

7-31-2015

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## Recommended Citation

Steigleder, Quinn and Sparber, Chad, "The Effect of Legal Status on Immigrant Wages and Occupational Skills" (2015). *Economics Faculty Working Papers*. Paper 47.

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## The Effect of Legal Status on Immigrant Wages and Occupational Skills

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July 2015

Native and foreign-born workers with a high school degree or less educational attainment provide unique occupational skills to the US labor force. This regularity might be driven, in part, by limited access to occupations for immigrants lacking legal rights to work in the US. This paper exploits exogenous policy change induced by the 1986 Immigration Reform and Control Act (IRCA) to perform triple-difference estimation examining whether legal status causes immigrants to work in occupations that use skills more similar to those of native-born workers. We find that legal status decreases the manual skill intensity of Mexican immigrants by two percentiles. It increases communication skill intensity by an equivalent amount. This effect reduces the skill gap between Mexican-born and native-born American workers by 13%.

**JEL:** F22, J24, J61, J31

**Keywords:** Immigration, Occupational Skills, Natural Experiment

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## I. Introduction

The economics literature provides extensive evidence that foreign and native-born workers with a high school degree or less education are imperfect substitutes in production.<sup>1</sup> This distinction is of primary importance to long-standing political and economic debate in the United States. If immigrants and natives are perfectly substitutable, then immigration will reduce wages paid to similar natives. If they are not, then natives will be protected from direct competition with immigrants and could experience complementarities and wage increases.

Much of the evidence for imperfect substitutability arises because immigrants and natives work in different types of occupations: Among workers with little educational attainment, native-born workers tend to specialize in occupations requiring communication skills, whereas immigrants perform manual labor.<sup>2</sup> An open question, however, is whether some of the difference in immigrant presence across occupations is driven by accessibility. Employer willingness to hire immigrants residing in the US illegally might vary across occupations due to licensing requirements, heterogeneity in the likelihood that employment laws will be enforced, or related reasons.<sup>3</sup>

The legal status of immigrants might therefore play a role in determining the type of work performed and skills used by immigrant workers. Unfortunately, information on legal status is not available in widely-used nationally representative surveys such as the US Census, American Community Survey (ACS), or Current Population Survey (CPS). As one solution to this limitation, some studies have relied on the Immigration Reform and Control Act (IRCA) as a source of information. IRCA was passed in 1986 ostensibly to reduce the inflow of illegal immigration into the United States by introducing employer penalties for hiring undocumented workers and increasing border enforcement. However, it also offered amnesty that granted legal status to previously unauthorized immigrants who could verify continuous residency in the US since January 1, 1982. Exogenous policy change created by IRCA allows us to identify groups of workers likely to have acquired legal status. This facilitates triple-difference estimation to examine how legalization affects legalized immigrant wages and occupational skills.

Our analysis begins by exploring wage effects – a question examined by previous studies as well. We find that wage effects appear to exist but are small. Mexican-born immigrants who were likely eligible for amnesty through IRCA saw wages increase by 2.9-6.5%. The second part of our analysis is more innovative. We examine whether IRCA-induced legal status created an opportunity for immigrants to

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<sup>1</sup> See Ottaviano and Peri (2012), Manacorda, Manning, and Wadsworth (2012), and Card (2009, 2012).

<sup>2</sup> See Peri and Sparber (2009) and Amuedo-Dorantes and de la Rica (2011).

<sup>3</sup> See evidence on occupational licensing in Orrenius and Zavodny (2006), Lozano and Sorensen (2011), Ball, Dube, and Sorensen (2010), and Gallo and Bailey (1996), for example.

work in occupations more similar to those of native-born Americans. Our estimates again show that such an effect occurs but is small. Mexican-born immigrants who were likely eligible for amnesty through IRCA decreased manual skills associated with their occupations by two percentiles. They increased their communication skill use by 2.1 percentiles. These magnitudes are equivalent to 13% of the skill gap between native-born Americans and Mexican immigrants with a high school degree or less education. This suggests that legal status does help immigrants to pursue occupations more like those of native-born workers, thus increasing the level of labor market competition. The effect is small, however, and does not come close to reversing the comparative advantage of native-born workers in performing communication work.

Throughout our analysis, we perform a number of placebo checks help to illustrate the validity of our triple difference methodology. For example, if IRCA was correlated with omitted factors that caused wage and occupational changes for one or more immigrant groups, then our results could be. Much of our analysis is focused on placebo comparisons of immigrant groups that should not be affected by IRCA (e.g., groups unlikely to have received legal status from IRCA). Null results in those regressions help in reassuring that our main results are indeed likely to be driven by IRCA-induced changes in legal status, and not omitted factors correlated with the policy.

## **II. Related Literature**

Many economists have examined the effect of legal status on immigrant wages and/or occupational standing. Since documentation status is not available in nationally-representative datasets, many authors turn to alternative sources. For example, Lozano and Sorensen (2011) use the Mexican Migration Project (MMP). They note that most undocumented immigrants affected by IRCA were from Mexico and conclude that IRCA was associated with a statistically significant 20-log point increase in Mexican immigrant earnings. As a placebo test, they perform regressions using groups not expected to be affected by the policy (e.g., native born Hispanics and immigrants not born in Mexico) and find effects that are rarely significant.

