigma_t T_t + \epsilon_{ist} \quad (2)$$

where i indexes skill groups, and LMI_{st} is a measure of labour market institutions in state s at time t .

Borjas (2003) and Aydemir and Borjas (2011) argue that the use of geographic variation is likely to exacerbate the bias in the OLS regressions, for two reasons. First, native migration across states will mitigate any negative effect of immigration, which will make it difficult to observe a difference between states that receive a lot of immigrants and those that do not; this is less of a concern when using skill groups, as education and experience are difficult to change. Second, the small sample size necessitated by using geographic regions means there is a great deal of error in the measurement of the immigrant share, leading to attenuation bias.

It may be possible to eliminate some attenuation bias in my state-level regressions by switching to a model with fewer skill groupings, to allow for a larger cell size. In the next section, I examine the choice of skill groupings. While there is not much that can be done about the other source of bias (created by forces that tend to equalize conditions across geographic regions), note that this will not be a problem for my analysis so long as the degree of bias is not related to labour market institutions. I discuss this assumption in more detail below.

As noted above, the estimated impact of immigration will be biased upwards (even without the geographic variation) if immigrants select into markets where

the economy is strong. My estimates of δ , the coefficient on the interaction between immigration and labour market institutions, could also be biased if this selection differs across states in a way that is correlated with labour market institutions. In particular, we may worry that immigration is less responsive to economic conditions in states with protective labour market institutions, both because these institutions themselves may help mitigate the risks of negative economic outcomes (particularly if immigrants are sensitive to wages, rather than unemployment risk), and because they might be correlated with other features of the social safety net.

I show below that the relationship between immigration and lagged wage and employment outcomes is quite similar across states with different minimum wage levels and at will exceptions. While this is not true for unionisation, I also show that controlling for lagged economic conditions does not substantially alter my results. As a third test, I implement the IV strategy proposed by Altonji and Card (1991), which is based on the fact that immigrants tend to settle where there are already a large number of immigrants from the same country. The instrument, adapted to this context, is:

$$\hat{m}_{ist} = \sum_k \lambda_{ik1970} \theta_{sk1970} M_{kt} \quad (3)$$

where k indexes source countries; λ_{ikt} is the fraction of immigrants from source country k in 1970 who fell into skill group i ; θ_{sk1970} is the fraction of immigrants from source country k in 1970 who settled in state s ; and M_{kt} is the national inflow of immigrants from source country k between 1970 and time t . The predicted immigrant share is \hat{m}_{ist}/pop_{ist} , where pop_{ist} is the population in cell ist .

For this instrument to be exogenous, it must be the case that neither national inflows of immigrants from source country k nor the fraction of immigrants from

k settling in a particular state in 1970 are related to current economic conditions in that state. While this may not be entirely the case, the use of the instrument may still be useful in telling us about the direction of the bias in the OLS, so long as it is “less endogenous” than the raw immigration flows. As I will show in the results section, the use of the IV produces estimates of δ that are significantly more negative (in most cases) than the OLS, indicating that the direction of the bias is upward. This suggests that the negative effects of restrictive labour market policies will be, if anything, underestimated by the OLS regressions.

3 Summary statistics and comparison with earlier work

Tables 1 and 2 provide summary statistics for the immigration and labour market institution data. The immigrant share tripled from 1960 to 2012, from around 6.6% in 1960 to just under 20% in 2012. The immigrant share is highest for the least educated and most educated groups, and is relatively even across age groups. The Pacific Census Region has had by far the highest average immigrant share over this period, at around 21%; the next highest is the Middle Atlantic region, at 15.6%. Table 1 also shows the trend broken down by group. The immigrant share has grown fastest for less educated workers, and those in the Pacific region.

Table 2 shows how the minimum wage, private-sector unionisation and the number of at-will employment exceptions vary over time and across regions. The minimum wage, which is expressed in 1999 dollars, was significantly higher in 1980 than in all the following years, at an average of \$7.12. This had fallen dramatically by 1990, to \$5.11; it then rose slightly in the following two years. The variation across states was highest in the middle years of my sample, with

a standard deviation of \$0.37 in 2000 and a range of about \$1.35 (compared to 0.05 and around \$1 in 1980, respectively.)

[Tables 1 and 2 about here]

Unionisation rates remained relatively stable from 1980-2000, at around 20% in each of these year, before falling to 14.8% in 2012. The distribution of unionisation rates became substantially more compressed after 1980, however. Unionisation rates ranged from 6-38% in 1980, but from 16-24% in 1990.

The popularity of exceptions to at-will employment expanded substantially in the 1980's, with the mean number of exceptions rising from 0.55 in 1980 to 1.8 in 1990. This was primarily driven by increasing adoptions of the public policy and implied contract exceptions (not shown separately in the table), which had been adopted by around 80% of states by 1990; the good faith exception has remained relatively rare, with around 20% of states recognizing this exception from 1990-2012. In all years since 1990, there are at least some states recognizing 0, 1, 2 and 3 exceptions.

Next, I replicate the results from Aydemir and Borjas (2011), and showing how this result changes as I move from their sample construction (national level data with 40 skill groups, from 1960-2000) to the sample construction used in this paper (state-level data with 16 skill groups, from 1980-2012.) The first column of Table 3 shows the result for log wages from their paper, and the second column shows my attempt to replicate their result. I come quite close, with an estimate of -0.480 versus -0.489 in that paper. The coefficient for the fraction of time employed (not available in Aydemir and Borjas (2011)) is -0.069. In the next column of the table, I show how these coefficients change when I add an extra year of data, from the 2012 ACS. The coefficients fall in both cases, to -0.391 for wages and -0.057 for employment, but remain highly significant. In the next column, I switch to state-level data. As expected, the coefficients fall in

magnitude, but are still negative and significant. This is no longer true for the employment coefficient, however, once I restrict my time frame to 1980-2012, as I will in my main analysis. The coefficient on immigration is now positive in the employment regression; it is still negative for wages, but is about one-quarter the size of the original Aydemir and Borjas estimate.

The last two columns of Table 3 shows that the decline in the coefficient when switching to state-level data is likely due to attenuation bias; when using state-level data with fewer skill groups, the coefficients are much larger in magnitude. For a model with sixteen skill groups, the coefficient for wages is -0.234; for the model with just four skill groups, it is -0.573. The reduction in bias comes at a cost, however: the sample size falls by a factor of ten. While this isn't a problem in these simple regressions (the coefficients are still significant at the 1% level), the reduced sample size will become a problem when I try to implement the IV. Table 4 shows the results from the IV regressions with the 40-, 16- and 4-skill group models. While the coefficients become steadily more negative as the skill groupings get broader, the power of the first stage regression falls. The F-statistic in the 4-skill model is just below 10, and the coefficient is significant only at the 10% level.¹

[Table 3 and 4 about here]

Because I am primarily interested in precisely identifying the direction of the coefficients, and not the magnitude, I use the 16 skill-group model throughout the remainder of the paper. This model reduces the bias enough that negative effects are observable, but maintains a large enough sample size for the IV to function properly. I show in the robustness section that my main OLS results are quite similar when I use either the 4 or 40 skill group models.

¹Note that the Wooldridge score tests shown at the bottom of Table retable:iv suggest that the IV and OLS do not produce significantly different results in most of these specifications, with the exception of the 16-skill group wage model. As shown below, this will no longer be true once I introduce the labour market institution variables.

Before moving to my analysis of labour market institutions, it is important to note that there is a substantial amount of variation in the immigration elasticity across space and over time. Table 5 shows the coefficients from interactions of immigration with year fixed effects and region fixed effects, using the 16 skill group model. The wage impact of immigration on wages has significantly lessened over time; the coefficient on immigration is -0.579 for 1980, but -0.224 for 2012. Regionally, New England and the Middle Atlantic Census divisions have the least negative wage and employment elasticities, while the East North Central and East South Central divisions have the most negative. For wages, the estimated impact of immigration ranges from -0.521 in the East North Central division to 0.127 in New England; for employment, the coefficients range from -0.082 in the Middle Atlantic division, to 0.037 in the East South Central division.