Amuedo-Dorantes and Bansak (2011) examine Hispanic natives from the 1979 National Survey of Youth (NLSY79) of similar age and work experience to those in the Legalized Population Survey (LPS) to estimate the effects of legalization on immigrant labor market outcomes. They find that for both women and men, employment fell, unemployment rose, and wage rates were higher at statistically significant levels for newly legalized immigrants after IRCA. The paper also highlights that legalization can affect labor supply of immigrants in three ways: staying employed and earning higher wages because

legalization allows immigrants to negotiate wages and no longer be dependent upon a single employer; exiting employment in search of a better job match while receiving employment insurance; or entering the work force for the first time (as cited in Killingsworth 1983).

Although Amuedo-Dorantes and Bansak (2011) find that legalization affects employment outcomes, they find limited direct evidence that it affects returns to skill. They discover that returns to work experience increased for men but were not statistically different from zero for women, and legalization raised the employment returns to English proficiency. Thus, higher-skilled immigrants benefit from legalization and less-skilled foreign-born workers become unemployed because they can now receive unemployment insurance.

Kossoudji and Clark (2002) also work with LPS and a comparison sample from NLSY79 to show that English proficiency and education improved wage growth for male immigrants following legalization. Their results provide strong evidence that amnesty from IRCA enhanced the labor market opportunities of legalized workers. The authors also highlight that changes in wages for legalized men resulted from their new legal status rather than from the macroeconomic conditions, as post-legalization gains resulted primarily from changes in return to human capital.

Sisk (2014) studies the difference between scarring associated with previous unauthorized status and the turning point of legalization to determine how amnesty affects hourly wages and occupational standing. He defines a “turning point” as new economic opportunities for immigrants, and “scarring” as receiving no benefit from legalization. He concludes that overall legalization is a turning point for immigrants after finding that wages of legalized immigrant men and women are 25% higher than they would be if they had remained unauthorized. Although he finds that men are more likely than women to benefit, legalization improves occupational standing and upward mobility into jobs with higher median wages. As a caveat, however, he notes that endogeneity could possibly bias his study.

In contrast to the studies above, some work has found little effect from legalization. Lofstrom, Hill and Hayes (2010) find that improvements in employment outcomes from legalization are likely to be small, if not zero. Although they do find slight significant changes in wages for some immigrant groups, they argue that these changes are due to demographic and residential factors rather than legalization. The authors test the effects of authorization on wages paid to legal immigrants, those who crossed the border illegally, and those who over-stayed their visas. They highlight that visa abusers and illegal border crossers tend to be employed in low-skilled occupations with low earnings, while legal immigrants tend to be employed in high-skilled jobs with higher pay. Similar to Orrenius and Zavodny (2006), Lofstrom, Hill and Hayes (2010) find that high-skilled immigrants will benefit more from

legalization than low-skilled immigrants. Their evidence also shows that visa abusers benefit from gaining legal status because the occupational earnings of immigrants in this category increased by approximately 13% more than those of continuously legal immigrants. However, they find that the discrepancies between wages amongst immigrant groups are most likely due to other demographic features and the amount of time an immigrant has been residing in the U.S. rather than the legalization process itself. Thus, legalizing unauthorized immigrants is unlikely to lead to dramatic changes in the labor market outcomes of most previously unauthorized immigrants, especially for low-skilled workers. Although the authors find that highly skilled immigrants exhibit occupational improvements after gaining legal status, ultimately none of these changes are attributed directly to gaining legal status. One important criticism of this study, however, is that it uses observations from data collected only one year after immigrants were able to receive amnesty, so this may not have given enough time for legalization to significantly affect immigrant wages.

Importantly, other authors have recognized trends common across immigrants within ethnic group regardless of legal status. Donato and Sisk (2012) study how government policy changed the conditions in places Mexican migrants work. They find worsening conditions for both unauthorized and legal Mexican migrants in the years following IRCA. Similarly, Donato, Durand, and Massey (1992) find that wages for men deteriorated for Mexicans after IRCA. This occurred because the policy's efforts to reduce the number of unauthorized immigrants led to increases in deportations and more raids in workplaces to check documentation. Consequently, risk-averse employers began to treat all Mexican migrant workers the same regardless of their legal status in order to avoid penalties. Thus, employers were more worried about having the correct paperwork filled out by the Mexican employer rather than what their true documentation status was, and as a result workplace conditions became unfavorable.

Although legal status is likely to generate the most direct and important labor market consequences for immigrants, it might affect outcomes for native-born workers as well. Orrenius and Zavodny (2006), Ottaviano and Peri (2012), Manacorda, Manning, and Wadsworth (2012), and Card (2009, 2012) are among many authors to have noted that the degree of substitution between native and foreign-born workers is a key determinant of the effect of immigration on native wages. Issues of substitutability and the implied wage effect for native-born wage remains unresolved in the economics literature.<sup>4</sup>

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<sup>4</sup> In addition to other papers cited in the text, see Altonji and Card (1991), Butcher and Card (1991), LaLonde and Topel (1991) or Schoeni (1997) for evidence that immigration has little or zero significant negative effect on native wages. Card (2012) argues that overall impact of legalization on native wages is far smaller than the effects of other factors like new technology, institutional changes, and macroeconomic conditions. See Borjas (2003, 2013) for contrary evidence that immigration lowers the wage of the average native worker by 3.2%, 8.9% for high school