[Table 5 about here]

4 Labour market institutions and the impact of immigration

Table 6 shows the results from estimating the OLS regression shown in equation 2. The first four columns show the results for wages, while the second four columns show the results for employment. I first present models examining each labour market institution individually, and then examine a model with all three institutions simultaneously. For wages, the impact of immigration is significantly more negative in states with high minimum wages and higher unionisation. The effects are large: based on the univariate regression in column (1), moving from the 25th percentile of minimum wages in my sample (\$5.15) to the 75th percentile (\$6.80) would change the predicted wage effect of immigration from -0.191 to -0.503. The impact of unionisation is somewhat

smaller in magnitude, although still economically significant: the predicted impact of immigration on wages at the 25th percentile of unionisation (15.8%) is -0.241, while the impact at the 75th percentile (21.8%) is -0.358. For employment, more at will exceptions are associated with a more negative effect of immigration. Moving from 0 to 3 at will employment exceptions would move the predicted employment elasticity from 0.025 to -0.02.

[Table 6 about here]

Next, I turn to the results from the IV model. I estimate this model by first regressing immigration on the Altonji-Card instrument and fixed effects, and constructing a predicted immigration level from this regression. Then, I interact this predicted immigration level with my institution variables to form my instruments. The results from the regression of immigration on the predicted immigrant share are very close to those reported in Table 4; the only difference is that there are slightly fewer observations because I am missing information the institutional variables for some states.² The results of the first stage regressions for the models that include one institutional variable at a time are reported in Table 7. The instrument works as expected, with predicted immigration significantly predicting actual immigration in all cases. Wooldridge score tests for endogeneity suggest that, at least for wages, the IV makes a difference: the OLS and IV results are significantly different. The negative coefficients on the interaction variables indicate that the relationship between predicted immigration and actual immigration is less strong for labour markets with more rigid institutions; in other words, less of the expected migration actually materializes in these places. The partial R^2 in all of the regressions are large.

[Table 7 about here]

Table 8 shows that the results of the IV regressions with the institutional

²Specifically, I have no data on the at-will exceptions for any year in Washington D.C.; I am also missing the unionisation measure for D.C. in 1980.

variables entering separately suggest that the coefficients on the minimum wage and unionisation interactions in in table 6 were biased upwards in the OLS equation. The effect of both these variables are more negative and significant than in the previous table. While the coefficients lost significance in the regression model that contains all of the institutional variables at once, the magnitude of the coefficients are very similar to those in the single-variable regressions.

[Table 8 about here]

The results of the IV suggest that, if anything, the coefficients on the institutional interactions in the OLS model are biased upwards, towards zero. In the robustness section, I will show that the results also become more negative when controlling for lagged wage and employment variables, suggesting again that any connection between labour market institutions and the pattern of immigration over the business cycle will tend to work against finding negative effects. Leaving this issue aside for now, I next present the results of an OLS model in which the labour market institution variables are interacted with each other. This will tell us whether the relationship between labour market institutions and the impact of immigration worsens as the degree of rigidity in the labour market rises. Table 9 reports these results. For wages, the effect of each institutional variable individually is now positive and significant, while all of the two-way interactions are negative and significant. This suggests that the effect of introducing labour market rigidities is indeed non-linear and increasing. There is no significant effect of any variable on employment.