One source of potential imperfect substitutability lies in the occupations and their associated skills performed by native and foreign-born labor. Peri and Sparber (2009) argue that immigrants with a high school degree or less education have a comparative advantage in manual and physical skills, so they generally work in occupations requiring those skills. Similarly-educated native-born workers instead perform jobs requiring more communication tasks. Inflows of immigrants cause native-born workers to further specialize in language-based jobs. This response helps protect native-born workers from labor market competition with immigrants, mitigating potential wage losses. The authors further note that established immigrants who have been in the U.S. for a long time are more at risk of competition with new immigrants: Although immigrants do become more like natives in their skill use the longer they remain in the U.S., their “response to immigration is smaller and less significant, making them especially vulnerable to wage competition with new immigrants.” Established immigrants suffer the largest wage losses from new immigration. These insights are important for this paper as they might be informative about potential labor market competition arising from the acquisition of legal status. If legal status allows immigrant workers to access jobs and perform skills more similar to those of native-born workers, it will increase labor market competition, which could potentially generate larger negative wage effects.

### III. Empirical Framework and Data

#### *Model Intuition*

IRCA legislation in 1986 granted amnesty to illegal immigrants who could verify continuous residency in the U.S. since January 1, 1982. This policy change therefore provides a natural experiment for identifying the effects of legal status on immigrant workers. This paper estimates the effects of acquiring legal status on the wage and occupational skill outcomes of foreign-born workers in the United States. To do so, we follow insights outlined in Ball, Dube, and Sorensen (2010) and perform triple-difference estimation across individuals ( $i$ ) similar to regression (1):

$$(1) \ Y_{i,t} = \alpha + \beta_1 \cdot TGroup_{i,t} + \beta_2 \cdot TYear_{i,t} + \beta_3 \cdot Est_{i,t} \\ + \gamma_1 \cdot TGroup_{i,t} \cdot TYear_{i,t} + \gamma_2 \cdot TGroup_{i,t} \cdot Est_{i,t} + \gamma_3 \cdot TYear_{i,t} \cdot Est_{i,t} \\ + \eta \cdot TGroup_{i,t} \cdot TYear_{i,t} \cdot Est_{i,t} + \delta \cdot X + \varepsilon_{i,t}$$

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dropouts, 4.9% for college grads, 2.6% for high school grads, and barely any change for those who have completed some college.

The variable  $Y$  represents various outcome measures of interest including the (log) wages and skills of foreign-born workers. The vector  $X$  includes a series of controls for determinants of labor market outcomes including indicator variables for age, gender, educational attainment, usual weeks worked per year, and usual hours worked per week. The error term is represented by  $\varepsilon_{i,t}$ . All models are estimated with heteroskedasticity-robust standard errors.

Our interest lies in the remaining terms in the model.  $TGroup$  is a dichotomous variable measuring the treatment group of individuals who were likely to be residing in the US illegally prior to IRCA legislation. The central challenge of analyzing the effects of acquiring legal status is that most nationally-representative surveys (such as the Census, ACS, and CPS) do not ask such questions. Instead, scholars must adopt proxy groups of individuals likely to be residing in the U.S. illegally. One common strategy is to identify Mexican-born individuals with limited educational attainment as “likely illegal immigrants” since – as reported in Passel (2005) and Hoefer, Rytina, and Campbell (2006) – over 80% of immigrants from Mexico are in the US illegally. Our analysis follows this convention and adopts Mexican-born workers with a high school degree or less education as the treatment group.

Second,  $Est$  represents a dichotomous variable identifying whether a person is an established immigrant or is instead a new arrival. The data section below will describe this in greater detail. The key insight, however, is that 1986 IRCA legislation applied to established immigrants who first arrived in the US before 1982. No amnesty was granted to individuals arriving in later years. Thus, the treatment (IRCA legislation) was not applied universally across a treated ethnic group (Mexican-born non-citizens).

Finally,  $TYear$  is a dichotomous variable identifying the year of the data survey. This too will be discussed in further detail in the following section. The key insight is that amnesty was a one-time event, and that established immigrants in the treated group will not experience the same labor market effects in every survey year.

Altogether, the model implies that the triple-difference coefficient ( $\eta$ ) is the key parameter of interest. This coefficient measures whether the treated group of established immigrants who were likely to have received amnesty experienced wage or skill changes as a result of IRCA legislation.

### *Census Data*

We use 1990 and 2000 U.S. Census data to estimate the regression model in (1). We use foreign-born individuals age 18-65 (inclusive) who are employed in known non-military occupations and work more than 30 hours a week for more than half of the year. We drop people who live in group quarters or

are enrolled in school. Our main regressions include only those with a high school degree or less education.

Fortuitous questions asked in the 1990 census facilitate our identification strategy.<sup>5</sup> That census records the year in which an immigrant first arrived to the United States into broad aggregates. One grouping is for 1980 and 1981 (9-10 years of US labor market experience), and another is for 1982-1984 (6-8 years of experience). Our operating assumption is that these two groups of workers are very similar (conditional on other covariates) except for one important distinction: The group of more established immigrants would have been subject to IRCA amnesty protection if they had arrived to the US illegally, but the latter group would not. We drop all workers who have been in the US for shorter or longer durations from the sample.