To get a sense of the size of the effects from Table 9, consider two states which are on different ends of the labour market flexibility spectrum in 2012: Georgia and Oregon. Georgia's effective minimum wage was \$7.25³, the same as the federal minimum wage, while Oregon had a relatively high minimum wage of \$8.80. In 1999 dollars, the minimum wages were \$5.26 and \$6.17,

³Its actual minimum wage was \$5.15, meaning that the federal minimum wage was binding.

respectively. Georgia recognized no exceptions to at-will employment, while Oregon recognized two; Georgia had a unionisation rate of 14.4%, versus 16.6% for Oregon. The predicted impact of immigration is about 20% lower in Georgia, at -0.305 versus -0.367 for Oregon. This difference is small, however, when compared to the variation in the impact of immigration induced by changes in labour market policies over time. The average minimum wage in 1980 was \$7.12, versus \$5.44 in 2012 (both in 1999 dollars), while average unionisation rate was 21.8%, as opposed to 14.8% in 2012. On the other hand, the mean number of at-will employment exception rose from just under 0.55 to around 1.61 over the same time period. On net, these changes would predict a decline in the magnitude of the immigration coefficient, from a predicted value of -0.581 in 1980 to around -0.241 today. These figures are strikingly similar to the actual levels: a regression of wages on immigration interacted with year indicators produces an estimated coefficient of -0.579 in 1980 and -0.224 in 2012. This tells us that the relationship between labour market institutions and the impact of immigration is large enough in principle to explain the entire change in the wage elasticity over this period.

[Table 9 about here]

5 Robustness

Table 10 shows the results of the main OLS regression for wages (reproduced from column 4 of table 6), compared with the results from several alternative specifications. In column (2), I show the results for the female sample. They are qualitatively similar to the male result, with a strong negative coefficient on the interaction between minimum wages and immigration. Columns (3) and (4) show the results of using the 40 skill groupings, and 4 skill groupings, respectively. The results are similar in both specifications, although somewhat less

significant with four skill groupings. Columns 5-7 explore different specifications of the labour market institutions. In column (5), I use a broader definition of union membership that includes workers covered by collective agreements; this makes very little difference. In column (6), I use a definition of union membership that includes public sector workers. While this significantly lowers the coefficient on the union interaction, it makes little difference to the other results. In column (7), I add each of the at-will employment exceptions separately. Neither of these variations makes any difference to the main results.

[Table 10 about here]

A key concern in the regressions from table 6 is that the negative coefficients on the interaction terms simply reflect differential bias in the OLS. In particular, this could arise if states with high minimum wages or unionisation have systematically less positive bias in the OLS; this would mean that any negative relationship between immigration and native outcomes would be more visible in these states, even if there was no underlying difference in the employment or wage elasticities. The positive bias in the OLS is thought to arise because immigrants tend to go where the economy is strong. This bias would be less pronounced for states with less flexible labour markets if immigration to these states is less dependent on the business cycle.

Table 11 tests this proposition directly by looking at the relationship between immigration and lagged economic conditions. The dependent variable in this table is the share of the population made up of recent immigrants (those arriving in the 0-5 years leading up to the survey). I regress this share on measures of wages and employment taken from the March supplement of the CPS in each year, for the 6-10 years prior to the survey year (or 11-15 years, in some specifications. See Data Appendix for a description of the CPS data.) I also interact these wage and employment measures with the labour market

institution variables, to see if the business cycle differentially affects migration in states with less flexible labour markets.

[Table 11 about here]

The results of this exercise suggest that the relationship between immigration and the business cycle does not differ substantially by minimum wage or at will employment. There is a very strong relationship, however, between a state's unionisation level and the responsiveness of immigration to wages and employment. In more unionised states, immigration is much less positively correlated with lagged wages and employment. This could imply that the estimated negative effect of unionisation on the wage elasticity is driven by differential bias in the OLS.

Table 12 shows the results of the main wage regressions, with controls added for lagged economic conditions. Column (1) contains the original regressions from Table 6, for reference. In columns (2) and (3), I add wage and employment variables to the model; in columns (4) and (5), I also add the interactions of these variables with the labour market institution measures. In all specifications, the interaction between minimum wages and immigration is negative, significant and of a similar size as the original coefficient. The coefficient on the unionisation interaction falls and loses significance in some specifications, but is usually negative and of the same magnitude as before. At will employment now becomes negative and significant in several specifications. The fact that my coefficients change very little when I include controls for economic conditions suggests that my initial results are not being driven by a differential relationship between the business cycle and immigration in states with restrictive labour market institutions.

[Table 12 about here]

6 Conclusion

Most work looking at the impact of immigration on native workers focuses on estimating the size of wage and employment elasticities, as well as the distributional impact. This information is important for understanding the political economy of immigration, and for formulating immigration policy. An issue that has been relatively ignored, however, is how these effects may be exacerbated or attenuated by labour market institutions. This paper attempts to capture this interaction for one set of labour market policies that are common in U.S. states. It shows that high minimum wages and unionisation levels (and, to a lesser extent, exceptions to at-will employment) are associated with a more negative effect of immigration on the outcomes of native workers. The impact of immigration is particularly pronounced when these labour market institutions co-exist, suggesting that it is the overall degree of flexibility in the labour market that matters for the immigration elasticity. The size of the estimated effects are large: they could, for example, entirely explain the change in the wage impact of immigration from 1980-2012. While it is possible in principle that my results are driven by differential bias in the OLS across states with different labour market institutions, I show that this is unlikely to be the case: either using the Altonji and Card IV strategy or controlling for lagged economic outcomes only strengthens my results.

The causal channel underlying my results is not entirely clear: it could be that more rigid labour market institutions are associated with some other, unobserved feature of labour markets that makes it unusually difficult to absorb immigrants. When combined with similar results for Europe, however (see AK2003), my results suggest that there are large and consistent differences in the immigration environment that are related to labour market flexibility. A better understanding of this causal relationship could assist in helping policy

makers minimize the negative effects of immigration.

7 Data Appendix

Unless otherwise specified, the data used in all regressions come from the 1980-2000 U.S. Census Public Use Microdata Files, and the 2012 3-year American Community Survey, available from the IPUMS website. The sample is restricted to men aged 18-64, who do not reside in group quarters and who are not in school at the time of the survey. All regressions are weighted by the sample size used to construct the dependent variable. Weights are standardized to equal 1 within any year.

Skill groups Skill groups are defined by education and potential experience. In the main 16-group specification, there are 4 education groups and 4 potential experience groups. The four education groups are high school drop-outs (educational attainment of less than 12th grade), high school graduates (educational attainment of exactly 12th grade), some college (those with at least one year but less than four years of college), and college graduates (those with four or more years of college.) I assume that high school drop-outs enter the workforce at age 17, high school graduates at age 19, those with some college at age 21, and college graduates at age 23; potential experience is age - assumed age of entry into the labour force. Potential experience is grouped into intervals of 1-10 years, 11-20 years, etc.

Immigrant share An immigrant is defined as a non-citizen or a naturalized citizen. Immigrant shares are calculated in the sample of those in the civilian labour force, who worked at least one week in the previous year.

Log annual wages and fraction of time worked

These variables are constructed using the sample of respondents who are in the civilian labour force, who reported positive hours worked in the week prior to the survey (positive hours "usually worked") and who worked at least one week in the year prior to the survey. Annual earnings are defined as wages,

expressed in 1999 dollars. Weeks worked is weeks worked in the previous year, divided by 52.

CPS data

In some specifications, I control for lagged economic conditions, measured using the CPS. To construct these measures, I use the CPS March supplement from 1965-2012. The measures I construct from this data are the average of annual earnings for the periods 6-10 years and 11-15 years prior to the survey year; and average employment rates (among all respondents, not just those in the labour force) for the same period. The sample is the set of men aged 18-64; when constructing wages, I also impose the restriction that the respondent be employed and have non-zero earnings. Wages are expressed in 1999 dollars.

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9 Conflict of Interest Statement

The author declares that she has no conflict of interest.