Unfortunately, the 1980 census does not provide year of immigration categories that would allow us to separate immigrants into these two experience groups. However, the 2000 census does. Unlike with 1990 census information, IRCA would not have applied to either established or new immigrants in the 2000 census.

Our resulting sample of foreign-born workers with a high school degree or less education is dominated by individuals born in Latin America. 42% of respondents were born in Mexico, and another 28% were born in other Latin American countries. The remaining countries with the highest levels of representation are Vietnam (5%), China (3%), and the Philippines (3%). Placebo checks later in the paper will focus on immigrants from these countries.

Given the data availability, we re-express our main regression model as equation (2):

$$(2) Y_{i,t} = \alpha + \beta_1 \cdot Mex_{i,t} + \beta_2 \cdot Year1990_{i,t} + \beta_3 \cdot Est_{i,t} \\ + \gamma_1 \cdot Mex_{i,t} \cdot Year1990_{i,t} + \gamma_2 \cdot Mex_{i,t} \cdot Est_{i,t} + \gamma_3 \cdot Year1990_{i,t} \cdot Est_{i,t} \\ + \eta \cdot Mex_{i,t} \cdot Year1990_{i,t} \cdot Est_{i,t} + \delta \cdot X + \varepsilon_{i,t}$$

The model includes foreign-born individuals who have been in the US 6-10 years. The  $\beta$  coefficients represent key indicator variables. In models in which  $Y$  measures individual wages, for example,  $\beta_1$  measures wage differentials paid to Mexicans attributable to discrimination, productivity, or other undescribed differences with other immigrant workers. The coefficient  $\beta_2$  simply measures whether immigrant wages were lower in 1990 than in 2000. Finally,  $\beta_3$  measures the wage differential paid to established immigrants (9-10 years of U.S. experience) versus newer ones (6-8 years).

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<sup>5</sup> See Ball, Dube, and Sorensen (2010) for similar motivation.

The  $\gamma$  coefficients measure difference-in-difference effects. Thus,  $\gamma_1$  measures whether Mexicans were treated differently in 1990 than in 2000.  $\gamma_2$  records whether established Mexicans received a premium relative to other groups.  $\gamma_3$  measures whether wage trends for established immigrants were different than for newer immigrants.

As noted,  $\eta$  is the primary triple-difference coefficient of interest. The identifying assumption is that Mexicans with 9-10 years of established US work experience identified in the 1990 census were likely to have received IRCA amnesty and legal status. Similarly-experienced Mexicans in the 2000 census were not as likely to have received amnesty, nor were other groups of workers.

In addition to the control variables noted above, we also include a variable measuring the employment rate of an individual immigrant's cohort (year of observation, place of birth, and years in the US). Amuedo-Dorantes and Bansak (2011) argued that IRCA caused disproportionate increases in unemployment among the least skilled workers. Failure to control for this possibility could lead to biased estimates resulting from changes in workforce composition.

Ultimately, we consider several groups to make comparisons. Ball, Dube, and Sorensen (2010) and Hill, Hayes and Lofstrom (2010) highlight how most undocumented immigrants affected by IRCA were from Mexico and Central America.<sup>6</sup> Thus, we continue with previous convention and use Mexican-born immigrants as the treatment group. We compare them both to non-Mexican Latin Americans (henceforth, "Latin Americans") as well as non-Latin American immigrants (henceforth, "Other Immigrants"). However, we also consider various placebo comparisons. One such exercise will compare Vietnamese, Chinese, and Pilipino immigrants (the three largest non-Latin American source countries) with immigrants from other source countries. Another will compare workers with college experience. In those cases, both the "treatment" and "control" groups are assumed to be in the US legally, and should not be subject to IRCA legislation. If our estimation strategy is valid, the triple difference coefficient in these placebo exercises should be insignificantly different from zero.

### *Skill Data*

Wage effects provide a direct and obvious channel through which legal status could affect the labor market outcomes of foreign-born workers. However, changes in occupational skill composition might have broader effects on native-born workers by implying more intense labor market competition for jobs in which native workers have a comparative advantage.

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<sup>6</sup> Hill, Hayes, and Lofstrom (2010) note that close to 90% of illegal border crossers originate from Latin America, with slightly more than 38% from Mexico.

We follow Peri and Sparber's (2009) approach to measuring skills used by workers with a high school degree or less education. The original information comes from the US Department of Labor's O\*NET database of occupational abilities. This source provides measures of the abilities required to perform a specific occupation. Values have been converted into percentiles measuring the share of the labor force using less of a particular skill in 2010. Though O\*NET measures 52 separate abilities, we group them into two larger aggregates: manual and communication skills.<sup>7</sup>

Importantly, work by Peri and Sparber (2009), Amuedo-Dorantes and de la Rica (2011), Hill, Hayes, and Lofstrom (2010), and others highlight how foreign-born workers – especially those with little education – tend to specialize in occupations intensive in manual or physical labor skills while natives pursue jobs more intensive in communication or language skills. Figure 1 illustrates this for workers with a high school degree or less education. The average native-born American with little educational attainment used more manual skills than 61.8% of the US labor force, but more communication skills than only 35.9% of the labor force. Mexicans, in contrast, used far more manual skills (higher levels than 76.8% of the labor force) and far fewer communication skills (19.4%). Latin Americans and other immigrants have average skill use values between the native-born American and Mexican-born figures. Similar summary statistics formed part of the motivation for Peri and Sparber's (2009) analysis of the effects of immigration on native-born American wages. The data suggests that among less-educated workers, immigrants have a comparative advantage in manual skills while natives have an advantage in communication work. This difference helps protect Americans from direct labor market competition with immigrants.