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Table 1: Summary statistics: immigration

	Dependent variable: Immigrant share	
	Mean	Trend
Year - 1960	0.066	
Year - 1970	0.060	
Year - 1980	0.074	
Year - 1990	0.111	
Year - 2000	0.149	
Year - 2012	0.198	
Less than high school	0.155	0.008***
High school	0.086	0.003***
Some college	0.090	0.002***
College	0.125	0.003***
Experience - 1-10 years	0.102	0.003***
Experience - 11-20 years	0.125	0.004***
Experience - 21-30 years	0.115	0.003***
Experience - 31-40 years	0.107	0.002***
Region - New England	0.116	0.002***
Region - Middle Atlantic	0.158	0.002***
Region - East North Central	0.069	0.001***
Region - West North Central	0.037	0.001***
Region - South Atlantic	0.103	0.004***
Region - East South Central	0.027	0.001***
Region - West South Central	0.106	0.004***
Region - Mountain	0.099	0.003***
Region - Pacific	0.214	0.005***

This table shows the mean immigrant share by year, education, experience and region, as well as the trends in the immigrant share by education, experience and region.

Table 2: Summary statistics: labour market institutions

	Minimum Wage	Unionization	At-will exceptions
1980			
Mean	7.12	0.218	0.55
S.D.	0.05	0.081	0.78
Range	7.11-8.26	0.060-0.384	0-2
1990			
Mean	5.11	0.195	1.76
S.D.	0.29	0.018	0.87
Range	4.96-5.71	0.157-0.240	0-3
2000			
Mean	5.31	0.203	1.83
S.D.	0.34	0.016	0.84
Range	5.15-6.50	0.166-0.247	0-3
2012			
Mean	5.44	0.148	1.61
S.D.	0.29	0.014	0.87
Range	5.26-6.29	0.121-0.184	0-3

This table provides information on the labour market institution variables and their variation across states, by year.

Table 3: The effect of immigration on native male outcomes: comparison to previous estimates

	AB2007	AB2007 (replication)	AB2007 (update)	State-level 1980-2012	State-level, 1980-2012, 16 skill groups	State-level, 1980-2012, 4 skill group
Impact of immigration on:						
Wages*	-0.489 (0.223)	-0.480*** (0.103)	-0.391*** (0.075)	-0.237*** (0.026)	-0.146*** (0.028)	-0.234*** (0.035)
Employment*		-0.069* (0.035)	-0.057** (0.024)	-0.032*** (0.006)	0.017** (0.008)	-0.009 (0.011)
Skill groups	5	5	5	5	5	2
Experience groups	8	8	8	8	8	2
Geographic detail	National	National	National	State	State	State
Years	1960-2000	1960-2000	1960-2012	1960-2012	1980-2012	1980-2012
N	200	200	240	12229	8160	3264
						816

This table shows the results from regressions of male native wages and employment on the immigrant share, at the indicated geography by skill group level, over the indicated period. All regressions include fixed effects by education and experience groups, as well as year fixed effects; the state level regressions also include state fixed effects.

Table 4: Effect of immigration on wages: IV estimates

	40 skill groups		16 skill groups		4 skill groups	
	Wages	Employment	Wages	Employment	Wages	Employment
Immigration	-0.149 (0.105)	0.041 (0.031)	-0.415*** (0.119)	0.015 (0.046)	-0.674* (0.371)	-0.035 (0.095)
N	8,160	8,160	3,264	3,264	816	816
First stage coefficient	0.697***	0.697***	0.702***	0.702***	0.300***	0.300***
First stage F-statistics	90.6	90.6	45.0	45.0	9.4	
Wooldridge score test statistic	0.001	0.910	4.55**	0.43	0.17	0.003

This table shows the results of IV regressions of wages and employment on the immigrant share. The instrument is based Altonji and Card (2001), and uses information on the distribution of immigrants by source country and skill across states; see equation 3. The regressions include state, year, education and experience group fixed effects.

Table 5: Effect of immigration on native outcomes: variation over time and Census regions

	By year		By region	
	Wages	Employment	Wages	Employment
Immigration	-0.579***	-0.010	0.127	0.034
Immigration x:				
Year - 1990	0.354***	-0.011		
Year - 2000	0.281***	-0.000		
Year - 2012	0.355***	0.006		
Region - Middle Atlantic			-0.273**	0.003
Region - East North Central			-0.648***	-0.084***
Region - West North Central			-0.390***	-0.027
Region - South Atlantic			-0.230*	-0.075***
Region - East South Central			-0.585***	-0.119***
Region - West South Central			-0.381***	-0.037
Region - Mountain			-0.271**	-0.025
Region - Pacific			-0.394***	-0.048**

This table shows the results from regressions of native outcomes on the immigrant share, and the immigrant share interacted with either year or Census division indicators.