We do not examine the broader impacts of legal status on American workers in this paper. Instead, our empirical analysis will assess whether legal status causes the occupational skills of immigrants to look more like those of natives. These results will be indicative of whether legal status increases the risk of potential labor market competition. The values displayed in Figure 1 are useful for providing context for regression estimates.

#### **IV. Empirical Results**

##### *Wage Results*

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<sup>7</sup> Manual skills measure Arm-Hand Steadiness; Manual Dexterity; Finger Dexterity; Control Precision; Multilimb Coordination; Response Orientation; Rate Control; Reaction Time; Wrist-Finger Speed; Speed of Limb Movement; Static Strength; Explosive Strength; Trunk Strength; Stamina; Extent Flexibility; Dynamic Flexibility; Gross Body Coordination; and Gross Body Equilibrium. Communication skills are the average of Oral Comprehension; Written Comprehension; Oral Expression; and Written Expression.

Table 1 provides our main wage estimates of the regression model (2). Regressions are performed across foreign-born individuals with a high school degree or less education in the 1990 and 2000 censuses. Observations are weighted by census sample weights, and standard errors are heteroskedasticity robust.

Column (1) uses Mexicans as the treatment group and compares wage outcomes to (non-Mexican) Latin Americans. The triple interaction-term is created to identify immigrants that most likely were affected by the amnesty program (Mexicans who likely changed from being in the US illegally pre-IRCA to legally post-IRCA). The coefficient indicates that the acquisition of legal status through IRCA legislation increased wages paid to likely illegal immigrants by 6.5%.

Beyond our main estimates, the model includes a host of control variables that produce predictable signs. High school dropouts earn 15.1% lower wages than high school graduates. Female migrants earn 22.8% less than men. Migrants in the country 9-10 years earn 3.7% more than those in the country 6-8 years. Mexicans earn 2.6% less than other immigrants. Unreported regression coefficients reveal an earnings profile that generally increases with age at a diminishing rate. Individuals who work more hours and weeks per year earn higher wages.

The two-way interactions are informative about other wage differentials in the economy. Wages for established immigrants were 4.1% lower in 1990 than in 2000. Wages paid to established Mexicans were insignificantly different from wages paid to other established immigrants. Mexicans earned 10.2% less in 1990 than in 2000 relative to trends experienced by other immigrant groups. This differential trend is important in confirming the need for triple difference estimation to identify the effects of legal status. Simple difference-in-difference estimation comparing wage effects of Mexicans to other immigrants will be biased if they fail to account for eligibility based upon year of arrival to the US.

Column (2) compares outcomes of Mexicans to other (non-Latin American) immigrants. This is an important exercise because if many Latin Americans also received legal status through IRCA legislation, then Column (1) would underestimate the wage effects. It is therefore somewhat surprising that the magnitude of the wage coefficient decreases to 2.9% and is insignificant at conventional levels ( $p$ -value of 0.122). Nonetheless, we still believe that this result provides mildly supportive evidence for wage increases associated with the acquisition of legal status.

Column (3) performs our first placebo test. Vietnam, China, and the Philippines are the three largest non-Latin American source countries in our sample and account for roughly 11% of foreign-born workers with a high school degree or less education. Unlike with Mexicans (or potentially other Latin American groups), the literature assumes that the vast majority of workers from these countries reside in the US

legally. Thus, we should not expect IRCA to provide legal status or generate any wage differential for immigrants from these countries relative to those from other sources. Indeed, the triple difference coefficient in Column (3) reduces to just 1.6% and is far from being statistically significant (p-value of 0.614). We believe this exercise helps to demonstrate that the estimated coefficients in Column (1) and – to a lesser extent – in Column (2) are due to the acquisition of legal status and not due to omitted factors correlated with IRCA’s policy change.

The comparison between Vietnamese, Chinese, and Pilipino immigrants to other groups is not the only potential placebo check. The economics literature often notes that immigrants illegally residing in the US have reduced access to higher education<sup>8</sup> and jobs associated with a college degree.<sup>9</sup> We might therefore expect IRCA legislation to have little impact on wage differentials paid to college-educated Mexicans versus other workers.

Table 2 explores this possibility by reporting regressions performed across individuals with at least some college experience. Columns repeat the structure of Table 1. All three regressions report triple-difference coefficients that are insignificant from zero, again helping to confirm that the result in Table 1 was driven by legal status and not a related but omitted variable. However, the coefficient estimates in Columns (1) and (2) are somewhat troublesome, as they are quite close to the figures estimated in Table 1. The number of Mexicans and Latin Americans in the college sample is much smaller than in the low education sample, which could affect the precision of the estimates. The number of immigrants from other source countries grows, however. In Column (3), we see a point estimate of the effect of IRCA effectively equal to zero when comparing Vietnamese, Chinese, and Pilipino outcomes to other college-educated immigrants.

Altogether, we believe the regressions and placebo checks in Tables 1 and 2 offer mildly supportive evidence to past work provided by Lozano and Sorensen (2011), Amuedo-Dorantes and Bansak (2011), Kossoudji and Clark (2002), and others. Legal status increases wages paid to foreign-born workers with little educational attainment by 2.9-6.5%. The estimates are identified by IRCA legislation and do not appear to be the result of omitted variables bias.

### *Skill Results*

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<sup>8</sup> See Kaushal (2008) and Amuedo-Dorantes and Sparber (2014).

<sup>9</sup> See Orrenius and Zavodny (2006).

Legal status might be capable of affecting a range of labor market outcomes for foreign-born workers. Wage effects might be the most obvious and direct consequence, but occupational adjustment provides another important potential channel through which immigrants respond.

We perform estimates of equation (2) but replace the dependent variable with measures of the manual and communication skill content of immigrants' occupations. Table 3 provides the estimates for the triple difference term of interest. The model continues to include all the control variables of equation (2) and previous regressions, but we do not report them in the interest of conserving space. The top panel of Table 3 reports estimates for manual skill regressions; the bottom panel displays estimates from regressions of communication skills.

Column (1) compares Mexican to Latin American immigrants. Despite the wage differentials identified in Table 1, we find little statistical evidence that legal status generated an occupational response when comparing these two groups. We see only a small and marginally-significant increase in communication skill intensity by 1.3 percentiles. Interestingly, however, by comparing the occupational skills of Mexicans versus other immigrant groups, we find stronger evidence that legal status facilitated by IRCA legislation led Mexican workers into occupations requiring less manual and more communication content. Specifically, legal status decreased the manual skill content of occupations held by Mexican workers by 2 percentiles. It increased the communication skill content of Mexican workers by 2.1 percentiles, nearly the same amount. The model therefore provides evidence that legal status causes foreign-born workers to move into occupations more like those of native-born workers. This suggests that legal status does increase labor market competition between natives and immigrants. Importantly, however, the magnitude of occupational skill response is exceptionally small. For context, consider again the summary statistics in Figure 1. A manual skill response of two percentiles amounts to 13.3% of the average manual skill gap between Mexican and native-born Americans and 15.4% of the gap with non-Latin American immigrants. The 2.1 percentile communication skill increase would close the Mexican/native skill gap by an equivalent 12.7%, while closing the gap with other immigrants by 18.3%.

Column (3) repeats our pattern of providing a placebo check by comparing two groups of immigrants unlikely to have received legal status from IRCA legislation: Vietnamese, Chinese, and Pilipino immigrants relative to other non-Latin American immigrants. Point estimates for manual (0.003) and communication skills (-0.010) are near zero and insignificant, again helping to demonstrate that the estimates for a response among Mexican workers are driven by policy and not omitted factors.

The manual and communication skills discussed in Table 3 represent an aggregation of several component skills identified by O\*NET. Table 4 provides a summary of the skill response for some of these components. The top panel displays estimates based upon comparisons between Mexicans and Latin Americans. The bottom panel compares Mexicans to other immigrant groups. The coefficients are almost always larger in magnitude for the latter comparison – not surprising given the results in Table 3. Both pairings find support for several skill responses consistent with the interpretation that legal status caused immigrants to work in occupations more similar to those held by native-born workers.

Columns (1) and (2) examine the oral and written comprehension components of communication skills, respectively. The model estimates between a 0.8 and 3.2 percentile increase in oral comprehension, and a 1.3 to 2.0 percentile increase in written comprehension for Mexican workers following IRCA. Remaining columns explore responses for manual skill components. Results are similar for both comparison groups. Mexican workers moved into jobs requiring less arm-hand steadiness, manual dexterity, and coordination following IRCA. Interestingly, however, the legislation did not significantly change the level of dynamic strength required.

Altogether, the results of Table 4 provide evidence that Mexicans did respond to IRCA legislation by increasing communication-related skills and decreasing manual-related skills. These responses were small, however, suggesting that the implied increase in labor market competition with native-born workers was small as well.

## **V. Conclusion**

Immigration continues to be a major political and economic issue, so it is important to understand how policy affects the U.S. labor market. Legal status for undocumented immigrants could have many effects. Most directly, it could provide immigrants with job opportunities offering higher wages. However, these jobs might involve skills more similar to those used by native-born workers. If so, legal status for immigrants illegally residing in the United States could lead to increased labor market competition with natives.

This study exploits a natural experiment created by IRCA amnesty legislation of 1986 to determine the wage and skill effects of transitioning to legal status for immigrants likely eligible for amnesty. We use 1990 and 2000 census data on foreign-born individuals who first entered 6-10 years prior to the survey. We compare Mexican immigrants who were likely subject to IRCA amnesty to Latin American and other immigrants who were less likely to receive amnesty. We find that wages paid to likely-eligible

Mexicans increased 2.9-6.5%. Null results arising in comparisons between immigrants from top non-Latin American source countries (Vietnam, China, and the Philippines) and other immigrants provide a placebo check to help ensure the results are caused by legal status and not omitted factors. Similarly, it is reassuring that significant wage estimates arise only from our sample of workers with a high school degree or less education, and not among workers with at least some college experience.

Skill response regressions find similar evidence that legal status affected the labor market outcomes of foreign-born workers. We find that IRCA caused Mexican workers with little educational attainment to decrease their supply of manual skills by two percentiles and increase their supply of communication skills by roughly the same magnitude. On the one hand, this suggests that a transition to legal status causes immigrants who had been in the US illegally to compete with native-born workers for jobs more directly. On the other hand, the size of this response is small, accounting for just 13% of the manual and communication skill gap between Mexicans and native-born Americans. Thus, the effect does not come close to reversing the comparative advantage of native-born workers in performing communication work.