Table 6: Labour market institutions and the effect of immigration on native outcomes

	Wages			Employment				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Immigration	0.782*** (0.235)			0.824*** (0.260)	-0.026 (0.087)			0.023 (0.087)
Immigration x min. wage	-0.189*** (0.042)			-0.161*** (0.044)	0.003 (0.016)			0.004 (0.015)
Immigration		0.089 (0.130)				-0.001 (0.028)		
Immigration x unionization		-2.087*** (0.720)		-1.384** (0.702)		-0.046 (0.183)		-0.124 (0.167)
Immigration							0.025 (0.018)	
Immigration x at will exceptions							-0.015* (0.008)	-0.016** (0.008)
N	3200	3200	3200	3200	3200	3200	3200	3200

This table shows the results from regressions of wages and employment for native men on the immigrant share and the immigrant share interacted with the labour market institution variables. All regressions include state fixed effects, education and experience group fixed effects, and year fixed effects, as well as the labour market institution variables.

Table 7: First stage regressions

	Min. wage regression		Unionisation regression		At will regressions	
	Immigration	Immigration x min. wage	Immigration	Immigration x unionisation	Immigration	Immigration x at-will exceptions
Predicted immigration	1.732*** (0.172)	5.639*** (1.126)	1.191*** (0.158)	0.050 (0.030)	0.262** (0.130)	-0.830*** (0.163)
Predicted immigration x min. wage	-0.186*** (0.034)	-0.401* (0.214)	-2.202*** (0.679)			
Predicted immigration x unionisation				0.367*** (0.103)		
Predicted immigration x At will employment					0.336*** (0.033)	1.570*** (0.096)
Shea's Partial R^2	0.188	0.070	0.634	0.198	0.036	0.104

This table shows the first stage regressions of the immigrant share and immigrant share interactions on the predicted immigration level (based on the instrument in equation 3) and the interaction of predicted immigration with the labour market institution variables.

Table 8: Labour market institutions and the effect of immigration on native outcomes: IV estimates

	Wages			Employment				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Immigration	1.403** (0.639)			0.779 (0.926)	-0.214 (0.158)			-0.008 (0.112)
Immigration x min. wage	-0.429*** (0.172)			-0.627 (0.490)	0.054 (0.042)			0.044 (0.051)
Immigration		-0.003 (0.159)				0.025 (0.039)		
Immigration x unionisation		-4.121*** (0.152)		-4.600 (3.095)		-0.234 (0.320)		-0.228 (0.330)
Immigration							0.097 (0.100)	
Immigration x at will exceptions							-0.034 (0.024)	-0.055 (0.057)
Wooldridge score test statistic	23.16**	11.31***	6.92**	38.55***	4.97*	2.90	3.56	9.02*
N	3200	3200	3200	3200	3200	3200	3200	3200

This table shows the results of IV regressions of wages and employment for native men on the immigrant share and the immigrant share interacted with the labour market institution variables. All regressions include state fixed effects, education and experience group fixed effects, and year fixed effects, as well as the labour market institution variables.

Table 9: Labour market institutions and the effect of immigration on native outcomes: interactions

	Wages	Employment
Immigration	-2.183*	-0.019
	(1.298)	(0.408)
Immigration x:		
Minimum wage	0.305	-0.000
	(0.208)	(0.066)
Unionisation	14.862**	0.168
	(7.156)	(2.159)
At-will exceptions	2.333**	0.140
	(1.135)	(0.354)
Min. wage x unionisation	-2.533**	0.020
	(1.139)	(0.338)
Min. wage x at-will	-0.383**	-0.020
	(0.189)	(0.059)
Unionisation x at-will	-13.148**	-0.715
	(5.817)	(1.891)
Min. wage x unionisation x at-will	2.160**	0.081
	(0.968)	(0.312)
N	3200	3200

This table shows the results from OLS regressions of wages and employment on immigration, and the interaction of immigration with all one-, two- and three-way interactions of the labour market institution variables. The regressions contain state, year, education and experience group fixed effects, as well as controls for the labour market institutions.