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**Table 1: Wage Regressions, Immigrants with a High School Degree or Less Education**

<b>Dependent Variable:</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
<b>Treated Group:</b>	<b>In(Wage)</b>	<b>In(Wage)</b>	<b>In(Wage)</b>
<b>Control Group:</b>	<b>Mexicans</b>	<b>Mexicans</b>	<b>Other Top Source</b>
	<b>Latin Americans</b>	<b>Other</b>	<b>Other</b>
<b>Treated Group * Treated Period * Established</b>	0.065*** (0.018)	0.029 (0.019)	0.016 (0.031)
<b>Treated Group * Treated Period</b>	-0.102*** (0.013)	-0.055*** (0.014)	0.045** (0.021)
<b>Treated Group * Established</b>	-0.013 (0.012)	-0.015 (0.013)	0.026 (0.021)
<b>Treated Period * Established</b>	-0.041*** (0.014)	-0.005 (0.015)	-0.008 (0.019)
<b>Treated Group</b>	-0.026*** (0.009)	-0.181*** (0.010)	-0.207*** (0.014)
<b>Treated Year</b>	-0.066*** (0.012)	-0.031*** (0.011)	-0.059*** (0.013)
<b>Established</b>	0.037*** (0.010)	0.037*** (0.011)	0.022 (0.014)
<b>Employment Rate</b>	0.707*** (0.067)	0.206*** (0.044)	0.264*** (0.044)
<b>Female</b>	-0.228*** (0.005)	-0.231*** (0.005)	-0.223*** (0.008)
<b>High School Dropout</b>	-0.151*** (0.005)	-0.152*** (0.005)	-0.156*** (0.008)
<b>Constant</b>	9.345 (10,523.183)	9.247*** (0.058)	9.334*** (0.098)
<b>Observations</b>	60,713	62,970	26,268
<b>R-squared</b>	0.210	0.251	0.258

Note: Unit of observation is a foreign-born individual. In addition to coefficients shown, the model includes indicators for age, weeks worked per year, hours worked per week, and a constant. Heteroskedasticity robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 2: Wage Regressions, Immigrants with Some College or More Education

Dependent Variable:	(1)	(2)	(3)
Treated Group:	ln(Wage)	ln(Wage)	ln(Wage)
Control Group:	Mexicans	Mexicans	Other Top Source
	Latin Americans	Other	Other
<b>Treated Group * Treated Period * Established</b>	0.060 (0.051)	0.026 (0.046)	-0.005 (0.026)
<b>Treated Group * Treated Period</b>	-0.146*** (0.036)	0.041 (0.033)	0.022 (0.018)
<b>Treated Group * Established</b>	-0.016 (0.034)	0.021 (0.029)	0.050*** (0.018)
<b>Treated Period * Established</b>	-0.061** (0.026)	-0.010 (0.013)	-0.013 (0.016)
<b>Treated Group</b>	-0.076*** (0.024)	-0.398*** (0.021)	-0.135*** (0.012)
<b>Treated Year</b>	-0.092*** (0.021)	-0.122*** (0.009)	-0.128*** (0.011)
<b>Established</b>	0.081*** (0.019)	0.032*** (0.009)	0.022** (0.010)
<b>Employment Rate</b>	1.101*** (0.099)	0.189*** (0.037)	0.300*** (0.039)
<b>Female</b>	-0.189*** (0.012)	-0.227*** (0.006)	-0.219*** (0.006)
<b>Bachelor's Degree or More</b>	0.241*** (0.012)	0.338*** (0.007)	0.349*** (0.007)
<b>Constant</b>	9.665*** (0.178)	12.157*** (0.089)	11.976*** (0.060)
<b>Observations</b>	12,369	46,172	42,910
<b>R-squared</b>	0.278	0.309	0.293

Note: Unit of observation is a foreign-born individual. In addition to coefficients shown, the model includes indicators for age, weeks worked per year, hours worked per week, and a constant. Heteroskedasticity robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: Composite Skill Regressions, Immigrants with a High School Degree or Less Education**

	(1)	(2)	(3)
<b>Treated Group:</b>	<b>Mexicans</b>	<b>Mexicans</b>	<b>Other Top Source</b>
<b>Control Group:</b>	<b>Latin Americans</b>	<b>Other</b>	<b>Other</b>
	<i>Dependent Variable: Manual Skill</i>		
<b>Treated Group * Treated Period * Established</b>	-0.011 (0.007)	-0.020*** (0.007)	0.003 (0.011)
	<i>Dependent Variable: Communication Skill</i>		
<b>Treated Group * Treated Period * Established</b>	0.013* (0.008)	0.021*** (0.007)	-0.010 (0.012)

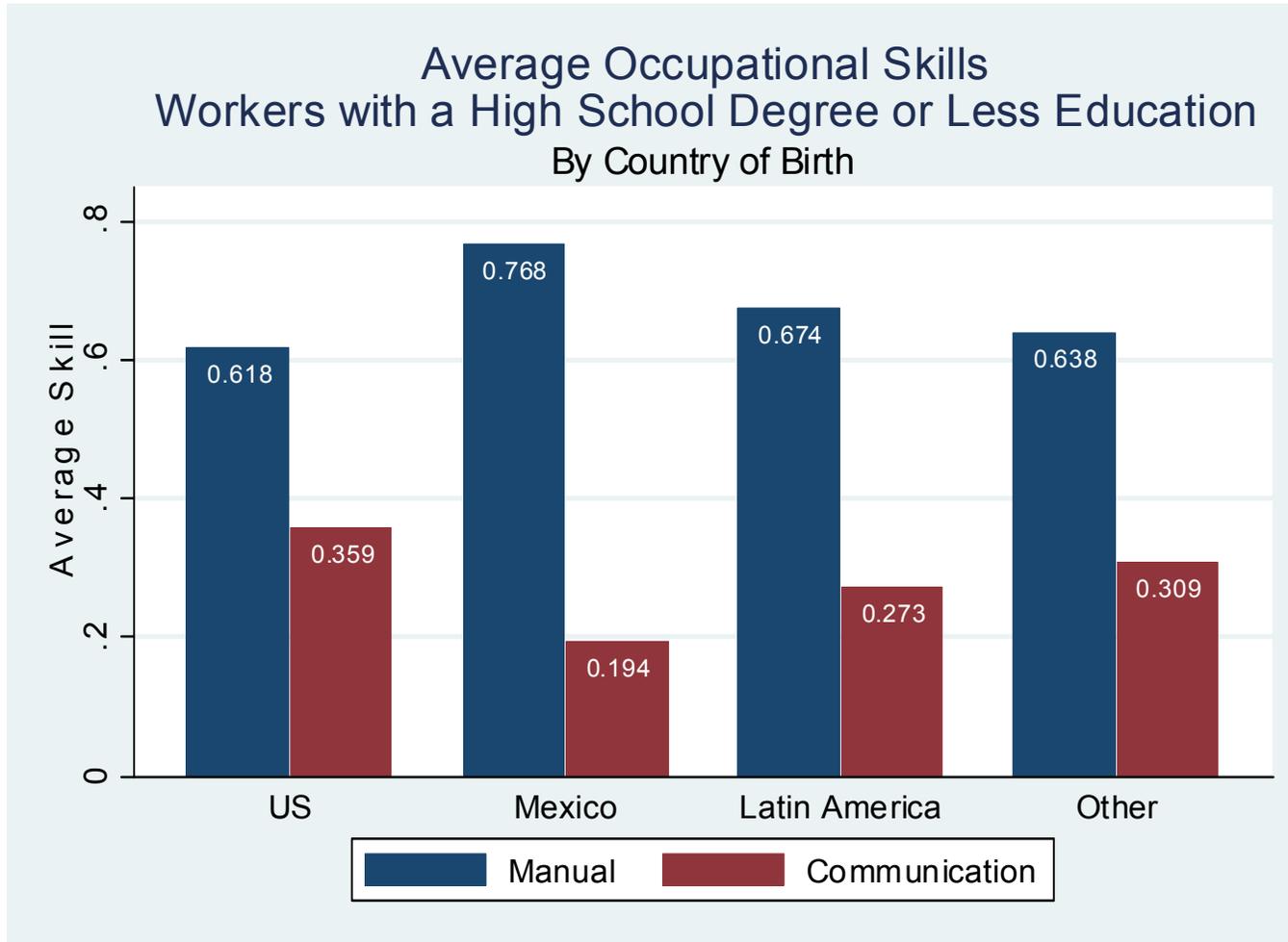
Note: Unit of observation is a foreign-born individual with a high school degree or less education. In addition to coefficients shown, the model includes a control for the employment rate of a migrant's cohort; indicators for gender, being a high school dropout, age, weeks worked per year, hours worked per week, and a constant. The model includes a full array of controls for the treated group, treated period, being an established immigrant, and all two-way interactions. Heteroskedasticity robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4: Assorted Skill Regressions, Immigrants with a High School Degree or Less Education**

Dependent Variable:	(1) Oral Comprehension	(2) Written Comprehension	(3) Arm-Hand Steadiness	(4) Manual Dexterity	(5) Multilimb Coordination	(6) Dynamic Strength
	<i>Treated Group: Mexicans Control Group: Latin Americans</i>					
<b>Treated Group * Treated Period * Established</b>	0.008 (0.008)	0.020*** (0.007)	-0.022*** (0.008)	0.021*** (0.007)	-0.016** (0.007)	-0.004 (0.007)
	<i>Treated Group: Mexicans Control Group: Other</i>					
<b>Treated Group * Treated Period * Established</b>	0.032*** (0.008)	0.013* (0.007)	-0.029*** (0.008)	0.026*** (0.007)	-0.018** (0.007)	-0.006 (0.007)

Note: Unit of observation is a foreign-born individual with a high school degree or less education. In addition to coefficients shown, the model includes a control for the employment rate of a migrant's cohort; indicators for gender, being a high school dropout, age, weeks worked per year, hours worked per week, and a constant. The model includes a full array of controls for the treated group, treated period, being an established immigrant, and all two-way interactions. Heteroskedasticity robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure 1: Average Occupational Skills among Workers with a High School Degree or Less Education



Note: Values represent the proportion of the US workforce using less than a given skill.