Table 10: Robustness tests

	Dependent variable: log wages						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Main result (for reference)	Women	More skill groups	Fewer skill groups	Broader union measure	Union measure incl. public sector	Indiv. at-will exceptions
Immigration	0.824*** (0.260)	0.435 (0.296)	0.978*** (0.186)	-0.097 (1.843)	0.824*** (0.262)	0.574** (0.240)	0.725*** (0.272)
Immigration x:							
Minimum wage	-0.161*** (0.044)	-0.144*** (0.049)	-0.163*** (0.032)	-0.593* (0.316)	-0.169*** (0.044)	-0.132*** (0.047)	-0.147*** (0.045)
Unionisation	-1.384** (0.702)	0.576 (0.809)	-1.428*** (0.493)	-5.908 (4.824)	-1.106* (0.642)	-0.253 (0.231)	-1.457** (0.676)
At will exceptions	0.013 (0.024)	0.020 (0.032)	-0.005 (0.018)	0.300 (0.227)	0.020 (0.024)	-0.013 (0.024)	
Public policy exception							0.084 (0.064)
Good faith exception							-0.051 (0.055)
Implied contract exception							0.014 (0.053)

This table shows the results of regressions of male native wages on immigration and the immigration by labour market institution interactions, using different specifications of the data.

Table 11: Immigration and the economic cycle

	Business cycle measure:			
	Log wages, 6-10 yrs.	Wage growth 11-15 yrs.	Employment, 6-10 yrs.	Employment 11-15 yrs. growth
	<i>Dependent variable: immigrant share</i>			
Business cycle	0.030 (0.021)	0.029 (0.020)	0.028 (0.017)	0.078 (0.067)
Business cycle x minimum wage	0.002 (0.003)	0.001 (0.003)	-0.004 (0.002)	0.001 (0.010)
Business cycle x unionization	-0.166*** (0.038)	-0.143*** (0.032)	-0.032 (0.022)	-0.311*** (0.096)
Business cycle x at will exceptions	-0.002 (0.002)	-0.001 (0.002)	-0.002 (0.002)	-0.012* (0.007)
				0.063 (0.056)
				-0.001 (0.007)
				-0.226*** (0.058)
				-0.007 (0.003)

This table shows the results from a regression of the immigrant share on the indicated business cycle measures, and the interaction of the business cycle measures with labour market institutions. The regressions contain state, year, education and experience group fixed effects, and controls for the labour market institutions.

Table 12: Labour market institutions and the impact of immigration: additional controls

	Dependent variable: log wages				
	(1)	(2)	(3)	(4)	(5)
Immigration	0.824*** (0.26)	1.036*** (0.237)	0.598** (0.261)	0.863*** (0.222)	1.038*** (0.235)
Immigration x:					
Minimum wage	-0.161*** (0.044)	-0.119*** (0.040)	-0.117** (0.045)	-0.084** (0.038)	-0.119*** (0.040)
Unionisation	-1.384** (0.702)	-2.641*** (0.597)	-1.124 (0.698)	-2.268*** (0.508)	-2.565*** (0.587)
At will exceptions	0.013 (0.024)	-0.043** (0.021)	-0.003 (0.024)	-0.054** (0.022)	-0.045** (0.021)
Lagged wages		X		X	
Lagged employment		X		X	
Lagged wage growth			X		X
Lagged employment growth			X		X
Lagged wages x institutions				X	
Lagged employment x institutions				X	
Lagged wage growth x institutions					X
Lagged employment growth x institutions					X

This table shows the results from regressions of male native wages on immigration and the immigration by labour market institution interactions, using a variety of controls (as indicated) for business cycle conditions.